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TRAFFIC IMPACT ANALYSIS

HIVE APARTMENTS

Costa Mesa, California
November 8, 2024

Prepared for:

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LLG Ref. 2-23-4668-1

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TRAFFIC IMPACT ANALYSIS

HIVE APARTMENTS

Costa Mesa, California
November 8, 2024

1.0 INTRODUCTION

This traffic impact analysis addresses the potential circulation needs associated with the proposed Hive Apartments Project (hereinafter referred to as Project) located in the City of Costa Mesa, California. The Project site is located west of Susan Street, south of Sunflower Avenue and north of S. Coast Drive in the City of Costa Mesa. The proposed Project consists of demolishing the existing office buildings and football training field to construct 1,050 multifamily dwelling units within three (3) five-story apartment buildings and 3,692 SF of ground floor retail.

This report documents the findings and recommendations of a traffic impact analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential circulation effects and Project-related improvements associated with the proposed Project. The traffic analysis evaluates the existing operating conditions at eight (8) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future operating conditions without and with the proposed Project. Where necessary, intersection improvement measures are identified. This traffic report satisfies the traffic analysis requirements of the City of Costa Mesa as outlined in the *City of Costa Mesa Transportation Impact Analysis (TIA) Guidelines dated October 2020.* The Scope of Work for this traffic study, which is included in ***Appendix A***, was developed in conjunction with City of Costa Mesa staff.

The project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing peak hour traffic information has been collected at eight (8) key study intersections for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the Cities of Costa Mesa, Fountain Valley, and Santa Ana. Based on our research, there are five (5) cumulative projects in the City of Costa Mesa, two (2) cumulative projects in the City of Fountain Valley, and four (4) cumulative projects in the City of Santa Ana within the vicinity of the subject site that have either been built, but not yet fully occupied, or are being processed for approval. These eleven (11) planned and/or approved cumulative projects were considered in the cumulative traffic analysis for this project.

This traffic report analyzes existing and future weekday AM peak hour and PM peak hour traffic conditions for a near-term (Year 2028) and long-term buildout (Year 2050) traffic settings upon completion of the proposed Project. Peak hour traffic forecasts for the Year 2028 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 eleven (11) cumulative projects. Long-term buildout (Year

2050) peak hour traffic forecasts were projected based on modeled traffic projections prepared by OCTA utilizing the OCTAM 5.1 Year 2050 Model.

1.1 Study Area

The eight (8) key study intersections selected for evaluation were based on the City of Costa Mesa's 50-trip threshold criteria. The eight (8) key study intersections and two (2) project driveways listed below provide local access to the study area and define the extent of the boundaries for this traffic analysis.

Key Study Intersections

1. Susan Street at Sunflower Avenue (City of Costa Mesa)
2. Hyland Avenue at South Coast Drive/I-405 NB On-Ramp (City of Costa Mesa/Caltrans)
3. Harbor Avenue at South Coast Drive (City of Costa Mesa)
4. Susan Street at South Coast Drive (City of Costa Mesa)
5. Fairview Road at South Coast Drive (City of Costa Mesa)
6. Harbor Avenue at I-405 NB Ramps (City of Costa Mesa/Caltrans)
7. Harbor Avenue at I-405 SB Ramps (City of Costa Mesa/Caltrans)
8. Fairview Road at Sunflower Avenue (City of Costa Mesa)

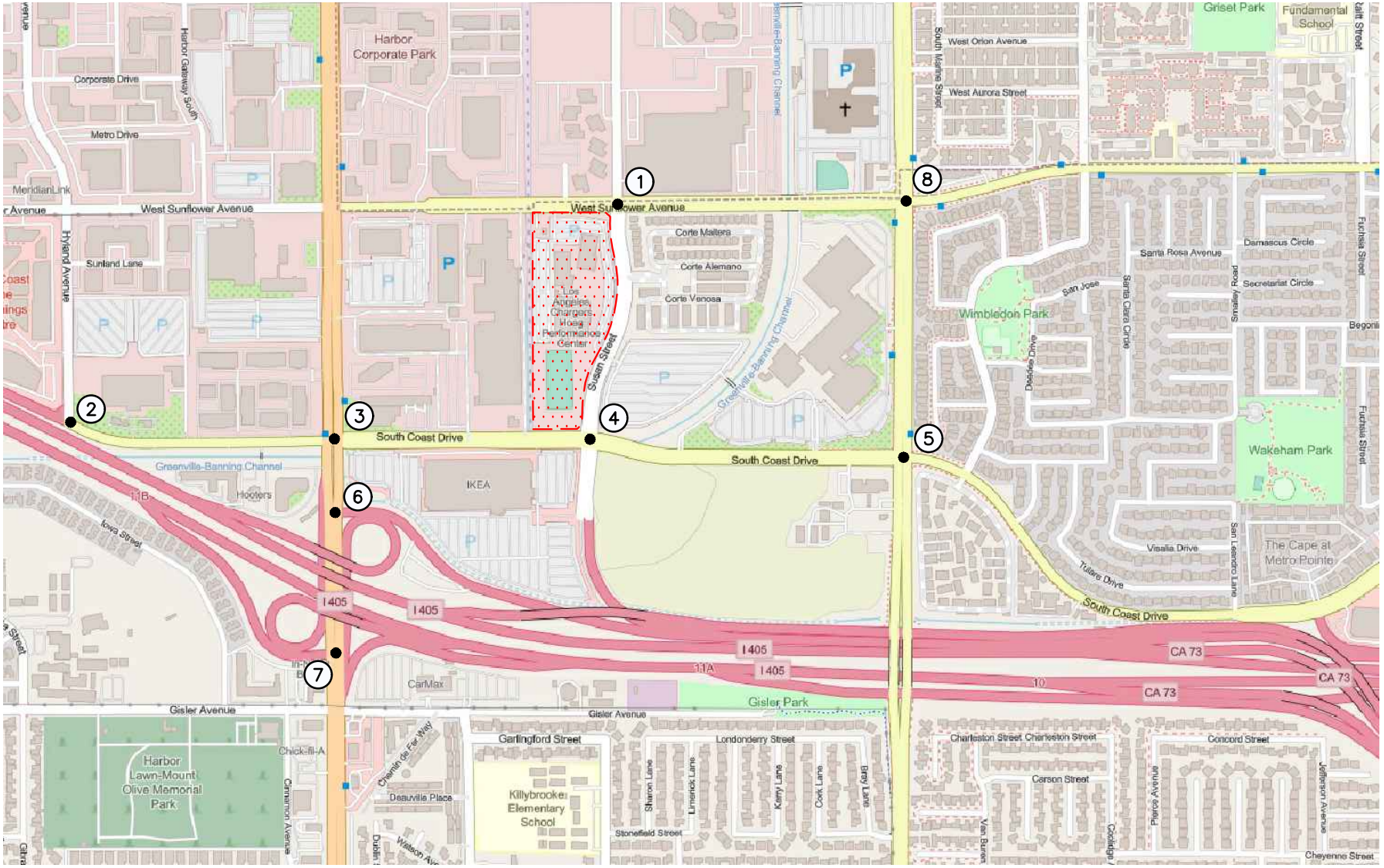
A. Susan Street at Project Driveway 1 (City of Costa Mesa)

B. Susan Street at Project Driveway 2 (City of Costa Mesa)

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the proposed 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 circulation effects associated with area growth, cumulative projects and the proposed Project. When necessary, this report recommends intersection improvements that may be required to restore/maintain an acceptable Level of Service and/or offset the circulation effects of the project.

Included in this Traffic Analysis are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- AM and PM peak hour capacity analyses for existing conditions,
- AM and PM peak hour capacity analyses for future near-term (Year 2028) traffic conditions without and with the proposed Project,
- AM and PM peak hour capacity analyses for future long-term (Year 2050) traffic conditions without and with the proposed Project,
- Caltrans Analysis,
- Multimodal Analysis
- Site Access and Internal Circulation Evaluation, and
- Recommended Intersection Improvements.



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SOURCE: GOOGLE

KEY

= PROJECT SITE

(#) = STUDY INTERSECTION

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NO SCALE

FIGURE 1-1

VICINITY MAP

HIVE APARTMENTS, COSTA MESA

2.0 PROJECT DESCRIPTION AND LOCATION

The Project site is located west of Susan Street, south of Sunflower Avenue and north of S. Coast Drive in the City of Costa Mesa. The existing development on the site consists of 172,176 SF office development within three (3) buildings and the entitled development consists of 80,000 SF of office use on the portion of the Project site currently occupied with a professional football training field. ***Figure 2-1*** presents an aerial depiction of the existing site.

The proposed Project will consist of demolishing the existing office buildings and football training field to construct 1,050 multifamily dwelling units within three (3) five-story apartments buildings. In addition, 3,692 SF of ground floor retail is proposed. ***Figure 2-2*** presents the proposed site plan for the Project, prepared by Architects Orange, which shows the proposed apartment development. Site access for the proposed apartments will continue to be provided via the two (2) existing driveways along Susan Street. The proposed Project will also provide emergency vehicle access via Sunflower Avenue and South Coast Drive.

2.1 Pedestrian Circulation

Pedestrian circulation will be provided via existing public sidewalks along Sunflower Avenue, Susan Street, and South Coast Drive bordering the project site, which will connect to the project's internal walkway. The proposed Project will protect the existing sidewalk along the project frontage and if necessary, repair or reconstruct sidewalks along the project frontage per the City's request.

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SOURCE: GOOGLE

KEY

= PROJECT SITE

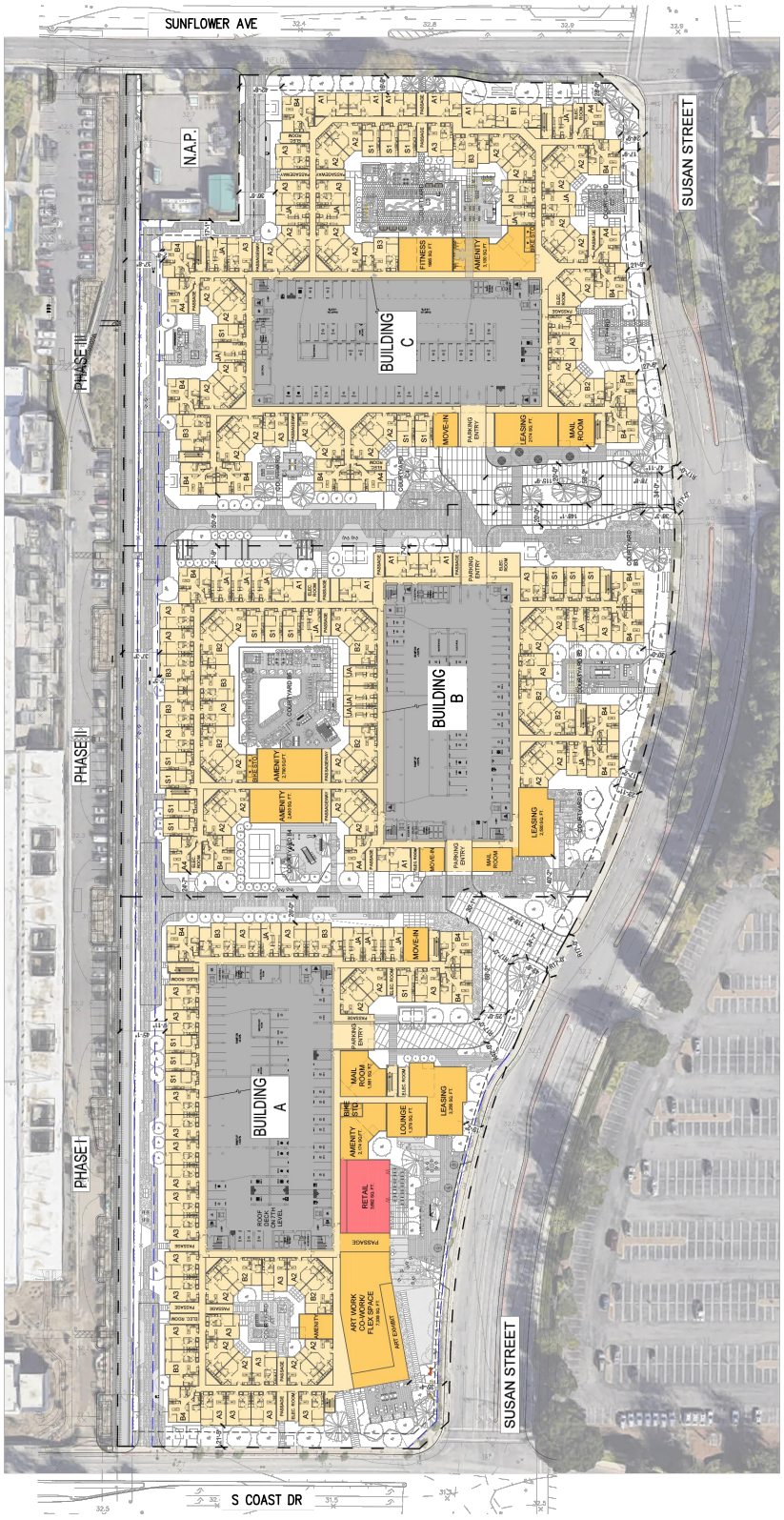
N

NO SCALE

FIGURE 2-1

EXISTING AERIAL PHOTOGRAPH

HIVE APARTMENTS, COSTA MESA



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SOURCE: ARCHITECTS ORANGE

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N

NO SCALE

FIGURE 2-2

PROPOSED SITE PLAN

HIVE APARTMENTS, COSTA MESA

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the proposed Project includes Harbor Boulevard, Fairview Avenue, Susan Street, Sunflower Avenue, and South Coast Drive. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

Harbor Boulevard is a seven to eight-lane divided roadway oriented in the north-south direction, located to the west of the Project site. Parking is not permitted along either side of this roadway in the vicinity of the proposed project. The posted speed limit on Harbor Boulevard is 40 miles per hour (mph). Harbor Boulevard is classified as a major arterial per the City of Costa Mesa Circulation Element. Traffic signals control the study intersections of Harbor Boulevard at South Coast Drive, I-405 NB Ramps, and I-405 SB Ramps.

Fairview Avenue is a six-lane divided roadway oriented in the north-south direction, located to the east of the Project site. The posted speed limit on Fairview Avenue is 40 mph within the vicinity of the proposed Project. Parking is not permitted along either side of the roadway in the vicinity of the proposed project. Fairview Avenue is classified as a major arterial per the City of Costa Mesa Circulation Element. Traffic signals control the study intersections of Fairview Avenue at South Coast Drive and Sunflower Avenue.

Susan Street is a four-lane divided roadway between South Coast Drive and Sunflower Avenue, a three-lane divided roadway south of South Coast Drive, and a two-lane divided roadway north of Sunflower Avenue, oriented in the north-south direction. Susan Street borders the Project site to the east. The posted speed limit on Susan Street is generally 30 mph within the vicinity of the proposed Project. Parking is not permitted along either side of the roadway in the vicinity of the proposed project. Traffic signals control the study intersections of Susan Street at Sunflower Avenue and South Coast Drive.

Sunflower Avenue is a four-lane, divided roadway oriented in the east-west direction, located to the north of the Project site. The posted speed limit on Sunflower Avenue is 40 mph in the vicinity of the proposed Project. Parking is not permitted along either side of the roadway. Sunflower Avenue is classified as a primary arterial per the City of Costa Mesa Circulation Element within the vicinity of the Project site. A traffic signal controls the study intersections of Sunflower Avenue at Susan Street and Fairview Avenue.

South Coast Drive is a 4-lane divided roadway west of Fairview Avenue and a 3-lane divided roadway east of Fairview Avenue, oriented in the east-west direction. South Coast Drive borders the Project site to the south. The posted speed limit on south Coast Drive is 40 mph west of Fairview Avenue and 35 mph east of Fairview Avenue in the vicinity of the proposed Project. Parking is not permitted along either side of the roadway in the vicinity of the proposed project. South Coast Drive

is classified as a primary arterial per the City of Costa Mesa Circulation Element. A traffic signal controls the study intersections of South Coast Drive at Hyland Avenue, Harbor Boulevard, Susan Street, and Fairview Avenue.

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.

3.1.1 *Public Transit*

Public transit bus service for the Project site is adequate and is provided in the project area by the Orange County Transportation Authority (OCTA). OCTA is the leading transit provider in Orange County and offers a wide range of fixed-route bus services. OCTA has developed an extensive network of transit routes to connect residents and commuters of Costa Mesa to key destinations. Three (3) OCTA bus routes operate within the vicinity of the project site on Sunflower Avenue, Harbor Boulevard, South Coast Drive, and Fairview Avenue which consists of the following:

- OCTA Route 43: The major route of travel includes Harbor Boulevard. Nearest to the project site are bus stops on northwest and northeast corner of the intersection of Harbor Boulevard at Sunflower Avenue. Route 43 operates on approximate 20-minute headways during weekdays and weekends. The nearest five bus stops are located west of the project site, along Harbor Boulevard between South Coast Drive and Scenic Avenue/Lake Center Drive.

- OCTA Route 47: The major route of travel includes Fairview Avenue. Nearest to the project site are bus stops on the northeast and southwest corner of the intersection of Fairview Avenue at Sunflower Avenue. Route 47 operates on approximate 20-minute headways on the weekdays and weekends. The nearest five bus stops are located east of the project site, along Fairview Avenue between South Coast Drive and Sunflower Avenue.

- OCTA Route 150: The major route of travel is Sunflower Avenue. Nearest to the project site are bus stops on the northeast and southeast corner of the intersection of Fairview Avenue at Sunflower Avenue. Route 150 operates on approximate 40-minute headways on the weekdays and does not operate on weekends. The nearest two bus stops are located east of the project site along Sunflower Avenue. The first is along Fairview Avenue in between MacArthur Boulevard and Sunflower Avenue and the second is along Sunflower Avenue between Wimbledon Way and Fairview Avenue.

Figure 3-2 graphically illustrates the transit routes of OCTA within the vicinity of the project. ***Figure 3-3*** identifies the locations of the existing bus stops in proximity to the Project site.

3.2 Bicycle Master Plan

The City of Costa Mesa promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The City of Costa Mesa Active Transportation Plan (June

2018) recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the city. The City of Costa Mesa provides an extensive network of existing and future bicycle facilities in close proximity to the project site. A Class I bike path is currently provided along the Project's border to the west, along AAA Avenue, and along South Coast Drive, west of Harbor Boulevard. A Class II bike lane is currently provided along Susan Street, between South Coast Drive and Sunflower Avenue, as well as along Sunflower Avenue, South Coast Drive, Hyland Avenue, and Fairview Street within the vicinity of the Project. Future Class II bike lanes are proposed along Harbor Boulevard, south of South Coast Drive, and Sunflower Avenue, between Fairview Street and Bristol Street. ***Figure 3-4*** presents the existing and proposed bicycle facilities for the City of Costa Mesa.

3.3 Existing Traffic Volumes

Vehicular turning movement counts were conducted at the eight (8) key study locations adjacent to the project site during the weekday morning and evening peak commuter periods to determine the existing AM and PM peak hour traffic volumes. AM and PM peak hour traffic counts at the key study intersections were collected by AimTD, LLC in April 2024.

Figures 3-5 and ***3-6*** illustrate the existing AM and PM peak hour traffic volumes at the eight (8) key study evaluated in this report, respectively. ***Appendix B*** contains the detailed peak hour count sheets for the key intersections evaluated in this report.

3.4 Existing Intersection Conditions

Existing AM and PM peak hour operating conditions for the eight (8) key study intersections were evaluated using the *Intersection Capacity Utilization* (ICU) methodology for signalized intersections and the methodology outlined in the *Highway Capacity Manual* (HCM) for unsignalized intersections.

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

In conformance with the City of Costa Mesa General Plan and the City's traffic study requirements, existing 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 Costa Mesa requirements, the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for through and all turn lanes.

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 3-1***.

3.4.2 *Highway Capacity Manual 7 (HCM 7) Method of Analysis (Unsignalized Intersections)*

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 is shown in ***Table 3-2***.

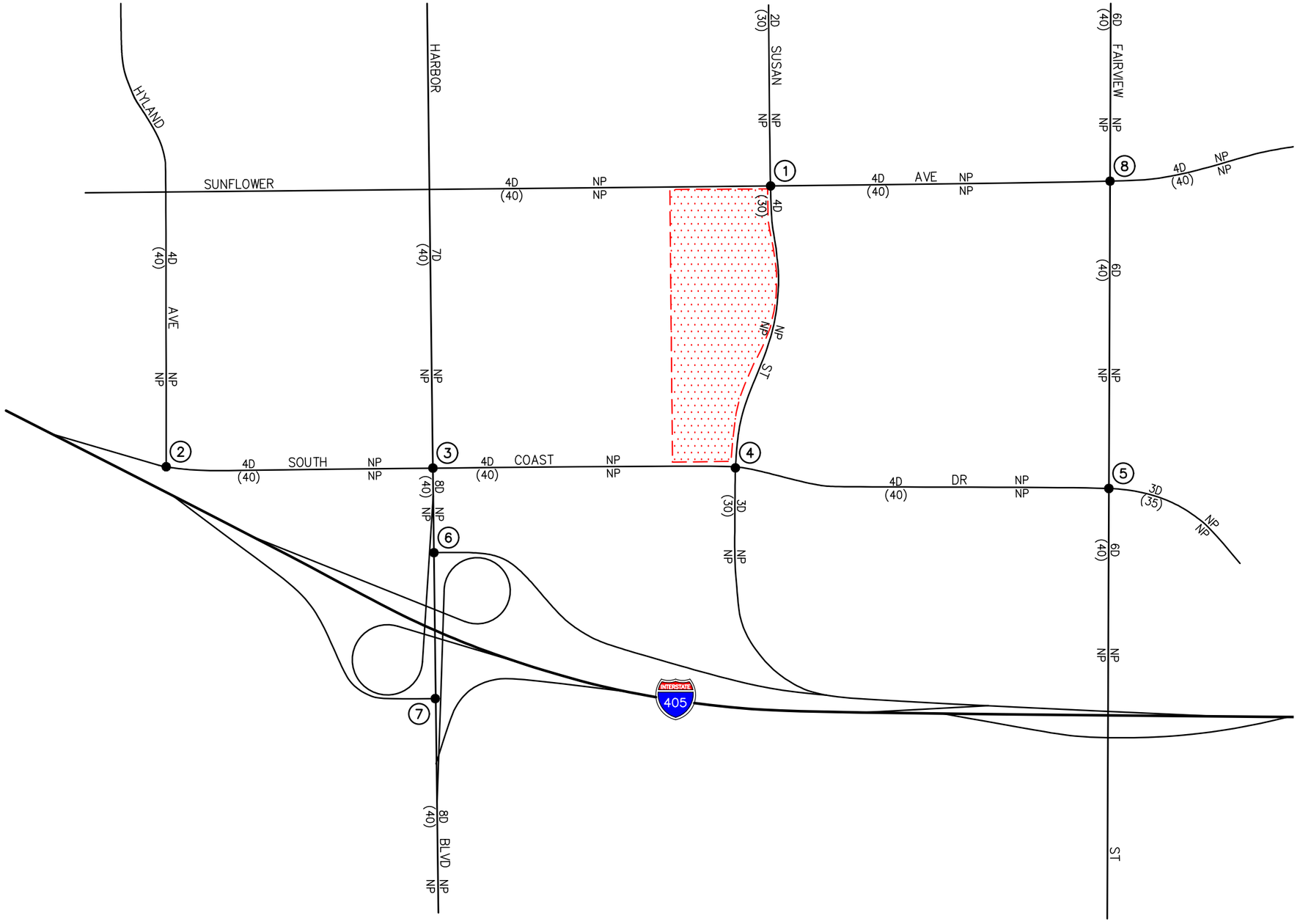
3.4.3 *Level of Service Criteria*

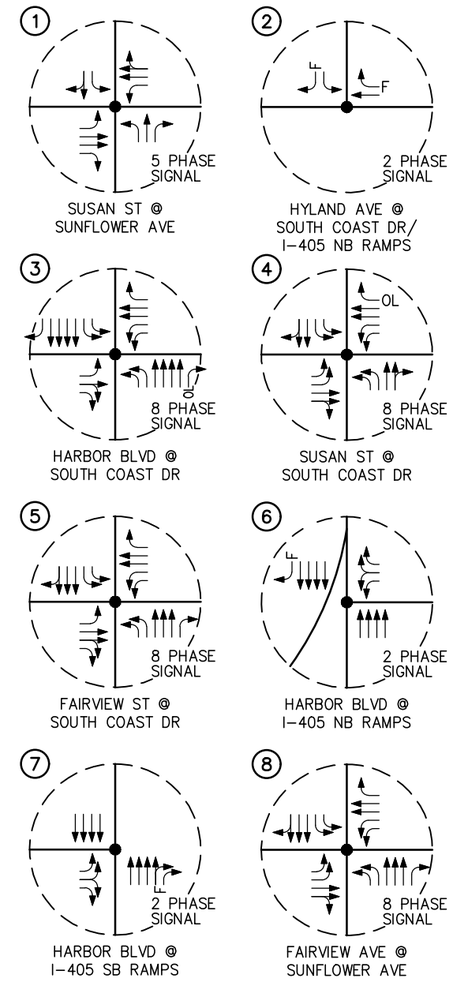
According to the City of Costa Mesa, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours for all intersections.

3.5 Existing Level of Service Results

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

Appendix C presents the ICU/LOS calculation worksheets for the eight (8) key study intersections.





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N NO SCALE

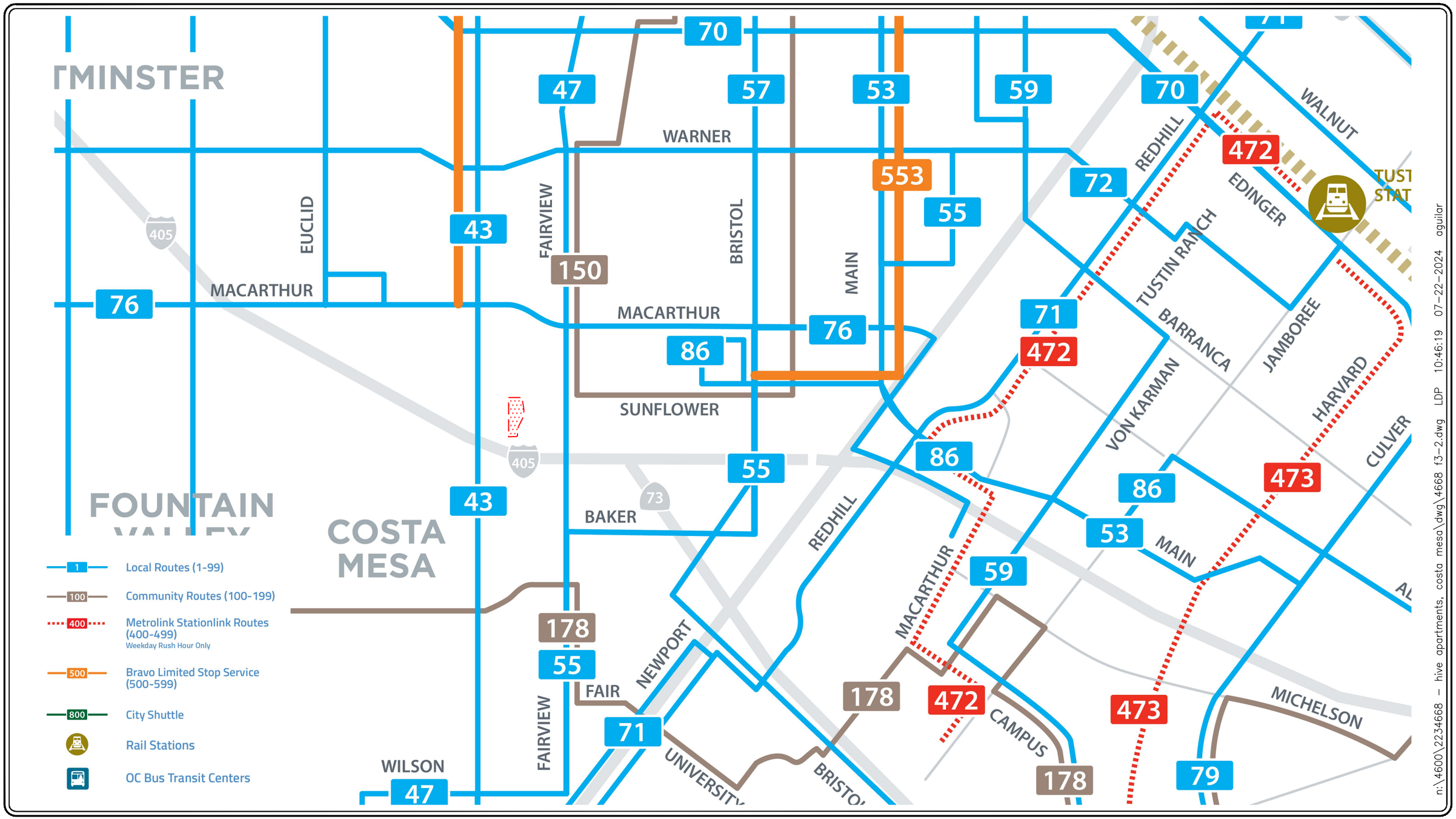
KEY

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

FIGURE 3-1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

HIVE APARTMENTS, COSTA MESA



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SOURCE: OCTA

KEY

= PROJECT SITE

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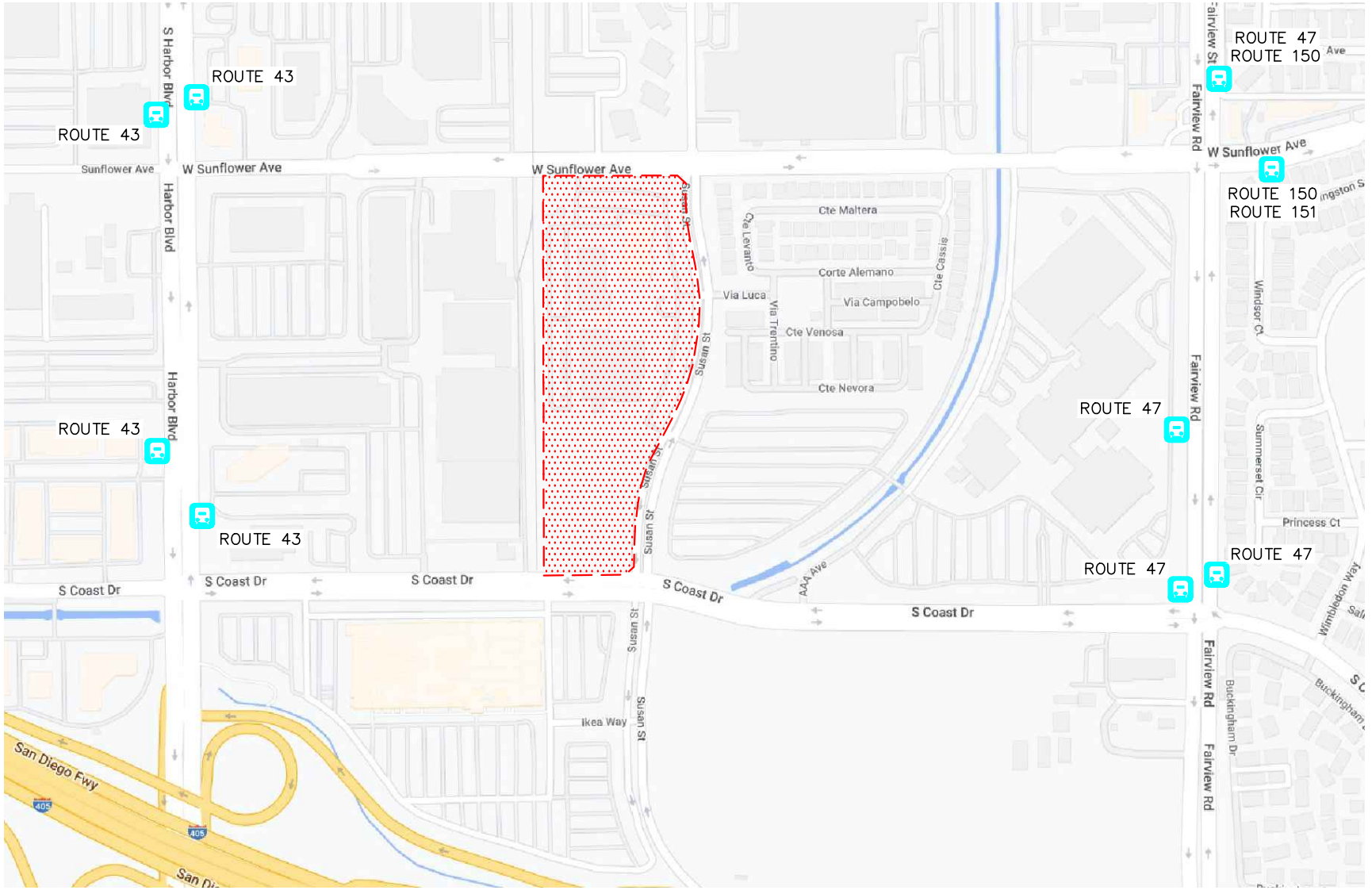
N NO SCALE

FIGURE 3-2

OCTA TRANSIT MAP

HIVE APARTMENTS, COSTA MESA



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SOURCE: GOOGLE

KEY

= PROJECT SITE

= TRANSIT STOP

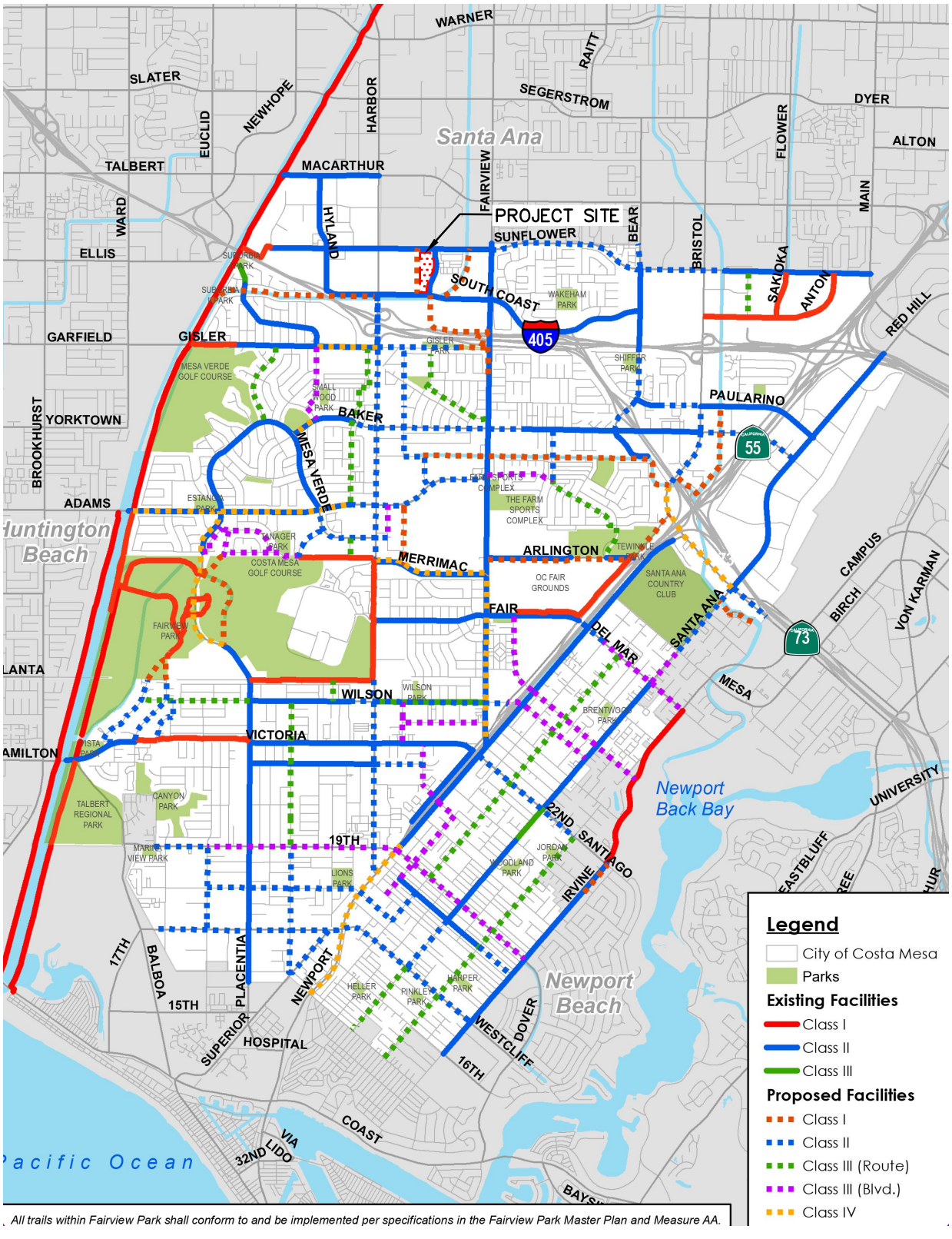
N

NO SCALE

FIGURE 3-3

TRANSIT STOP LOCATIONS

HIVE APARTMENTS, COSTA MESA



SOURCE: CITY OF COSTA MESA ACTIVE TRANSPORTATION PLAN

KEY

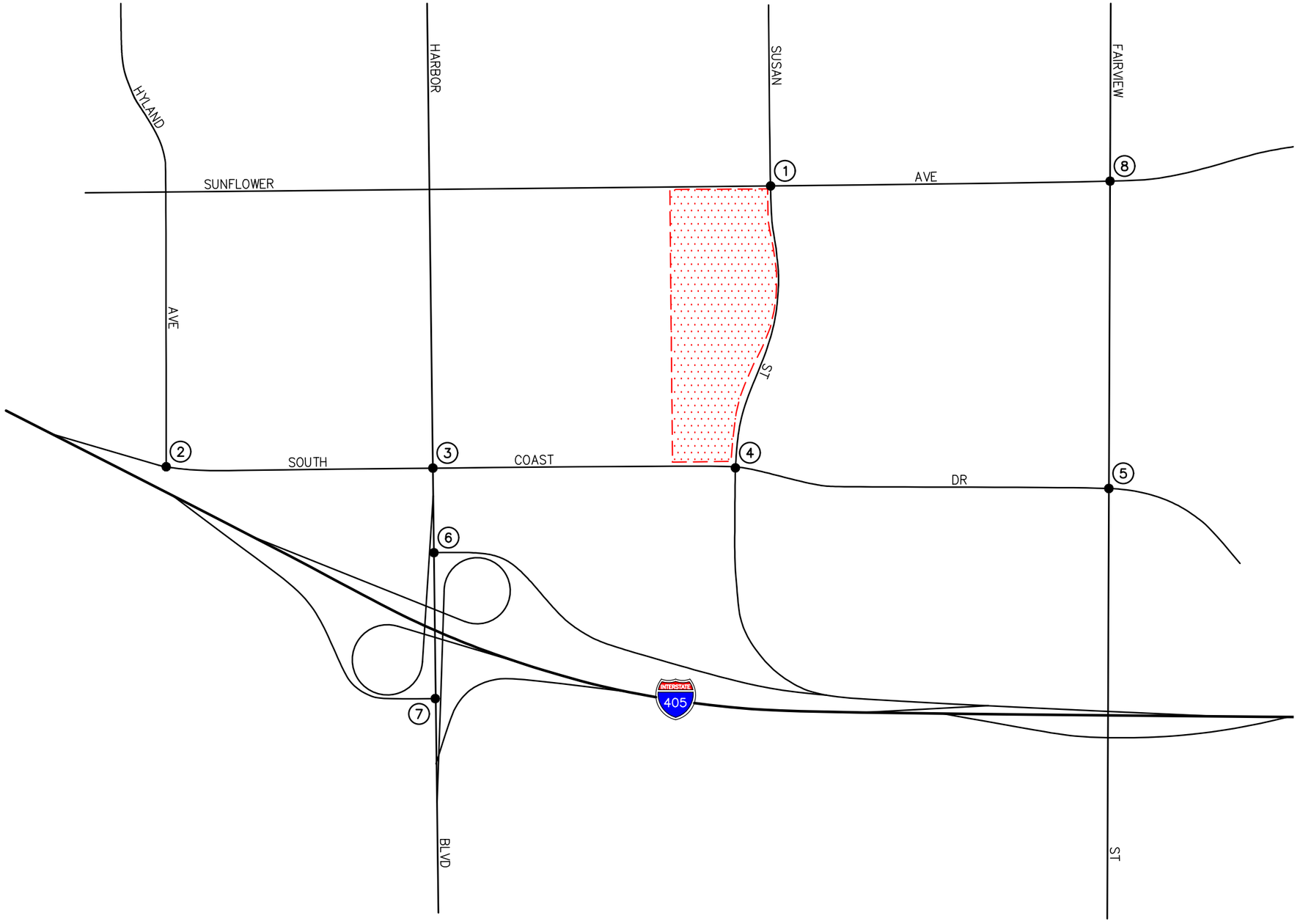
= PROJECT SITE

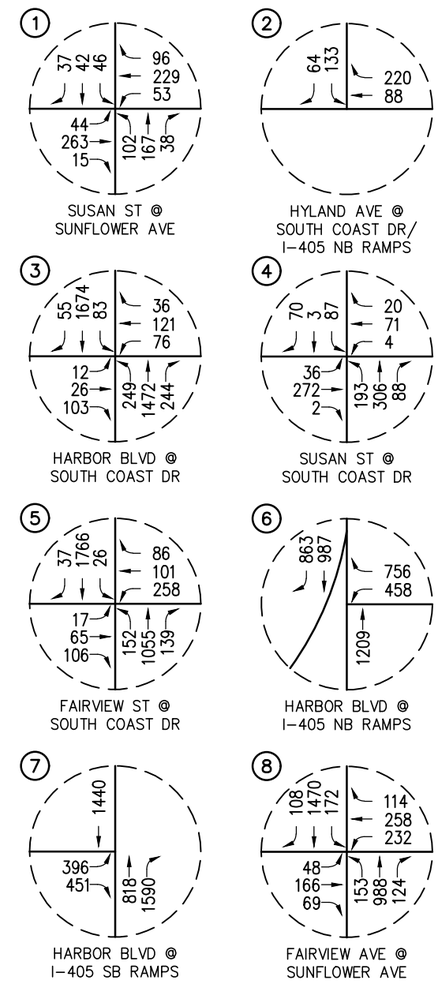
NO SCALE

FIGURE 3-4

CITY OF COSTA MESA EXISTING AND PROPOSED BICYCLE FACILITIES MAP

HIVE APARTMENTS, COSTA MESA





NOTE: LEFT-TURN VOLUMES INCLUDE U-TURNS

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KEY

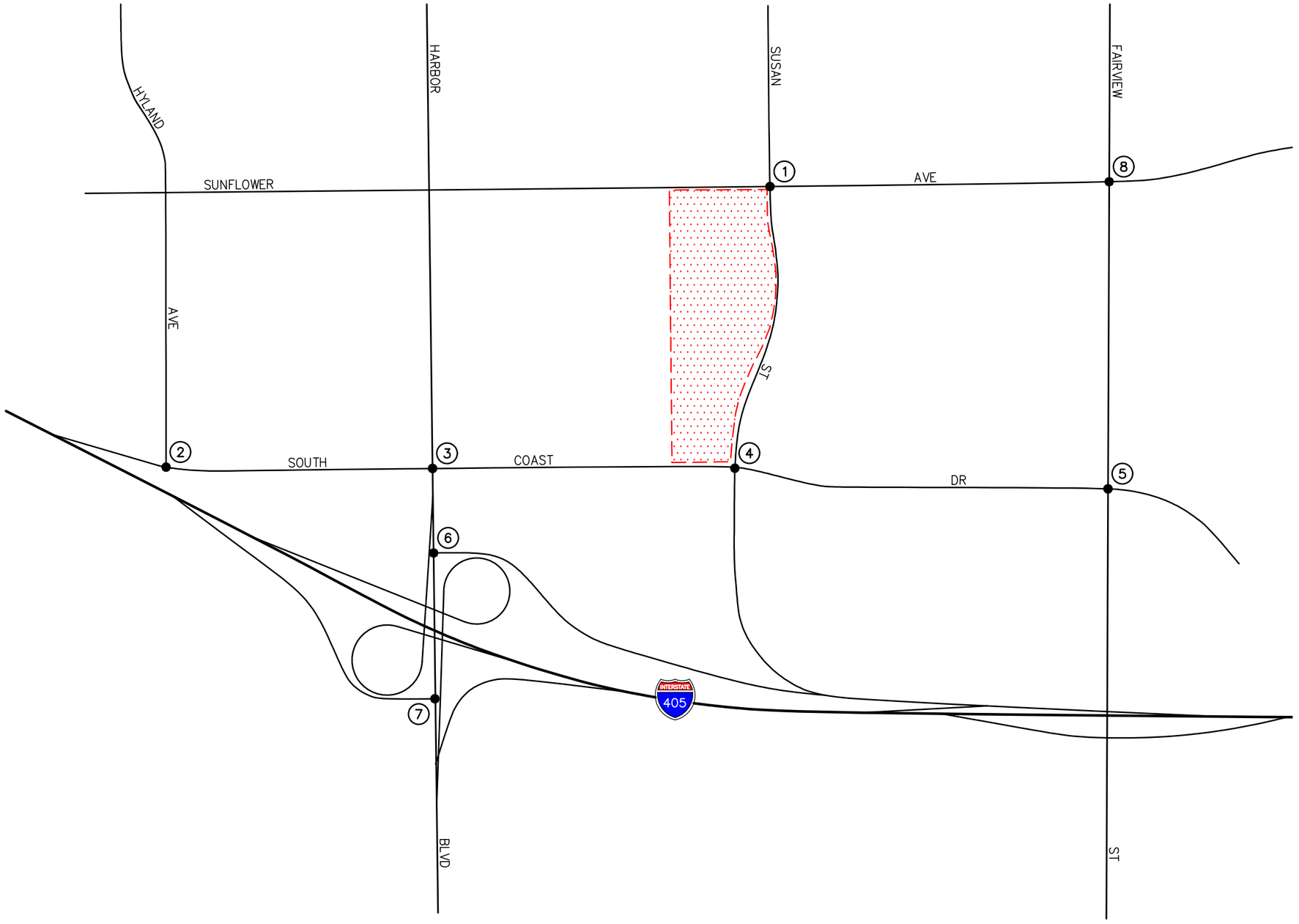
(#) = STUDY INTERSECTION

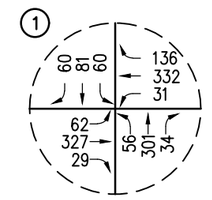
= PROJECT SITE

FIGURE 3-5

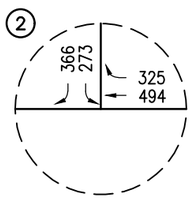
EXISTING AM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

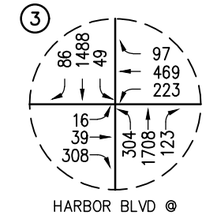




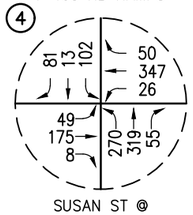
SUSAN ST @
SUNFLOWER AVE



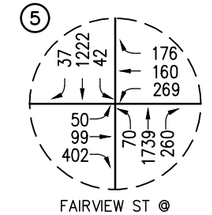
HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



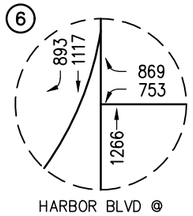
HARBOR BLVD @
SOUTH COAST DR



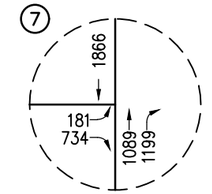
SUSAN ST @
SOUTH COAST DR



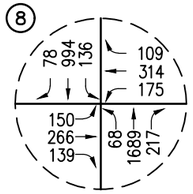
FAIRVIEW ST @
SOUTH COAST DR



HARBOR BLVD @
I-405 NB RAMPS



HARBOR BLVD @
I-405 SB RAMPS



FAIRVIEW AVE @
SUNFLOWER AVE

NOTE: LEFT-TURN VOLUMES INCLUDE U-TURNS

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LLG

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 3-6

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU METHODOLOGY)

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.60	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.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 7 METHODOLOGY)[1]

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

[1] Source: *Highway Capacity Manual 7*, Chapter 20: Two-Way Stop-Controlled Intersections.

TABLE 3-3
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	Control Type	ICU	LOS
1. Susan Street at Sunflower Avenue	Costa Mesa	D	AM PM	5∅ Traffic Signal	0.333 0.458	A A
2. Hyland Avenue at South Coast Drive/I-405 NB On-Ramp	Costa Mesa/ Caltrans	D	AM PM	2∅ Traffic Signal	0.148 0.514	A A
3. Harbor Boulevard at South Coast Drive	Costa Mesa	D	AM PM	8∅ Traffic Signal	0.415 0.543	A A
4. Susan Street at South Coast Drive	Costa Mesa	D	AM PM	8∅ Traffic Signal	0.247 0.298	A A
5. Fairview Road at South Coast Drive	Costa Mesa	D	AM PM	8∅ Traffic Signal	0.659 0.591	B A
6. Harbor Boulevard at I-405 NB Ramps	Costa Mesa/ Caltrans	D	AM PM	2∅ Traffic Signal	0.452 0.571	A A
7. Harbor Boulevard at I-405 SB Ramps	Costa Mesa/ Caltrans	D	AM PM	2∅ Traffic Signal	0.411 0.555	A A
8. Fairview Road at Sunflower Avenue	Costa Mesa	D	AM PM	8∅ Traffic Signal	0.621 0.625	B B

Notes:

- ICU = Intersection Capacity Utilization
- LOS = Level of Service, please refer to *Table 3-1* for the LOS definitions
- ∅ = Phase
- **BOLD ICU/LOS** indicates unacceptable service level

4.0 TRAFFIC FORECASTING METHODOLOGY

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

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

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

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

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation factors and equations used in this analysis are based on information found in the 11th Edition of Trip Generation, published by the Institute of Transportation Engineers (ITE) [Washington, D.C., 2021].

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated for the proposed Project and existing/entitled land use. As shown in the upper portion of *Table 5-1*, the trip generation potential of the proposed Project was estimated using the using ITE Land Use 221: Multifamily Housing (Mid-Rise) Not Close to Rail Transit trip rates and ITE Land Use 822: Strip Retail Plaza Less than 40 KSF whereas the existing/entitled uses were estimated using the using ITE Land Use 710: General Office Building. Review of the middle of *Table 5-1* indicates that the proposed Project is forecast to generate 4,948 daily trips, with 397 trips (94 inbound, 304 outbound) produced in the AM peak hour and 432 trips (261 inbound, 171 outbound) produced in the PM peak hour on a "typical" weekday.

The lower portion of *Table 5-1* indicates that the existing/entitled 252,176 SF office use is forecast to generate 2,733 daily trips, with 384 trips (338 inbound, 46 outbound) produced in the AM peak hour and 363 trips (62 inbound, 301 outbound) produced in the PM peak hour on a "typical" weekday.

As shown on the second to last row (Row A) of *Table 5-1*, the net trip generation potential of the proposed Project compared to the trip generation of the existing office use is 3,082 net greater daily trips, with 135 net greater trips (-138 inbound, +273 outbound) produced in the AM peak hour and 184 net greater trips (+219 inbound, -35 outbound) produced in the PM peak hour on a "typical" weekday. This trip generation potential represents the net trips to be analyzed.

As shown on the last row (Row B) of *Table 5-1*, the net trip generation potential of the proposed Project compared to the trip generation of the existing/entitled office use is 2,215 net greater daily trips, with 13 net greater trips (-245 inbound, +258 outbound) produced in the AM peak hour and 69 net greater trips (+199 inbound, -130 outbound) produced in the PM peak hour on a "typical" weekday. However, as directed by Staff, the traffic study will not take a trip credit for the entitled use and the information provided in Row B is for informational purposes only.

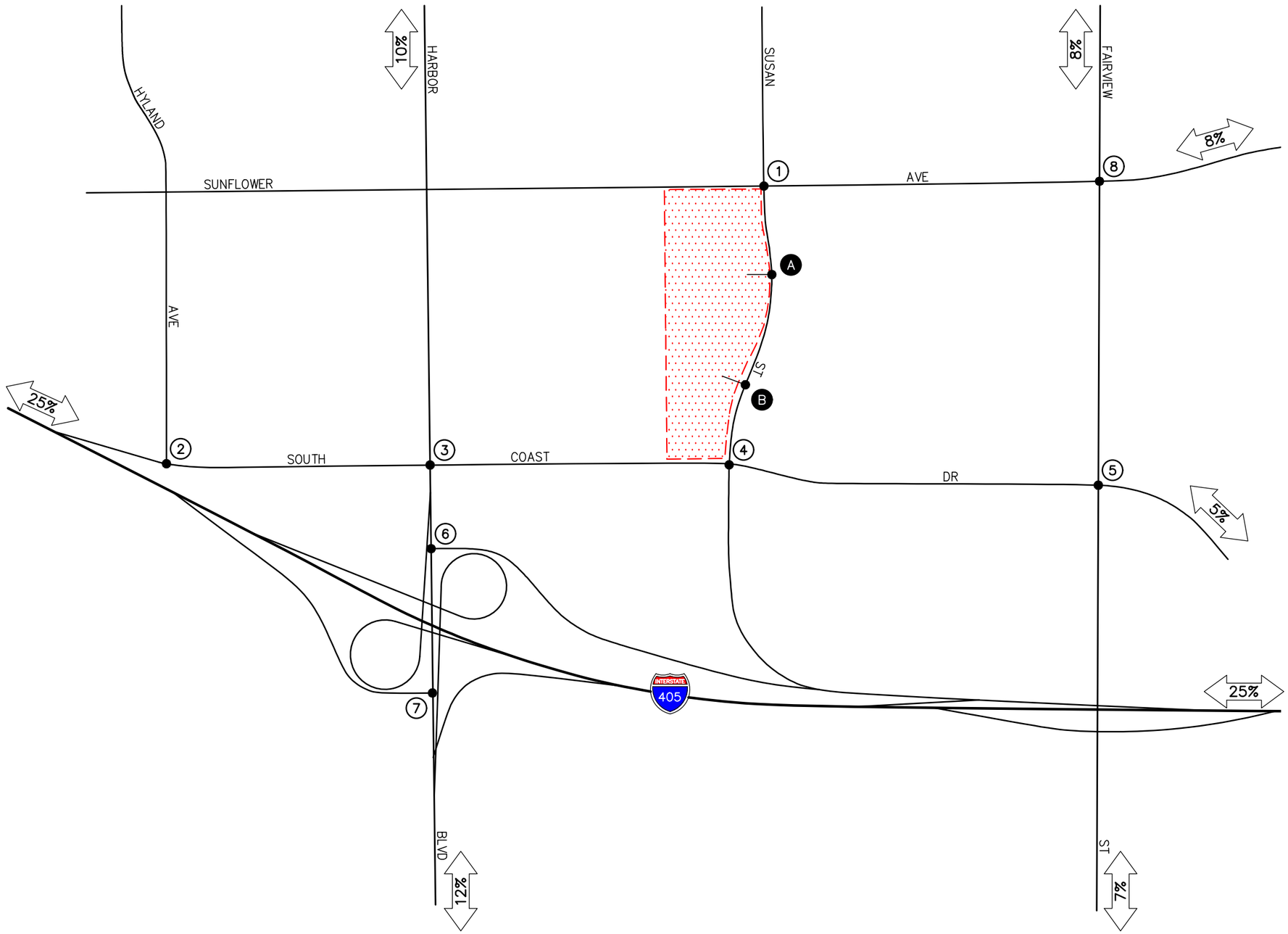
This study will assess the traffic implications utilizing the trips noted in Row A.

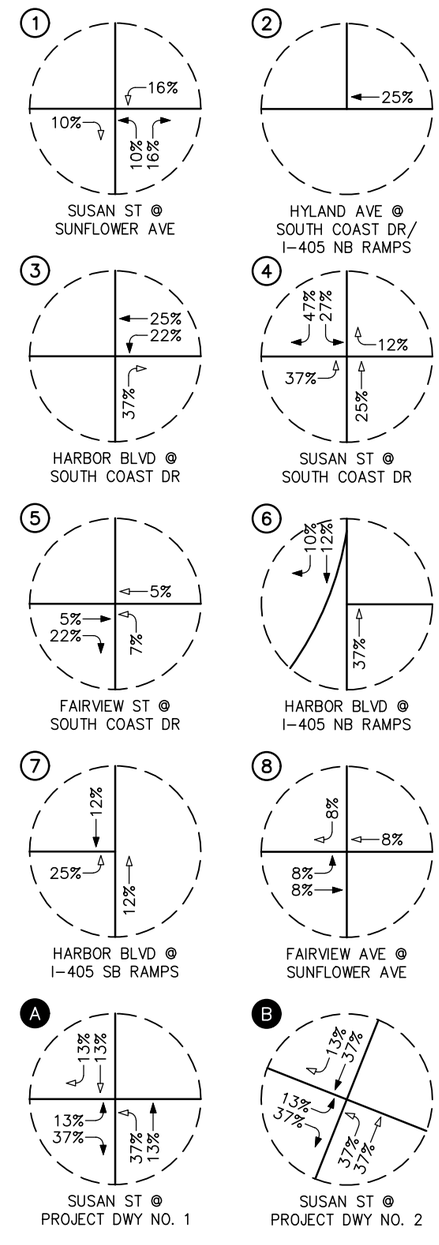
5.2 Project Traffic Distribution and Assignment

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:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity, and
- ingress/egress availability at the Project site.

Figure 5-1 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 5-2*** 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 proposed Project presented in *Table 5-1*.





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N NO SCALE

KEY

(#) = STUDY INTERSECTION

= INBOUND PERCENTAGE

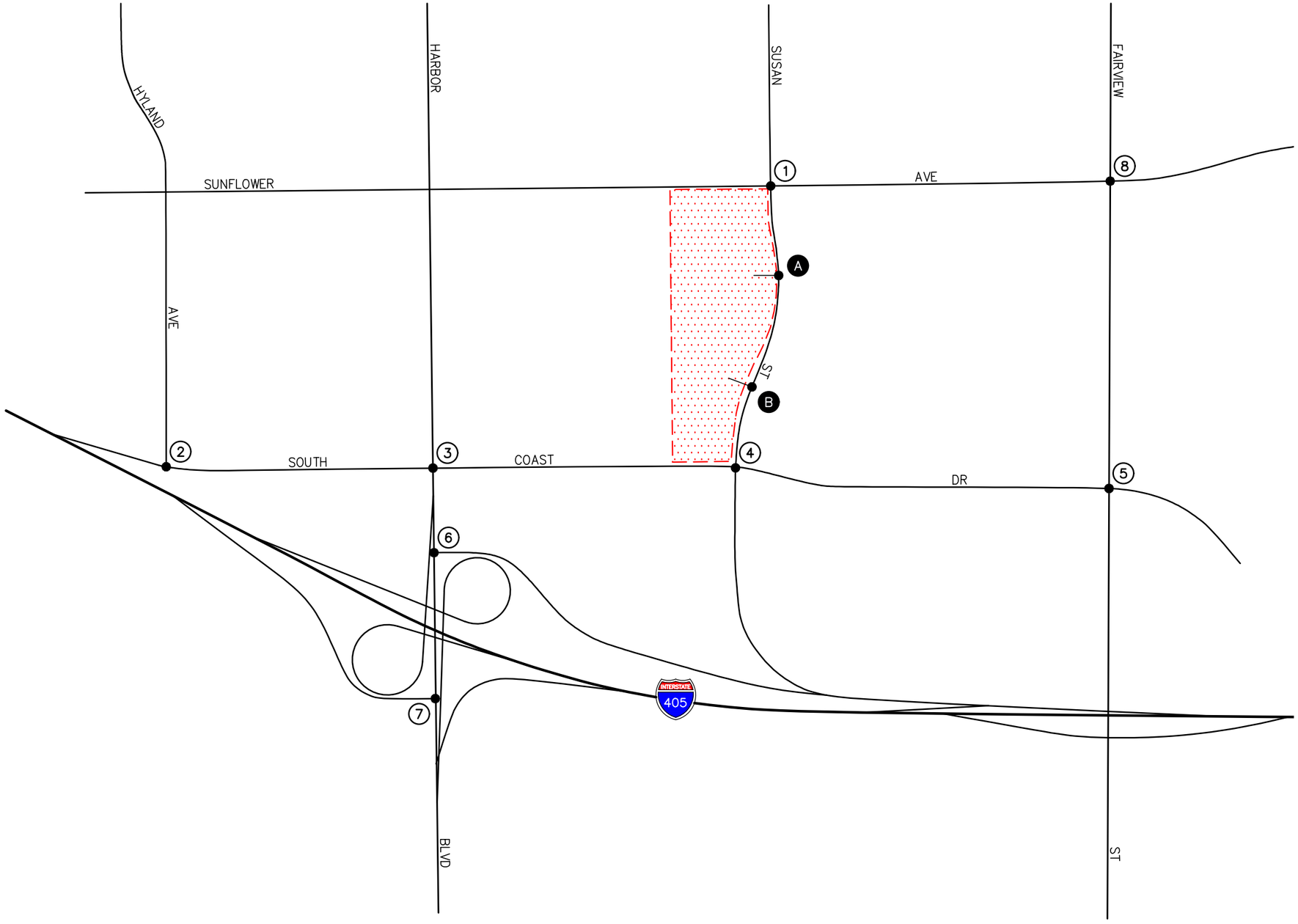
= OUTBOUND PERCENTAGE

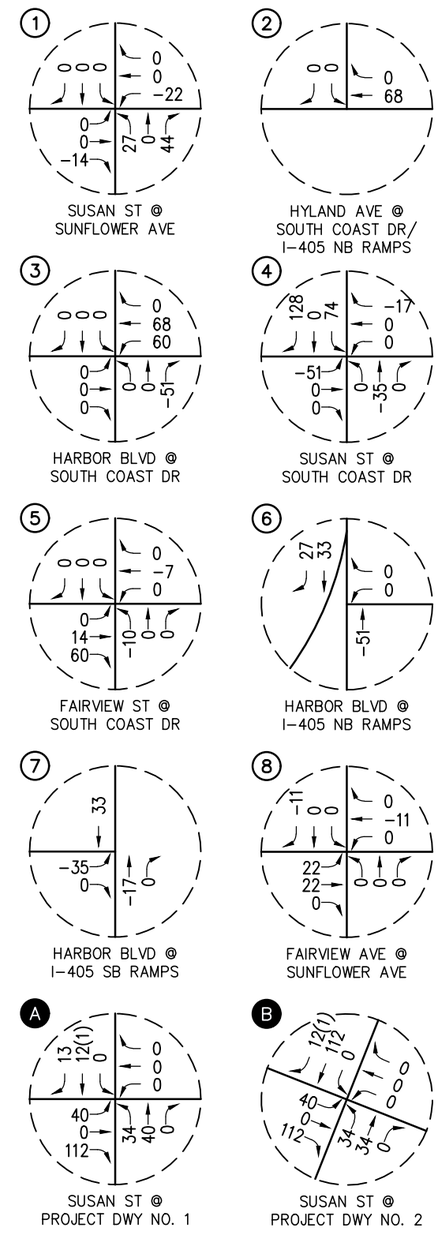
= PROJECT SITE

FIGURE 5-1

PROJECT TRIP DISTRIBUTION PATTERN

HIVE APARTMENTS, COSTA MESA





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LLG

N NO SCALE

KEY

(#) = STUDY INTERSECTION

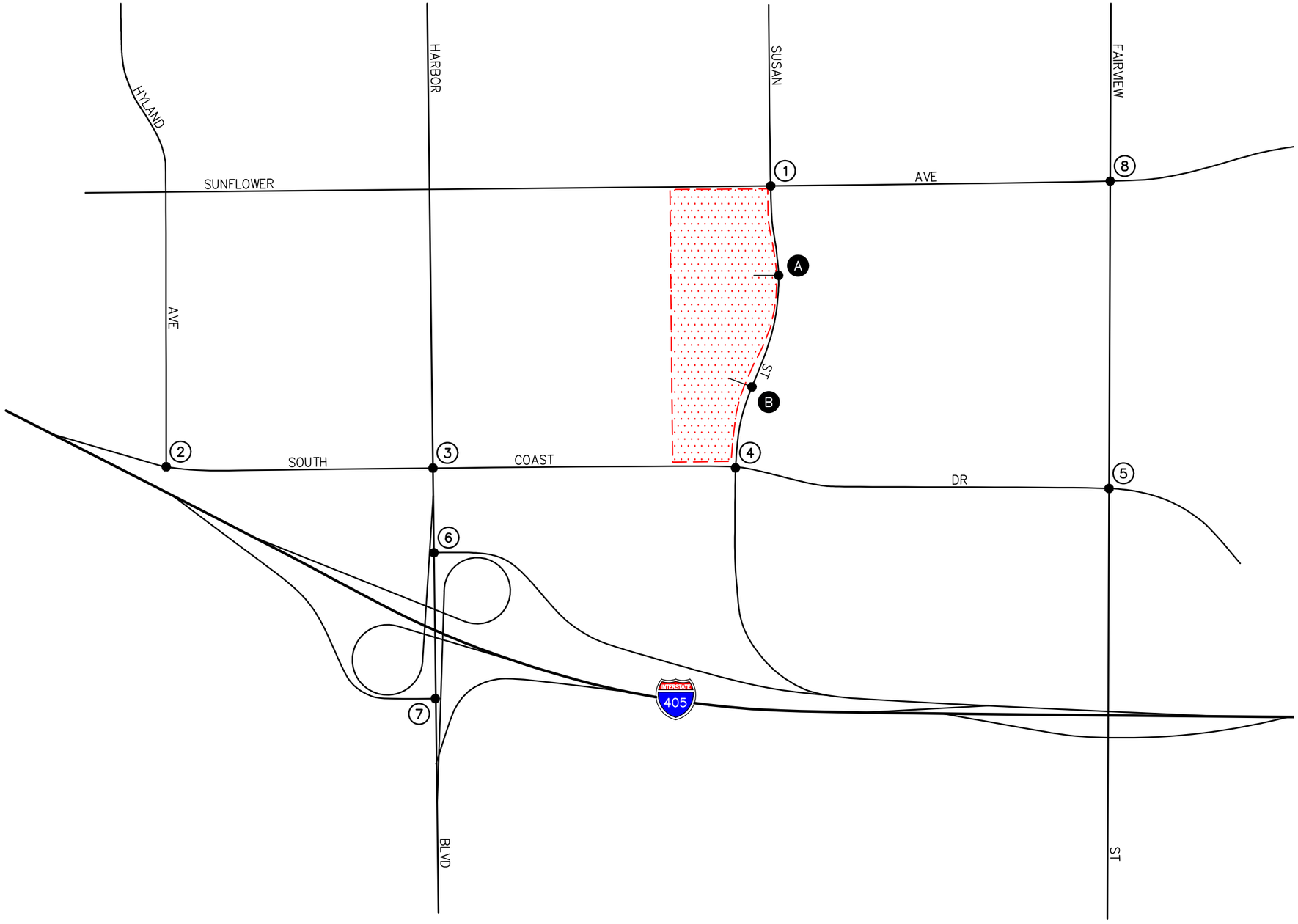
= PROJECT SITE

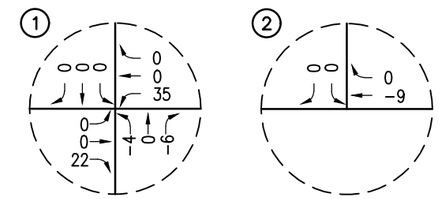
(XX) = PASSBY TRIPS

FIGURE 5-2

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

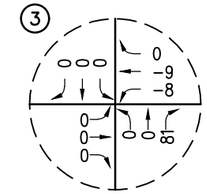
HIVE APARTMENTS, COSTA MESA



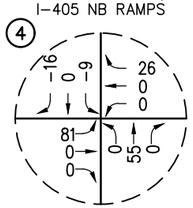


SUSAN ST @
SUNFLOWER AVE

HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



HARBOR BLVD @
SOUTH COAST DR



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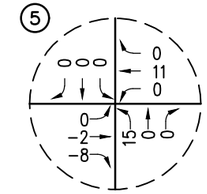
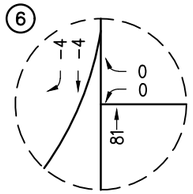
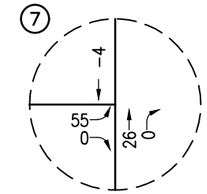
SOUTH COAST DR



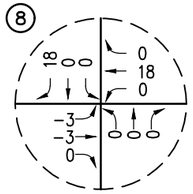
FAIRVIEW ST @
SOUTH COAST DR



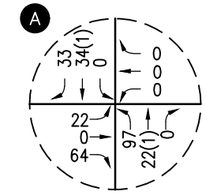
HARBOR BLVD @
I-405 NB RAMPS



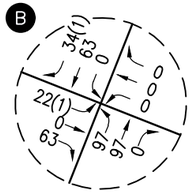
HARBOR BLVD @
I-405 SB RAMPS



FAIRVIEW AVE @
SUNFLOWER AVE



SUSAN ST @
PROJECT DWY NO. 1



SUSAN ST @
PROJECT DWY NO. 2

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LLG

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

(XX) = PASSBY TRIPS

FIGURE 5-3

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

TABLE 5-1

PROJECT TRIP GENERATION RATES AND FORECAST[2]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Rates:							
▪ 221: Multifamily Housing (Mid-Rise) Not Close to Rail Transit (TE/DU)	4.54	23%	77%	0.37	61%	39%	0.39
▪ 710: General Office Building (TE/TSF)	10.84	88%	12%	1.52	17%	83%	1.44
▪ 822: Strip Retail Plaza Less than 40 KSF (TE/TSF)	54.45	60%	40%	2.36	50%	50%	6.59
Proposed Project Trip Generation Forecast:							
▪ Hive Apartments (1,050 DU)	4,767	89	300	389	250	160	410
▪ Hive Retail (3,692 SF)	201	5	4	9	12	12	24
Pass-by/Internal Capture (10%, 10%, 10%)	-20	-1	0	-1	-1	-1	-2
Total Proposed Project Trip Generation	***4,948***	***93***	***304***	***397***	***261***	***171***	***432***
Existing and Entitled Trip Generation Forecast:							
▪ Existing Office Buildings (172,176 SF)	1,866	231	31	262	42	206	248
▪ Entitled Office Buildings (80,000 SF) [3]	867	107	15	122	20	95	115
Total Existing/Entitled Trip Generation	***2,733***	***338***	***46***	***384***	***62***	***301***	***363***
(A) Net Project Trip Generation Forecast (Proposed Project vs. Existing)	**3,082**	**-138**	**273**	**135**	**219**	**-35**	**184**
(B) Net Project Trip Generation Forecast (Proposed Project vs. Exiting/Entitled) [4]	**2,215**	**-245**	**258**	**13**	**199**	**-130**	**69**

Notes:

- TE/DU = trip end per dwelling unit
- TE/TSF = trip ends per 1,000 square feet

[2] Source: *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021).

[3] Source: *North Costa Mesa Specific Plan*.

[4] Row B shown for comparison purposes only and not for traffic analysis.

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Horizon year, background traffic growth estimates have been calculated using an ambient growth factor. The ambient traffic growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1.0%) per year. Applied to the Year 2024 existing traffic volumes, this factor results in a 4.0% growth in existing volumes to the near-term horizon year 2028.

6.2 Cumulative Projects Traffic Characteristics

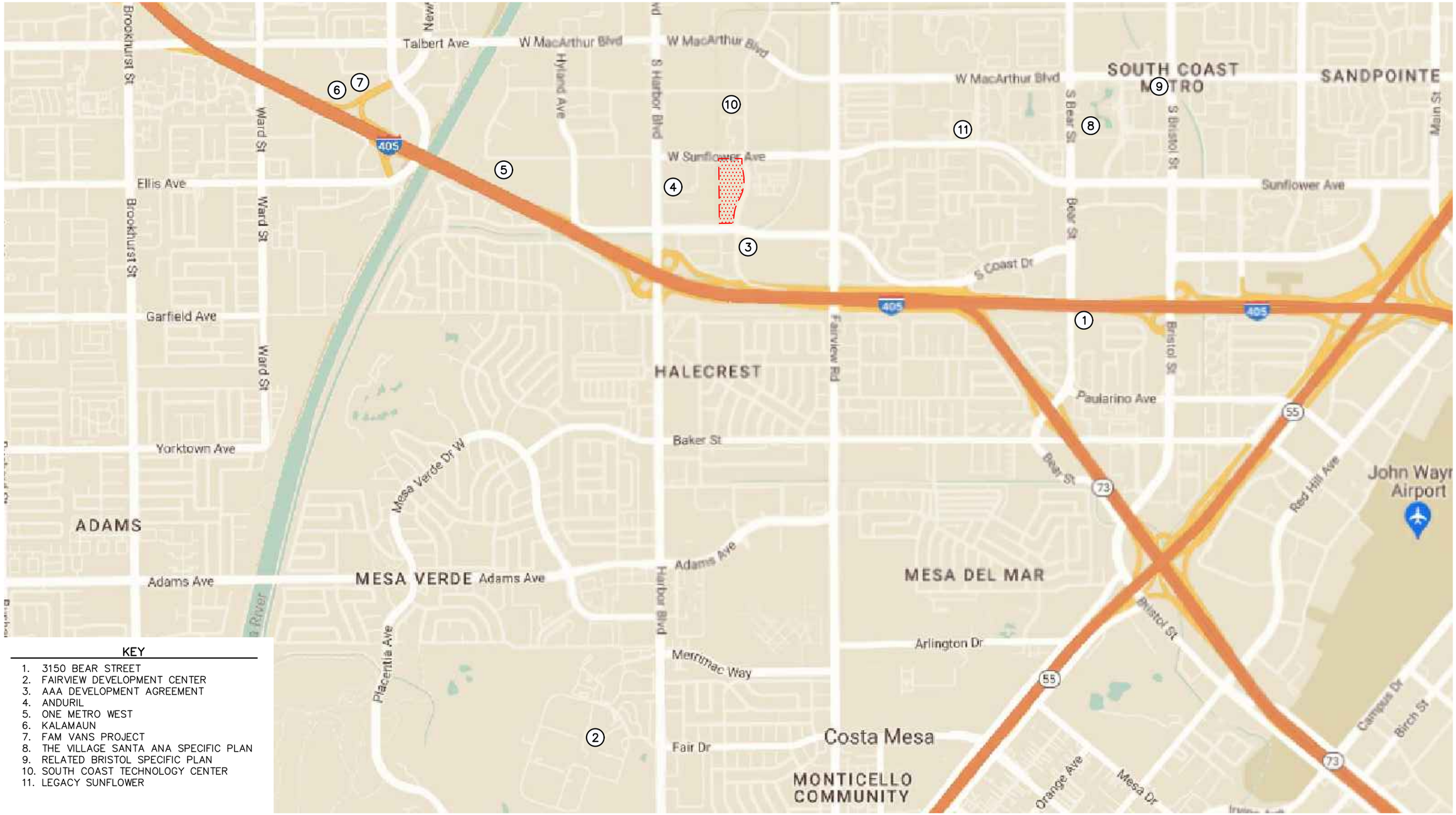
In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (cumulative projects) in the vicinity of the proposed Project has been researched at the Cities of Costa Mesa, Fountain Valley, and Santa Ana. With this information, the potential circulation effects of the proposed Project can be evaluated within the context of the cumulative effects of all ongoing development.

Based on our research, there are five (5) cumulative projects in the City of Costa Mesa, two (2) cumulative projects in the City of Fountain Valley, and four (4) cumulative projects in the City of Santa Ana within the vicinity of the subject site that have either been built, but not yet fully occupied, or are being processed for approval. These eleven (11) related projects have been included as part of the cumulative background setting.

Table 6-1 provides the location and a brief description for each of the eleven (11) cumulative projects. ***Figure 6-1*** graphically illustrates the location of the cumulative 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 potential for all eleven (11) cumulative projects. As shown, the cumulative projects are forecast to generate a total of 58,933 daily trips, with 4,891 trips (2,120 inbound and 2,771 outbound) forecast during the AM peak hour and 5,149 trips (2,520 inbound and 2,629 outbound) forecast during the PM peak hour.

The anticipated AM and PM peak hour cumulative projects traffic volumes at the key study intersections are presented in ***Figure 6-2*** and ***6-3***, respectively.



KEY

1. 3150 BEAR STREET
2. FAIRVIEW DEVELOPMENT CENTER
3. AAA DEVELOPMENT AGREEMENT
4. ANDURIL
5. ONE METRO WEST
6. KALAMAUN
7. FAM VANS PROJECT
8. THE VILLAGE SANTA ANA SPECIFIC PLAN
9. RELATED BRISTOL SPECIFIC PLAN
10. SOUTH COAST TECHNOLOGY CENTER
11. LEGACY SUNFLOWER

KEY

(#) = LOCATION OF CUMULATIVE PROJECTS

= PROJECT SITE

NO SCALE

FIGURE 6–1

LOCATION OF CUMULATIVE PROJECTS

HIVE APARTMENTS, COSTA MESA

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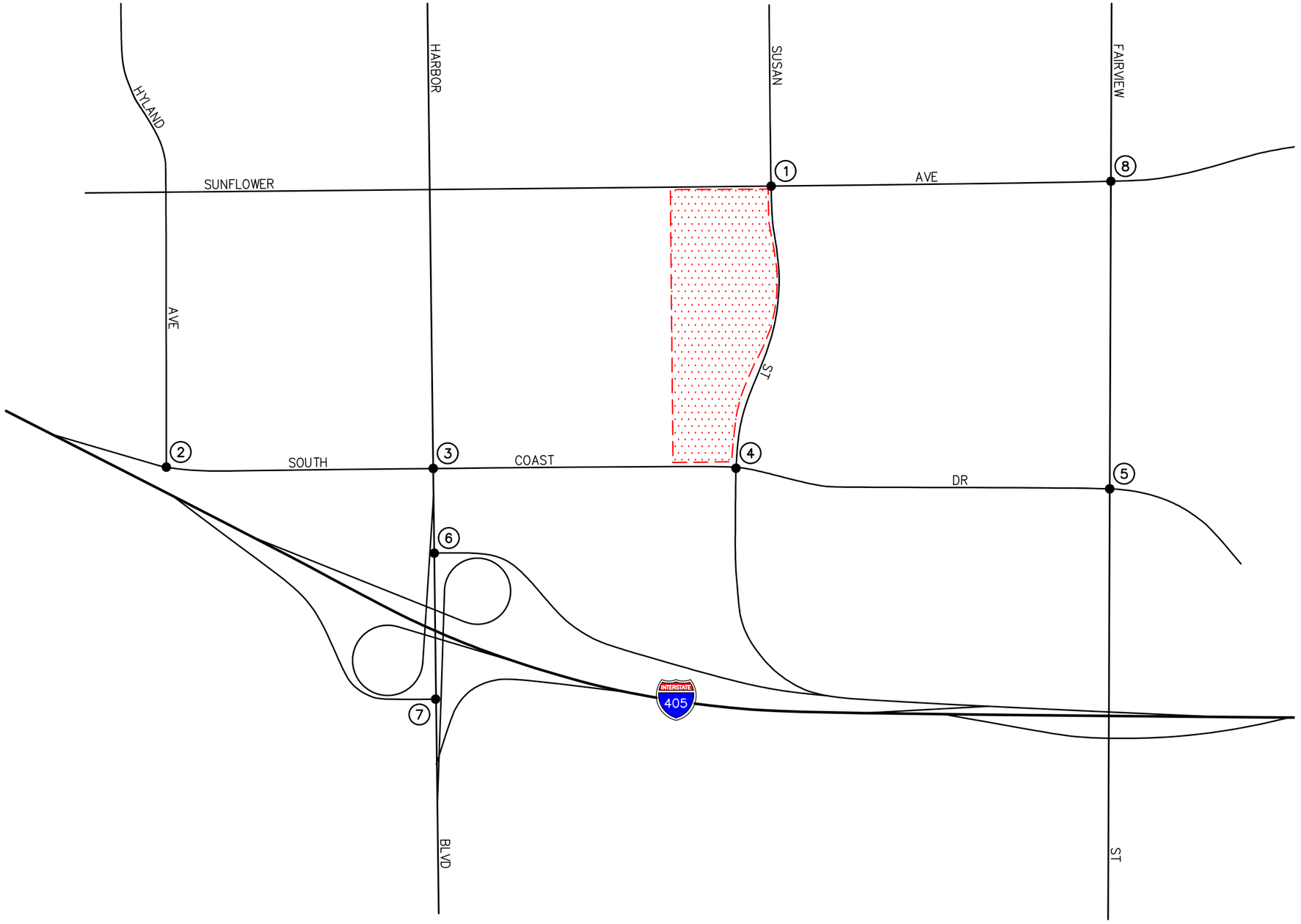
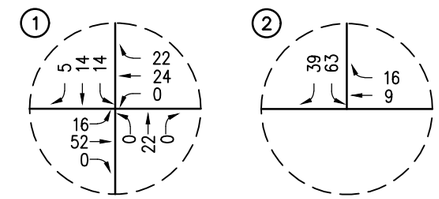
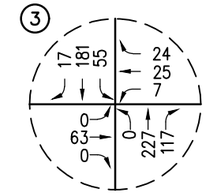


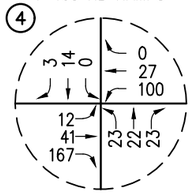


SUSAN ST @
SUNFLOWER AVE

HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



HARBOR BLVD @
SOUTH COAST DR



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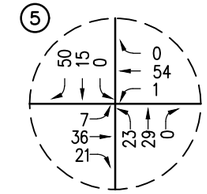
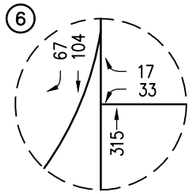
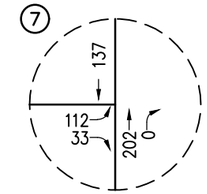
SOUTH COAST DR



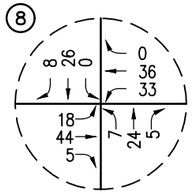
FAIRVIEW ST @
SOUTH COAST DR



HARBOR BLVD @
I-405 NB RAMPS



HARBOR BLVD @
I-405 SB RAMPS



FAIRVIEW AVE @
SUNFLOWER AVE

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LLG

N NO SCALE

KEY

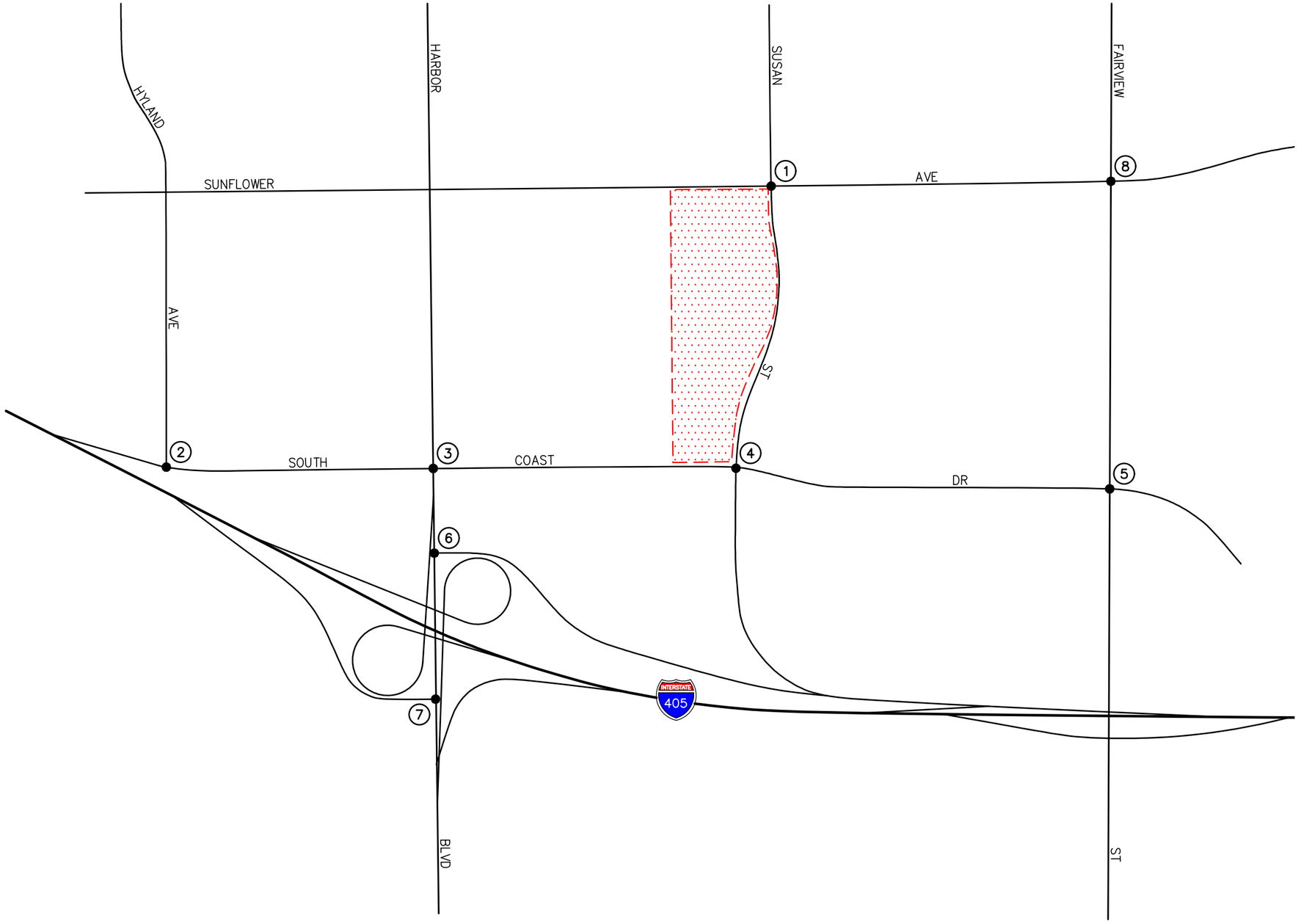
(#) = STUDY INTERSECTION

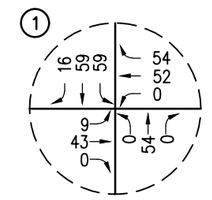
= PROJECT SITE

FIGURE 6-2

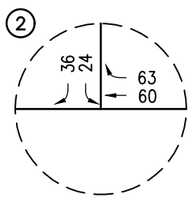
AM PEAK HOUR CUMULATIVE PROJECTS TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

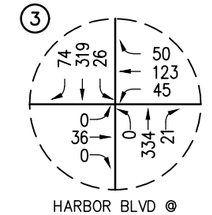




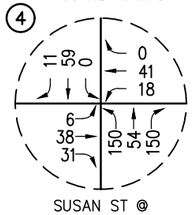
1 SUSAN ST @ SUNFLOWER AVE



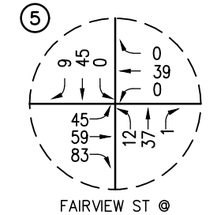
2 HYLAND AVE @ SOUTH COAST DR/ I-405 NB RAMPS



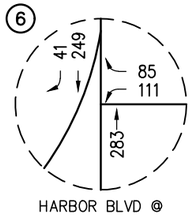
3 HARBOR BLVD @ SOUTH COAST DR



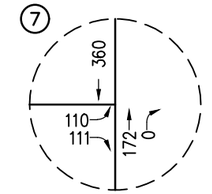
4 SUSAN ST @ SOUTH COAST DR



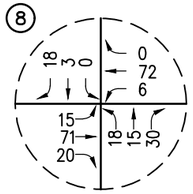
5 FAIRVIEW ST @ SOUTH COAST DR



6 HARBOR BLVD @ I-405 NB RAMPS



7 HARBOR BLVD @ I-405 SB RAMPS



8 FAIRVIEW AVE @ SUNFLOWER AVE

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LLG

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-3

PM PEAK HOUR CUMULATIVE PROJECTS TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[5]

No.	Cumulative Project	Location/Address	Description
City of Costa Mesa			
1.	3150 Bear Street	3150 Bear Street	122 DU townhomes 20 DU single family homes
2.	Fairview Development Center	2476 Market Street	2,300 DU low-rise apartments
3.	AAA Development Agreement	1498 South Coast Drive	250,000 SF office
4.	Anduril	3370 Harbor Boulevard	94,000 SF research and development
5.	One Metro West	1683 Sunflower Avenue	Demolition: 345,410 SF industrial building Construction: 1,057 DU apartment 1.50 AC public park 1,500 SF community center 25,000 SF office building 6,000 SF supermarket
City of Fountain Valley			
6.	Kalamaun	10800 Kalama River	38,000 SF commercial (retail building)
7.	Fam Vans Project	10870 Kalama River	287,240 SF vehicle dealership
City of Santa Ana			
8.	The Village Santa Ana Specific Plan[6]	1561 West Sunflower Avenue	*Phase 1:* Demolition of existing 40,743 SF retail, 47,301 SF furniture store, 51,990 SF quality restaurant, and 5,653 SF high-turnover restaurant. Construction of 55,175 SF retail, 18,000 SF supermarket, and 360 DU high-rise residential apartments. *Phase 2:* Construction of 513 DU high-rise residential apartments. *Phase 3:* Construction of 177 DU high-rise residential apartments. *Phase 4:* Demolition of existing 18,362 SF movie theater. Construction of 6,825 SF retail, 300,000 SF office, and 264 DU high-rise residential apartments. *Phase 5:* Construction of 269 DU high-rise residential apartments.

Notes:
- SF = Square-feet
- DU = Dwelling units

[5] Source: City of Costa Mesa, City of Fountain Valley, and City of Santa Ana Planning Departments.

[6] Phases 1, 2, 3, 4, and 5 have been included within long term buildout conditions.

TABLE 6-1 (CONTINUED)
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS[7]

No.	Cumulative Project	Location/Address	Description
City of Santa Ana (Continued)			
9.	Related Bristol Specific Plan[8]	NWC and SWC of Bristol Street and Callen's Common	*Phase 1:* Demolition of existing 244,120 SF retail. Construction of 1,375 DU mid-rise residential apartments, 200 unit senior continuum care, 250 room hotel, and 250,000 SF retail *Phase 2:* Demolition of existing 36,522 SF retail. Construction of 856 DU mid-rise residential apartments and 65,000 SF retail. *Phase 3:* Demolition of existing 184,421 SF retail. Construction of 1,519 DU mid-rise residential apartments and 35,000 SF retail
10.	South Coast Technology Center	3100, 3110, and 3120 West Lake Center Drive	313,244 SF retail
11.	Legacy Sunflower	651 West Sunflower Avenue	226 DU multifamily residence

Notes:
- SF = Square-feet
- DU = Dwelling units

[7] Source: City of Costa Mesa, City of Fountain Valley, and City of Santa Ana Planning Departments.

[8] Phases 1, 2 and 3 have been included within long term buildout conditions.

TABLE 6-2
CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST[9]

Cumulative Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
1. 3150 Bear Street	1,011	16	47	63	51	30	81
2. Fairview Development Center	15,502	221	699	920	739	434	1,173
3. AAA Development Agreement	2,710	334	46	380	61	299	360
4. Anduril	1,042	80	17	97	15	77	92
5. One Metro West[10]	6,800	98	400	498	411	251	662
6. Kalamaun	1,862	49	32	81	75	75	150
7. Fam Vans Project	7,997	390	144	534	278	417	695
8. The Village Santa Ana Specific Plan	3,018	497	284	781	-9	402	393
9. Related Bristol Specific Plan[11]	7,328	267	952	1,219	476	212	688
10. South Coast Technology Center	10,434	147	90	237	363	393	756
11. Legacy Sunflower[12]	1,229	21	60	81	60	39	99
Cumulative Projects Total Trip Generation Potential	**58,933**	**2,120**	**2,771**	**4,891**	**2,520**	**2,629**	**5,149**

9 Unless otherwise noted, Source: *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021).

10 Source: *Traffic Impact Analysis for One Metro West* prepared by LSA, dated April 2020.

11 Source: *Revised Traffic Circulation Analysis for Related Bristol* prepared by LLG Engineers, dated June 2023.

12 Source: *Traffic Impact Analysis Report for Legacy Sunflower Apartments* prepared by LLG Engineers, dated January 2019.

6.3 Year 2050 Buildout Traffic Conditions

As coordinated with City staff, the Year 2050 traffic volume forecasts for this traffic study were developed via the utilization of the OCTAM 5.1 Year 2050 traffic model provided by OCTA. Specifically, AM peak period and PM peak period link traffic volumes were provided by OCTA for the existing base year (i.e. Year 2019) and for the Year 2050 year. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the OCTA approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour link traffic volumes were determined. These future year 2050 link traffic volumes were post-processed based on the relationship of the base year validation model run output to the base year ground traffic counts resulting in Year 2050 without project daily traffic volumes for the AM peak hour/PM peak hour turning movements for the key study intersections.

6.4 Year 2028 and Year 2050 Traffic Volumes

6.4.1 *Year 2028 Cumulative Traffic Volumes*

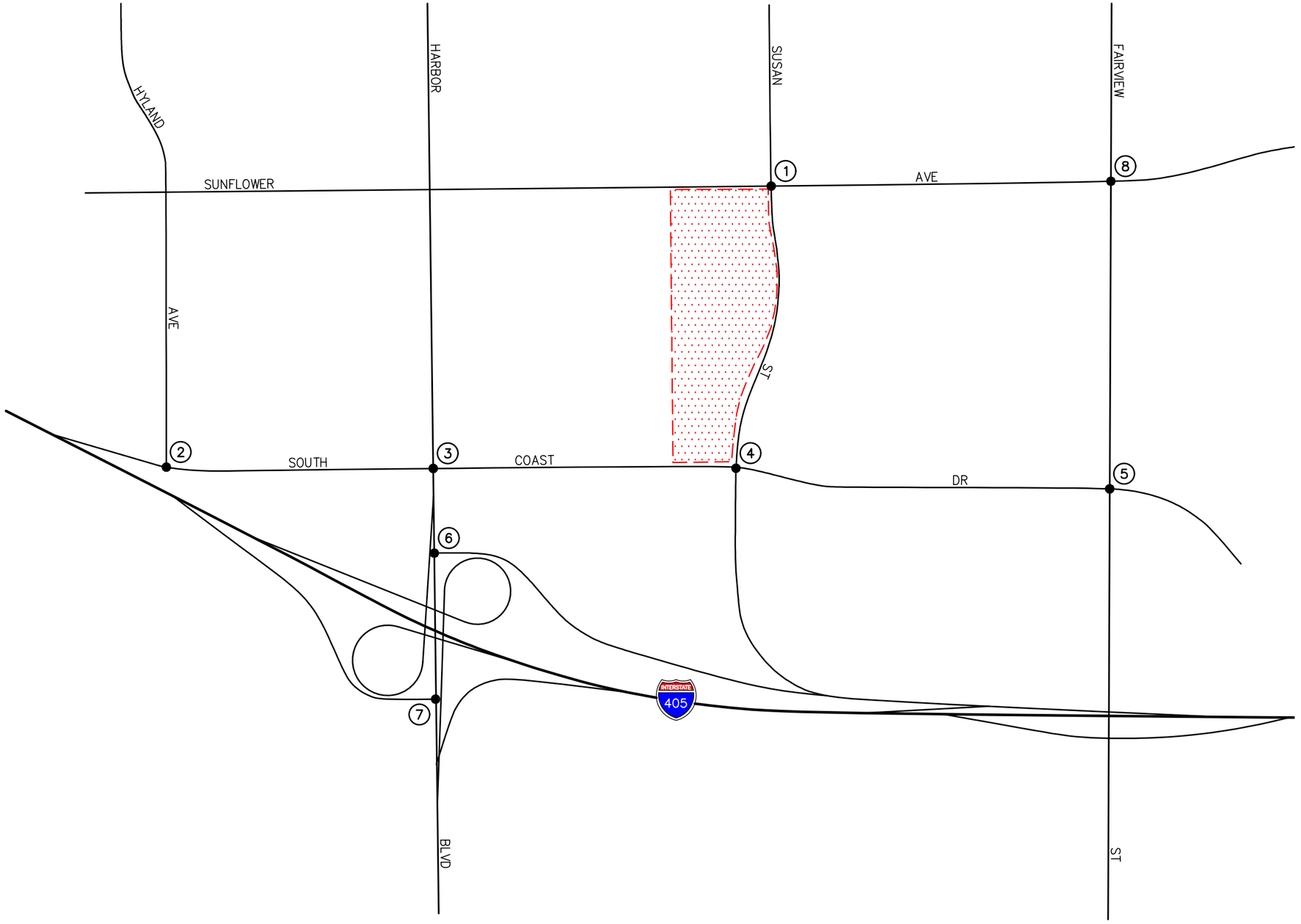
Figures 6-4 and ***6-5*** present the Year 2028 AM and PM peak hour cumulative traffic volumes at the eight (8) key study intersections, respectively. It should be noted that the Year 2028 Cumulative traffic volumes include ambient traffic growth as well as the traffic from the eleven (11) cumulative projects.

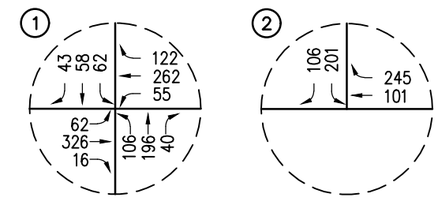
Figures 6-6 and ***6-7*** illustrate the Year 2028 forecast AM and PM peak hour traffic volumes with the inclusion of the trips generated by the proposed Project, respectively.

6.4.2 *Year 2050 Buildout Traffic Volumes*

Figures 6-8 and ***6-9*** present the Year 2050 AM and PM peak hour cumulative traffic volumes at the eight (8) key study intersections, respectively.

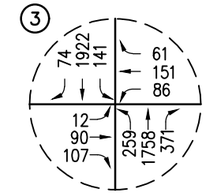
Figures 6-10 and ***6-11*** illustrate the Year 2050 forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively.





SUSAN ST @
SUNFLOWER AVE

HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



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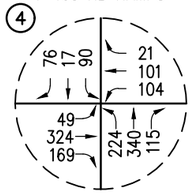
SOUTH COAST DR



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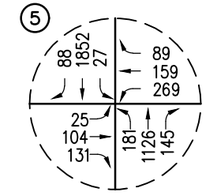

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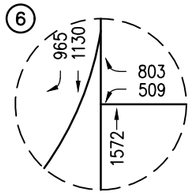
SOUTH COAST DR



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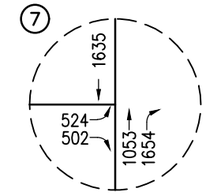
I-405 NB RAMPS



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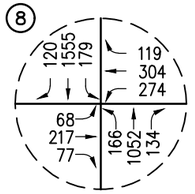

FAIRVIEW AVE @
SUNFLOWER AVE

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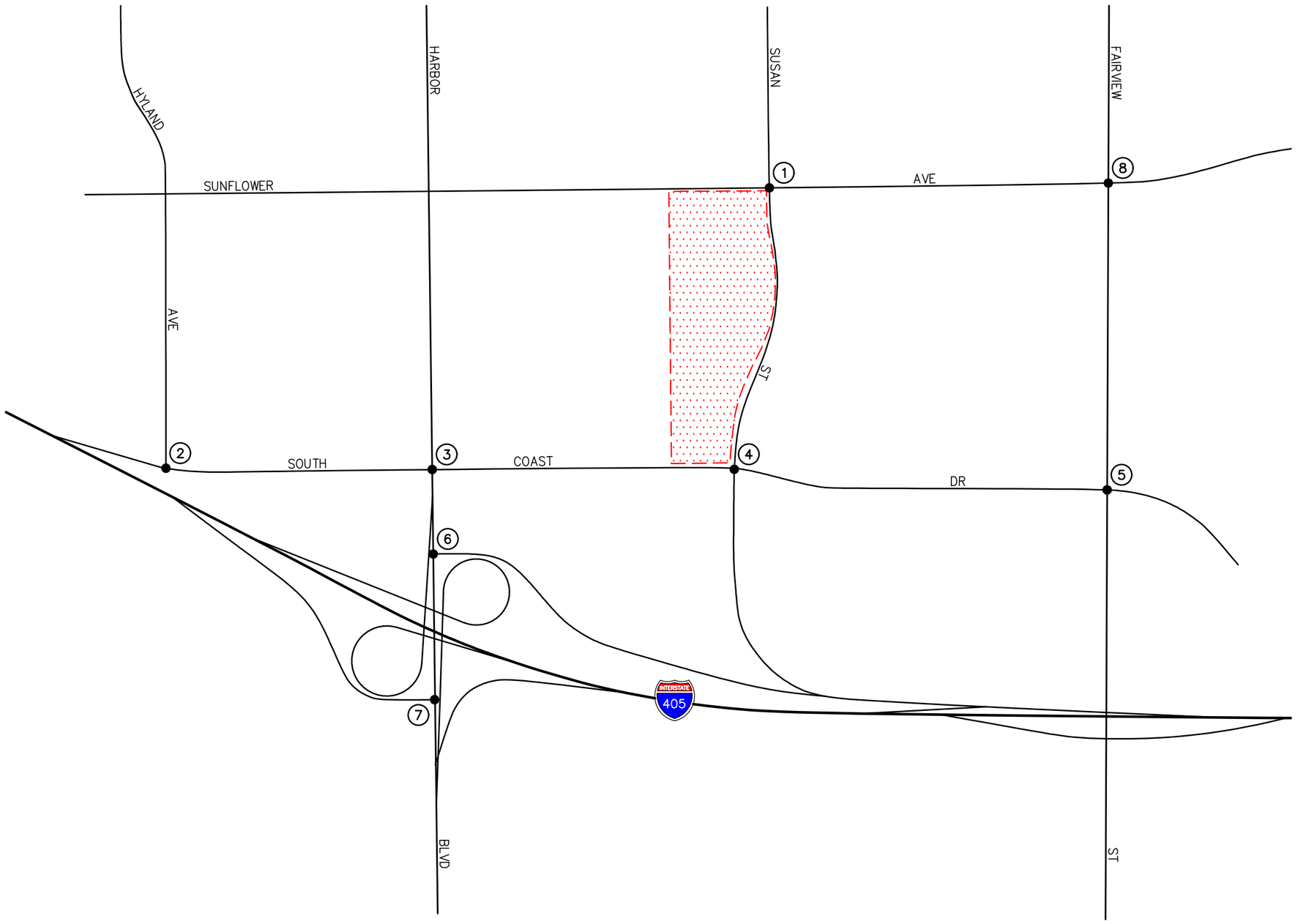
(#) = STUDY INTERSECTION

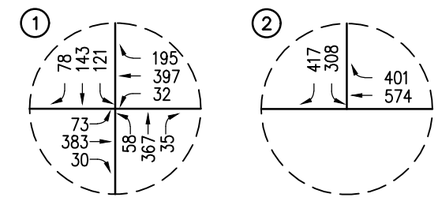
= PROJECT SITE

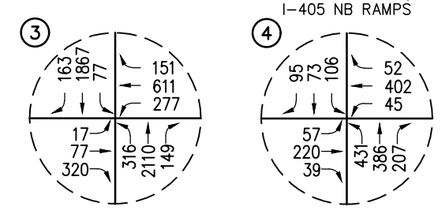
FIGURE 6-4

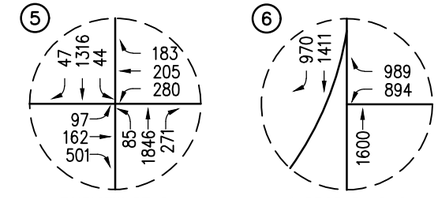
YEAR 2028 CUMULATIVE AM PEAK HOUR TRAFFIC VOLUMES

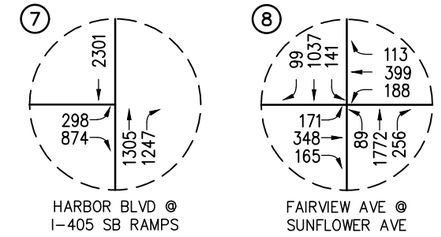
HIVE APARTMENTS, COSTA MESA











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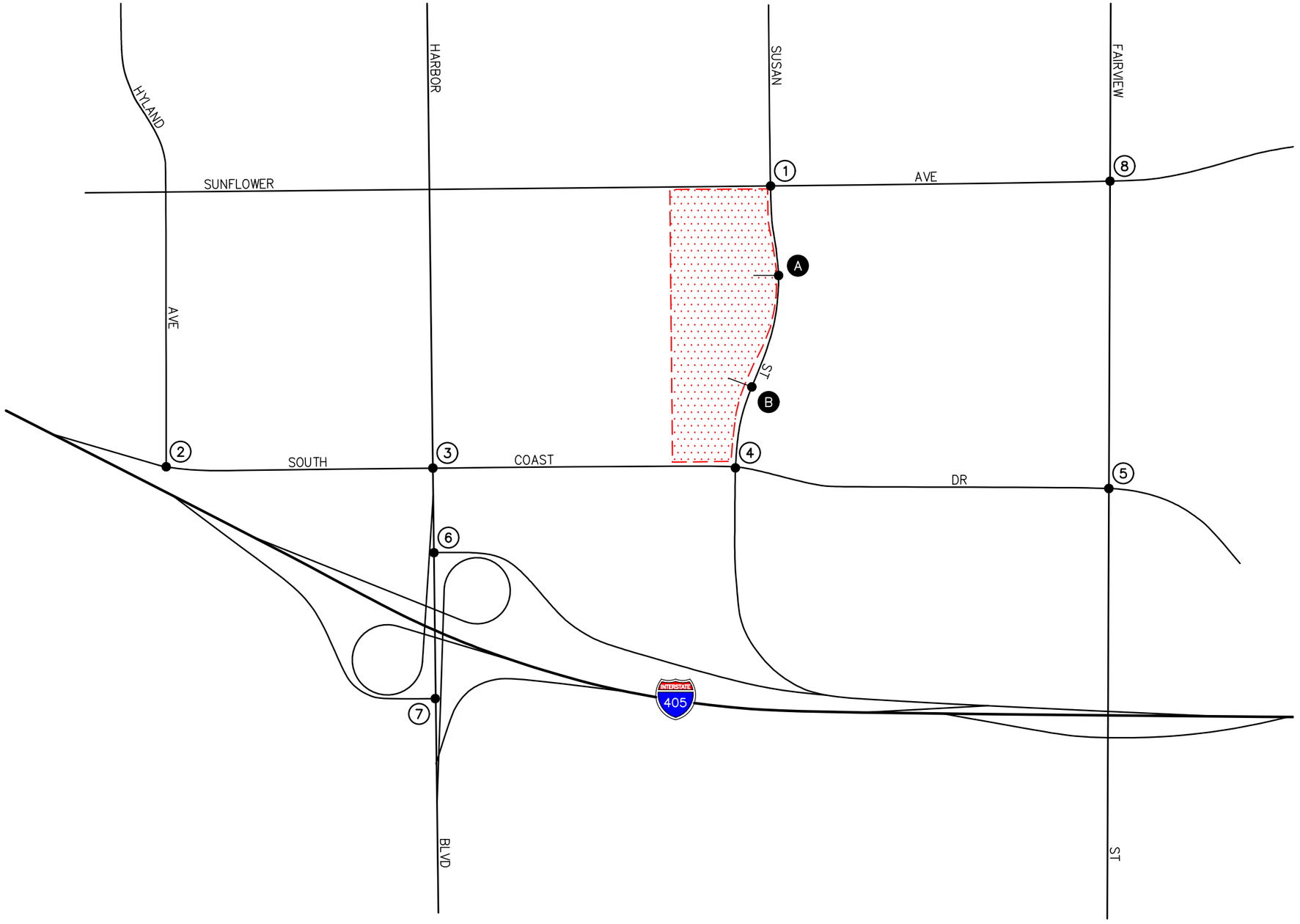
(#) = STUDY INTERSECTION

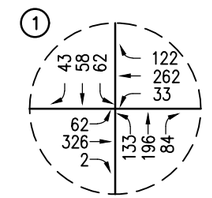
= PROJECT SITE

FIGURE 6-5

YEAR 2028 CUMULATIVE PM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA





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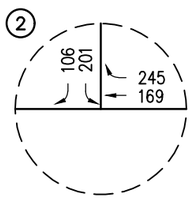
SUNFLOWER AVE



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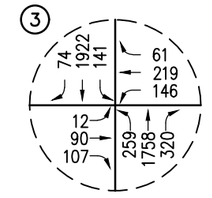
I-405 NB RAMPS



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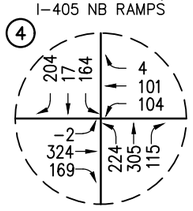

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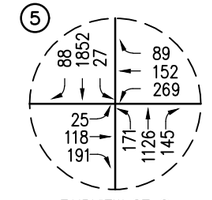

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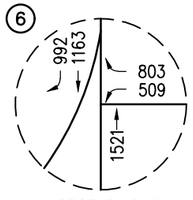

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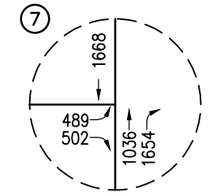

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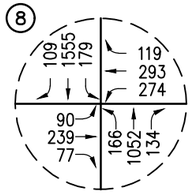

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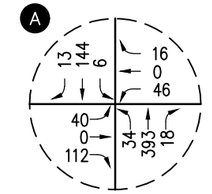
SUNFLOWER AVE



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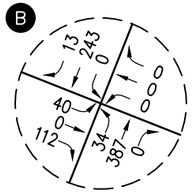

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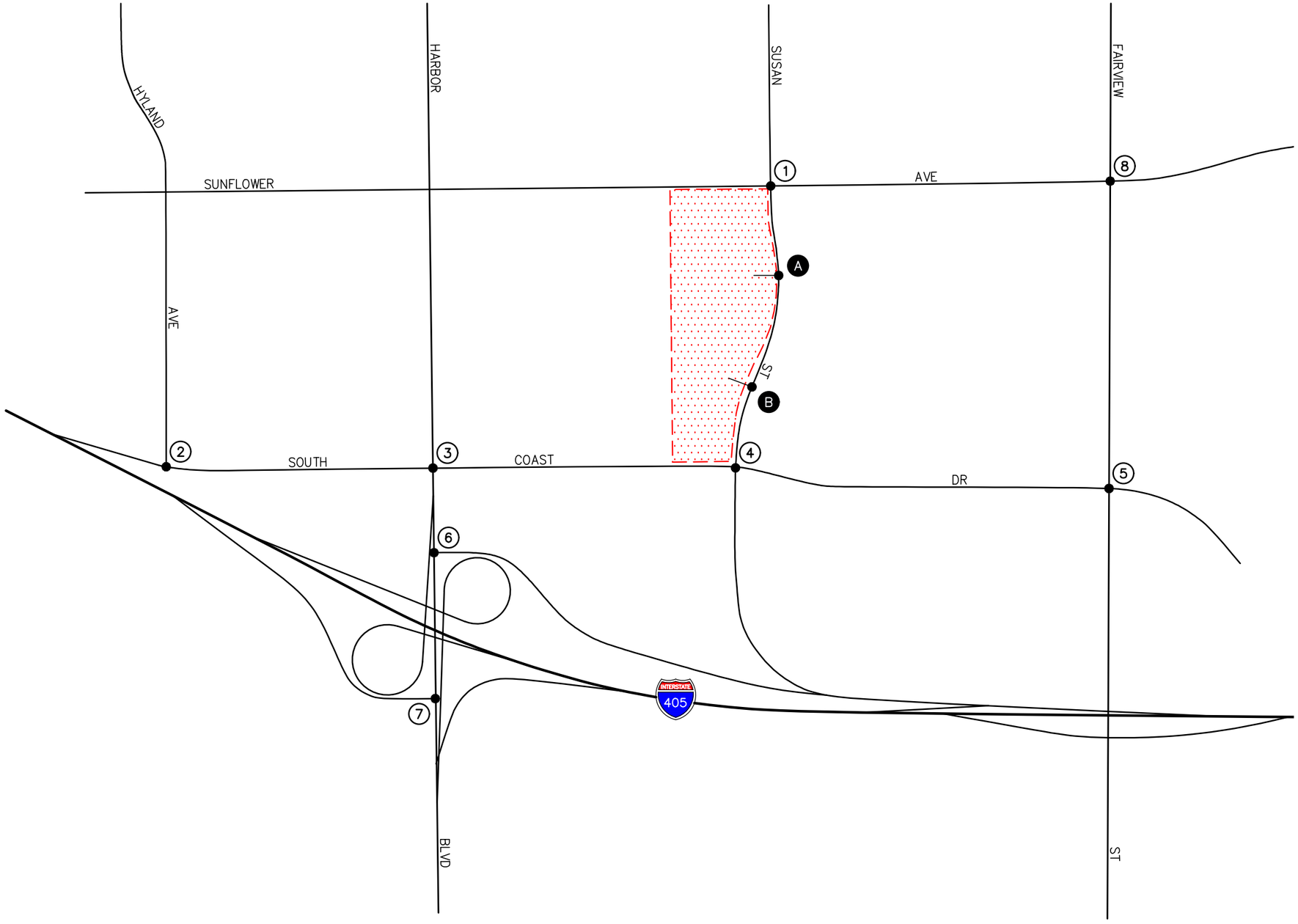
(#) = STUDY INTERSECTION

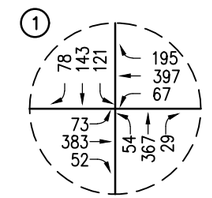
= PROJECT SITE

FIGURE 6-6

YEAR 2028 CUMULATIVE PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA





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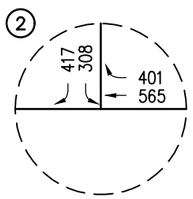
SUNFLOWER AVE



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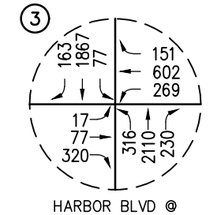
SOUTH COAST DR/
I-405 NB RAMPS



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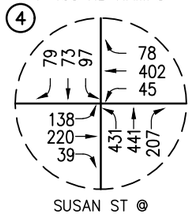
SOUTH COAST DR



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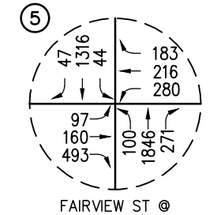

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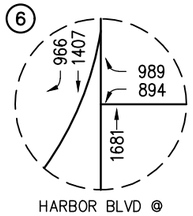

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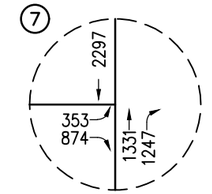

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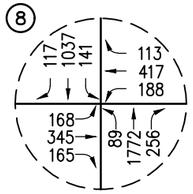

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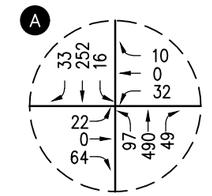

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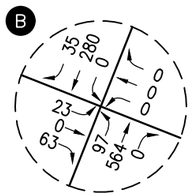

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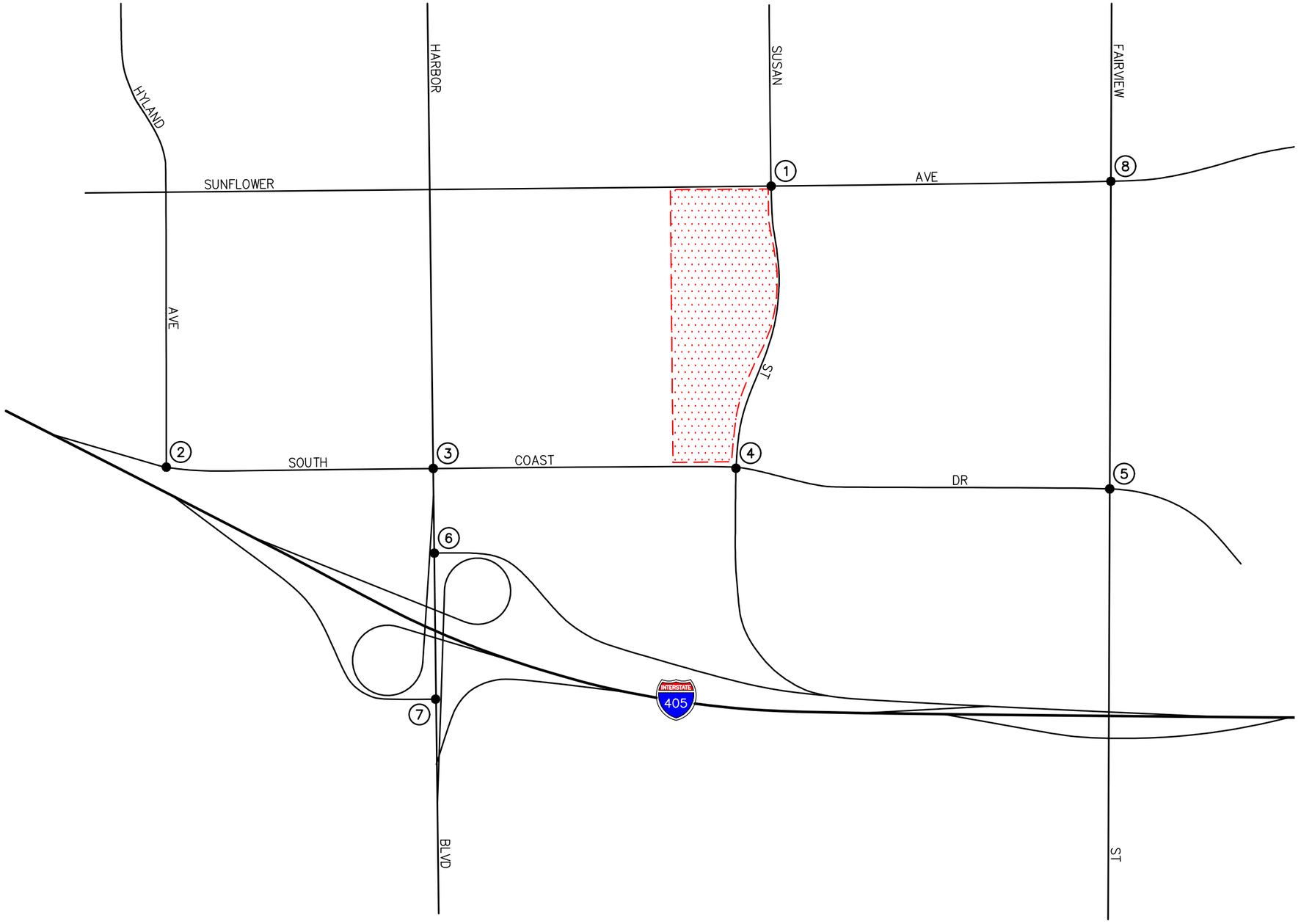
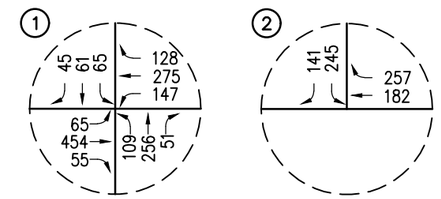
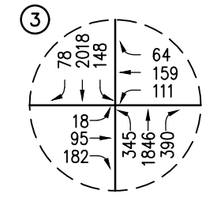
FIGURE 6-7

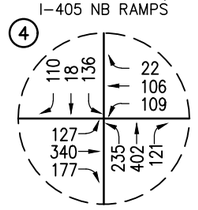
YEAR 2028 CUMULATIVE PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

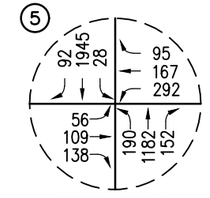
HIVE APARTMENTS, COSTA MESA

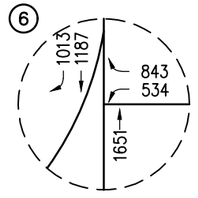


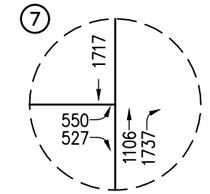


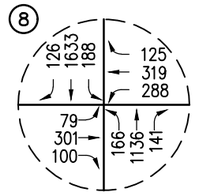












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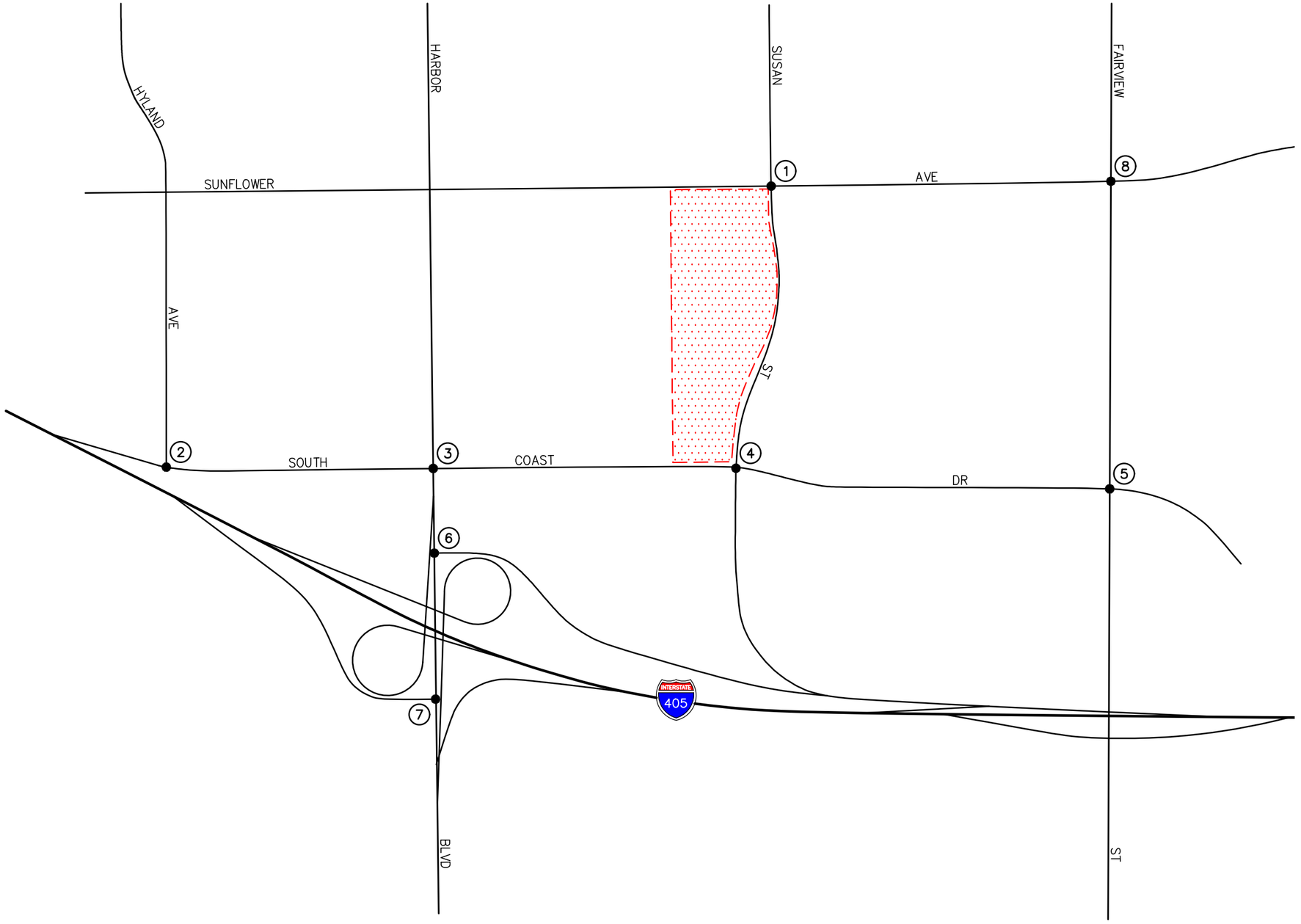
(#) = STUDY INTERSECTION

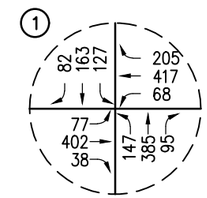
= PROJECT SITE

FIGURE 6-8

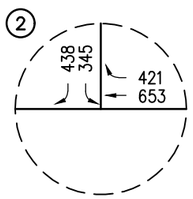
YEAR 2050 BUILDOUT AM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

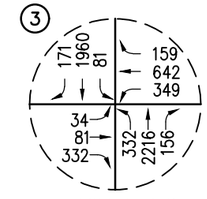




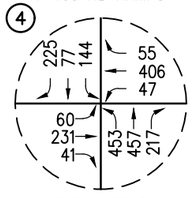
SUSAN ST @
SUNFLOWER AVE



HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



HARBOR BLVD @
SOUTH COAST DR



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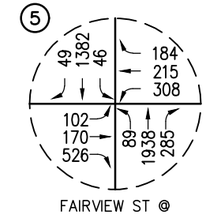
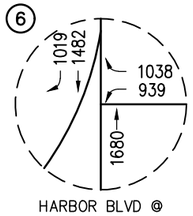
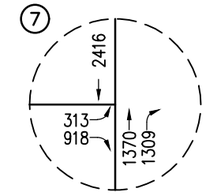
SOUTH COAST DR



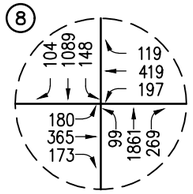
FAIRVIEW ST @
SOUTH COAST DR



HARBOR BLVD @
I-405 NB RAMPS



HARBOR BLVD @
I-405 SB RAMPS



FAIRVIEW AVE @
SUNFLOWER AVE

n:\4600\2234668 - hive apartments, costa mesa\dwg\4668 f6-9.dwg LDP 15:06:50 07-22-2024 aguilar

LLG

N NO SCALE

KEY

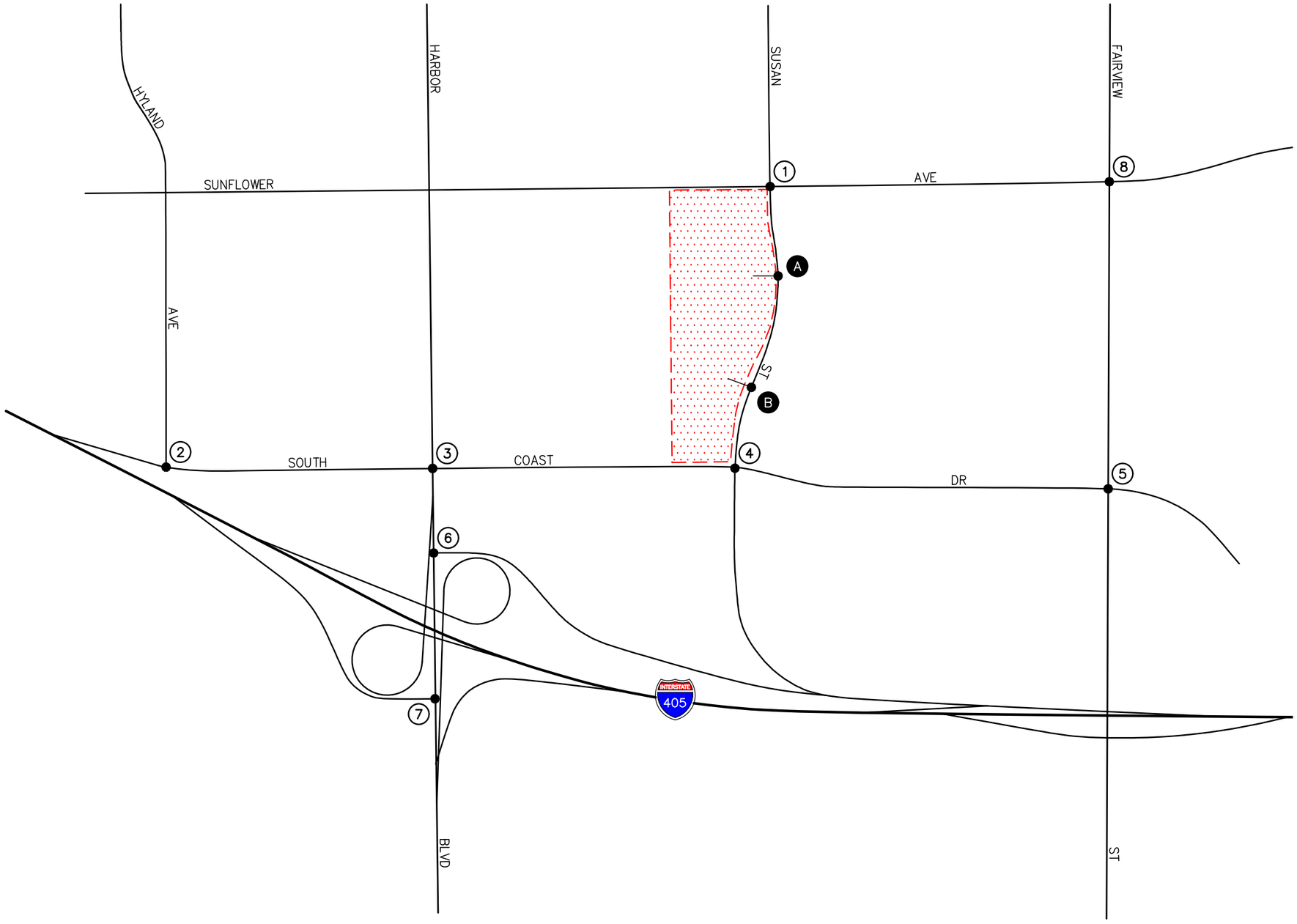
(#) = STUDY INTERSECTION

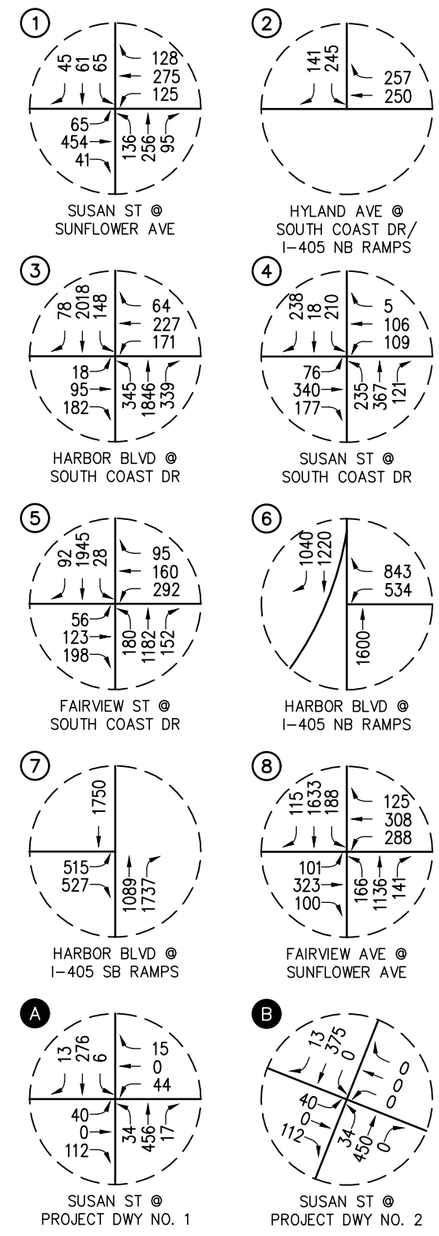
= PROJECT SITE

FIGURE 6-9

YEAR 2050 BUILDOUT PM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA





n:\4600\2234668 - hive apartments, costa mesa\dwg\4668 f6-10.dwg LDP 15:10:05 07-22-2024 aguilar

LLG

N NO SCALE

KEY

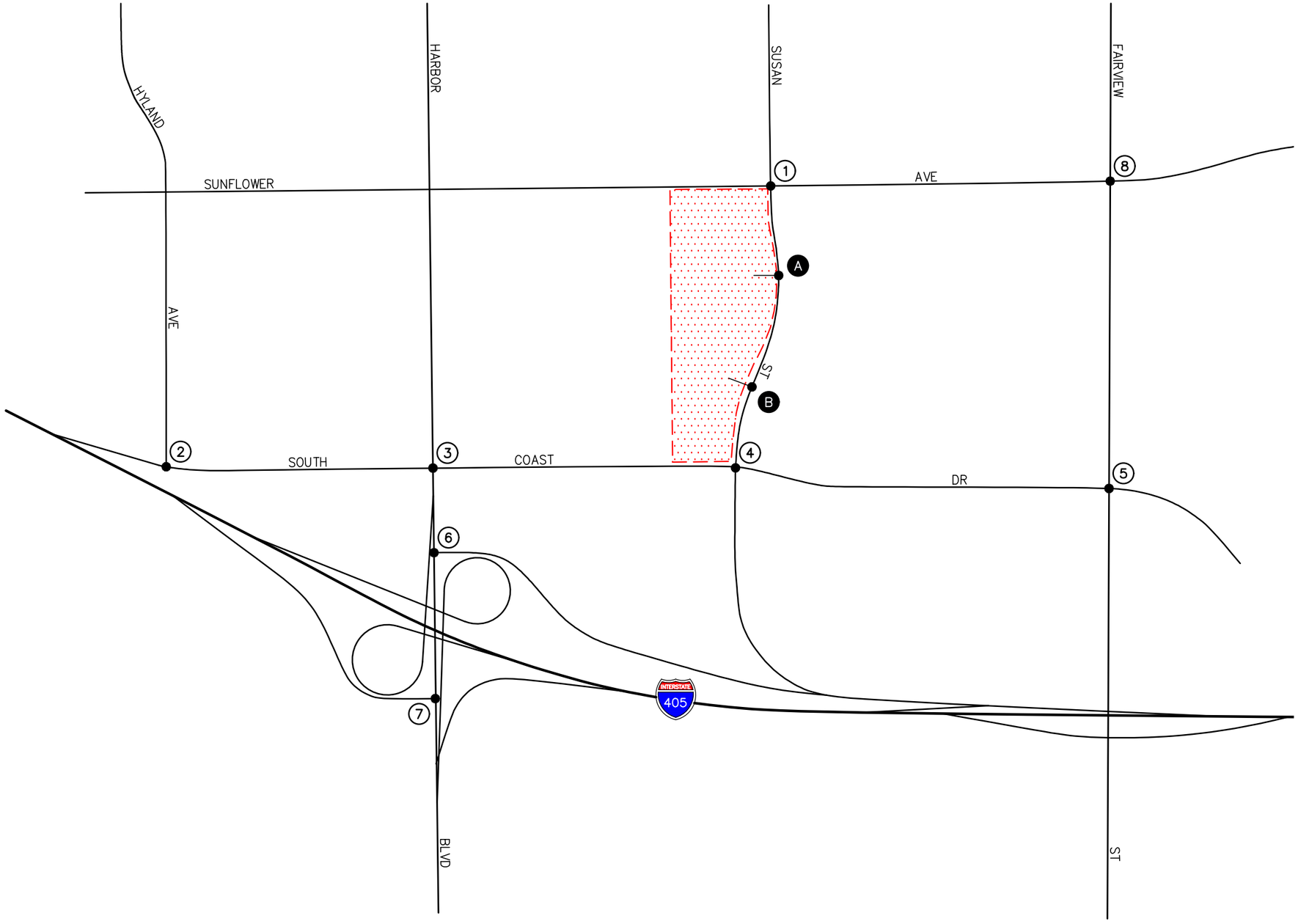
(#) = STUDY INTERSECTION

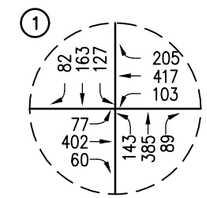
= PROJECT SITE

FIGURE 6-10

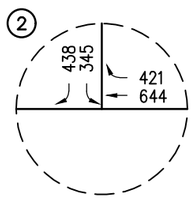
YEAR 2050 BUILDOUT PLUS PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

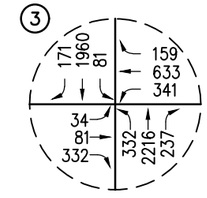




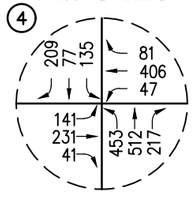
SUSAN ST @
SUNFLOWER AVE



HYLAND AVE @
SOUTH COAST DR/
I-405 NB RAMPS



HARBOR BLVD @
SOUTH COAST DR



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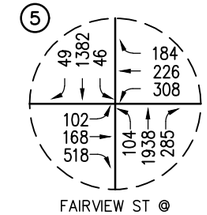
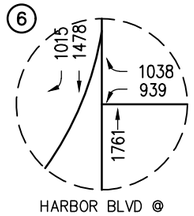
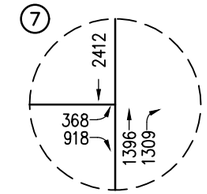
SOUTH COAST DR



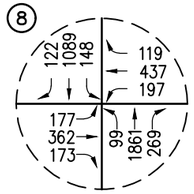
FAIRVIEW ST @
SOUTH COAST DR



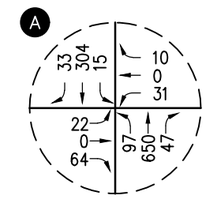
HARBOR BLVD @
I-405 NB RAMPS



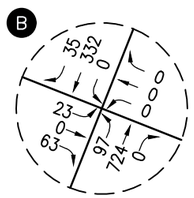
HARBOR BLVD @
I-405 SB RAMPS



FAIRVIEW AVE @
SUNFLOWER AVE



SUSAN ST @
PROJECT DWY NO. 1



SUSAN ST @
PROJECT DWY NO. 2

LLG

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-11

YEAR 2050 BUILDOUT PLUS PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HIVE APARTMENTS, COSTA MESA

7.0 TRAFFIC CIRCULATION ANALYSIS METHODOLOGY

The potential circulation effects of the added peak hour project traffic volumes generated by the Project have been evaluated based on the analysis of existing operating conditions at eight (8) key study intersections. Operating conditions at the key study intersections were evaluated during the AM and PM peak hours for existing traffic conditions without, then with the proposed Project.

The previously discussed capacity analysis procedures were utilized to investigate the service level characteristics at each study intersection. The significance of the potential circulation effects of the project at each key intersection was then evaluated using the LOS standards and criteria defined in this report.

7.1 Level of Service Criteria and Thresholds

Per the City of Costa Mesa, the need for potential improvements will be assessed based on the following criteria:

- The project increases traffic demand by 1% of capacity (ICU increase ≥ 0.01) at a signalized study intersection forecast to operate at an unacceptable LOS. The City of Costa Mesa considers LOS D to be the minimum acceptable LOS for all intersections.
- At unsignalized intersections, the project causes an intersection at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a signal is justified.

7.2 Traffic Analysis Scenarios

Per the requirements of the City of Costa Mesa, the following scenarios are those for which volume/capacity calculations have been performed at the eight (8) key study intersections for existing plus project, near-term (Year 2028), and long-term buildout (Year 2050) traffic conditions:

A. Existing Traffic Conditions;
B. Near-Term (Year 2028) Background Traffic Conditions (Existing plus Ambient Growth plus Related Projects);
C. Near-Term (Year 2028) Background Plus Project Traffic Conditions;
D. Long-Term Buildout (Year 2050) Buildout Traffic Conditions;
E. Long-Term Buildout (Year 2050) Buildout Plus Project Traffic Conditions; and

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Year 2028 Cumulative Traffic Analysis

Table 8-1 summarizes the peak hour level of service results at the eight (8) key study intersections for the Year 2028 horizon year. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-3*). The second column (2) lists forecast 2028 cumulative conditions (existing traffic plus ambient growth traffic plus cumulative project traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will exceed the LOS standards and criteria defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.1.1 *Year 2028 Cumulative Traffic Conditions*

Review of column (2) of *Table 8-1* indicates that the eight (8) key study intersections are forecast to operate at acceptable level of service during the AM and PM peak hours under Year 2028 Cumulative traffic conditions.

8.1.2 *Year 2028 Cumulative Plus Project Traffic Conditions*

Review of columns (3) and (4) of *Table 8-1* indicates that the eight (8) key study intersections are forecast to continue operating at acceptable level of service during the AM and PM peak hours under Year 2028 Cumulative traffic conditions with the addition of project traffic. As such, improvements at the study intersections are not required.

Appendix C presents the presents the ICU/LOS calculation worksheets for the eight (8) key study intersections.

TABLE 8-1

YEAR 2028 CUMULATIVE PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2028 Cumulative Traffic Conditions		(3) Year 2028 Cumulative Plus Project Traffic Conditions		(4) Exceed LOS Criteria		(5) Year 2028 Cumulative Plus Project Traffic Conditions with Improvements	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Susan Street at Sunflower Avenue	D	AM	0.333	A	0.407	A	0.407	A	0.000	No	--	--
		PM	0.458	A	0.598	A	0.598	A	0.000	No	--	--
2. Hyland Avenue at South Coast Drive/I-405 NB On-Ramp	D	AM	0.148	A	0.202	A	0.248	A	0.046	No	--	--
		PM	0.514	A	0.591	A	0.585	A	0.000[13]	No	--	--
3. Harbor Boulevard at South Coast Drive	D	AM	0.415	A	0.484	A	0.503	A	0.019	No	--	--
		PM	0.543	A	0.646	B	0.643	B	0.000[13]	No	--	--
4. Susan Street at South Coast Drive	D	AM	0.247	A	0.372	A	0.385	A	0.013	No	--	--
		PM	0.298	A	0.396	A	0.439	A	0.043	No	--	--
5. Fairview Road at South Coast Drive	D	AM	0.659	B	0.726	C	0.741	C	0.015	No	--	--
		PM	0.591	A	0.686	B	0.654	B	0.000[13]	No	--	--
6. Harbor Boulevard at I-405 NB Ramps	D	AM	0.452	A	0.531	A	0.523	A	0.000[13]	No	--	--
		PM	0.571	A	0.685	B	0.698	B	0.013	No	--	--
7. Harbor Boulevard at I-405 SB Ramps	D	AM	0.411	A	0.481	A	0.478	A	0.000[13]	No	--	--
		PM	0.555	A	0.675	B	0.674	B	0.000[13]	No	--	--
8. Fairview Road at Sunflower Avenue	D	AM	0.621	B	0.688	B	0.693	B	0.005	No	--	--
		PM	0.625	B	0.686	B	0.686	B	0.000	No	--	--

Notes:

- **BOLD ICU/LOS** indicates unacceptable service level

[13] A theoretical negative increase, denoted as an increase of 0.000 for ICU, is due to the net negative Project inbound trips during the AM peak hour and/or net negative Project outbound trips during the PM peak hour.

8.2 Year 2050 Buildout Traffic Analysis

Table 8-2 summarizes the peak hour level of service results at the eight (8) key study intersections for the Year 2050 buildout year. The first column (1) of ICU/LOS values in *Table 8-2* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 3-3*). The second column (2) lists forecast 2050 buildout conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents future forecast traffic conditions with the addition of traffic generated by the proposed Project. The fourth column (4) shows the increase in ICU value due to the added peak hour project trips and indicates whether the traffic associated with the Project will exceed the LOS standards and criteria defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.2.1 *Year 2050 Buildout Traffic Conditions*

Review of column (2) of *Table 8-2* indicates that the eight (8) key study intersections are forecast to operate at acceptable level of service during the AM and PM peak hours under Year 2050 Buildout traffic conditions.

8.2.2 *Year 2050 Buildout Plus Project Traffic Conditions*

Review of columns (3) and (4) of *Table 8-2* indicates that the eight (8) key study intersections are forecast to continue operating at acceptable level of service during the AM and PM peak hours under Year 2050 Buildout traffic conditions with the addition of project traffic. As such, improvements at the study intersections are not required.

Appendix C presents the presents the ICU/LOS calculation worksheets for the eight (8) key study intersections.

TABLE 8-2

YEAR 2050 BUILDOUT PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2050 Buildout Traffic Conditions		(3) Year 2050 Buildout Plus Project Traffic Conditions		(4) Exceed LOS Criteria		(5) Year 2050 Buildout Plus Project Traffic Conditions with Improvements	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Susan Street at Sunflower Avenue	D	AM	0.333	A	0.434	A	0.421	A	0.000[14]	No	--	--
		PM	0.458	A	0.563	A	0.563	A	0.000	No	--	--
2. Hyland Avenue at South Coast Drive/I-405 NB On-Ramp	D	AM	0.148	A	0.267	A	0.309	A	0.042	No	--	--
		PM	0.514	A	0.624	B	0.618	B	0.000[14]	No	--	--
3. Harbor Boulevard at South Coast Drive	D	AM	0.415	A	0.544	A	0.563	A	0.019	No	--	--
		PM	0.543	A	0.648	B	0.646	B	0.000[14]	No	--	--
4. Susan Street at South Coast Drive	D	AM	0.247	A	0.402	A	0.414	A	0.012	No	--	--
		PM	0.298	A	0.401	A	0.441	A	0.040	No	--	--
5. Fairview Road at South Coast Drive	D	AM	0.659	B	0.636	B	0.649	B	0.013	No	--	--
		PM	0.591	A	0.657	B	0.655	B	0.000[14]	No	--	--
6. Harbor Boulevard at I-405 NB Ramps	D	AM	0.452	A	0.545	A	0.537	A	0.000[14]	No	--	--
		PM	0.571	A	0.674	B	0.687	B	0.013	No	--	--
7. Harbor Boulevard at I-405 SB Ramps	D	AM	0.411	A	0.493	A	0.491	A	0.000[14]	No	--	--
		PM	0.555	A	0.664	B	0.664	B	0.000	No	--	--
8. Fairview Road at Sunflower Avenue	D	AM	0.621	B	0.639	B	0.643	B	0.004	No	--	--
		PM	0.625	B	0.667	B	0.666	B	0.000[14]	No	--	--

Notes:

- **BOLD ICU/LOS** indicates unacceptable service level

[14] A theoretical negative increase, denoted as an increase of 0.000 for ICU, is due to the net negative Project inbound trips during the AM peak hour and/or net negative Project outbound trips during the PM peak hour.

9.0 STATE OF CALIFORNIA (CALTRANS) METHODOLOGY

The Department of Transportation (Caltrans) has also formally adopted VMT as the metric for reviewing the transportation impacts of a land use development project. Caltrans has released the *Vehicle Miles Traveled-Focused Transportation Impact Study Guide (TISG)*, dated May 20, 2020 in order to provide guidance on Caltrans' review of land use projects.

Caltrans' TISG references the *Technical Advisory on Evaluating Transportation Impacts In California Environmental Quality Act* (CEQA), dated December 2018, prepared by the State of California Governor's Office of Planning and Research (OPR) as the basis for its guidance on VMT assessment. The City of Costa Mesa adopted new traffic impact criteria to be consistent with the CEQA revisions and OPR recommendations. These new guidelines are contained within the *City of Costa Mesa Transportation Impact Analysis (TIA) Guidelines (October 2020)* and provide screening criteria and methodology for VMT analysis. Since the City's guidelines are generally consistent with OPR guidelines, no separate VMT analysis has been prepared for Caltrans' review of the proposed project. The VMT analysis for this project is contained within a separate document (i.e. refer to the *Vehicle Miles Traveled (VMT) Screening Assessment Memorandum for the Proposed Hive Apartments).*

9.1 Off-Ramp Vehicle Queueing Analysis

The *Caltrans Interim Land Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance*, dated December 2020, provides direction on a simplified safety analysis approach that reduces the risk to all road users and that focuses on multi-modal conflict analysis as well as access management issues. District traffic safety staff are encouraged to consider the proposed Project's potential influence on safety on state roadways, including the following factors:

- Increased presence of pedestrians and bicyclists
- Degradation of the walking and bicycling environment and experience
- New pedestrian and bicyclist connection desires
- Multimodal conflict points, especially at intersections and project access locations
- Change in traffic mix such as an increase in bicyclists or pedestrians where features such as shoulders or sidewalks may not exist or are inconsistent with facility design (sidewalks, bike and multi-user paths, multimodal roadways, etc.)
- Increased vehicular speeds
- Transition between free flow and metered flow
- Increased traffic volumes
- Queuing at off-ramps resulting in slow or stopped traffic on the mainline or speed differentials between adjacent lanes
- Queuing exceeding turn pocket length that impedes through-traffic

The proposed Project does not take direct access from a State facility; however, an evaluation of the Project's potential impacts on queuing at Caltrans intersections was prepared in order to determine if the Project would cause, or contribute towards, slowing or stopped traffic on freeway mainline travel lanes, off-ramps, and State highway lanes that could result in unsafe speed differentials between

adjacent lanes. Pursuant to requirements of Caltrans, off-ramp queueing was analyzed using the Highway Capacity Manual (HCM) method for signalized intersections. The off-ramp queuing calculations were prepared utilizing the HCM 7 operational methodology for signalized intersections. A *Vistro* network was created based on existing conditions field reviews at the three (3) ramp intersections. In addition, specifics such as traffic volume data, lane configurations, available vehicle storage lengths, crosswalk locations, posted speed limits, traffic signal timing and phasing, etc., were coded to complete the existing network. The corresponding weekday AM peak hour and PM peak hour HCM 7 worksheets for purposes of determining the 95th percentile vehicle queues are contained in ***Appendix D***.

9.2 Year 2028 Cumulative Traffic Analysis

Table 9-1 identifies the minimum required stacking/storage lengths for the off-ramp lanes at the three (3) ramp intersections for Year 2028 Cumulative traffic conditions.

9.2.1 *Existing Traffic Conditions*

Review of column (1) of *Table 9-1* indicates that the existing storage for the off-ramp lanes is considered adequate to accommodate the anticipated queues under Existing traffic conditions.

9.2.2 *Year 2028 Cumulative Traffic Conditions*

Review of column (2) of *Table 9-1* indicates that the existing storage for the off-ramp lanes is considered adequate to accommodate the anticipated queues under Year 2028 Cumulative traffic conditions.

9.2.3 *Year 2028 Cumulative Plus Project Traffic Conditions*

Review of column (3) of *Table 9-1* indicates that the existing storage for the off-ramp lanes is considered adequate to accommodate the anticipated queues under Year 2028 Cumulative traffic conditions with the addition of project traffic.

Therefore, based on this analysis, the proposed Project is not anticipated to negatively affect traffic flow on the State Highway System as the existing vehicular storage capacity on the off-ramps are considered adequate under the Year 2028 Cumulative traffic conditions.

TABLE 9-1
YEAR 2028 CUMULATIVE CALTRANS PEAK HOUR QUEUING ANALYSIS[15]

Key Intersections	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Year 2028 Cumulative Traffic Conditions				(3) Year 2028 Cumulative Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)
2. Hyland Avenue at Coast Drive/I-405 NB On-Ramp													
Westbound Through	1,530	25	Yes	126	Yes	25	Yes	181	Yes	25	Yes	177	Yes
6. Harbor Boulevard at I-405 NB Ramps													
Westbound Left -Turn	400	319	Yes	388	Yes	336	Yes	417	Yes[16]	336	Yes	417	Yes[16]
Westbound Left/Right-Turn	400	334	Yes	404	Yes[17]	351	Yes	441	Yes[17]	351	Yes	441	Yes[17]
Westbound Right-Turn	400	337	Yes	417	Yes[18]	355	Yes	463	Yes[18]	355	Yes	463	Yes[18]
7. Harbor Boulevard at I-405 SB Ramps													
Eastbound Left -Turn	450	260	Yes	148	Yes	286	Yes	230	Yes	280	Yes	272	Yes
Eastbound Left/Right-Turn	450	258	Yes	328	Yes	292	Yes	368	Yes	286	Yes	366	Yes
Eastbound Right-Turn	450	257	Yes	328	Yes	300	Yes	368	Yes	293	Yes	366	Yes

15 Queues are based on HCM 95th Percentile methodology.

16 Although the queue exceeds the left -turn storage, the ramp has the capacity to accommodate the additional spillover queue.

17 Although the queue exceeds the left/right-turn storage, the ramp has the capacity to accommodate the additional spillover queue.

18 Although the queue exceeds the right-turn storage, the ramp has the capacity to accommodate the additional spillover queue.

9.3 Year 2050 Buildout Traffic Analysis

Table 9-2 identifies the minimum required stacking/storage lengths for the off-ramp lanes at the three (3) ramp intersections for Year 2050 Buildout traffic conditions.

9.3.1 *Year 2050 Buildout Traffic Conditions*

Review of column (2) of *Table 9-2* indicates that the existing storage for the off-ramp lanes is considered adequate to accommodate the anticipated queues under Year 2050 Buildout traffic conditions.

9.3.2 *Year 2050 Buildout Plus Project Traffic Conditions*

Review of column (3) of *Table 9-2* indicates that the existing storage for the off-ramp lanes is considered adequate to accommodate the anticipated queues under Year 2050 Buildout traffic conditions with the addition of project traffic.

Therefore, based on this analysis, the proposed Project is not anticipated to negatively affect traffic flow on the State Highway System as the existing vehicular storage capacity on the off-ramps are considered adequate under the Year 2050 Buildout traffic conditions.

TABLE 9-2

YEAR 2050 BUILDOUT CALTRANS PEAK HOUR QUEUING ANALYSIS[19]

Key Intersections	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Year 2050 Buildout Traffic Conditions				(3) Year 2050 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)
2. Hyland Avenue at Coast Drive/I-405 NB On-Ramp													
Westbound Through	1,530	25	Yes	126	Yes	28	Yes	204	Yes	40	Yes	200	Yes
6. Harbor Boulevard at I-405 NB Ramps													
Westbound Left -Turn	400	319	Yes	388	Yes	341	Yes	414	Yes[20]	341	Yes	414	Yes[20]
Westbound Left/Right-Turn	400	334	Yes	404	Yes[21]	357	Yes	437	Yes[21]	357	Yes	437	Yes[21]
Westbound Right-Turn	400	337	Yes	417	Yes[22]	361	Yes	458	Yes[22]	361	Yes	458	Yes[22]
7. Harbor Boulevard at I-405 SB Ramps													
Eastbound Left -Turn	450	260	Yes	148	Yes	291	Yes	228	Yes	285	Yes	268	Yes
Eastbound Lef /Right-Turn	450	258	Yes	328	Yes	297	Yes	364	Yes	291	Yes	363	Yes
Eastbound Right-Turn	450	257	Yes	328	Yes	305	Yes	364	Yes	298	Yes	363	Yes

19 Queues are based on HCM 95th Percentile methodology.

20 Although the queue exceeds the left -turn storage, the ramp has the capacity to accommodate the additional spillover queue.

21 Although the queue exceeds the left/right-turn storage, the ramp has the capacity to accommodate the additional spillover queue.

22 Although the queue exceeds the right-turn storage, the ramp has the capacity to accommodate the additional spillover queue.

10.0 MULTIMODAL CIRCULATION

The on-site circulation layout of the proposed Project and the adjacent roadways as illustrated in *Figure 2-2* on an overall basis is adequate for drivers, pedestrians, bicycles, and public transit users and is consistent with the City of Costa Mesa *Active Transportation Plan (ATP)*.

Figure 10-1 illustrates the multimodal transportation (vehicular, pedestrian, bicycle, public transit) aspects of the Project site, including connections between sidewalks, signalized crosswalks, unsignalized crossings, existing and future bicycle facilities, and public transit stops.

Pedestrian Circulation

Pedestrian connection to the surrounding residential, commercial, as well as nearby public transit stops, is provided via existing sidewalks on both sides of Sunflower Avenue, Susan Street, and South Coast Drive. The Project will maintain the existing sidewalk along the Project frontage on Susan Street.

Bike Lanes

A Class II Bicycle Lane currently exists along Susan Street (i.e. on both sides of the street), between South Coast Drive and Sunflower Avenue, as well as along Sunflower Avenue, South Coast Drive, Hyland Avenue, and Fairview Street within the vicinity of the Project. Bicycle circulation will be provided via adjacent roadways and sidewalks, accordingly.

Consistent with the improvements identified in the 2018 ATP, including the Existing and Proposed Bikeway Facilities Map (Figure 6-1 of the ATP) and the Proposed Bicycle Facilities (Table 6-1 of the ATP), the following bicycle facilities are included in the ATP as future planned improvements within the vicinity of the project site.

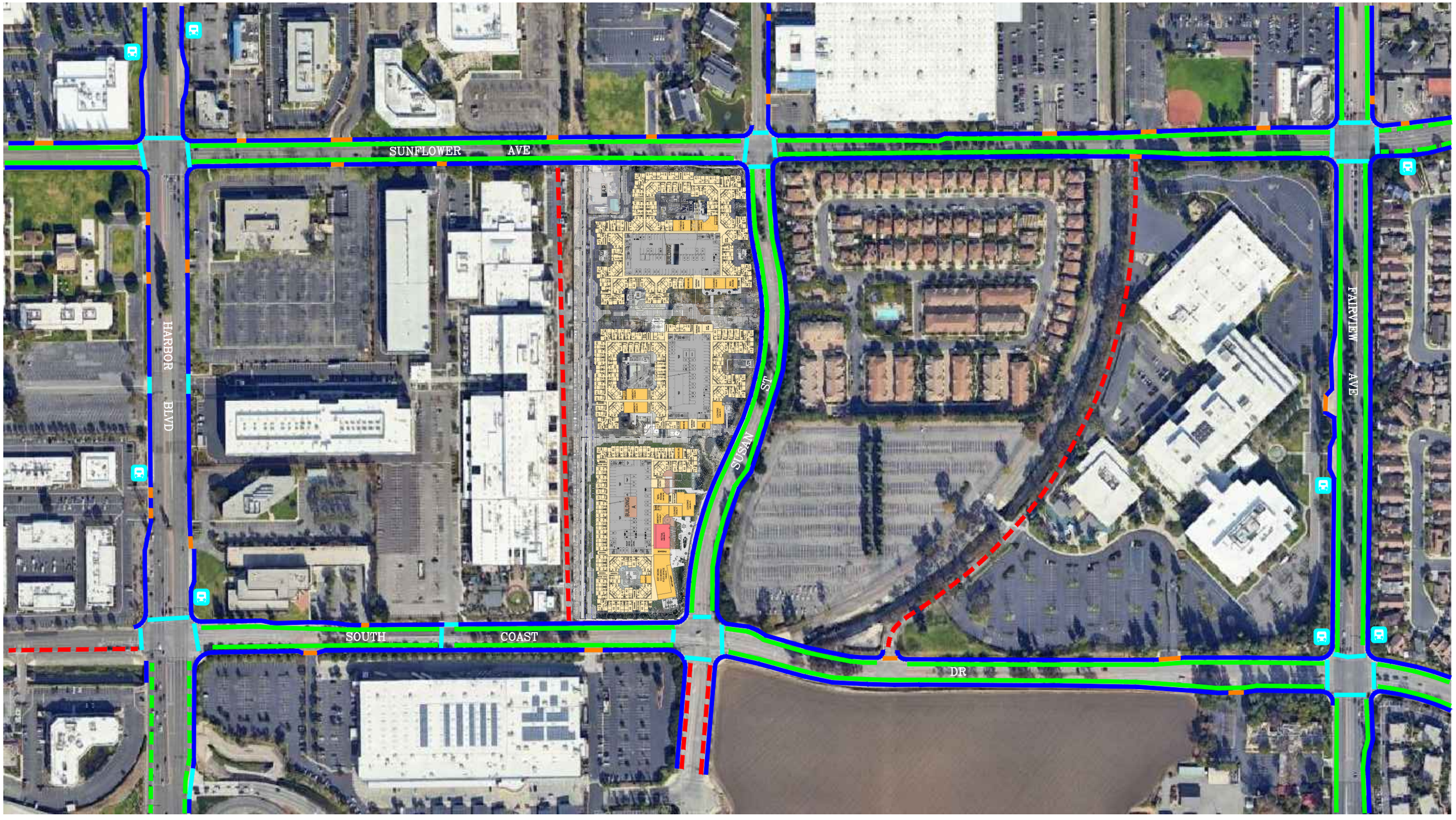
- A Class I Shared-Use Path on South Coast Drive, west of Harbor Boulevard
- A Class I Shared-Use Path on Susan Street, south of South Coast Drive
- A Class I Shared-Use Path adjacent to the existing channel east of Susan Street, between Sunflower Avenue and South Coast Drive
- A Class II Bike Lane on Harbor Boulevard, south of South Coast Drive
- A Class II Bike Lane on Sunflower Avenue, between Fairview Street and Bristol Street

Public Transit

Public transit bus service is provided in the Project area by the Orange County Transportation Authority (OCTA). ***Section 3.1.1*** contains descriptions for the following transit route:

- *OCTA Route 43*
- *OCTA Route 47*
- *OCTA Route 150*

The current bus stops nearest to the Project site are located along Harbor Boulevard, north of Sunflower Avenue and north of South Coast Drive, all of which are approximately 0.5 miles from the nearest project driveway.



SOURCE: GOOGLE

KEY

= SIDEWALKS
= SIGNALIZED CROSSWALKS
= UNSIGNALIZED CROSSINGS
= SHARED USE PATH (CLASS I)
= BICYCLE LANE (CLASS II)
= OCTA BUS STOP LOCATIONS
= EXISTING
= FUTURE

LLG

N NO SCALE

FIGURE 10-1

MULTIMODAL CIRCULATION

HIVE APARTMENTS, COSTA MESA

n:\4600\2234668 - hive apartments, costa mesa\dwg\4668 f10-1.dwg LDP 13:41:57 11-07-2024 kopulsky

11.0 SITE ACCESS AND INTERNAL CIRCULATION EVALUATION

11.1 Site Access

Vehicular access to the Project site will continue to be provided via the two (2) existing full-access driveways along Susan Street. The proposed Project will also provide emergency vehicle access from Sunflower Avenue and South Coast Drive.

Table 11-1 summarizes the intersection level of service results at the two (2) Project driveways for Year 2028 Cumulative and Year 2050 Buildout traffic conditions at completion and full occupancy of the proposed Project. As shown, the project driveways are forecast to operate at LOS D or better during the AM peak hour and PM peak hour.

Appendix E presents the HCM/LOS calculations for the two (2) Project driveways.

11.2 Project Driveway Queuing Analysis

A queuing evaluation was prepared for the project driveways to determine if the existing northbound left-turn storage lanes along Susan Street are sufficient to serve the proposed Project. Queues were also evaluated at the project driveways to determine internal stacking. The queuing assessment was conducted utilizing the 95th percentile delay methodology. The 95th percentile queue represents the back of vehicle queue with 95th percentile traffic volumes. For unsignalized locations, the 95th percentile queue length (feet) in the peak hour was also used to determine the required storage length.

Table 11-2 summarizes the queueing results at the project driveways for Year 2028 Cumulative Plus Project and Year 2050 Buildout Plus Project. Review of *Table 11-2* indicates that the existing and/or proposed storage is adequate to accommodate the anticipated queues.

Appendix E presents the HCM/LOS calculations for the two (2) Project driveways.

11.3 Internal Circulation Evaluation

The on-site circulation layout of the proposed Project as illustrated in *Figure 2-2* on an overall basis is adequate. Curb return radii appear adequate for passenger cars, service/delivery trucks and trash trucks. In addition, the overall layout does not create significant vehicle-pedestrian conflict points and project traffic is not anticipated to cause significant internal queuing/stacking at the Project driveways.

TABLE 11-1
PROJECT DRIVEWAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS

Key Intersections	Intersection Control	Time Period	(1) Year 2028 Cumulative Plus Project Traffic Conditions		(2) Year 2050 Buildout Plus Project Traffic Conditions	
			Delay (s/v)	LOS	Delay (s/v)	LOS
A. Susan Street at Project Driveway 1	Two-Way Stop	AM	15.9	C	17.9	C
		PM	24.2	C	29.6	D
B. Susan Street at Project Driveway 2	Two-Way Stop	AM	11.9	B	13.3	B
		PM	13.5	B	14.5	B

Notes:
- s/v = seconds per vehicle (delay)

TABLE 11-2
PROJECT DRIVEWAY PEAK HOUR QUEUING ANALYSIS[23]

Key Intersections	Storage Provided (feet)	(1) Year 2028 Cumulative Plus Project Traffic Conditions				(2) Year 2050 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		95th Percentile Queue/Min. Storage Required (feet)	Adequate Storage (Yes/No)	95th Percentile Queue/Min. Storage Required (feet)	Adequate Storage (Yes/No)	95th Percentile Queue/Min. Storage Required (feet)	Adequate Storage (Yes/No)	95th Percentile Queue/Min. Storage Required (feet)	Adequate Storage (Yes/No)
A. Susan Street at Project Driveway 1									
Northbound Left-Turn	95	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left/Through/Right	185	25	Yes	25	Yes	25	Yes	25	Yes
B. Susan Street at Project Driveway 2									
Northbound Left-Turn	95	25	Yes	25	Yes	25	Yes	25	Yes
Eastbound Left/Through/Right	36	25	Yes	25	Yes	26	Yes	25	Yes

[23] Queues are based on HCM 95th Percentile methodology.

12.0 RECOMMENDED INTERSECTION IMPROVEMENTS

For those intersections, if any, where projected traffic volumes are expected to result in unacceptable operating conditions, this report recommends (identifies) improvement measures that change the intersection geometry to increase capacity.

12.1 Year 2028 Cumulative Plus Project Recommended Improvements

The results of the intersection capacity analysis presented previously in *Table 8-1* concludes that the proposed Project will not require intersection improvements at any of the eight (8) study intersections.

12.2 Year 2050 Buildout Plus Project Recommended Improvements

The results of the intersection capacity analysis presented previously in *Table 8-2* concludes that the proposed Project will not require intersection improvements at any of the eight (8) study intersections.

13.0 SUMMARY OF FINDINGS AND CONCLUSION

- ***Project Description*** – The Project site is located west of Susan Street, south of Sunflower Avenue and north of S. Coast Drive in the City of Costa Mesa. The existing development on the site consists of 172,176 SF office development within three (3) buildings and the entitled development consists of 80,000 SF of office use on the portion of the Project site currently occupied with a professional football training field.

  The proposed Project will consist of demolishing the existing office buildings and football training field to construct 1,050 multifamily dwelling units within three (3) five-story apartments buildings. In addition, 3,692 SF of ground floor retail is proposed. Site access for the proposed apartments will continue to be provided via the two (2) existing driveways along Susan Street. The proposed Project will also provide emergency vehicle access from Sunflower Avenue and South Coast Drive.

  Pedestrian circulation will be provided via existing public sidewalks along Sunflower Avenue, Susan Street, and South Coast Drive bordering the project site, which will connect to the project's internal walkway. The proposed Project will protect the existing sidewalk along the project frontage and if necessary, repair or reconstruct sidewalks along the project frontage per the City's request.

- ***Study Scope*** – The eight (8) key study intersections and two (2) project driveways listed below were selected for detailed peak hour level of service analyses under Existing, Year 2028 Cumulative and Year 2050 Buildout Traffic Conditions.

  Key Study Intersections

  1. Susan Street at Sunflower Avenue (City of Costa Mesa)
  2. Hyland Avenue at South Coast Drive/I-405 NB On-Ramp (City of Costa Mesa/Caltrans)
  3. Harbor Avenue at South Coast Drive (City of Costa Mesa)
  4. Susan Street at South Coast Drive (City of Costa Mesa)
  5. Fairview Road at South Coast Drive (City of Costa Mesa)
  6. Harbor Avenue at I-405 NB Ramps (City of Costa Mesa/Caltrans)
  7. Harbor Avenue at I-405 SB Ramps (City of Costa Mesa/Caltrans)
  8. Fairview Road at Sunflower Avenue (City of Costa Mesa)
  A. Susan Street at Project Driveway 1 (City of Costa Mesa)
  B. Susan Street at Project Driveway 2 (City of Costa Mesa)

  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.

  Per the City's criteria, LOS D is the minimum acceptable condition that should be maintained during the morning and evening peak commute hours on all intersections within the City.

- ***Existing Traffic Conditions*** – All eight (8) key study intersections currently operate at an acceptable level of service during the AM and PM peak hours.

- ***Project Trip Generation*** – The proposed Project is forecast to generate 4,948 daily trips, with 397 trips (94 inbound, 304 outbound) produced in the AM peak hour and 432 trips (261 inbound, 171 outbound) produced in the PM peak hour on a "typical" weekday.

  The existing/entitled 252,176 SF office use is forecast to generate 2,733 daily trips, with 384 trips (338 inbound, 46 outbound) produced in the AM peak hour and 363 trips (62 inbound, 301 outbound) produced in the PM peak hour on a "typical" weekday.

  The net trip generation potential of the proposed Project compared to the trip generation of the existing office use is 3,082 net greater daily trips, with 135 net greater trips (-138 inbound, +273 outbound) produced in the AM peak hour and 184 net greater trips (+219 inbound, -35 outbound) produced in the PM peak hour on a "typical" weekday. This trip generation potential represents the net trips to be analyzed.

  The net trip generation potential of the proposed Project compared to the trip generation of the existing/entitled office use is 2,215 net greater daily trips, with 13 net greater trips (-245 inbound, +258 outbound) produced in the AM peak hour and 69 net greater trips (+199 inbound, -130 outbound) produced in the PM peak hour on a "typical" weekday. However, as directed by Staff, the traffic study will not take a trip credit for the entitled use and the information provided in for the entitled use is for informational purposes only.

- ***Cumulative Projects Traffic Characteristics*** – The eleven (11) cumulative projects are forecast to generate a total of 58,933 daily trips, with 4,891 trips (2,120 inbound and 2,771 outbound) forecast during the AM peak hour and 5,149 trips (2,520 inbound and 2,629 outbound) forecast during the PM peak hour.

- ***Year 2028 Cumulative Plus Project Traffic Conditions*** – All eight (8) key study intersections are forecast to continue operating at acceptable level of service during the AM and PM peak hours under Year 2028 Cumulative traffic conditions with the addition of project traffic. As such, improvements at the study intersections are not required.

- ***Year 2050 Buildout Plus Project Traffic Conditions*** – All eight (8) key study intersections are forecast to continue operating at acceptable level of service during the AM and PM peak hours under Year 2050 Buildout traffic conditions with the addition of project traffic. As such, improvements at the study intersections are not required.

- ***Caltrans Year 2028 Cumulative Plus Project Traffic Conditions*** – The existing storage for the off-ramp lanes for the three (3) Caltrans study intersections is considered adequate to accommodate the anticipated queues under Year 2028 Cumulative traffic conditions with the addition of project traffic.

- ***Caltrans Year 2050 Buildout Plus Project Traffic Conditions*** – The existing storage for the off-ramp lanes for the three (3) Caltrans study intersections is considered adequate to accommodate the anticipated queues under Year 2050 Buildout traffic conditions with the addition of project traffic.

- ***Year 2028 Cumulative Plus Project Recommended Improvements*** – The results of the intersection capacity analysis concludes that the proposed Project will not require intersection improvements at any of the eight (8) study intersections.

- ***Year 2050 Buildout Plus Project Recommended Improvements*** – The results of the intersection capacity analysis concludes that the proposed Project will not require intersection improvements at any of the eight (8) study intersections.