



Euclid-Hazard 7-Eleven Service Station Project

Appendix I

Focused Traffic Impact Assessment Euclid-Hazard 7-Eleven Service Station

October 18, 2019

Ms. Christine Saunders
Sagecrest Planning+Environmental
2400 E. Katella Avenue, Suite 800
Anaheim, CA 92806

LLG Reference: 2.19.4164.1

Subject: **Focused Traffic Impact Assessment for the Proposed
813 N. Euclid Street Gas Station Project**
Santa Ana, California

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Dear Ms. Saunders:

Linscott, Law & Greenspan, Engineers (LLG) is pleased to present the findings of this Focused Traffic Impact Assessment for the proposed 813 N. Euclid Street Gas Station Project (herein after referred to as "Project") located at 813 N. Euclid Street in the City of Santa Ana, California. The project site is currently vacant and the proposed Project will consist of a gas station with eight (8) vehicle fueling positions and a 3,045 square-foot (SF) convenience market. The proposed Project is anticipated to be completed in the Year 2020. Access to the project site will be provided via one right-turn in/right-turn out only driveway located along Euclid Street and via one left-turn in/right-turn in/right-turn out only driveway located along Hazard Avenue.

The Focused Traffic Impact Assessment for the proposed Project will satisfy the traffic impact requirements of the City of Santa Ana and will focus to the key study intersection of Euclid Street at Hazard Avenue. Included in this focused traffic assessment are:

- 1) Existing traffic counts,
- 2) Estimated Project traffic generation/distribution/assignment,
- 3) Estimated cumulative project traffic generation/distribution/assignment,
- 4) AM and PM peak hour analyses for existing traffic conditions,
- 5) AM and PM peak hour analyses for existing plus project traffic conditions,
- 6) AM and PM peak hour analyses for Year 2020 cumulative without and with project traffic conditions,
- 7) Recommended Improvements, and
- 8) Left-turn queuing evaluation for Euclid Street at Hazard Avenue.

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PROJECT DESCRIPTION

The proposed Project site is located at 813 N. Euclid Street in the City of Santa Ana, California. The project site is currently vacant. *Figure 1* presents a vicinity map which illustrates the general location of the Project and depicts the surrounding street system. *Figure 2* presents an aerial image of the existing site.

The proposed Project will consist of a gas station with eight (8) vehicle fueling positions and a 3,045 square-foot (SF) convenience market. The proposed Project is anticipated to be completed in the Year 2020. Access to the project site will be provided via one right-turn in/right-turn out only driveway located along Euclid Street and via one left-turn in/right-turn in/right-turn out only driveway located along Hazard Avenue. *Figure 3* presents the proposed site plan for the proposed Project, prepared by ASI Development.

EXISTING CONDITIONS

Existing Roadway Conditions

Figure 4 presents an inventory of the existing roadway conditions for the key study intersection of Euclid Street at Hazard Avenue. 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 September 5, 2019 at the intersection of Euclid Street at Hazard Avenue 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 Euclid Street at Hazard Avenue.

Appendix A contains the detailed peak hour traffic count sheets for the intersection of Euclid Street at Hazard Avenue.

Intersection Peak Hour Level of Service Methodology

AM and PM peak hour operating conditions for the key signalized intersection was evaluated using the *Intersection Capacity Utilization* (ICU) methodology.

Intersection Capacity Utilization (ICU) Method of Analysis

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 Santa Ana requirements, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through lanes and 1,600 vph for left-turn lanes and right-turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation. The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in *Table 1*.

Minimum LOS Thresholds and Significant Traffic Impact Criteria

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

- An unacceptable peak hour Level of Service (LOS) at any of the key intersections is projected. The City of Santa Ana considers LOS D (ICU = 0.801 - 0.900) to be the minimum acceptable LOS for all intersections, except for those locations located within the City's defined major development areas, where LOS E is considered acceptable. Based on the above, LOS D is the requirement for the intersection of Euclid Street at Hazard Avenue.
- The project increases traffic demand at the study intersection by 1% of capacity (ICU increase ≥ 0.010), causing or worsening LOS E or LOS F ($V/C > 0.900$).

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 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington, D.C., 2017].

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 853: Convenience Market with Gasoline Pumps trip rates.

Review of the lower portion of **Table 2** indicates that the proposed Project is forecast to generate 1,935 daily trips, with 62 trips (31 inbound, 31 outbound) produced in the AM peak hour and 62 trips (31 inbound, 31 outbound) produced in the PM peak hour on a “typical” weekday. Please note that the aforementioned overall project trip generation includes adjustments for pass-by as recommended by ITE. The pass-by reduction factors that are utilized in this letter report are based on information published in the *Trip Generation Handbook, 3rd Edition*, published by ITE (2014) and are summarized in the footnotes of **Table 2**.

It should be noted that the trip generation methodology and forecasts were approved by City of Santa Ana staff prior to proceeding with further analysis.

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 Euclid Street at Hazard Avenue and at the project driveways 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 mitigate 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 at the project driveways with the addition of the trips generated by the proposed Project to existing peak hour traffic volumes.

Year 2020 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 2019 traffic volumes results in a one percent (1.0%) growth in existing volumes to horizon year 2020.

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 Santa Ana, Garden Grove and Westminster. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. Based on our research, there are eighteen (18) cumulative projects in the City of Santa Ana, four (4) cumulative projects in the City of Garden Grove and one (1) cumulative project in the City of Westminster within the vicinity of the Project site that have either been built, but not yet fully occupied, or are being processed for approval. These twenty-three (23) cumulative projects have been included as part of the cumulative background setting in addition to the inclusion of an ambient traffic growth factor, which provides a conservative forecast. The locations of the twenty-three (23) cumulative projects are presented in *Figure 9*.

Table 3 provides the location and a brief description for each of the twenty-three (23) cumulative projects. *Table 4* summarizes the trip generation potential for all twenty-three (23) cumulative projects on a daily and peak hour basis for a typical weekday. As shown, the cumulative projects are expected to generate 8,303 daily trips, with 633 trips (266 inbound, 367 outbound) anticipated during the AM peak hour and 648 trips (355 inbound, 293 outbound) produced during the PM peak hour.

The AM and PM peak hour traffic volumes associated with the twenty-three (23) cumulative projects in the Year 2020 are presented in *Figure 10*. *Figure 11* presents the Year 2020 AM and PM peak hour cumulative traffic volumes at the key study intersection. *Figure 12* illustrates the Year 2020 forecast AM and PM peak hour traffic volumes at the key study intersection and at the project driveways with the inclusion of the trips generated by the proposed Project.

EXISTING PLUS PROJECT CAPACITY ANALYSIS

Table 5 summarizes the peak hour level of service results at the intersection of Euclid Street at Hazard Avenue for Existing plus Project traffic conditions. Review of column (1) of *Table 5* indicates that the intersection of Euclid Street at Hazard Avenue currently operates at unacceptable LOS E during the AM peak hour and at acceptable LOS C during the PM peak hour. Review of columns (2) and (3) of *Table 5* indicates that traffic associated with the proposed Project will significantly impact the intersection of Euclid Street at Hazard Avenue, when compared to the LOS standards and significant impact criteria specified in this report. As shown in column (4) of *Table 5*, the implementation of improvements at the impacted key study intersection completely offsets the impact of project traffic and the key study

intersection is forecast to operate at an acceptable LOS during the AM and PM peak hours.

Appendix B contains the existing and existing plus project AM peak hour and PM peak hour ICU/LOS calculation worksheets for the key study intersection.

YEAR 2020 PLUS PROJECT CAPACITY ANALYSIS

Table 6 summarizes the peak hour level of service results at the intersection of Euclid Street at Hazard Avenue for Year 2020 Cumulative plus Project traffic conditions. Review of column (2) of *Table 6* indicates that the addition of ambient traffic growth and cumulative project traffic will adversely impact the intersection of Euclid Street at Hazard Avenue. The key study intersection is forecast to continue to operate at an unacceptable LOS E during the AM peak hour and at acceptable LOS C during the PM peak hour with the addition of ambient traffic growth and cumulative project traffic.

Review of columns (3) and (4) of *Table 6* indicates that traffic associated with the proposed Project will cumulatively impact the intersection of Euclid Street at Hazard Avenue, when compared to the LOS standards and significant impact criteria specified in this report. As shown in column (5) of *Table 6*, the implementation of improvements at the impacted key study intersection completely offsets the impact of project traffic and the key study intersection is forecast to operate at an acceptable LOS during the AM and PM peak hours.

Appendix B also contains the Year 2020 AM peak hour and PM peak hour ICU/LOS calculation worksheets for the key study intersection.

INTERSECTION LEFT-TURN QUEUING ANALYSIS

This section of the letter report addresses City staff concerns regarding AM peak hour and PM peak hour left-turn stacking/storage lengths for the intersection of Euclid Street at Hazard Avenue. The queuing evaluation was conducted based on projected Year 2020 peak hour traffic volumes (without and with the proposed Project) and the Highway Capacity Manual (HCM) signalized methodology.

Table 7 presents the Year 2020 left-turn queuing analysis results for the intersection of Euclid Street at Hazard Avenue. Column (1) presents Year 2020 Cumulative traffic conditions and column (2) presents Year 2020 Cumulative plus Project traffic conditions. Column (3) presents Year 2020 Cumulative plus Project with improvements traffic conditions. It should be noted that the storage provided shown in *Table 7* is based on the formally striped left-turn pocket. However, the effective

storage is much longer given that each striped left-turn lane continues into a two-way-left-turn-lane. Review of *Table 7* shows that based on the effective storage, adequate storage is provided to satisfy the Year 2020 plus Project 95th percentile queues for all four (4) left-turn lanes at the intersection of Euclid Street at Hazard Avenue.

Figure 13 graphically illustrates the results of the intersection left-turn queuing analysis for the intersection of Euclid Street at Hazard Avenue. As shown, the 95th percentile queues can be accommodated within the effective left-turn pocket storage, which includes the two-way-left-turn lanes.

Appendix C contains the Year 2020 AM peak hour and PM peak hour HCM/LOS calculation worksheets for the key study intersection.

SITE ACCESS ANALYSIS

Table 8 summarizes the levels of service at the two (2) Project driveways for Year 2020 Cumulative plus Project traffic conditions. The operations analysis for the two (2) Project driveways is based on the *Highway Capacity Manual 6* (HCM 6) Method of Analysis for unsignalized intersections. Review of *Table 8* shows that the two (2) Project driveways are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under Year 2020 Cumulative plus Project traffic conditions. As such, project access will be adequate. Motorists entering and exiting the Project site will be able to do so comfortably, safely, and without undue congestion.

Appendix D contains the Year 2020 AM peak hour and PM peak hour HCM/LOS calculation worksheets for the project driveways.

RECOMMENDED IMPROVEMENTS

The following improvements are recommended to offset the proposed Project's Existing plus Project and Year 2020 Cumulative plus Project impact at the intersection of Euclid Street/Hazard Avenue.

- **No. 1 – Euclid Street at Hazard Avenue:** Restripe Hazard Avenue to provide an exclusive eastbound right-turn lane. Modify the existing traffic signal, if necessary. The installation of this improvement is subject to the approval of the City of Santa Ana.

Figure 14 graphically illustrates the recommended improvements for Existing plus Project and Year 2020 Cumulative plus Project traffic conditions at the intersection of Euclid Street/Hazard Avenue.

The proposed Project can be expected to pay a proportional “fair-share” of the improvement costs of the cumulatively impacted intersection to mitigate the project’s traffic impacts. **Table 9** presents the percentage of net traffic impact at the study intersection cumulatively impacted by the proposed Project for Year 2020 traffic conditions. As presented in this table, the first column (1) presents a total of all intersection peak hour movements for existing traffic conditions. The second column (2) presents Project only traffic conditions. The third column (3) presents future Year 2020 traffic conditions with Project traffic. The fourth column (4) represents what percentage of total intersection peak hour traffic is Project-related traffic.

Review of *Table 9* shows that the Project’s fair share contribution towards the intersection of Euclid Street/Hazard Avenue totals **35.0%**.

CONCLUSIONS

- The proposed Project site is located at 813 N. Euclid Street in the City of Santa Ana, California. The project site is currently vacant. The proposed Project will consist of a gas station with eight (8) vehicle fueling positions and a 3,045 SF convenience market. The proposed Project is anticipated to be completed in the Year 2020. Access to the project site will be provided via one right-turn in/right-turn out only driveway located along Euclid Street and via one left-turn in/right-turn in/right-turn out only driveway located along Hazard Avenue.
- The proposed Project is forecast to generate 1,935 daily trips, with 62 trips (31 inbound, 31 outbound) produced in the AM peak hour and 62 trips (31 inbound, 31 outbound) produced in the PM peak hour on a “typical” weekday.
- The twenty-three (23) cumulative projects are expected to generate 8,303 daily trips, with 633 trips (266 inbound, 367 outbound) anticipated during the AM peak hour and 648 trips (355 inbound, 293 outbound) produced during the PM peak hour.
- The proposed Project will significantly impact the intersection of Euclid Street at Hazard Avenue under Existing plus Project traffic conditions. The implementation of improvements at the impacted key study intersection completely offsets the impact of project traffic and the key study intersection is forecast to operate at an acceptable LOS during the AM and PM peak hours.
- The proposed Project will cumulatively impact the intersection of Euclid Street at Hazard Avenue under Year 2020 Cumulative plus Project traffic conditions. The implementation of improvements at the impacted key study intersection

completely offsets the impact of project traffic and the key study intersection is forecast to operate at an acceptable LOS during the AM and PM peak hours.

- Based on the effective storage, adequate storage is provided to satisfy the Year 2020 plus Project 95th percentile queues for the four (4) left-turn lanes at the intersection of Euclid Street at Hazard Avenue.
- The two (2) Project driveways are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under Year 2020 Cumulative plus Project traffic conditions. As such, project access will be adequate. Motorists entering and exiting the Project site will be able to do so comfortably, safely, and without undue congestion.
- The following improvements are recommended to offset the proposed Project's Existing plus Project and Year 2020 Cumulative plus Project impact at the intersection of Euclid Street/Hazard Avenue.
 - **No. 1 – Euclid Street at Hazard Avenue:** Restripe Hazard Avenue to provide an exclusive eastbound right-turn lane. Modify the existing traffic signal, if necessary. The installation of this improvement is subject to the approval of the City of Santa Ana. The Project's fair share contribution towards the intersection of Euclid Street/Hazard Avenue totals **35.0%**.

* * * * *

We appreciate the opportunity to provide this Focused Traffic Impact Assessment report for the proposed 813 N. Euclid Street Gas Station Project. If you have any questions regarding this letter, please do not hesitate to call us at (949) 825-6175.

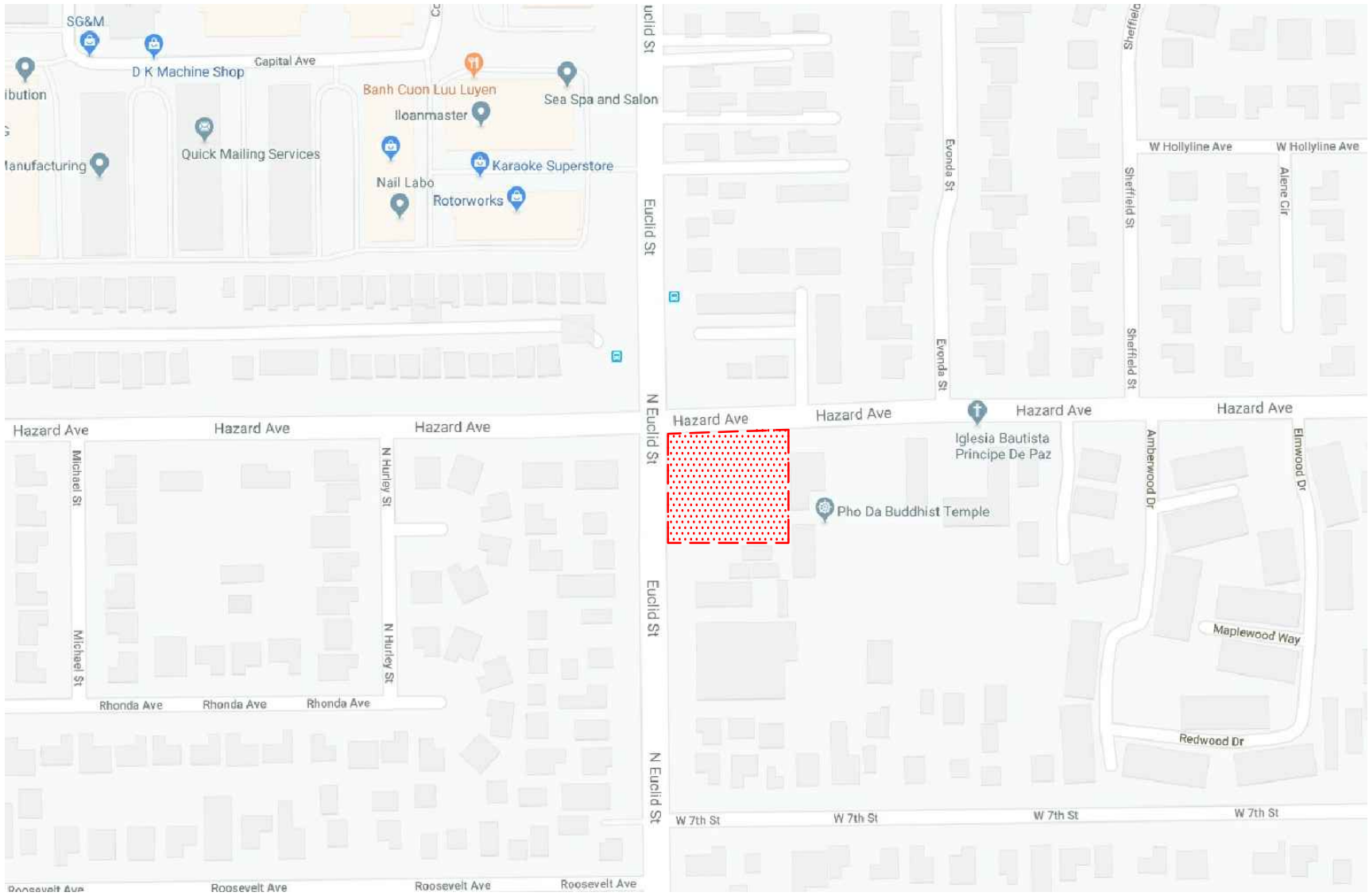
Very truly yours,
Linscott, Law & Greenspan, Engineers



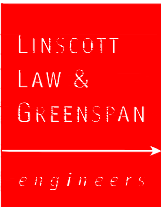
Daniel A. Kloos, P.E.
Associate Principal

Attachments





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SOURCE: GOOGLE

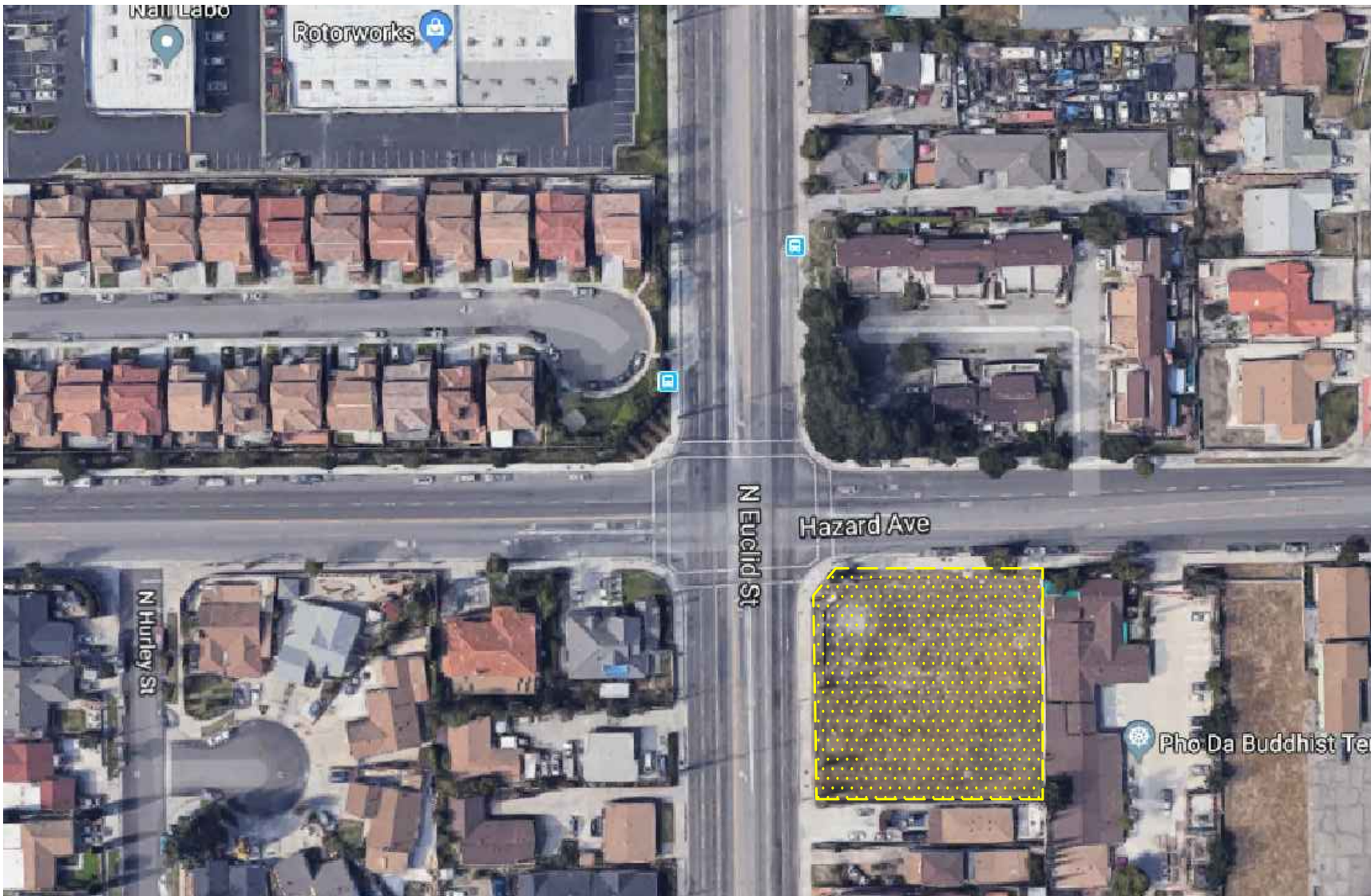
KEY

 = PROJECT SITE

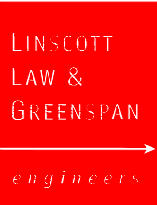
FIGURE 1

VICINITY MAP

813 N. EUCLID STREET GAS STATION, SANTA ANA



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SOURCE: GOOGLE

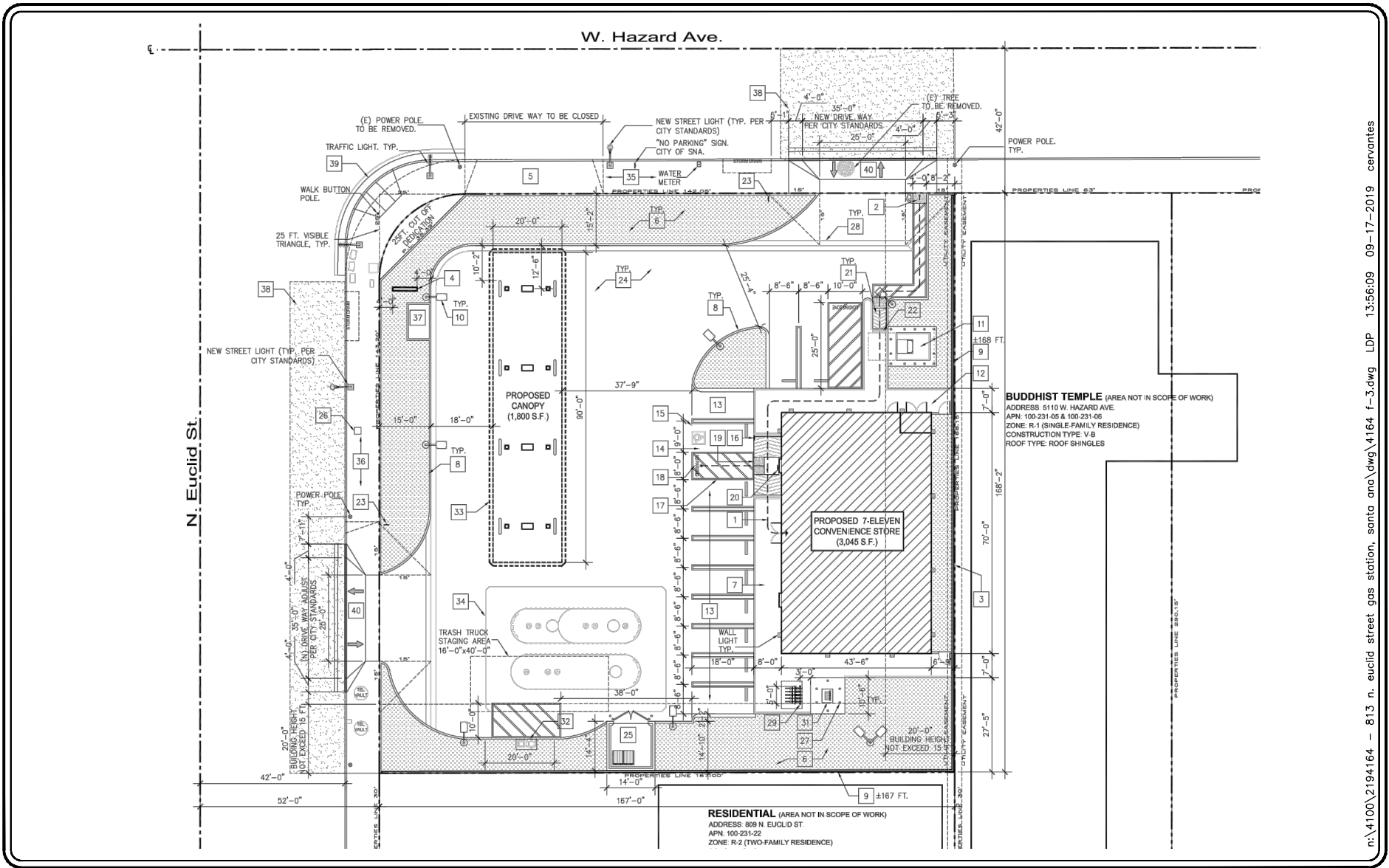
KEY

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FIGURE 2

EXISTING SITE AERIAL

813 N. EUCLID STREET GAS STATION, SANTA ANA



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SOURCE: ASI DEVELOPMENT

FIGURE 3

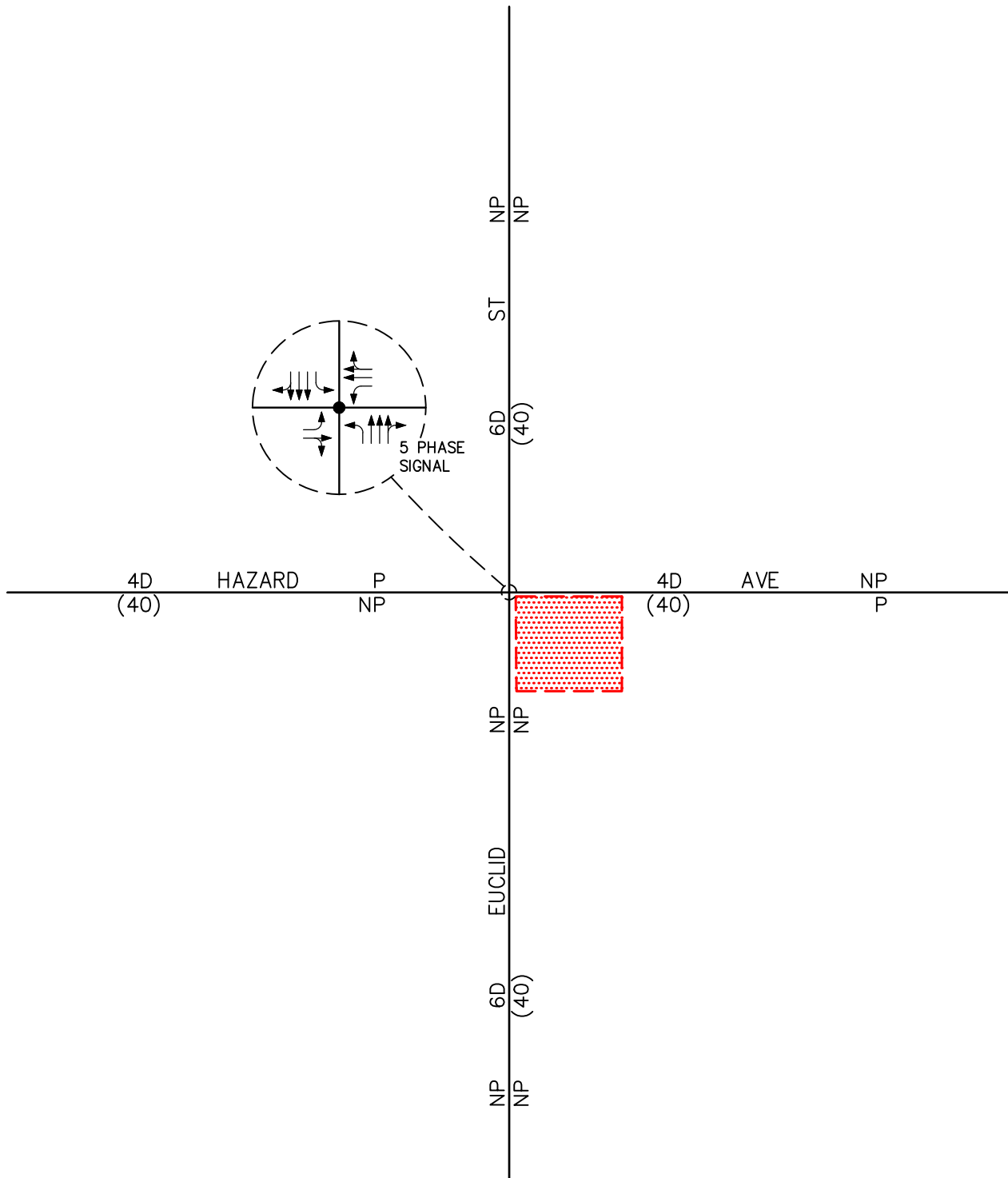
PROPOSED SITE PLAN

813 N. EUCLID STREET GAS STATION, SANTA ANA

**LINSCOTT
LAW &
GREENSPAN**
engineers



NO SCALE



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KEY

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



NO SCALE

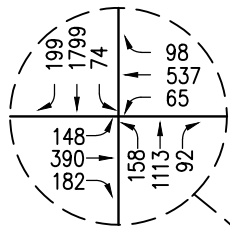
FIGURE 4

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

813 N. EUCLID STREET GAS STATION, SANTA ANA

LINSCOTT
LAW &
GREENSPAN
engineers

AM PEAK HOUR



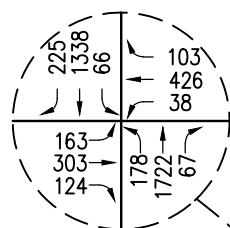
HAZARD

AVE

ST

EUCLID

PM PEAK HOUR



HAZARD

AVE

ST

EUCLID

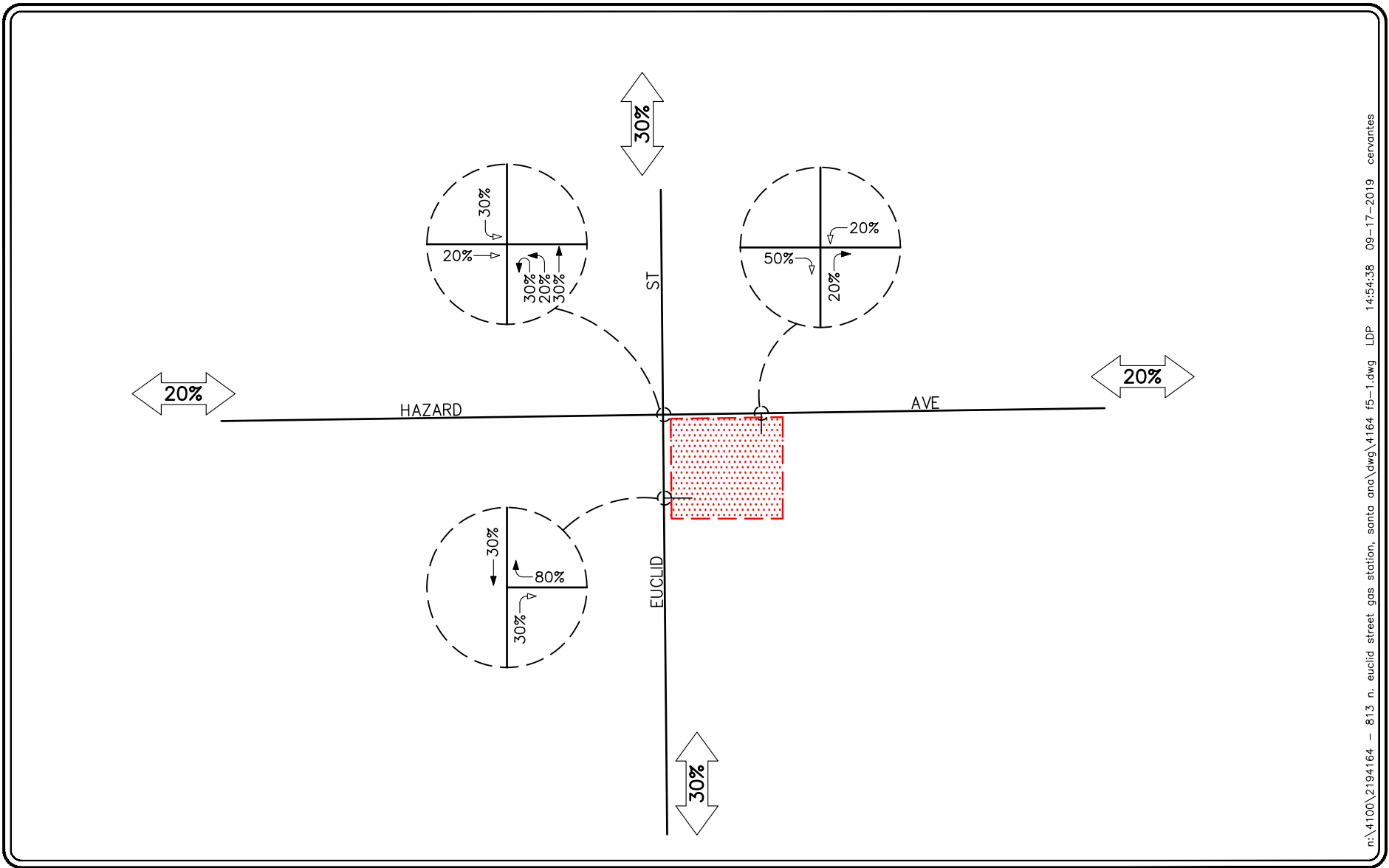
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FIGURE 5

EXISTING AM AND PM PEAK HOUR
TRAFFIC VOLUMES

813 N. EUCLID STREET GAS STATION, SANTA ANA



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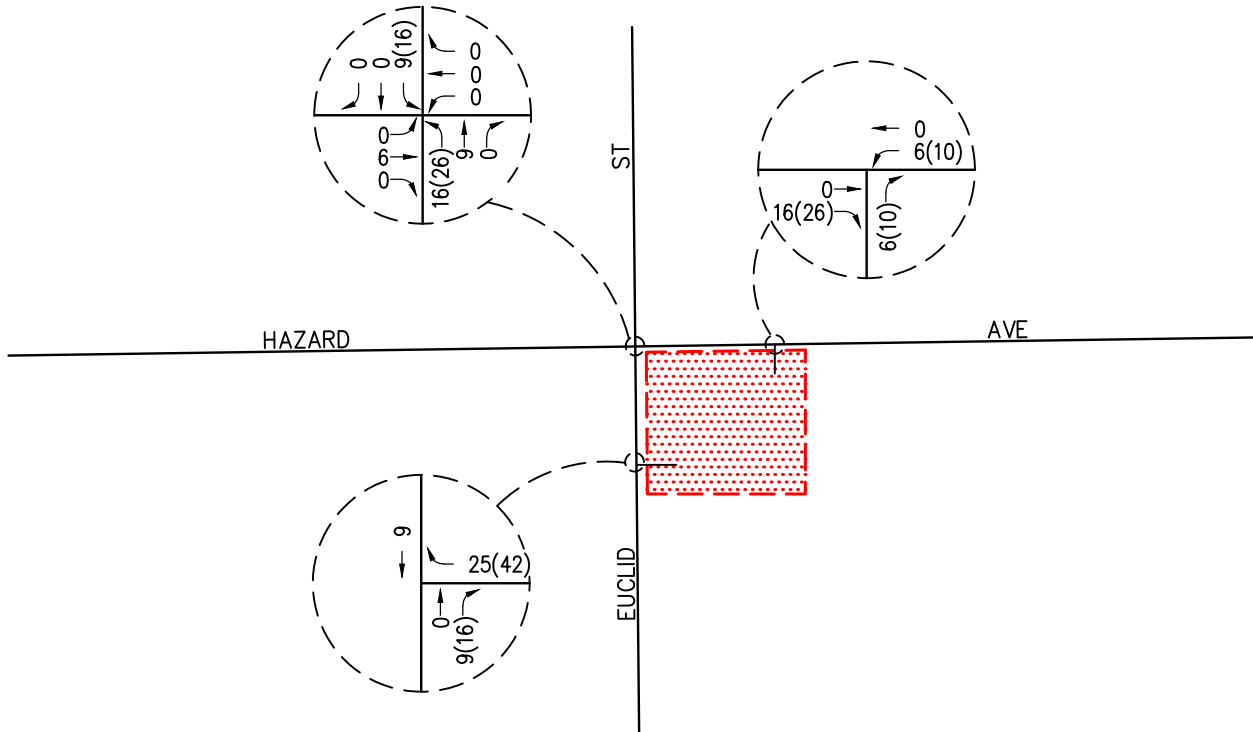
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- KEY**
- ← = INBOUND PERCENTAGE
 - = OUTBOUND PERCENTAGE
 - ▨ = PROJECT SITE

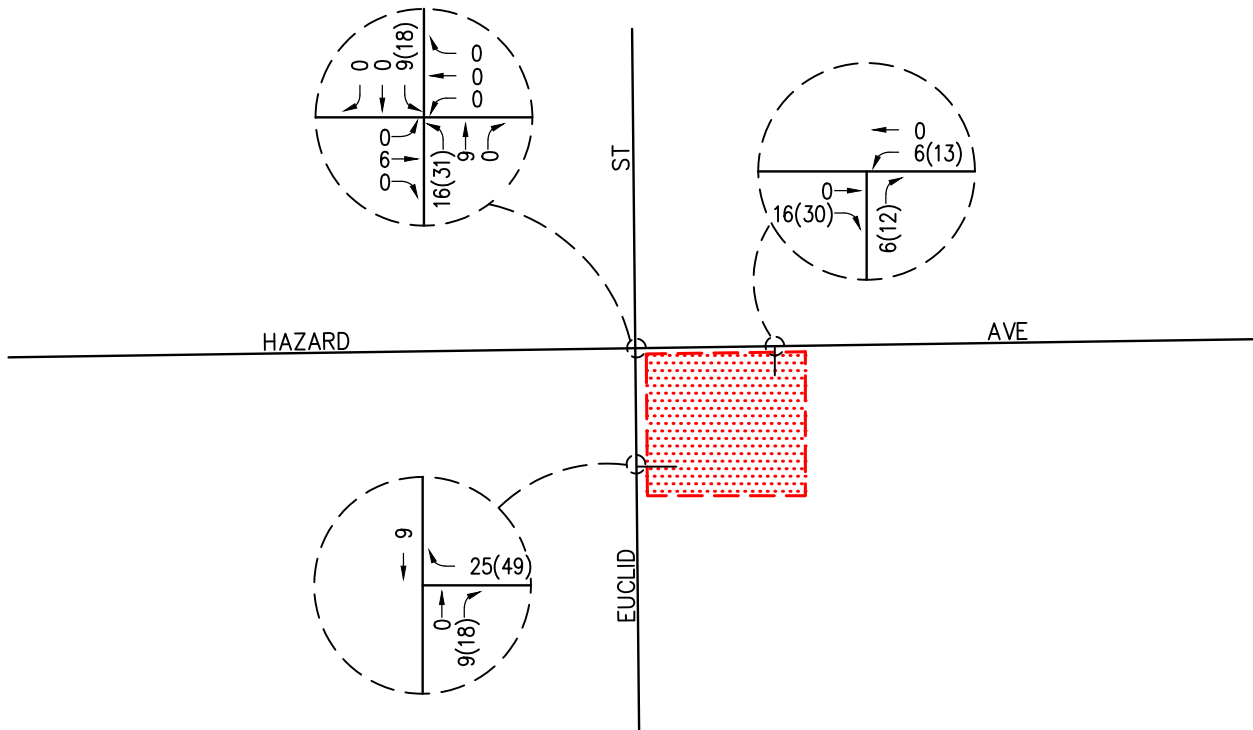
FIGURE 6

PROJECT TRAFFIC DISTRIBUTION PATTERN
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

AM PEAK HOUR



PM PEAK HOUR



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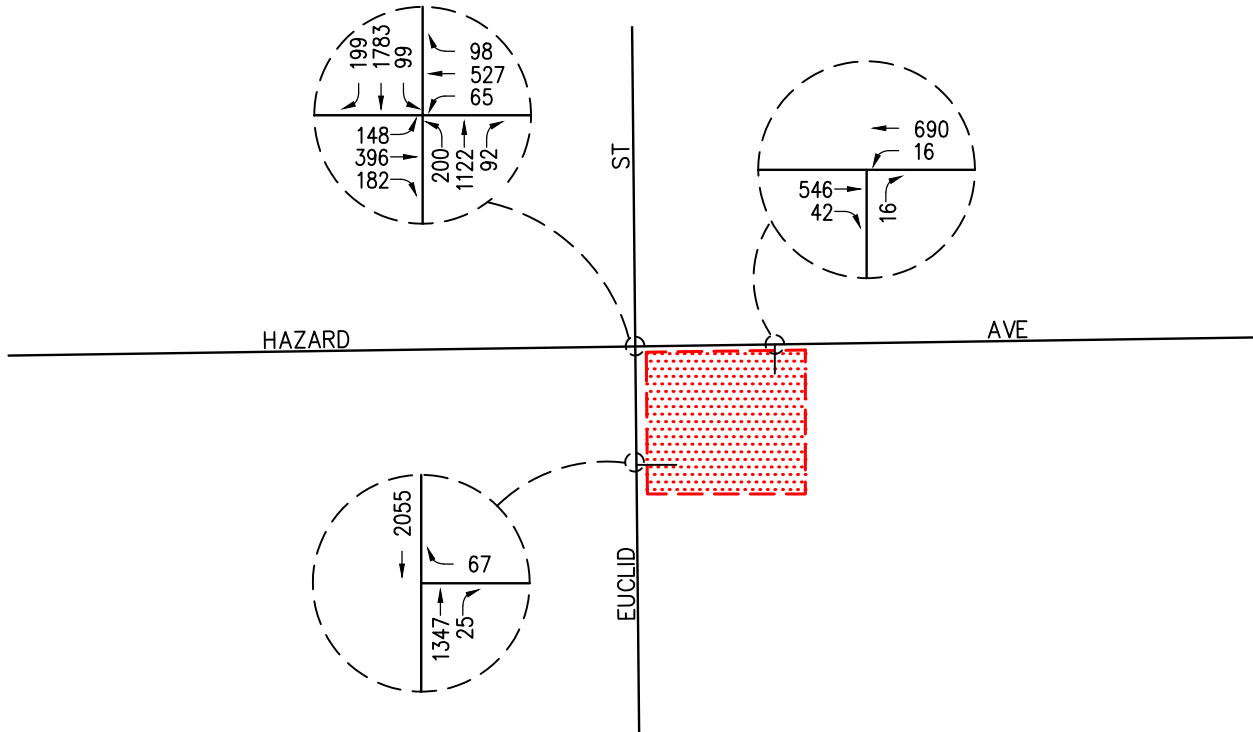
XX(XX) = PROJECT TRIPS (PASS-BY TRIPS)

FIGURE 7

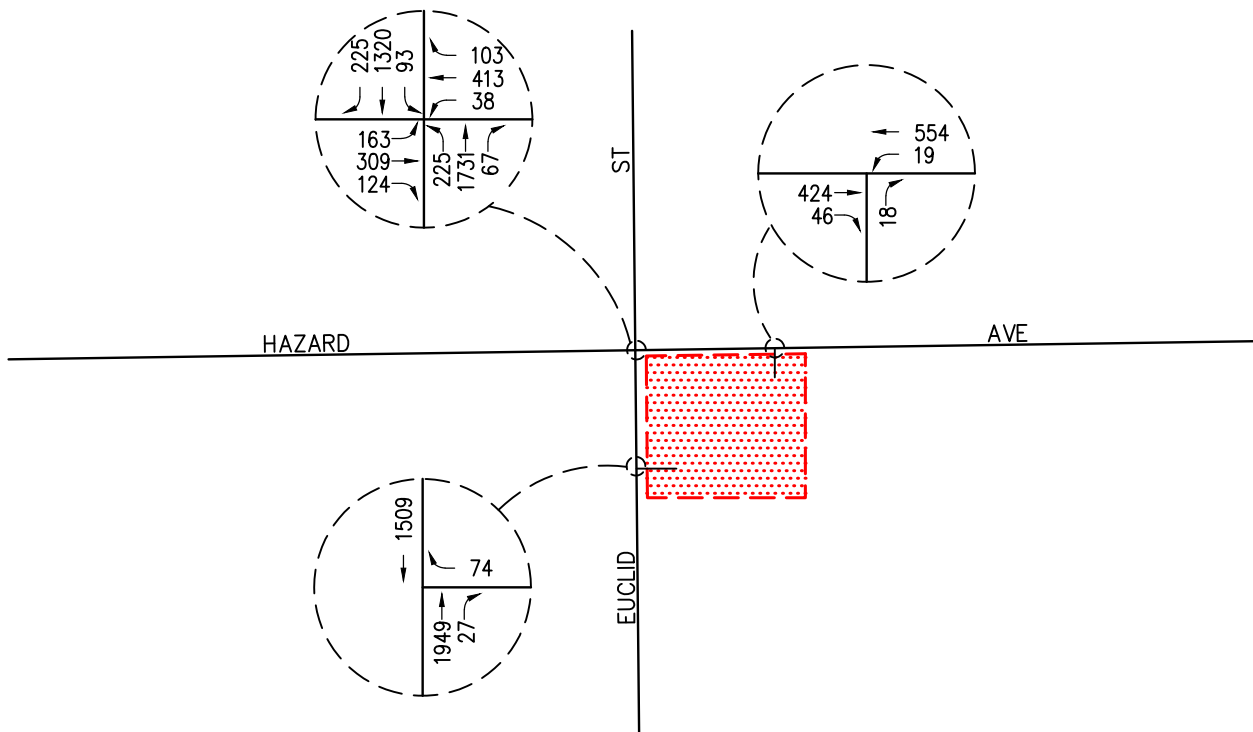
AM AND PM PEAK HOUR
PROJECT ONLY TRAFFIC VOLUMES

813 N. EUCLID STREET GAS STATION, SANTA ANA

AM PEAK HOUR

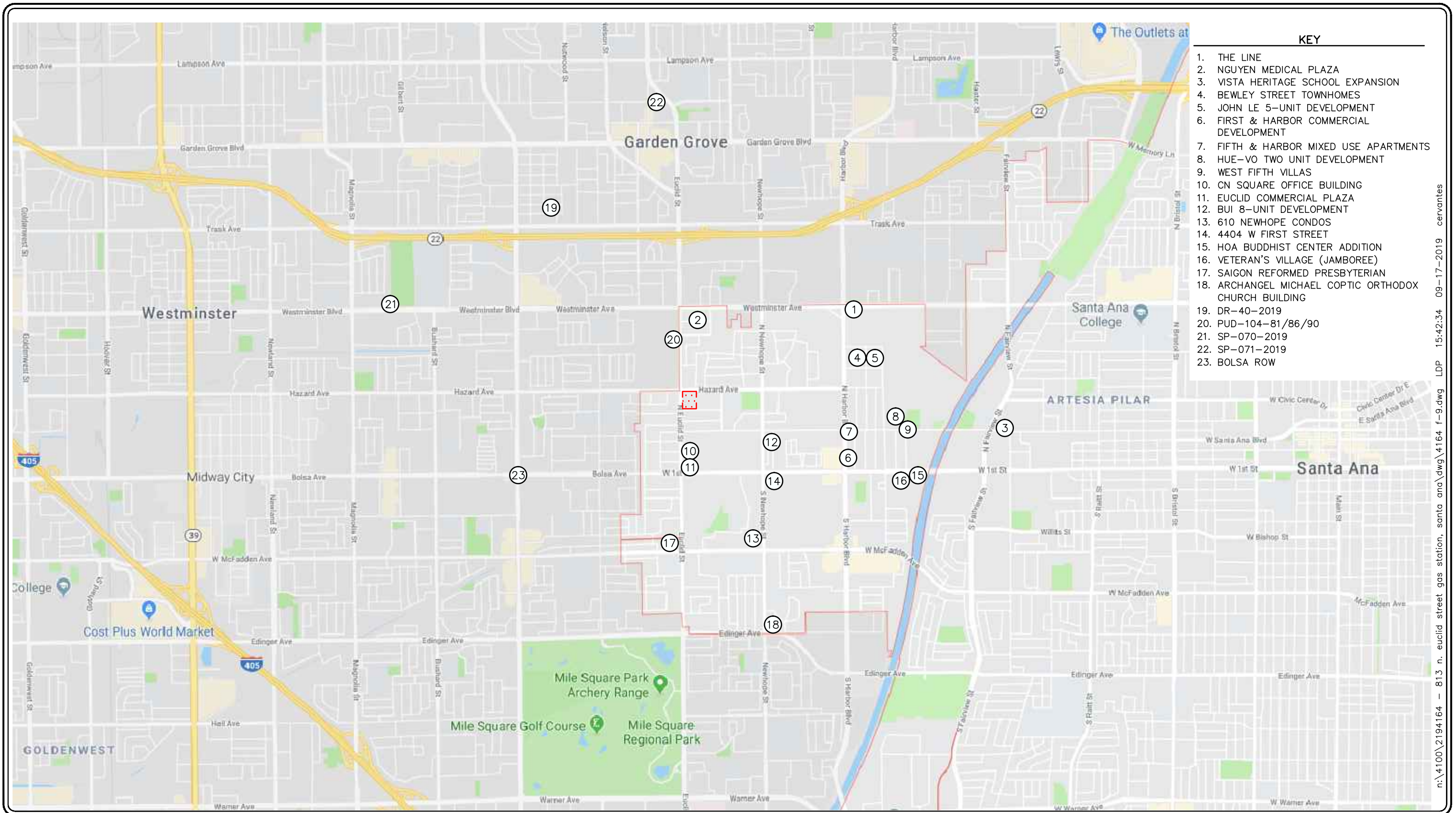


PM PEAK HOUR



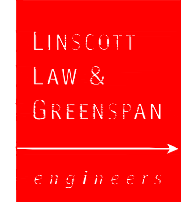
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- KEY**
1. THE LINE
 2. NGUYEN MEDICAL PLAZA
 3. VISTA HERITAGE SCHOOL EXPANSION
 4. BEWLEY STREET TOWNHOMES
 5. JOHN LE 5-UNIT DEVELOPMENT
 6. FIRST & HARBOR COMMERCIAL DEVELOPMENT
 7. FIFTH & HARBOR MIXED USE APARTMENTS
 8. HUE-VO TWO UNIT DEVELOPMENT
 9. WEST FIFTH VILLAS
 10. CN SQUARE OFFICE BUILDING
 11. EUCLID COMMERCIAL PLAZA
 12. BUI 8-UNIT DEVELOPMENT
 13. 610 NEWHOPE CONDOS
 14. 4404 W FIRST STREET
 15. HOA BUDDHIST CENTER ADDITION
 16. VETERAN'S VILLAGE (JAMBOREE)
 17. SAIGON REFORMED PRESBYTERIAN
 18. ARCHANGEL MICHAEL COPTIC ORTHODOX CHURCH BUILDING
 19. DR-40-2019
 20. PUD-104-81/86/90
 21. SP-070-2019
 22. SP-071-2019
 23. BOLSA ROW

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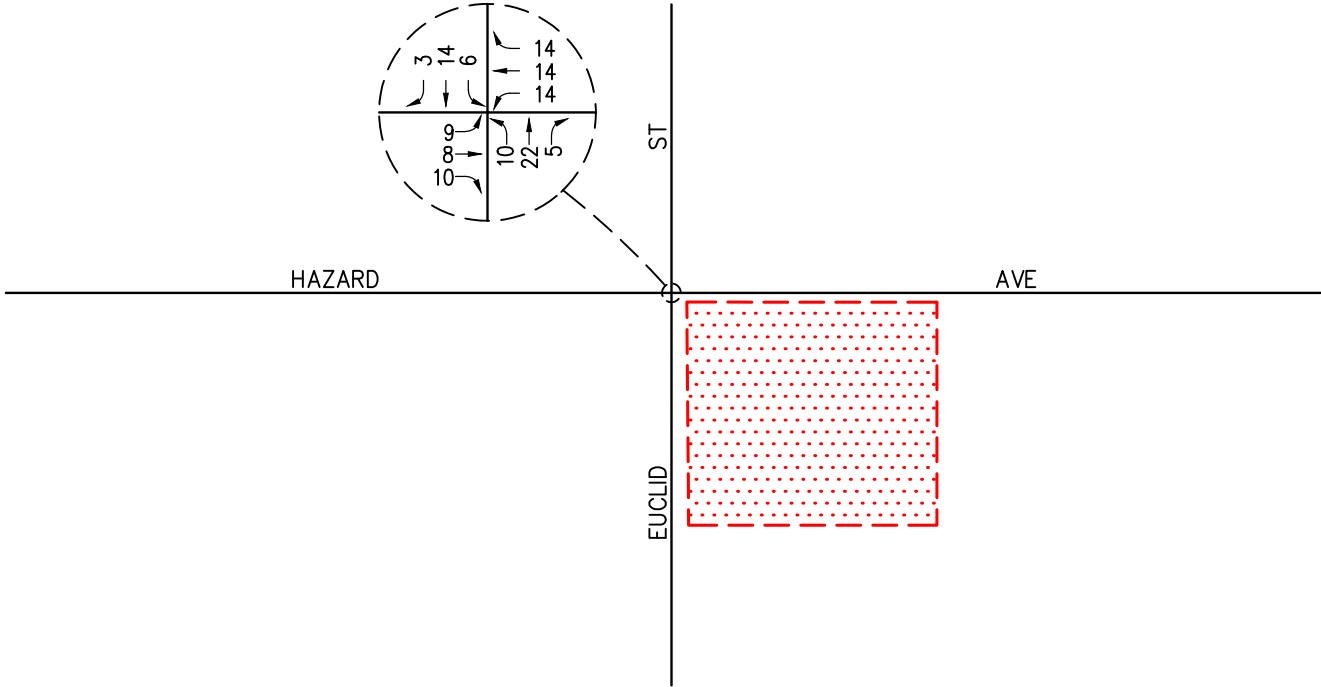


- KEY**
- # = CUMULATIVE PROJECT LOCATION
 - [Red Hatched Box] = PROJECT SITE

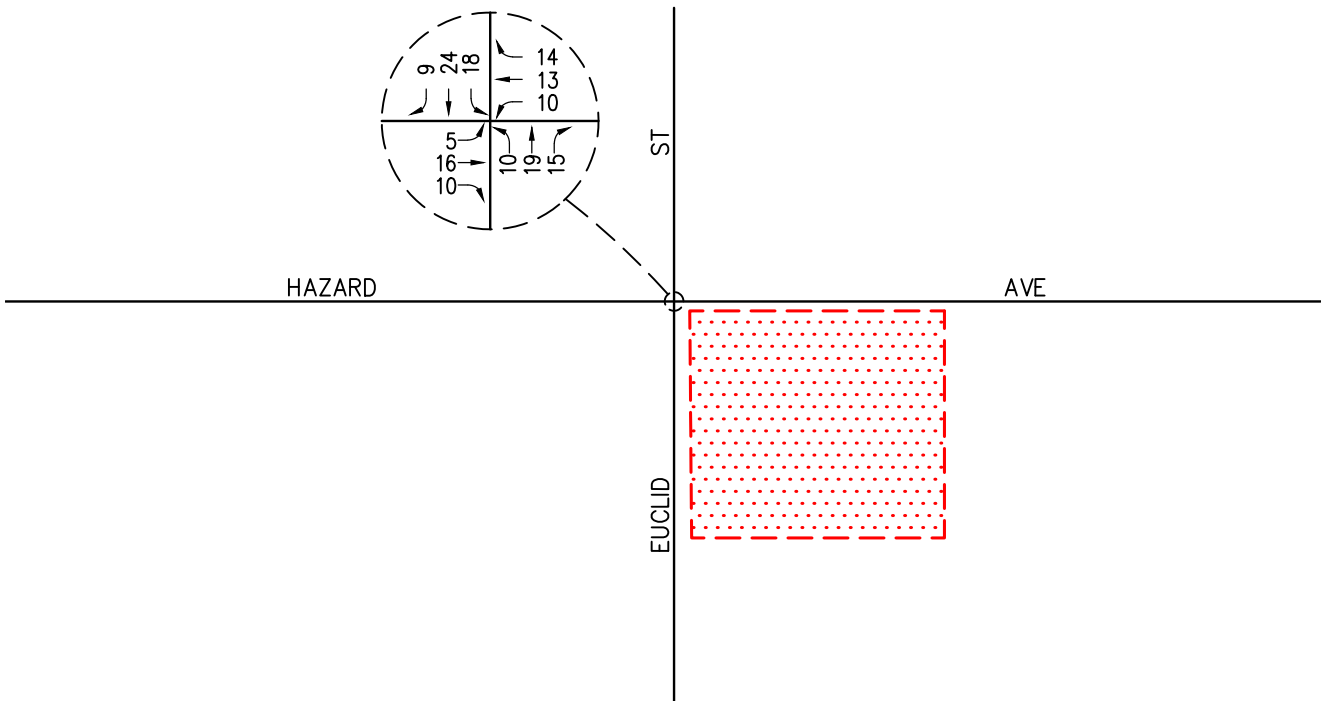
FIGURE 9

LOCATION OF CUMULATIVE PROJECTS
813 N. EUCLID STREET GAS STATION, SANTA ANA

AM PEAK HOUR



PM PEAK HOUR



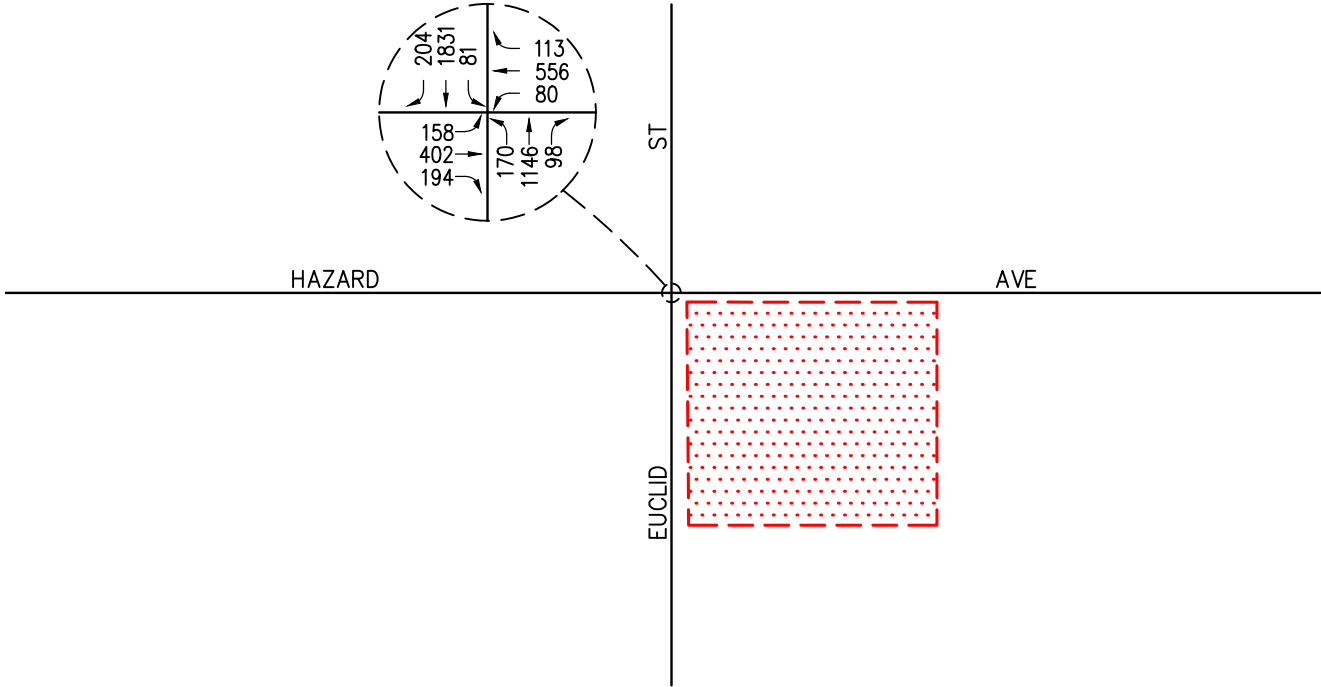
n:\4100\2194164 - 813 n. euclid street gas station, santa ana\dwg\4164 f-10.dwg LDP 15:50:35 09-17-2019 cervantes



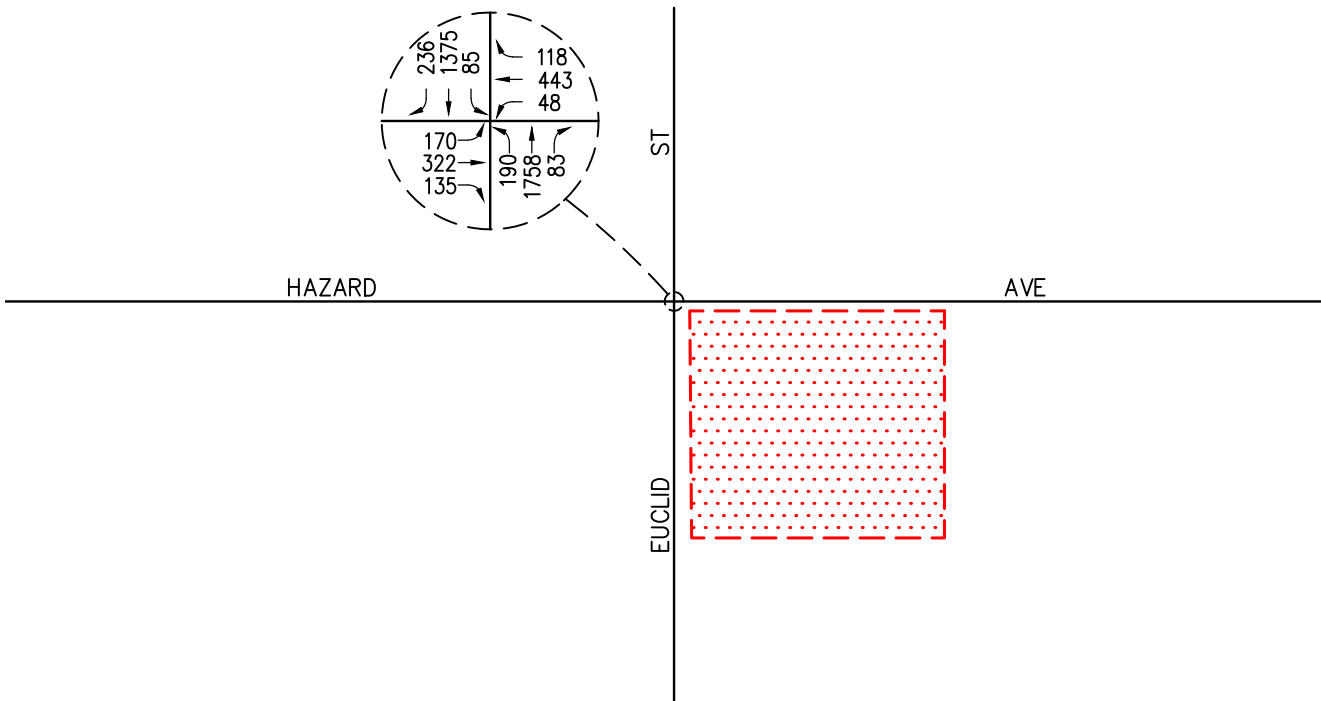
FIGURE 10

AM AND PM PEAK HOUR
CUMULATIVE PROJECTS ONLY TRAFFIC VOLUMES
813 N. EUCLID STREET GAS STATION, SANTA ANA

AM PEAK HOUR



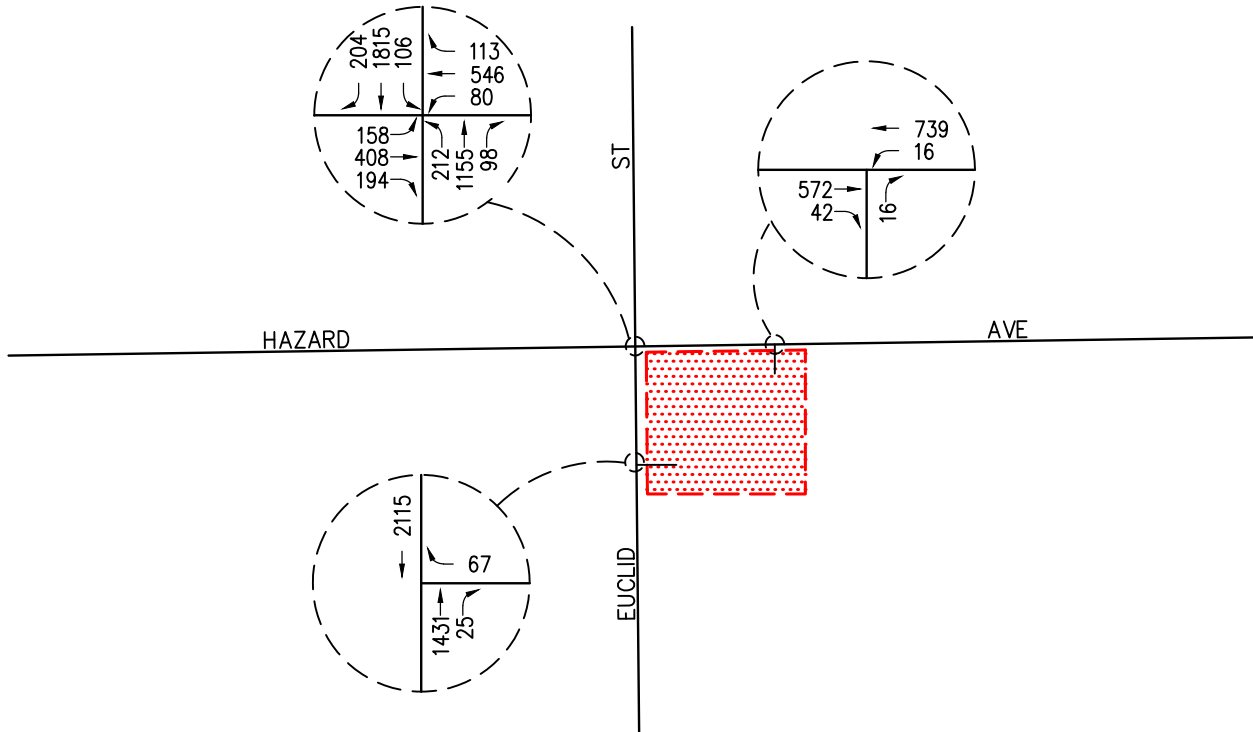
PM PEAK HOUR



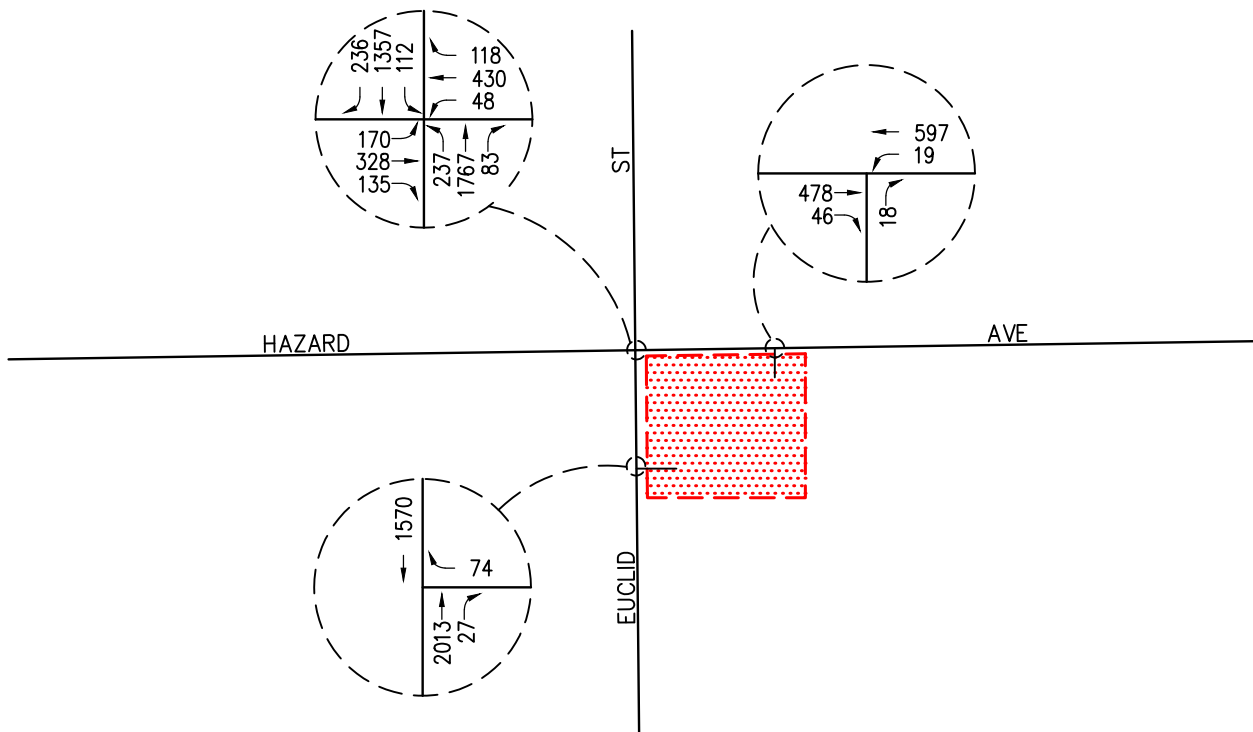
n:\4100\2194164 - 813 n. euclid street gas station, santa ana\dwg\4164 f-11.dwg LDP 15:54:48 09-17-2019 cervantes



AM PEAK HOUR



PM PEAK HOUR

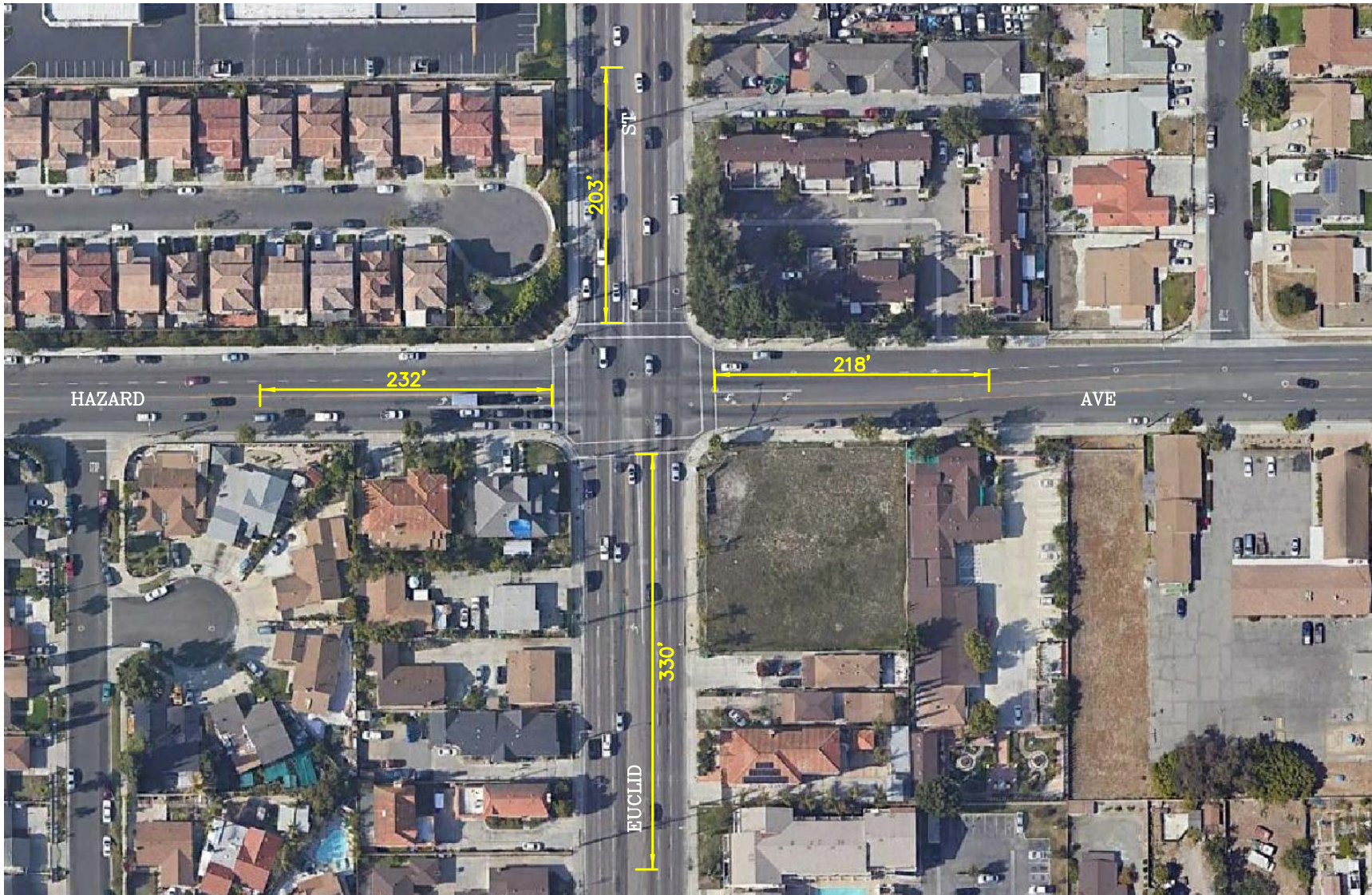


n:\4100\2194164 - 813 n. euclid street gas station, santa ana\dwg\4164 f-12.dwg LDP 16:01:35 09-17-2019 cervantes



FIGURE 12

YEAR 2020 CUMULATIVE PLUS PROJECT
AM AND PM PEAK HOUR TRAFFIC VOLUMES
813 N. EUCLID STREET GAS STATION, SANTA ANA

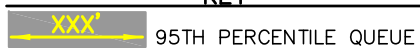


n:\4100\2194164 - 813 n. euclid street gas station, santa ana.dwg\4164 f-13.dwg LDP 10:45:36 09-19-2019 agular



SOURCE: GOOGLE

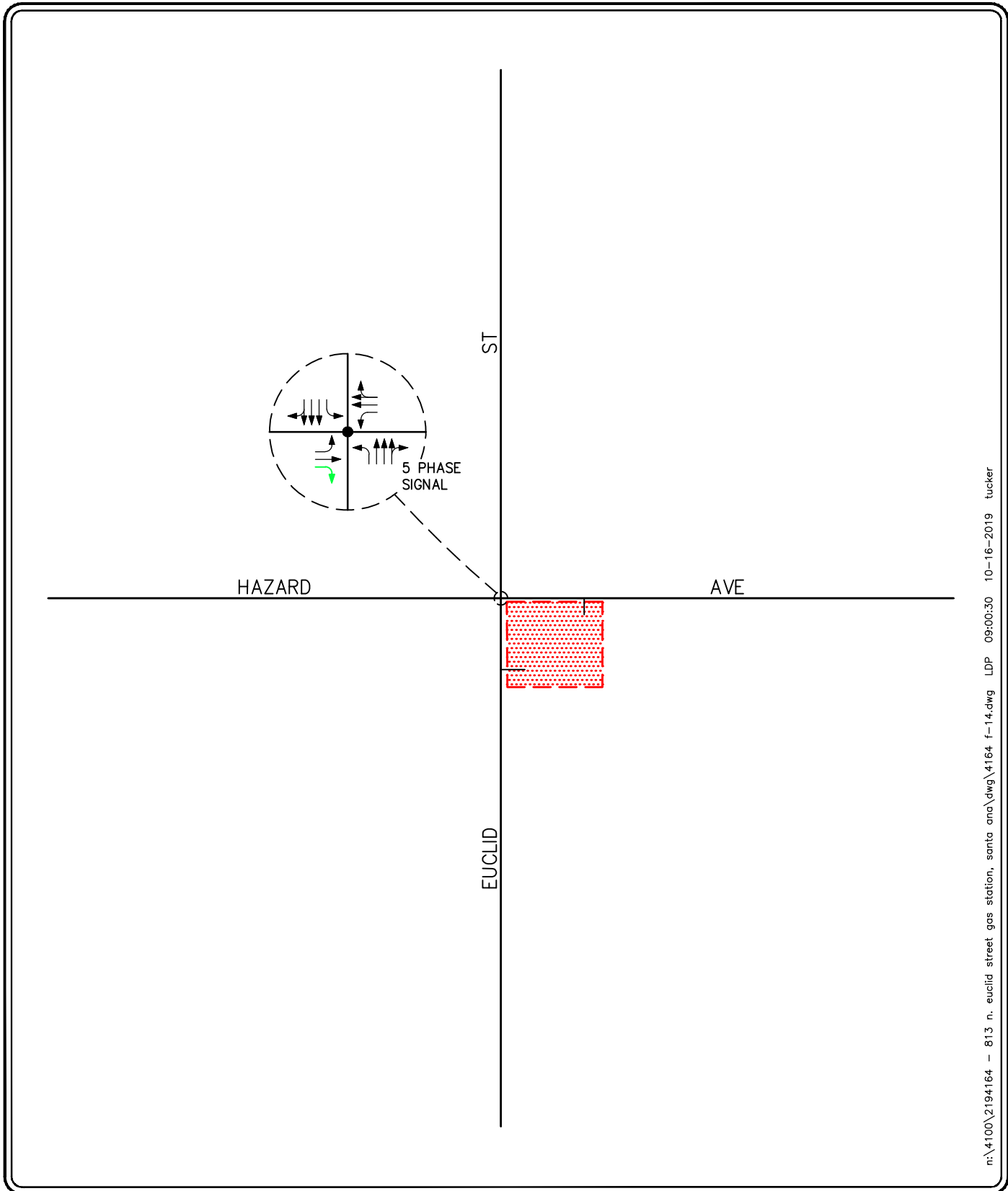
KEY



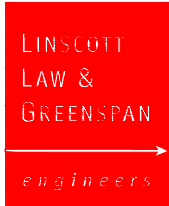
95TH PERCENTILE QUEUE

FIGURE 13

INTERSECTION LEFT-TURN QUEUING ANALYSIS
 813 N. EUCLID STREET GAS STATION, SANTA ANA



n:\4100\2194164 - 813 n. euclid street gas station, santa ana\dwg\4164 f-14.dwg LDP 09:00:30 10-16-2019 tucker



NO SCALE

- KEY**
- ← = APPROACH LANE ASSIGNMENT
 - = RECOMMENDED IMPROVEMENT
 - = TRAFFIC SIGNAL

FIGURE 14

RECOMMENDED IMPROVEMENTS
813 N. EUCLID STREET GAS STATION, SANTA ANA

TABLE 1
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS¹
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

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.

¹ Source: *Transportation Research Board Circular 212 – Interim Materials on Highway Capacity.*

TABLE 2
PROJECT TRAFFIC GENERATION FORECAST²
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

ITE Land Use Code / Project Description	Daily	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<u>Generation Rates:</u>							
▪ 853: Convenience Market with Gasoline Pumps (TE/VFP)	322.50	50%	50%	20.76	50%	50%	23.04
<u>Generation Forecasts:</u>							
▪ 813 N. Euclid Street Gas Station Project (8 VFP)	2,580	83	83	166	92	92	184
Pass-By (Daily: 25%, AM: 63%, PM: 66%) ³	<u>-645</u>	<u>-52</u>	<u>-52</u>	<u>-104</u>	<u>-61</u>	<u>-61</u>	<u>-122</u>
Total Proposed Project Trip Generation	1,935	31	31	62	31	31	62

Notes:

- TE/VFP = Trip end per vehicle fueling position

² Source: *Trip Generation, 10th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2017)].

³ Source: *Trip Generation Handbook, 3rd Edition*, which recommends an AM peak hour pass-by of 63% and a PM peak hour pass-by of 66%. The daily pass-by is estimated to be 25%.

TABLE 3
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS⁴
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

No.	Description	Location/Address	Size
<u>City of Santa Ana</u>			
1.	The Line	3630 W Westminster Avenue	228 DU Apartments and 4,248 SF Commercial
2.	Nguyen Medical Plaza	5030 Westminster Avenue	5,800 SF Medical Office
3.	Vista Heritage School Expansion	2609 W Fifth Street	400 Student School Expansion
4.	Bewley Street Townhomes	1122 N Bewley Street	11 DU Townhomes
5.	John Le 5-Unit Development	1113 N Bewley Street	5 DU Apartments
6.	First & Harbor Commercial Development	121 N Harbor Boulevard	36,606 SF Commercial, Demolish 6,400 SF
7.	Fifth and Harbor Mixed Use Apartments	421 N Harbor Boulevard	94 DU Apartments 9,900 SF Commercial
8.	Hue-Vo Two Unit Development	3402 W Seventh Street	3 DU Single-Family
9.	West Fifth Villas	3417 W Fifth Street	8 DU Condominiums
10.	CN Square Office Building	402 N Euclid Street	4,025 SF Office building
11.	Euclid Commercial Plaza	111 N Euclid Street	2,680 SF Commercial
12.	Bui 8-Unit Development	301 N Mountain View	8 DU Apartments
13.	610 Newhope Condominiums	610 S Newhope Street	9 DU Condominiums
14.	4404 W First Street	4404 W First Street	3,662 SF Commercial
15.	Hoa Buddhist Center Addition	3222 W First Street	9,256 SF Church expansion
16.	Veteran's Village (Jamboree)	3314 W First Street	76 DU Apartments
17.	Saigon Reformed Presbyterian	5321 W McFadden Avenue	2,000 SF Church expansion
18.	Archangel Michael Coptic Orthodox Church Building	4405, 4319, 4325 W Edinger Avenue 4326, 4330, 4402 W Regent Drive	9,928 SF Church expansion, Demolish 5 DU
<u>City of Garden Grove</u>			
19.	DR-40-2019	10232 Russell Avenue	2 DU Condominium
20.	PUD-104-81/86/90	14291, 14231 Euclid Street	7,250 SF Retail and Office
21.	SP-070-2019 /V-023-2019	9191 Westminster Avenue	7,140 SF Medical Office
22.	SP-071-2019	12701,12671 Nelson Street	3,007 SF Church Office Expansion
<u>City of Westminster</u>			
23.	Bolsa Row	1002 Bolsa Avenue	200 DU Apartments

⁴ Source: Cities of Santa Ana, Garden Grove and Westminster Planning Department staff.

TABLE 4
CUMULATIVE PROJECTS TRIP GENERATION FORECAST⁵
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

No.	Cumulative Project Description	Daily Two-Way	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1.	The Line	1,813	26	83	109	86	53	139
2.	Nguyen Medical Plaza	202	12	4	16	6	14	20
3.	Vista Heritage School Expansion	852	125	107	232	33	35	68
4.	Bewley Street Townhomes	81	1	4	5	4	2	6
5.	John Le 5-Unit Development	37	0	2	2	2	1	3
6.	First & Harbor Commercial Development	1,244	19	12	31	44	48	92
7.	Fifth and Harbor Mixed Use Apartments	1,025	15	36	51	45	33	78
8.	Hue-Vo Two Unit Development	28	1	1	2	2	1	3
9.	West Fifth Villas	59	1	3	4	3	1	4
10.	CN Square Office Building	39	4	1	5	1	4	5
11.	Euclid Commercial Plaza	91	2	1	3	3	3	6
12.	Bui 8-Unit Development	59	1	3	4	3	1	4
13.	610 Newhope Condominiums	40	1	2	3	2	1	3
14.	4404 W First Street	124	2	1	3	5	5	10
15.	Hoa Buddhist Center Addition	64	2	1	3	2	3	5
16.	Veteran's Village (Jamboree)	556	8	27	35	27	16	43
17.	Saigon Reformed Presbyterian	14	1	0	1	0	1	1
18.	Archangel Michael Coptic Orthodox Church Building	69	2	1	3	2	3	5
19.	DR-40-2019	15	0	1	1	1	0	1
20.	PUD-104-81/86/90	158	5	2	7	6	8	14
21.	SP-070-2019 /V-023-2019	248	16	4	20	7	18	25
22.	SP-071-2019	21	1	0	1	0	1	1
23.	Bolsa Row	1,464	21	71	92	71	41	112
Total Cumulative Projects Trip Generation Forecast		8,303	266	367	633	355	293	648

⁵ Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*. Where applicable, pass-by adjustment factors were utilized and are reflected in the cumulative projects trip generation potential.

TABLE 5
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Project Significant Impact		(4) Existing Plus Project With Improvements	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Euclid Street at Hazard Avenue	D	AM	0.918	E	0.944	E	0.026	Yes	0.852	D
		PM	0.743	C	0.772	C	0.029	No	0.747	C

TABLE 6
YEAR 2020 CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2020 Cumulative Traffic Conditions		(3) Year 2020 Cumulative Plus Project Traffic Conditions		(4) Project Significant Impact		(5) Year 2020 Cumulative Plus Project With Improvements	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Euclid Street at Hazard Avenue	D	AM	0.918	E	0.956	E	0.983	E	0.027	Yes	0.883	D
		PM	0.743	C	0.783	C	0.813	D	0.030	No	0.778	C

TABLE 7
YEAR 2020 PEAK HOUR INTERSECTION LEFT-TURN QUEUING ANALYSIS⁶
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

Key Study Intersection	Storage Provided (ft.)	(1) Year 2020 Cumulative Traffic Conditions				(2) Year 2020 Cumulative Plus Project Traffic Conditions				(3) Year 2020 Cumulative Plus Project With Improvements Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue (ft.)	Adequate Storage Yes / No	Max Queue (ft.)	Adequate Storage Yes / No	Max. Queue (ft.)	Adequate Storage Yes / No	Max. Queue (ft.)	Adequate Storage Yes / No	Max. Queue (ft.)	Adequate Storage Yes / No	Max. Queue (ft.)	Adequate Storage Yes / No
1. Euclid Street at Hazard Avenue													
▪ Northbound Left-Turn	150' [a]	283'	Yes	213'	Yes	330'	Yes	252'	Yes	306'	Yes	252'	Yes
▪ Southbound Left-Turn	170' [a]	133'	Yes	106'	Yes	203'	Yes	144'	Yes	172'	Yes	135'	Yes
▪ Eastbound Left-Turn	100' [a]	227'	Yes	182'	Yes	232'	Yes	183'	Yes	226'	Yes	181'	Yes
▪ Westbound Left-Turn	70' [a]	155'	Yes	49'	Yes	218'	Yes	50'	Yes	103'	Yes	43'	Yes

Notes:

[a] = The storage shown is only for the striped left-turn pocket. However, the effective storage is much longer given that the striped left-turn lane continues into a two-way-left-turn-lane.

⁶ Queue is based on the 95th Percentile Queue and is reported in total queue length (feet) per lane for signalized intersections.

TABLE 8
PROJECT DRIVEWAY LEVELS OF SERVICE SUMMARY
813 N. EUCLID STREET GAS STATION PROJECT, SANTA ANA

Project Driveway	Time Period	Intersection Control	Year 2020 Cumulative Plus Project Traffic Conditions	
			HCM	LOS
-- Euclid Street at Project Driveway No. 1	AM	One-Way	20.9 s/v	C
	PM	Stop	33.6 s/v	D
-- Project Driveway No. 2 at Hazard Avenue	AM	One-Way	12.7 s/v	B
	PM	Stop	11.8 s/v	B

Notes:

- s/v = seconds per vehicle

TABLE 9
YEAR 2020 PROJECT FAIR SHARE CONTRIBUTION

Key Intersections	Impacted Time Period	(1) Existing Traffic	(2) Project Only Traffic	(3) Year 2020 Cumulative Plus Project Traffic	(4) Net Project Percent Increase
1. Euclid Street at Hazard Avenue	AM	4,855	82	5,089	35.0%

Notes:
Net Project Percent Increase (4) = [Column (2)] / [Column (3) – Column (1)]

APPENDIX A

EXISTING TRAFFIC COUNT DATA

City: SANTA ANA
 N-S Direction: EUCLID STREET
 E-W Direction: HAZARD AVENUE

File Name : H1909003
 Site Code : 00000000
 Start Date : 9/5/2019
 Page No : 1

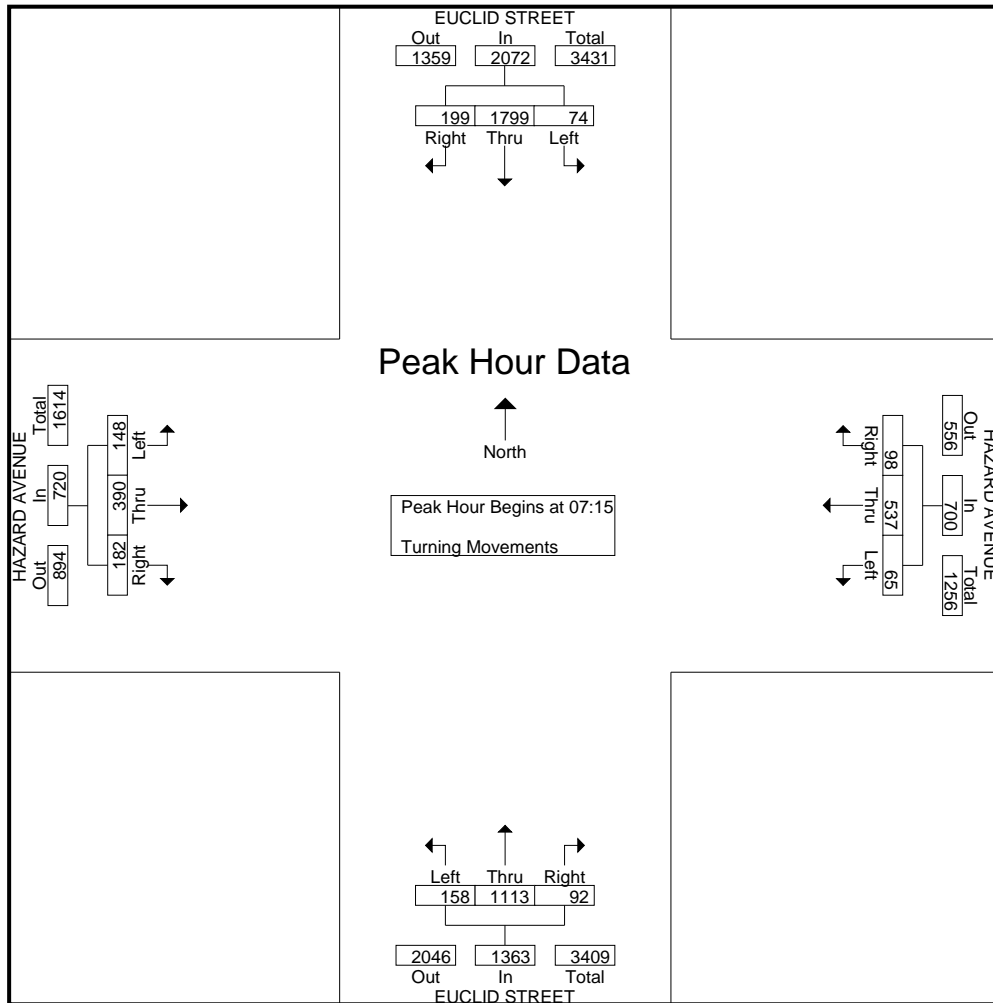
Groups Printed- Turning Movements

Start Time	EUCLID STREET Southbound			HAZARD AVENUE Westbound			EUCLID STREET Northbound			HAZARD AVENUE Eastbound			Int. Total
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
07:00	16	483	15	12	39	8	11	220	17	30	50	26	927
07:15	37	485	14	23	93	22	15	248	33	37	64	37	1108
07:30	45	440	14	20	139	19	19	287	42	49	95	32	1201
07:45	59	450	23	29	177	16	36	305	44	43	115	30	1327
Total	157	1858	66	84	448	65	81	1060	136	159	324	125	4563
08:00	58	424	23	26	128	8	22	273	39	53	116	49	1219
08:15	27	409	17	16	65	9	14	267	28	46	107	56	1061
08:30	41	436	23	21	57	10	7	244	21	44	82	45	1031
08:45	42	432	25	16	51	13	18	276	44	53	77	45	1092
Total	168	1701	88	79	301	40	61	1060	132	196	382	195	4403
16:00	51	272	25	14	75	9	14	420	43	36	75	36	1070
16:15	48	282	16	13	80	11	23	426	51	44	66	41	1101
16:30	61	305	19	16	86	16	24	444	52	31	59	35	1148
16:45	45	320	15	15	86	14	17	441	44	49	89	40	1175
Total	205	1179	75	58	327	50	78	1731	190	160	289	152	4494
17:00	65	348	17	25	105	11	14	407	46	32	67	40	1177
17:15	48	320	17	30	114	17	17	434	37	22	80	42	1178
17:30	61	325	22	21	110	5	17	418	51	40	77	41	1188
17:45	51	345	10	27	97	5	19	463	44	30	79	40	1210
Total	225	1338	66	103	426	38	67	1722	178	124	303	163	4753
Grand Total	755	6076	295	324	1502	193	287	5573	636	639	1298	635	18213
Apprch %	10.6	85.3	4.1	16	74.4	9.6	4.4	85.8	9.8	24.8	50.5	24.7	
Total %	4.1	33.4	1.6	1.8	8.2	1.1	1.6	30.6	3.5	3.5	7.1	3.5	

City: SANTA ANA
 N-S Direction: EUCLID STREET
 E-W Direction: HAZARD AVENUE

File Name : H1909003
 Site Code : 00000000
 Start Date : 9/5/2019
 Page No : 2

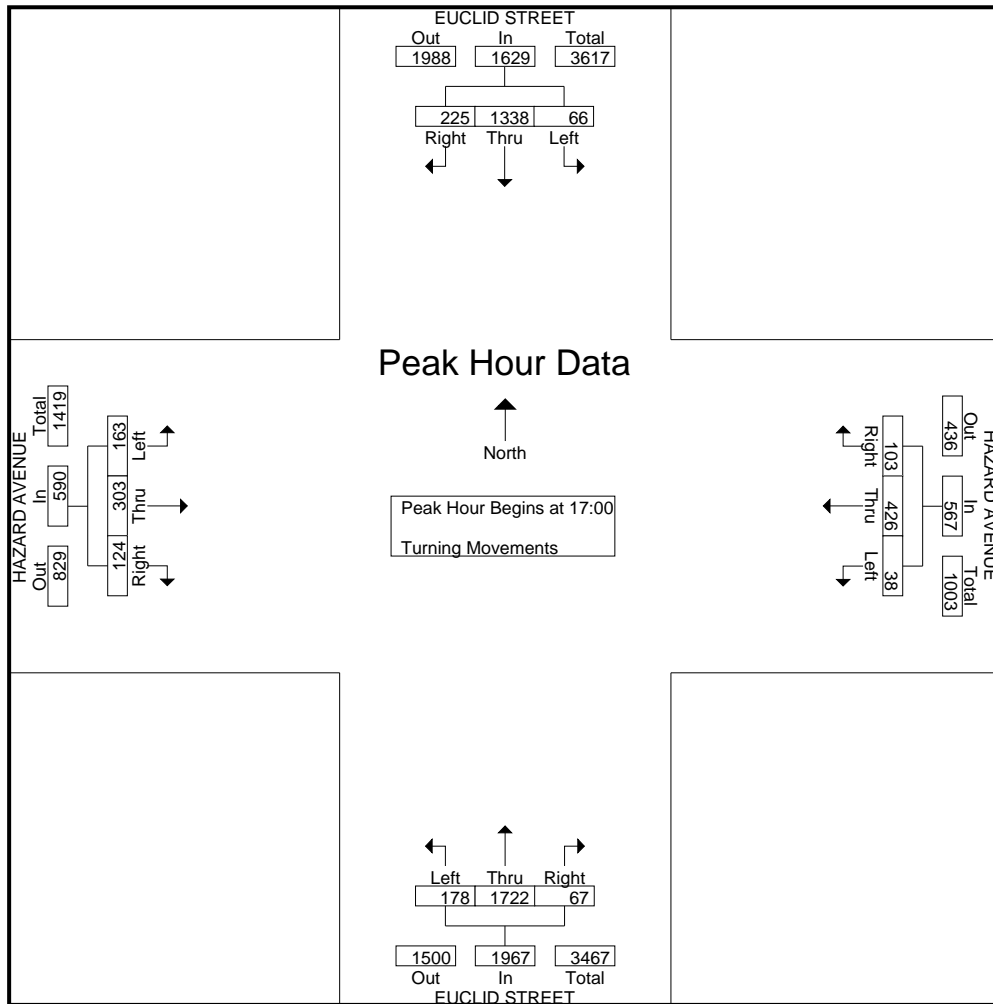
Start Time	EUCLID STREET Southbound				HAZARD AVENUE Westbound				EUCLID STREET Northbound				HAZARD AVENUE Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	37	485	14	536	23	93	22	138	15	248	33	296	37	64	37	138	1108
07:30	45	440	14	499	20	139	19	178	19	287	42	348	49	95	32	176	1201
07:45	59	450	23	532	29	177	16	222	36	305	44	385	43	115	30	188	1327
08:00	58	424	23	505	26	128	8	162	22	273	39	334	53	116	49	218	1219
Total Volume	199	1799	74	2072	98	537	65	700	92	1113	158	1363	182	390	148	720	4855
% App. Total	9.6	86.8	3.6		14	76.7	9.3		6.7	81.7	11.6		25.3	54.2	20.6		
PHF	.843	.927	.804	.966	.845	.758	.739	.788	.639	.912	.898	.885	.858	.841	.755	.826	.915



City: SANTA ANA
 N-S Direction: EUCLID STREET
 E-W Direction: HAZARD AVENUE

File Name : H1909003
 Site Code : 00000000
 Start Date : 9/5/2019
 Page No : 3

Start Time	EUCLID STREET Southbound				HAZARD AVENUE Westbound				EUCLID STREET Northbound				HAZARD AVENUE Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	65	348	17	430	25	105	11	141	14	407	46	467	32	67	40	139	1177
17:15	48	320	17	385	30	114	17	161	17	434	37	488	22	80	42	144	1178
17:30	61	325	22	408	21	110	5	136	17	418	51	486	40	77	41	158	1188
17:45	51	345	10	406	27	97	5	129	19	463	44	526	30	79	40	149	1210
Total Volume	225	1338	66	1629	103	426	38	567	67	1722	178	1967	124	303	163	590	4753
% App. Total	13.8	82.1	4.1		18.2	75.1	6.7		3.4	87.5	9		21	51.4	27.6		
PHF	.865	.961	.750	.947	.858	.934	.559	.880	.882	.930	.873	.935	.775	.947	.970	.934	.982



APPENDIX B

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX B-1

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	158	1113	92	74	1799	199	148	390	182	65	537	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1113	92	74	1799	199	148	390	182	65	537	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	278	23	19	450	50	37	98	46	16	134	25
Total Analysis Volume [veh/h]	158	1113	92	74	1799	199	148	390	182	65	537	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.24	0.24	0.05	0.39	0.39	0.09	0.34	0.34	0.04	0.19	0.19
Intersection LOS	E											
Intersection V/C	0.918											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	178	1722	67	66	1338	225	163	303	124	38	426	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	1722	67	66	1338	225	163	303	124	38	426	103
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	431	17	17	335	56	41	76	31	10	107	26
Total Analysis Volume [veh/h]	178	1722	67	66	1338	225	163	303	124	38	426	103
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.35	0.35	0.04	0.31	0.31	0.10	0.25	0.25	0.02	0.16	0.16
Intersection LOS	C											
Intersection V/C	0.743											

APPENDIX B-II

**EXISTING PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	281	23	25	446	50	37	99	46	16	132	25
Total Analysis Volume [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.24	0.24	0.06	0.39	0.39	0.09	0.34	0.34	0.04	0.18	0.18
Intersection LOS	E											
Intersection V/C	0.944											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	433	17	23	330	56	41	77	31	10	103	26
Total Analysis Volume [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.35	0.35	0.06	0.30	0.30	0.10	0.25	0.25	0.02	0.15	0.15
Intersection LOS	C											
Intersection V/C	0.772											

APPENDIX B-III

**EXISTING PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐			⇐ ⇐			⇐ ⇐			⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	281	23	25	446	50	37	99	46	16	132	25
Total Analysis Volume [veh/h]	200	1122	92	99	1783	199	148	396	182	65	527	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.24	0.24	0.06	0.39	0.39	0.09	0.25	0.11	0.04	0.18	0.18
Intersection LOS	D											
Intersection V/C	0.852											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	433	17	23	330	56	41	77	31	10	103	26
Total Analysis Volume [veh/h]	225	1731	67	93	1320	225	163	309	124	38	413	103
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.35	0.35	0.06	0.30	0.30	0.10	0.19	0.08	0.02	0.15	0.15
Intersection LOS	C											
Intersection V/C	0.747											

APPENDIX B-IV

**YEAR 2020 CUMULATIVE
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.956

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐ ⇐			⇐ ⇐			⇐ ⇐			⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	170	1146	98	81	1831	204	158	402	194	80	556	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	1146	98	81	1831	204	158	402	194	80	556	113
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	287	25	20	458	51	40	101	49	20	139	28
Total Analysis Volume [veh/h]	170	1146	98	81	1831	204	158	402	194	80	556	113
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.24	0.24	0.05	0.40	0.40	0.10	0.35	0.35	0.05	0.20	0.20
Intersection LOS	E											
Intersection V/C	0.956											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	190	1758	83	85	1375	236	170	322	135	48	443	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	1758	83	85	1375	236	170	322	135	48	443	118
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	440	21	21	344	59	43	81	34	12	111	30
Total Analysis Volume [veh/h]	190	1758	83	85	1375	236	170	322	135	48	443	118
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.36	0.36	0.05	0.32	0.32	0.11	0.27	0.27	0.03	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.783											

APPENDIX B-V

**YEAR 2020 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.983

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	289	25	27	454	51	40	102	49	20	137	28
Total Analysis Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.25	0.25	0.07	0.40	0.40	0.10	0.35	0.35	0.05	0.19	0.19
Intersection LOS	E											
Intersection V/C	0.983											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	442	21	28	339	59	43	82	34	12	108	30
Total Analysis Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.36	0.36	0.07	0.31	0.31	0.11	0.27	0.27	0.03	0.16	0.16
Intersection LOS	D											
Intersection V/C	0.813											

APPENDIX B-VI

**YEAR 2020 CUMULATIVE PLUS PROJECT
WITH MITIGATION TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	289	25	27	454	51	40	102	49	20	137	28
Total Analysis Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.25	0.25	0.07	0.40	0.40	0.10	0.26	0.12	0.05	0.19	0.19
Intersection LOS	D											
Intersection V/C	0.883											

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	442	21	28	339	59	43	82	34	12	108	30
Total Analysis Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.36	0.36	0.07	0.31	0.31	0.11	0.21	0.08	0.03	0.16	0.16
Intersection LOS	C											
Intersection V/C	0.778											

APPENDIX C

INTERSECTION LEFT-TURN QUEUING ANALYSIS HCM WORKSHEETS

APPENDIX C-1

**YEAR 2020 CUMULATIVE
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.993

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	170	1146	98	81	1831	204	158	402	194	80	556	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	1146	98	81	1831	204	158	402	194	80	556	113
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	302	26	21	482	54	42	106	51	21	146	30
Total Analysis Volume [veh/h]	179	1206	103	85	1927	215	166	423	204	84	585	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	58	0	11	53	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	54	54	7	49	49	47	47	47	47	47
g / C, Green / Cycle	0.10	0.45	0.45	0.06	0.41	0.41	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.24	0.05	0.40	0.41	0.22	0.35	0.11	0.19	0.19
s, saturation flow rate [veh/h]	1781	3560	1796	1781	3560	1776	743	1768	798	1870	1762
c, Capacity [veh/h]	179	1605	809	104	1457	727	226	691	88	730	688
d1, Uniform Delay [s]	53.96	23.95	23.95	55.81	34.88	35.21	46.58	34.52	59.30	27.63	27.64
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.40	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	31.75	1.32	2.60	13.92	18.62	31.11	6.07	14.96	35.62	0.52	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.54	0.54	0.81	0.98	0.99	0.73	0.91	0.96	0.50	0.50
d, Delay for Lane Group [s/veh]	85.71	25.27	26.55	69.73	53.50	66.32	52.65	49.47	94.92	28.15	28.20
Lane Group LOS	F	C	C	E	D	E	D	D	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	6.96	9.18	9.55	2.95	23.69	26.63	5.29	19.78	3.42	7.92	7.49
50th-Percentile Queue Length [ft/ln]	173.97	229.53	238.72	73.69	592.28	665.74	132.32	494.52	85.59	198.10	187.28
95th-Percentile Queue Length [veh/ln]	11.29	14.15	14.62	5.31	31.67	35.09	9.07	27.07	6.16	12.54	11.98
95th-Percentile Queue Length [ft/ln]	282.33	353.77	365.42	132.64	791.84	877.32	226.65	676.86	154.06	313.52	299.50

Movement, Approach, & Intersection Results

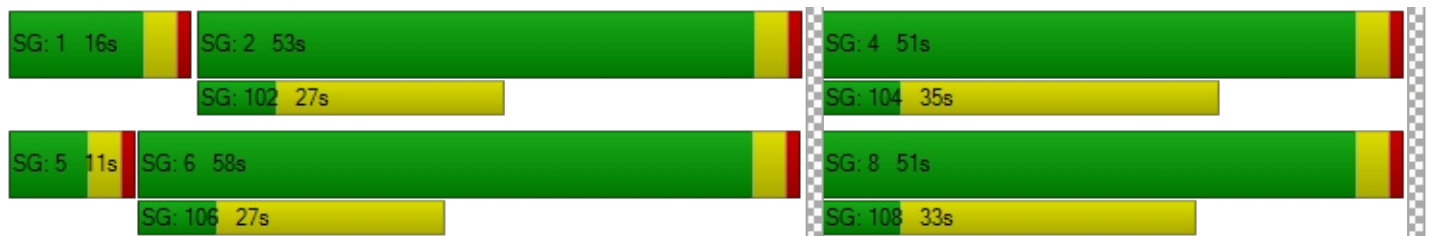
d_M, Delay for Movement [s/veh]	85.71	25.63	26.55	69.73	56.86	66.32	52.65	49.47	49.47	94.92	28.17	28.20
Movement LOS	F	C	C	E	E	E	D	D	D	F	C	C
d_A, Approach Delay [s/veh]	32.92			58.26			50.14			35.29		
Approach LOS	C			E			D			D		
d_I, Intersection Delay [s/veh]	46.51											
Intersection LOS	D											
Intersection V/C	0.993											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.243	3.362	2.577	2.486
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	817	783	783
d_b, Bicycle Delay [s]	18.15	21.00	22.20	22.20
I_b,int, Bicycle LOS Score for Intersection	2.378	2.784	2.868	2.210
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↑			↵ ↑ ↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	190	1758	83	85	1375	236	170	322	135	48	443	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	1758	83	85	1375	236	170	322	135	48	443	118
Peak Hour Factor	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	448	21	22	350	60	43	82	34	12	113	30
Total Analysis Volume [veh/h]	193	1790	85	87	1400	240	173	328	137	49	451	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	24	45	0	10	31	0	0	40	0	0	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	42	42	6	36	36	35	35	35	35	35
g / C, Green / Cycle	0.13	0.45	0.45	0.06	0.38	0.38	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.35	0.05	0.31	0.31	0.21	0.26	0.05	0.16	0.16
s, saturation flow rate [veh/h]	1781	3560	1827	1781	3560	1733	841	1778	927	1870	1737
c, Capacity [veh/h]	230	1584	813	111	1347	656	267	651	190	685	636
d1, Uniform Delay [s]	40.43	22.43	22.48	43.90	26.58	26.61	35.72	25.83	38.58	22.64	22.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.23	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.04	3.90	7.48	11.28	5.62	11.00	2.91	3.08	0.71	0.43	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.78	0.78	0.78	0.82	0.82	0.65	0.71	0.26	0.43	0.43
d, Delay for Lane Group [s/veh]	48.47	26.34	29.96	55.18	32.20	37.61	38.63	28.92	39.29	23.07	23.15
Lane Group LOS	D	C	C	E	C	D	D	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	4.86	12.00	13.19	2.35	11.83	12.54	4.03	9.28	1.09	4.93	4.63
50th-Percentile Queue Length [ft/ln]	121.61	300.02	329.85	58.70	295.73	313.43	100.81	232.00	27.16	123.17	115.84
95th-Percentile Queue Length [veh/ln]	8.48	17.68	19.15	4.23	17.47	18.34	7.26	14.28	1.96	8.57	8.16
95th-Percentile Queue Length [ft/ln]	212.04	442.06	478.77	105.65	436.74	458.60	181.47	356.90	48.88	214.17	204.10

Movement, Approach, & Intersection Results

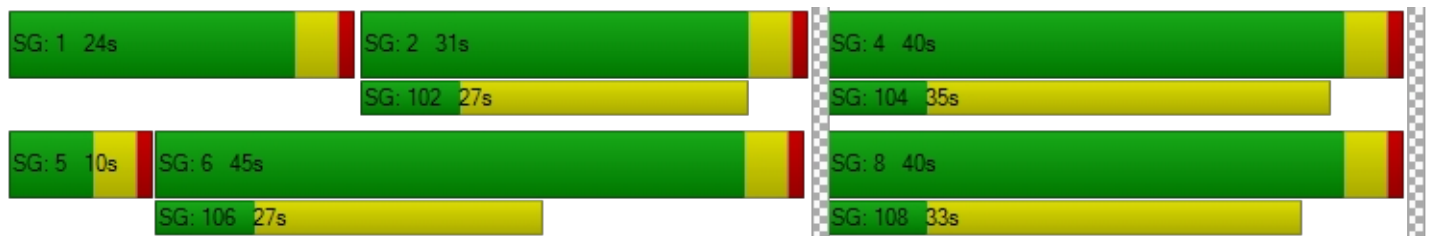
d_M, Delay for Movement [s/veh]	48.47	27.45	29.96	55.18	33.35	37.61	38.63	28.92	28.92	39.29	23.10	23.15
Movement LOS	D	C	C	E	C	D	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	29.52			35.04			31.55			24.39		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	31.03											
Intersection LOS	C											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	37.14	37.14
I_p,int, Pedestrian LOS Score for Intersection	3.175	3.373	2.504	2.406
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	863	568	758	758
d_b, Bicycle Delay [s]	15.35	24.34	18.32	18.32
I_b,int, Bicycle LOS Score for Intersection	2.697	2.509	2.612	2.071
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX C-II

**YEAR 2020 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	50.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.028

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑ ↑			↵ ↑ ↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	304	26	28	478	54	42	107	51	21	144	30
Total Analysis Volume [veh/h]	223	1216	103	112	1911	215	166	429	204	84	575	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	18	57	0	11	50	0	0	46	0	0	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	54	54	7	47	47	42	42	42	42	42
g / C, Green / Cycle	0.12	0.47	0.47	0.06	0.41	0.41	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.25	0.25	0.06	0.40	0.40	0.22	0.36	0.11	0.19	0.19
s, saturation flow rate [veh/h]	1781	3560	1796	1781	3560	1776	750	1769	794	1870	1760
c, Capacity [veh/h]	218	1672	843	110	1456	726	208	645	63	681	641
d1, Uniform Delay [s]	50.44	21.46	21.46	53.93	33.28	33.60	47.73	36.15	57.47	28.70	28.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.17	0.45	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.45	1.18	2.33	44.96	17.40	29.70	10.40	29.42	172.65	0.63	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.52	0.52	1.02	0.97	0.98	0.80	0.98	1.34	0.52	0.53
d, Delay for Lane Group [s/veh]	84.90	22.64	23.79	98.89	50.68	63.30	58.12	65.57	230.13	29.33	29.38
Lane Group LOS	F	C	C	F	D	E	E	E	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	8.33	8.45	8.79	4.54	22.23	25.11	5.42	22.42	4.84	7.80	7.37
50th-Percentile Queue Length [ft/ln]	208.24	211.22	219.87	113.60	555.72	627.68	135.59	560.52	121.07	194.98	184.26
95th-Percentile Queue Length [veh/ln]	13.19	13.22	13.66	8.09	29.96	33.32	9.24	30.19	8.72	12.38	11.82
95th-Percentile Queue Length [ft/ln]	329.81	330.39	341.46	202.17	749.02	833.12	231.07	754.66	217.92	309.48	295.56

Movement, Approach, & Intersection Results

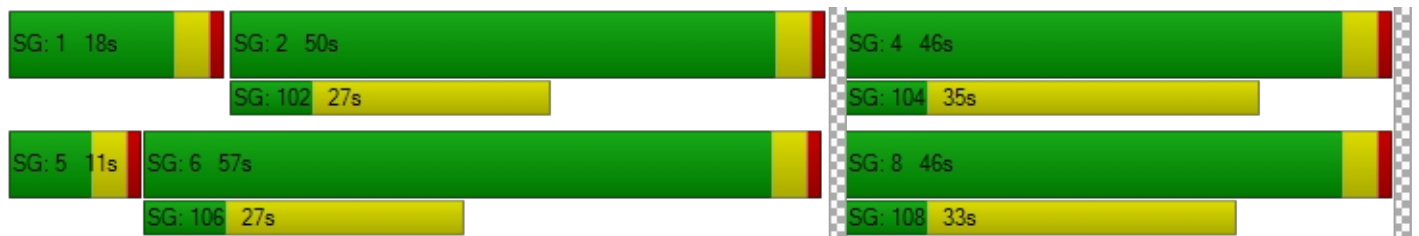
d_M, Delay for Movement [s/veh]	84.90	22.96	23.79	98.89	53.98	63.30	58.12	65.57	65.57	230.13	29.35	29.38
Movement LOS	F	C	C	F	D	E	E	E	E	F	C	C
d_A, Approach Delay [s/veh]	31.97			57.12			64.02			51.03		
Approach LOS	C			E			E			D		
d_I, Intersection Delay [s/veh]	50.03											
Intersection LOS	D											
Intersection V/C	1.028											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	47.03	47.03
I_p,int, Pedestrian LOS Score for Intersection	3.246	3.363	2.584	2.489
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	922	800	730	730
d_b, Bicycle Delay [s]	16.71	20.70	23.17	23.17
I_b,int, Bicycle LOS Score for Intersection	2.408	2.791	2.878	2.201
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵ ↑↑↑			↵ ↑↑↑			↵ ↑			↵ ↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Peak Hour Factor	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	450	21	29	345	60	43	84	34	12	109	30
Total Analysis Volume [veh/h]	241	1799	85	114	1382	240	173	334	137	49	438	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	25	45	0	11	31	0	0	39	0	0	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	42	42	7	34	34	34	34	34	34	34
g / C, Green / Cycle	0.16	0.44	0.44	0.07	0.36	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.35	0.35	0.06	0.31	0.31	0.20	0.26	0.05	0.15	0.16
s, saturation flow rate [veh/h]	1781	3560	1827	1781	3560	1732	851	1779	922	1870	1734
c, Capacity [veh/h]	278	1562	802	132	1270	618	266	642	178	675	626
d1, Uniform Delay [s]	39.12	22.99	23.05	43.53	28.35	28.38	35.96	26.38	39.62	22.93	22.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.25	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.03	4.29	8.21	15.24	7.69	14.63	3.10	3.73	0.82	0.43	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.80	0.80	0.87	0.86	0.86	0.65	0.73	0.27	0.43	0.43
d, Delay for Lane Group [s/veh]	47.16	27.28	31.25	58.77	36.03	43.01	39.05	30.11	40.44	23.36	23.44
Lane Group LOS	D	C	C	E	D	D	D	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	6.02	12.30	13.59	3.18	12.42	13.32	4.06	9.63	1.11	4.84	4.55
50th-Percentile Queue Length [ft/ln]	150.59	307.61	339.69	79.58	310.51	332.92	101.38	240.70	27.64	121.12	113.86
95th-Percentile Queue Length [veh/ln]	10.05	18.06	19.63	5.73	18.20	19.30	7.30	14.72	1.99	8.45	8.05
95th-Percentile Queue Length [ft/ln]	251.22	451.43	490.83	143.24	455.00	482.53	182.48	367.92	49.76	211.37	201.35

Movement, Approach, & Intersection Results

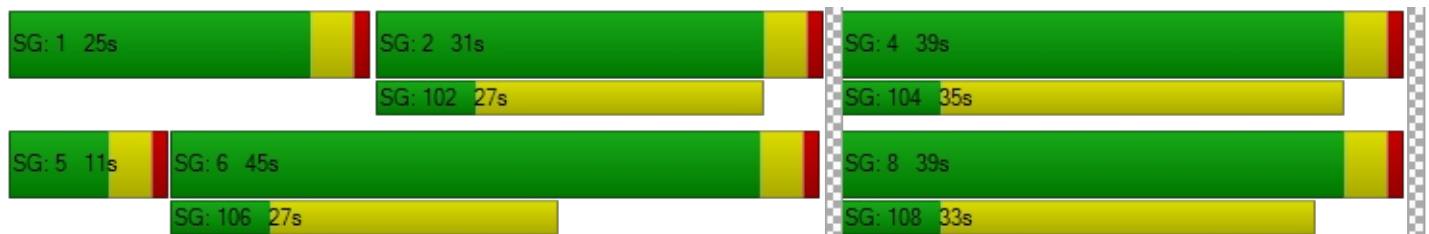
d_M, Delay for Movement [s/veh]	47.16	28.51	31.25	58.77	37.51	43.01	39.05	30.11	30.11	40.44	23.39	23.44
Movement LOS	D	C	C	E	D	D	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	30.73			39.66			32.51			24.77		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	33.28											
Intersection LOS	C											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	37.14	37.14
I_p,int, Pedestrian LOS Score for Intersection	3.180	3.375	2.514	2.411
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	863	568	737	737
d_b, Bicycle Delay [s]	15.35	24.34	18.95	18.95
I_b,int, Bicycle LOS Score for Intersection	2.728	2.514	2.622	2.060
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX C-III

**YEAR 2020 CUMULATIVE PLUS PROJECT
WITH MITIGATION TRAFFIC CONDITIONS**

Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	53.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	1155	98	106	1815	204	158	408	194	80	546	113
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	304	26	28	478	54	42	107	51	21	144	30
Total Analysis Volume [veh/h]	223	1216	103	112	1911	215	166	429	204	84	575	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	20	56	0	13	49	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	52	52	9	45	45	47	47	47	47	47	47
g / C, Green / Cycle	0.13	0.43	0.43	0.08	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.25	0.25	0.06	0.40	0.40	0.22	0.23	0.13	0.09	0.19	0.19
s, saturation flow rate [veh/h]	1781	3560	1796	1781	3560	1776	750	1870	1589	959	1870	1760
c, Capacity [veh/h]	238	1547	780	134	1340	668	228	730	620	239	730	687
d1, Uniform Delay [s]	51.48	25.45	25.45	54.73	37.42	37.42	46.32	28.94	25.59	43.46	27.57	27.58
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.16	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.75	1.51	2.97	12.57	40.13	54.81	5.64	1.09	0.31	0.88	0.51	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.57	0.57	0.84	1.05	1.07	0.73	0.59	0.33	0.35	0.49	0.49
d, Delay for Lane Group [s/veh]	67.22	26.96	28.42	67.31	77.55	92.23	51.96	30.04	25.90	44.33	28.08	28.13
Lane Group LOS	E	C	C	E	F	F	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	7.67	9.62	10.02	3.81	26.71	29.37	5.25	9.92	4.13	2.29	7.79	7.36
50th-Percentile Queue Length [ft/ln]	191.68	240.47	250.59	95.19	667.83	734.22	131.18	247.93	103.22	57.13	194.74	184.00
95th-Percentile Queue Length [veh/ln]	12.21	14.71	15.22	6.85	36.52	40.11	9.00	15.08	7.43	4.11	12.37	11.81
95th-Percentile Queue Length [ft/ln]	305.21	367.63	380.40	171.34	913.12	1002.85	225.10	377.04	185.79	102.83	309.17	295.23

Movement, Approach, & Intersection Results

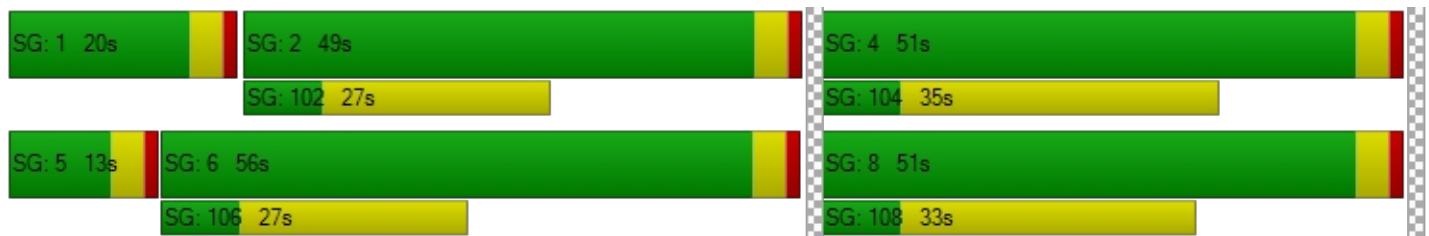
d_M, Delay for Movement [s/veh]	67.22	27.37	28.42	67.31	81.38	92.23	51.96	30.04	25.90	44.33	28.10	28.13
Movement LOS	E	C	C	E	F	F	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	33.20			81.72			33.54			29.85		
Approach LOS	C			F			C			C		
d_I, Intersection Delay [s/veh]	53.04											
Intersection LOS	D											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	3.248	3.365	2.667	2.491
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	750	783	783
d_b, Bicycle Delay [s]	19.27	23.44	22.20	22.20
I_b,int, Bicycle LOS Score for Intersection	2.408	2.791	2.878	2.201
Bicycle LOS	B	C	C	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Euclid Street at Hazard Avenue

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	150.00	100.00	100.00	170.00	100.00	100.00	100.00	100.00	100.00	70.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Euclid Street			Euclid Street			Hazard Avenue			Hazard Avenue		
Base Volume Input [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	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	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	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1767	83	112	1357	236	170	328	135	48	430	118
Peak Hour Factor	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	450	21	29	345	60	43	84	34	12	109	30
Total Analysis Volume [veh/h]	241	1799	85	114	1382	240	173	334	137	49	438	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	24	43	0	12	31	0	0	40	0	0	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	41	41	8	34	34	34	34	34	34	34	34
g / C, Green / Cycle	0.16	0.43	0.43	0.08	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.35	0.35	0.06	0.31	0.31	0.20	0.18	0.09	0.05	0.15	0.16
s, saturation flow rate [veh/h]	1781	3560	1827	1781	3560	1732	851	1870	1589	1046	1870	1734
c, Capacity [veh/h]	277	1536	788	142	1266	616	268	678	576	290	678	628
d1, Uniform Delay [s]	39.15	23.60	23.66	42.96	28.44	28.47	35.75	23.51	21.13	31.53	22.83	22.87
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.14	4.72	8.99	9.85	7.85	14.90	2.76	0.56	0.21	0.27	0.42	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.81	0.81	0.80	0.86	0.86	0.65	0.49	0.24	0.17	0.43	0.43
d, Delay for Lane Group [s/veh]	47.29	28.32	32.65	52.81	36.29	43.37	38.52	24.07	21.34	31.81	23.25	23.34
Lane Group LOS	D	C	C	D	D	D	D	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh/ln]	6.03	12.57	13.92	3.00	12.47	13.38	4.02	5.78	2.13	0.95	4.83	4.54
50th-Percentile Queue Length [ft/ln]	150.83	314.23	348.08	74.90	311.65	334.39	100.48	144.48	53.15	23.84	120.80	113.55
95th-Percentile Queue Length [veh/ln]	10.06	18.38	20.04	5.39	18.26	19.37	7.23	9.72	3.83	1.72	8.44	8.04
95th-Percentile Queue Length [ft/ln]	251.54	459.59	501.06	134.81	456.41	484.34	180.87	243.04	95.66	42.91	210.93	200.94

Movement, Approach, & Intersection Results

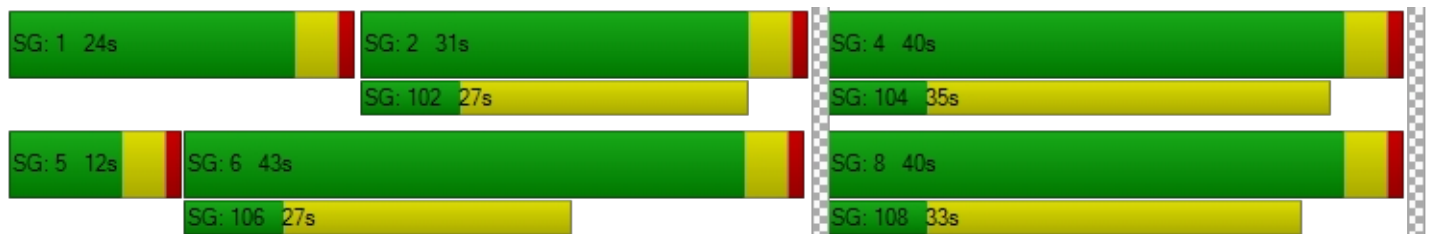
d_M, Delay for Movement [s/veh]	47.29	29.66	32.65	52.81	37.78	43.37	38.52	24.07	21.34	31.81	23.28	23.34
Movement LOS	D	C	C	D	D	D	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.78			39.54			27.37			23.98		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	32.93											
Intersection LOS	C											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	37.14	37.14
I_p,int, Pedestrian LOS Score for Intersection	3.180	3.375	2.607	2.411
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	568	758	758
d_b, Bicycle Delay [s]	16.51	24.34	18.32	18.32
I_b,int, Bicycle LOS Score for Intersection	2.728	2.514	2.622	2.060
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-






APPENDIX D

PROJECT DRIVEWAY LEVEL OF SERVICE CALCULATION WORKSHEETS

Intersection Level Of Service Report
Intersection 2: Euclid Street at Project Driveway No. 1

Control Type:	Two-way stop	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.240

Intersection Setup

Name	Euclid Street		Euclid Street		Project Driveway No. 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Euclid Street		Euclid Street		Project Driveway No. 1	
Base Volume Input [veh/h]	1431	25	0	2115	0	67
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]	1431	25	0	2115	0	67
Peak Hour Factor	0.9500	0.9500	1.0000	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]	377	7	0	557	0	18
Total Analysis Volume [veh/h]	1506	26	0	2226	0	71
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.02	0.00	0.00	0.02	0.00	0.24
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	20.93
Movement LOS	A	A		A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.92
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	22.88
d_A, Approach Delay [s/veh]	0.00		0.00		20.93	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.39					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: Project Driveway No. 2 at Hazard Avenue

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.035

Intersection Setup

Name	Project Driveway No. 2		Hazard Avenue		Hazard Avenue	
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 Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway No. 2		Hazard Avenue		Hazard Avenue	
Base Volume Input [veh/h]	0	16	572	42	16	739
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	16	572	42	16	739
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	151	11	4	194
Total Analysis Volume [veh/h]	0	17	602	44	17	778
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	0.04	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	12.69	0.00	0.00	8.90	0.00
Movement LOS		B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.11	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	0.00	2.72	0.00	0.00	1.38	0.00
d_A, Approach Delay [s/veh]	12.69		0.00		0.19	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.25					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 2: Euclid Street at Project Driveway No. 1

Control Type:	Two-way stop	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	Euclid Street		Euclid Street		Project Driveway No. 1	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Euclid Street		Euclid Street		Project Driveway No. 1	
Base Volume Input [veh/h]	2013	27	0	1570	0	74
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]	2013	27	0	1570	0	74
Peak Hour Factor	0.9500	0.9500	1.0000	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]	530	7	0	413	0	19
Total Analysis Volume [veh/h]	2119	28	0	1653	0	78
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.02	0.00	0.00	0.02	0.00	0.39
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	33.62
Movement LOS	A	A		A		D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	1.70
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	42.52
d_A, Approach Delay [s/veh]	0.00		0.00		33.62	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	0.68					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: Project Driveway No. 2 at Hazard Avenue

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	Project Driveway No. 2		Hazard Avenue		Hazard Avenue	
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 Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Driveway No. 2		Hazard Avenue		Hazard Avenue	
Base Volume Input [veh/h]	0	18	478	46	19	597
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	18	478	46	19	597
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	126	12	5	157
Total Analysis Volume [veh/h]	0	19	503	48	20	628
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	0.03	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	11.77	0.00	0.00	8.60	0.00
Movement LOS		B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.11	0.00	0.00	0.06	0.00
95th-Percentile Queue Length [ft/ln]	0.00	2.67	0.00	0.00	1.50	0.00
d_A, Approach Delay [s/veh]	11.77		0.00		0.27	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.32					
Intersection LOS	B					