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April 14, 2023

Ms. Meghan Gibson
Chambers Group, Inc.
5 Hutton Centre Drive, Suite 750
Santa Ana, CA 92707

LLG Reference: 2.23.4653.1

Subject: **Focused Traffic Impact Assessment for the Proposed Chino Valley Fire Station 68 Project**
Chino Hills, California

Dear Ms. Gibson:

Linscott, Law & Greenspan, Engineers is pleased to present the findings of this Focused Traffic Impact Assessment for the proposed Chino Valley Fire Station 68 Project (herein after referred to as "Project") located south of the intersection of Pipeline Avenue and Soquel Canyon Parkway in the City of Chino Hills, California. The 3.74-acre project site is currently vacant. The proposed Project will consist of an 11,813 square foot (SF) Fire Station and a 6,332 SF Essential Resource Facility (ERF) for a total development of 18,145 SF. Access to the project site will be provided via two proposed driveways located along Soquel Canyon Parkway. The western driveway is an emergency response exit only. The eastern driveway is proposed as a right-turn in/right-turn out only driveway and will provide ingress/egress for the Fire Station and the ERF, as well as a return drive for the emergency vehicle (i.e. fire truck).

The Focused Traffic Impact Assessment for the proposed Project will satisfy the traffic impact requirements of the City of Chino Hills and will focus to the key study intersection of Pipeline Avenue at Soquel Canyon Parkway and the eastern Project driveway at Soquel Canyon Parkway. It should be noted that the Scope of Work for this assessment was developed in conjunction with City of Chino Hills Public Works Department staff. Included in this focused traffic impact assessment are:

1) Existing traffic counts,
2) Estimated Project traffic generation/distribution/assignment,
3) AM and PM peak hour analyses for existing traffic conditions,
4) AM and PM peak hour analyses for existing plus project traffic conditions,
5) AM and PM peak hour analyses for Year 2048 without and with project traffic conditions,
6) Site access and internal circulation evaluation, and
7) Vehicle Miles Traveled (VMT) Assessment.

PROJECT DESCRIPTION

The proposed Project site is located south of the intersection of Pipeline Avenue and Soquel Canyon Parkway in the City of Chino Hills, California. The 3.74-acre project site is currently vacant. ***Figure 1*** presents a vicinity map which illustrates the general location of the Project and depicts the study location and surrounding street system. ***Figure 2*** presents an aerial image of the existing site.

The proposed Project will consist of an 11,813 SF Fire Station and a 6,332 SF Essential Resource Facility (ERF) for a total development of 18,145 SF. The proposed Project is anticipated to be completed by August 2024. Access to the project site will be provided via two proposed driveways located along Soquel Canyon Parkway. The western driveway is an emergency response exit only. The eastern driveway is proposed as a right-turn in/right-turn out only driveway and will provide ingress/egress for the Fire Station and the ERF, as well as a return drive for the emergency vehicle (i.e. fire truck). ***Figure 3*** presents the proposed site plan for the proposed Project, prepared by PBK Architects.

EXISTING CONDITIONS

Existing Roadway Conditions

Figure 4 presents an inventory of the existing roadway conditions for the key study intersection of Pipeline Avenue at Soquel Canyon Parkway. This figure identifies the number of travel lanes and controls for the key study intersection.

Existing Traffic Volumes

AM peak hour and PM peak hour traffic counts were collected by Transportation Studies Inc. (TSI) on March 23, 2023 at the intersection of Pipeline Avenue at Soquel Canyon Parkway in order to develop the baseline peak hour traffic volume data for the intersection analysis.

Figure 5 illustrates the existing AM and PM peak hour traffic volumes at the intersection of Pipeline Avenue at Soquel Canyon Parkway.

Appendix A contains the detailed peak hour traffic count sheets for the intersection of Pipeline Avenue at Soquel Canyon Parkway.

Intersection Peak Hour Level of Service Methodology

AM and PM peak hour operating conditions for the key stop-controlled intersection and the project driveway were evaluated using the *Highway Capacity Manual* 7 (HCM 7) methodology.

Highway Capacity Manual (HCM) Method of Analysis

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable, which can reduce users' delay tolerance.

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 1***.

All-way stop-controlled intersections require every vehicle to stop at the intersection before proceeding. Because each driver must stop, the decision to proceed into the intersection is a function of traffic conditions on the other approaches. The time between subsequent vehicle departures depends on the degree of conflict that results between the vehicles and vehicles on the other approaches. This methodology determines the control delay for each lane on the approach, computes a weighted average for the whole approach, and computes a weighted average for the intersection as a whole. Level of service (LOS) at the approach and intersection levels is based solely on control delay. The HCM control delay value range for all-way stop-controlled intersections is also shown in *Table 1*.

Minimum LOS Thresholds and Significant Traffic Impact Criteria

Per City of Chino Hills requirements, impacts to local and regional transportation systems are considered significant if:

- According to the City of Chino Hills General Plan Circulation Element, LOS D is the minimum service level that should be achieved/maintained at all intersections. The City's TIA guidelines indicate that improvements would be required when the intersections or roadway projected to operate at LOS D or better without the Project would exceed LOS D with the Project. Improvements would also be required if added Project-related traffic results in an increase of 0.01 or more in the volume-to-capacity (V/C) ratio at a location that is projected to operate at LOS E or F without the Project.

TRAFFIC FORECASTING METHOD OF ANALYSIS

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

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

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

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

PROJECT TRAFFIC CHARACTERISTICS

Project Trip Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation rates 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 2 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and presents the forecast daily and peak hour project traffic volumes for a "typical" weekday. As shown in the upper portion of *Table 2,* the trip generation potential of the proposed Project was estimated based on ITE Land Use Code 575: Fire and Rescue Station trip rates.

Review of the lower portion of *Table 2* indicates that the proposed Project is forecast to generate 87 daily trips, with 9 trips (6 inbound, 3 outbound) produced in the AM peak hour and 9 trips (3 inbound, 6 outbound) produced in the PM peak hour on a "typical" weekday

Project Trip Distribution and Assignment

The directional traffic distribution pattern for the proposed Project is presented in ***Figure 6***. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers and regional access routes,
- expected localized traffic flow patterns based on adjacent street channelization, and presence of traffic signals,
- existing traffic volumes, and
- ingress/egress availability at the Project site.

The anticipated AM and PM peak hour traffic volumes associated with the proposed Project at the key study intersection of Pipeline Avenue at Soquel Canyon Parkway and at the Project Driveway are presented in ***Figure 7***. The traffic volume assignments presented in *Figure 7* reflect the traffic distribution characteristics shown in *Figure 6* and the traffic generation forecast presented in *Table 2.*

FUTURE TRAFFIC CONDITIONS

Existing Plus Project Traffic Volumes

The Existing plus Project traffic conditions have been generated based upon existing conditions and the estimated Project traffic. These forecast traffic conditions have been prepared pursuant to the City's requirement, which requires that the potential impacts of a Project be evaluated upon the circulation system, as it currently exists. This traffic volume scenario and the related analysis will identify the roadway improvements necessary to offset the direct traffic impacts of the Project, if any.

Figure 8 presents the projected AM and PM peak hour traffic volumes at the key study intersection and the project driveway with the addition of the trips generated by the proposed Project to existing peak hour traffic volumes.

Year 2048 Plus Project Traffic Volumes

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 existing Year 2023 traffic volumes results in a twenty-five percent (25.0%) growth in existing volumes to future horizon year 2048. It should be noted that the 25-year future forecast was requested by City of Chino Hills Public Works Department staff.

Figure 9 presents the Year 2048 AM and PM peak hour traffic volumes at the key study intersection. ***Figure 10*** illustrates the Year 2048 forecast AM and PM peak hour traffic volumes at the key study intersection and the project driveway with the inclusion of the trips generated by the proposed Project.

EXISTING PLUS PROJECT CAPACITY ANALYSIS

Table 3 summarizes the peak hour level of service results at the intersections of Pipeline Avenue at Soquel Canyon Parkway and the Project Driveway at Soquel Canyon Parkway for Existing plus Project traffic conditions. Review of column (1) of *Table 3* indicates that the intersection of Pipeline Avenue at Soquel Canyon Parkway currently operates at an acceptable level of service during the AM and PM peak hours. Review of columns (2) and (3) of *Table 3* indicates that traffic associated with the proposed Project *will not* adversely impact the intersection of Pipeline Avenue at Soquel Canyon Parkway when compared to the LOS standards and significant impact criteria specified in this report. The intersection of Pipeline Avenue at Soquel Canyon Parkway is forecast to continue to operate at an acceptable level of service during the AM and PM peak hours under Existing plus Project traffic conditions. Further review of *Table 3* indicates that the Project Driveway is also forecast to operate at an acceptable level of service during the AM and PM peak hours under Existing plus Project traffic conditions.

Appendix B contains the Existing and Existing plus Project AM peak hour and PM peak hour HCM/LOS calculation worksheets for the key study intersections.

YEAR 2048 PLUS PROJECT CAPACITY ANALYSIS

Table 4 summarizes the peak hour level of service results at the intersections of Pipeline Avenue at Soquel Canyon Parkway and the Project Driveway at Soquel Canyon Parkway for Year 2048 plus Project traffic conditions. Review of column (2) of *Table 4* indicates that the intersection of Pipeline Avenue at Soquel Canyon Parkway is forecast to continue to operate in the Year 2048 at an acceptable level of service during the AM and PM peak hours. Review of columns (3) and (4) of *Table 4* indicates that traffic associated with the proposed Project *will not* adversely impact the intersection of Pipeline Avenue at Soquel Canyon Parkway when compared to the

LOS standards and significant impact criteria specified in this report. The intersection of Pipeline Avenue at Soquel Canyon Parkway is forecast to continue to operate at an acceptable level of service during the AM and PM peak hours under Year 2048 plus Project traffic conditions. Further review of *Table 4* indicates that the Project Driveway is also forecast to operate at an acceptable level of service during the AM and PM peak hours under Year 2048 plus Project traffic conditions.

Appendix B also contains the Year 2048 without and with Project AM peak hour and PM peak hour HCM/LOS calculation worksheets for the key study intersections.

SITE ACCESS AND INTERNAL CIRCULATION EVALUATION

As shown previously in *Tables 3* and *4*, the Project driveway along Soquel Canyon Parkway is forecast to operate at acceptable levels of service during the AM peak hour and PM peak hour under Existing plus Project traffic conditions and under Year 2048 plus Project traffic conditions. As such, project access will be adequate. Motorists entering and exiting the Project site will be able to do so without undue congestion.

The on-site circulation layout of the proposed Project as illustrated in *Figure 3* on an overall basis is adequate. Curb return radii appear adequate for passenger cars, service/delivery trucks and fire trucks.

VEHICLE MILES TRAVELED (VMT) ASSESSMENT

On December 28, 2018, the California Natural Resources Agency adopted revised CEQA Guidelines. Among the changes to the guidelines was the removal of vehicle delay and LOS from consideration for transportation impacts under CEQA. With the adopted guidelines, transportation impacts are to be evaluated based on a project's effect on vehicle miles traveled. Lead agencies are allowed to continue using their current impact criteria, or to opt into the revised transportation guidelines. However, the new guidelines must be used starting July 1, 2020, as required in CEQA section 15064.3. The City of Chino Hills recently adopted new vehicle miles traveled guidelines in April 2022 to be consistent with the CEQA revisions. These new guidelines are contained within the *City of Chino Hills Vehicle Miles Traveled (VMT) Guidelines Implementation Policy,* dated April 2022 and provide screening criteria and methodology for VMT analysis.

Per the *City of Chino Hills VMT Guidelines Implementation Policy*, there are three types of screening to screen projects from project-level VMT assessments. The three screening steps are described below. The results of each screening step applied to the

proposed Project is also discussed. It should be noted that the project only needs to satisfy one of the three screening steps.

Screening Criterion #1: Small Projects

Absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or the General Plan, projects that generate or attract fewer than 110 trips per day may be assumed to cause a less-than-significant transportation impact. This screening threshold is premised on and consistent with CEQA's Class 1 categorial exemption (Guidelines, § 15301(e)(2)) and is suggested for use by OPR in its Technical Advisory. Accordingly, a qualifying land use project would be screened out and would not require a full VMT impact analysis.

- *Based on Table 2, the proposed Project is forecast to generate 87 daily trips, which is less than the aforementioned 110 trips per day threshold. Therefore, Screening Criterion #1: Small Projects* ***is satisfied****.*

Screening Criterion 2: Local-Serving Commercial and Public Facilities, and Affordable Housing

The City, in its discretion, will determine a development project's specific land use type. Projects that are considered "local-serving" and "affordable housing" for the purposes of this VMT screening criteria include, without limitation:

- Local-serving retail uses of 50,000 square feet or less (i.e., corresponding to the most current ITE Trip Generation Manual's Land Use Code 800's for "Retail" and/or 900's for "Services").

- Local-serving public facility (i.e., public schools, libraries, post offices, police and fire facilities, local government offices).

- Deed-restricted housing project with 100% of the units corresponding to affordable to lower-income households.

- For a project to be local serving, its users (residents, customers, employees, visitors) must primarily be from the local area. If the project is not one or more of the identified land uses (or not considered to fit within any of the land use categories by City staff), the project cannot be screened under Criteria #2. Conversely, if the project is for one or more of the identified land uses, the project can be screened under Criteria #2 and no further analysis for VMT is needed.

- *Based on the project description, the project is considered a local serving public facility (i.e. fire station). Therefore, Screening Criterion #2: Local-Serving Commercial and Public Facilities, and Affordable Housing* ***is satisfied****.*

Screening Criterion 3: Low VMT Areas, Mixed-Use Projects, Redevelopment Projects, Previously Entitled Projects, and Project Consistency with City Planning Framework

Development projects that locate in Low VMT Areas of the City and incorporate features similar to existing development (i.e. density, mix of uses, transit accessibility) will tend to exhibit similarly low VMT. Based on this, a project located in a Low VMT Area of the City depicted on *Figures 1* and *2* of the City's guidelines, and that incorporates features similar to existing development (i.e. density, mix of uses, transit accessibility) would meet the screening criteria and will be presumed to cause a less-than significant transportation impact. Consequently, the project would not be required to complete a full VMT impact analysis.

- *Based on review of Figures 1 and 2 of the City's guidelines, the proposed Project site is not located in a Low VMT Area. Therefore, Screening Criterion #3: Low VMT Areas, Mixed-Use Projects, Redevelopment Projects, Previously Entitled Projects, and Project Consistency with City Planning Framework* ***is not satisfied****.*

Based on the City's guidelines, the proposed Project ***satisfies*** Screening Criterion #1: Small Projects and Screening Criterion #2: Local-Serving Commercial and Public Facilities, and Affordable Housing. Therefore, this project could be screened from a full VMT analysis and could be presumed to have a less than significant impact on VMT per the *City of Chino Hills Vehicle Miles Traveled (VMT) Guidelines Implementation Policy,* dated April 2022.

CONCLUSION

- The proposed Project site is located south of the intersection of Pipeline Avenue and Soquel Canyon Parkway in the City of Chino Hills, California. The 3.74-acre project site is currently vacant. The proposed Project will consist of an 11,813 SF Fire Station and a 6,332 SF Essential Resource Facility (ERF) for a total development of 18,145 SF. The proposed Project is anticipated to be completed by August 2024. Access to the project site will be provided via two proposed driveways located along Soquel Canyon Parkway. The western driveway is an emergency response exit only. The eastern driveway is proposed as a right-turn in/right-turn out only driveway and will provide ingress/egress for the Fire Station and the ERF, as well as a return drive for the emergency vehicle (i.e. fire truck).

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- The proposed Project is forecast to generate 87 daily trips, with 9 trips (6 inbound, 3 outbound) produced in the AM peak hour and 9 trips (3 inbound, 6 outbound) produced in the PM peak hour on a "typical" weekday.

- The proposed Project *will not* adversely impact the intersection of Pipeline Avenue at Soquel Canyon Parkway when compared to the LOS standards and significant impact criteria specified in this report. The intersection of Pipeline Avenue at Soquel Canyon Parkway is forecast to continue to operate at an acceptable level of service during the AM and PM peak hours under Existing plus Project traffic conditions and under Year 2048 plus Project traffic conditions.

- The Project driveway along Soquel Canyon Parkway is forecast to operate at acceptable levels of service during the AM peak hour and PM peak hour under Existing plus Project traffic conditions and under Year 2048 plus Project traffic conditions. As such, project access will be adequate. Motorists entering and exiting the Project site will be able to do so without undue congestion. The on-site circulation layout of the proposed Project on an overall basis is adequate. Curb return radii appear adequate for passenger cars, service/delivery trucks and fire trucks.

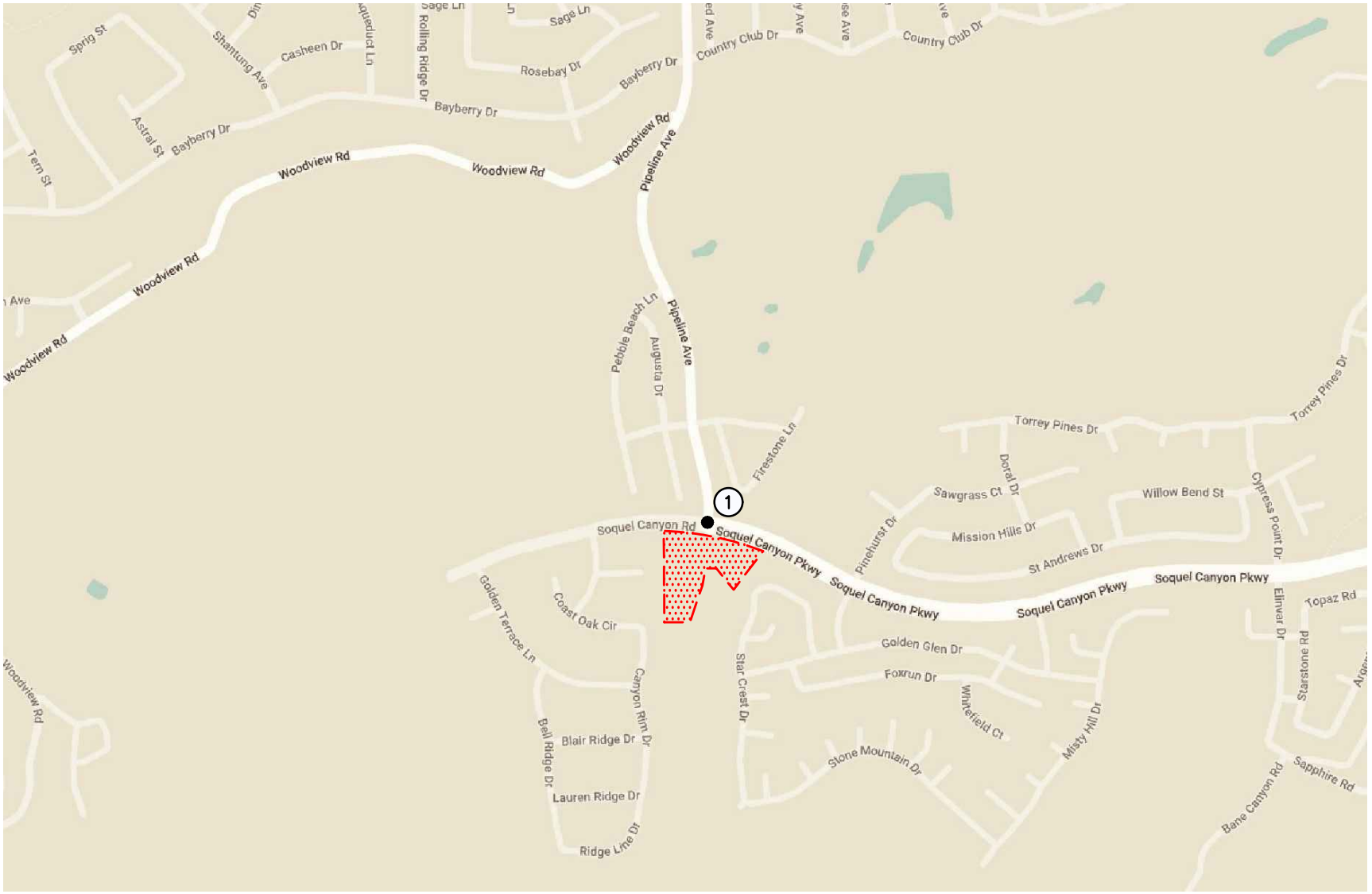
- Based on the City's guidelines, the proposed Project ***satisfies*** Screening Criterion #1: Small Projects and Screening Criterion #2: Local-Serving Commercial and Public Facilities, and Affordable Housing. Therefore, this project could be screened from a full VMT analysis and could be presumed to have a less than significant impact on VMT per the *City of Chino Hills Vehicle Miles Traveled (VMT) Guidelines Implementation Policy,* dated April 2022

We appreciate the opportunity to provide this Focused Traffic Impact Assessment for the proposed Chino Valley Fire Station 68 Project. If you have any questions regarding this letter, please do not hesitate to call us at (949) 825-6175.

Very truly yours,
Linscott, Law & Greenspan, Engineers

Daniel A. Kloos, P.E.
Associate Principal

Attachments



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N NO SCALE

SOURCE: GOOGLE

KEY

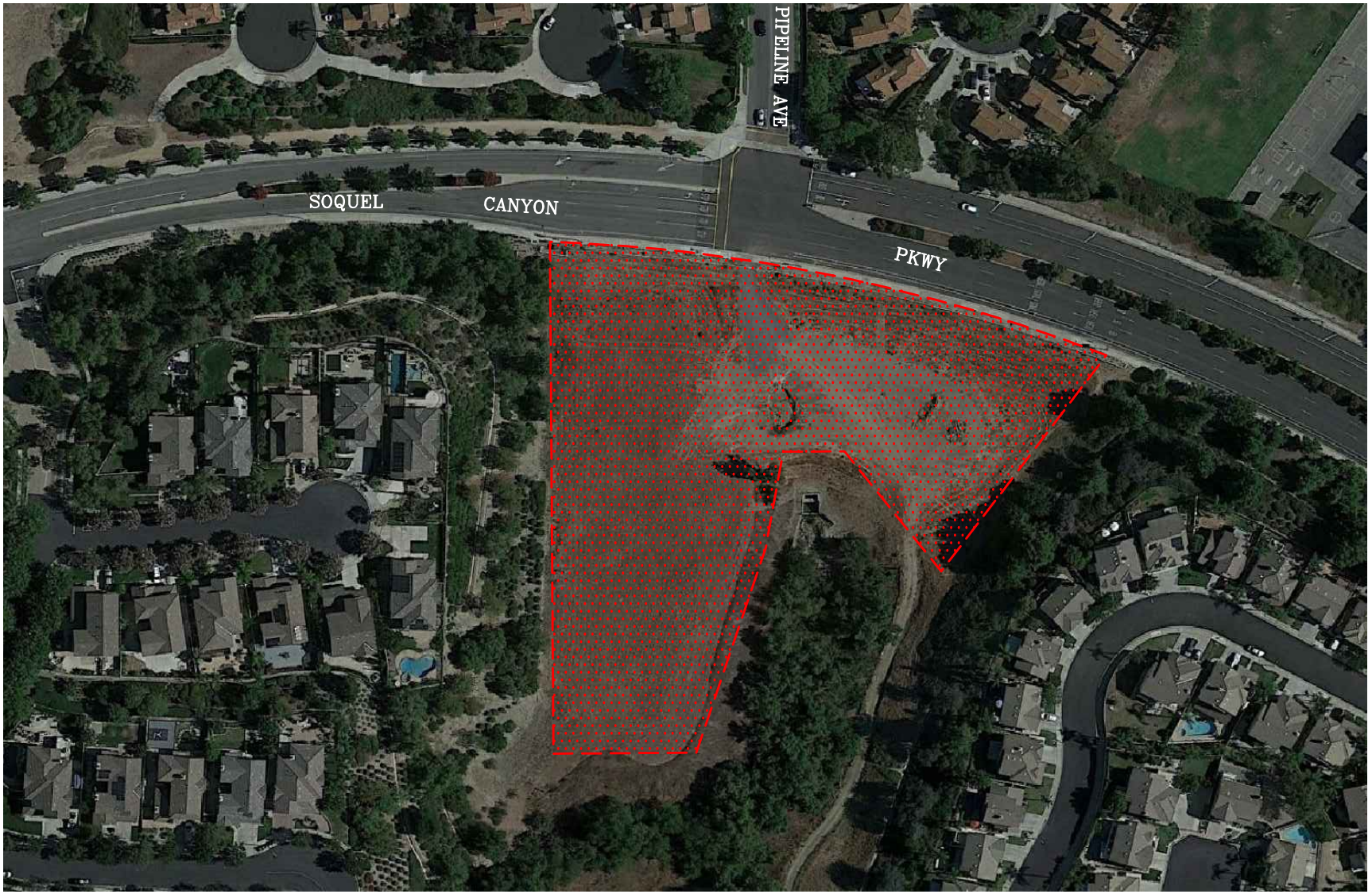
(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1

VICINITY MAP

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



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SOURCE: GOOGLE

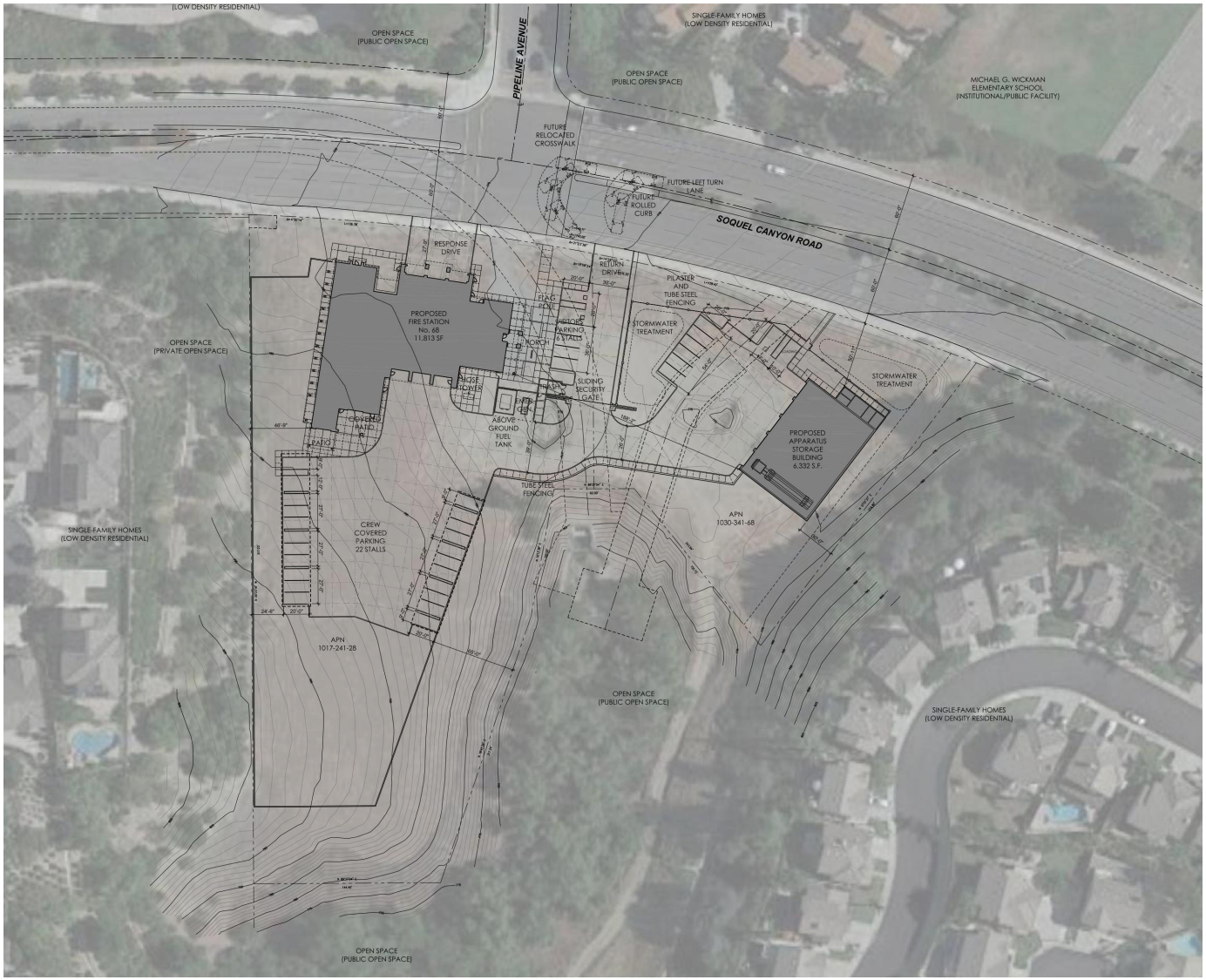
KEY

= PROJECT SITE

FIGURE 2

EXISTING SITE AERIAL

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



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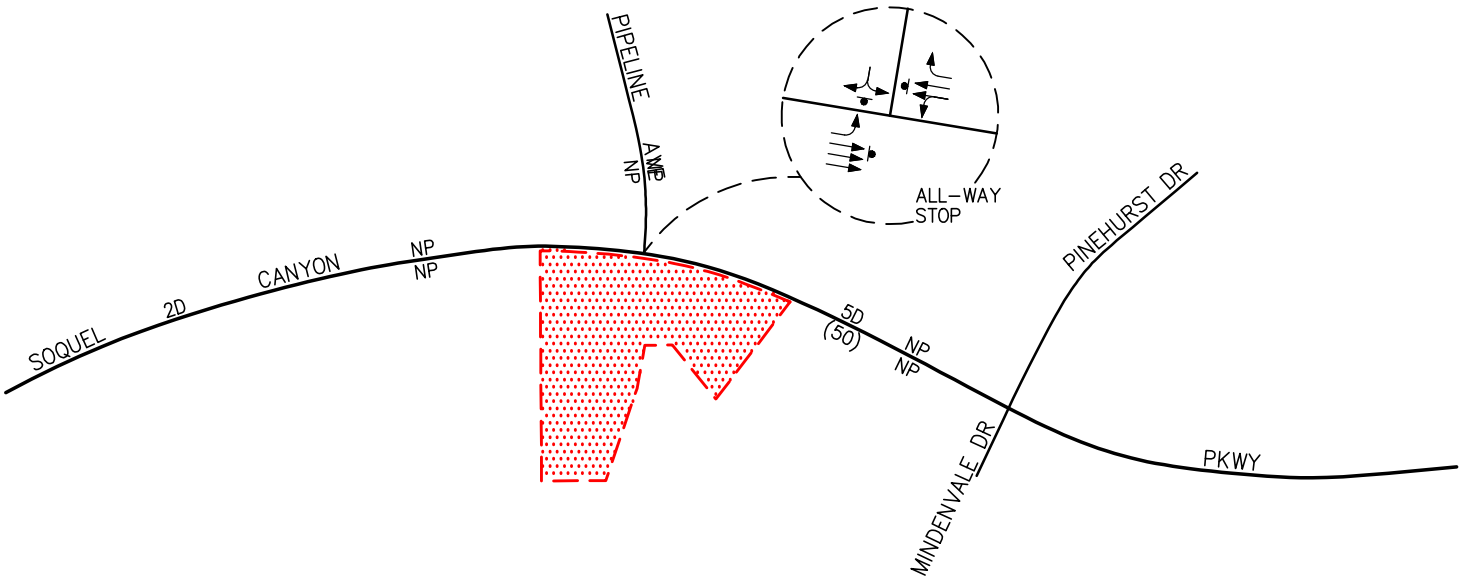
SOURCE: PBK ARCHITECTS

FIGURE 3

PROPOSED SITE PLAN

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



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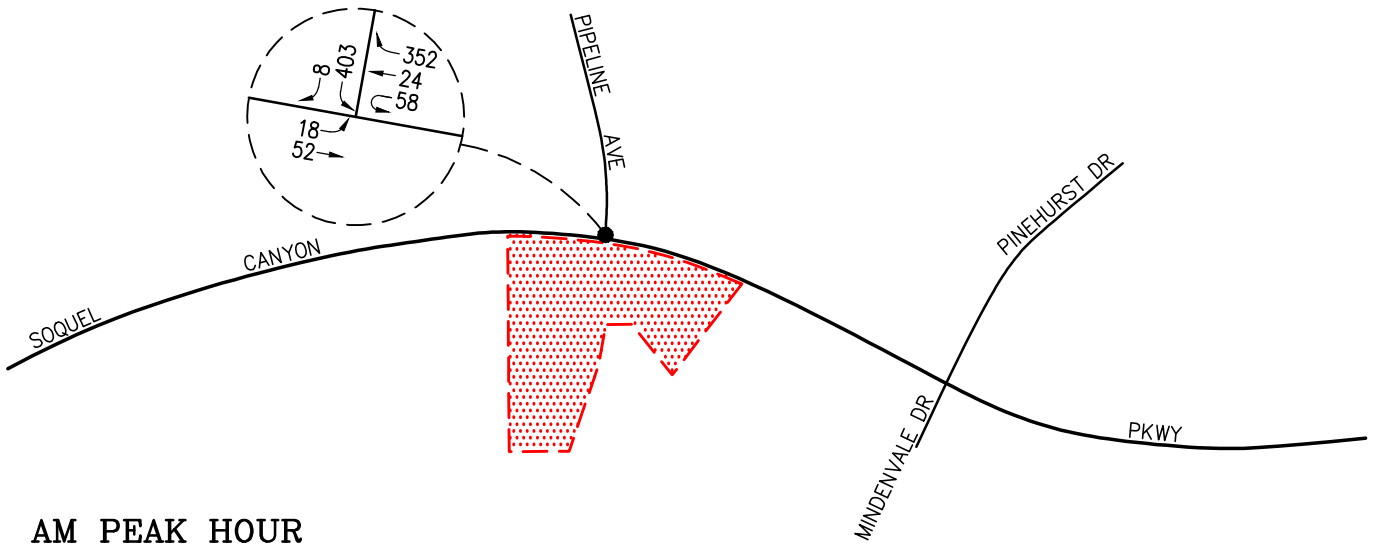
KEY

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

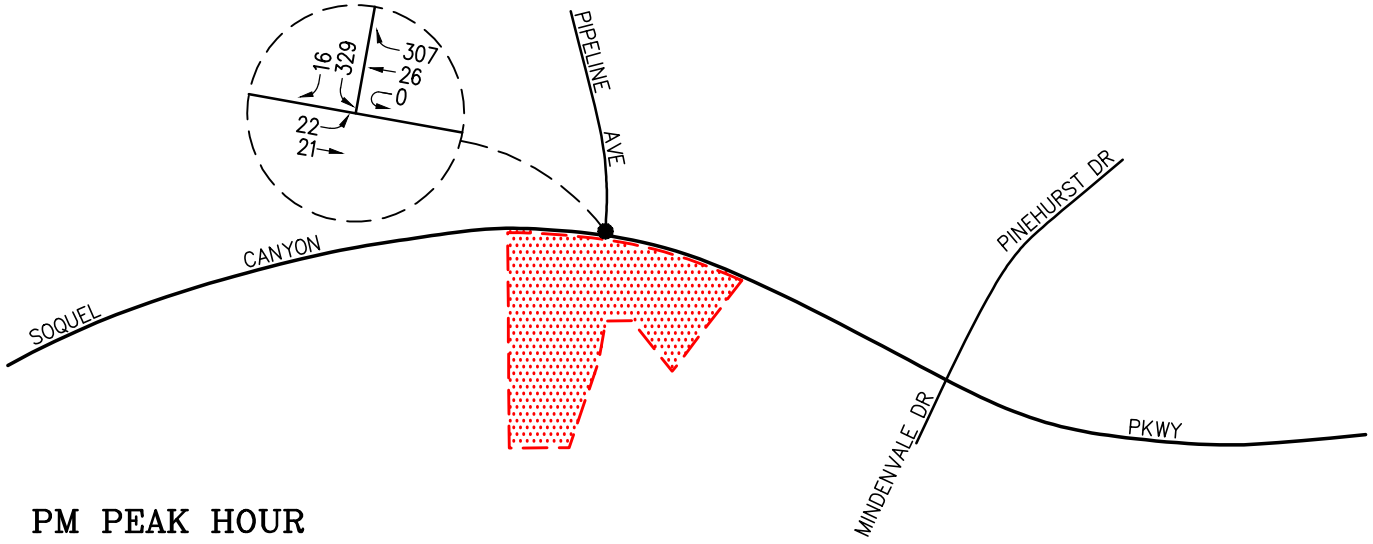
FIGURE 4

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



AM PEAK HOUR



PM PEAK HOUR

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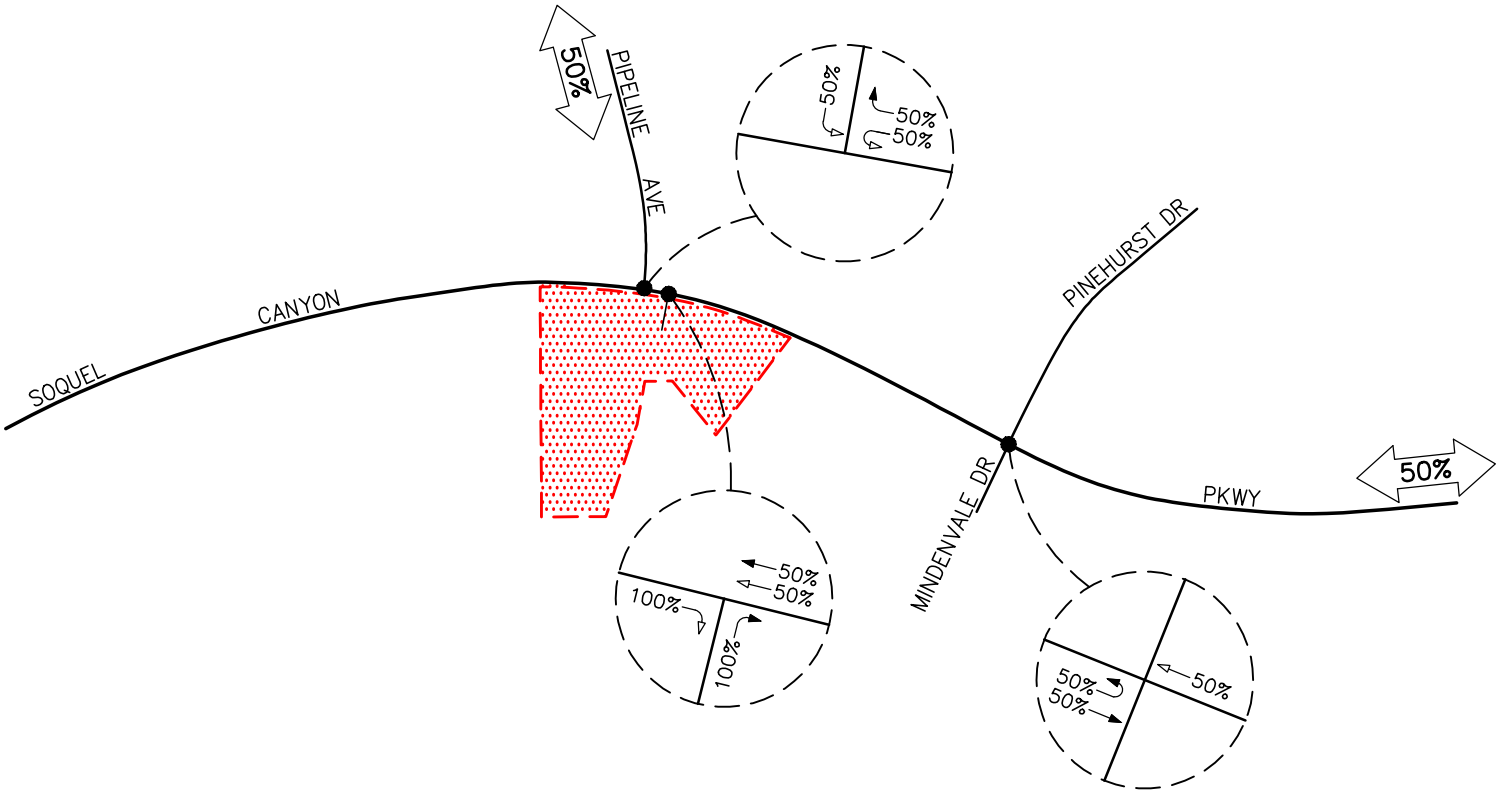
KEY
= PROJECT SITE

FIGURE 5

EXISTING AM AND PM PEAK HOUR TRAFFIC VOLUMES

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



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N NO SCALE

KEY

= INBOUND PERCENTAGE

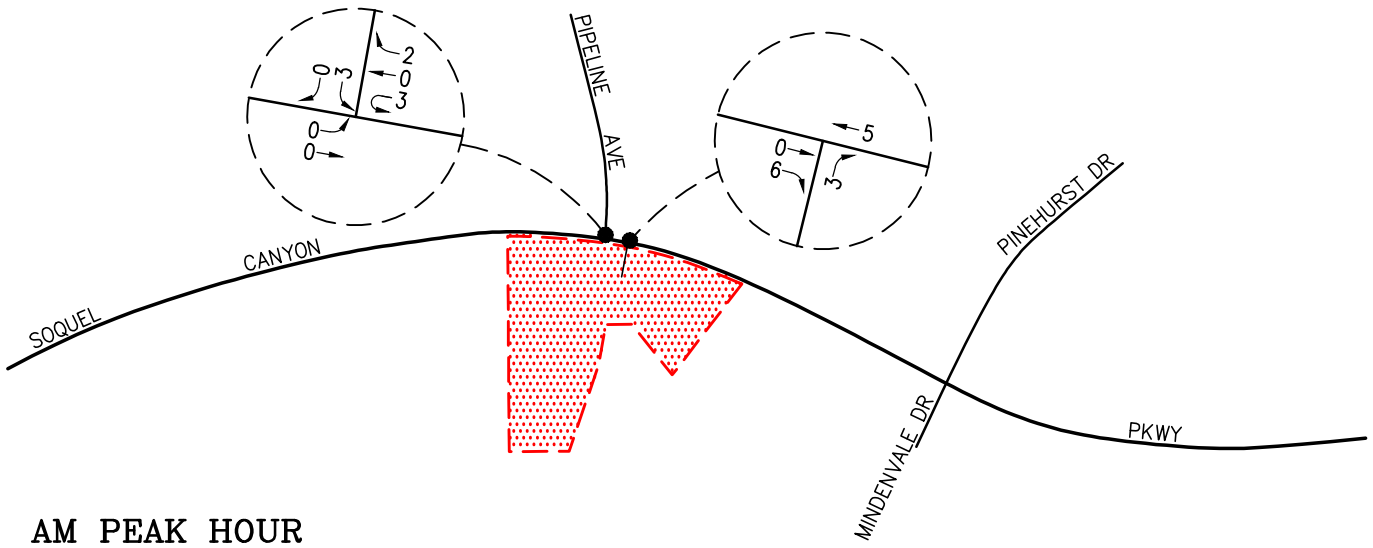
= OUTBOUND PERCENTAGE

= PROJECT SITE

FIGURE 6

PROJECT TRAFFIC DISTRIBUTION PATTERN

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



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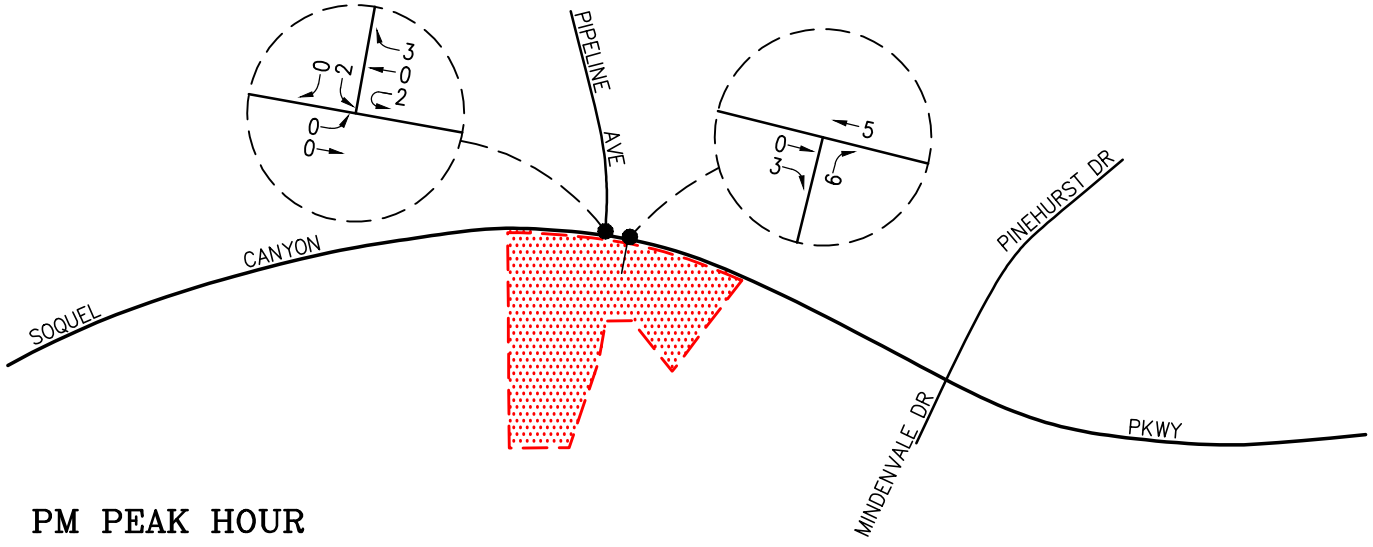

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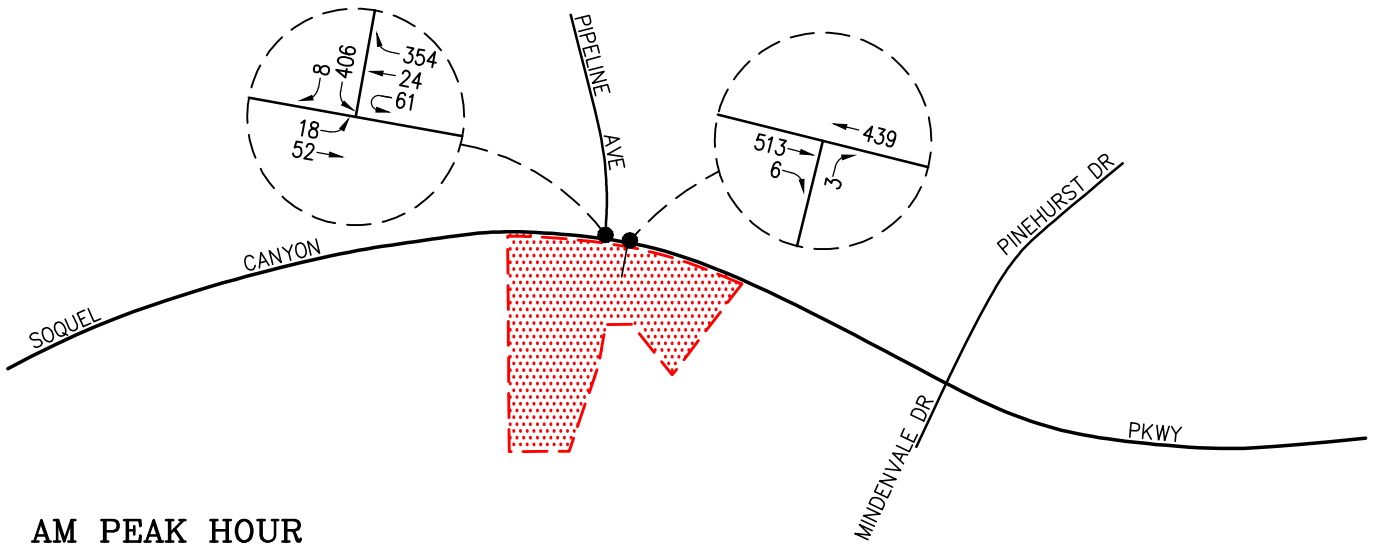
KEY
= PROJECT SITE

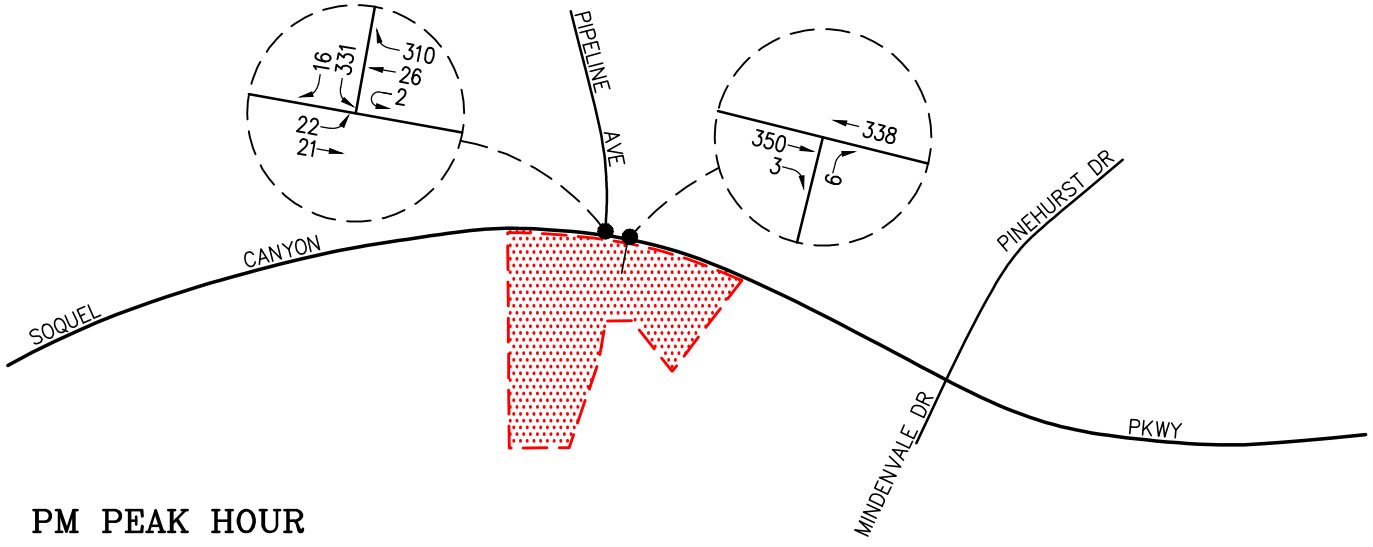
FIGURE 7

AM AND PM PEAK HOUR PROJECT TRAFFIC VOLUMES

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



AM PEAK HOUR



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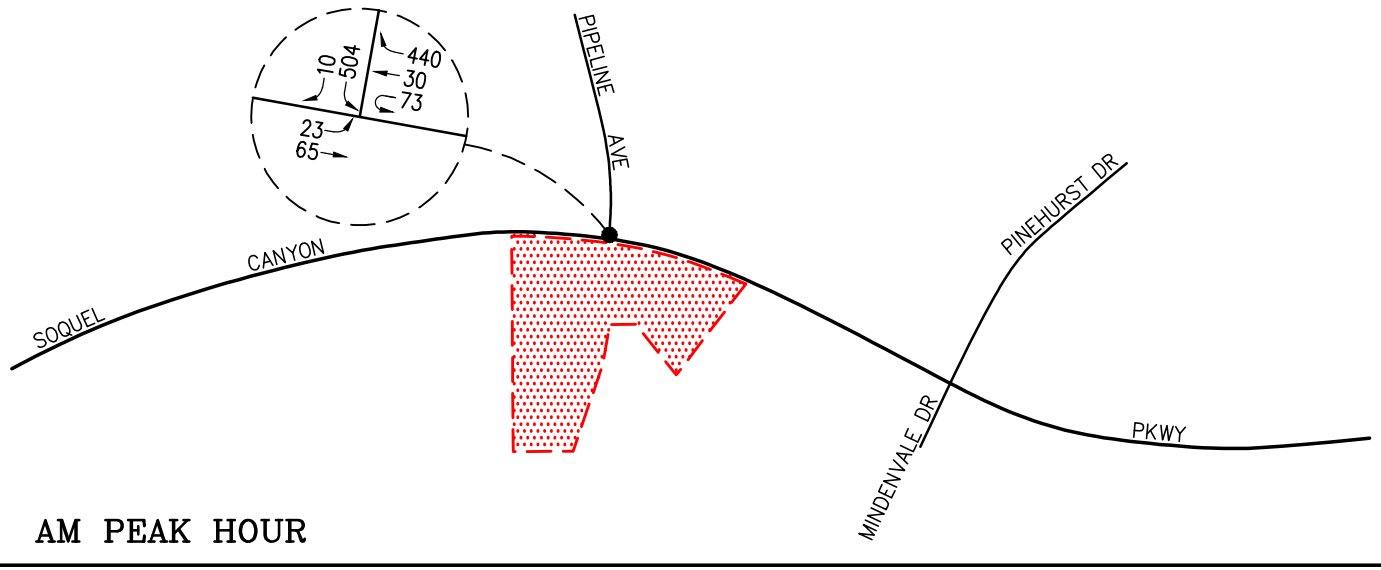
= PROJECT SITE

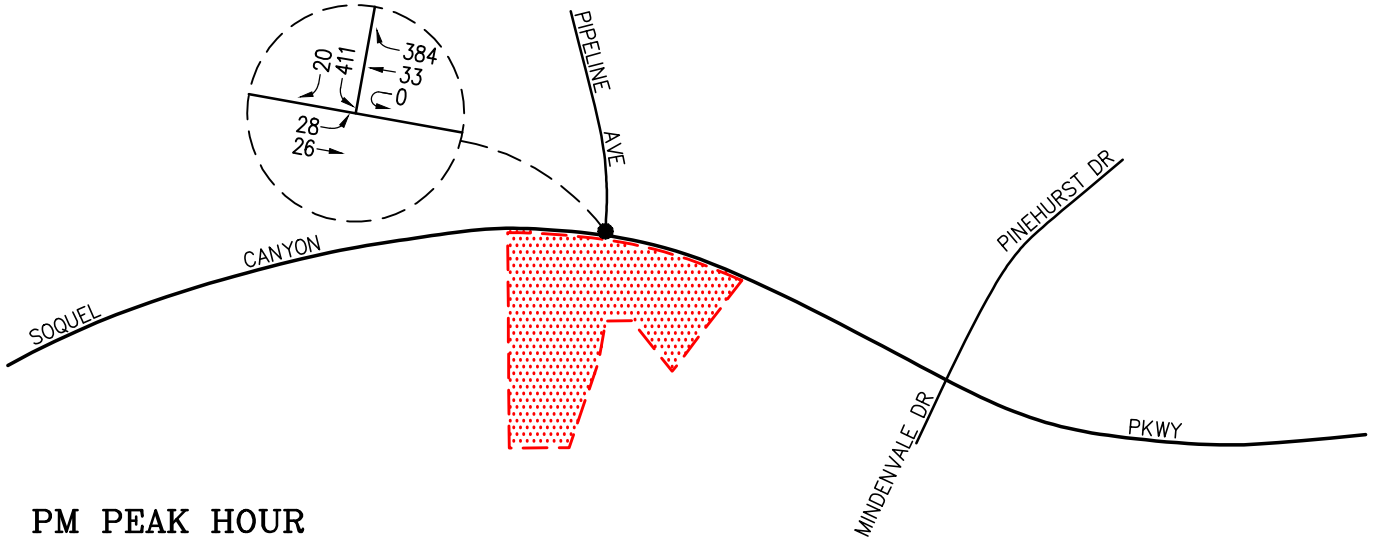
FIGURE 8

EXISTING PLUS PROJECT AM AND PM PEAK HOUR TRAFFIC VOLUMES

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



AM PEAK HOUR



PM PEAK HOUR

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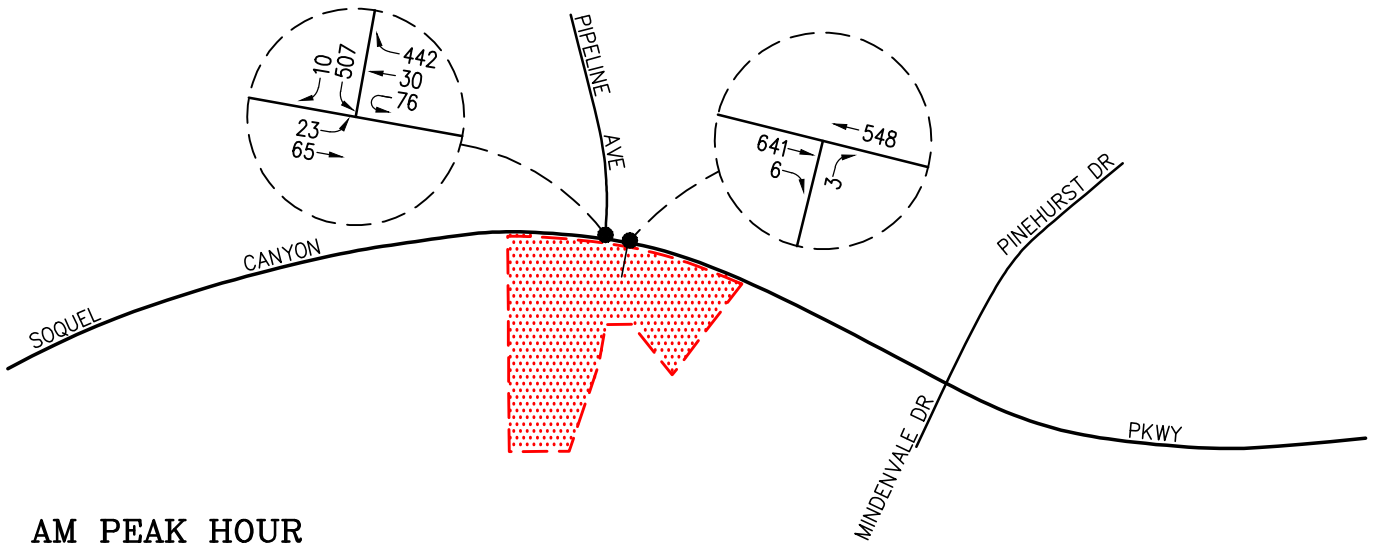
KEY
= PROJECT SITE

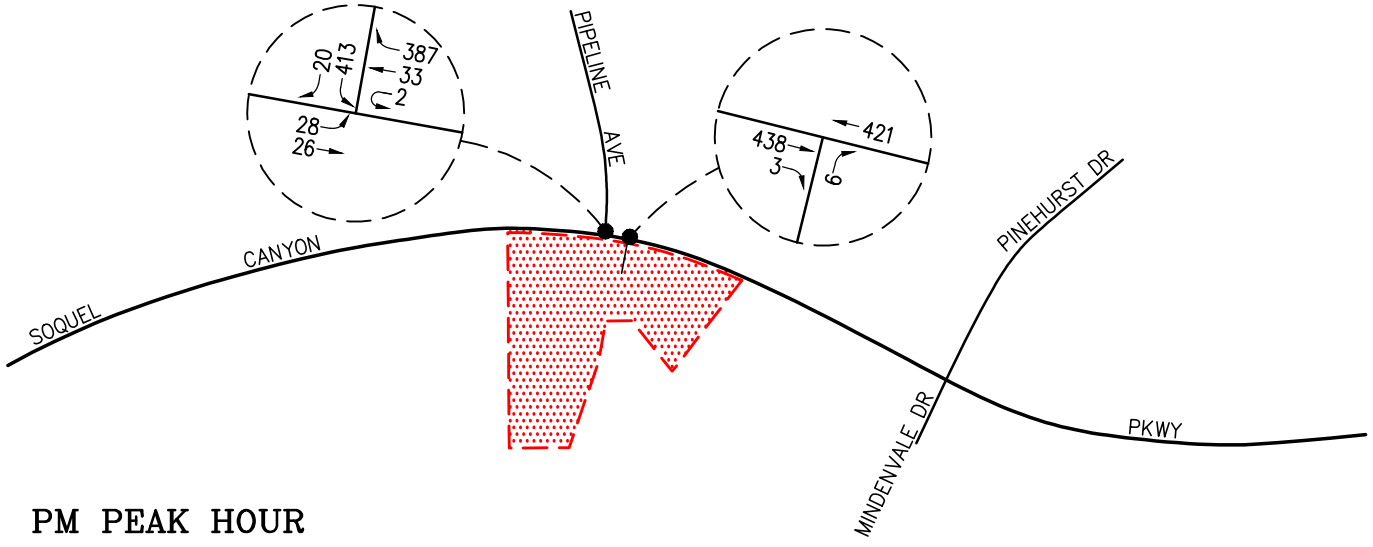
FIGURE 9

YEAR 2048 AM AND PM PEAK HOUR TRAFFIC VOLUMES

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS



AM PEAK HOUR



PM PEAK HOUR

n:\4600\2234653 - chino valley fire station 68 project, chino hills\dwg\4653 f-10.dwg LDP 16:07:47 04-12-2023 kopulsky

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY
= PROJECT SITE

FIGURE 10

YEAR 2048 PLUS PROJECT AM AND PM PEAK HOUR TRAFFIC VOLUMES

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS

LINSCOTT LAW & GREENSPAN engineers

TABLE 1

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 7 METHODOLOGY) [1,2]

CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS

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. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

2 Source: *Highway Capacity Manual 7*, Chapter 21: All-Way Stop-Controlled Intersections. For approaches and intersection-wide assessment, LOS is defined solely by control delay.

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TABLE 2
PROJECT TRAFFIC GENERATION FORECAST[3]
CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS

ITE Land Use Code / Project Description	Daily	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Generation Rates:							
▪ 575: Fire and Rescue Station (TE/TSF)	4.80[4]	71%[5]	29%[5]	0.48[5]	29%	71%	0.48
Generation Forecasts:							
▪ Chino Valley Fire Station 68 Project (18,145 SF)	87	6	3	9	3	6	9

Notes:
- TE/TSF = Trip End per Thousand Square Feet

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

[4] Due to unavailable daily trip generation data for ITE Land Use 575: Fire and Rescue Station (Trip Ends Per Thousand Square Feet), the daily rate was based on the total PM peak hour rate multiplied by 10 resulting in: 0.48 * 10 = 4.80.

[5] Due to unavailable AM peak hour trip generation data for ITE Land Use 575: Fire and Rescue Station (Trip Ends Per Thousand Square Feet), the AM peak hour rate was based on the total PM peak hour rate, with the entering and exiting percentages assumed to be the reverse of the PM peak hour enter/exit percentages.

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TABLE 3
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS

Key Intersections	Time Period	(1) Existing Traffic Conditions			(2) Existing With Project Traffic Conditions			(3) Exceeds LOS Thresholds		
		Delay (s/v)	V/C	LOS	Delay (s/v)	V/C	LOS	Delay Increase	V/C Increase	Yes/No
1. Pipeline Avenue at Soquel Canyon Parkway	AM	20.0	0.767	C	20.4	0.776	C	0.4	0.009	No
	PM	13.8	0.574	B	13.9	0.578	B	0.1	0.004	No
2. Project Driveway at Soquel Canyon Parkway	AM	--	--	--	10.9	0.005	B	--	--	--
	PM	--	--	--	10.2	0.009	B	--	--	--

Notes:
- s/v = seconds per vehicle

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TABLE 4
YEAR 2048 PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
CHINO VALLEY FIRE STATION 68 PROJECT, CHINO HILLS

Key Intersections	Time Period	(1) Existing Traffic Conditions			(2) Year 2048 Buildout Traffic Conditions			(3) Year 2048 Buildout With Project Traffic Conditions			(4) Exceeds LOS Thresholds		
		Delay (s/v)	V/C	LOS	Delay (s/v)	V/C	LOS	Delay (s/v)	V/C	LOS	Delay Increase	V/C Increase	Yes/No
1. Pipeline Avenue at Soquel Canyon Parkway	AM	20.0	0.767	C	29.6	0.898	D	30.3	0.905	D	0.7	0.007	No
	PM	13.8	0.574	B	17.9	0.702	C	18.1	0.707	C	0.2	0.005	No
2. Project Driveway at Soquel Canyon Parkway	AM	--	--	--	--	--	--	11.3	0.005	B	--	--	--
	PM	--	--	--	--	--	--	10.5	0.009	B	--	--	--

Notes:
- s/v = seconds per vehicle

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City : Chino Hills
N-S Direction : Pipeline Ave
E-W Direction: Soquel Canyon Rd

File Name : h2303040
Site Code : 00000000
Start Date : 3/23/2023
Page No : 1

Groups Printed- Turning Movements

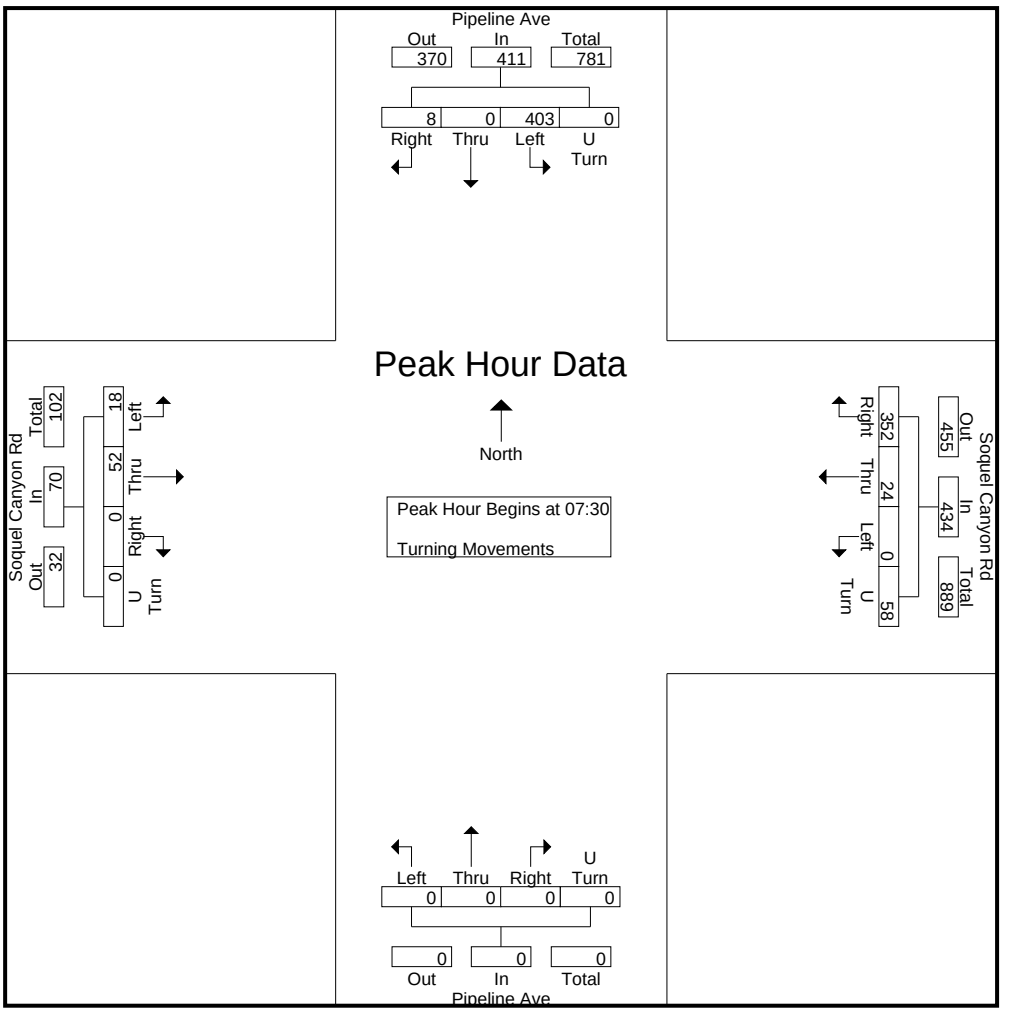
	Pipeline Ave Southbound				Soquel Canyon Rd Westbound				Pipeline Ave Northbound				Soquel Canyon Rd Eastbound				
Start Time	Right	Thru	Left	U Turn	Right	Thru	Left	U Turn	Right	Thru	Left	U Turn	Right	Thru	Left	U Turn	Int. Total
07:00	4	0	30	0	57	1	0	0	0	0	0	0	0	5	5	0	102
07:15	2	0	49	0	59	3	0	0	0	0	0	0	0	6	10	0	129
07:30	1	0	61	0	69	6	0	43	0	0	0	0	0	16	5	0	201
07:45	3	0	89	0	79	5	0	15	0	0	0	0	0	10	5	0	206
Total	10	0	229	0	264	15	0	58	0	0	0	0	0	37	25	0	638
08:00	1	0	133	0	94	6	0	0	0	0	0	0	0	15	5	0	254
08:15	3	0	120	0	110	7	0	0	0	0	0	0	0	11	3	0	254
08:30	2	0	50	0	117	6	0	0	0	0	0	0	0	5	4	0	184
08:45	2	0	67	0	101	0	0	0	0	0	0	0	0	4	7	0	181
Total	8	0	370	0	422	19	0	0	0	0	0	0	0	35	19	0	873
16:00	9	0	79	0	74	11	0	0	0	0	0	0	0	4	2	0	179
16:15	7	0	77	0	51	4	0	0	0	0	0	0	0	5	4	0	148
16:30	5	0	84	0	81	5	0	0	0	0	0	0	0	7	9	0	191
16:45	4	0	74	0	92	2	0	0	0	0	0	0	0	2	8	0	182
Total	25	0	314	0	298	22	0	0	0	0	0	0	0	18	23	0	700
17:00	3	0	82	0	65	6	0	0	0	0	0	0	0	8	1	0	165
17:15	4	0	89	0	69	13	0	0	0	0	0	0	0	4	4	0	183
17:30	4	0	60	0	79	11	0	0	0	0	0	0	0	5	7	1	167
17:45	4	0	89	0	40	8	0	0	0	0	0	0	0	7	2	1	151
Total	15	0	320	0	253	38	0	0	0	0	0	0	0	24	14	2	666
Grand Total	58	0	1233	0	1237	94	0	58	0	0	0	0	0	114	81	2	2877
Apprch %	4.5	0	95.5	0	89.1	6.8	0	4.2	0	0	0	0	0	57.9	41.1	1	
Total %	2	0	42.9	0	43	3.3	0	2	0	0	0	0	0	4	2.8	0.1	

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City : Chino Hills
N-S Direction : Pipeline Ave
E-W Direction: Soquel Canyon Rd

File Name : h2303040
Site Code : 00000000
Start Date : 3/23/2023

	Pipeline Ave Southbound					Soquel Canyon Rd Westbound					Pipeline Ave Northbound					Soquel Canyon Rd Eastbound					
Start Time	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	1	0	61	0	62	69	6	0	43	118	0	0	0	0	0	0	16	5	0	21	201
07:45	3	0	89	0	92	79	5	0	15	99	0	0	0	0	0	0	10	5	0	15	206
08:00	1	0	133	0	134	94	6	0	0	100	0	0	0	0	0	0	15	5	0	20	254
08:15	3	0	120	0	123	110	7	0	0	117	0	0	0	0	0	0	11	3	0	14	254
Total Volume	8	0	403	0	411	352	24	0	58	434	0	0	0	0	0	0	52	18	0	70	915
% App. Total	1.9	0	98.1	0		81.1	5.5	0	13.4		0	0	0	0		0	74.3	25.7	0		
PHF	.667	.000	.758	.000	.767	.800	.857	.000	.337	.919	.000	.000	.000	.000	.000	.000	.813	.900	.000	.833	.901

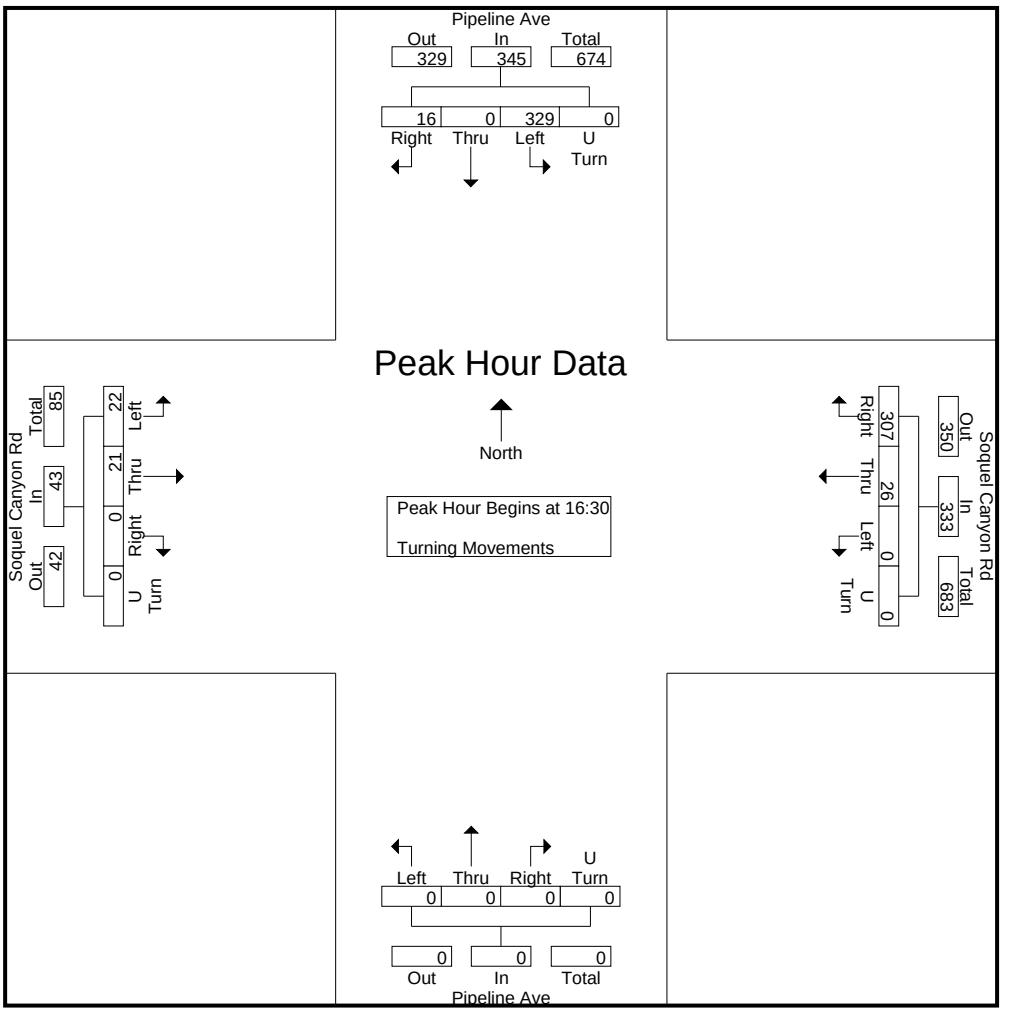


Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City : Chino Hills
N-S Direction : Pipeline Ave
E-W Direction: Soquel Canyon Rd

File Name : h2303040
Site Code : 00000000
Start Date : 3/23/2023
Page No : 3

	Pipeline Ave Southbound					Soquel Canyon Rd Westbound					Pipeline Ave Northbound					Soquel Canyon Rd Eastbound					
Start Time	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Right	Thru	Left	U Turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	5	0	84	0	89	81	5	0	0	86	0	0	0	0	0	0	7	9	0	16	191
16:45	4	0	74	0	78	92	2	0	0	94	0	0	0	0	0	0	2	8	0	10	182
17:00	3	0	82	0	85	65	6	0	0	71	0	0	0	0	0	0	8	1	0	9	165
17:15	4	0	89	0	93	69	13	0	0	82	0	0	0	0	0	0	4	4	0	8	183
Total Volume	16	0	329	0	345	307	26	0	0	333	0	0	0	0	0	0	21	22	0	43	721
% App. Total	4.6	0	95.4	0		92.2	7.8	0	0		0	0	0	0		0	48.8	51.2	0		
PHF	.800	.000	.924	.000	.927	.834	.500	.000	.000	.886	.000	.000	.000	.000	.000	.000	.656	.611	.000	.672	.944



APPENDIX B

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX B-I

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	403	8	18	52	58	24	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	403	8	18	52	58	24	352
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	2	5	14	16	7	98
Total Analysis Volume [veh/h]	447	9	20	58	64	27	391
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	595	484	521	521	521	518	561	634
Degree of Utilization, x	0.77	0.04	0.04	0.04	0.04	0.12	0.05	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.03	0.13	0.12	0.12	0.12	0.42	0.15	4.24
95th-Percentile Queue Length [ft]	175.67	3.22	2.89	2.89	2.89	10.49	3.79	106.08
Approach Delay [s/veh]	26.20	10.03				15.81		
Approach LOS	D	B				C		
Intersection Delay [s/veh]	20.03							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	329	16	22	21	0	26	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	16	22	21	0	26	307
Peak Hour Factor	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	4	6	6	0	7	81
Total Analysis Volume [veh/h]	349	17	23	22	0	28	325
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	638	536	581	581	581	611	611	696
Degree of Utilization, x	0.57	0.04	0.01	0.01	0.01	0.02	0.02	0.47

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.64	0.13	0.04	0.04	0.04	0.07	0.07	2.49
95th-Percentile Queue Length [ft]	91.11	3.36	0.96	0.96	0.96	1.76	1.76	62.32
Approach Delay [s/veh]	15.95	9.36				12.03		
Approach LOS	C	A				B		
Intersection Delay [s/veh]	13.75							
Intersection LOS	B							

APPENDIX B-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	406	8	18	52	61	24	354
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	8	18	52	61	24	354
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	2	5	14	17	7	98
Total Analysis Volume [veh/h]	451	9	20	58	68	27	393
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	593	482	518	518	518	517	559	631
Degree of Utilization, x	0.78	0.04	0.04	0.04	0.04	0.13	0.05	0.62

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	7.23	0.13	0.12	0.12	0.12	0.45	0.15	4.32
95th-Percentile Queue Length [ft]	180.78	3.24	2.90	2.90	2.90	11.28	3.80	108.06
Approach Delay [s/veh]	26.92	10.06				15.99		
Approach LOS	D	B				C		
Intersection Delay [s/veh]	20.44							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 2: Project Driveway at Soquel Canyon Parkway

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Base Volume Input [veh/h]	0	3	513	6	0	439
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	513	6	0	439
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	135	2	0	116
Total Analysis Volume [veh/h]	0	3	540	6	0	462
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	10.86	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.37	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.86		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	331	16	22	21	2	26	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	331	16	22	21	2	26	310
Peak Hour Factor	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440	0.9440
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	4	6	6	1	7	82
Total Analysis Volume [veh/h]	351	17	23	22	2	28	328
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	637	535	579	579	579	602	610	695
Degree of Utilization, x	0.58	0.04	0.01	0.01	0.01	0.02	0.02	0.47

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.70	0.13	0.04	0.04	0.04	0.08	0.08	2.54
95th-Percentile Queue Length [ft]	92.52	3.36	0.96	0.96	0.96	1.91	1.89	63.54
Approach Delay [s/veh]	16.11	9.38				12.12		
Approach LOS	C	A				B		
Intersection Delay [s/veh]	13.86							
Intersection LOS	B							

Intersection Level Of Service Report
Intersection 2: Project Driveway at Soquel Canyon Parkway

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Base Volume Input [veh/h]	0	6	350	3	0	338
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	350	3	0	338
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	1.0000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	92	1	0	89
Total Analysis Volume [veh/h]	0	6	368	3	0	356
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	10.17	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.03	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.65	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.17		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.08					
Intersection LOS	B					

APPENDIX B-III

YEAR 2048 TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	29.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.898

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	504	10	23	65	73	30	440
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	504	10	23	65	73	30	440
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	3	6	16	18	8	110
Total Analysis Volume [veh/h]	504	10	23	65	73	30	440
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	573	454	486	486	486	493	532	597
Degree of Utilization, x	0.90	0.05	0.04	0.04	0.04	0.15	0.06	0.74

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.70	0.16	0.14	0.14	0.14	0.52	0.18	6.35
95th-Percentile Queue Length [ft]	267.54	3.99	3.49	3.49	3.49	12.92	4.47	158.79
Approach Delay [s/veh]	41.70	10.61				21.29		
Approach LOS	E	B				C		
Intersection Delay [s/veh]	29.63							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	411	20	28	26	0	33	384
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	411	20	28	26	0	33	384
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	5	7	7	0	8	96
Total Analysis Volume [veh/h]	411	20	28	26	0	33	384
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	614	502	541	541	541	579	579	657
Degree of Utilization, x	0.70	0.06	0.02	0.02	0.02	0.03	0.03	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.67	0.18	0.05	0.05	0.05	0.09	0.09	3.81
95th-Percentile Queue Length [ft]	141.68	4.41	1.22	1.22	1.22	2.20	2.20	95.13
Approach Delay [s/veh]	21.50	9.89				15.11		
Approach LOS	C	A				C		
Intersection Delay [s/veh]	17.85							
Intersection LOS	C							

APPENDIX B-IV

YEAR 2048 WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	30.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	507	10	23	65	76	30	442
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	507	10	23	65	76	30	442
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	127	3	6	16	19	8	111
Total Analysis Volume [veh/h]	507	10	23	65	76	30	442
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	571	452	485	485	485	491	530	595
Degree of Utilization, x	0.90	0.05	0.04	0.04	0.04	0.15	0.06	0.74

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	10.94	0.16	0.14	0.14	0.14	0.54	0.18	6.47
95th-Percentile Queue Length [ft]	273.45	4.01	3.50	3.50	3.50	13.58	4.49	161.69
Approach Delay [s/veh]	42.90	10.64				21.59		
Approach LOS	E	B				C		
Intersection Delay [s/veh]	30.31							
Intersection LOS	D							

Intersection Level Of Service Report
Intersection 2: Project Driveway at Soquel Canyon Parkway

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Base Volume Input [veh/h]	0	3	641	6	0	548
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	3	641	6	0	548
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	160	2	0	137
Total Analysis Volume [veh/h]	0	3	641	6	0	548
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	11.31	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.02	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.39	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.31		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Pipeline Avenue at Soquel Canyon Parkway

Control Type:	All-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration							
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	Yes		Yes		Yes		

Volumes

Name	Pipeline Avenue		Soquel Canyon Parkway		Soquel Canyon Parkway		
Base Volume Input [veh/h]	413	20	28	26	2	33	387
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	413	20	28	26	2	33	387
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	5	7	7	1	8	97
Total Analysis Volume [veh/h]	413	20	28	26	2	33	387
Pedestrian Volume [ped/h]	0		0		0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	613	501	540	540	540	572	578	655
Degree of Utilization, x	0.71	0.06	0.02	0.02	0.02	0.03	0.03	0.59

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.76	0.18	0.05	0.05	0.05	0.09	0.09	3.88
95th-Percentile Queue Length [ft]	143.99	4.43	1.22	1.22	1.22	2.36	2.34	97.06
Approach Delay [s/veh]	21.79	9.91				15.27		
Approach LOS	C	A				C		
Intersection Delay [s/veh]	18.06							
Intersection LOS	C							

Intersection Level Of Service Report
Intersection 2: Project Driveway at Soquel Canyon Parkway

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Project Driveway		Soquel Canyon Parkway		Soquel Canyon Parkway	
Base Volume Input [veh/h]	0	6	438	3	0	421
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	6	438	3	0	421
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	110	1	0	105
Total Analysis Volume [veh/h]	0	6	438	3	0	421
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	10.45	0.00	0.00	0.00	0.00
Movement LOS		B	A	A		A
95th-Percentile Queue Length [veh/ln]	0.00	0.03	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.68	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.45		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	B					