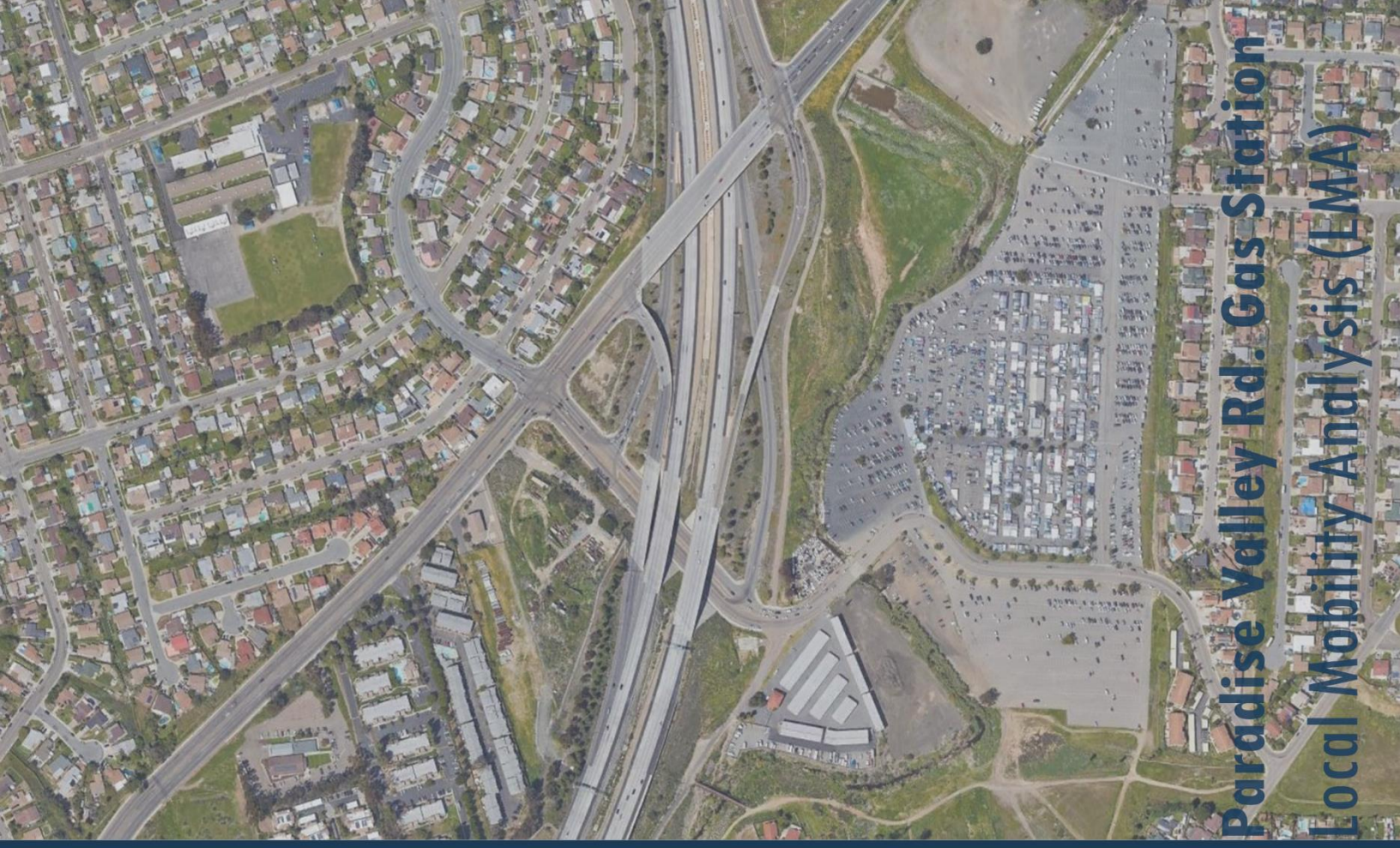

Paradise Valley Rd. Gas Station
Local Mobility Analysis (LMA)

Prepared For: The County of San Diego and Rincon Consultants, Inc.

Project Number: 001719
PDS2019-ZAP-19003, PDS2020-ER-20-18-001
Date: 05/12/2023

URBAN SYSTEMS ASSOCIATES, INC.
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Appendices

1.0 EXECUTIVE SUMMARY

Urban Systems Associates, Inc. (USAI) was retained by Rincon Consultants, Inc. to evaluate possible traffic impacts for the proposed project located at the northeast corner of Paradise Valley Road and Elkelton Place in Spring Valley, California. The proposed project consists of the development of a vacant lot with a 4,713 square feet (SF) gas station with eight (8) vehicle fueling spaces and a car wash. The proposed project falls within the jurisdiction boundaries for the County of San Diego. The project is calculated to generate a net increase of **893** primary average daily trips (ADT) with **71** AM (**36** In / **36** Out) peak hour trips and **80** PM (**40** In / **40** Out) peak hour trips.

1.1 CEQA Impacts and Mitigation Measures

The project has been scoped with County of San Diego staff to assess whether a CEQA Transportation Analysis would be required for this project.

Refer to **Appendix A** for the Scoping Agreement for the Paradise Valley Road Gas Station project.

The project has been screened out through the California Environmental Quality Act (CEQA) Transportation Analysis Screening by meeting two elements of the screening criteria, which include:

1. A small service/retail project; a project that is less than 50,000 SF.
2. Locally serving retail/public facility/recreational

Therefore, no CEQA impacts are presumed from this project and no mitigation would be required.

1.2 LMA Findings and Proposed Improvements

The project has been scoped with County of San Diego staff to assess the type of Local Mobility Analysis (LMA) that would be required for this project.

Since the project is calculated to generate a net increase of 893 primary Average Daily Trips (ADT), a full LMA was prepared to analyze the potential effects of the proposed development project on traffic operations and safety to the roadway network in the proximate area of the project. Based upon a full LMA evaluation of Existing, Near-Term (Opening Day Year 2022), and Near-Term (Opening Day Year 2022) With Project conditions, the following can be concluded:

1.3 Proposed Improvements at Intersections

Table 1-1: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Intersection Peak Hour LOS Summary Comparison

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	Need for Improvement?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	Paradise Valley Road / Elkelton Place	36.9	D	45.5	D	46.8	D	9.9	No	50.4	D	4.9	No
2	Paradise Valley Road / SR-54 SB On-Ramp	6.9	A	7.4	A	6.8	A	-0.1	No	7.5	A	0.1	No
3	Elkelton Place / SR-125 SB Off-Ramp	8.9	A	22.9	C	9.0	A	0.1	No	23.8	C	0.9	No
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	30.3	C	48.7	D	30.6	C	0.3	No	52.0	D	3.3	No
5	Jamacha Boulevard / Gillespie Drive	12.0	B	20.3	C	13.6	B	1.6	No	21.1	C	0.8	No
6	Jamacha Road / Sweetwater Road	29.0	C	47.7	D	29.4	C	0.4	No	49.2	D	1.5	No

Notes:

LOS = Level of Service

Δ = Change

D= Delay

1. As shown in **Table 1-1**, none of the study intersections result in a LOS degradation from an acceptable LOS to a LOS E or F as a result of the addition of Project traffic.
2. As shown in **Table 1-1**, none of the study intersections that operate in the Without Project conditions that were calculated to operate at a LOS E or F have resulted in an increased delay of 5.0 or more seconds with the addition of Project traffic.
3. All study intersections where no exclusive left-turn lane exists (NB approach of Jamacha Boulevard at Gillespie Drive) are not anticipated to have a volume that exceeds 100 vehicles per hour in the AM and PM peak hour.
4. All study intersections where the posted speed limit is 45 mph or greater, and have a left-turn volume that is anticipated to exceed 150 vehicles have a protected left-turn phase in the existing conditions.
5. All study intersections where the left-turn volume is anticipated to exceed 300 vehicles are currently providing two dedicated left-turn lanes.
6. All study intersections where the right-turn volume is anticipated to exceed 150 vehicles are currently providing a dedicated turn lane, except for the following:
    a. **Paradise Valley Road / Elkelton Place (shared EB-T and EB-R lane)**
        i. EB-R turn is currently shared with an EB-T movement.
        ii. The 150 vehicles per hour threshold is exceeded in the AM and PM peak hours for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.
        iii. The existing conditions show that the shared EB-T and EB-R lane is approximately 20 feet wide at the intersection.
        iv. The 95th percentile queue for the shared EB-T and EB-R lane is the following:
            - Existing AM: 200 ft.
            - Existing PM: 329 ft.

- N-T AM: 273 ft.
- N-T PM: 456 ft.
- N-T+P AM: 286 ft.
- N-T+P PM: 643 ft.

❖ **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold and not as a result of the addition of project traffic. It is recommended to explore the restriping of the intersection to accommodate an exclusive right-turn lane considering that the volume threshold is exceeded on all study conditions and factoring that the posted speed limit of 45mph.**

b. Paradise Valley Road / Elkelton Place (shared WB-T and WB-R lane)

i. WB-R turn is currently shared with a WB-T movement.

ii. The 150 vehicles per hour threshold is exceeded in the PM peak hour for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.

iii. The existing conditions show that the shared EB-T and EB-R lane is approximately 12 feet wide at the intersection.

iv. The 95th percentile queue for the shared WB-T and WB-R lane is the following:

- Existing AM: 100 ft.
- Existing PM: 422 ft.
- N-T AM: 180 ft.
- N-T PM: 502 ft.
- N-T+P AM: 150 ft.
- N-T+P PM: 466 ft.

- **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold established through consultation with the County of San Diego staff and the County of San Diego General Plan and not as a result of the addition of project traffic.**

7. The following locations are shown to result in a turn-lane 95th queue to exceed the storage length of the turn-lane:

   a. Paradise Valley Road / Elkelton Place

   i. SB-L
      - AM Peak: Near-Term, and Near-Term With Project
      - PM Peak: Existing, Near-Term, and Near-Term With Project

   ii. NB-L
      - AM Peak: Near-Term With Project
      - PM Peak: Existing, Near-Term, and Near-Term With Project

   iii. EB-L
      - AM Peak: Existing, Near-Term, and Near-Term With Project
      - PM Peak: Existing, Near-Term, and Near-Term With Project

   iv. WB-L
      - AM Peak: Near-Term With Project
      - PM Peak: Near-Term With Project

   - **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions (except for the WB-L turn), which as shown, have existing queues that exceed turn lane length/storage. It is**

recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements. In addition, it is also recommended to explore the extension of the WB-L turn lane in conjunction with the signal timing/phasing adjustments.

b. Jamacha Boulevard / Sweetwater Road – SR-54 NB Off-Ramp

i. EB-L

- AM Peak: Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.**

c. Sweetwater Road / Jamacha Road

i. EB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

ii. NB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing**

queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.

1.4 Proposed Improvements at Roadway Segments

As a result of the analysis conducted for the study street segments shown in **Table 1-2**, none of the segments show a degradation of their LOS between Near-Term (Opening Day Year 2022) Without Project conditions and Near-Term (Opening Day Year 2022) With Project conditions.

Therefore, no improvements would be necessary for the study street segments.

Table 1-2: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Street Segment LOS Summary Comparison

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Existing			Existing + Project			Δ V/C	Does this result in the need for an improvement?
					LOS	Volume	V/C	LOS	Volume	V/C		
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	4	34,200	Major Road B	C	24,827	0.73	C	26,055	0.76	0.036	***NO***
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	D	29,408	0.86	D	30,033	0.88	0.018	***NO***
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	4	28,000	Boulevard B	C	20,135	0.72	C	20,247	0.72	0.004	***NO***
Sweetwater Road	N/O Jamacha Boulevard	4	34,200	Major Road B	B	13,849	0.40	B	14,050	0.41	0.006	***NO***
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	E	31,000	0.91	E	31,268	0.91	0.008	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

2.0 INTRODUCTION

2.1 Project and Study Description

Urban Systems Associates, Inc. has prepared a Full Local Mobility Analysis (LMA) for the proposed Paradise Valley Road Gas Station project located at the northeast corner of Paradise Valley Road and Elkelton Place in Spring Valley, California. The proposed project consists of the development of a 21,548 SF (0.49 acres) of vacant space to support a gasoline service station (with four multi-product dispensers to serve up to eight vehicles simultaneously) with a 2,318 SF canopy, a 4,713 SF convenience store building, an 855 SF carwash tunnel, and 16 off-street vehicle parking spaces. The planned development site is located east of Paradise Valley Road, north of Elkelton Place, and west of SR-54 / SR-125.

2.1.1 Purpose of the Transportation Study

The purpose of this LMA study is to examine potential traffic operation issues and impacts on the surrounding area as a direct result of the proposed project. The proposed project was analyzed following the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (*December 2018*), the County of San Diego General Plan, and consultation with County of San Diego staff.

2.1.2 Project Location and Vicinity Map (*exhibit*)

The project site is located at the northeast corner of Paradise Valley Road and Elkelton Place in Spring Valley, California, and is identified with Assessor's Parcel Number (APN) 584-1160-52-00. The project site is bound to the southwest by Elkelton Place, to the northwest by Paradise Valley Road, and to the east by a State Route (SR) 54 freeway on-ramp.

Figure 2-1 shows a vicinity map of the proposed project site location.

Figure 2-1: Project Location and Vicinity Map

2.1.3 Project Size and Description

The project site consists of approximately 21,548 SF (0.49 acres) of vacant space, which is planned to be developed to support a gasoline service station (with four multi-product dispensers to serve up to eight vehicles simultaneously) with a 2,318 SF canopy, a 4,713 SF convenience store building, an 855 SF carwash tunnel, and 16 off-street vehicle parking spaces.

2.1.4 Existing and Proposed Land-Use and Zoning

The proposed project is consistent with the County of San Diego General Plan. As shown in the Land-Use Map contained within **Appendix B**, the project is located within the Spring Valley Community Planning Area. The project site's land use designation is that of a *Medium Impact Industrial*, which as described in the County of San Diego General Plan Land Use Framework, provides for "*freestanding industrial development in all Regional Category areas with access to key transportation corridors.*"

The project site's zoning is identified with an M52 (Limited Impact Industrial)/M54 (General Impact Industrial). M52 zoning permits gasoline sales as part of the commercial use types subject to limitations listed under zoning ordinance 2523a. The limitations described under zoning ordinance 2980 indicate that "*there shall be no open goods or materials, and all repair and lubrication services shall take place in an enclosed building.*" M54 zoning permits gasoline sales as part of the commercial use types listed under the zoning ordinance 2542b.

2.1.5 Site Plan and Proposed Project (*exhibit*)

A project site plan is included in **Figure 2-2**.

As shown in the project site plan, the project will be accessible from the public right-of-way via a right-in/right-out driveway along Paradise Valley Road. The project will develop the site with a

4,713 SF convenience store on the northeast corner of the site with surface-level parking adjacent to the building. Directly adjacent to the surface level parking spaces fronting the convenience store, the project will develop eight (8) fueling spaces (4 fueling pumps). The project will support an 855 SF car wash that will be located in the southwest corner of the site, which is planned to be accessed via a one-way access point that will be located on the southeast corner of the site.

Since the proposed project is anticipated to generate a net increase of 893 primary ADT and 80 peak hour trips during the highest peak, a full LMA is required. To determine the potential effects of the proposed development project on traffic operations and safety to the roadway network in the proximate area of the project, the evaluation of the project access point and surrounding roadway network facilities have been prepared.

Figure 2-3 shows the proposed project location, study area, study intersections, and study street segments.

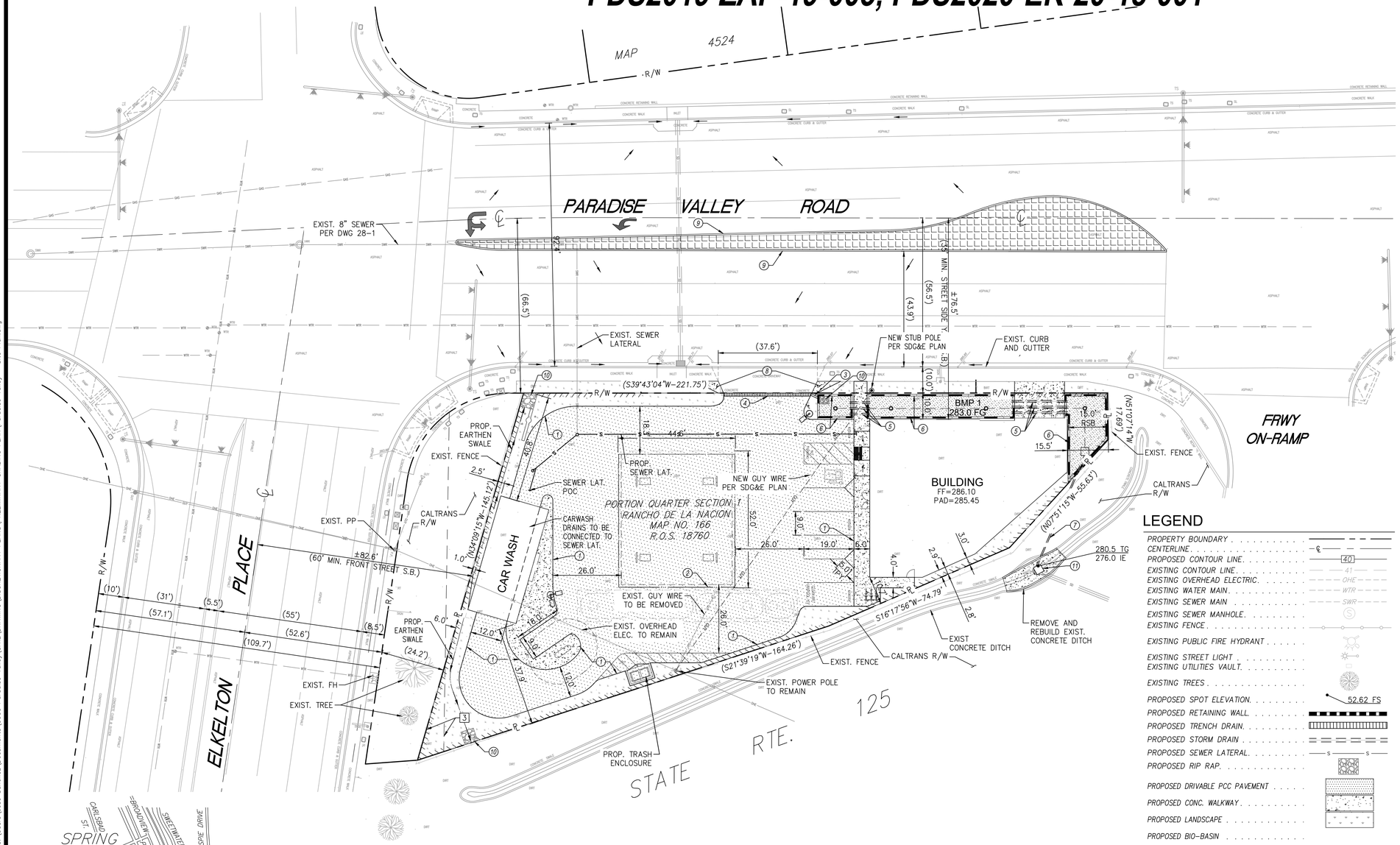
Table 2-1 lists the project study area intersections.

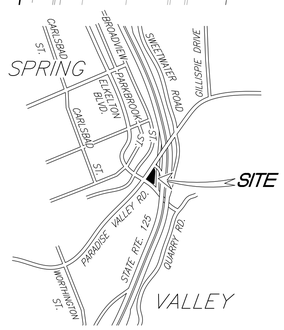
Table 2-2 lists the project study area street segments.

Figure 2-2: Project Site Plan

Provided on the following page in 11”X17” format.

SITE PLAN
PARADISE VALLEY GAS STATION
PDS2019-ZAP-19-003, PDS2020-ER-20-18-001





VICINITY MAP
NO SCALE

SITE ADDRESS:

NORTH EAST CORNER OF PARADISE VALLEY ROAD AND ELKELTON BLVD
SPRING VALLEY, CA 91977
APN 584-160-52-00

LEGAL DESCRIPTION

THAT PORTION OF QUARTER SECTION 1 OF RANCHO DE LA NACION, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP NO. 166, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY AS CONVEYED IN FINAL ORDER OF CONDEMNATION TO THE STATE OF CALIFORNIA AS PARCEL 30173 OF SAID CONDEMNATION RECORDED JULY 14, 1998 AS INSTRUMENT NO. 1998-0435558 IN THE OFFICE OF SAID RECORDER.

EXISTING EASEMENTS

EASEMENTS AND EXCEPTIONS PER SCHEDULE B OF PRELIMINARY TITLE REPORT BY COMMONWEALTH LAND TITLE COMPANY – ORDER NO. 09193261-919-KRC-KRE, DATED AUGUST 1, 2017

1. AGREEMENT FOR IMPROVEMENTS IN PUBLIC RIGHT-OF-WAY ORDINANCE 4815 EXECUTED BY CHARLES M. ERRECA, LOUISE ERRECA, ERNEST M. STANLEY & NINA G. STANLEY PER DOCUMENT RECORDED DECEMBER 4, 1978 AS INSTRUMENT NO. 78-520244 OF OFFICIAL RECORDS. NON-PLOTTABLE
2. THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED DY THE DOCUMENT RECORDED DECEMBER 8, 1999 AS INSTRUMENT NO. 999-0798894 OF OFFICIAL RECORDS. (NOTED HEREON) NON-PLOTTABLE
3. AN EASEMENT FOR SLOPE PURPOSES IN FAVOR OF STATE OF CALIFORNIA PER DOCUMENT RECORDED DECEMBER 8, 1999 AS INSTRUMENT NO. 1999-0798894 OF OFFICIAL RECORDS. (PLOTTED HEREON)

SITE AREA:

TOTAL SITE AREA (GROSS)	21,458 S.F. (0.49 AC)
NET SITE AREA	21,458 S.F. (0.49 AC)

OWNER/DEVELOPER

NAME: JOSEPH BRIKHO
ADDRESS: 245 HIGHLAND AVE.
NATIONAL CITY, CA 91950
PHONE NO.: (619) 726-7741

SOIL CONDITION

EXISTING UNDEVELOPED SITE

TOPOGRAPHY SOURCE

TOPOGRAPHY SHOWN ON THESE PLANS WAS GENERATED FIELD SURVEY OF THIS SITE WAS PERFORMED ON MARCH 6 & 8, 2018 BY STEVEN M. HOWELL, LAND SURVEYOR, LS 5758.

BENCHMARK

THE BENCHMARK FOR THIS SURVEY IS CITY OF SAN DIEGO CONTROL PT. NO. 1207, A LEAD WITH DISK STAMPED "SD CITY ENGINEER" IN THE TOP OF CURB AT 538 & 542 BROADVIEW STREET, NORTHEAST OF ELKELTON BLVD.
ELEVATION = 257.51 FEET NAVD88 DATUM

BASINS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE NORTHWESTERLY LINE OF SUBJECT PARCEL AS SHOWN ON RECORD OF SURVEY MAP NO. 18760, AS SHOWN HEREON. I.E NORTH 39°43'04" EAST

LEGEND

PROPERTY BOUNDARY
CENTERLINE
PROPOSED CONTOUR LINE
EXISTING CONTOUR LINE
EXISTING OVERHEAD ELECTRIC
EXISTING WATER MAIN
EXISTING SEWER MAIN
EXISTING SEWER MANHOLE
EXISTING FENCE
EXISTING PUBLIC FIRE HYDRANT
EXISTING STREET LIGHT
EXISTING UTILITIES VAULT
EXISTING TREES
PROPOSED SPOT ELEVATION (52.62 FS)
PROPOSED RETAINING WALL
PROPOSED TRENCH DRAIN
PROPOSED STORM DRAIN
PROPOSED SEWER LATERAL
PROPOSED RIP RAP
PROPOSED DRIVABLE PCC PAVEMENT
PROPOSED CONC. WALKWAY
PROPOSED LANDSCAPE
PROPOSED BIO-BASIN

FEATURE NOTES:

1. PROPOSED 6" CURB PER SDRSD G-01
2. PROPOSED 2' WIDE RIBBON GUTTER
3. PROPOSED 8" HDPE STORM DRAIN
4. PROPOSED TRENCH DRAIN "NDS" FILCOTEN PRO 300 SERIES
5. PROPOSED 3-8" STORM DRAIN PIPES
6. PROPOSED RETAINING WALL PER SDRSD C-01
7. PROPOSED 18" HDPE (TYPE S) STORM DRAIN
8. MODIFY EX. DRIVEWAY TO INCLUDE 2:1 TRANSITION PER SDRSD G-14A
9. PROPOSED 6" MEDIA CURB TYPE B-1 PER SDRSD G-06
10. PROPOSED NO. 2 BACKING RIP RAP PER SDRSD D-40
11. REMOVE EXIST. GMP INLET, REPLACE WITH OCB TYPE F INLET. EXIST DITCH TRANSITION REMOVAL SHALL OCCUR AS TO PROTECT 1.0' OF EXISTING WELDED WIRE MESH AND LAP INTO NEW CONSTRUCTED DITCH MESH.

LAND COVER SUMMARY TABLE	
DRIVABLE PCC PAVEMENT	12,102 SF
CONC. WALKWAY	1,166 SF
LANDSCAPE	2,465 SF
BIO-BASIN	850 SF
RETAIL BLDG. AREA	3,555 SF
CARWASH BLDG. AREA	855 SF
LAND COVERAGE	82%

SCALE: 1" = 20'
20 10 0 20 40 60

PREPARED BY:

HOWES | WEILER | LANDY
PLANNING & ENGINEERING
Tel. 760.929.2288 Fax. 760.929.2287
2888 LOKER AVENUE EAST SUITE 217
CARLSBAD, CA 92010
www.HWL-PE.com

REGISTERED PROFESSIONAL ENGINEER
MELLOR R. LANDY
No. 81085
Exp. 09-30-23
CIVIL
STATE OF CALIFORNIA

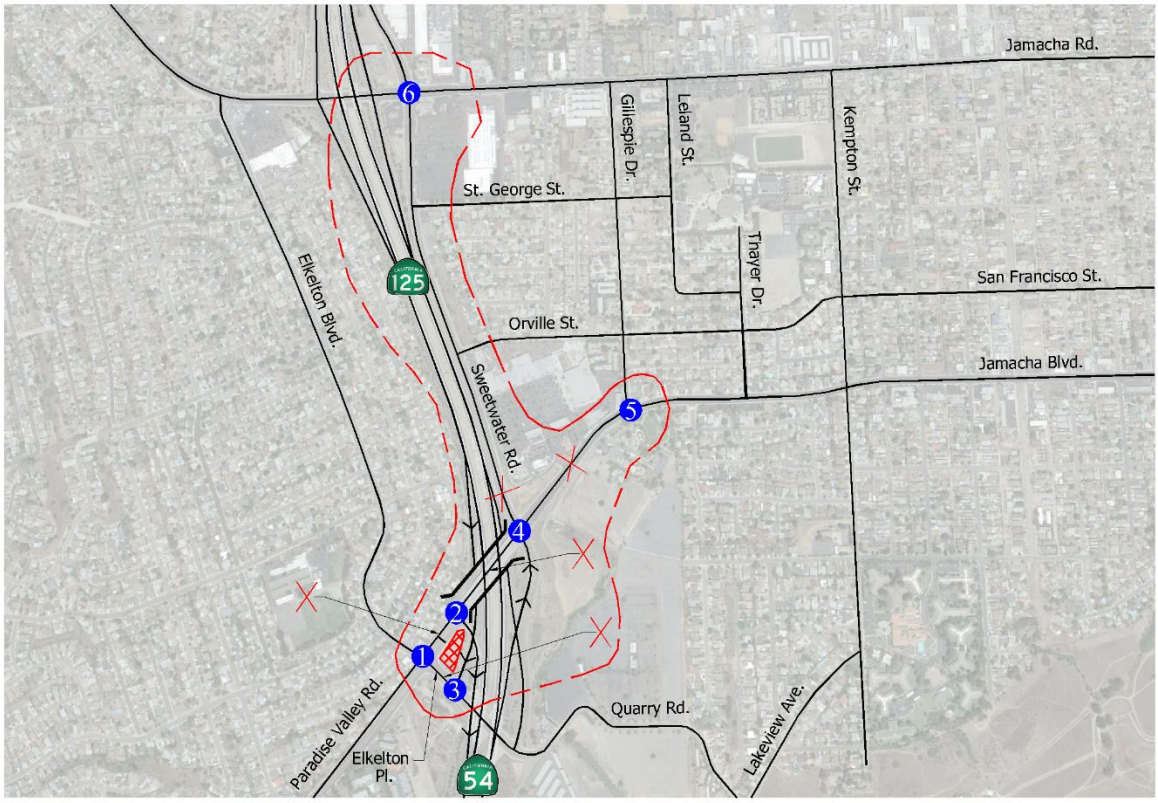
MELLOR R. LANDY DATE
R.C.E. 81085 EXP. 9-30-23

1ST SUBMITTAL	11-11-19
2ND SUBMITTAL	6-01-20
3ND SUBMITTAL	4-08-22

SHEET 1 OF 1

SAVE DATE: 3/31/2022 ~ PLOT DATE: 3/31/2022 ~ FILE NAME: C:\Users\Jose Sanchez\Documents\0000 Poradise Valley\CIVIL\DRAWING\DISCRETIONARY PLANS\PRELIMINARY GRADING PLAN\Paradise Valley – Site Plan.dwg

Figure 2-3: Project Location, Study Area, and Intersection Key



Legend

= Project Location

= Study Area Boundary

= Study Intersection Location

= Study Street Segment Location

N
NO SCALE

Table 2-1: Study Area Intersections

Intersections	
Number	**Intersection**
1	Paradise Valley Road / Elkelton Place
2	Paradise Valley Road / SR-54 SB On-Ramp
3	Elkelton Place / SR-125 SB Off-Ramp
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp
5	Jamacha Boulevard / Gillespie Drive
6	Jamacha Road / Sweetwater Road

Table 2-2: Study Area Street Segments

Intersections	
Number	**Intersection**
1	Paradise Valley Road / Elkelton Place
2	Paradise Valley Road / SR-54 SB On-Ramp
3	Elkelton Place / SR-125 SB Off-Ramp
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp
5	Jamacha Boulevard / Gillespie Drive
6	Jamacha Road / Sweetwater Road

2.1.6 Proposed Project Opening Day Year and Analysis Scenarios

The proposed project has an estimated opening day of Year 2022.

The analysis scenarios included in this LMA include the following:

- Existing Conditions
- Near-Term (Opening Day Year 2022) Conditions
- Near-Term (Opening Day Year 2022) With Project Conditions

3.0 CEQA VMT ANALYSIS

The Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (*December 2018*) identifies the framework for which any new development within the County of San Diego's jurisdiction must be evaluated. This framework includes CEQA VMT analysis. This type of analysis is based on changes in the focus of transportation impact analysis in CEQA stemming from Senate Bill (SB) 743, which by shifting from measuring impacts to drivers to measuring the impact of driving is aiming to align any new development with the State of California's goals to reduce greenhouse gas (GHG) emissions. The change mandated by SB 743 is made to replace Level of Service (LOS) as the metric for transportation impacts to Vehicle Miles Traveled (VMT) while providing a streamlined review of land use and transportation projects that will help reduce future VMT growth whilst encouraging infill development and improving public health through more active transportation.

VMT is a metric that measures the efficiency of the use of a roadway network as a function of population or employment, which accounts for the generated number of vehicle trips and the distance associated with these vehicle trips. VMT is associated with energy usage and emissions of vehicle trips. VMT tends to increase as the land use density decreases prompting larger travel distances (with primary reliance on automobile trips) between origins and destinations.

In January 2019, the Natural Resources Agency finalized updates to the CEQA Guidelines including the incorporation of SB 743 modifications. In December 2018, the Office of Planning and Research (OPR) published the latest Technical Advisory on Evaluating Transportation Impacts in CEQA to the California Natural Resources Agency. The Technical Advisory provides recommendations for the evaluation of transportation impacts under SB 743, including the elimination of Level of Service (LOS), auto delay, and other measures of vehicular capacity or traffic congestions. CEQA Guidelines section 15064.3 states that "Generally vehicle miles traveled is the most appropriate

measure of transportation impacts" and the OPR guidance recommends the use of VMT as the preferred CEQA transportation metric.

The County of San Diego Transportation Study Guidelines (*September 2022*) - hereto referred in this document as "County of San Diego TSG" - identify a VMT analysis methodology, VMT thresholds for CEQA transportation impacts, and identification of possible mitigation strategies. These thresholds must be evaluated in conjunction with the SANDAG Regional Travel Demand Model, for which model outputs can be used to produce VMT per Resident, VMT per Employee, Total VMT per Service population, and Total VMT.

3.1 Project VMT Per Employee

The County of San Diego TSG provides screening criteria for analysis under CEQA based on VMT. The requirements to prepare a detailed transportation VMT analysis apply to all land development projects, except for those projects that meet at least one (1) of the screening criteria elements that have been identified in the County of San Diego Transportation Study Guidelines (*September 2022*). As stated in the County of San Diego Transportation Study Guidelines (*September 2022*), a development project that meets at least one (1) of the eight (8) screening criteria elements would be presumed to have a less than significant VMT impact due to the project characteristics and/or location. The screening criteria list along with a brief description sourced from the County of San Diego TSG of each criteria element is included below:

1. Projects Located in a VMT Efficient Area: VMT efficient area is any area with an average VMT per Resident, VMT per Employee, or VMT per Service Population 15 percent below the baseline average for the entire San Diego County region, including the incorporated cities. Land use projects may qualify for the use of VMT efficient area screening if the project can be reasonably expected to generate VMT per Resident, per

Employee, or per Service Population, respectively, that is similar to the existing land uses in the VMT efficient area.

2. Projects Located in Infill Village Area: Infill developments, as defined by the OPR are "buildings within unused and underutilized lands with existing development patterns, typically but not exclusively within urban areas." The County of San Diego's General Plan identifies villages as areas where a higher intensity and a wide range of land uses are established or have been planned. These village areas typically function as the center of community planning areas and contain the highest population and development densities.
3. Small Residential and Employment Projects: Projects that generate or attract fewer than 110 trips per day generally may be presumed to have a less than significant impact absent substantial evidence to the contrary.
4. Projects Located in a Transit Accessible Area: Projects located within ½-mile of an existing major transit stop or and existing stop along a high-quality transit corridor may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may not apply if the project has:
    - Has a Floor Area Ration (FAR) of less than 0.75
    - Includes more parking for use by residents, customers, or employees of the project than required by the County.
    - Is inconsistent with SANDAG's most recent Sustainable Communities Strategy (SCS).
    - Replaces affordable residential units with a smaller number of moderate – or high – income residential units.
5. Locally Serving Retail / Service Projects: Locally serving retail/service projects less than 50,000 SF may be presumed to have a less than significant impact absent substantial evidence to the contrary.

6. Locally Serving Public Facilities and Other Uses: Public facilities that serve the surrounding community or public facilities that are passive use may be presumed to have a less than significant impact absent substantial evidence to the contrary. These facilities do not include uses that would attract users from outside the vicinity of the use. Examples of locally serving facilities and uses include: transit centers, schools, libraries, post offices, park-and-ride lots, local health/medical clinics, law enforcement and fire facilities, open spaces preserves, local parks and trailheads, government offices, communication and utility buildings, water sanitation buildings, and waste management buildings.
7. Redevelopment Projects with Greater VMT Efficiency: For projects that replace existing VMT-generating land uses, the project may be presumed to have a less than significant impact if the total project VMT is less than the existing land use's total VMT, absent substantial evidence to the contrary.
8. Affordable Housing: Residential projects where the development consists of 100% of affordable units may be presumed to have a less than significant impact absent substantial evidence.

The project has been evaluated against the screening criteria above to identify whether any of the screening criteria elements are met by the project.

The Paradise Valley Road Gas Station project will develop a gasoline service station (with four multi-product dispensers to serve up to eight vehicles simultaneously) with a 2,318 SF canopy, a 4,713 SF convenience store building, an 855 SF carwash tunnel, and 16 off-street vehicle parking spaces. Therefore, the project meets screening criteria #5 as a development that is a local service retail/service project consisting of less than 50,000 SF.

As a result of the evaluation discussed above, the Paradise Valley Gas Station project screens out of a CEQA VMT Analysis by meeting one (1) of the eight (8) screening criteria elements. Therefore, no CEQA VMT Analysis is required for this project.

4.0 LOCAL MOBILITY ANALYSIS (LMA)

The Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (*December 2018*) and the County of San Diego General Plan identify the framework for which any new development within the County of San Diego's jurisdiction must be evaluated. This framework includes discretionary entitlement non-CEQA LMA.

An LMA evaluates the effects of a proposed development project on traffic operations and safety for the roadway network in the proximate area of the project. An LMA is required by the County General Plan to assess transportation effects and ensure orderly development, public safety, adequate infrastructure, and consistency with the General Plan.

To determine the level of analysis required for an LMA, a project's consistency with the General Plan in conjunction with the estimated daily trips that the project will generate must be evaluated.

Table 4-1 shows the screening criteria to determine the LMA study requirements.

Table 4-1: LMA Study Requirements Screening Criteria

	Focused LMA	Full LMA
Consistent with General Plan	250-499 Daily Trips	500 or greater Daily Trips
Inconsistent with General Plan	N/A	250 or greater Daily Trips

For purposes of determining the LMA type, trips are based on the number of vehicle trips after any internal capture and alternative modes/location-based adjustments are applied but before adjustments for pass-by are taken.

As described in Section 2.1.4 of this report, the project is consistent with the County of San Diego General Plan by being located in a site with a land-use designation (*Medium Impact Industrial*) that allows the development of the uses planned for the project.

The project is calculated to generate a net increase of **893** primary average daily trips (ADT) with **71** AM (**36** In / **36** Out) peak hour trips and **80** PM (**40** In / **40** Out) peak hour trips.

Therefore, since the project is consistent with the County of San Diego General Plan and is calculated to generate 500 or more daily trips, the Paradise Valley Road Gas Station project is required to be evaluated with a full LMA.

5.0 METHODOLOGY AND THRESHOLDS

Consultation with County of San Diego staff has been conducted to identify the thresholds that trigger the requirement for improvements resulting from the analysis of the study intersections. The methodology and thresholds followed for the preparation of an LMA are discussed below.

1. **Signalized Intersection**
    a. Methodology:
        i. Should be analyzed using standard or state-of-the-practice procedures such as Highway Capacity Manual (HCM) analysis.
            - HCM 6th Edition is the latest version that reflects the current state-of-the-practice methodology.
            - Software packages that use deterministic methods include Synchro, Vistro, and Highway Capacity Software.
        ii. For intersections that are closely spaced, have a unique geometry, or are part of a congested corridor, micro-simulation analysis should be performed.
            - Micro-simulation should also be considered when determining turn lane storage if the analyst believes deterministic methods are not producing reasonable maximum or 95th percentile queue lengths.
            - Software packages that use micro-simulation methods include SimTraffic and Vissim.
    b. Thresholds:
        i. Improvements are required if any of the following are triggered:
            - Any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes

the intersection to degrade to a LOS E or F should identify improvements to improve operations to LOS D or better.

- Any intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay.
- If the left-turn volume exceeds 100 vehicles per hour, an exclusive left-turn lane is recommended.
- If the left-turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left-turn signal phase is recommended.
- If the left-turn volume exceeds 300 vehicles per hour, a second left-turn lane is recommended.
- If the right-turn volume exceeds 150 vehicles per hour, a dedicated right-turn lane is recommended.
- The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage.

2. **Unsignalized Intersection**

   a. Methodology: All-way stop, side-street stop, and roundabout intersections should be analyzed using standard or state-of-the-practice procedures such as Highway Capacity Manual (HCM) analysis.

      i. HCM 6th Edition is the latest version that reflects the current state-of-the-practice methodology.

      ii. Software packages that use deterministic methods include Synchro, Vistro, and Highway Capacity Software.

      iii. All-way stop intersections and roundabouts should be reported for the entire intersection average value.

iv. Minor side-street stop intersections should be reported for the worst-case movement.

b. Thresholds:

i. Side-street stop-controlled intersections require an improvement if:

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- If the worst-case movement is currently operating at LOS E or F, the project adds 5 or more seconds of overall intersection AND the project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection.
- The intersection meets the peak hour signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA-MUTCD).

ii. All-way stop and roundabout intersections require an improvement if:

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- The project adds 5 or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour.
- The intersection meets the peak hour signal warrants after the addition of project traffic per the California Manual on Uniform Traffic Control Devices (CA-MUTCD).

3. **Intersection Control Evaluation (ICE)**

a. The selection of the appropriate ICE should be guided by performance-based evaluations that objectively consider the range of project solutions and control strategies for a given project context. Traffic operations and safety performance are key inputs into the ICE framework.

b. Consistent with the CA-MUTCD, the County of San Diego recognizes the roundabout as a standard form of intersection control.

c. If the analysis screening indicates that a roundabout should be evaluated, the analysis should be conducted using one of the following methodologies: SIDRA or RODEL. These models are consistent with HCM 2010 and HCM 6th Edition models.

4. **Roadway Segments**

   a. HCM methodology assigns a LOS grade to the roadway segment and is evaluated based on acceptable LOS as identified in the County General Plan and Public Road Standards based on facility classification type.

   b. Roadway segments are analyzed for LOS based on Table 1 within the *Public Road Standards for the County of San Diego (March 2012)* shown in **Table 5-1** below.

5. **Site Access, Safety, and Other Analyses**

   a. The design of site circulation, parking, and access should accommodate bus and pedestrian movements. The following factors need to be considered when evaluating existing and/or post-project traffic conditions to address identified traffic operations and safety concerns:

      i. Intersection phasing and queuing
      ii. Inadequate weaving distance and deceleration length with increasing traffic volumes
      iii. Speed differentials from vehicles slowing or stopping
      iv. Inadequate decision sight distance
      v. Access management
      vi. Driveway location and design
      vii. Bicycle, pedestrian, and transit accessibility

Table 5-1: Public Road Standards for the County of San Diego (Roadway Classification)

TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

MOBILITY ELEMENT ROADS			LEVELS OF SERVICE				
Road Classification		# of Travel Lanes	A	B	C	D	E
Expressway (6.1)		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median (4.1A)	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000	<28,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700	<9,700
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000	<8,000
NON-MOBILITY ELEMENT ROADS**			**LEVELS OF SERVICE**				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector***		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road***		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.

6.0 EXISTING CONDITIONS

To analyze Existing conditions, traffic volumes including pedestrian and bicycle counts were collected on Thursday, June 20th, 2019. These volumes were evaluated to determine existing baseline operating conditions. Existing traffic counts are provided in **Appendix C**.

6.1 Existing Roadway Network

The studied roadway street segment facilities are described in detail below:

Paradise Valley Road – is an east-west corridor that operates as a four-lane Major Road with Intermittent Turn Lanes for the study segments between Elkelton Place and Sweetwater Road. The roadway is identified in the Spring Valley Mobility Element as a major road that supports a Class IV bikeway. The segments under study currently do not show a posted speed limit, but the adjacent segment southwest of Elkelton Place has a posted speed limit of 45 mph. On-street parking is not permitted on both sides of the roadway along the study segments. The study segments are characterized by the presence of contiguous sidewalks on both sides of the roadway.

Jamacha Boulevard – is an east-west corridor that operates as a four-lane Major Road with Intermittent Turn Lanes for the study segments between Sweetwater Road and Gillespie Drive. The roadway is identified in the Spring Valley Mobility Element as a major road that supports a Class IV bikeway. The roadway currently supports a Class II bike lane in both travel directions. The posted speed limit of the study segment is 40 mph. On-street parking is not permitted on both sides of the roadway along the study segments. The study segments are characterized by the presence of contiguous sidewalks on both sides of the roadway.

Sweetwater Road – is a north-south corridor that operates as a four-lane Major Road with Intermittent Turn Lanes for the study segment between Paradise Valley Road / Jamacha Boulevard and Jamacha Road. The roadway is identified in the Spring Valley Mobility Element as a major road

that supports a Class IV bikeway. The roadway currently supports a Class II bike lane in both travel directions. The posted speed limit of the study segment is 45 mph. On-street parking is not permitted on both sides of the roadway along the study segments. The study segments are characterized by the presence of contiguous sidewalks on both sides of the roadway except for a roadway segment between Paradise Valley Road / Jamacha Boulevard and St. George Street where the west side of the roadway is currently not supporting a sidewalk.

Elkelton Place – is a north-south corridor that operates as a four-lane Boulevard with Intermittent Turn Lanes for the study segment between Paradise Valley Road and SR-125 SB Off-Ramp. The roadway is identified in the Spring Valley Mobility Element as a boulevard that supports a Class IV bikeway. The study segment does not currently display a posted speed limit On-street parking is not permitted on both sides of the roadway along the study segments. The study segments are characterized by the presence of contiguous sidewalks on both sides of the roadway.

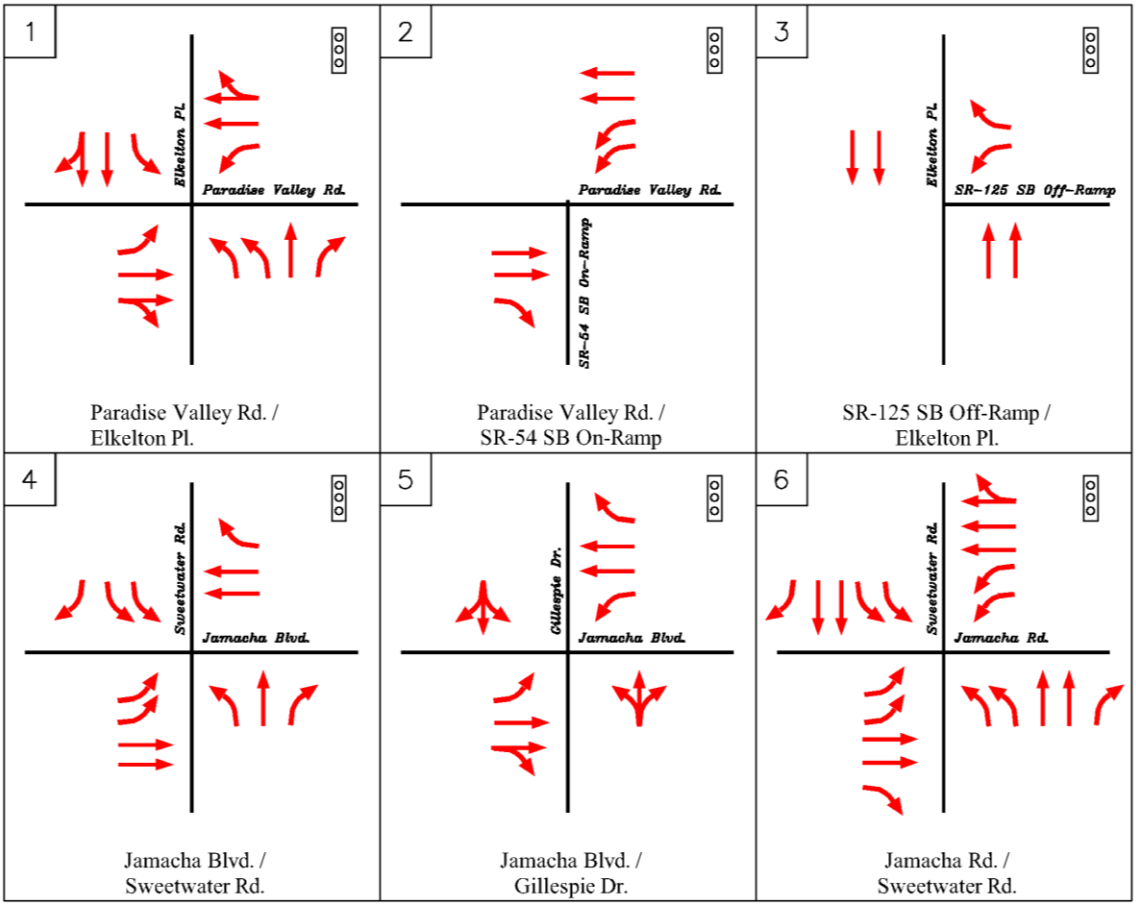
6.2 Existing Traffic Control and Intersection Geometrics (*exhibit*)

Refer to **Figure 6-1** below for a figure showing the type of intersection control and lane configurations for the study intersections.

As shown in **Figure 6-1**, all study intersections are currently controlled by traffic signalization.

Up to four (4) of the study intersections are four-legged intersections while the remaining two (2) study intersections are three-legged intersections.

Figure 6-1: Existing Lane Configurations



Legend

= Signalized Intersection

6.3 Existing Level of Service (LOS) at Intersections (*Table*)

Existing peak hour traffic volumes at the study intersections can be found in **Figure 6-2**.

The average delay and level of service at the study intersections in the AM and PM peak hour were analyzed using a software package called *Synchro Version 10*. This software is an application that applies the latest *Highway Capacity Manual* methodology; HCM 6th Edition.

Refer to **Figure 6-2** for the Existing AM and PM peak hour volumes.

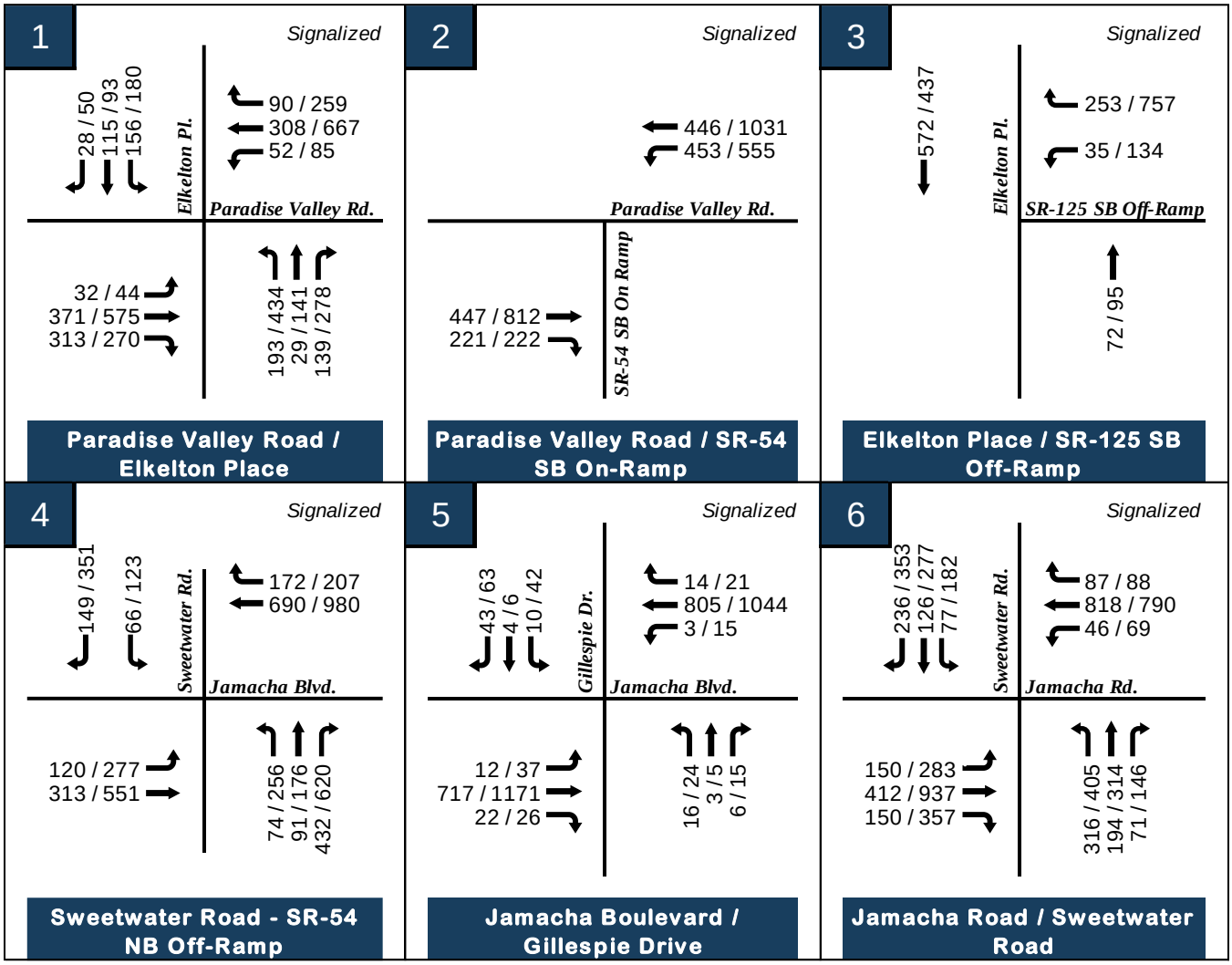
Refer to **Table 6-1** for the Existing intersection level of service analysis.

As shown in the table, the study intersections currently operate at an acceptable LOS D or better in both the AM and PM peak hour setting, except for the following:

- Paradise Valley Road / Elkelton Place
    - PM Peak – LOS E

Refer to **Appendix D** for Existing Synchro worksheets.

Figure 6-2: Existing AM / PM Intersection Peak Hour Volumes



XX / XX = AM / PM Peak hour volumes

Table 6-1: Existing Intersection Peak Hour LOS Summary

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Paradise Valley Road / Elkelton Place	Signalized	36.6	D	57.6	E
2	Paradise Valley Road / SR-54 SB On-Ramp	Signalized	6.8	A	7.2	A
3	Elkelton Place / SR-125 SB Off-Ramp	Signalized	8.7	A	20.6	C
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	Signalized	29.9	C	46.3	D
5	Jamacha Boulevard / Gillespie Drive	Signalized	11.1	B	19.8	B
6	Jamacha Road / Sweetwater Road	Signalized	28.3	C	45.1	D

Notes:

Delay = seconds per vehicle

LOS = Level of Service

6.4 Existing Level of Service (LOS) at Roadway Segments (*Table*)

Figure 6-3 shows the Existing ADT volumes for the study street segments.

Refer to **Table 6-2** for the Existing street segment analysis.

Based on Existing volumes and the County's roadway classification thresholds, all study street segments currently operate at an acceptable level of service (LOS) D or better.

Figure 6-3: Existing ADT Volumes

Legend

= Project Location

= Study Intersection Location

= Study Street Segment Location

XX,XXX = ADT Number

N
NO SCALE

Table 6-2: Existing Street Segment LOS Summary

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	County of San Diego	4	Major Road B	34,200	24,104	0.70	C
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	4	Major Road B	34,200	28,551	0.83	D
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	County of San Diego	4	Boulevard B	28,000	19,549	0.70	B
Sweetwater Road	N/O Jamacha Boulevard	County of San Diego	4	Major Road B	34,200	13,446	0.39	A
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	6	Major Road B	34,200	30,097	0.88	D
Paradise Valley Road	W/O Elkelton Place	County of San Diego	4	Major Road B	34,200	24,206	0.71	C

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

6.5 Existing Bicycle Facilities (*exhibit*)

Identification of the existing bicycle facilities within one-mile bicycling distance from the center of the intersection formed by the project driveway has been conducted.

Bicycle facilities that have been identified within one-mile bicycling distance from the center of the intersection formed by the project driveway are shown in **Figure 6-4** below.

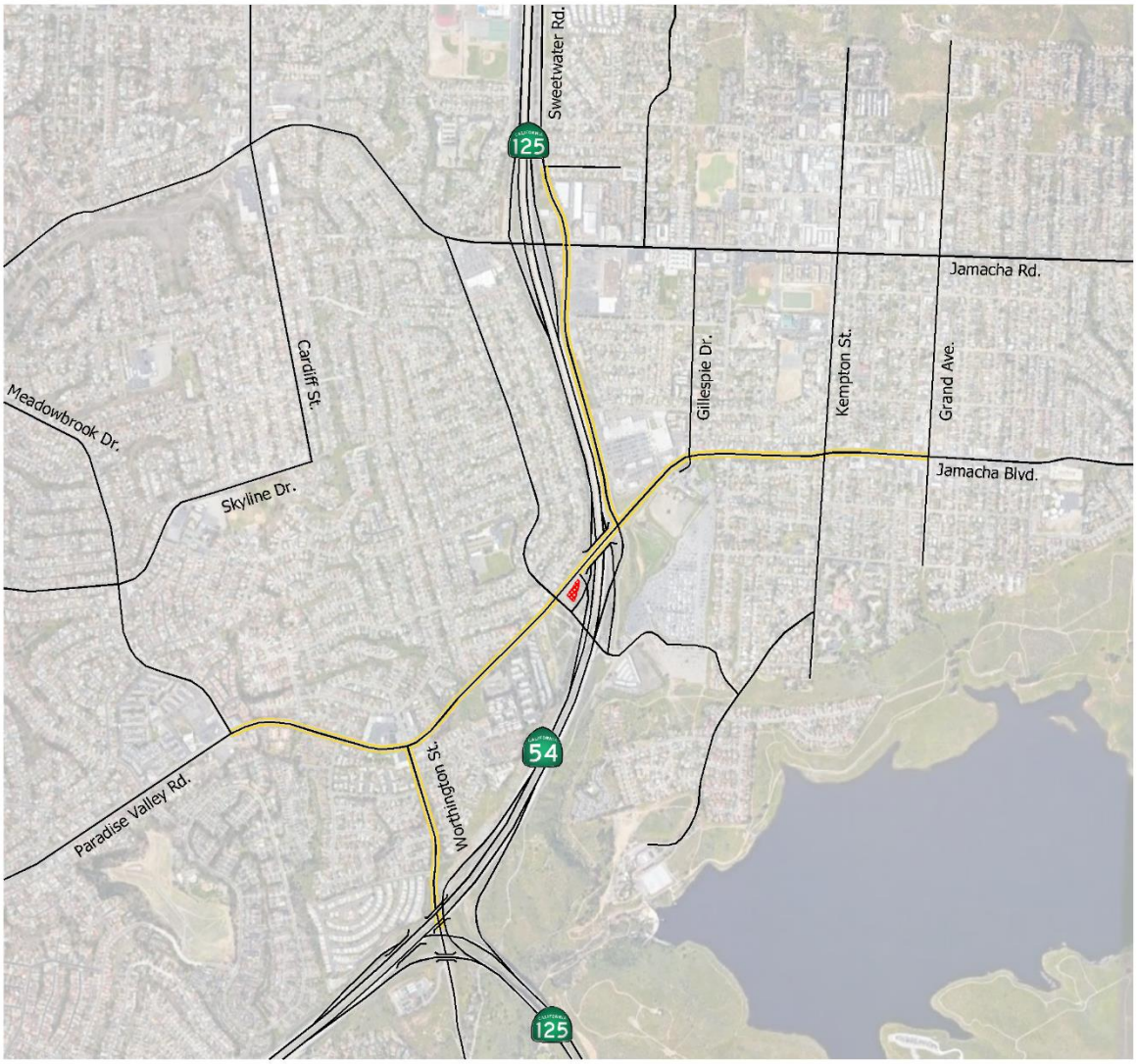
As shown in the figure, several roadways support Class II bike lanes in the vicinity of the project site. These roadway segments include the following:

- Paradise Valley Road (S. Meadowbrook Drive – Sweetwater Road)
- Worthington Street (SR-54 – Paradise Valley Road)
- Jamacha Boulevard (Sweetwater Road – Grand Avenue)
- Sweetwater Road (Jamacha Boulevard/Paradise Valley Road – Spring Vista Way)

Of the observed existing bicycle facilities shown in **Figure 6-4**, no segments were identified to have bike lane gaps except for the south side of Paradise Valley Road between Elkelton Place and SR-

54 SB On-Ramp (roadway segment fronting the project site). All of the identified roadway segments above currently support Class II bike lanes in both travel directions.

Figure 6-4: Existing Bicycle Facilities



Legend

= Project Location

= Bicycle Facilities (within 1-Mile Bicycling Distance from Project Site)

N
NO SCALE

6.6 Existing Pedestrian and Trail Facilities (*exhibit*)

Identification of the existing pedestrian facilities within a ¼-mile walking distance from the project site's planned access point has been conducted.

Pedestrian facilities that have been identified within a ¼-mile walking distance from the project site's planned access point are shown in **Figure 6-5** below.

These pedestrian facilities include pedestrian sidewalks and crosswalks in the vicinity of the project site.

Of the observed facilities shown in **Figure 6-5**, the following deficiencies have been identified: Paradise Valley Road (W/O Elkelton Place)

- The north side of the segment along Paradise Valley Road (W/O Elkelton Place) currently has an approximate 550' segment of missing sidewalk adjacent to the intersection of Paradise Valley Road at Elkelton Place.
- All four (4) corners of the intersection of Paradise Valley Road at Elkelton Place are not ADA compliant.
- The SE and SW corners of Paradise Valley Road at SR-54 SB On-Ramp are not ADA compliant.
- The NE and SE corners of Elkelton Place at SR-125 SB Off-Ramp are not ADA compliant.
- The NE and SE corners of Elkelton Place at SR-125 NB On-Ramp are not ADA compliant.
- Elkelton Place south of Quarry Road does not provide a sidewalk on both sides of the street.
- All four (4) corners of the intersection of Sweetwater Road at Jamacha Boulevard are not ADA compliant.

Figure 6-5: Existing Pedestrian Facilities

Legend

P = Project Location

— = Pedestrian Facilities (within 1/4 Mile walking distance from Project Site)

N
NO SCALE

Identification of the existing trail facilities within a ¼-mile distance from the project site has been conducted.

One (1) trail has been identified within a ¼-mile distance from the project site as shown in **Figure 6-6** below.

As shown in **Figure 6-6**, the Sweetwater Regional Trail is located within a ¼-mile distance from the project site. This trail is identified in the County of San Diego County Trails Program, Community Trails Master Plan as a 4.10-mile-long trail that connects users to the Sweetwater and Valle de Oro borders, Sweetwater Reservoir Trail, and staging areas. The trail provides special features such as being part of the Sweetwater Reservoir Loop Trail, the Sweetwater County Regional Park connection, and being designated as a regional trail.

Figure 6-6: Existing Trail Facilities

Legend

= Project Location

= Trail Facilities (within 1/4 Mile from Project Site)

N
NO SCALE

Trail Name	Trail Length
Sweetwater Regional Trail	4.10 mi.

6.7 Existing Transit Facilities (*exhibit*)

Identification of the existing transit facilities within a ¼-mile walking distance from the project site has been conducted.

Two (2) transit facilities serviced by the San Diego Metropolitan Transit System (SDMTS) have been identified within a ¼-mile distance from the project site as shown in **Figure 6-7** below.

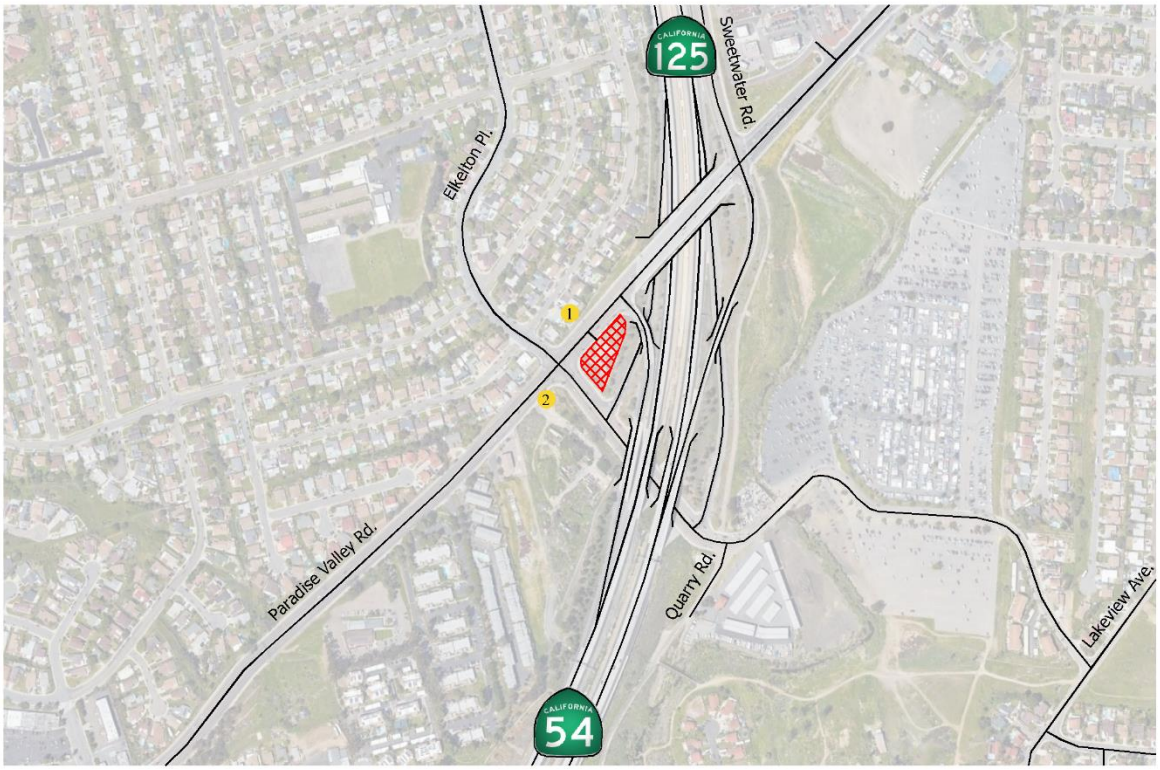
The two (2) transit facilities located within a ¼-mile distance from the project site include the following characteristics:

- Transit Stop ID#1
    - Located at the NE corner of Paradise Valley Road / Elkelton Place
    - Serviced by SDMTS Route 962
    - No amenities are provided
- Transit Stop ID#2
    - Located at the SE corner of Paradise Valley Road / Elkelton Place
    - Serviced by SDMTS Route 962
    - No amenities are provided

Both transit stops are serviced by DMTS Route 962. This route provides users with destinations that include Bell Jr. High School, Paradise Hills Community Park, Skyline Hills Library, and Southwest College Higher Education Center. This route operates Monday through Friday with a peak hour headway of approximately 15-minute intervals in the morning and afternoon peak hour periods. The route also operates Saturday and Sunday with a peak hour headway of approximately 30-minute intervals in the morning and afternoon peak hour periods.

Refer to **Appendix E** for the latest transit schedule for SDMTS Route 962.

Figure 6-7: Existing Transit Facilities



Legend

= Project Location

= Transit Stop Location (within 1/4 Mile walking distance from Project Site)

N
NO SCALE

ID	Transit Stop Location	Distance from Project	Route(s)
1	N/E corner of Paradise Valley Rd. / Elkelton Pl.	0.1 mi.	(962)
2	S/E corner of Paradise Valley Rd. / Elkelton Pl.	0.1 mi.	(962)

7.0 PROJECT TRAFFIC

7.1 Trip Generation (*Table*)

Based on the location of the project, *SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates (2002)* were used for establishing a trip generation estimate. As shown in the project trip generation in **Table 7-1**, the proposed gasoline service station (with four multi-product dispensers to serve up to eight vehicles simultaneously) with a 2,318 SF canopy, a 4,713 SF convenience store building, an 855 SF carwash tunnel, and 16 off-street vehicle parking spaces. is anticipated to generate a net increase of **893** primary average daily trips (ADT) with **71** AM (**36** In / **36** Out) peak hour trips and **80** PM (**40** In / **40** Out) peak hour trips.

Primary trips, otherwise known as cumulative trips, are "trips that go directly between the primary purposes of home, work, and school. Also linked trip that goes from a primary purpose to a single destination and back again to the same primary point, is considered two primary unlinked trips". In other words, these are "new trips added to the community". (Source: *City of San Diego Trip Generation Manual*).

Non-primary trips are trips that exist on the road system today; these are trips that would stop at the proposed project on their way to or from their primary trip purpose.

Of the total **1,240** ADT, **607** of those trips are defined as primary (cumulative) trips, as shown in **Table 7-2**.

When utilizing *SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates (2002)* peak hour percentages, the **893** primary ADT has **71 AM** (**36** In / **36** Out) peak hour trips and **80 PM** (**40** In / **40** Out) peak hour trips, as shown in **Table 7-3**.

Table 7-1: Project Trip Generation

Land Use	Intensity	Rate*	ADT	AM						PM					
				Peak %*	Vol.	In %	Out%	In	Out	Peak %*	Vol.	In %	Out%	In	Out
PROPOSED PROJECT															
Gasoline w/ Food Mart w/ Car Wash	**8** vehicle fueling spaces	**155** /vehicle fueling space	**1,240**	**8%**	**99**	**50% : 50%**		**50**	**50**	**9%**	**112**	**50% : 50%**		**56**	**56**
Total			**1,240**		**99**			**50**	**50**		**112**			**56**	**56**

Source:

*Rates are used taken from SANDAG "(Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002.

Note:

ADT= Average Daily Trips

KSF = 1,000 Square Feet

Table 7-2: Primary vs. Non-Primary Trips

Total (100%)	Primary Trips (51%)	Diverted Trips (21%)	Pass-By (28%)
1,240	632	260	347

Table 7-3: Primary Trip Based Project Trip Generation

Land Use	Intensity	Rate*	ADT	AM						PM					
				Peak %*	Vol.	In %	Out%	In	Out	Peak %*	Vol.	In %	Out%	In	Out
PROPOSED PROJECT															
Gasoline w/ Food Mart w/ Car Wash	**8** vehicle fueling spaces	**155** / vehicle fueling space	**893**	**8%**	**71**	**50% : 50%**		**36**	**36**	**9%**	**80**	**50% : 50%**		**40**	**40**
Total			**893**		**71**			**36**	**36**		**80**			**40**	**40**

Source:

*Rates are used taken from SANDAG "(Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002.

Pass-By Trips have been subtracted from the total; Primary and Diverted Trips remain in the trip generation calculation.

Note:

ADT= Average Daily Trips

KSF = 1,000 Square Feet

7.2 Trip Distribution and Assignment (*Exhibit*)

Trip distribution is the process of determining traffic percentage splits on the local roadway network. Based on the obtained traffic counts and existing travel patterns, trip distribution for the proposed project was developed.

This project contemplates the project trip distribution based on the future roadway network configurations along Paradise Valley Road for the intersection with Elkelton Place consisting of a WB left-turn U-turn movement being permitted at the intersection of Paradise Valley Road at Elkelton Place. With this condition, inbound project traffic would be benefitted from access to the project site that would prevent project traffic traveling WB along Paradise Valley Road from either traveling up to the intersection of Deep Dell Road to make a left-turn U-turn, or to enter the residential neighborhood north of Paradise Valley Road as an alternative route to access the project site.

The proposed project anticipates a distribution of 137.5% of project traffic traveling along Paradise Valley Road between Elkelton Place and SR-54 SB On-Ramp, 70% of project traffic traveling along Paradise Valley Road between Sweetwater Road / SR-54 NB Off-Ramp and SR-54 SB On-Ramp, 30% of project traffic traveling along Jamacha Boulevard Road between Sweetwater Road / SR-54 NB Off-Ramp and Gillespie Drive, 22.5% of project traffic traveling along Sweetwater Road between Jamacha Boulevard and Jamacha Road, and 12.5% of project traffic traveling along Elkelton Place between Paradise Valley Road and SR-125 SB Off-Ramp.

Figure 7-1 shows the proposed project's outbound trip assignment.

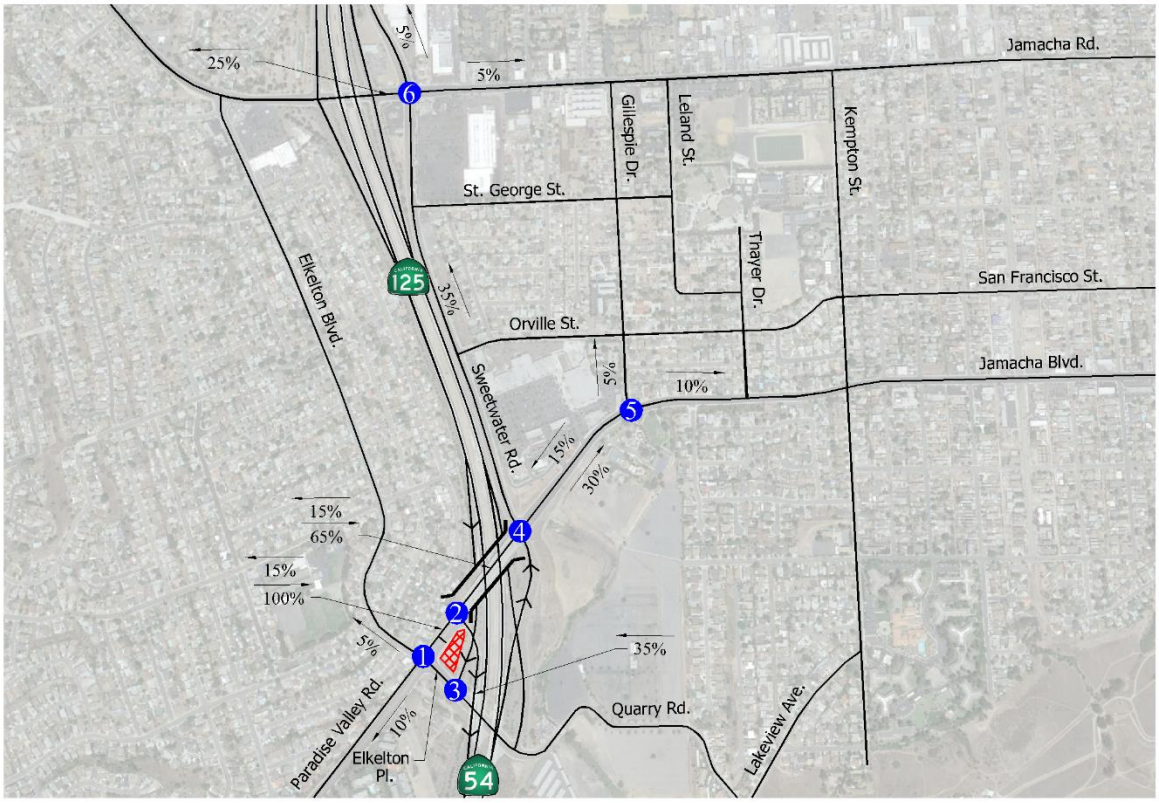
Figure 7-2 shows the proposed project's inbound trip assignment.

Figure 7-3 shows the proposed project's trip distribution along the studied segments as well as Project Only ADT volumes.

Figure 7-4 shows the Project Only AM/PM peak hour traffic volumes.

Figure 7-5 shows the Project Only ADT volumes.

Figure 7-1: Project Outbound Trip Assignment



Legend

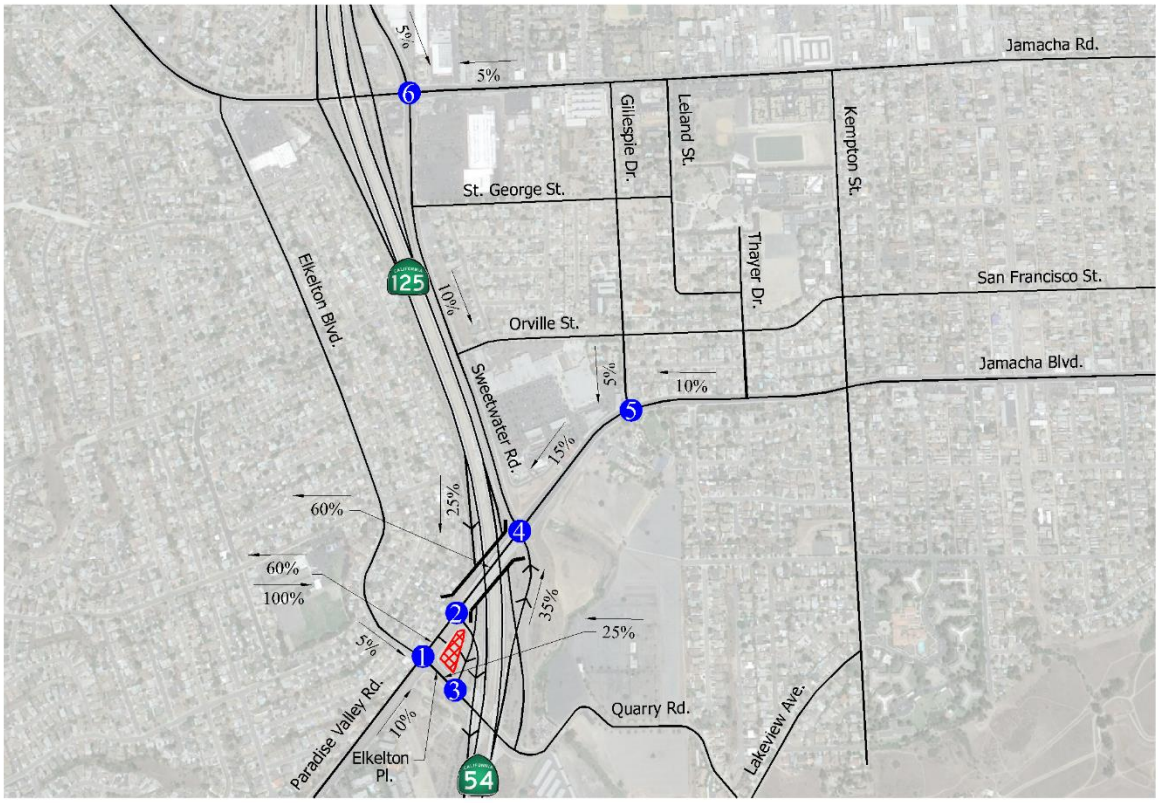
= Project Location

XX% = Distribution Percentage (Scenario B – Outbound)

= Study Intersection Location

N
NO SCALE

Figure 7-2: Project Inbound Trip Assignment



Legend

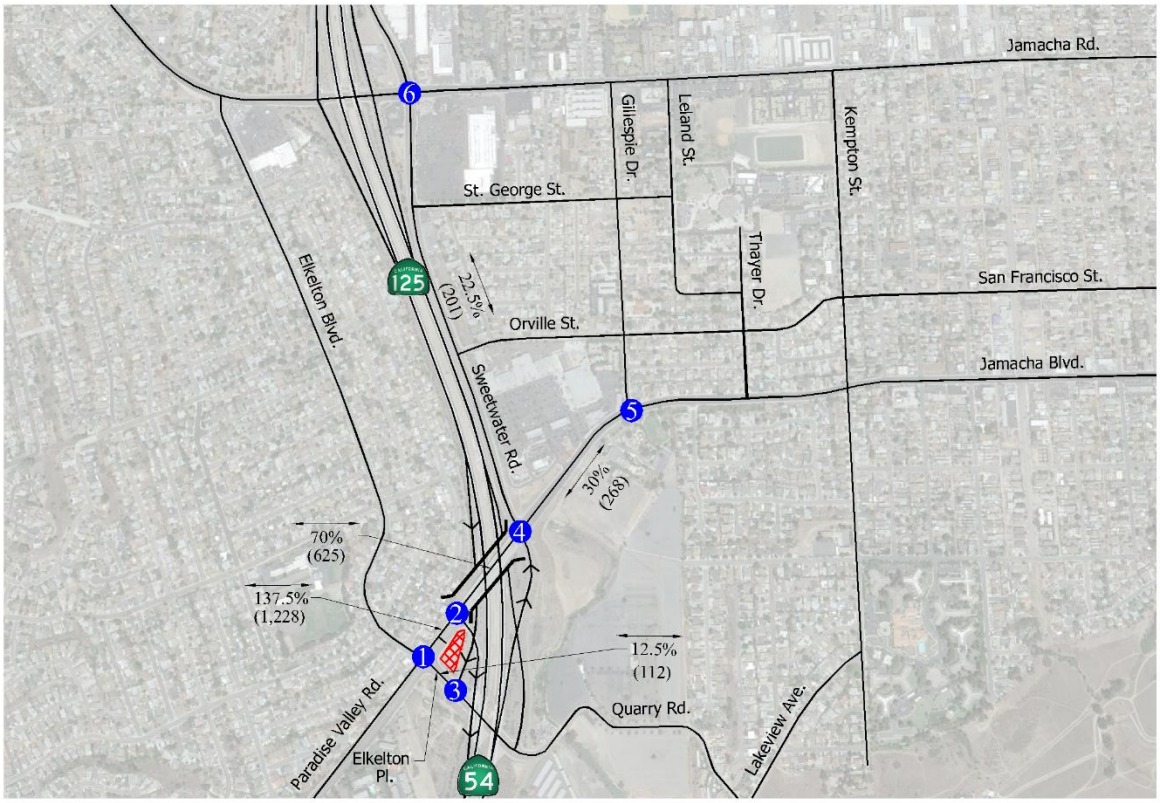
= Project Location

XX% = Distribution Percentage (Scenario B – Inbound)

= Study Intersection Location

N
NO SCALE

Figure 7-3: Project Trip Distribution



Legend

= Project Location

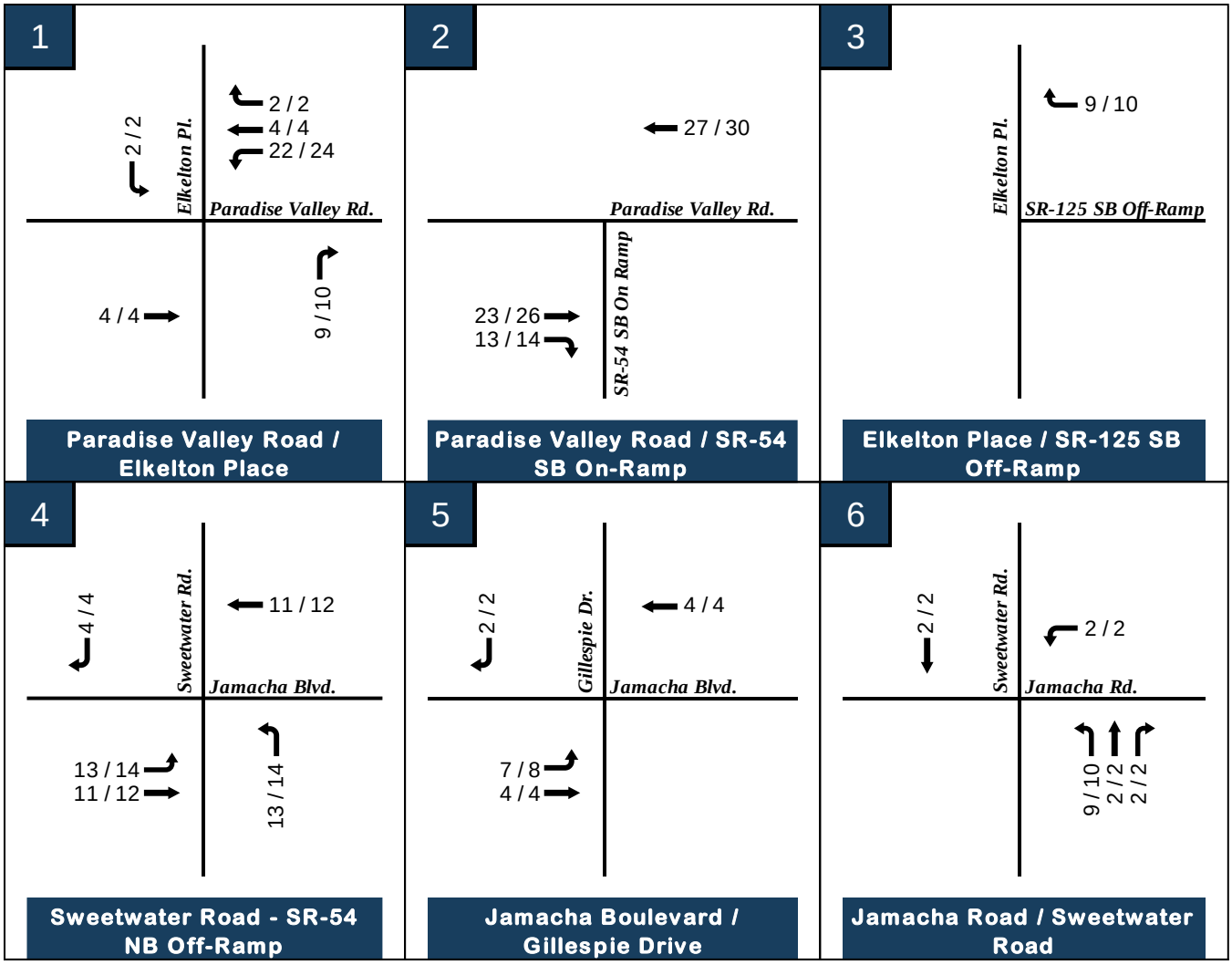
XX% = Distribution Percentage (Scenario B)

= Study Intersection Location

XX,XXX = ADT Number

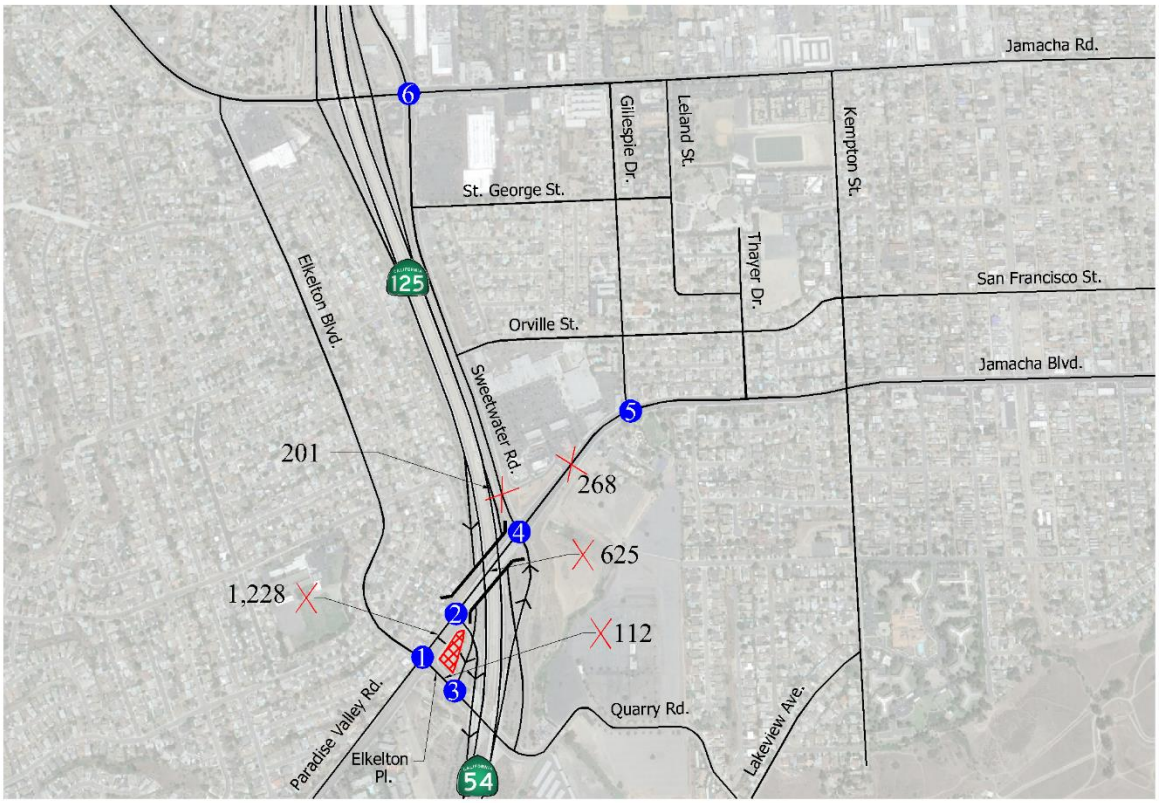
N
NO SCALE

Figure 7-4: Project Only AM/PM Peak Hour Traffic Volumes



XX / XX = AM / PM Peak hour volumes

Figure 7-5: Project Only ADT Volumes



Legend

= Project Location

= Study Intersection Location

= Study Street Segment Location

XX,XXX = ADT Number

N
NO SCALE

8.0 OPENING DAY (YEAR 2022) WITHOUT PROJECT CONDITIONS

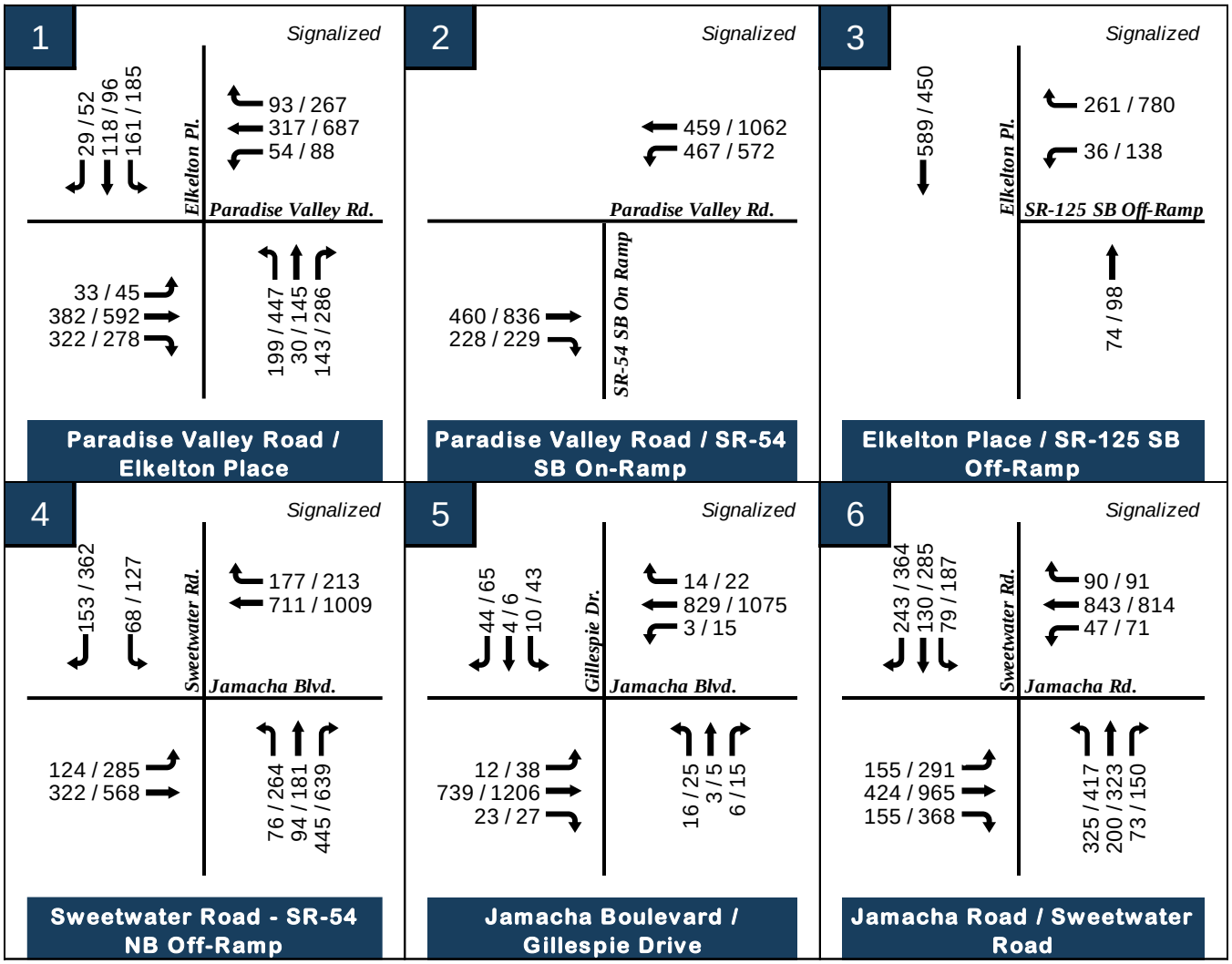
To analyze Near-Term (Opening Day Year 2022) Without Project conditions, the Existing baseline traffic counts have been subjected to an ambient growth factor to account for anticipated traffic growth over the period between the Existing counts were collected (Year 2019) and the estimated Opening Day of the project (Year 2022). The applied ambient growth factor consists of growth of 1% in traffic volumes per year, for a total ambient growth factor of 3%.

The total ambient growth factor of 3% has been applied to all of the intersection approach peak hour turning volumes and the roadway segment volumes collected in Year 2019 to establish a count data baseline for the Near-Term (Opening Day Year 2022) Without Project conditions.

8.1 AM and PM Peak Hour Turning Movement Volumes (*exhibit*)

Near-Term (Opening Day Year 2022) Without Project peak hour traffic volumes for the study intersections are shown in **Figure 8-1** below.

Figure 8-1: Near-Term (Opening Day Year 2022) Without Project AM/PM Peak Hour Traffic Volumes



XX / XX = AM / PM Peak hour volumes

8.2 Intersection Level of Service (*Table*)

The average delay and level of service at the study intersections in the AM and PM peak hour were analyzed using a software package called *Synchro Version 10*. This software is an application that applies the latest *Highway Capacity Manual* methodology; HCM 6th Edition.

Refer to **Table 8-1** for the Near-Term (Opening Day Year 2022) Without Project intersection level of service analysis.

For the analysis of the Near-Term (Opening Day Year 2022) study scenarios, the cycle length of Paradise Valley Road at Elkelton Place has been updated to provide 120 seconds in the AM and PM peak hour settings instead of the Existing cycle length of 100 seconds.

As shown in the table, the study intersections are anticipated to operate at an acceptable LOS D or better in both the AM and PM peak hour setting.

Refer to **Appendix F** for Near-Term (Opening Day Year 2022) Without Project Synchro worksheets.

Table 8-1: Near-Term (Opening Day Year 2022) Without Project Intersection Peak Hour LOS Summary

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Paradise Valley Road / Elkelton Place	Signalized	36.9	D	45.5	D
2	Paradise Valley Road / SR-54 SB On-Ramp	Signalized	6.9	A	7.4	A
3	Elkelton Place / SR-125 SB Off-Ramp	Signalized	8.9	A	22.9	C
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	Signalized	30.3	C	48.7	D
5	Jamacha Boulevard / Gillespie Drive	Signalized	12.0	B	20.3	C
6	Jamacha Road / Sweetwater Road	Signalized	29.0	C	47.7	D

Notes:

Delay = seconds per vehicle

LOS = Level of Service

8.3 Roadway Segment Volumes (*exhibit* & table)

Figure 8-2 displays the Near-Term (Opening Day Year 2022) Without Project ADT volumes for the study street segments.

Refer to **Table 8-2** for the Near-Term (Opening Day Year 2022) Without Project street segment level of service analysis.

Based on Near-Term (Opening Day Year 2022) Without Project volumes and the County's roadway classification thresholds, all study street segments are anticipated to operate at an acceptable level of service (LOS) D or better, except for the following:

- Jamacha Boulevard (Gillespie Drive – Sweetwater Road / SR-54 NB Off-Ramp)
    - LOS E

Figure 8-2: Near-Term (Opening Day Year 2022) Without Project ADT Volumes

Legend

= Project Location

= Study Intersection Location

= Study Street Segment Location

XX,XXX = ADT Number

N
NO SCALE

Table 8-2: Near-Term (Opening Day Year 2022) Without Project Street Segment LOS Summary

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	County of San Diego	4	Major Road B	34,200	24,827	0.73	C
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	4	Major Road B	34,200	29,408	0.86	D
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	County of San Diego	4	Boulevard B	28,000	20,135	0.72	C
Sweetwater Road	N/O Jamacha Boulevard	County of San Diego	4	Major Road B	34,200	13,849	0.40	B
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	4	Major Road B	34,200	31,000	0.91	E

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

9.0 OPENING DAY (YEAR 2022) WITH PROJECT CONDITIONS

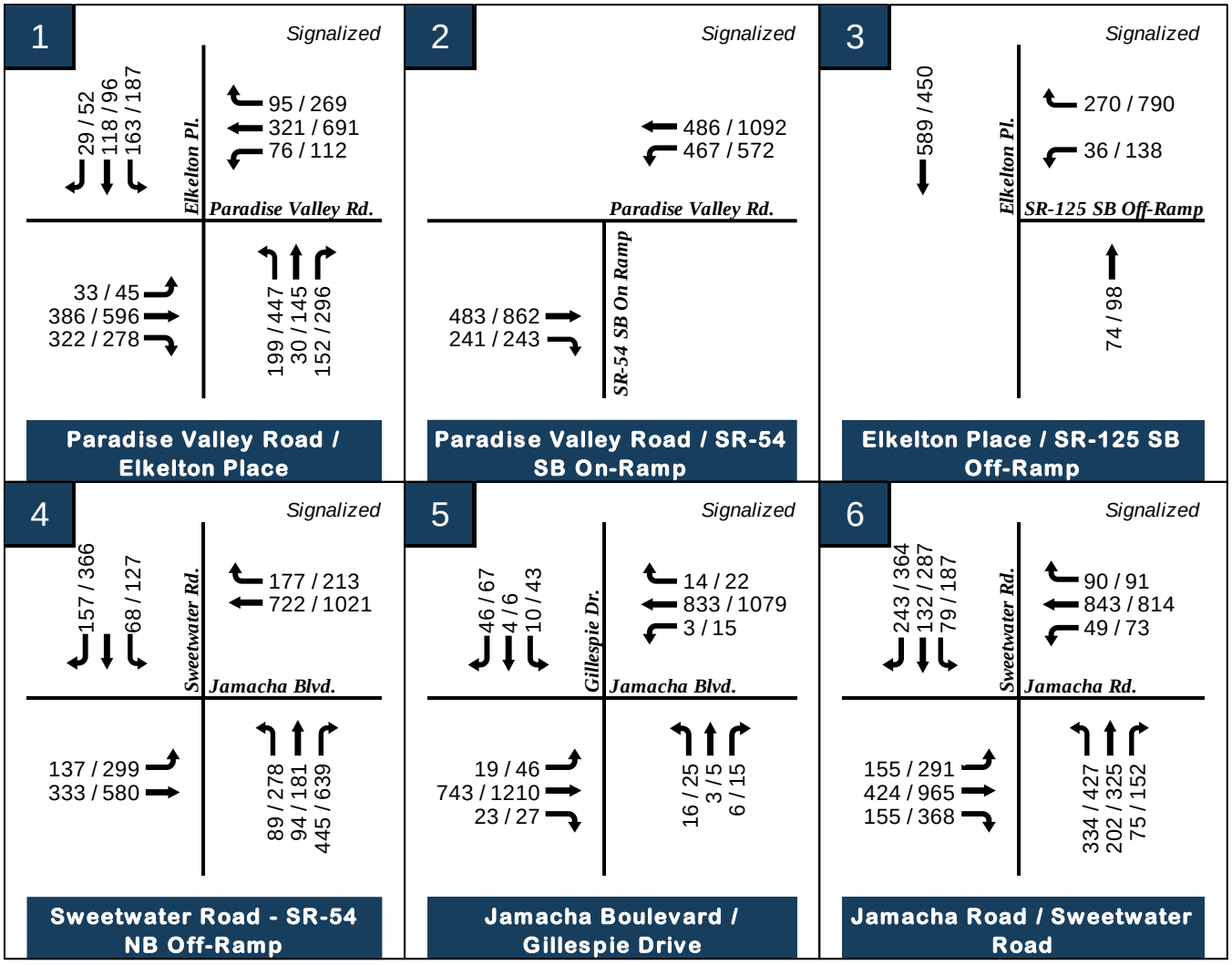
To analyze Near-Term (Opening Day Year 2022) With Project conditions, Project Only traffic volumes have been added to the Near-Term (Opening Day Year 2022) traffic volumes. These volumes were evaluated to determine the operations of the roadway facilities at the estimated opening day of the project including project traffic.

9.1 AM and PM Peak Hour Turning Movement Volumes (*exhibit*)

Near-Term (Opening Day Year 2022) With Project peak hour traffic volumes for the study intersections are shown as follows:

- **Figure 9-1**: Near-Term (Opening Day Year 2022) With Project AM/PM peak hour traffic volumes

Figure 9-1: Near-Term (Opening Day Year 2022) With Project AM/PM Peak Hour Traffic Volumes



XX / XX = AM / PM Peak hour volumes

9.2 Intersection Level of Service (*Table*)

The average delay and level of service at the study intersections in the AM and PM peak hour were analyzed using a software package called *Synchro Version 10*. This software is an application that applies the latest *Highway Capacity Manual* methodology; HCM 6th Edition.

Refer to **Table 9-1** for the Near-Term (Opening Day Year 2022) With Project intersection level of service analysis.

For the analysis of the Near-Term (Opening Day Year 2022) study scenarios, the cycle length of Paradise Valley Road at Elkelton Place has been updated to provide 120 seconds in the AM and PM peak hour settings instead of the Existing cycle length of 100 seconds.

As shown in the table, the study intersections are anticipated to operate at an acceptable LOS D or better in both the AM and PM peak hour setting.

Refer to **Table 9-2** for a Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project intersection level of service analysis comparison table.

Refer to **Appendix G** for Near-Term (Opening Day Year 2022) With Project Synchro worksheets.

Table 9-1: Near-Term (Opening Day Year 2022) With Project Intersection Peak Hour LOS Summary

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Paradise Valley Road / Elkelton Place	Signalized	46.8	D	50.4	D
2	Paradise Valley Road / SR-54 SB On-Ramp	Signalized	6.8	A	7.5	A
3	Elkelton Place / SR-125 SB Off-Ramp	Signalized	9.0	A	23.8	C
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	Signalized	30.6	C	52.0	D
5	Jamacha Boulevard / Gillespie Drive	Signalized	13.6	B	21.1	C
6	Jamacha Road / Sweetwater Road	Signalized	29.4	C	49.2	D

Notes:

Delay = seconds per vehicle

LOS = Level of Service

Table 9-2: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Intersection Peak Hour LOS Summary Comparison

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	Need for Improvement?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	Paradise Valley Road / Elkelton Place	36.9	D	45.5	D	46.8	D	9.9	No	50.4	D	4.9	No
2	Paradise Valley Road / SR-54 SB On-Ramp	6.9	A	7.4	A	6.8	A	-0.1	No	7.5	A	0.1	No
3	Elkelton Place / SR-125 SB Off-Ramp	8.9	A	22.9	C	9.0	A	0.1	No	23.8	C	0.9	No
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	30.3	C	48.7	D	30.6	C	0.3	No	52.0	D	3.3	No
5	Jamacha Boulevard / Gillespie Drive	12.0	B	20.3	C	13.6	B	1.6	No	21.1	C	0.8	No
6	Jamacha Road / Sweetwater Road	29.0	C	47.7	D	29.4	C	0.4	No	49.2	D	1.5	No

Notes:

LOS = Level of Service

Δ = Change

D= Delay

9.3 Roadway Segment Volumes (*exhibit* & table)

Figure 9-2 displays the Near-Term (Opening Day Year 2022) With Project ADT volumes for the study street segments.

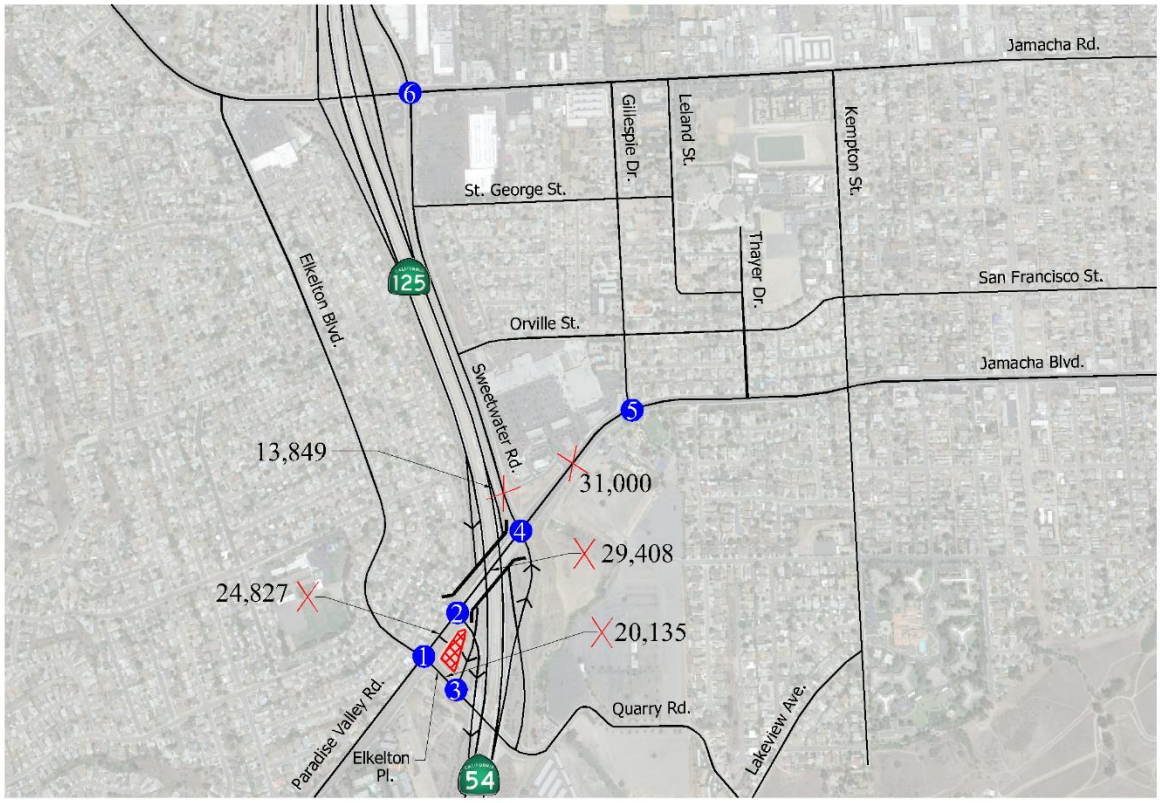
Refer to **Table 9-3** for the Near-Term (Opening Day Year 2022) With Project street segment level of service analysis.

Based on Near-Term (Opening Day Year 2022) With Project volumes and the County's roadway classification thresholds, all study street segments are anticipated to operate at an acceptable level of service (LOS) D or better, except for the following:

- Jamacha Boulevard (Gillespie Drive – Sweetwater Road / SR-54 NB Off-Ramp)
    - LOS E

Refer to **Table 9-4** for a Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project ADT level of service analysis comparison table.

Figure 9-3: Near-Term (Opening Day Year 2022) With Project ADT Traffic Volumes



Legend

= Project Location

= Study Intersection Location

= Study Street Segment Location

XX,XXX = ADT Number

N
NO SCALE

Table 9-3: Near-Term (Opening Day Year 2022) With Project Street Segment LOS

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	County of San Diego	4	Major Road B	34,200	26,055	0.76	C
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	4	Major Road B	34,200	30,033	0.88	D
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	County of San Diego	4	Boulevard B	28,000	20,247	0.72	C
Sweetwater Road	N/O Jamacha Boulevard	County of San Diego	4	Major Road B	34,200	14,050	0.41	B
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	County of San Diego	4	Major Road B	34,200	31,268	0.91	E

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

Table 9-4: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Street Segment LOS Summary Comparison

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Existing			Existing + Project			Δ V/C	Does this result in the need for an improvement?
					LOS	Volume	V/C	LOS	Volume	V/C		
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	4	34,200	Major Road B	C	24,827	0.73	C	26,055	0.76	0.036	***NO***
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	D	29,408	0.86	D	30,033	0.88	0.018	***NO***
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	4	28,000	Boulevard B	C	20,135	0.72	C	20,247	0.72	0.004	***NO***
Sweetwater Road	N/O Jamacha Boulevard	4	34,200	Major Road B	B	13,849	0.40	B	14,050	0.41	0.006	***NO***
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	E	31,000	0.91	E	31,268	0.91	0.008	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

9.4 Identification of Intersection Deficiencies and Improvements

Consultation with County of San Diego staff has been conducted to identify the thresholds that trigger the requirement for improvements resulting from the analysis of the study intersections. A summary of the thresholds is included in **Section 5.0** of this report.

1. As shown in **Table 9-2**, none of the study intersections result in a LOS degradation from an acceptable LOS to a LOS E or F as a result of the addition of Project traffic.
2. As shown in **Table 9-2**, none of the study intersections that operate in the Without Project conditions that were calculated to operate at a LOS E or F have resulted in an increased delay of 5.0 or more seconds with the addition of Project traffic.
3. All study intersections where no exclusive left-turn lane exists (NB approach of Jamacha Boulevard at Gillespie Drive) are not anticipated to have a volume that exceeds 100 vehicles per hour in the AM and PM peak hour.
4. All study intersections where the posted speed limit is 45 mph or greater, and have a left-turn volume that is anticipated to exceed 150 vehicles have a protected left-turn phase in the existing conditions.
5. All study intersections where the left-turn volume is anticipated to exceed 300 vehicles are currently providing two dedicated left-turn lanes.
6. All study intersections where the right-turn volume is anticipated to exceed 150 vehicles are currently providing a dedicated turn lane, except for the following:
    a. **Paradise Valley Road / Elkelton Place (shared EB-T and EB-R lane)**
        i. EB-R turn is currently shared with an EB-T movement.
        ii. The 150 vehicles per hour threshold is exceeded in the AM and PM peak hours for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.

iii. The existing conditions show that the shared EB-T and EB-R lane is approximately 20 feet wide at the intersection.

iv. The 95th percentile queue for the shared EB-T and EB-R lane is the following:

- Existing AM: 200 ft.
- Existing PM: 329 ft.
- N-T AM: 273 ft.
- N-T PM: 456 ft.
- N-T+P AM: 286 ft.
- N-T+P PM: 643 ft.

❖ **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold and not as a result of the addition of project traffic. It is recommended to explore the restriping of the intersection to accommodate an exclusive right-turn lane considering that the volume threshold is exceeded on all study conditions and factoring the posted speed limit of 45mph.**

b. Paradise Valley Road / Elkelton Place (shared WB-T and WB-R lane)

i. WB-R turn is currently shared with a WB-T movement.

ii. The 150 vehicles per hour threshold is exceeded in the PM peak hour for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.

iii. The existing conditions show that the shared WB-T and WB-R lane is approximately 12 feet wide at the intersection.

iv. The 95th percentile queue for the shared WB-T and WB-R lane is the following:

- Existing AM: 100 ft.
- Existing PM: 422 ft.
- N-T AM: 180 ft.
- N-T PM: 502 ft.
- N-T+P AM: 150 ft.
- N-T+P PM: 466 ft.

❖ **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold defined by the County of San Diego and not as a result of the addition of project traffic.**

7. The following locations are shown to result in a turn-lane 95th queue to exceed the storage length of the turn-lane:

a. Paradise Valley Road / Elkelton Place

v. SB-L

- AM Peak: Near-Term, and Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

vi. NB-L

- AM Peak: Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

vii. EB-L

- AM Peak: Existing, Near-Term, and Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

viii. WB-L

- AM Peak: Near-Term With Project
- PM Peak: Near-Term With Project

- **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions (except for the WB-L turn), which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements. In addition, it is also recommended to explore the extension of the WB-L turn lane in conjunction with the signal timing/phasing adjustments.**

b. Jamacha Boulevard / Sweetwater Road – SR-54 NB Off-Ramp

ii. EB-L

- AM Peak: Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

- **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.**

c. Sweetwater Road / Jamacha Road

i. EB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

ii. NB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.**

9.5 Identification of Roadway Segment Deficiencies and Improvements

As a result of the analysis conducted for the study street segments shown in **Table 9-4** none of the segments show a degradation of their LOS between Near-Term (Opening Day Year 2022) Without Project conditions and Near-Term (Opening Day Year 2022) With Project conditions.

Therefore, no improvements would be necessary for the study street segments.

10.0 TRAFFIC SIGNAL WARRANT ANALYSIS

A signal warrant analysis has not been prepared for this study since all of the study intersections are currently operating as signal-controlled intersections.

11.0 SITE ACCESS ANALYSIS

As shown in **Table 7-3**, the projected ADT that the Project driveway would experience is **893** average daily trips (ADT) with **71** AM peak hour trips (**36** in / **36** out) and **80** PM peak hour trips (**40** in / **40** out).

Queuing analysis for the project access driveway under study has been evaluated for the Near-Term (Opening Day Year 2022) With Project conditions, with an emphasis on the known or anticipated congested approaches:

- Paradise Valley Road / Project Driveway
    - NB approach

The intersection has been assumed to operate as a Two-Way Stop Controlled (TWSC) intersection, where the major roadway approach will be Paradise Valley Road in the EB direction and the minor roadway approach will be the Project Driveway. A 95th percentile queuing evaluation has been conducted for the intersection above.

Synchro worksheets for the 95th percentile queuing evaluation are included in **Appendix H.** The software package used for this evaluation is *Synchro Version 10*. Note that HCM methodology expresses the 95th percentile queue for unsignalized intersections (i.e. TWSC) in units of vehicles. The approximate vehicle length for this evaluation is based on the ITE Traffic Engineering Handbook 7th Edition (*01/2016*) typical length for queued vehicles of 25 feet.

Near-Term (Opening Day Year 2020) With Project Conditions:

- **NB approach**

  AM Peak: 0.2 veh. (*5 feet*)

  PM Peak: 0.4 veh. (*10 feet*)

As reflected in the queuing evaluation, the 95th percentile queue for the NB approach of Paradise Valley Road at the Project Driveway is minimal during the evaluated AM and PM peak within the Near-Term (Opening Day Year 2020) With Project conditions.

12.0 SAFETY AND OPERATION IMPROVEMENT ANALYSIS

Safety and operational evaluations have been conducted for the Paradise Valley Road Gas Station project. These evaluations include a Sight Distance Analysis and a Parking Evaluation and are discussed below.

12.1 Sight Distance Analysis

A Sight Distance Analysis was prepared for the project to evaluate the sight distance adequacy of the project access along Paradise Valley Road.

The proposed project plans to provide access along Paradise Valley Road. The existing conditions of Paradise Valley Road between Elkelton Place and SR-54 SB On-Ramp are those of a 4-Lane Major Road with Intermittent Turn Lanes. This roadway segment does not have a posted speed limit, however, the adjacent street segment along Paradise Valley Road west of Elkelton Place shows a posted speed limit of 45 miles per hour in both directions of travel.

The *County of San Diego Public Road Standards (03/2012)* identifies the sight distance requirements for all intersections within the County of San Diego's jurisdiction. As described in Section 6E, the design standards for sight distance require conformance to intersectional sight distance criteria as shown in Table 5 of the *County of San Diego Public Road Standards (03/2012)*.

Table 12-1: Standard Corner Sight Distance At Intersections

Design Speed, MPH	Minimum Corner Intersection Sight Distance in Feet*
60	600
50	500
40	400
30	300
20	200

*Corner sight distance measured along the direction of travel from a point on the minor road at least 10 feet from the edge of the major road pavement and measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road (see County Road Standard Drawings DS-20A and DS-20B). The design speed used to determine the minimum sight distance requirement shall be the greater of the current prevailing speed (if known) and the minimum design speed of the respective road classification shown in Tables 2A and 2B. Additional corner intersection sight distance may be required for left turns at divided highways, left turns onto two-way highways with more than two lanes, or grades which exceed 3 percent, as per "AASHTO A Policy on Design of Highways and Streets".

As identified in **Table 12-1**, the corner sight distance at intersections is based on a roadway facility speed that is the greater of the current prevailing speed (if known) or the minimum design speed of the respective road classification shown in Table 2A in the *County of San Diego Public Road Standards (03/2012)*. Table 2A is included as **Table 12-2** below, which shows the County of San Diego Public Road Standards, Mobility Element Road Classifications.

Table 12-2: Mobility Element Road Classifications

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MIN. CURVE RADIUS	MAX. DESIRABLE GRADE	MIN. DESIGN SPEED (MPH)
Expressway (6.1)	6 / 12'	34'	126'	146'	2 / 10'	10'	1,700'	6%	65
Prime Arterial (6.2)	6 / 12'	14'	102'	122'	2 / 8'	10'	1,700'	6%	65
Major Road									
With Raised Median (4.1A)	4 / 12'	14'	78'	98'	2 / 8'	10'	1,200'	7%	55
With Intermittent Turn Lanes (4.1B)	4 / 12'	-	64' - 78'	84' - 98'	2 / 8'	10'	1,200'	7%	55
Boulevard									
With Raised Median (4.2A)	4 / 12'	14'	78'	106'	2 / 8'	14'	500'	9%	40
With Intermittent Turn Lanes (4.2B)	4 / 12'	-	64' - 78'	92' - 106'	2 / 8'	14'	500'	9%	40
Community Collector									
With Raised Median (2.1A)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
With Continuous Left Turn Lane (2.1B)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
With Intermittent Turn Lanes (2.1C)	2 / 12'	-	40' - 54'	60' - 74'	2 / 8'	10'	700'	9%	45
With Improvement Options (2.1D)	2 / 12'	-	40' - 54'	84'	2 / 8'	15' - 22'	700'	9%	45
No Median (2.1E)	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Light Collector									
With Raised Median (2.2A)	2 / 12'	14'	54'	78'	2 / 8'	12'	500'	9%	40
With Continuous Left Turn Lane (2.2B)	2 / 12'	14'	54'	78'	2 / 8'	12'	500'	9%	40
With Intermittent Turn Lanes (2.2C)	2 / 12'	-	40' - 54'	64' - 78'	2 / 8'	12'	500'	9%	40
With Improvement Options (2.2D)	2 / 12'	-	40' - 54'	88'	2 / 8'	17' - 24'	500'	9%	40
No Median (2.2E)	2 / 12'	-	40'	64'	2 / 8'	12'	500'	9%	40
With Reduced Shoulder (2.2F)	2 / 12'	-	28'	52'	2 / 2'	12'	500'	9%	40
Minor Collector									
With Raised Median (2.3A)	2 / 12'	14'	54'	82'	2 / 8'	14'	350'	12%	35
With Intermittent Turn Lanes (2.3B)	2 / 12'	-	40' - 54'	68' - 82'	2 / 8'	14'	350'	12%	35
No Median (2.3C)	2 / 12'	-	40'	68'	2 / 8'	14'	350'	12%	35

NOTES:

1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above.
2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.
5 Additional pavement and ROW may be required for ME Boulevards / Community Collectors (4 feet) and Light Collectors (12 feet) in Industrial/Commercial Zones.
6 ME roads needing additional turn or passing lanes will require an additional 12 to 14 feet of pavement and ROW for each lane.
7 The maximum superelevation allowed on ME roads is 6%. Superelevation is not normally required on Non-ME roads.
8 ME roads designated with Bike Lanes will require an additional 10 feet of pavement and ROW. This may be increased to 12' for four-lane roads and above based upon the provisions in Section 7.3 of these standards.
9 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
10 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.
11 Road surfacing widths include median width.

As previously described, existing conditions of Paradise Valley Road between Elkelton Place and SR-54 SB On-Ramp are those of a 4-Lane Major Road with Intermittent Turn Lanes. This road classification is identified in Table 3 as 4.1B, with characteristics such as no median and a minimum design speed of 55 miles per hour. Therefore, with a design speed of 55 miles per hour, a corner sight distance can be identified from Table 2. The corner sight distances shown in Table 2 are based on speed increments of 10 miles per hour ranging from 20 miles per hour to 60 miles per

hour. Since the minimum design speed identified in Table 3 is 55 miles per hour, for which no corner sight distance is identified in Table 2, a linear interpolation of the corner sight distances for 50 miles per hour and 60 miles per hour has been conducted. This linear interpolation is calculated as follows:

Linear Interpolation Formula ⟶ $(Y-Y_1) / (X-X_1) = (Y-Y_2) / (X-X_2)$

Where:

Y = Minimum Design Speed A = 55 miles per hour

Y_1 = Minimum Design Speed B = 50 miles per hour

Y_2 = Minimum Design Speed C = 60 miles per hour

X= Corner Sight Distance A = Unknown Variable

X_1 = Corner Sight Distance B = 500 feet

X_2 = Corner Sight Distance C = 600 feet

$$(55 – 50) / (X – 500) = (55 – 60) / (X – 600)$$

$$5 / (X – 500) = -5 / (X – 600)$$

$$-5X + 2500 = 5X – 3000$$

$$10X = 5500$$

$$\underline{X = 550 \text{ feet}}$$

As shown in the linear interpolation above, the corner sight distance at 55 miles per hour is calculated at 550 feet.

The resulting corner sight distance is based on a minimum design speed of 55 miles per hour and the linear interpolation between the corner sight distances at 50 miles per hour and 60 miles per hour. Considering these factors, USAI conducted field observations that included a Radar Speed Survey and a Sight Distance Evaluation onsite. The Radar Speed Survey was conducted at an abundance of caution to verify the prevailing speed of vehicles approaching the proposed project's driveway location.

A Radar Speed Survey was conducted on April 16th, 2020 at a single location along Paradise Valley Road, approximately 300 feet south-west of Elkelton Place. This survey consisted of recording a vehicle sample of 100 vehicles pursuant to requirements of the California Vehicle Code that require the data to be collected with a radar device that meets or exceeds minimum standards of the National Traffic Highway Safety Administration, and which has been calibrated within the previous three (3) years. The data sample consisted of 100 vehicles traveling in the north-eastbound direction only. This evaluation only accounts for north-eastbound traffic since the project proposes an access point to be configured as a right-in right-out driveway.

Please refer to **Appendix I** for the radar device certificates of calibration.

Please refer to **Appendix J** for a summary of the Radar Speed Survey results.

As shown in **Appendix J**, from the recorded sample of 100 vehicles, the 85th percentile speed was calculated at 54 miles per hour. Therefore, the resulting 85th percentile speed is lower than the minimum design speed of 55 miles per hour of the facility. Consequently, based on these results, the previously calculated corner sight distance of 550 feet is used for this sight distance evaluation.

USAI staff proceeded to identify onsite the approximate location of the project driveway and recorded images from the driveway location to document the existing sight conditions onsite. As stated in **Table 12-1**, corner sight distance is measured along the direction of travel from a point in the minor road at least 10 feet from the edge of the major road pavement. USAI measured 550 feet at ground level south-west from the project driveway location and identified the approximate location of where vehicles are expected to exit the project driveway based on site plan dimensions. A setback distance of 10 feet from the face of the curb was measured to identify the approximate location of the driver exiting the project at the driveway. As described in **Table 12-1**, the corner sight distance is measured at an eye height of 3.5 feet on the minor road to a height of an object of 4.25 feet on the major road. Field photos documenting the existing sight visibility conditions based on the criteria described in **Table 12-1** are shown in **Appendix K**.

The approximate location of the proposed project driveways is shown in plan view as **Figure 12-1**. This location is based on the Project Site Plan included in **Figure 2-2**.

For further reference, an approximate plan view representation of the sight distance triangle is included in **Figure 12-2**.

The existing Corner Sight Distance conditions for the project appear adequate based on the sight distance triangles and the observed conditions in the field. There are at least 550 feet of unobstructed intersectional sight distance in the south-western direction along Paradise Valley Road from the property driveway serving the project in accordance with the methodology described in Table 5 of the *County of San Diego Public Road Standards (03/2012)*. The sight distance meets the required intersectional Sight Distance requirements of 550 feet as described in Table 6 of the *County of San Diego Public Road Standards (03/2012)* based on a minimum design speed of 55 miles per hour, which has been verified to be the higher of the prevailing speed (verified through a Radar Speed Survey with an 85th percentile speed of 54 miles per hour) or the minimum design speed of the road classification. I have exercised responsible charge for the

certification as defined in Section 6703 of the Professional Engineers Act of the California Business and Professions Code.

Additionally, it is recommended that upon final grading of the project, additional field verification of the intersectional sight distance be conducted and it should be noted that no significant obstruction (including parked vehicles and plantings) greater than 36" should be present in the visibility triangle shown on the site plan or the intersectional sight distance triangle shown in this document.

Refer to **Appendix L** for supplemental field observation pictures.

Figure 12-1: Project Driveway Approximate Location

Figure 12-2: Sight Distance Triangle for Project Driveway

12.2 Parking Evaluation

A parking evaluation was prepared for the project to evaluate the parking supply adequacy of the project site. The project consists of a Minor Use Permit and the parking analysis has been conducted to determine the number of required spaces for a Use Permit in accordance with Section 6782 of the Zoning Ordinance.

The County of San Diego Zoning Ordinance 6762 shows the off-street parking requirements for commercial uses. The Paradise Valley Gas Station project is a fuel station with accessory retail sales and/or service for which as shown in **Figure 12-3** is required to provide parking at a rate of 4.0 parking spaces per 1,000 square feet (SF) of gross floor area (GSF). This parking requirement does not include parking spaces normally provided adjacent to fuel pumps for fueling vehicles or service bays.

Figure 12-3: County of San Diego Zoning Ordinance 6762 Excerpt

RETAIL	
Retail Sales and Services Includes Personal Services and Repair Services *Retail sales and services other than those specifically listed in this table*	4.5 Parking spaces per KSF GFA *(Total eating, drinking and entertainment uses cannot exceed 15% of project's GFA. Otherwise the floor area that exceeds 15% shall be calculated according to stand-alone eating and drinking establishment use parking requirements)*
Bicycle Parking	0.1 Bike space per car space but not less than 3
Gasoline Station	
Without accessory retail sales and/or service	1 Parking space per employee but not less than 3 *(largest work shift)*
Bicycle Parking	0.05 Bike space per car space but not less than 3
With accessory retail sales and/or service	4 Parking spaces per KSF GFA *(Parking requirement does not include spaces normally provided adjacent to gas pumps for fueling vehicles or service bays)*
Bicycle Parking	0.1 Bike space per car space but not less than 3

Provided with the parking ratios required for a fuel station with accessory retail sales and/or service above, the Paradise Valley Gas Station project is required to provide parking on-site as follows:

Standard Parking Spaces

(4,713 SF Fuel Station W/ Accessory Retail Sales and/or Service) (4.0 spaces / 1,000 SF of GFA) = 18.85 = 19 spaces

Bicycle Parking Spaces

(19 car spaces) (0.1 spaces / car spaces) = 1.9 → *Bike parking spaces cannot be less than 3 spaces

Therefore, based on the County of San Diego Zoning Ordinance 6762, the proposed Paradise Valley Gas Station project would be required to provide a parking supply of 19 vehicle parking spaces and three (3) bicycle parking spaces.

- **Proposed Parking Inventory**

The Project proposes to provide off-street parking as shown in the Project Site Plan in **Figure 2-2**. Previous Project site plans proposed to provide a parking supply consisting of seven (7) vehicle parking spaces and three (3) bicycle spaces. The currently proposed parking supply consists of an additional vehicle parking space, totaling eight (8) vehicle parking spaces, and three (3) bicycle parking spaces. Up to seven (7) vehicle parking spaces are planned to be located adjacent to the Project convenience store, and one (1) vehicle parking space is planned to be located adjacent to the Project automated car wash. The three (3) bicycle parking spaces are planned as exterior parking spaces to be located outside and adjacent to the convenience store. The planned vehicle parking spaces include the following:

- Total vehicle parking spaces = 8 spaces
    - Standard parking spaces = 6 spaces
    - American with Disabilities Act (ADA) / accessible spaces = 1 space
    - Clean Air / Vanpool / Future Electric Vehicle Spaces = 1 space

In addition to the proposed vehicle and bicycle parking spaces, the project plans to provide four (4) fuel pumps, that total eight (8) fueling spaces adjacent to the fuel pumps. These fueling spaces are proposed to serve customers onsite and to operate as short-term parking spaces for vehicles that are being serviced fuel at the fuel pump, while customers have access to the convenience store if desired. This operation is a common practice at fuel stations with convenience stores, where customers can access a convenience store during the vehicle fueling process. By this operation, parking spaces dedicated to customers that enter the site only to have access to the convenience store are available, while those customers that use the fuel pumps can temporarily park their vehicles next to the fuel pump, obtain fuel for their vehicles, and access the convenience store to purchase any conveniences. Additionally, the site will be operated by two (2) staff members which will occupy at most two (2) of the vehicle parking spaces at any time.

- **Evaluation**

USAI researched parking ratios for the proposed Project land uses across various sources. National and local sources including the Institute of Transportation Engineers (ITE) Parking Generation 4th Edition and 5th Edition were consulted to establish a parking ratio or analyze for parking by means of hourly accumulation that could be used to estimate a parking reduction. Note that the Institute of Transportation Engineers (ITE) Parking Generation 4th was included in the research for parking ratios, however, this edition of the Institute of Transportation Engineers (ITE) Parking Generation is both an older edition (5th Edition is the current and latest edition) and no land-use code was determined a good fit to the proposed project land uses. One land use (LU) code was found in the Institute of Transportation Engineers (ITE) Parking Generation 5th Edition to contain parking ratios

for facilities that include convenience markets with fuel stations. This land-use code is described below:

- LU 960: Super Convenience Market with Gas Station (*ITE Parking Generation 5th Edition*)
    - Land use code 960 consists of fuel stations with convenience stores with significant business related to the sale of convenience items and fueling of motor vehicles. These facilities are characterized by having a convenience market with at least 3,000 square feet and at least 10 fueling positions. Therefore, the proposed project land uses do not match the criteria for this land-use code since this land-use code is based on a minimum number of 10 fueling positions and the proposed project includes plans for only 8 fueling positions.
    - Although the proposed project land uses do not match the criteria for this land-use code as the proposed number of fueling positions (8) is less than the minimum reference number of fueling positions (10), in exploring parking characteristics of the sites being included in the determination of a parking ratio for this land-use code, it has been observed that there is no significant variability in the parking demand of super convenience market with fuel station uses based on the square footage of the convenience market uses.

USAI planned to conduct field observations at several fuel stations with similar characteristics to those of the proposed project in the vicinity to estimate a parking rate. However, due to the unforeseen circumstances related to the pandemic associated with Covid-19, these field observations were discarded at the time being as traffic patterns have been disrupted and fuel stations are assumed to not be operating at their normal capacities and traffic influxes.

The lack of consistent and reliable parking data for the proposed project land uses from ITE resources and the unusual prevailing traffic conditions due to Covid-19, which are assumed to affect fuel station demands and therefore traffic flow into fuel stations, has led to consider other

alternative sources of information that can be presented to support a parking reduction for the proposed project.

Through observations resulting from the research conducted from the *ITE Parking Generation 5th Edition* for Land Use Code 960 (Super Convenience Market with Gas Station), it has been determined that the parking demand of convenience market with fuel stations has no significant variability associated with the independent variable of the size of the convenience store/market. The *ITE Parking Generation 5th Edition* for Land Use Code 960 summarizes the peak period parking demand average parking rate of convenience market with fuel stations at 8.11 parking spaces per 1,000 SF of GFA for the convenience store. This average peak period parking demand results from the analysis of 12 sites with an average convenience store area of 5,500 SF of GFA. The surveyed sites for this analysis consisted of sites with an average parking supply of 13 spaces per 1,000 SF of GFA. The analyzed sites were observed to have a peak period parking demand ranging from 5.18 to 11.67 parking spaces per 1,000 SF of GFA. Due to the relatively small sample of sites surveyed, the *ITE Parking Generation 5th Edition* for Land Use Code 960 does not include a fitted curve equation to calculate what the mathematical supply of a site with project characteristics would be required to provide.

Based on these observations, it is concluded that the size of a convenience store is not the determinant factor for the parking demand for a land-use consisting of a convenience market with a fuel station. The parking demand of such sites is assumed to be determined based on the operational characteristics of the site, consisting of the number of available fuel positions, location of the facility, accessibility to the facility, and the vicinity and land uses neighboring the facility. Therefore, a survey of fuel stations in the vicinity of the proposed Paradise Valley was considered a reliable approach for this parking evaluation considering all of the factors that have been previously discussed.

The survey of fuel stations in the vicinity of the proposed Paradise Valley Gas Station project consisted of analyzing satellite and ground-level imagery of fuel stations in the vicinity to count the number of parking spaces that fuel stations in the area provide. **Figure 12-4** below shows a map of the surveyed fuel stations. **Table 12-3** below summarizes information of the surveyed fuel stations including address, number of fueling spaces, the number of provided parking spaces, and whether the fuel station provides for a car wash or not.

Figure 12-4: Map of Surveyed Fuel Stations

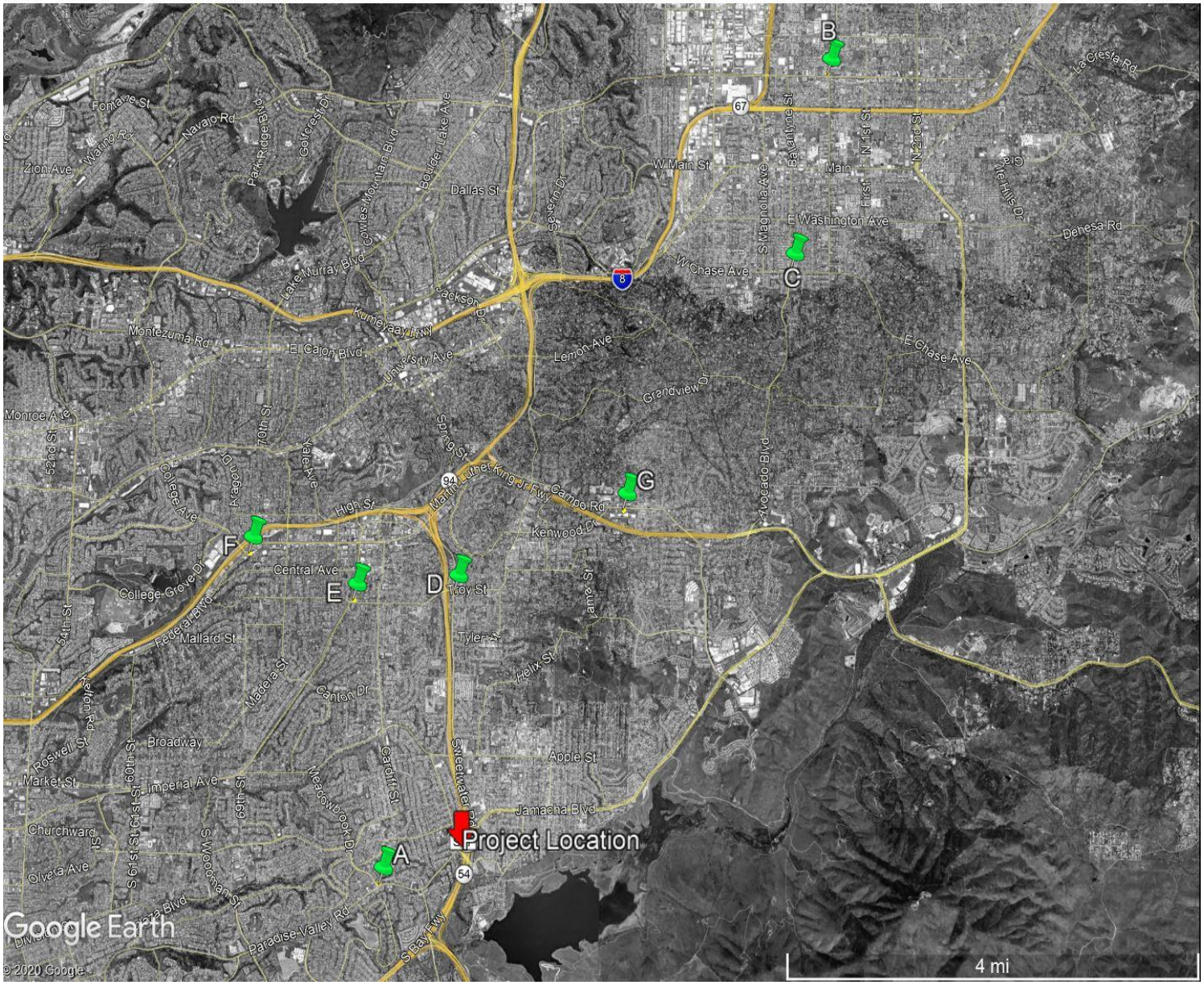


Table 12-3: Survey of Fuel Stations

ID	Address	# of Fueling Spaces	Car Wash?	# of Parking Spaces
A	495 S. Meadowbrook Drive, Saan Diego, CA 92114	8	Yes	6
B	898 Broadway, El Cajon, CA 92021	8	Yes	7
C	404 E. Chase Avenue, El Cajon, CA 92020	8	No	7
D	2835 Sweetwater Road, Spring Valley, CA 9197	6	Yes	7
E	2717 Lemon Grove Avenue, Lemon Grove, CA 91945	8	No	7
F	6901 Federal Boulevard, Lemon Grove, CA 91945	8	No	9
G	9749 Campo Road, Salley, CA 91977	8	No	9

As shown in **Table 12-3**, 7 fuel stations were surveyed. The surveyed fuel stations provide fueling spaces that range between 6 to 8, with the majority of the surveyed locations (up to 6 fuel stations) providing 8 fueling spaces. Furthermore, three (3) of the surveyed locations provide a car wash service. The number of parking spaces that were observed to be provided by the surveyed fuel stations ranges between 6 to 9 parking spaces, with the majority of the surveyed sites (up to 4 fuel stations) providing seven (7) parking spaces.

In correlation with the surveyed data, the proposed project plans to provide fueling spaces in the same range of the surveyed fuel stations with eight (8) fueling spaces and a parking supply in the higher end of the spectrum of the surveyed data with eight (8) parking spaces. Furthermore, the project proposes to provide an automated drive-through car wash, which is not planned to provide additional parking spaces associated with this use. In addition to this, it is anticipated that the demand for the automated drive-through car wash will not exceed the planned queuing space designated to access the automated drive-through car wash.

Furthermore, fuel stations with convenience markets tend to operate with customers that use the convenience store services while using fuel station services. Such operations normally consist of customers that purchase and pump fuel for their vehicles and access the convenience store before, during, and/or after the fuel is pumped into their vehicles. These customers use the fueling space where their vehicle is parked to pump fuel as a temporary and short-term parking space to

access the convenience store if their trip purpose to the facility involves both pumping fuel and purchasing any goods inside the convenience store. Other customers for which their trip purpose to the facility involves only purchasing any goods inside the convenience store are anticipated to park in the designated parking spaces outside of the fueling canopy. It is anticipated that the majority of customers that would access the site are customers that would use the facility to pump fuel since the primary use of this facility is planned to be the fuel station.

The proposed project site would therefore provide eight (8) vehicle parking spaces that would serve primarily customers that enter the site to access the convenience market services while occasionally servicing customers that use the fueling services and access the convenience market services either before or after using the fueling services. Two (2) of these parking spaces will also be available to staff/employees at any time. The eight (8) fueling positions that are planned to be provided would serve as short-term temporary spaces for customers entering the facility to access only the fueling services of the facility as their primary trip objective, whilst having the flexibility to briefly access the convenience marker services before, during, or after using the fueling services. This type of operation would be consistent with the operation of other gas stations with similar offered uses.

- **Variance Request:**

According to Zoning Ordinance Section 6795, "The requirement for design, dimensions, construction, landscaping, and surfacing of parking and bicycle spaces, driveways and other areas may be administratively waived or modified by the Director when practical difficulties make their strict application infeasible and upon a finding that the waiver or modification is consistent with the purpose and intent of Section 6792. Any other waiver or modification of these Parking Regulations shall be allowed only in accordance with the Variance Procedure commencing at Section 7100, unless otherwise specified". As a result, a Variance may be necessary to modify the parking requirement in the Zoning Ordinance discussed above.

In finding such a Variance, Zoning Ordinance Section 7107 states the following requirements:

a) That there are special circumstances applicable to the property, including size, shape, topography, location or surroundings, that do not apply generally to property in the same vicinity and under identical zoning classification;
b) That, because of those special circumstances, the strict application of the Zoning Ordinance deprives the property of privileges enjoyed by other property in the vicinity and under identical zoning classification;
c) That granting the variance or its modification is subject to such conditions as will assure that the adjustment thereby authorized shall not constitute a grant of special privileges inconsistent with the limitations upon other properties in the vicinity and zone in which such property is situated;
d) That the variance will not authorize a use or activity which is not otherwise expressly authorized by the applicable use classification;
e) That granting the variance or its modification will not be materially detrimental to the public health, safety or welfare, or injurious to the property or improvements in the vicinity and zone in which the property is located; and
f) That granting the variance or its modification will not be incompatible with the San Diego County General Plan.

In making these findings, the following facts may be utilized:

a) The proposed project is located on a property of limited size bounded by freeway, freeway ramps and County roads which not only have an unusual shape and easements but limit access and create circumstances unique to the site in this vicinity which limit the amount of land area and consequently parking which can be provided.
b) Due to these circumstances, the provision of 19 parking spaces is impossible. As documented in this memo, several other gas stations in the region have the same or less

parking. Within the unincorporated area, in Spring Valley, the Qwik Korner Gas Station and Market from Kenwood Drive has fewer parking spaces (5 spaces) as an example.

c) As shown, there are multiple gas stations with convenience stores operate with similar limitations as far as the number of parking spaces based on the geometric limitations of their property. The granting of a Variance would not constitute a special privilege inconsistent with limitations on other properties.

d) A gas station with convenience market is a use and activity which is expressly authorized by the applicable use classification for the property.

e) As discussed, the granting of the variance will not be materially detrimental to the public health, safety, or welfare, or injurious to the property or improvements in the vicinity and zone due to the fact that there is no on-street parking available in the vicinity and there is no residence or business adjacent within easy walking distance which would suffer from a loss of parking or overflow parking.

f) The granting of a variance with regard to parking would not be incompatible with the San Diego County General Plan.

Based on the foregoing, it appears that the findings for a variance related to parking could be met and should be considered for this site.

Therefore, considering the parking supply range in correlation with the amount of fueling spaces provided by the fuel station facilities in the vicinity of the proposed project site, it is expected that the proposed Paradise Valley Gas Station will operate satisfactorily provided the proposed parking supply consisting of eight (8) fueling positions that would serve also as short-term vehicle parking spaces, eight (8) vehicle parking spaces, and three (3) bicycle parking spaces.

13.0 ACTIVE TRANSPORTATION ANALYSIS

13.1 Pedestrian Analysis

13.1.1 Existing and Planned Facilities (*exhibit*)

Pedestrian facilities that have been identified within a ¼-mile walking distance from the project site's planned access point are shown in **Figure 6-5**.

Planned pedestrian facilities have been identified within the San Diego County, Spring Valley La Presa Pedestrian Area Plan (*April 2010*). **Figure 13-1** shows existing and proposed bicycle facilities. Of the evaluated area of study, it is observed that the following facilities are proposed in the Spring Valley La Presa Pedestrian Area Plan:

- Jamacha Boulevard (SR-54 NB Off-Ramp – Gillespie Drive)
    - Part of Zone I improvements within the Spring Valley La Presa Pedestrian Area Plan, this improvement consists of adding parkway zones, adequate lighting at pedestrian scale, and bus stop shelters. In addition, the improvement considers providing for curb extensions at the intersection to reduce crossing distance and improve pedestrian conditions to connect park and commercial center pedestrians.

13.1.2 Deficiencies

Of the observed facilities shown in **Figure 6-5**, the following deficiencies have been identified: Paradise Valley Road (W/O Elkelton Place)

- The north side of the segment along Paradise Valley Road (W/O Elkelton Place) currently has an approximate 550' segment of missing sidewalk adjacent to the intersection of Paradise Valley Road at Elkelton Place.

- All four (4) corners of the intersection of Paradise Valley Road at Elkelton Place are not ADA compliant.
- The SE and SW corners of Paradise Valley Road at SR-54 SB On-Ramp are not ADA compliant.
- The NE and SE corners of Elkelton Place at SR-125 SB Off-Ramp are not ADA compliant.
- The NE and SE corners of Elkelton Place at SR-125 NB On-Ramp are not ADA compliant.
- Elkelton Place south of Quarry Road does not provide a sidewalk on both sides of the street.
- All four (4) corners of the intersection of Sweetwater Road at Jamacha Boulevard are not ADA compliant.

13.1.3 Proposed Improvements

The project proposes to provide pedestrian-related signal timing changes to accommodate an anticipated increase in pedestrian demand for the pedestrian facilities adjacent to the project site. In addition, the project proposes to construct curb ramps that meet accessibility standards for the intersections of Paradise Valley Road at Elkelton Place and Paradise Valley Road at SR-54 SB On-Ramp.

Figure 13-1: Proposed Pedestrian Improvements (Zone I) from County of San Diego, Spring Valley La Presa Pedestrian Area Plan

Zone I – A segment of Jamacha Boulevard from the northbound freeway onramp to Gillespie Street, and the area bounded by Gillespie Street, Jamacha Road, Kempton Street, and Orville Street.

Zone II -- Grand Avenue between Jamacha Road and Jamacha Boulevard, and Jamacha Boulevard between Kempton Street and Ramona Street.

Zone III – The intersection of Jamacha Boulevard and La Presa Avenue, and La Presa Avenue extending from Jamacha Boulevard southward along the La Presa Elementary School frontage, including the intersection of La Presa with San Diego Street.

13.2 Bicycle Analysis

13.2.1 Existing and Planned Facilities (*exhibit*)

Bicycle facilities that have been identified within one-mile bicycling distance from the center of the intersection formed by the project driveway are shown in **Figure 6-4**.

As shown in the figure, several roadways support Class II bike lanes in the vicinity of the project site. These roadway segments include the following:

- Paradise Valley Road (S. Meadowbrook Drive – Sweetwater Road)
- Worthington Street (SR-54 – Paradise Valley Road)
- Jamacha Boulevard (Sweetwater Road – Grand Avenue)
- Sweetwater Road (Jamacha Boulevard/Paradise Valley Road – Spring Vista Way)

Planned bicycle facilities have been identified within the San Diego County Bicycle Master Plan (*Adopted 10/2008*). Specific to the Spring Valley Community, **Figure 13-2** shows existing and proposed bicycle facilities. Of the evaluated area of study, it is observed that the following facilities are proposed in the San Diego County Bicycle Master Plan:

- Elkelton Place (Paradise Valley Road – Lakeview Avenue)
    - Class III Bike Route
- Lakeview Avenue (Elkelton Place – San Carlos Street)
    - Class III Bike Route

13.2.2 Deficiencies

Of the observed existing bicycle facilities shown in **Figure 6-4**, no segments were identified to have bike lane gaps except for the south side of Paradise Valley Road between Elkelton Place and SR-

54 SB On-Ramp (roadway segment fronting the project site). All of the identified roadway segments above currently support Class II bike lanes in both travel directions.

13.2.3 Proposed Improvements

No improvements are proposed for bicycle facilities other than the onsite bicycle facilities that are planned as shown in the Project Site Plan in **Figure 2-2**.

Figure 13-2: Planned Bicycle Facilities from County of San Diego Bicycle Master Plan

Provided on the following page in 11”X17” format.

San Diego County Bicycle Master Plan - Existing and Proposed Bicycle Facilities - Spring Valley

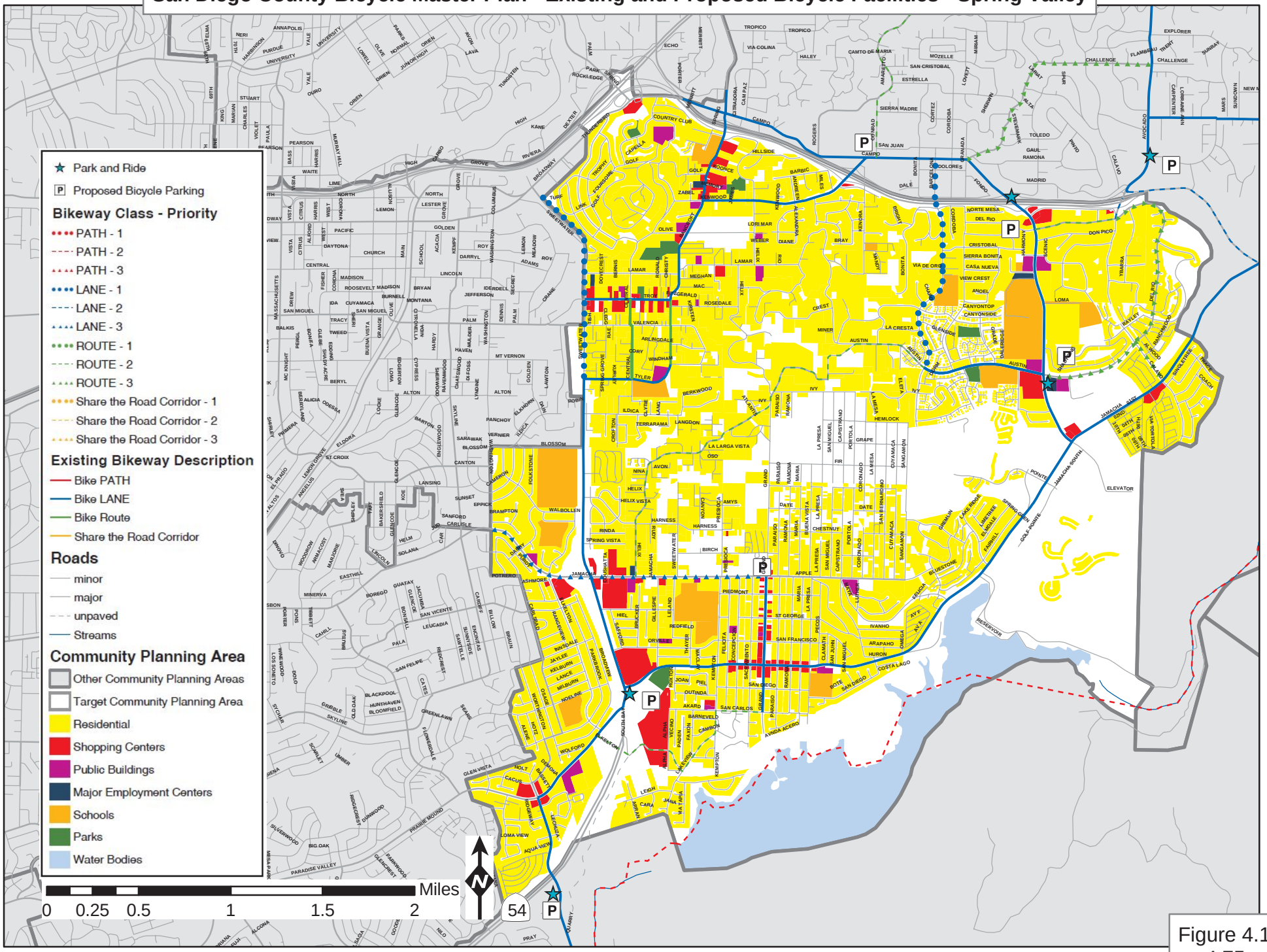


Figure 4.19
p. 4.75

13.3 Trails

13.3.1 Existing and Planned Facilities (*exhibit*)

One (1) trail has been identified within a ¼-mile distance from the project site as shown in **Figure 6-6** below.

As shown in **Figure 6-6**, the Sweetwater Regional Trail is located within a ¼-mile distance from the project site. This trail is identified in the County of San Diego County Trails Program, Community Trails Master Plan as a 4.10-mile-long trail that connects users to the Sweetwater and Valle de Oro borders, Sweetwater Reservoir Trail, and staging areas. The trail provides special features such as being part of the Sweetwater Reservoir Loop Trail, the Sweetwater County Regional Park connection, and being designated as a regional trail.

Figure 13-3 shows a map of the Spring Valley Community Trails and Pathways Plan displaying planned trail facilities. As shown in the figure, other than the existing Sweetwater Regional Trail, no other planned trail facilities are located within ¼ -mile distance from the project site.

13.3.2 Proposed Improvements

No improvements are proposed for trail facilities by the project.

Figure 13-3: Planned Trail Facilities from County Trails Program Community Trails Master Plan

Provided on the following page in 11”X17” format.

Spring Valley

Community Trails and Pathways Plan

FOR PLANNING PURPOSES ONLY

- Regional Trail Proposed
- Regional Trail Existing
- Existing Community Trails
- Proposed Community Pathways
- Proposed Community Trails
- Existing Staging Area
- Proposed Staging Area
- Community Planning Areas
- Municipal Boundaries
- Trail and Pathway Easements
- Biological or Open Space Easement
- County Park Owned, Managed, or Other Property
- Other County Lands
- City Lands
- State Parks
- California Department of Fish and Game
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Military Reservations
- Indian Reservations
- Special District Lands
- Other Federal Lands
- Other State Lands
- Water Body
- Freeway
- Highway
- Roads
- River
- Intermittent Stream
- 40' Topographic Contours

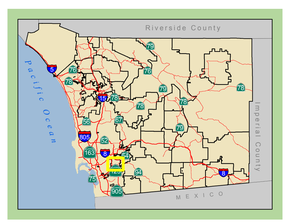
N

1,800 900 0 1,800

Feet

SanGIS

PARKS AND RECREATION COUNTY OF SAN DIEGO



COMMUNITY TRAILS MAP
APPROVED JANUARY 12, 2005
UPDATE APPROVED SEPTEMBER 23, 2009
BY COUNTY OF SAN DIEGO
BOARD OF SUPERVISORS

County of San Diego
Department of Parks and Recreation
Geographic Information Services

For more information regarding this map please contact:
Department of Parks and Recreation
Maryanne Vancio, Trails Program Coordinator at (858) 966-1372

14.0 IMPROVEMENTS AND RECOMMENDATIONS

14.1 Proposed Improvements at Intersections

Table 14-2: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Intersection Peak Hour LOS Summary Comparison

#	Intersection	Near-Term				Near-Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	S ?	PM Peak Hour		Δ	Need for Improvement?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	Paradise Valley Road / Elkelton Place	36.9	D	45.5	D	46.8	D	9.9	No	50.4	D	4.9	No
2	Paradise Valley Road / SR-54 SB On-Ramp	6.9	A	7.4	A	6.8	A	-0.1	No	7.5	A	0.1	No
3	Elkelton Place / SR-125 SB Off-Ramp	8.9	A	22.9	C	9.0	A	0.1	No	23.8	C	0.9	No
4	Jamacha Boulevard / Sweetwater Road - SR-54 NB Off-Ramp	30.3	C	48.7	D	30.6	C	0.3	No	52.0	D	3.3	No
5	Jamacha Boulevard / Gillespie Drive	12.0	B	20.3	C	13.6	B	1.6	No	21.1	C	0.8	No
6	Jamacha Road / Sweetwater Road	29.0	C	47.7	D	29.4	C	0.4	No	49.2	D	1.5	No

Notes:
LOS = Level of Service
Δ = Change
D= Delay

1. As shown in **Table 14-1**, none of the study intersections result in a LOS degradation from an acceptable LOS to a LOS E or F as a result of the addition of Project traffic.
2. As shown in **Table 14-1**, none of the study intersections that operate in the Without Project conditions that were calculated to operate at a LOS E or F have resulted in an increased delay of 5.0 or more seconds with the addition of Project traffic.
3. All study intersections where no exclusive left-turn lane exists (NB approach of Jamacha Boulevard at Gillespie Drive) are not anticipated to have a volume that exceeds 100 vehicles per hour in the AM and PM peak hour.
4. All study intersections where the posted speed limit is 45 mph or greater, and have a left-turn volume that is anticipated to exceed 150 vehicles have a protected left-turn phase in the existing conditions.

5. All study intersections where the left-turn volume is anticipated to exceed 300 vehicles are currently providing two dedicated left-turn lanes.
6. All study intersections where the right-turn volume is anticipated to exceed 150 vehicles are currently providing a dedicated turn lane, except for the following:
    a. **Paradise Valley Road / Elkelton Place (shared EB-T and EB-R lane)**
        i. EB-R turn is currently shared with an EB-T movement.
        ii. The 150 vehicles per hour threshold is exceeded in the AM and PM peak hours for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.
        iii. The existing conditions show that the shared EB-T and EB-R lane is approximately 20 feet wide at the intersection.
        iv. The 95th percentile queue for the shared EB-T and EB-R lane is the following:
            - Existing AM: 200 ft.
            - Existing PM: 329 ft.
            - N-T AM: 273 ft.
            - N-T PM: 456 ft.
            - N-T+P AM: 286 ft.
            - N-T+P PM: 643 ft.

        ❖ **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold and not as a result of the addition of project traffic. It is recommended to explore the restriping of the intersection to accommodate an exclusive right-turn lane considering that the volume threshold is exceeded on all study conditions and factoring that the posted speed limit of 45mph.**

b. Paradise Valley Road / Elkelton Place (shared WB-T and WB-R lane)

v. WB-R turn is currently shared with a WB-T movement.

vi. The 150 vehicles per hour threshold is exceeded in the PM peak hour for Existing, Near-Term (Opening Day Year 2022) Without Project, and Near-Term (Opening Day Year 2022) With Project conditions.

vii. The existing conditions show that the shared WB-T and WB-R lane is approximately 12 feet wide at the intersection.

viii. The 95th percentile queue for the shared WB-T and WB-R lane is the following:

- Existing AM: 100 ft.
- Existing PM: 422 ft.
- N-T AM: 180 ft.
- N-T PM: 502 ft.
- N-T+P AM: 150 ft.
- N-T+P PM: 466 ft.

❖ **No improvement to the intersection is required based on the evaluated data since the existing right-turn volume of the shared lane is higher than the threshold defined by the County of San Diego and not as a result of the addition of project traffic.**

7. The following locations are shown to result in a turn-lane 95th queue to exceed the storage length of the turn-lane:

a. Paradise Valley Road / Elkelton Place

ix. SB-L

- AM Peak: Near-Term, and Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

x. NB-L

- AM Peak: Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

xi. EB-L

- AM Peak: Existing, Near-Term, and Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

xii. WB-L

- AM Peak: Near-Term With Project
- PM Peak: Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions (except for the WB-L turn), which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements. In addition, it is also recommended to explore the extension of the WB-L turn lane in conjunction with the signal timing/phasing adjustments.**

b. Jamacha Boulevard / Sweetwater Road – SR-54 NB Off-Ramp

iii. EB-L

- AM Peak: Near-Term With Project
- PM Peak: Existing, Near-Term, and Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths**

of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.

c. Sweetwater Road / Jamacha Road

iii. EB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

iv. NB-L

- PM Peak: Existing, Near-Term, and Near-Term With Project

❖ **Improvements to the intersection are required based on the evaluated data since the 95th percentile queues exceed the existing storage lengths of the turn lanes listed above. Note that the addition of project traffic does not cause the 95th percentile queues to exceed the existing queueing conditions, which as shown, have existing queues that exceed turn lane length/storage. It is recommended to explore the adjustment of intersection signal timing/phasing to assess whether queueing conditions can improve with such recommended improvements.**

14.2 Proposed Improvements at Roadway Segments

As a result of the analysis conducted for the study street segments shown in **Table 14-**none of the segments show a degradation of their LOS between Near-Term (Opening Day Year 2022) Without Project conditions and Near-Term (Opening Day Year 2022) With Project conditions.

Therefore, no improvements would be necessary for the study street segments.

Table 14-2: Near-Term (Opening Day Year 2022) Without Project and Near-Term (Opening Day Year 2022) With Project Street Segment LOS Summary Comparison

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Existing			Existing + Project			Δ V/C	Does this result in the need for an improvement?
					LOS	Volume	V/C	LOS	Volume	V/C		
Paradise Valley Road	Elkelton Place - SR-54 SB On-Ramp	4	34,200	Major Road B	C	24,827	0.73	C	26,055	0.76	0.036	***NO***
Paradise Valley Road	SR-54 SB On-Ramp - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	D	29,408	0.86	D	30,033	0.88	0.018	***NO***
Elkelton Place	Paradise Valley Road - SR-125 SB Off-Ramp	4	28,000	Boulevard B	C	20,135	0.72	C	20,247	0.72	0.004	***NO***
Sweetwater Road	N/O Jamacha Boulevard	4	34,200	Major Road B	B	13,849	0.40	B	14,050	0.41	0.006	***NO***
Jamacha Boulevard	Gillespie Drive - Sweetwater Road / SR-54 NB Off-Ramp	4	34,200	Major Road B	E	31,000	0.91	E	31,268	0.91	0.008	***NO***

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

Major Road B: Major Road with Intermittent Turn Lanes

Boulevard B: Boulevard with Intermittent Turn Lanes

15.0 TRUCK ACCESS

As described in **Section 7.2**, the project contemplates project traffic distribution based on the future roadway network configurations along Paradise Valley Road for the intersection with Elkelton Place consisting of a WB left-turn U-turn movement being permitted at the intersection of Paradise Valley Road at Elkelton Place.

With this condition, inbound project traffic would be benefitted from access to the project site, which would prevent project traffic traveling farther downstream along Paradise Valley Road to make a U-turn in order to travel upstream on an eastbound direction to then proceed to access the site.

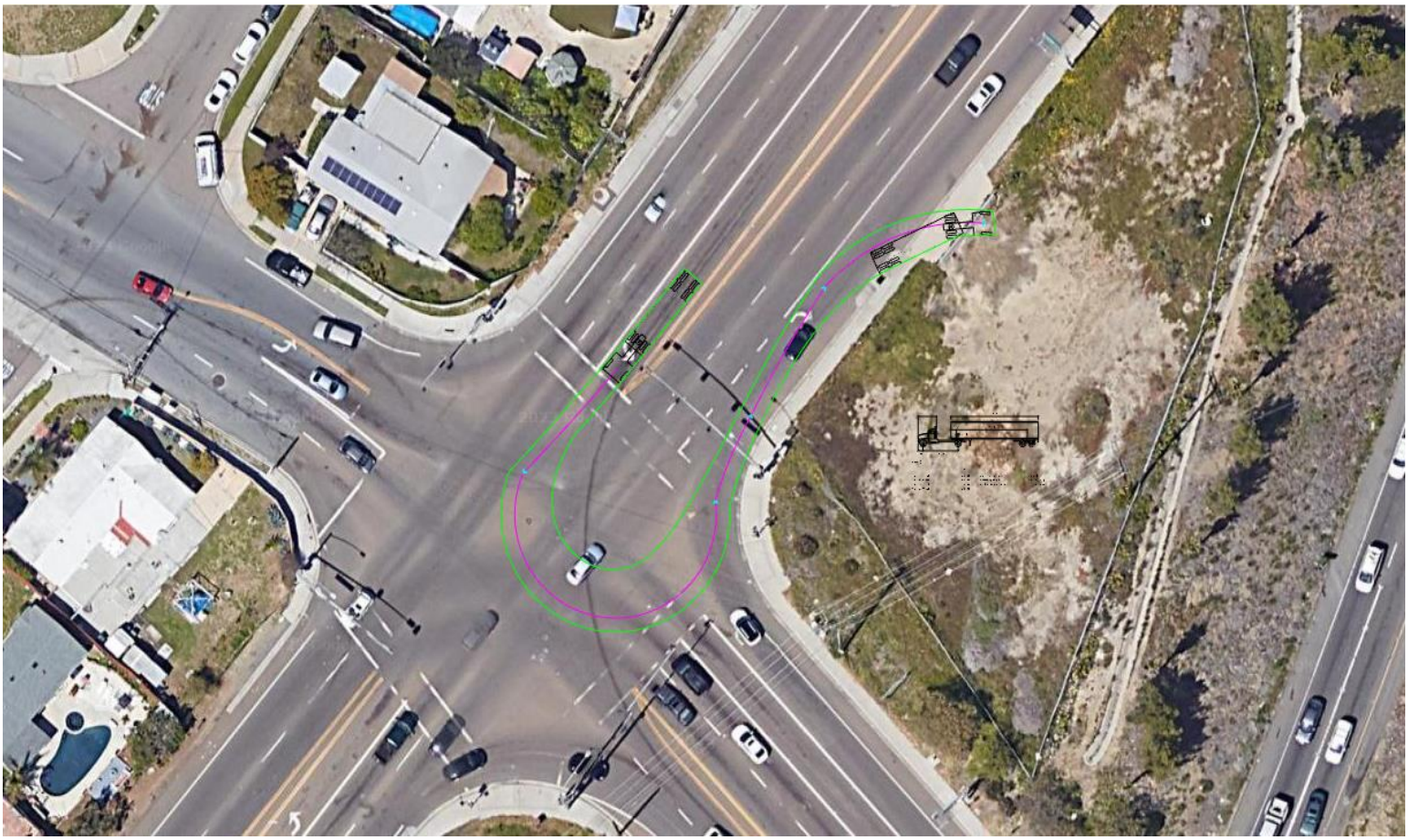
Truck traffic accessing the site would also benefit from this condition, as this site is anticipated to be accessed by truck traffic to service the convenience store and gas tankers to service/refill the fuel deposits of the gas station.

An evaluation of the truck access to the site has been conducted, specific to the larger truck traffic that is anticipated to access the site along Paradise Valley Road in the westbound direction, which would consist of the gas tanker trucks.

As shown in **Figure 15-1**, the truck turn template for a WB-40 design vehicle type shows that a westbound U-turn at the intersection of Paradise Valley Road with Elkelton Place would be feasible for the maneuver of a vehicle with the dimensions and turning radii of WB-40 classification.

Therefore, it is recommended that truck traffic accessing the site via a westbound U-turn at the intersection of Paradise Valley Road with Elkelton Place do not exceed the dimensions of a WB-40 design vehicle type. The use of alternate routes to access the site for truck traffic with larger dimensions than a WB-40 design vehicle type is recommended.

Figure 15-1: Truck Turn Template for Paradise Valley Road at Elkelton Place



16.0 LIST OF PREPARERS

Urban Systems Associates, Inc.

Principal Engineer

Justin P. Schlaefli; M.S. Civil Engineering, B.S. Civil Engineering

Registered Civil Engineer, Licensed Traffic Engineer, Professional Traffic Operations Engineer

Project Manager

Justin P. Schlaefli; M.S. Civil Engineering, B.S. Civil Engineering

Registered Civil Engineer, Licensed Traffic Engineer, Professional Traffic Operations Engineer

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Jorge Muradas; EIT, B.S Civil Engineering

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Jorge Muradas; EIT, B.S Civil Engineering

Word Processing, Report Production and Compilation

Jorge Muradas; EIT, B.S Civil Engineering

This report is site and time specific and is intended for a one-time use for this intended project under the conditions described as "Proposed Project". Any changes or delay in implementation may require re-analysis and re-consideration by the public agency granting approvals. California land development planning involves subjective political considerations as well as frequently re-interpreted principals of law as well as changes in regulations, policies, guidelines and procedures. Urban Systems and their professionals make no warrant, either express or implied, regarding our findings, recommendations, or professional advice as to the ability to successfully accomplish this land development project.

Traffic is a consequence of human behavior and as such is predictable only in a gross cumulative methodology of user opportunities, using accepted standards and following patterns of past behavior and physical constraints attempting to project into a future window of circumstances. Any counts or existing conditions cited are only as reliable as to the time and conditions under which they were recorded. As such the preparer of this analysis is unable to warrant, either express or implied, that any forecasts are statements of actual true conditions which will in fact exist at any future date.

Services performed by Urban Systems professionals resulting in this document are of a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation expressed or implied and no warranty or guarantee is included or intended in this report, document opinion or otherwise.

Any changes by others to this analysis or re-use of document at a later point in time or other location, without the express consent and concurrence of Urban Systems releases and relieves Urban Systems of any liability, responsibility or duty for subsequent questions, claims, or damages.

Appendix A: Scoping Agreement

Provided on the following page in 11”X17” format.

General Project Information and Description

Project Information

Project Name: Paradise Valley Road Gas Station

Project PDS Number: PDS2019-ZAP-19003, PDS2020-ER-20-18-001

Project Location: NE corner of Paradise Valley Road at Elkelton Place, Spring Valley, CA (APN 584-160-52-00)

Project Description

Land Uses and Intensities: Gasoline Station (8 fueling spaces) w/ Food Mart (3,555 SF) w/ Car Wash (855 SF)

Gross and Developable Acreage: 0.49 acres

Number of Vehicle Parking Spaces: 8 standard spaces + 8 short-term spaces at the fueling positions

Bicycle Storage Capacity: 3 spaces

Motorcycle Spaces: 0 spaces

Consultant

Name of Firm: Urban Systems Associates, Inc.

Project Manager: Justin P. Schlaefli, PE TE PTOE

Address: 8451 Miralani Drive, Suite A, San Diego, CA 92126

Telephone: (858) 560-4911

Trip Generation

Source: SANDAG (Not So) Brief Guide ... (*2002*)	**Pass-by Trips:** 347 ADT
Total Daily Trips: 1,240 ADT	**Diverted Trips:** 260 ADT
Internal Capture Rate:	**Trip Credit:**
Alternative Modes:	**Net Daily Trips:** 893 ADT

General Plan Consistency

Is this project consistent with the General Plan? X **Yes** ☐ **No**

Site Plan

Attach 11x17 copies of the project location/vicinity map and site plan containing the following:

- Driveway locations and access type
- Pedestrian access, bicycle access, and on-site pedestrian circulation

Refer to Attachment 1 for Project Site Plan

- Location and distance to closest existing transit stop (measure as walking distance to project entrance or middle of parcel
- Location of any planned trails identified in the Community Trails Master Plan (CTMP) within ¼ mile of the project location

Refer to Attachment 2 for Project Location Map identifying transit and trail facilities

CEQA Transportation Analysis Screening

Project Type Screening

	1) Select the Land Uses that apply to your project from the five options below. 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis).*	Screened Out Yes	Not Screened Out No
☐	**1. Small Projects:**		
	a. Does the project result in 110 daily trips or less?	☐	X
☒	**2. Small Service/Retail Project:**		
	a. Is the project less than 50,000 square feet?	X	☐
☐	**3. Mixed-Use Project:**		
	a. Is the project location screened out based on the SANDAG screening map for VMT/service population?	☐	X
☒	**4. Locally Serving Retail/Public Facility/Recreational**		
	a. Is the project locally serving: Retail OR Public Facility OR Recreational?	X	☐
☐	**5. Redevelopment Project:**		
	a. Does the project result in a net decrease in total Project VMT than the existing use?	☐	X
	b. If the project is to redevelop an affordable housing site, are all proposed units affordable housing units? Mark "No" for projects that replace affordable housing with market rate units	☐	X

Project Location Screening (if not screened based on project type) – Part 1

Refer to Attachment 3 for Screening Map

Is this project located within a grey area (area with little to no existing land use) on the applicable County screening maps for the project land use type?	☐ **Yes**	X **No**
If "yes", the project cannot be screened based on location. If "No", proceed to Part 2.		

Project Location Screening (if not screened based on project type) – Part 2

	1) Select the Land Uses that apply to your project 2) Answer the questions for each Land Use that applies to your project *(if "Yes" in any land use category below then that land use (or a portion of the land use) is screened from CEQA Transportation Analysis)*	Screened Out Yes	Not Screened Out No
☐	**1. Residential**		
	a. Is the project location screened out using the County screening maps for VMT/resident?	☐	☐
☐	**2. Employment**		
	a. Is the project location screened out using the County screening maps for VMT/employee or VMT/service population?	☐	☐
☒	**3. Retail/Public Facility/Recreational**		
	a. Is the project location screened out using the County screening maps for VMT/service population?	X	☐

Local Mobility Analysis

Type of Local Mobility Analysis (LMA)

☐	**Site Access Study**	249 daily trips or less
☐	**Focused LMA**	250 to 499 daily trips and consistent with the General Plan
X	**Full LMA**	500 or greater daily trips and consistent with the General Plan, or 250 or greater daily trips and inconsistent with the General Plan

Trip Distribution (Refer to Attachment 4 for Project Trip Distribution and Trip Assignment figures - 3 Scenarios are included)

☐	**Select Zone (Model Series_____)**	Projects that generate greater than 1,000 daily trips
X	**Manual Estimation**	Site Access Studies, Focused LMAs, or project's that generate less than 1,000 daily trips

Provide exhibit detailing trip distribution and trip assignment for review.

Study Intersections (and Roadway Segments) **(NOTE: Subject to change based of staff review)**

1. Paradise Valley Rd. / Elkelton Pl.	**6.** Jamacha Rd. / Sweetwater Rd.
2. Paradise Valley Rd. / SR-54 SB On-Ramp	**7.** *Paradise Valley Rd. (*Elkelton Pl. - SR-54 SB On-Ramp*)*
3. Elkelton Pl. / SR-125 SB Off-Ramp	**8.** Paradise Valley Rd. (SR-54 SB On-Ramp - SR-54 NB Off-Ramp)
4. Jamacha Blvd. / Sweetwater Rd. / SR-54 NB Off-Ramp	**9.** Elkelton Pl. (Paradise Valley Rd. - SR-125 SB Off-Ramp)
5. Jamacha Blvd. / Gillespie Dr.	**10.** Sweetwater Rd. (N/O Jamacha Blvd.)

Attach a separate page if the number of study locations exceeds 10. (Refer to Attachment 5 for full study area)

Other Jurisdictions

Is this project located within one mile of another Local Jurisdiction? **X Yes** ☐ **No**

If so, name of Jurisdiction: City of San Diego

Specific Issues to be addressed within the Study

(in addition to requirements described in the Guidelines – to be filled out by County Staff)

1.
2.
3.
4.
5.

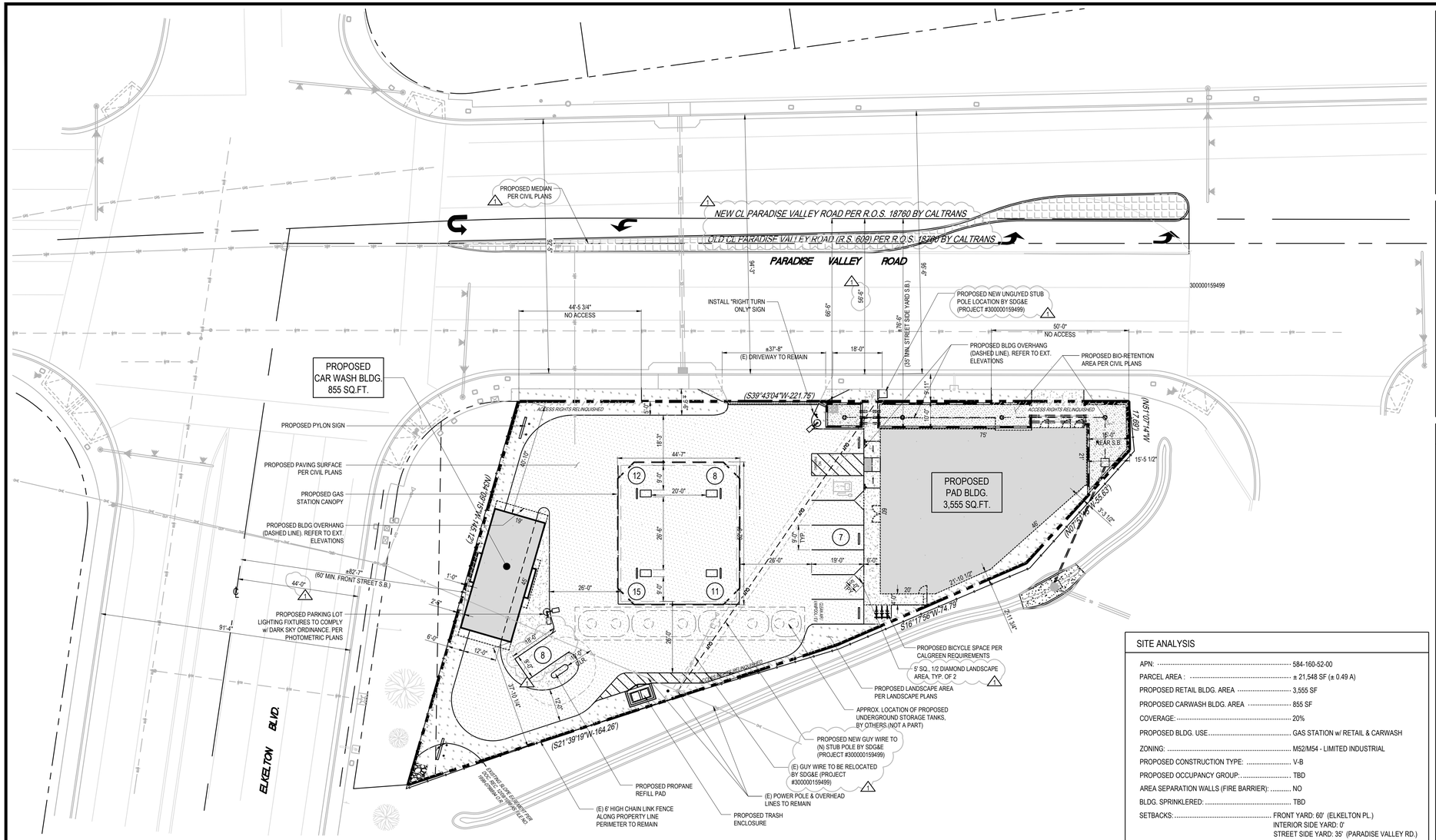
Recommended by:

Consultant's Representative	Date
Scoping Agreement Submitted on	Date
Scoping Agreement Re-submitted on	Date

Approved Scoping Agreement:

Damon Davis	9/23/20
County of San Diego Transportation Specialist	Date

Attachment 1: Project Site Plan



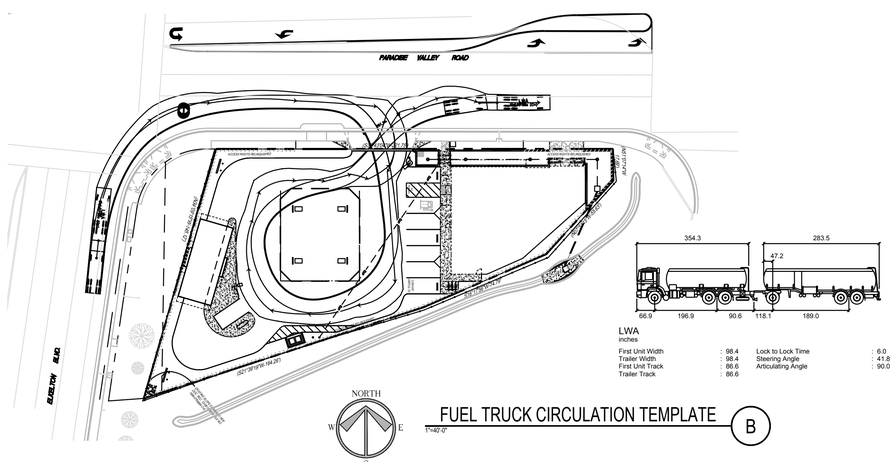
NORTH

ARCHITECTURAL SITE PLAN — A

1"=20'-0"

0 10' 20' 30' 40' 50'

SCALE 1"=20'



LWA
inches

First Unit Width	: 98.4	Lock to Lock Time	: 6.0
Trailer Width	: 98.4	Steering Angle	: 41.8
First Unit Track	: 86.6	Articulating Angle	: 90.0
Trailer Track	: 86.6		

NORTH

FUEL TRUCK CIRCULATION TEMPLATE — B

1"=40'-0"

EASEMENTS - EXCEPTIONS

EASEMENTS AND EXCEPTIONS PER SCHEDULE B OF PRELIMINARY TITLE REPORT BY COMMONWEALTH LAND TITLE COMPANY - ORDER NO. 09193261-919-KRC-KRE, DATED AUGUST 1, 2017

3. AGREEMENT FOR IMPROVEMENTS IN PUBLIC RIGHT-OF-WAY ORDINANCE 4815 EXECUTED BY CHARLES M. ERRECA, LOUISE ERRECA, ERNEST M. STANLEY & NINA G. STANLEY PER DOCUMENT RECORDED DECEMBER 4, 1978 AS INSTRUMENT NO. 78-520244 OF OFFICIAL RECORDS.

4. THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE RIGHTS OF ACCESS TO OR FROM THE STREET, HIGHWAY, OR FREEWAY ABUTTING SAID LAND, SUCH RIGHTS HAVING BEEN RELINQUISHED DY THE DOCUMENT RECORDED DECEMBER 8, 1999 AS INSTRUMENT NO. 999-0798894 OF OFFICIAL RECORDS. (NOTED HEREON)

5. AN EASEMENT FOR SLOPE PURPOSES IN FAVOR OF STATE OF CALIFORNIA PER DOCUMENT RECORDED DECEMBER 8, 1999 AS INSTRUMENT NO. 1999-0798894 OF OFFICIAL RECORDS. (PLOTTED HEREON)

LEGAL DESCRIPTION

THAT PORTION OF QUARTER SECTION 1 OF RANCHO DE LA NACION, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP NO. 166, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY AS CONVEYED IN FINAL ORDER OF CONDEMNATION TO THE STATE OF CALIFORNIA AS PARCEL 30173 OF SAID CONDEMNATION RECORDED JULY 14, 1998 AS INSTRUMENT NO. 1998-0435558 IN THE OFFICE OF SAID RECORDER DESCRIBED AS FOLLOWS:
COMMENCING AT THE MOST SOUTHERLY CORNER OF SAID PARCEL;
THENCE ALONG THE SOUTHWESTERLY LINE OF SAID PARCEL NORTH 34° 09' 25" WEST, 20.78 FEET TO THE
POINT OF BEGINNING;
THENCE (1) NORTH 21° 39' 19" EAST, 10.46 FEET;
THENCE (2) NORTH 21° 39' 19" EAST, 153.80 FEET;
THENCE (3) NORTH 16° 17' 56" EAST, 74.79 FEET;
THENCE (4) NORTH 07° 51' 15" WEST, 55.63 FEET;
THENCE (5) NORTH 51° 07' 14" WEST, 17.95 FEET;
THENCE (6) SOUTH 39° 42' 24" WEST, 50.00 FEET;
THENCE (7) CONTINUING SOUTH 39° 42' 24" WEST, 127.19 FEET;
THENCE (8) CONTINUING SOUTH 39° 42' 24" WEST, 44.48 FEET TO SAID SOUTHWESTERLY LINE;
THENCE (9) ALONG SAID LINE SOUTH 34° 09' 25" EAST, 145.47 FEET TO THE POINT OF BEGINNING.

SITE LEGEND

●	INDICATES FOUND 1" IRON PIPE W/ DISK "CAL DOT" PER ROS 18760. ACCEPTED AS DEED CORNER.
■	INDICATES BRASS DISK IN CONCRETE "CAL DOT" PER ROS 18760, N50°16'56"W, 5.00' FROM PROPERTY CORNER.
———	INDICATES SITE BOUNDARIES
– – WTR – –	EXISTING WATER LINE
– – SWR – –	EXISTING SEWER LINE
– – OHE – –	EXISTING OVERHEAD ELECTRIC
– – GAS – –	EXISTING GAS LINE
SWR SD	EXISTING MANHOLE (SWR=SEWER) (SD=STORM DRAIN)
WTR	EXISTING WATER GATE VALVE
TS	EXISTING TRAFFIC SIGNAL
TS	EXISTING TRAFFIC SIGNAL W/ ARM AND LIGHT
	EXISTING TREE
	INDICATES EXISTING CONCRETE CURB AND GUTTER
TC	INDICATES TOP OF CURB
FL	INDICATES FLOWLINE
GRD	INDICATES EXISTING GROUND
TW	INDICATES TOP OF WALL
AC	INDICATES ASPHALT
CONC	INDICATES CONCRETE
TS	INDICATES TRAFFIC SIGNAL
SL	INDICATES STREET LIGHTING
ROS	INDICATES RECORD OF SURVEY MAP
	PROPOSED LANDSCAPE AREA, PER LANDSCAPE PLANS
	PROPOSED PAVEMENT AREA, PER CIVIL PLANS
	PROPOSED BIO RETENTION AREA, PER CIVIL PLANS
	PROPOSED BIO RETENTION AREA, PER CIVIL PLANS

SITE ANALYSIS

APN:	584-160-52-00
PARCEL AREA :	± 21,548 SF (± 0.49 A)
PROPOSED RETAIL BLDG. AREA	3,555 SF
PROPOSED CARWASH BLDG. AREA	855 SF
COVERAGE:	20%
PROPOSED BLDG. USE	GAS STATION w/ RETAIL & CARWASH
ZONING:	M52/M54 - LIMITED INDUSTRIAL
PROPOSED CONSTRUCTION TYPE:	V-B
PROPOSED OCCUPANCY GROUP:	TBD
AREA SEPARATION WALLS (FIRE BARRIER):	NO
BLDG. SPRINKLERED:	TBD
SETBACKS:	FRONT YARD: 60' (ELKELTON PL.) INTERIOR SIDE YARD: 0' STREET SIDE YARD: 35' (PARADISE VALLEY RD.) REAR YARD: 15'

PARKING ANALYSIS

PARKING REQUIREMENT:
BASED ON THE COUNTY OS SAN DIEGO CODE OFF-STREET PARKING REQUIREMENTS ARE CALCULATED USING 4 PARKING SPACES PER 1,000 S.F.

USE	AREA	REQUIRED	TOTAL
GAS STATION w/ RETAIL	3,555 SQ.FT.	4/1,000	15 STALLS

TOTAL PARKING REQUIRED	15 STALLS
TOTAL PARKING PROVIDED	15 STALLS
STANDARD SPACES	06 STALLS
STAND. SPACES AT GAS PUMPS	08 STALLS
HC SPACES	01 STALL
CLEAN AIR/VAN POOL/EP (PER CGC TABLE 5.106.5.2)	01 STALL
FUTURE EV SPACES (PER CGC TABLE 5.106.5.3.3)	01 STALL
BICYCLE PARKING PROVIDED	3

SURVEYORS NOTES

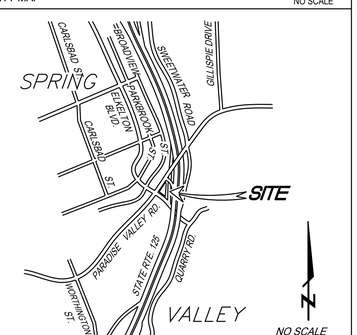
1. THIS SURVEY IS BASED ON PRELIMINARY TITLE REPORT NO. 09193261-919-KRC-KRE, DATED AUGUST 1, 2017, ISSUED BY COMMONWEALTH LAND TITLE COMPANY. EFFECTS OF AGREEMENTS, PERMITS, LIENS, ASSESSMENTS, LEASES, COVENANTS AND OR RESTRICTIONS APPEARING IN SAID POLICIES ARE NOT NOTED ON THIS SURVEY.
2. EXISTING LAND USE: VACANT
3. FIELD SURVEY OF THIS SITE WAS PERFORMED ON MARCH 6 & 8, 2018 BY STEVEN M. HOWELL, LAND SURVEYOR, LS 5758.
4. ASSESSOR PARCEL NO. 584-160-52-00
5. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND IS BASED ON RECORD INFORMATION AND FIELD LOCATION OF SURFACE FACILITIES INDICATED ON THIS SURVEY.
6. LEGAL DESCRIPTIONS SHOWN UNDER THE CAPTION (LEGAL DESCRIPTION) ARE FROM THE PRELIMINARY TITLE REPORT DESCRIBED IN NOTE 1 AND ARE BASED ON RECORD INFORMATION ONLY AND MAY NOT REFLECT ADJUSTMENTS MADE BY BOUNDARY SURVEYS AND FUTURE MAPPING EFFORTS.
7. TOTAL GROSS AREA: 21,468 SQ. FT. (0.493 ACRES)
8. BOUNDARY SHOWN IS BASED ON RECORD INFORMATION AND FOUND MONUMENTS PER RECORD OF SURVEY MAP NO. 18760.

ENTITLEMENT PROCESS NOTES

PLANNING & DEVELOPMENT SERVICES (PDS) PLANNING & CEQA:
1. ALL OUTDOOR LIGHTING SHALL CONFORM TO SECTION 59.101 ET. SEQ. OF THE SAN DIEGO COUNTY CODE AND WITH SECTION 6322 THROUGH ET. SEQ. OF THE COUNTY ZONING ORDINANCE.

VICINITY MAP

NO SCALE



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PROJECT

A PROPOSED COMMERCIAL DEVELOPMENT LOCATED AT:

NEC PARADISE VALLEY RD. & ELKELTON PL.
SPRING VALLEY, CA 91977

REVISIONS

NO.	DESCRIPTION	DATE
1	PLANNING DEPT. COMMENTS & PLAN COORDINATION	03-31-20

PDS2019-ZAP-19-003,
PDS2020-ER-20-18-001

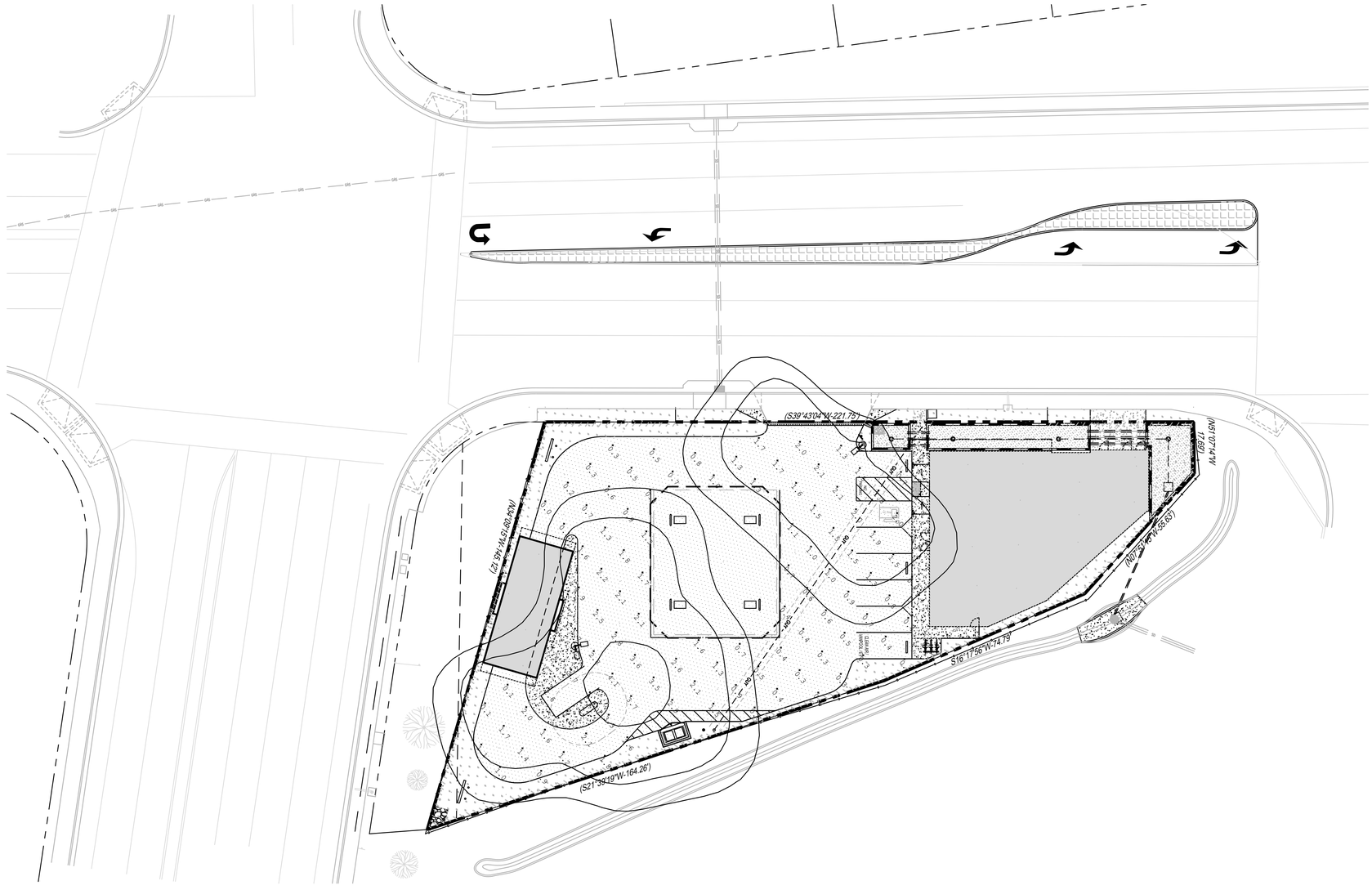
PLAN SUBMITTAL LOG

PLAN DATE	DESCRIPTION
10-31-19	SUBMITTAL TO PLANNING DEPT. - 1st REVIEW
01-06-20	SUBMITTAL TO PLANNING DEPT. - 2nd REVIEW
05-20-20	SUBMITTAL TO PLANNING DEPT. - 3rd REVIEW

SHEET TITLE

ARCHITECTURAL SITE PLAN

DATE: 05-20-20	SCALE: AS NOTED
DRAWN BY: L. DALE	DATABASE: 17084.DWG
CHECKED BY: -	SHEET NUMBER: -
PROJECT NO: 17084	AS1.0



NORTH

PHOTOMETRIC SITE PLAN A

1"=20'-0"

0 10' 20' 30' 40' 50'

SCALE 1"=20'

Luminaire Schedule							
Symbol	Qty	Label	Arrangement	Lum. Lumens	BUG Rating	LLF	Description
	1	RAR1-160L-70-4K7-4W	SINGLE	9414	B2-U0-G3	0.900	RAR1-160L-70-4K7-4W
	1	2890 - RAR1-160L-70-4K7-4W	2 @ 90 DEGREES	9414	B2-U0-G3	0.900	RAR1-160L-70-4K7-4W

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Object 4 Planar	Illuminance	Fc	1.35	4.1	0.0	N.A.	N.A.

NOTES:

- POLE FIXTURE MOUNTING HEIGHT: 20'-0" A.F.F.

- CALC PTS @ GROUND: 0'-0" A.F.F.

- CANOPY FIXTURES NOT INCLUDED IN PHOTOMETRIC

Calculations have been performed according to information provided regarding room dimensions, reflectances, furniture and architectural element placement. Some differences between measured values and calculated results may occur if the real environment conditions do not match the input data.

Photometric Data used as input for these calculations is based on established IES procedures and published lamp & ballast ratings.

Field Performance will depend on actual lamp, ballast, electrical and site characteristics.

For design reference only - All calculations should be reviewed for accuracy by a certified electrical engineer.

HUBBELL Outdoor Lighting

DATE: LOCATION:
TYPE: PROJECT:
CATALOG #:

RATIO Series

AREA/SITE LIGHTER

FEATURES

- Low profile LED area/site luminaire with a variety of IES distributions for lighting applications such as retail, commercial and campus parking lots
- Featuring Micro Strike Optics which maximizes target zone illumination with minimal losses at the house-side, reducing light trespass issues
- Visual comfort standard
- Compact and lightweight design with low EPA
- 3G rated for high vibration applications including bridges and overpasses
- Control options including photo control, occupancy sensing, NX Distributed Intelligence™ and 7-Pin with networked controls
- Best in class surge protection available

RELATED PRODUCTS

Airo | Cimaron LED | Ratio Family

IP66

CONTROL TECHNOLOGY

SiteSync | NX DISTRIBUTED INTELLIGENCE | wiSCAPE

SPECIFICATIONS

CONSTRUCTION

- Rectilinear form mimics the traditional shoebox form factor keeping a similar but updated style and appearance, ideal for retrofit applications
- Die-cast housing with hidden vertical heat fins that are optimal for heat dissipation while keeping a clean smooth outer surface
- Corrosion resistant, die-cast aluminum housing with powder coat paint finish

OPTICS

- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance
- 80, 160, 320 or 480 midpower LEDs
- 3000K, 4000K or 5000K (70 CRI) CCT
- Zero uplight at 0 degrees of tilt
- Field rotatable optics

INSTALLATION

- Standard square arm mount, compatible with B3 drill pattern
- Optional universal mounting block for ease of installation during retrofit applications. Available as an option or accessory for square and round poles.
- Knuckle arm fitter option available for 2-3/8" OD tenon. Max tilt of 60 degrees with 4 degree adjustable increments. (Restrictions apply for 7-pin options)

ELECTRICAL

- Universal 120-277 VAC or 347-480 VAC input voltage, 50/60 Hz
- Ambient operating temperature -40°C to 40°C
- Drivers have greater than 90% power factor and less than 20% THD
- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- Field replaceable surge protection device provides 20kA protection meeting ANSI/ IEEE C62.41.2 Category C High and Surge Location Category C3. Automatically takes fixture off-line for protection when device is compromised

CONTROLS

- Photo control, occupancy sensor and wireless available for complete on/off and dimming control
- 7-pin ANSI C136.41-2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0-10V dimming leads available for use with control devices (provided by others, must specify lead length)
- SiteSync™ wireless control system is available via 7-pin See ordering information and details at: www.hubbelllighting.com/sitesync
- NX Distributed Intelligence™ available with in fixture wireless control module, features dimming and occupancy sensor

CONTROLS (CONT'D)

- wiSCAPE® available with in fixture wireless control module, features dimming and occupancy sensor via 7-pin

CERTIFICATIONS

- DLC® (DesignLights Consortium Qualified, with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org
- Listed to UL1598 and CSA C22.2#250.0-24 for wet locations and 40°C ambient temperatures
- 3G rated for ANSI C136.31 high vibration applications
- Fixture is IP66 rated
- Meets IDA recommendations using 3K CCT configuration at 0 degrees of tilt

WARRANTY

- 5 year limited warranty
- See HLI Standard Warranty for additional information

KEY DATA	
Lumen Range	3,000–32,000
Wattage Range	25–227
Efficacy Range (LPW)	118–155
Fixture Projected Life (Hours)	L70>36K
Weights lbs. (kg)	13.5– 24 (6.1–10.9)

HUBBELL Lighting

HUBBELL Outdoor Lighting

DATE: LOCATION:
TYPE: PROJECT:
CATALOG #:

RATIO SERIES
AREA/SITE LIGHTER

ORDERING GUIDE

CATALOG #: Example: RAR1-80L-25-3K7-2-UNV-ASQ-BL-NXWE-BC

ORDERING INFORMATION

Series	# LEDs - Wattage	CCT/CRI	Distribution	Optics Rotation	Voltage
RAR1 Ratio Area Size 1	80L-25 25W - 3,000 Lumens	3K7 3000K, 70 CRI	2 IES TYPE II	Blank for no rotation	UNV Universal 120-277V
	80L-50 50W - 6,000 Lumens	4K7 4000K, 70 CRI	3 IES TYPE III	L Optic rotation left	120 120V
	160L-70 70W - 9,000 Lumens	5K7 5000K, 70 CRI	4W IES TYPE IV	R Optic rotation right	208 208V
	160L-100 100W - 12,000 Lumens		5QW IES TYPE V		240 240V
RAR2 Ratio Area Size 2	320L-110 110W - 15,000 Lumens				277 277V
	320L-140 140W - 18,000 Lumens				347 347V
	320L-165 165W - 21,000 Lumens				480 480V
	480L-185 185W - 24,000 Lumens				
	480L-210 210W - 27,000 Lumens				
	480L-240 240W - 30,000 Lumens				

ORDERING INFORMATION CONTINUED

Mounting	Color	Control Options Network	Options
ASQ Arm mount for square pole/flat surface	BL Black textured	NXWE NX Wireless Enabled (module + nicho)	BC Backlight control
ASQU Universal arm mount for square pole/flat surface	DB Dark bronze textured	NXSPW_F NX Wireless, PIR Occ, Sensor, Daylight Harvesting[1]	CO Continuous dimming
Mounting Round Poles	GT Graphite textured	NXSP_F NX, PIR Occ, Sensor, Daylight Harvesting[1]	F Fusing (must specify voltage)
A_ Arm mount for round pole[2]	GYS Light gray smooth	**Control Options Other**	TB Terminal block
A_U Universal arm mount for round pole[2]	PS Platinum silver smooth	SCP-40F Programmable occupancy sensor	2PF 2 power feed with 2 drivers[3]
Mounting Other	WH White textured	7PR 7-Pin twist lock receptacle	
WB Wall bracket	CC Custom color	7PR-SC 7-Pin receptacle with shorting cap	
MAF Maxi arm fitter for 2-3/8" OD horizontal arm		7PR-MD40F Low voltage sensor for 7PR	
K Knuckle		7PR-TL 7-Pin PCR with photocontrol	

Notes:
1 Replace "_" with "3" for 3.5"-4.0" OD pole, "4" for 4.18"-5.25" OD pole, "5" for 5.5"-6.5" OD pole
2 Replace "_" with "4" for up to 14' mounting height, "30" for 15-30' mounting height
3 Not available with 80 LED versions
4 At least one SCREMOTE required to program SCP motion sensor

STOCK ORDERING INFORMATION

Catalog Number	Lumens	Wattage	LED Count	CCT/CRI	Voltage	Distribution	Mounting	Finish
RAR1-100-4K-3	12,000	100W	160L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR1-100-4K-4W	12,000	100W	160L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR2-140-4K-3	18,000	140W	320L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR2-140-4K-4W	18,000	140W	320L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze
RAR2-165-4K-3	21,000	165W	320L	4000K/70CRI	120-277V	Type 3	Square Arm	Bronze
RAR2-165-4K-4W	21,000	165W	320L	4000K/70CRI	120-277V	Type 4W	Square Arm	Bronze

Page 2/7 Rev. 09/11/19
RAR1-RAR2-SPEC

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HUBBELL Lighting

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PROJECT

A PROPOSED COMMERCIAL DEVELOPMENT LOCATED AT:

NEC PARADISE VALLEY RD. & ELKELTON PL.
SPRING VALLEY, CA 91977

REVISIONS

NO.	DESCRIPTION	DATE

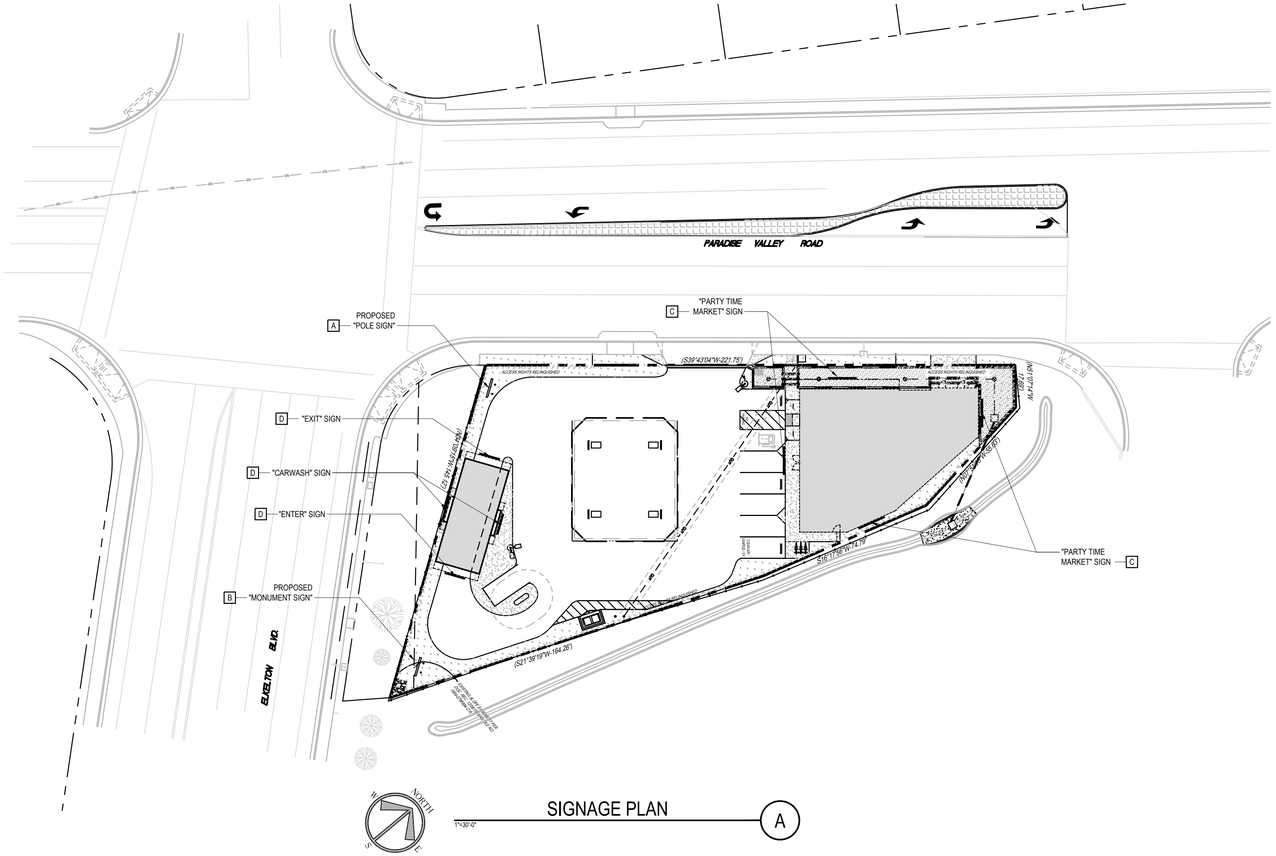
PDS2019-ZAP-19-003,
PDS2020-ER-20-18-001

SHEET TITLE

PHOTOMETRIC SITE PLAN

DATE: 05-20-20	SCALE: AS NOTED
DRAWN BY: L. DALE	DATABASE: 17084.DWG
CHECKED BY: -	SHEET NUMBER: AS1.1
PROJECT NO: 17084	

PHOTOMETRIC # BUILDING MOUNTED # PARKING AREA PROFILE # INSTALLATION INSTRUCTIONS



SIGNAGE PLAN A

8'

10

TOTAL OF 80 SF

NEW D/F POLE SIGN
10 X 8 LED ILLUM.WHITE
CABINET TO BE ALUMINUM
18" DEEP .
POLE COVER SHALL BE 18"X18
"WITH LIGHT BLUE ILLUMINATED
STRIPE BLUE LEDS

FACES TO BE FLEX WHITE WITH
COPY TO READ
GAS MART RED LETTERS WITH BLUE DROP
SHADOW
CAR WASH SHALL BE LIGHT BLUE
WITH ½" BLACK OUTLINE
OVER ALL EIGHTH TO BE 25'

POLE SIGN

PARADISE VALLEY RD

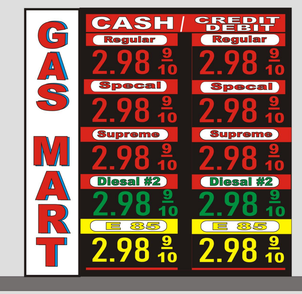
SIGN TYPE A

ANDY'S SIGNS
5465 MARENGO AVE
LA MESA CA 91942
619-721-1411

PARTY TIME MARKET
GAS MART PT FUELS

8'0"

8'0"



GRADE

MONUMENT SIGN

MONUMENT SIGN

PRICE SIGNS ARE TO BE 10" NUMBERS RED GREEN AND
YELLOW. GAS MART WILL BE RED COPY WITH BLUE
DROP SHADOW ALL LIT WITH WHITE LEDS .
TO BE INSTALED ON ELKENTON ST SIDE CORNER
TOTAL SQUARE FOOTAGE SHALL BE 64 SF 8 FEET TALL

SIGN TYPE B

ANDY'S SIGNS
5465 MARENGO AVE
LA MESA CA 91942
619-721-1411

PARTY TIME MARKET
GAS MART PT FUELS

NEW SET PARTY TIME MARKET
TO BE INSTALLED OVER MAIN ENTRANCE

LETTERS TO BE 5" DEEP BLACK RETURNS
WITH WHITE LED FOR ILLUM .
FACES TO BE WHITE 5/16 PLASTIC WITH RED
OVERLAY LEXTING 1" WHITE BORDER .
TRIM SHALL BE 3/4" WHITE TRIMCAP

TOTAL OF 23.10 SF

PARTY TIME LETTERS SHALL BE 14" 10.2SF
MARKET SHALL BE 18" 13.9 SF

SIGN TYPE C

ANDY'S SIGNS
5465 MARENGO AVE
LA MESA CA 91942
619-721-1411

PARTY TIME MARKET
PT FUELS

ENTER
EXIT

ENTER AND EXIT SIGNS
DAY NIGHT BLACK IN DAY WHITE
AT NIGHT LED ILLUM.
5" DEEP BLACK RETURNS
¾ BLACK TRIM CAP
12" TALL

ENTER 5.5 SF
EXIT 3.75 SF

CAR WASH

CAR WASH 16" CHANNLE LETTERS 12.5 SF
5" DEEP BLACK RETURNS
WHITE LED ILLUM.
BLUE FACES ¾ " BLACK TRIM CAP
INSTALLED ON TOWER

SIGN TYPE D

ANDY'S SIGNS
5465 MARENGO AVE
LA MESA CA 91942
619-721-1411

PARTY TIME MARKET
PT FUELS

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PROJECT

A PROPOSED COMMERCIAL DEVELOPMENT LOCATED AT:

NEC PARADISE VALLEY RD. & ELKELTON PL.
SPRING VALLEY, CA 91977

REVISIONS

NO.	DESCRIPTION	DATE
1	PLANNING DEPT. COMMENTS & PLAN COORDINATION	03-31-20

PDS2019-ZAP-19-003,
PDS2020-ER-20-18-001

SHEET TITLE

SINAGE PLAN

DATE:	05-20-20
SCALE:	AS NOTED
DRAWN BY:	L. DALE
DATABASE:	17084.DWG
CHECKED BY:	-
SHEET NUMBER:	AS1.2
PROJECT NO:	17084

Attachment 2: Project Location Plan

Legend

= Project Location

= Transit Stop Location (within 1/4 Mile walking distance from Project Site)

= Trail Facilities (within 1/4 Mile from Project Site)

N

NO SCALE

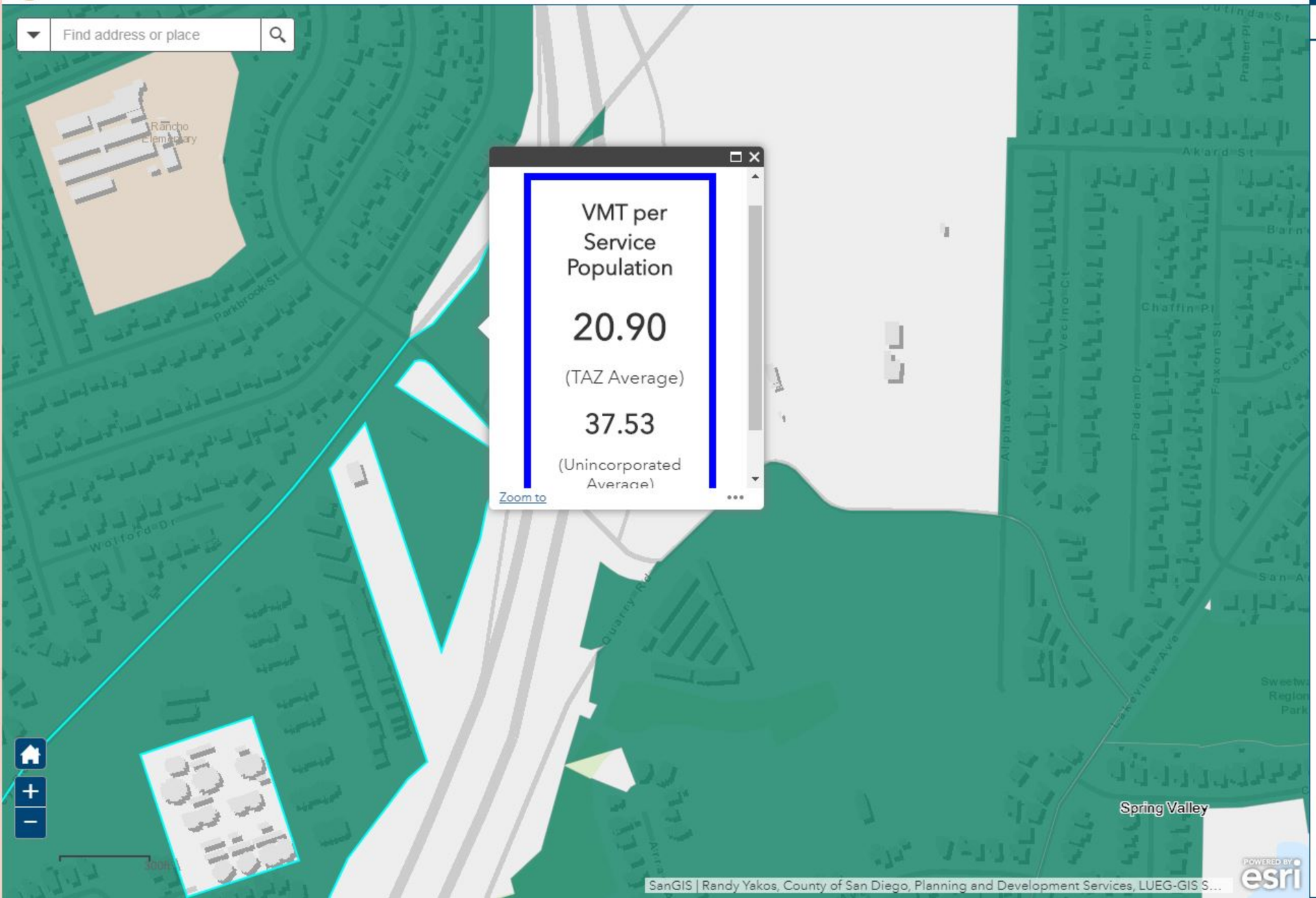
ID	Transit Stop Location	Distance from Project	Route(s)
1	N/E corner of Paradise Valley Rd. / Elkelton Pl.	267 ft.	(962)

Trail Name	Trail Length
Sweetwater Regional Trail	4.10 mi.

Attachment 3: SB743 VMT Screening Map

County of San Diego SB 743 Location-Based Screening Maps

Link to Transportation Study Guide



Data Layers

Operational Layers

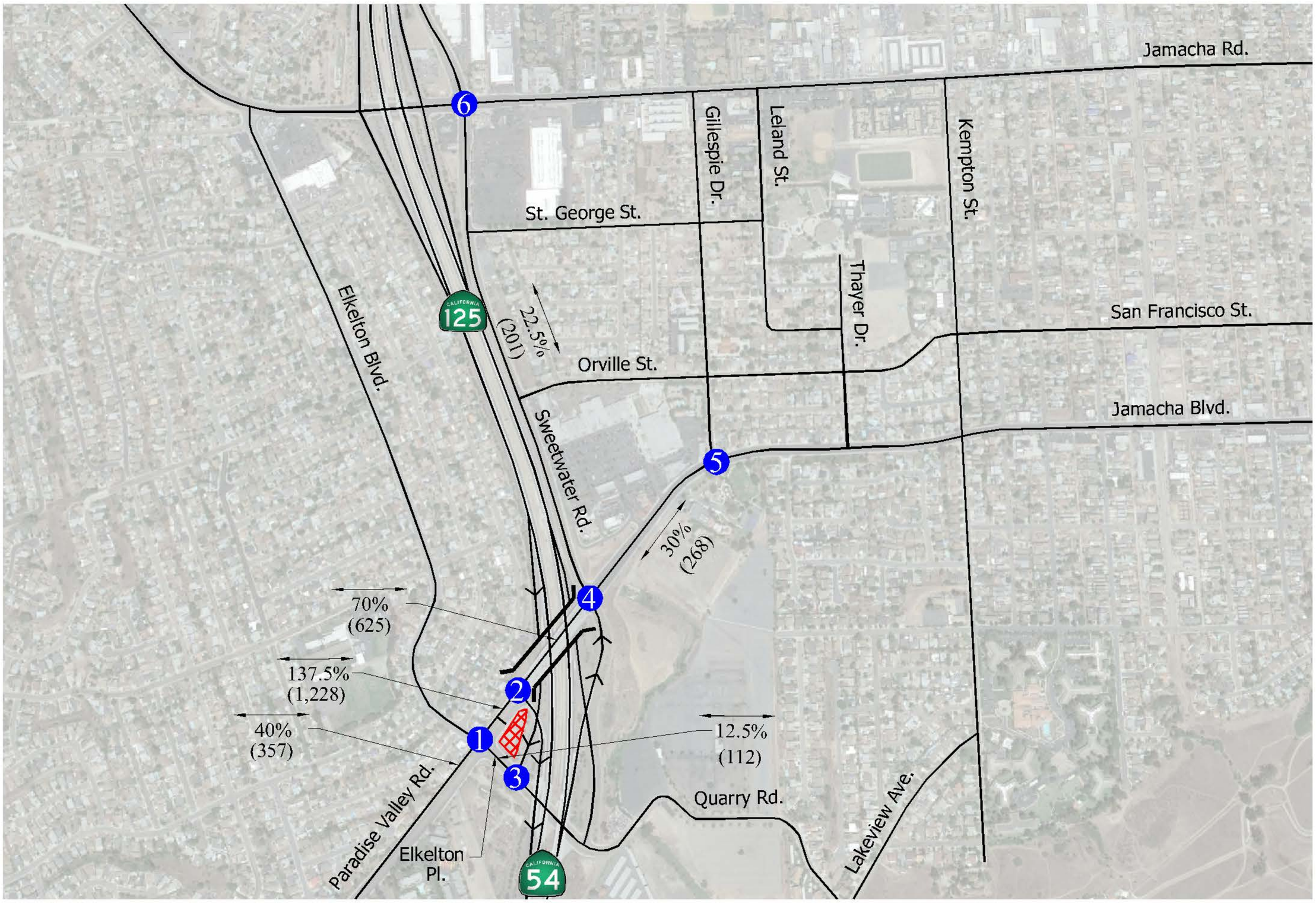
- County of San Diego General Plan
- County Water Authority Boundary
- Community Plan Areas
- VMT/Resident
- VMT/Resident - Insufficient Data to Determine VMT
- VMT/Service Population
- VMT/Service Population - Insufficient Data to Determine VMT
- VMT/Employee
- VMT/Employee - Insufficient Data to Determine VMT

Attachment 4: Project Trip Distribution and Trip Assignment

- **Scenario A**: No left-turn pocket U-turns allowed along Paradise Valley Road at Elkelton Place (SB approach) and along Paradise Valley Road at SR-54 SB On-Ramp (NB approach) - *existing conditions*

- **Scenario B:** Left-turn pocket U-turn allowed along Paradise Valley Road at Elkelton Place (SB approach) - *proposed scenario*

- **Scenario C:** Left-turn pocket U-turns allowed along Paradise Valley Road at Elkelton Place (SB approach) and along Paradise Valley Road at SR-54 SB On-Ramp (NB approach) - *proposed scenario*



Legend

= Project Location

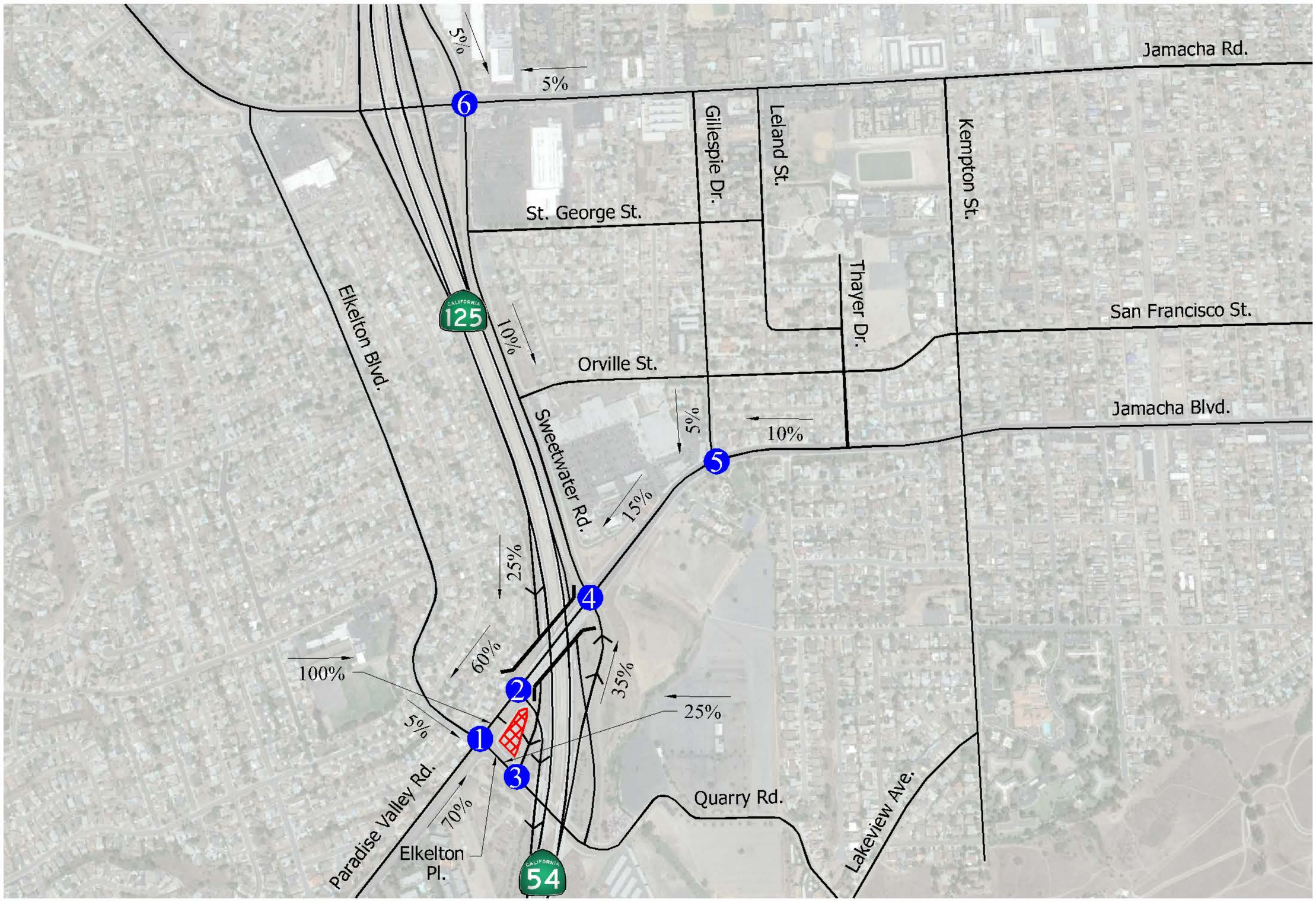
XX% = Distribution Percentage (Scenario A)

= Study Intersection Location

XX,XXX = ADT Number

N

NO SCALE



Legend

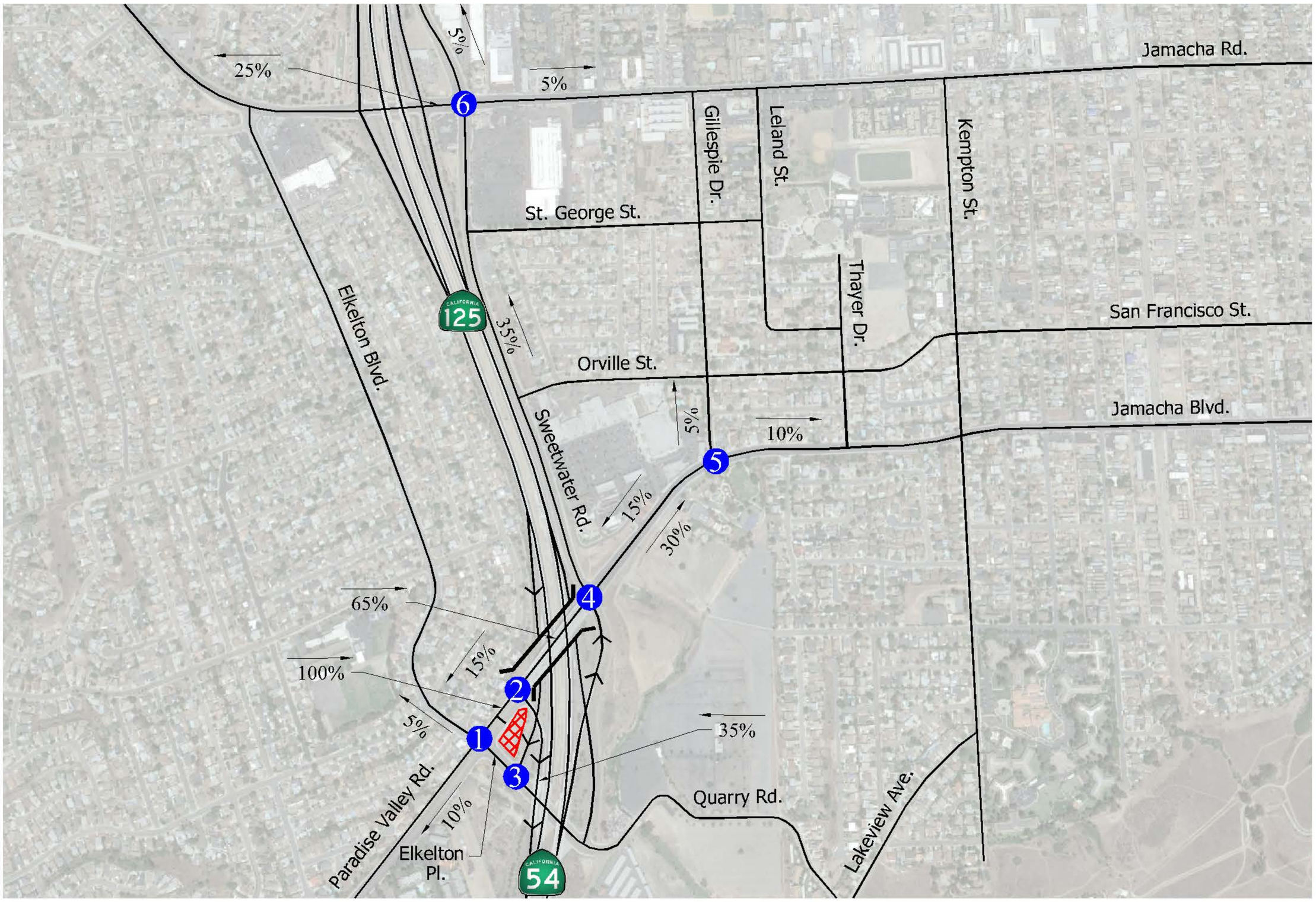
= Project Location

XX% = Distribution Percentage (Scenario A – Inbound)

= Study Intersection Location

N

NO SCALE



Legend

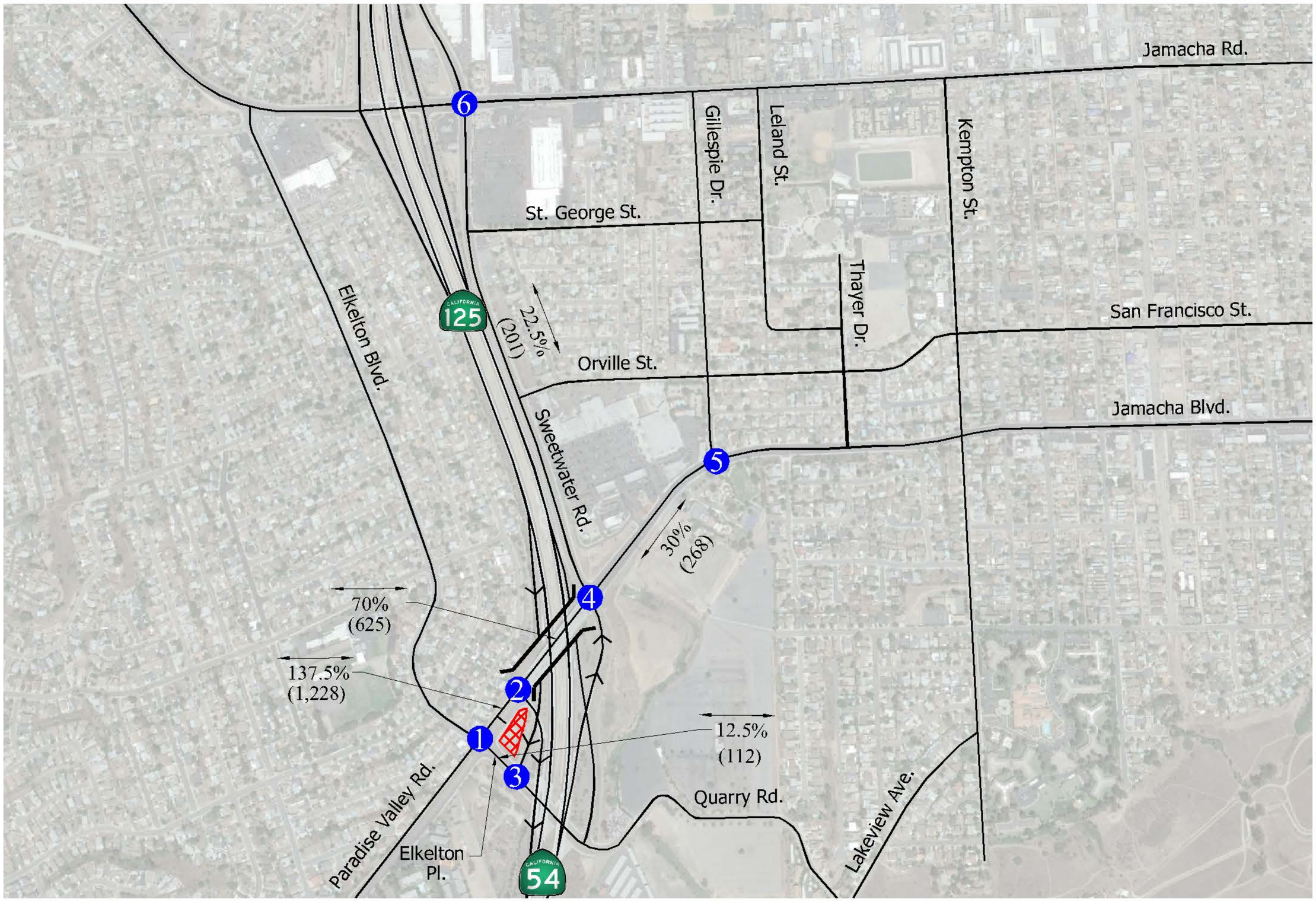
= Project Location

XX% = Distribution Percentage (Scenario A – Outbound)

= Study Intersection Location

N

NO SCALE



Legend

= Project Location

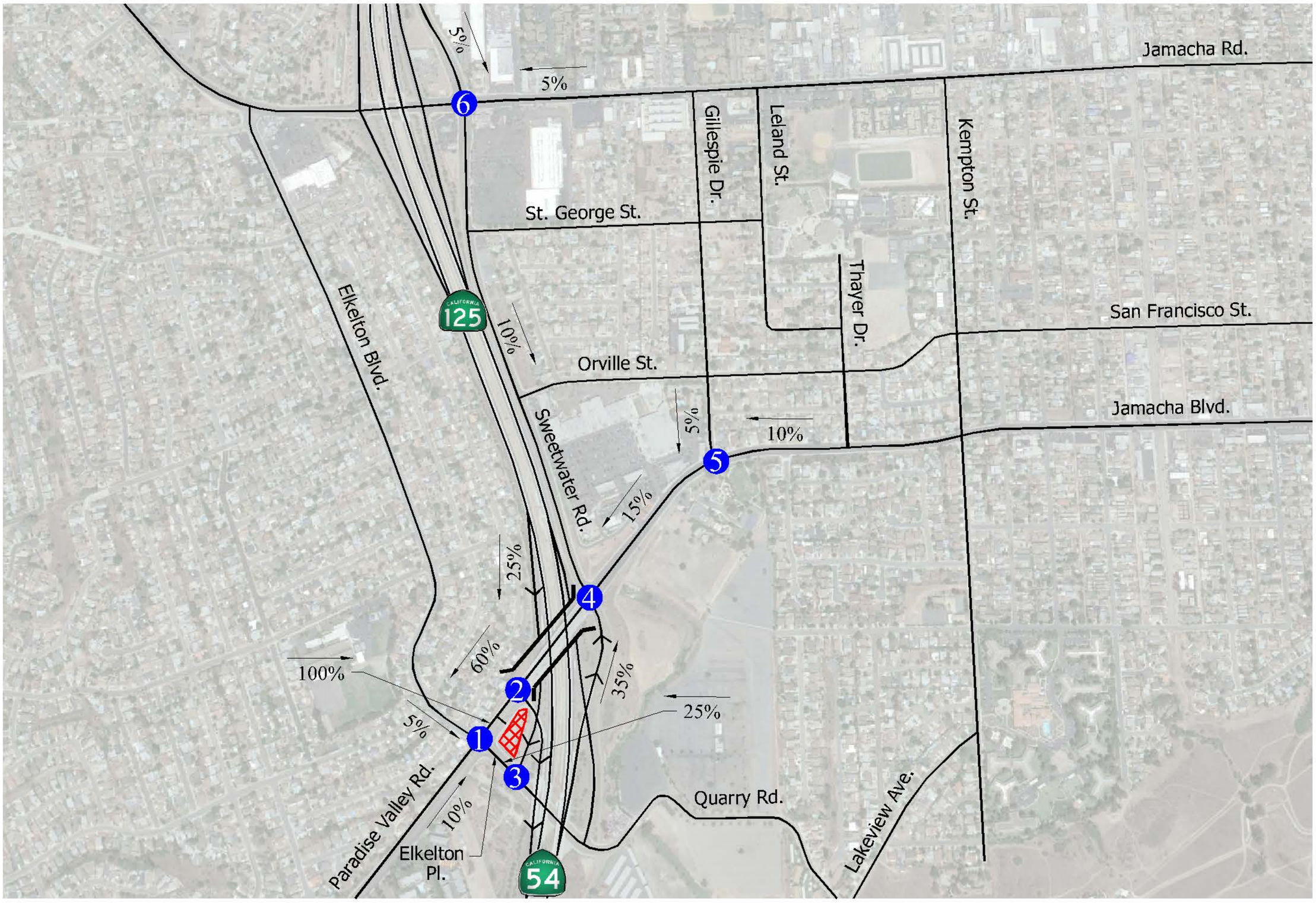
XX% = Distribution Percentage (Scenario B)

= Study Intersection Location

XX,XXX = ADT Number

N

NO SCALE



Legend

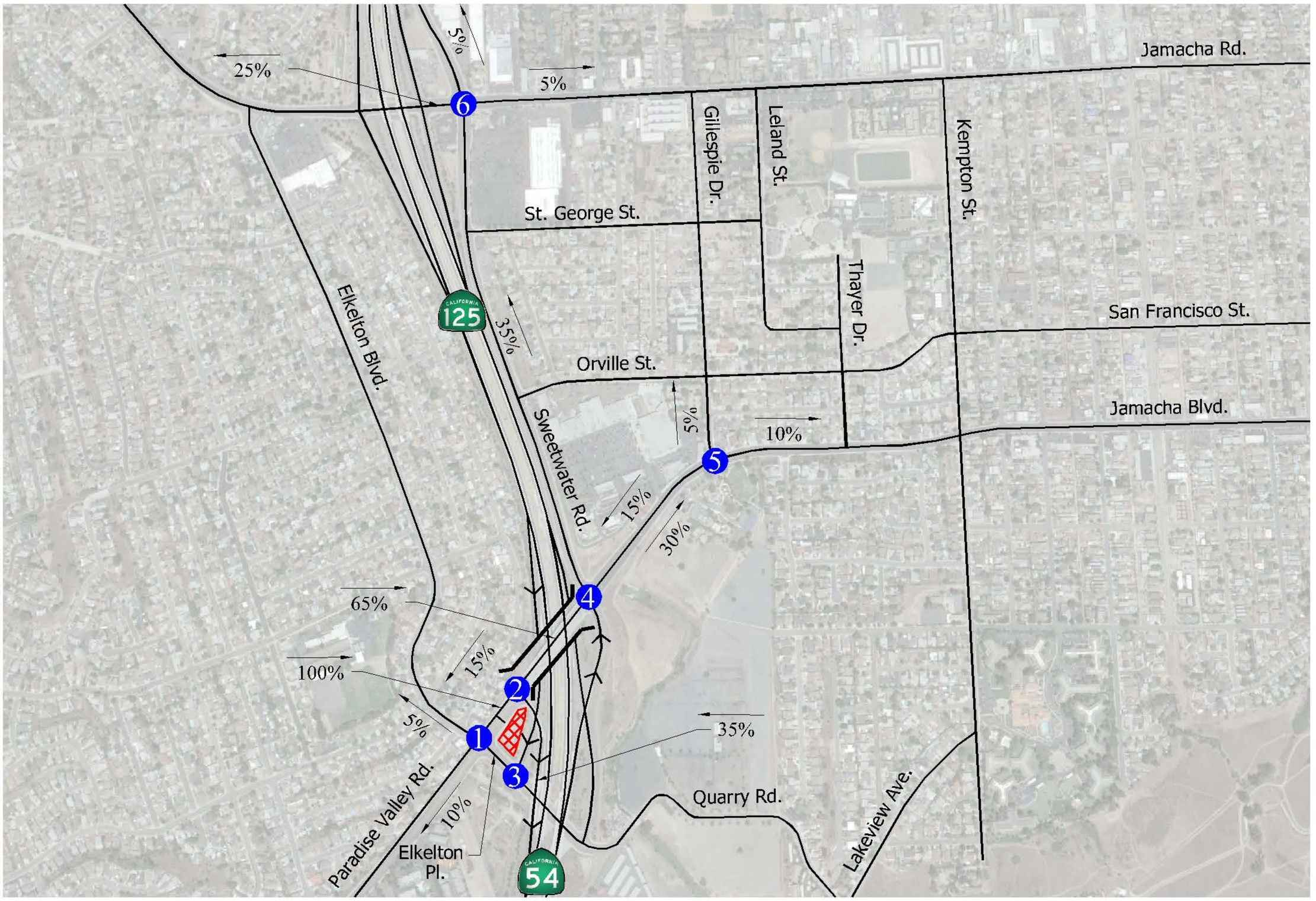
= Project Location

XX% = Distribution Percentage (Scenario B – Inbound)

= Study Intersection Location

N

NO SCALE



Legend

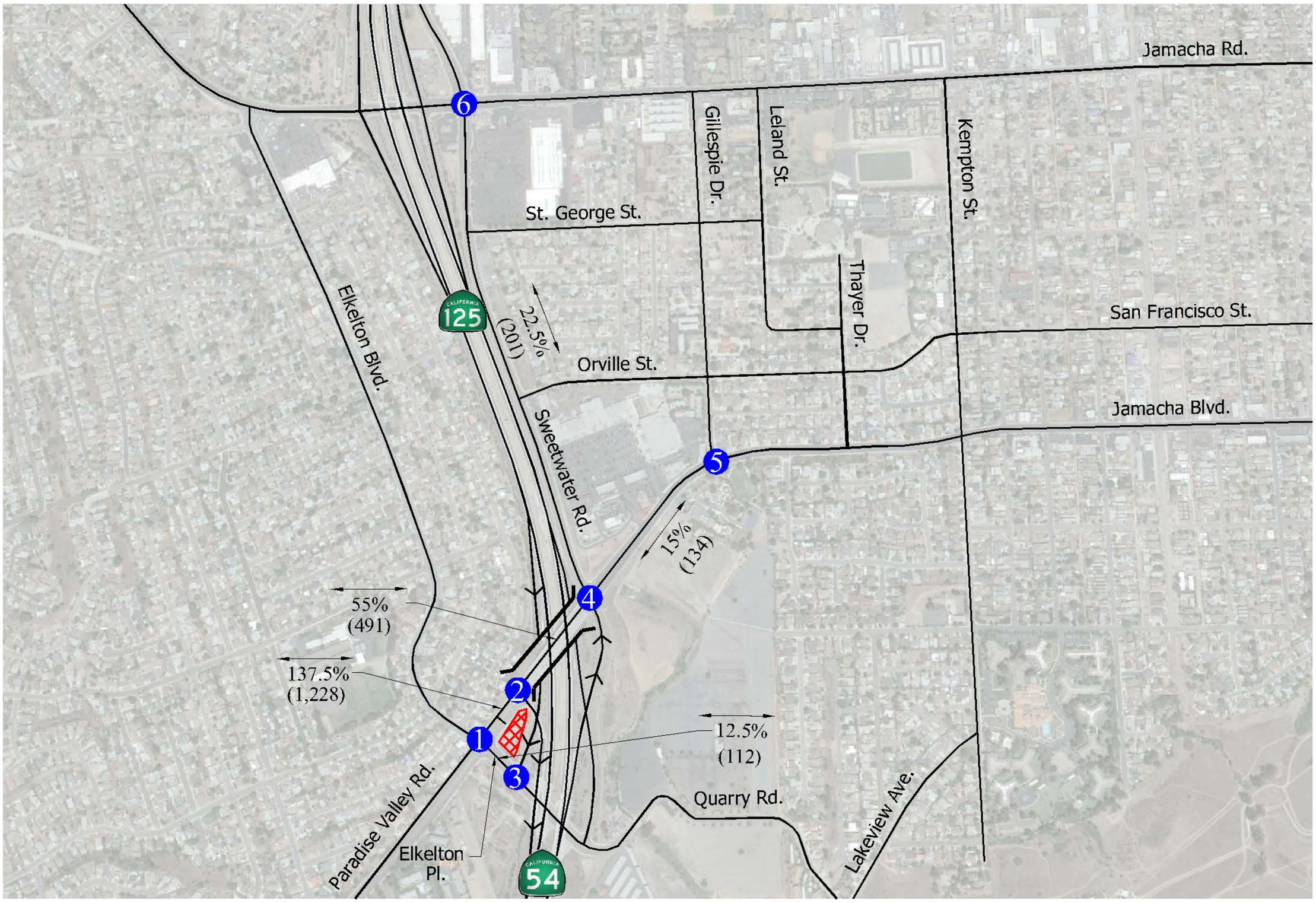
= Project Location

XX% = Distribution Percentage (Scenario B – Outbound)

= Study Intersection Location

N

NO SCALE



Legend

= Project Location

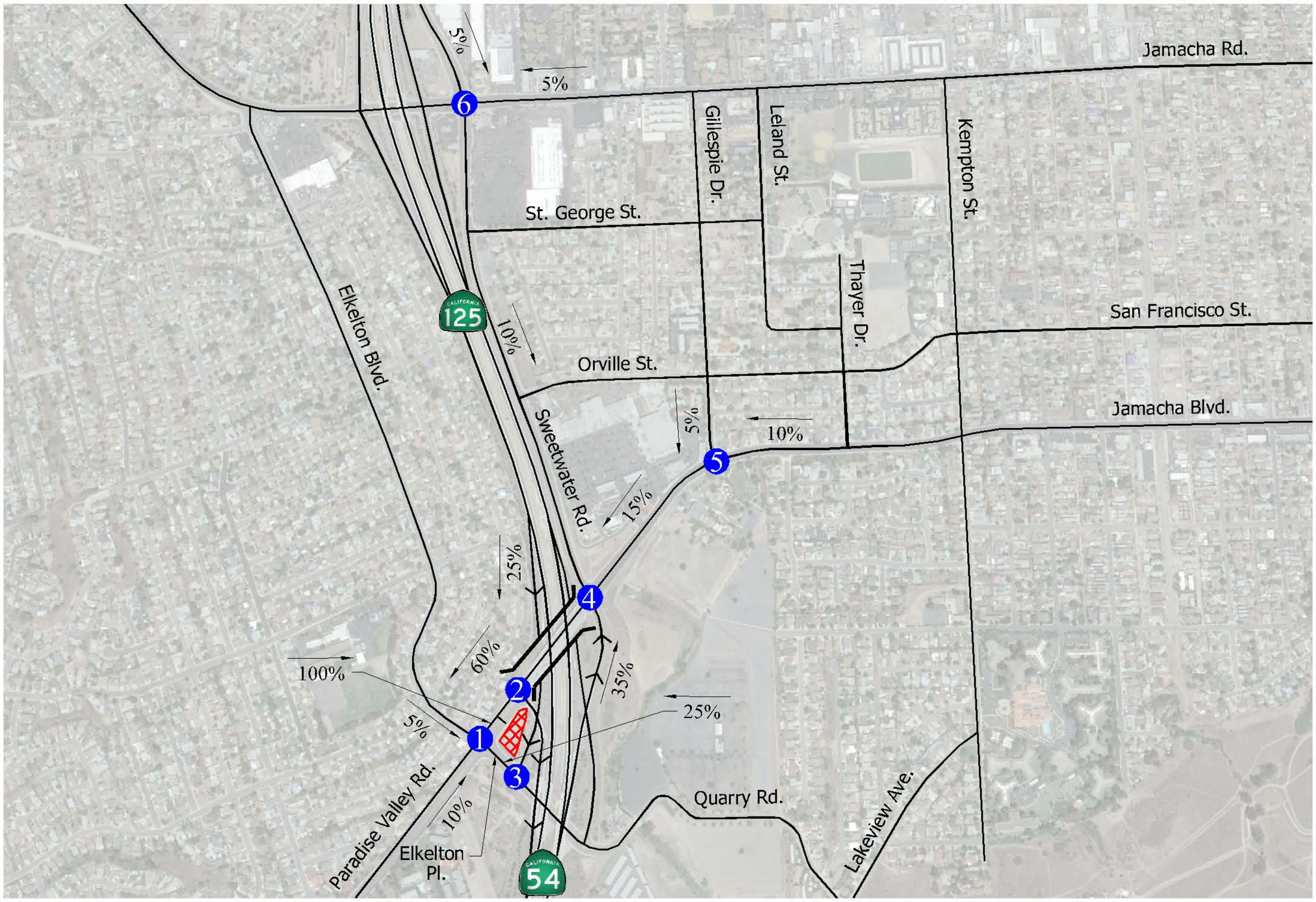
XX% = Distribution Percentage (Scenario C)

= Study Intersection Location

XX,XXX = ADT Number

N

NO SCALE



Legend

= Project Location

XX% = Distribution Percentage (Scenario C – Inbound

= Study Intersection Location

N

NO SCALE

Legend

= Project Location

XX% = Distribution Percentage (Scenario C – Outbound)

= Study Intersection Location

N

NO SCALE

Attachment 5: Project Study Area

STUDY INTERSECTIONS

1) Paradise Valley Rd / Elkelton Pl.
2) Paradise Valley Rd. / SR-54 SB On-Ramp
3) Elkelton Pl. / SR-125 SB Off-Ramp
4) Jamacha Blvd. / Sweetwater Rd. / SR-54 NB Off-Ramp
5) Jamacha Blvd. / Gillespie Dr.
6) Jamacha Rd. / Sweetwater Rd.

STUDY ROADWAY SEGMENTS

1) Paradise Valley Rd. (Elkelton Pl. - SR-54 SB On-Ramp)
2) Paradise Valley Rd. (SR-54 SB On-Ramp - SR-54 NB Off-Ramp / Sweetwater Rd.)
3) Elkelton Pl. (Paradise Valley Rd. - SR-125 SB Off-Ramp)
4) Sweetwater Rd. (N/O Jamacha Blvd.)
5) Jamacha Blvd. (Gillespie Dr. - SR-54 NB Off-Ramp / Sweetwater Rd.)

Appendix B: Land Use Map

Provided on the following page in 11”X17” format.

Spring Valley
Community Planning Area

General Plan Land Use Designations[1,2]

- Village Residential (VR-30)
- Village Residential (VR-24)
- Village Residential (VR-20)
- Village Residential (VR-15)
- Village Residential (VR-10.9)
- Village Residential (VR-7.3)
- Village Residential (VR-4.3)
- Village Residential (VR-2.9)
- Village Residential (VR-2)
- Semi-Rural Residential (SR-.5)
- Semi-Rural Residential (SR-1)
- Semi-Rural Residential (SR-2)
- Semi-Rural Residential (SR-4)
- Semi-Rural Residential (SR-10)
- Rural Lands (RL-20)
- Rural Lands (RL-40)
- Rural Lands (RL-80)
- Specific Plan Area[4]
- Office Professional[3]
- Neighborhood Commercial[3]
- General Commercial[3]
- Rural Commercial[3]
- Limited Impact Industrial[3]
- Medium Impact Industrial[3]
- High Impact Industrial[3]
- Village Core Mixed Use
- Public/Semi-Public Facilities[3]
- Public/Semi-Public Lands (Solid Waste Facility)
- Public Agency Lands
- Tribal Lands
- Open Space (Recreation)
- Open Space (Conservation)
- County Water Authority Boundary
- Planning Area Boundary

NOTES:

1: The type and intensity of development depicted on the map must be implemented in accordance with General Plan goals and policies and other County regulations which may further affect the type and intensity of use.

2: Land Use Element, Table LU-1 indicates the applicable Regional Category for each designation.

3: Maximum development intensity for non-residential designations is provided in Land Use Element, Table LU-1.

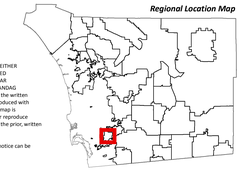
4: Refer to Community Plan for general land uses and intensities allowed in Specific Plan area (SPA).

Map Prepared By:

LUEG GIS
Land Use & Environment Group Geographic Information Service

Coordinates: NAD83 Feet

Regional Location Map



Source: County of San Diego, SanGIS, SANDAG
Document Path: S:\land_use\gpupdate_maps\official_maps\mxd\new_general_plan_atlas.mxd

20

ACRES

Map Date:04/18/2018

0 900 1,800 3,600
Feet

Appendix C: Existing Traffic Counts

Provided on the following page in 11”X17” format.

Prepared by National Data & Surveying Services

Elkelton Pl & Paradise Valley Rd

Peak Hour Turning Movement Count

ID: 19-04271-001
City: Spring Valley

Day: Thursday
Date: 06/20/2019

PEAK HOURS

AM: 08:00 AM - 09:00 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SOUTHBOUND — Elkelton Pl

AM	28	115	156	0	151	AM
NOON	0	0	0	0	0	NOON
PM	50	93	180	0	444	PM
	0	2	1	0		

EASTBOUND — Paradise Valley Rd

AM	NOON	PM	
529	0	1151	
0	0	0	0
32	0	44	1
371	0	575	2
313	0	270	0
AM	NOON	PM	

WESTBOUND — Paradise Valley Rd

PM	NOON	AM	
259	0	90	0
667	0	308	2
85	0	52	1
1	0	0	0
1034	0	666	
PM	NOON	AM	

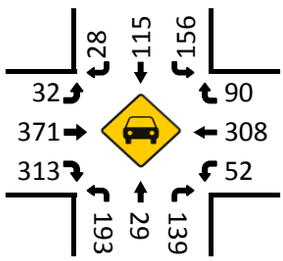
NORTHBOUND — Elkelton Pl

PM	448	0	434	141	278	PM
NOON	0	0	0	0	0	NOON
AM	480	0	193	29	139	AM
	0	2	1	1		

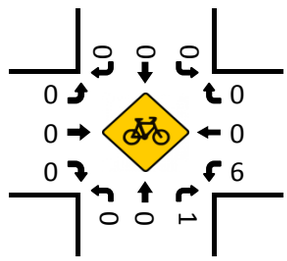
CONTROL: Signalized

TEV	1826 AM	0 NOON	3077 PM
PHF	0.96		0.96

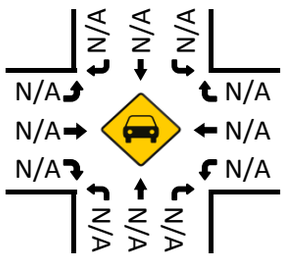
Total Vehicles (AM)



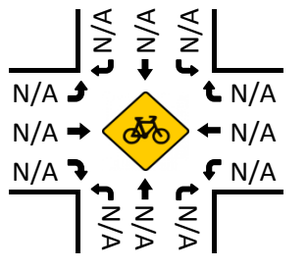
Bikes (AM)



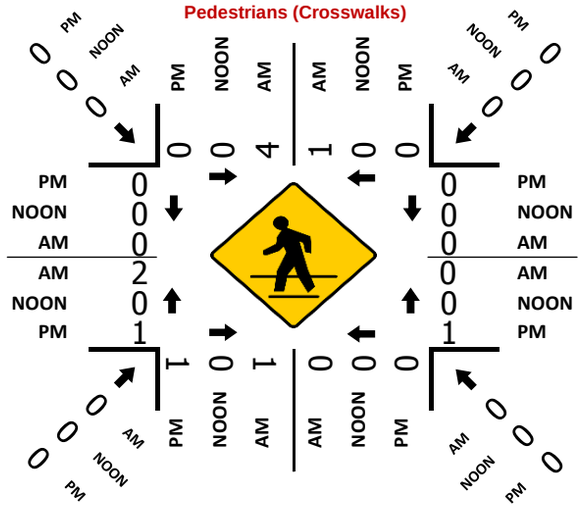
Total Vehicles (Noon)



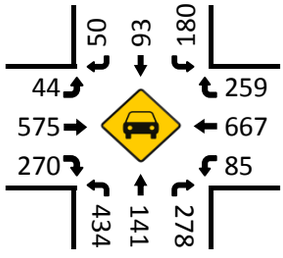
Bikes (NOON)



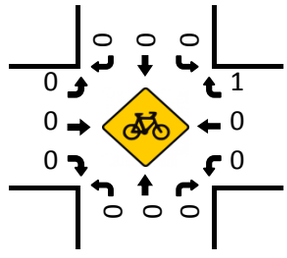
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

SR-125 SB On-Ramp & Paradise Valley Rd

Peak Hour Turning Movement Count

ID: 19-04271-002
City: Spring Valley

Day: Thursday
Date: 06/20/2019

PEAK HOURS

AM: 08:00 AM - 09:00 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

SR-125 SB On-Ramp — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Paradise Valley Rd — EASTBOUND

AM	NOON	PM		
446	0	1031	⇦	
0	0	0	↶	0
0	0	0	↱	0
447	0	812	→	2
221	0	222	↴	1
AM	NOON	PM		

WESTBOUND — Paradise Valley Rd

PM	NOON	AM		
0	0	0	↰	0
1031	0	446	←	2
555	0	453	↰	2
0	0	0	↰	0
812	0	447	⇨	
PM	NOON	AM		

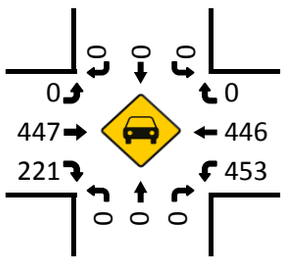
CONTROL: Signalized

TEV	1567 AM	0 NOON	2620 PM
PHF	0.98		0.93

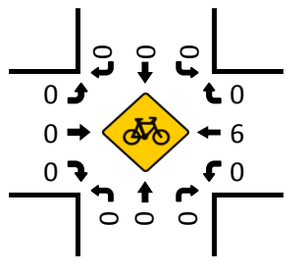
NORTHBOUND — SR-125 SB On-Ramp

PM	777	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	674	0	0	0	0	AM

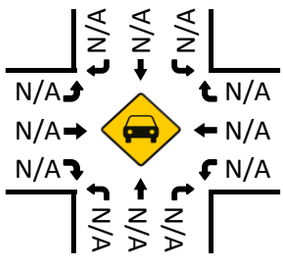
Total Vehicles (AM)



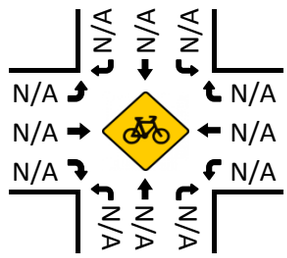
Bikes (AM)



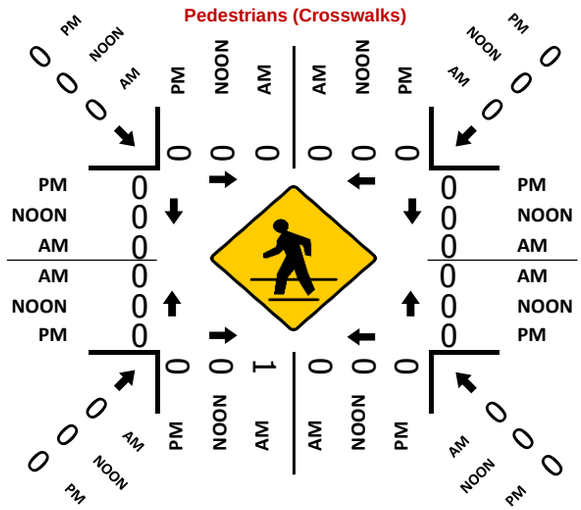
Total Vehicles (Noon)



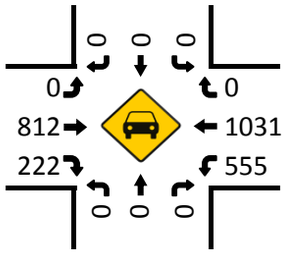
Bikes (NOON)



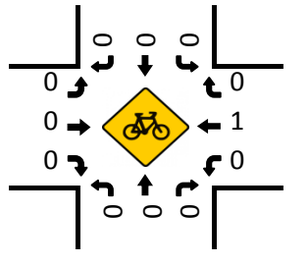
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Elkelton Pl & SR-125 SB Off-Ramp

Peak Hour Turning Movement Count

ID: 19-04271-003
City: Spring Valley

Day: Thursday
Date: 06/20/2019

PEAK HOURS

AM: 07:00 AM - 08:00 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Elkelton Pl — SOUTHBOUND

AM	0	572	0	0	325	AM
NOON	0	0	0	0	0	NOON
PM	0	437	0	1	853	PM

SR-125 SB Off-Ramp — EASTBOUND

AM	NOON	PM		
0	0	0		
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
AM	NOON	PM		

SR-125 SB Off-Ramp — WESTBOUND

PM	NOON	AM	
757	0	253	1
0	0	0	0
134	0	35	1
0	0	0	0
0	0	0	
PM	NOON	AM	

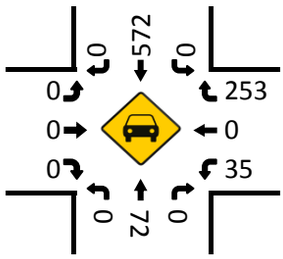
Elkelton Pl — NORTHBOUND

PM	571	0	0	95	0	PM
NOON	0	0	0	0	0	NOON
AM	607	0	0	72	0	AM

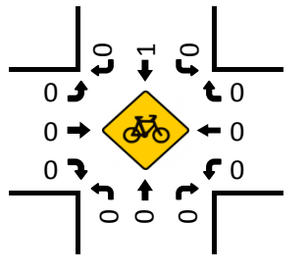
CONTROL: Signalized

TEV	932	0	1424
	AM	NOON	PM
PHF	0.94		0.94

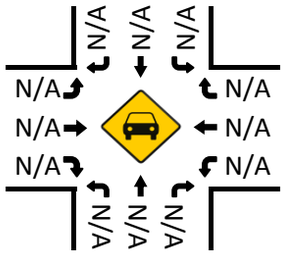
Total Vehicles (AM)



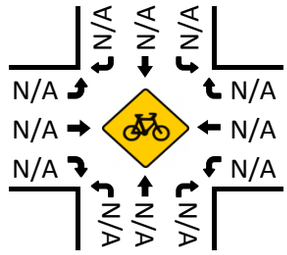
Bikes (AM)



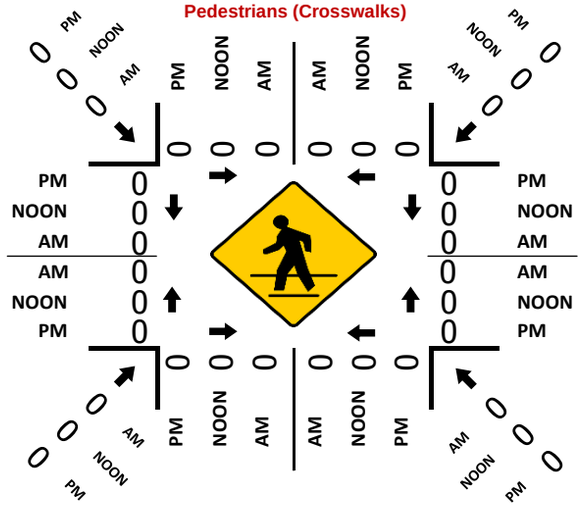
Total Vehicles (Noon)



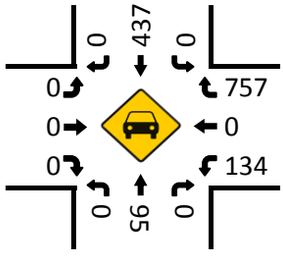
Bikes (NOON)



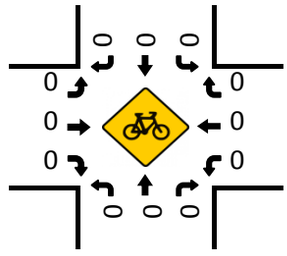
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Sweetwater Rd /SR-125 NB Off-Ramp & Jamacha Blvd

Peak Hour Turning Movement Count

ID: 19-04271-005
City: Spring Valley

Day: Thursday
Date: 06/20/2019

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Sweetwater Rd /SR-125 NB Off-Ramp — SOUTHBOUND

	Right	Thru	Left	U-Turn	Out
AM	149	0	66	0	383
NOON	0	0	0	0	0
PM	351	0	123	1	661
Lanes	1	0	2	0	

Jamacha Blvd — EASTBOUND

	AM	NOON	PM	Lanes
Out	913	0	1587	
U-Turn	0	0	0	0
Left	120	0	277	2
Thru	313	0	551	2
Right	0	0	0	0

Jamacha Blvd — WESTBOUND

	Lanes	PM	NOON	AM
Right	1	207	0	172
Thru	2	980	0	690
Left	0	0	0	0
U-Turn	0	0	0	0
Out		1294	0	811

Sweetwater Rd /SR-125 NB Off-Ramp — NORTHBOUND

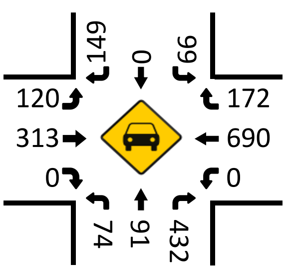
	Out	U-Turn	Left	Thru	Right
Lanes		0	1	1	1
PM	0	0	256	176	620
NOON	0	0	0	0	0
AM	0	0	74	91	432

CONTROL

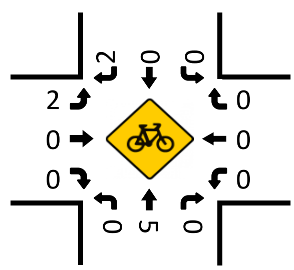
Signalized

	AM	NOON	PM
TEV	2107	0	3542
PHF	0.91		0.96

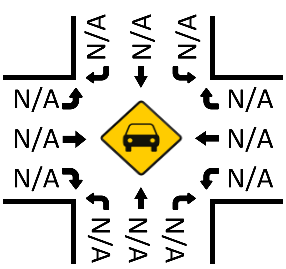
Total Vehicles (AM)



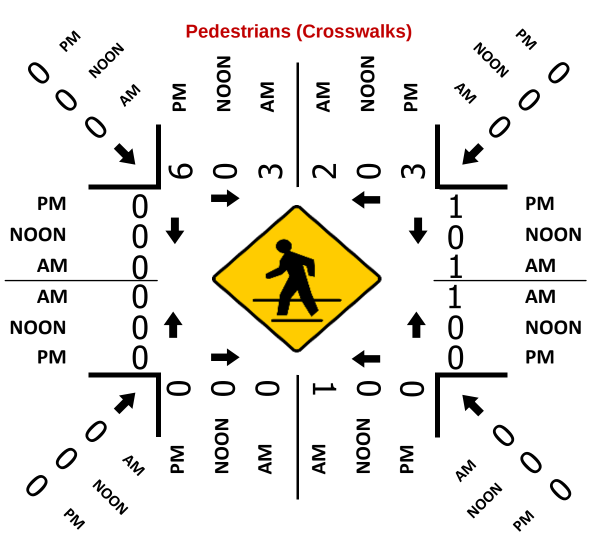
Bikes (AM)



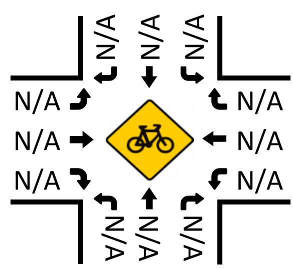
Total Vehicles (Noon)



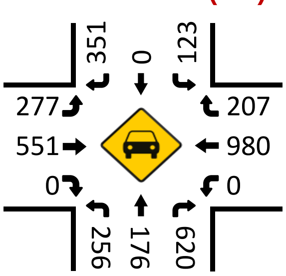
Pedestrians (Crosswalks)



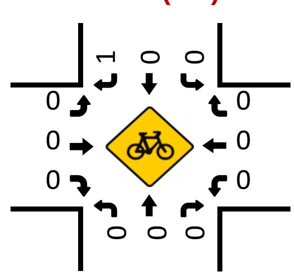
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Sweetwater Rd & Jamacha Rd

Peak Hour Turning Movement Count

ID: 19-04271-006
City: Spring Valley

Day: Thursday
Date: 06/20/2019

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Sweetwater Rd — SOUTHBOUND

AM	236	126	77	0	431	AM
NOON	0	0	0	0	0	NOON
PM	353	277	182	0	685	PM
	1	2	2	0		

Jamacha Rd — EASTBOUND

AM	NOON	PM		
1370	0	1548	⇦	
0	0	0	↶	0
150	0	283	↱	2
412	0	937	→	2
150	0	357	↴	1
AM	NOON	PM		

CONTROL

Signalized

TEV	2683	0	4201
	AM	NOON	PM
PHF	0.95		0.96

Jamacha Rd — WESTBOUND

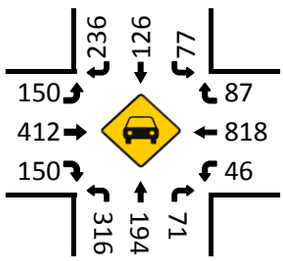
PM	NOON	AM		
88	0	87	↰	0.5
790	0	818	←	2.5
69	0	46	↰	2
0	0	0	↶	0
1265	0	560	⇨	
PM	NOON	AM		

Sweetwater Rd — NORTHBOUND

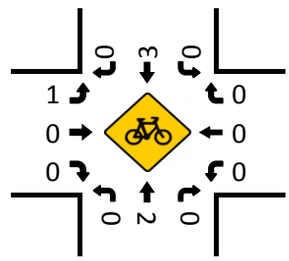
	0	2	2	1		
PM	703	0	405	314	146	PM
NOON	0	0	0	0	0	NOON
AM	322	0	316	194	71	AM

Sweetwater Rd

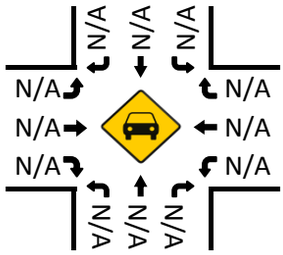
Total Vehicles (AM)



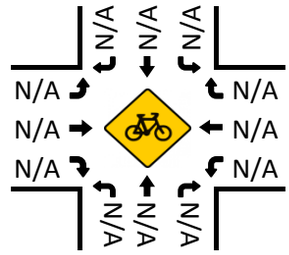
Bikes (AM)



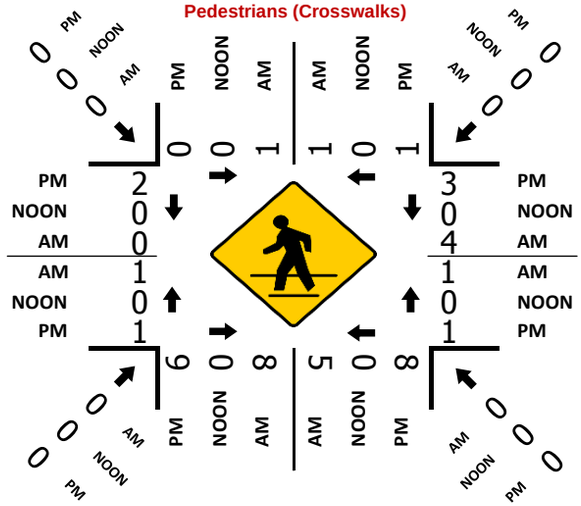
Total Vehicles (Noon)



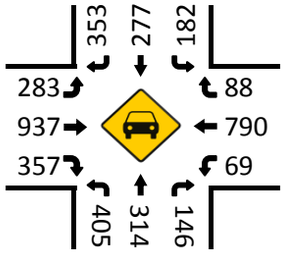
Bikes (NOON)



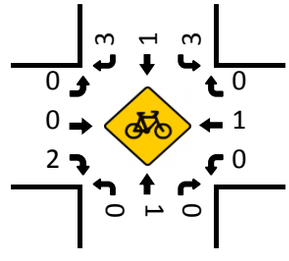
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Gillespie Dr & Jamacha Blvd

Peak Hour Turning Movement Count

ID: 19-04271-007
City: Spring Valley

Day: Thursday
Date: 06/20/2019

PEAK HOURS	COUNT PERIODS
AM: 07:30 AM - 08:30 AM	AM: 07:00 AM - 09:00 AM
NOON: NONE	NOON: NONE
PM: 05:00 PM - 06:00 PM	PM: 04:00 PM - 06:00 PM

SOUTHBOUND (Gillespie Dr)

AM	43	4	10	0	27
NOON	0	0	0	0	0
PM	63	6	42	0	56

EASTBOUND (Jamacha Blvd)

AM	NOON	PM	
866	0	1138	
2	0	7	0
10	0	30	1
717	0	1171	2
22	0	26	0

WESTBOUND (Jamacha Blvd)

PM	NOON	AM	
21	0	14	0
1044	0	805	2
15	0	3	1
0	0	0	0
1228	0	733	

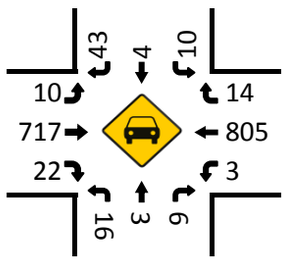
NORTHBOUND (Gillespie Dr)

PM	47	0	24	5	15
NOON	0	0	0	0	0
AM	29	0	16	3	6

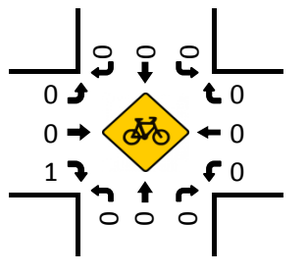
CONTROL			
Signalized			
TEV	1655 AM	0 NOON	2469 PM
PHF	0.89		0.96

	AM	NOON	PM
Left	0	1	0
Through	0	0	1
Right	0	0	0

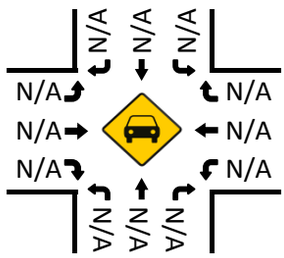
Total Vehicles (AM)



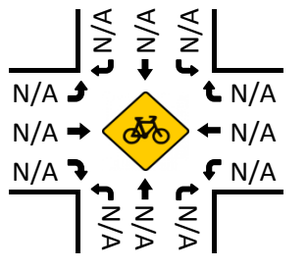
Bikes (AM)



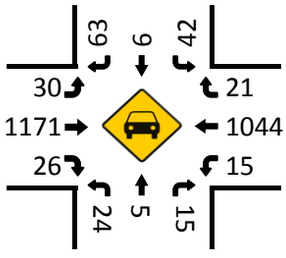
Total Vehicles (Noon)



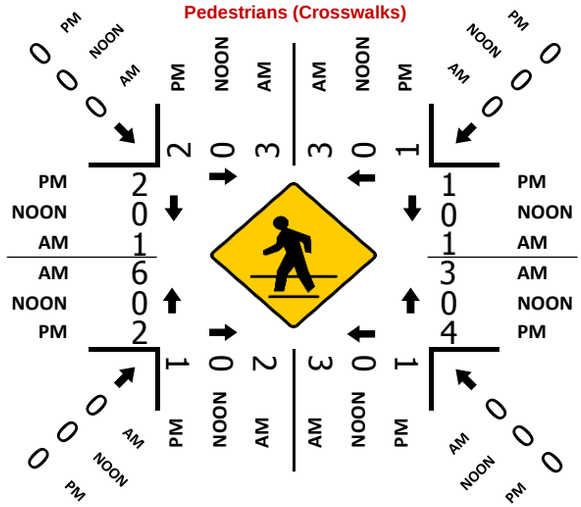
Bikes (NOON)



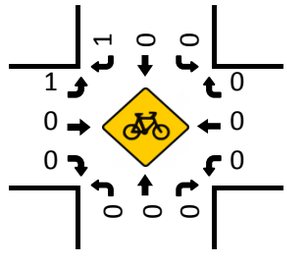
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

VOLUME

Paradise Valley Rd Bet. Elkelton Pl & SR-125 SB On-Ramp

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4272_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,817	11,287	24,104

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			21		36		57		**12:00**			179		156		335	
0:15			26		64		90		**12:15**			184		163		347	
0:30			25		45		70		**12:30**			184		154		338	
0:45			21	93	36	181	57	274	**12:45**			198	745	188	661	386	1406
1:00			18		38		56		**13:00**			199		164		363	
1:15			19		33		52		**13:15**			188		168		356	
1:30			6		35		41		**13:30**			184		184		368	
1:45			13	56	23	129	36	185	**13:45**			190	761	162	678	352	1439
2:00			14		23		37		**14:00**			181		185		366	
2:15			5		16		21		**14:15**			215		180		395	
2:30			15		24		39		**14:30**			221		182		403	
2:45			9	43	11	74	20	117	**14:45**			248	865	200	747	448	1612
3:00			9		22		31		**15:00**			241		180		421	
3:15			11		12		23		**15:15**			244		183		427	
3:30			29		21		50		**15:30**			233		191		424	
3:45			17	66	21	76	38	142	**15:45**			222	940	233	787	455	1727
4:00			22		14		36		**16:00**			238		224		462	
4:15			22		19		41		**16:15**			230		222		452	
4:30			44		17		61		**16:30**			255		217		472	
4:45			38	126	22	72	60	198	**16:45**			261	984	220	883	481	1867
5:00			50		49		99		**17:00**			250		245		495	
5:15			77		46		123		**17:15**			255		265		520	
5:30			113		58		171		**17:30**			266		267		533	
5:45			92	332	72	225	164	557	**17:45**			263	1034	254	1031	517	2065
6:00			109		81		190		**18:00**			249		203		452	
6:15			107		76		183		**18:15**			230		212		442	
6:30			132		81		213		**18:30**			209		202		411	
6:45			124	472	81	319	205	791	**18:45**			201	889	205	822	406	1711
7:00			125		84		209		**19:00**			199		172		371	
7:15			158		101		259		**19:15**			218		187		405	
7:30			169		91		260		**19:30**			176		170		346	
7:45			153	605	115	391	268	996	**19:45**			142	735	158	687	300	1422
8:00			159		113		272		**20:00**			154		137		291	
8:15			170		99		269		**20:15**			170		140		310	
8:30			174		98		272		**20:30**			153		125		278	
8:45			165	668	136	446	301	1114	**20:45**			160	637	152	554	312	1191
9:00			143		99		242		**21:00**			135		137		272	
9:15			136		104		240		**21:15**			103		132		235	
9:30			154		132		286		**21:30**			97		104		201	
9:45			144	577	114	449	258	1026	**21:45**			130	465	103	476	233	941
10:00			126		125		251		**22:00**			85		94		179	
10:15			150		118		268		**22:15**			76		100		176	
10:30			170		125		295		**22:30**			62		81		143	
10:45			153	599	126	494	279	1093	**22:45**			75	298	70	345	145	643
11:00			135		124		259		**23:00**			56		78		134	
11:15			159		138		297		**23:15**			47		70		117	
11:30			166		127		293		**23:30**			37		57		94	
11:45			175	635	118	507	293	1142	**23:45**			52	192	48	253	100	445
TOTALS				4272		3363		**7635**	**TOTALS**				8545		7924		**16469**
SPLIT %				56.0%		44.0%		**31.7%**	**SPLIT %**				51.9%		48.1%		**68.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	12,817	11,287	24,104

AM Peak Hour				11:45	11:45	**11:45**			**PM Peak Hour**				17:00	17:00	**17:00**
AM Pk Volume				722	591	**1313**			**PM Pk Volume**				1034	1031	**2065**
Pk Hr Factor				0.981	0.906	**0.946**			**Pk Hr Factor**				0.972	0.965	**0.969**
7 - 9 Volume	0	0		1273	837	**2110**			**4 - 6 Volume**	0	0		2018	1914	**3932**
7 - 9 Peak Hour				8:00	8:00	**8:00**			**4 - 6 Peak Hour**				17:00	17:00	**17:00**
7 - 9 Pk Volume	0	0		668	446	**1114**			**4 - 6 Pk Volume**	0	0		1034	1031	**2065**
Pk Hr Factor	0.000	0.000		0.960	0.820	**0.925**			**Pk Hr Factor**	0.000	0.000		0.972	0.965	**0.969**

Prepared by National Data & Surveying Services

VOLUME

Elkelton Pl Bet. Paradise Valley Rd & SR-125 SB Off-Ramp

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4272_002

DAILY TOTALS	NB	SB	EB	WB	Total
	11,383	8,166	0	0	19,549

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
0:00	50		17				67		**12:00**	162		111				273	
0:15	41		10				51		**12:15**	157		97				254	
0:30	39		14				53		**12:30**	183		107				290	
0:45	12	142	11	52			23	194	**12:45**	181	683	105	420			286	1103
1:00	9		10				19		**13:00**	152		89				241	
1:15	19		11				30		**13:15**	189		114				303	
1:30	21		12				33		**13:30**	204		108				312	
1:45	21	70	8	41			29	111	**13:45**	227	772	94	405			321	1177
2:00	22		13				35		**14:00**	216		132				348	
2:15	19		7				26		**14:15**	256		125				381	
2:30	7		10				17		**14:30**	264		132				396	
2:45	11	59	12	42			23	101	**14:45**	279	1015	110	499			389	1514
3:00	14		13				27		**15:00**	297		124				421	
3:15	18		15				33		**15:15**	289		113				402	
3:30	15		33				48		**15:30**	267		128				395	
3:45	14	61	24	85			38	146	**15:45**	299	1152	101	466			400	1618
4:00	8		26				34		**16:00**	210		100				310	
4:15	16		36				52		**16:15**	170		97				267	
4:30	15		55				70		**16:30**	206		107				313	
4:45	15	54	59	176			74	230	**16:45**	211	797	114	418			325	1215
5:00	22		69				91		**17:00**	192		100				292	
5:15	32		106				138		**17:15**	220		112				332	
5:30	34		158				192		**17:30**	204		115				319	
5:45	52	140	171	504			223	644	**17:45**	239	855	113	440			352	1295
6:00	50		206				256		**18:00**	255		122				377	
6:15	68		168				236		**18:15**	274		103				377	
6:30	89		154				243		**18:30**	259		108				367	
6:45	80	287	143	671			223	958	**18:45**	207	995	81	414			288	1409
7:00	69		145				214		**19:00**	183		78				261	
7:15	83		150				233		**19:15**	168		92				260	
7:30	83		157				240		**19:30**	149		85				234	
7:45	86	321	118	570			204	891	**19:45**	152	652	106	361			258	1013
8:00	89		122				211		**20:00**	128		73				201	
8:15	86		112				198		**20:15**	120		79				199	
8:30	89		138				227		**20:30**	126		81				207	
8:45	103	367	120	492			223	859	**20:45**	141	515	62	295			203	810
9:00	103		108				211		**21:00**	113		62				175	
9:15	119		123				242		**21:15**	115		69				184	
9:30	112		96				208		**21:30**	106		66				172	
9:45	117	451	107	434			224	885	**21:45**	83	417	55	252			138	669
10:00	124		76				200		**22:00**	87		66				153	
10:15	100		116				216		**22:15**	81		55				136	
10:30	142		106				248		**22:30**	82		56				138	
10:45	132	498	116	414			248	912	**22:45**	56	306	38	215			94	521
11:00	137		80				217		**23:00**	70		33				103	
11:15	145		84				229		**23:15**	59		29				88	
11:30	126		114				240		**23:30**	48		45				93	
11:45	139	547	94	372			233	919	**23:45**	50	227	21	128			71	355
TOTALS		2997		3853				**6850**	**TOTALS**		8386		4313				**12699**
SPLIT %		43.8%		56.2%				**35.0%**	**SPLIT %**		66.0%		34.0%				**65.0%**

DAILY TOTALS	NB	SB	EB	WB	Total
	11,383	8,166	0	0	19,549

AM Peak Hour	11:45		5:30					**11:45**	**PM Peak Hour**	15:00		14:00					**15:00**
AM Pk Volume	641		703					**1050**	**PM Pk Volume**	1152		499					**1618**
Pk Hr Factor	0.876		0.853					**0.905**	**Pk Hr Factor**	0.963		0.945					**0.961**
7 - 9 Volume	688		1062		0	0		**1750**	**4 - 6 Volume**	1652		858		0	0		**2510**
7 - 9 Peak Hour	8:00		7:00					**7:00**	**4 - 6 Peak Hour**	17:00		16:45					**17:00**
7 - 9 Pk Volume	367		570		0	0		**891**	**4 - 6 Pk Volume**	855		441		0	0		**1295**
Pk Hr Factor	0.891		0.908		0.000	0.000		**0.928**	**Pk Hr Factor**	0.894		0.959		0.000	0.000		**0.920**

Prepared by National Data & Surveying Services

VOLUME

Sweetwater Rd N/O Jamacha Blvd

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4272_005

DAILY TOTALS	NB	SB	EB	WB	Total
	8,159	5,287	0	0	13,446

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
0:00	30		25						55		**12:00**	118		71						189	
0:15	25		14						39		**12:15**	104		76						180	
0:30	12		20						32		**12:30**	137		77						214	
0:45	17	84	11	70					28	154	**12:45**	122	481	69	293					191	774
1:00	17		16						33		**13:00**	120		78						198	
1:15	12		10						22		**13:15**	123		85						208	
1:30	16		12						28		**13:30**	129		69						198	
1:45	13	58	11	49					24	107	**13:45**	117	489	94	326					211	815
2:00	14		5						19		**14:00**	121		92						213	
2:15	9		12						21		**14:15**	148		89						237	
2:30	7		11						18		**14:30**	152		79						231	
2:45	9	39	8	36					17	75	**14:45**	129	550	75	335					204	885
3:00	6		7						13		**15:00**	140		96						236	
3:15	6		12						18		**15:15**	156		87						243	
3:30	9		19						28		**15:30**	144		89						233	
3:45	12	33	11	49					23	82	**15:45**	155	595	77	349					232	944
4:00	13		7						20		**16:00**	149		91						240	
4:15	21		8						29		**16:15**	155		114						269	
4:30	9		7						16		**16:30**	151		137						288	
4:45	27	70	7	29					34	99	**16:45**	173	628	122	464					295	1092
5:00	28		15						43		**17:00**	149		122						271	
5:15	27		15						42		**17:15**	152		101						253	
5:30	45		14						59		**17:30**	170		122						292	
5:45	50	150	20	64					70	214	**17:45**	150	621	110	455					260	1076
6:00	66		27						93		**18:00**	141		96						237	
6:15	85		26						111		**18:15**	152		99						251	
6:30	104		43						147		**18:30**	129		89						218	
6:45	107	362	27	123					134	485	**18:45**	119	541	83	367					202	908
7:00	84		38						122		**19:00**	113		80						193	
7:15	93		47						140		**19:15**	115		71						186	
7:30	96		49						145		**19:30**	91		78						169	
7:45	116	389	47	181					163	570	**19:45**	106	425	73	302					179	727
8:00	81		41						122		**20:00**	109		65						174	
8:15	100		47						147		**20:15**	101		82						183	
8:30	93		60						153		**20:30**	97		73						170	
8:45	97	371	54	202					151	573	**20:45**	77	384	68	288					145	672
9:00	100		49						149		**21:00**	101		60						161	
9:15	103		46						149		**21:15**	76		72						148	
9:30	74		67						141		**21:30**	79		76						155	
9:45	103	380	47	209					150	589	**21:45**	66	322	63	271					129	593
10:00	96		57						153		**22:00**	59		66						125	
10:15	82		72						154		**22:15**	64		55						119	
10:30	113		65						178		**22:30**	45		39						84	
10:45	117	408	54	248					171	656	**22:45**	50	218	31	191					81	409
11:00	100		61						161		**23:00**	36		33						69	
11:15	100		75						175		**23:15**	40		27						67	
11:30	124		65						189		**23:30**	35		38						73	
11:45	94	418	67	268					161	686	**23:45**	32	143	20	118					52	261
TOTALS		2762		1528						**4290**	**TOTALS**		5397		3759						**9156**
SPLIT %		64.4%		35.6%						**31.9%**	**SPLIT %**		58.9%		41.1%						**68.1%**

DAILY TOTALS	NB	SB	EB	WB	Total
	8,159	5,287	0	0	13,446

AM Peak Hour	11:45	11:45			**11:45**	**PM Peak Hour**	16:45	16:15			**16:15**
AM Pk Volume	453	291			**744**	**PM Pk Volume**	644	495			**1123**
Pk Hr Factor	0.827	0.945			**0.869**	**Pk Hr Factor**	0.931	0.903			**0.952**
7 - 9 Volume	760	383	0	0	**1143**	**4 - 6 Volume**	1249	919	0	0	**2168**
7 - 9 Peak Hour	7:30	8:00			**7:45**	**4 - 6 Peak Hour**	16:45	16:15			**16:15**
7 - 9 Pk Volume	393	202	0	0	**585**	**4 - 6 Pk Volume**	644	495	0	0	**1123**
Pk Hr Factor	0.847	0.842	0.000	0.000	**0.897**	**Pk Hr Factor**	0.931	0.903	0.000	0.000	**0.952**

Prepared by National Data & Surveying Services

VOLUME

Jamacha Blvd Bet. Sweetwater Rd/SR-125 NB Off-Ramp & Gillespie Dr

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4272_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	15,160	14,937	30,097

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			40		56		96		**12:00**			187		188		375	
0:15			33		47		80		**12:15**			213		189		402	
0:30			37		42		79		**12:30**			219		216		435	
0:45			24	134	34	179	58	313	**12:45**			219	838	235	828	454	1666
1:00			23		28		51		**13:00**			194		212		406	
1:15			21		25		46		**13:15**			217		210		427	
1:30			27		27		54		**13:30**			228		211		439	
1:45			23	94	23	103	46	197	**13:45**			221	860	218	851	439	1711
2:00			15		28		43		**14:00**			221		184		405	
2:15			21		24		45		**14:15**			248		226		474	
2:30			14		26		40		**14:30**			280		236		516	
2:45			10	60	25	103	35	163	**14:45**			284	1033	200	846	484	1879
3:00			16		22		38		**15:00**			277		215		492	
3:15			11		21		32		**15:15**			271		235		506	
3:30			16		28		44		**15:30**			281		251		532	
3:45			21	64	29	100	50	164	**15:45**			311	1140	267	968	578	2108
4:00			16		29		45		**16:00**			316		266		582	
4:15			17		35		52		**16:15**			341		270		611	
4:30			19		60		79		**16:30**			316		271		587	
4:45			41	93	65	189	106	282	**16:45**			323	1296	287	1094	610	2390
5:00			45		102		147		**17:00**			294		295		589	
5:15			52		114		166		**17:15**			292		280		572	
5:30			84		147		231		**17:30**			304		289		593	
5:45			99	280	115	478	214	758	**17:45**			304	1194	263	1127	567	2321
6:00			83		154		237		**18:00**			280		272		552	
6:15			126		166		292		**18:15**			247		267		514	
6:30			162		163		325		**18:30**			257		248		505	
6:45			210	581	168	651	378	1232	**18:45**			281	1065	231	1018	512	2083
7:00			168		196		364		**19:00**			218		215		433	
7:15			177		186		363		**19:15**			242		204		446	
7:30			218		231		449		**19:30**			202		179		381	
7:45			206	769	217	830	423	1599	**19:45**			216	878	186	784	402	1662
8:00			157		197		354		**20:00**			203		186		389	
8:15			156		183		339		**20:15**			163		165		328	
8:30			182		187		369		**20:30**			171		156		327	
8:45			158	653	195	762	353	1415	**20:45**			189	726	141	648	330	1374
9:00			147		192		339		**21:00**			192		157		349	
9:15			169		171		340		**21:15**			177		166		343	
9:30			145		176		321		**21:30**			141		116		257	
9:45			165	626	193	732	358	1358	**21:45**			128	638	113	552	241	1190
10:00			143		184		327		**22:00**			135		106		241	
10:15			184		154		338		**22:15**			138		97		235	
10:30			159		193		352		**22:30**			108		107		215	
10:45			169	655	173	704	342	1359	**22:45**			93	474	79	389	172	863
11:00			168		181		349		**23:00**			83		75		158	
11:15			179		186		365		**23:15**			74		70		144	
11:30			169		198		367		**23:30**			48		68		116	
11:45			233	749	164	729	397	1478	**23:45**			55	260	59	272	114	532
TOTALS				4758		5560		**10318**	**TOTALS**				10402		9377		**19779**
SPLIT %				46.1%		53.9%		**34.3%**	**SPLIT %**				52.6%		47.4%		**65.7%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	15,160	14,937	30,097

AM Peak Hour				11:45	7:15	**11:45**			**PM Peak Hour**				16:00	16:45	**16:15**		
AM Pk Volume				852	831	**1609**			**PM Pk Volume**				1296	1151	**2397**		
Pk Hr Factor				0.914	0.899	**0.925**			**Pk Hr Factor**				0.950	0.975	**0.981**		
7 - 9 Volume	0	0		1422	1592	**3014**			**4 - 6 Volume**	0	0		2490	2221	**4711**		
7 - 9 Peak Hour				7:00	7:15	**7:00**			**4 - 6 Peak Hour**				16:00	16:45	**16:15**		
7 - 9 Pk Volume	0	0		769	831	**1599**			**4 - 6 Pk Volume**	0	0		1296	1151	**2397**		
Pk Hr Factor	0.000	0.000		0.882	0.899	**0.890**			**Pk Hr Factor**	0.000	0.000		0.950	0.975	**0.981**		

Prepared by National Data & Surveying Services

VOLUME

Paradise Valley Rd Bet. SR-125 SB On-Ramp & Sweetwater Rd/SR-125 NB Off-Ramp

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4273_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,527	19,024	28,551

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			18		60		78		12:00			144		255		399	
0:15			17		86		103		12:15			133		257		390	
0:30			20		80		100		12:30			142		264		406	
0:45			15	70	56	282	71	352	12:45			149	568	293	1069	442	1637
1:00			14		51		65		13:00			147		269		416	
1:15			14		43		57		13:15			142		274		416	
1:30			5		50		55		13:30			137		287		424	
1:45			9	42	33	177	42	219	13:45			154	580	266	1096	420	1676
2:00			11		33		44		14:00			142		286		428	
2:15			4		33		37		14:15			178		299		477	
2:30			12		43		55		14:30			177		268		445	
2:45			6	33	21	130	27	163	14:45			197	694	327	1180	524	1874
3:00			5		37		42		15:00			199		309		508	
3:15			6		26		32		15:15			198		289		487	
3:30			12		37		49		15:30			191		333		524	
3:45			6	29	33	133	39	162	15:45			185	773	361	1292	546	2065
4:00			8		42		50		16:00			188		384		572	
4:15			9		47		56		16:15			176		343		519	
4:30			9		49		58		16:30			194		359		553	
4:45			17	43	70	208	87	251	16:45			216	774	379	1465	595	2239
5:00			18		102		120		17:00			189		376		565	
5:15			31		133		164		17:15			201		389		590	
5:30			54		144		198		17:30			207		435		642	
5:45			49	152	133	512	182	664	17:45			215	812	381	1581	596	2393
6:00			60		152		212		18:00			196		338		534	
6:15			66		158		224		18:15			191		336		527	
6:30			78		185		263		18:30			160		340		500	
6:45			69	273	180	675	249	948	18:45			153	700	302	1316	455	2016
7:00			89		177		266		19:00			155		259		414	
7:15			100		213		313		19:15			176		294		470	
7:30			115		226		341		19:30			141		265		406	
7:45			97	401	233	849	330	1250	19:45			110	582	225	1043	335	1625
8:00			105		224		329		20:00			119		235		354	
8:15			111		219		330		20:15			132		234		366	
8:30			122		222		344		20:30			119		203		322	
8:45			109	447	234	899	343	1346	20:45			132	502	216	888	348	1390
9:00			93		190		283		21:00			106		216		322	
9:15			100		187		287		21:15			71		218		289	
9:30			102		242		344		21:30			77		171		248	
9:45			95	390	214	833	309	1223	21:45			105	359	164	769	269	1128
10:00			90		223		313		22:00			67		143		210	
10:15			104		207		311		22:15			55		141		196	
10:30			126		214		340		22:30			51		122		173	
10:45			109	429	212	856	321	1285	22:45			60	233	104	510	164	743
11:00			103		207		310		23:00			49		108		157	
11:15			117		227		344		23:15			41		102		143	
11:30			128		238		366		23:30			29		102		131	
11:45			129	477	214	886	343	1363	23:45			45	164	63	375	108	539
TOTALS				2786		6440		9226	TOTALS				6741		12584		19325
SPLIT %				30.2%		69.8%		32.3%	SPLIT %				34.9%		65.1%		67.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	9,527	19,024	28,551

AM Peak Hour				11:45	11:45	11:45			PM Peak Hour				17:15	17:00	17:00		
AM Pk Volume				548	990	1538			PM Pk Volume				819	1581	2393		
Pk Hr Factor				0.951	0.938	0.947			Pk Hr Factor				0.952	0.909	0.932		
7 - 9 Volume	0	0		848	1748	2596			4 - 6 Volume	0	0		1586	3046	4632		
7 - 9 Peak Hour				8:00	7:30	8:00			4 - 6 Peak Hour				16:45	17:00	17:00		
7 - 9 Pk Volume	0	0		447	902	1346			4 - 6 Pk Volume	0	0		813	1581	2393		
Pk Hr Factor	0.000	0.000		0.916	0.968	0.978			Pk Hr Factor	0.000	0.000		0.941	0.909	0.932		

Prepared by National Data & Surveying Services

VOLUME

Paradise Valley Rd Bet. Worthington St & Elkelton Pl

Day: Thursday
Date: 6/20/2019

City: Spring Valley
Project #: CA19_4272_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	11,454	12,752	24,206

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			28		62		90		12:00			165		182		347	
0:15			22		41		63		12:15			160		159		319	
0:30			18		53		71		12:30			196		200		396	
0:45			20	88	36	192	56	280	12:45			188	709	187	728	375	1437
1:00			16		28		44		13:00			163		170		333	
1:15			11		29		40		13:15			182		180		362	
1:30			19		26		45		13:30			196		207		403	
1:45			10	56	19	102	29	158	13:45			165	706	205	762	370	1468
2:00			15		24		39		14:00			221		206		427	
2:15			8		23		31		14:15			199		239		438	
2:30			9		18		27		14:30			240		244		484	
2:45			9	41	12	77	21	118	14:45			186	846	218	907	404	1753
3:00			13		13		26		15:00			202		235		437	
3:15			12		11		23		15:15			198		246		444	
3:30			21		18		39		15:30			208		227		435	
3:45			20	66	14	56	34	122	15:45			208	816	287	995	495	1811
4:00			35		13		48		16:00			206		241		447	
4:15			37		15		52		16:15			213		276		489	
4:30			47		17		64		16:30			225		249		474	
4:45			54	173	18	63	72	236	16:45			225	869	277	1043	502	1912
5:00			68		26		94		17:00			220		266		486	
5:15			109		36		145		17:15			213		259		472	
5:30			131		44		175		17:30			234		309		543	
5:45			154	462	53	159	207	621	17:45			200	867	292	1126	492	1993
6:00			167		69		236		18:00			108		245		353	
6:15			177		68		245		18:15			122		250		372	
6:30			181		118		299		18:30			126		243		369	
6:45			185	710	99	354	284	1064	18:45			113	469	221	959	334	1428
7:00			173		116		289		19:00			98		206		304	
7:15			187		116		303		19:15			95		205		300	
7:30			236		125		361		19:30			107		193		300	
7:45			172	768	122	479	294	1247	19:45			98	398	171	775	269	1173
8:00			167		114		281		20:00			74		166		240	
8:15			169		129		298		20:15			65		149		214	
8:30			190		117		307		20:30			91		144		235	
8:45			157	683	133	493	290	1176	20:45			72	302	163	622	235	924
9:00			156		144		300		21:00			68		119		187	
9:15			160		120		280		21:15			65		131		196	
9:30			158		136		294		21:30			52		126		178	
9:45			150	624	114	514	264	1138	21:45			56	241	128	504	184	745
10:00			125		115		240		22:00			63		112		175	
10:15			168		138		306		22:15			42		89		131	
10:30			166		136		302		22:30			50		103		153	
10:45			161	620	147	536	308	1156	22:45			33	188	87	391	120	579
11:00			139		153		292		23:00			32		94		126	
11:15			157		160		317		23:15			20		71		91	
11:30			184		154		338		23:30			29		72		101	
11:45			174	654	146	613	320	1267	23:45			17	98	65	302	82	400
TOTALS				4945		3638		8583	TOTALS				6509		9114		15623
SPLIT %				57.6%		42.4%		35.5%	SPLIT %				41.7%		58.3%		64.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	11,454	12,752	24,206

AM Peak Hour				6:45		11:45		11:45	PM Peak Hour				16:45		17:00		16:45
AM Pk Volume				781		687		1382	PM Pk Volume				892		1126		2003
Pk Hr Factor				0.827		0.859		0.872	Pk Hr Factor				0.953		0.911		0.922
7 - 9 Volume	0	0		1451		972		2423	4 - 6 Volume	0	0		1736		2169		3905
7 - 9 Peak Hour				7:00		8:00		7:00	4 - 6 Peak Hour				16:45		17:00		16:45
7 - 9 Pk Volume	0	0		768		493		1247	4 - 6 Pk Volume	0	0		892		1126		2003
Pk Hr Factor	0.000	0.000		0.814		0.927		0.864	Pk Hr Factor	0.000	0.000		0.953		0.911		0.922

Appendix D: Existing AM & PM Synchro Worksheets

Provided on the following page in 11”X17” format.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	156	115	28	193	29	139	32	371	313	52	308	90
Future Volume (veh/h)	156	115	28	193	29	139	32	371	313	52	308	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	181	134	17	210	32	76	34	391	165	60	354	57
Peak Hour Factor	0.86	0.86	0.86	0.92	0.92	0.92	0.95	0.95	0.95	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	210	1087	136	276	568	540	41	745	310	75	994	159
Arrive On Green	0.13	0.36	0.36	0.08	0.32	0.32	0.02	0.32	0.32	0.05	0.34	0.34
Sat Flow, veh/h	1674	2987	373	3248	1758	1464	1674	2298	957	1674	2885	460
Grp Volume(v), veh/h	181	74	77	210	32	76	34	283	273	60	204	207
Grp Sat Flow(s),veh/h/ln	1674	1670	1690	1624	1758	1464	1674	1670	1585	1674	1670	1675
Q Serve(g_s), s	10.5	2.9	3.0	6.3	1.2	3.4	2.0	13.6	13.9	3.5	9.0	9.2
Cycle Q Clear(g_c), s	10.5	2.9	3.0	6.3	1.2	3.4	2.0	13.6	13.9	3.5	9.0	9.2
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.60	1.00		0.27
Lane Grp Cap(c), veh/h	210	608	615	276	568	540	41	542	514	75	576	577
V/C Ratio(X)	0.86	0.12	0.13	0.76	0.06	0.14	0.83	0.52	0.53	0.80	0.35	0.36
Avail Cap(c_a), veh/h	220	608	615	436	568	540	100	542	514	83	576	577
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.4	21.0	21.0	44.3	23.1	20.8	48.1	27.2	27.3	46.8	24.2	24.3
Incr Delay (d2), s/veh	26.8	0.4	0.4	1.6	0.2	0.5	14.2	3.6	3.9	33.6	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	1.2	1.3	2.6	0.5	1.2	1.0	5.9	5.7	2.2	3.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	21.4	21.4	45.9	23.3	21.4	62.2	30.8	31.2	80.5	25.9	26.0
LnGrp LOS	E	C	C	D	C	C	E	C	C	F	C	C
Approach Vol, veh/h		332			318			590			471	
Approach Delay, s/veh		47.5			37.8			32.8			32.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	37.4	12.1	40.9	6.5	39.4	16.1	36.9
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	4.9	32.1	13.3	31.7	5.9	31.1	13.0	32.0
Max Q Clear Time (g_c+I1), s	5.5	15.9	8.3	5.0	4.0	11.2	12.5	5.4
Green Ext Time (p_c), s	0.0	2.1	0.2	0.7	0.0	1.5	0.0	0.3

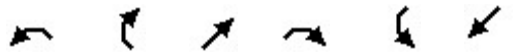
Intersection Summary	
HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D

Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	181	167	210	32	151	34	720	60	457
v/c Ratio	0.82	0.14	0.59	0.05	0.22	0.35	0.60	0.71	0.37
Control Delay	71.8	19.1	49.4	24.0	4.0	55.7	21.5	87.3	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	19.1	49.4	24.0	4.0	55.7	21.5	87.3	24.0
Queue Length 50th (ft)	114	30	67	14	0	21	137	38	110
Queue Length 95th (ft)	#208	54	101	36	36	53	200	#100	149
Internal Link Dist (ft)		411		232			590		334
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	228	1184	454	593	678	103	1198	85	1220
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.14	0.46	0.05	0.22	0.33	0.60	0.71	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Min green cannot be less than 2 seconds, (Phase 6).



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	447	221	453	446
Future Volume (vph)	0	0	447	221	453	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	466	230	472	465
RTOR Reduction (vph)	0	0	0	147	0	0
Lane Group Flow (vph)	0	0	466	83	472	465
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			13.4	13.4	11.2	37.0
Effective Green, g (s)			13.4	13.4	11.2	37.0
Actuated g/C Ratio			0.36	0.36	0.30	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1269	567	1029	3505
v/s Ratio Prot			c0.13	0.05	c0.14	0.13
v/s Ratio Perm						
v/c Ratio			0.37	0.15	0.46	0.13
Uniform Delay, d1			8.7	7.9	10.4	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.2	0.1	0.3	0.0
Delay (s)			8.9	8.1	10.8	0.0
Level of Service			A	A	B	A
Approach Delay (s)	0.0		8.6			5.4
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.0	Sum of lost time (s)	12.4
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	466	230	472	465
v/c Ratio	0.38	0.33	0.46	0.13
Control Delay	9.7	3.0	13.3	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.7	3.0	13.3	0.1
Queue Length 50th (ft)	33	0	34	0
Queue Length 95th (ft)	65	27	100	0
Internal Link Dist (ft)	334			699
Turn Bay Length (ft)		275	450	
Base Capacity (vph)	3345	1507	3400	3505
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.15	0.14	0.13

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	35	253	0	572	72	0
Future Volume (veh/h)	35	253	0	572	72	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	40	205	0	615	96	0
Peak Hour Factor	0.87	0.87	0.93	0.93	0.75	0.75
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	366	326	0	1201	1201	0
Arrive On Green	0.22	0.22	0.00	0.36	0.36	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	40	205	0	615	96	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	0.6	3.7	0.0	4.3	0.6	0.0
Cycle Q Clear(g_c), s	0.6	3.7	0.0	4.3	0.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	366	326	0	1201	1201	0
V/C Ratio(X)	0.11	0.63	0.00	0.51	0.08	0.00
Avail Cap(c_a), veh/h	1977	1759	0	5071	5296	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.3	10.5	0.0	7.5	6.3	0.0
Incr Delay (d2), s/veh	0.1	2.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.0	0.0	0.8	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	12.5	0.0	7.8	6.3	0.0
LnGrp LOS	A	B	A	A	A	A
Approach Vol, veh/h	245			615	96	
Approach Delay, s/veh	12.0			7.8	6.3	
Approach LOS	B			A	A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		17.1				17.1	12.6
Change Period (Y+Rc), s		6.4				* 6.4	6.1
Max Green Setting (Gmax), s		47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s		2.6				6.3	5.7
Green Ext Time (p_c), s		0.6				4.4	0.8

Intersection Summary		
HCM 6th Ctrl Delay		8.7
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	40	291	615	96
v/c Ratio	0.11	0.52	0.44	0.07
Control Delay	12.8	6.2	8.0	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.8	6.2	8.0	6.2
Queue Length 50th (ft)	5	0	33	4
Queue Length 95th (ft)	26	42	68	11
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1665	1504	3505	3505
Starvation Cap Reductn	0	0	112	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.19	0.18	0.03

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	74	91	432	66	0	149	120	313	0	0	690	172
Future Volume (vph)	74	91	432	66	0	149	120	313	0	0	690	172
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1463	3221		1485	3221	3320			3320	1467
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1463	3221		1485	3221	3320			3320	1467
Peak-hour factor, PHF	0.78	0.78	0.78	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	95	117	554	70	0	159	129	337	0	0	742	185
RTOR Reduction (vph)	0	0	496	0	0	63	0	0	0	0	0	73
Lane Group Flow (vph)	95	117	58	70	0	96	129	337	0	0	742	112
Confl. Peds. (#/hr)			1						1			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	16.5	16.5	10.2	9.5		65.9	11.9	37.7			33.8	43.3
Effective Green, g (s)	16.5	16.5	10.2	9.5		59.1	11.9	37.7			33.8	43.3
Actuated g/C Ratio	0.17	0.17	0.10	0.10		0.61	0.12	0.39			0.35	0.44
Clearance Time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	280	295	152	313		899	392	1282			1149	650
v/s Ratio Prot	0.06	c0.07		c0.02		0.01	0.04	c0.10			c0.22	0.02
v/s Ratio Perm			c0.04			0.05						0.06
v/c Ratio	0.34	0.40	0.38	0.22		0.11	0.33	0.26			0.65	0.17
Uniform Delay, d1	35.7	36.1	40.8	40.6		8.1	39.2	20.5			26.9	16.4
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.7	0.9	1.6	0.4		0.1	0.5	0.1			1.3	0.1
Delay (s)	36.5	37.0	42.3	41.0		8.2	39.7	20.6			28.1	16.5
Level of Service	D	D	D	D		A	D	C			C	B
Approach Delay (s)		40.8			18.2			25.9			25.8	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	25.9
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	95	117	554	70	159	129	337	742	185
v/c Ratio	0.34	0.40	0.85	0.23	0.15	0.33	0.27	0.65	0.25
Control Delay	38.6	39.6	17.8	48.7	2.1	46.4	26.3	32.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	39.6	17.8	48.7	2.1	46.4	26.3	32.6	7.0
Queue Length 50th (ft)	49	61	0	19	0	34	60	180	14
Queue Length 95th (ft)	87	103	25	57	32	90	190	399	82
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	837	881	813	1015	1078	1049	1572	1360	1027
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.13	0.68	0.07	0.15	0.12	0.21	0.55	0.18

Intersection Summary

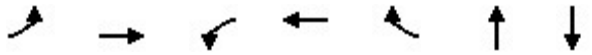
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	2	10	717	22	3	805	14	16	3	6	10	4
Future Volume (vph)	2	10	717	22	3	805	14	16	3	6	10	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		1.00			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.97			0.90
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1660	3303		1660	3320	1437		1631			1534
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (perm)		1660	3303		1660	3320	1437		1631			1534
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.94	0.94	0.94	0.63	0.63	0.63	0.89	0.89
Adj. Flow (vph)	2	12	854	26	3	856	15	25	5	10	11	4
RTOR Reduction (vph)	0	0	1	0	0	0	6	0	0	0	0	44
Lane Group Flow (vph)	0	14	879	0	3	856	9	0	40	0	0	19
Confl. Peds. (#/hr)				5			6			4		
Confl. Bikes (#/hr)				1								
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		1.0	47.4		0.7	47.1	47.1		6.9			6.8
Effective Green, g (s)		1.0	47.4		0.7	47.1	47.1		6.9			6.8
Actuated g/C Ratio		0.01	0.60		0.01	0.60	0.60		0.09			0.09
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		21	1996		14	1994	863		143			133
v/s Ratio Prot		c0.01	c0.27		0.00	0.26			c0.02			c0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.67	0.44		0.21	0.43	0.01		0.28			0.14
Uniform Delay, d1		38.5	8.4		38.6	8.4	6.3		33.4			33.1
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		58.7	0.7		7.6	0.7	0.0		1.1			0.5
Delay (s)		97.2	9.1		46.1	9.1	6.3		34.5			33.6
Level of Service		F	A		D	A	A		C			C
Approach Delay (s)			10.4			9.2			34.5			33.6
Approach LOS			B			A			C			C

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	43
Future Volume (vph)	43
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.89
Adj. Flow (vph)	48
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	7
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

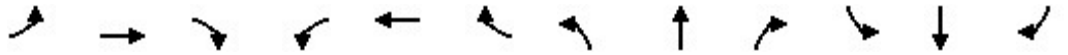
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	14	880	3	856	15	40	63
v/c Ratio	0.09	0.38	0.02	0.37	0.01	0.18	0.26
Control Delay	40.6	15.0	42.0	15.5	0.0	31.4	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	15.0	42.0	15.5	0.0	31.4	15.6
Queue Length 50th (ft)	5	87	1	84	0	15	6
Queue Length 95th (ft)	30	388	13	#466	0	37	43
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	473	2292	147	2289	1019	737	763
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.38	0.02	0.37	0.01	0.05	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	412	150	46	818	87	316	194	71	77	126	236
Future Volume (veh/h)	150	412	150	46	818	87	316	194	71	77	126	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	163	448	81	49	880	79	340	209	38	82	134	195
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	233	1569	881	100	1922	172	409	811	400	183	578	360
Arrive On Green	0.07	0.47	0.47	0.03	0.43	0.43	0.13	0.24	0.24	0.06	0.17	0.17
Sat Flow, veh/h	3248	3340	1477	3248	4483	401	3248	3340	1460	3248	3340	1464
Grp Volume(v), veh/h	163	448	81	49	627	332	340	209	38	82	134	195
Grp Sat Flow(s),veh/h/ln	1624	1670	1477	1624	1600	1685	1624	1670	1460	1624	1670	1464
Q Serve(g_s), s	4.6	7.7	2.2	1.4	13.1	13.2	9.6	4.8	1.8	2.3	3.3	10.9
Cycle Q Clear(g_c), s	4.6	7.7	2.2	1.4	13.1	13.2	9.6	4.8	1.8	2.3	3.3	10.9
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	1569	881	100	1372	722	409	811	400	183	578	360
V/C Ratio(X)	0.70	0.29	0.09	0.49	0.46	0.46	0.83	0.26	0.09	0.45	0.23	0.54
Avail Cap(c_a), veh/h	424	1569	881	424	1372	722	458	1599	745	458	1599	807
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	15.3	8.2	44.9	19.1	19.1	40.2	28.8	25.5	43.0	33.6	31.0
Incr Delay (d2), s/veh	3.8	0.5	0.2	3.7	1.1	2.1	11.3	0.2	0.1	1.7	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.9	0.7	0.6	4.9	5.4	4.4	1.9	0.6	1.0	1.3	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	15.8	8.4	48.7	20.2	21.2	51.5	29.0	25.6	44.8	33.8	32.3
LnGrp LOS	D	B	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		692			1008			587			411	
Approach Delay, s/veh		22.1			21.9			41.8			35.2	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	49.3	16.2	21.6	11.1	45.4	9.6	28.2
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	3.4	9.7	11.6	12.9	6.6	15.2	4.3	6.8
Green Ext Time (p_c), s	0.1	3.5	0.2	1.6	0.2	7.1	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	163	448	163	49	974	340	209	76	82	134	251
v/c Ratio	0.48	0.27	0.16	0.20	0.46	0.72	0.27	0.15	0.30	0.28	0.59
Control Delay	47.8	18.3	2.4	47.6	22.2	50.9	33.0	5.6	47.3	37.6	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	18.3	2.4	47.6	22.2	50.9	33.0	5.6	47.3	37.6	27.3
Queue Length 50th (ft)	46	78	0	13	136	97	57	0	23	38	98
Queue Length 95th (ft)	100	182	35	39	280	#229	92	28	58	65	162
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	439	1670	1019	439	2114	475	1661	604	475	1661	467
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.27	0.16	0.11	0.46	0.72	0.13	0.13	0.17	0.08	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	180	93	50	434	141	278	44	575	270	85	667	259
Future Volume (veh/h)	180	93	50	434	141	278	44	575	270	85	667	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	205	106	29	467	152	196	47	612	200	92	725	216
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	208	810	214	435	563	557	58	797	260	90	860	256
Arrive On Green	0.12	0.31	0.31	0.13	0.32	0.32	0.03	0.32	0.32	0.05	0.34	0.34
Sat Flow, veh/h	1674	2612	691	3248	1758	1490	1674	2474	807	1674	2522	751
Grp Volume(v), veh/h	205	66	69	467	152	196	47	413	399	92	480	461
Grp Sat Flow(s),veh/h/ln	1674	1670	1633	1624	1758	1490	1674	1670	1612	1674	1670	1604
Q Serve(g_s), s	12.2	2.9	3.0	13.4	6.4	9.5	2.8	22.3	22.3	5.4	26.6	26.6
Cycle Q Clear(g_c), s	12.2	2.9	3.0	13.4	6.4	9.5	2.8	22.3	22.3	5.4	26.6	26.6
Prop In Lane	1.00		0.42	1.00		1.00	1.00		0.50	1.00		0.47
Lane Grp Cap(c), veh/h	208	518	506	435	563	557	58	538	519	90	570	547
V/C Ratio(X)	0.99	0.13	0.14	1.07	0.27	0.35	0.80	0.77	0.77	1.02	0.84	0.84
Avail Cap(c_a), veh/h	208	518	506	435	563	557	82	538	519	90	570	547
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	24.8	24.8	43.3	25.3	22.6	47.9	30.5	30.6	47.3	30.5	30.5
Incr Delay (d2), s/veh	58.7	0.5	0.6	64.0	1.2	1.7	21.8	10.1	10.5	99.5	14.1	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	1.2	1.2	9.2	2.8	3.5	1.5	10.2	10.0	4.7	12.6	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	102.4	25.3	25.4	107.3	26.5	24.3	69.7	40.6	41.1	146.8	44.6	45.1
LnGrp LOS	F	C	C	F	C	C	E	D	D	F	D	D
Approach Vol, veh/h		340			815			859			1033	
Approach Delay, s/veh		71.8			72.3			42.4			53.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	37.5	17.1	35.9	7.6	39.4	16.1	36.9
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	5.4	32.2	13.4	31.0	4.9	32.7	12.4	32.0
Max Q Clear Time (g_c+I1), s	7.4	24.3	15.4	5.0	4.8	28.6	14.2	11.5
Green Ext Time (p_c), s	0.0	2.3	0.0	0.6	0.0	1.7	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	57.6
HCM 6th LOS	E

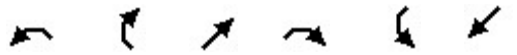
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	205	163	467	152	299	47	899	92	1007
v/c Ratio	0.94	0.15	1.03	0.26	0.42	0.56	0.80	0.98	0.85
Control Delay	93.5	16.5	92.7	26.7	15.3	71.7	34.4	137.0	37.1
Queue Delay	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	3.0
Total Delay	93.5	16.5	92.7	26.7	17.0	71.7	34.4	137.0	40.1
Queue Length 50th (ft)	132	25	~164	71	85	30	250	60	301
Queue Length 95th (ft)	#261	48	#264	123	155	#81	329	#161	#422
Internal Link Dist (ft)		411		232			590		334
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	217	1064	455	590	719	85	1125	94	1191
Starvation Cap Reductn	0	0	0	0	264	0	0	0	105
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.15	1.03	0.26	0.66	0.55	0.80	0.98	0.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Min green cannot be less than 2 seconds, (Phase 6).



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	812	222	555	1031
Future Volume (vph)	0	0	812	222	555	1031
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.97	0.97	0.91	0.91
Adj. Flow (vph)	0	0	837	229	610	1133
RTOR Reduction (vph)	0	0	0	135	0	0
Lane Group Flow (vph)	0	0	837	94	610	1133
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			19.8	19.8	16.2	48.4
Effective Green, g (s)			19.8	19.8	16.2	48.4
Actuated g/C Ratio			0.41	0.41	0.33	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1433	641	1138	3505
v/s Ratio Prot			c0.24	0.06	c0.18	0.32
v/s Ratio Perm						
v/c Ratio			0.58	0.15	0.54	0.32
Uniform Delay, d1			11.1	9.0	13.1	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	0.5	0.1
Delay (s)			11.7	9.1	13.5	0.1
Level of Service			B	A	B	A
Approach Delay (s)	0.0		11.2			4.8
Approach LOS	A		B			A

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.4
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	837	229	610	1133
v/c Ratio	0.60	0.30	0.54	0.32
Control Delay	13.7	3.0	15.6	0.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.7	3.0	15.6	0.2
Queue Length 50th (ft)	88	0	66	0
Queue Length 95th (ft)	168	33	132	0
Internal Link Dist (ft)	334			699
Turn Bay Length (ft)		275	450	
Base Capacity (vph)	2974	1365	3363	3505
Starvation Cap Reductn	12	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.17	0.18	0.32

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	134	757	0	437	95	0
Future Volume (veh/h)	134	757	0	437	95	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	147	750	0	480	120	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.79	0.79
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	911	810	0	756	756	0
Arrive On Green	0.54	0.54	0.00	0.23	0.23	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	147	750	0	480	120	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	2.4	25.2	0.0	7.1	1.6	0.0
Cycle Q Clear(g_c), s	2.4	25.2	0.0	7.1	1.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	911	810	0	756	756	0
V/C Ratio(X)	0.16	0.93	0.00	0.64	0.16	0.00
Avail Cap(c_a), veh/h	1077	959	0	2763	2886	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.2	11.4	0.0	19.0	16.9	0.0
Incr Delay (d2), s/veh	0.1	13.1	0.0	0.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.7	0.0	2.4	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	24.5	0.0	19.9	17.0	0.0
LnGrp LOS	A	C	A	B	B	A
Approach Vol, veh/h	897			480	120	
Approach Delay, s/veh	21.5			19.9	17.0	
Approach LOS	C			B	B	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		18.7				18.7	35.7
Change Period (Y+Rc), s		6.4				* 6.4	6.1
Max Green Setting (Gmax), s		47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s		3.6				9.1	27.2
Green Ext Time (p_c), s		0.7				3.2	2.4

Intersection Summary		
HCM 6th Ctrl Delay		20.6
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	147	832	480	120
v/c Ratio	0.26	0.79	0.42	0.11
Control Delay	11.0	8.0	11.8	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.0	8.0	11.8	10.6
Queue Length 50th (ft)	18	3	30	6
Queue Length 95th (ft)	66	72	104	26
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1563	1485	3319	3313
Starvation Cap Reductn	0	0	87	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.09	0.56	0.15	0.04

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	256	176	620	123	0	351	277	551	0	0	980	207
Future Volume (vph)	256	176	620	123	0	351	277	551	0	0	980	207
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Peak-hour factor, PHF	0.95	0.95	0.95	0.91	0.91	0.91	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	269	185	653	135	0	386	295	586	0	0	1043	220
RTOR Reduction (vph)	0	0	471	0	0	119	0	0	0	0	0	64
Lane Group Flow (vph)	269	185	182	135	0	267	295	586	0	0	1043	156
Confl. Peds. (#/hr)			1									9
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	27.2	27.2	20.7	11.3		81.6	17.5	36.7			39.8	51.1
Effective Green, g (s)	27.2	27.2	20.7	11.3		74.8	17.5	36.7			39.8	51.1
Actuated g/C Ratio	0.22	0.22	0.17	0.09		0.61	0.14	0.30			0.33	0.42
Clearance Time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	371	390	249	299		912	463	1001			1085	613
v/s Ratio Prot	c0.16	0.11		c0.04		c0.04	0.09	0.18			c0.31	0.02
v/s Ratio Perm			c0.12			0.14						0.08
v/c Ratio	0.73	0.47	0.73	0.45		0.29	0.64	0.59			0.96	0.25
Uniform Delay, d1	43.8	41.0	47.9	52.3		11.0	49.1	36.0			40.2	22.9
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	6.9	0.9	10.6	1.1		0.2	2.9	0.9			18.6	0.2
Delay (s)	50.7	42.0	58.5	53.4		11.2	52.0	36.9			58.8	23.1
Level of Service	D	D	E	D		B	D	D			E	C
Approach Delay (s)		53.8			22.1			42.0			52.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	121.7	Sum of lost time (s)	25.9
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	269	185	653	135	386	295	586	1043	220
v/c Ratio	0.73	0.48	0.91	0.45	0.35	0.64	0.59	0.96	0.32
Control Delay	56.3	45.6	25.9	60.8	3.4	57.6	42.1	61.8	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	45.6	25.9	60.8	3.4	57.6	42.1	61.8	13.0
Queue Length 50th (ft)	193	124	55	50	18	109	209	402	45
Queue Length 95th (ft)	316	215	#355	103	85	193	350	#810	139
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	664	700	754	806	1093	833	1249	1081	903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.26	0.87	0.17	0.35	0.35	0.47	0.96	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

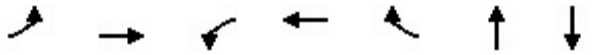
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	30	1171	26	15	1044	21	24	5	15	42	6
Future Volume (vph)	7	30	1171	26	15	1044	21	24	5	15	42	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		0.99			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.95			0.92
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1660	3308		1660	3320	1446		1613			1569
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (perm)		1660	3308		1660	3320	1446		1613			1569
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.95	0.95	0.95	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	7	31	1207	27	16	1099	22	30	6	19	53	8
RTOR Reduction (vph)	0	0	1	0	0	0	11	0	0	0	0	46
Lane Group Flow (vph)	0	38	1233	0	16	1099	11	0	55	0	0	95
Confl. Peds. (#/hr)				2			3			5		
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		3.1	42.0		0.7	39.6	39.6		7.4			12.0
Effective Green, g (s)		3.1	42.0		0.7	39.6	39.6		7.4			12.0
Actuated g/C Ratio		0.04	0.53		0.01	0.50	0.50		0.09			0.15
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		65	1765		14	1670	727		151			239
v/s Ratio Prot		c0.02	c0.37		0.01	0.33			c0.03			c0.06
v/s Ratio Perm							0.01					
v/c Ratio		0.58	0.70		1.14	0.66	0.02		0.36			0.40
Uniform Delay, d1		37.2	13.6		39.0	14.5	9.8		33.4			30.1
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		12.7	2.3		291.3	2.0	0.0		1.5			1.1
Delay (s)		49.9	16.0		330.3	16.6	9.8		34.9			31.2
Level of Service		D	B		F	B	A		C			C
Approach Delay (s)			17.0			20.9			34.9			31.2
Approach LOS			B			C			C			C

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	16.6
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	63
Future Volume (vph)	63
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.79
Adj. Flow (vph)	80
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

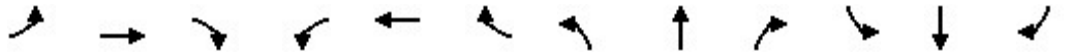
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	38	1234	16	1099	22	55	141
v/c Ratio	0.22	0.66	0.12	0.64	0.03	0.24	0.47
Control Delay	40.4	19.9	43.5	23.0	0.0	32.6	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	19.9	43.5	23.0	0.0	32.6	24.1
Queue Length 50th (ft)	14	169	6	142	0	20	32
Queue Length 95th (ft)	64	#773	36	#712	0	60	90
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	454	1867	141	1730	805	699	755
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.66	0.11	0.64	0.03	0.08	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	937	357	69	790	88	405	314	146	182	277	353
Future Volume (veh/h)	283	937	357	69	790	88	405	314	146	182	277	353
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	301	997	191	73	840	78	440	341	101	194	295	320
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	354	1451	810	119	1616	149	387	938	466	255	802	513
Arrive On Green	0.11	0.43	0.43	0.04	0.36	0.36	0.12	0.28	0.28	0.08	0.24	0.24
Sat Flow, veh/h	3248	3340	1456	3248	4464	413	3248	3340	1464	3248	3340	1461
Grp Volume(v), veh/h	301	997	191	73	601	317	440	341	101	194	295	320
Grp Sat Flow(s),veh/h/ln	1624	1670	1456	1624	1600	1677	1624	1670	1464	1624	1670	1461
Q Serve(g_s), s	10.2	26.8	7.5	2.5	16.5	16.6	13.3	9.1	5.6	6.5	8.2	20.4
Cycle Q Clear(g_c), s	10.2	26.8	7.5	2.5	16.5	16.6	13.3	9.1	5.6	6.5	8.2	20.4
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	354	1451	810	119	1158	607	387	938	466	255	802	513
V/C Ratio(X)	0.85	0.69	0.24	0.61	0.52	0.52	1.14	0.36	0.22	0.76	0.37	0.62
Avail Cap(c_a), veh/h	358	1451	810	358	1158	607	387	1350	647	387	1350	753
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	25.4	12.8	53.0	28.0	28.0	49.1	32.1	27.9	50.4	35.3	30.2
Incr Delay (d2), s/veh	17.2	2.7	0.7	5.0	1.7	3.2	88.3	0.2	0.2	4.7	0.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	10.9	2.6	1.1	6.5	7.1	10.1	3.7	2.0	2.8	3.4	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.0	28.1	13.5	58.0	29.6	31.2	137.5	32.4	28.1	55.1	35.6	31.5
LnGrp LOS	E	C	B	E	C	C	F	C	C	E	D	C
Approach Vol, veh/h		1489			991			882			809	
Approach Delay, s/veh		33.9			32.2			84.3			38.6	
Approach LOS		C			C			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	53.5	17.6	32.1	16.5	45.4	13.1	36.6
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	4.5	28.8	15.3	22.4	12.2	18.6	8.5	11.1
Green Ext Time (p_c), s	0.1	5.9	0.0	3.1	0.0	6.4	0.3	2.8

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	301	997	380	73	934	440	341	159	194	295	376
v/c Ratio	0.73	0.64	0.38	0.29	0.47	0.99	0.51	0.34	0.54	0.51	0.76
Control Delay	56.3	26.6	5.7	49.9	24.8	86.8	39.5	18.7	50.9	41.1	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	26.6	5.7	49.9	24.8	86.8	39.5	18.7	50.9	41.1	35.1
Queue Length 50th (ft)	94	240	31	22	149	143	105	50	60	93	178
Queue Length 95th (ft)	#204	465	132	53	266	#323	150	97	115	131	271
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	410	1552	991	410	1974	444	1552	536	444	1552	498
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.64	0.38	0.18	0.47	0.99	0.22	0.30	0.44	0.19	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix E: San Diego Metropolitan Transit System Transit Schedule (Route 962)

Provided on the following page in 11”X17” format.

ONE-WAY FARES / Tarifas Sencillas

Exact fare, please / Favor de pagar la cantidad exacta	
Adult / Adulto	**$2.50**
Senior/Disabled/Medicare* Personas Mayores/con Discapacidades/Medicare*	**$1.25**
Youth (ages 6-18)* Jóvenes (edades 6-18)*	**$2.50**

DAY PASS (Regional) / Pase diario (Regional)

Adult / Adulto	**$6.00**
Senior/Disabled/Medicare* Personas Mayores/con Discapacidades/Medicare*	**$3.00**
Youth (ages 6-18)* Jóvenes (edades 6-18)*	**$3.00**

MONTHLY PASSES / Pases mensual

Adult / Adulto	**$72.00**
Senior/Disabled/Medicare* Personas Mayores/con Discapacidades/Medicare*	**$23.00**
Youth (ages 6-18)* Jóvenes (edades 6-18)*	**$23.00**

*Proof of eligibility required. Senior Eligibility: Age 65+ or born on or before September 1, 1959.
*Se requiere verificación de elegibilidad. Elegibilidad para Personas Mayores: Edad 65+ o nacido en o antes del 1 de septiembre, 1959.

COMPASS CARDS / Tarjeta Compass
There is a $2 charge for Compass Cards, which can be reloaded for future use.
Hay un costo de $2 por la tarjeta Compass Card, la cual puede ser recargada para usos futuros.

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Download the free Compass Cloud app on your Apple or Android phone.
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Visit sdmts.com/fares for more info. Visite sdmts.com/fares para más información.

DIRECTORY / *Directorio*

MTS Information & Trip Planning *MTS Información y planeo de viaje*	**511** or/ó **(619) 233-3004**
TTY/TDD (teletype for hearing impaired) *Teletipo para sordos*	**(619) 234-5005** or/ó **(888) 722-4889**
InfoExpress (24-hour info via Touch-Tone phone) *Información las 24 horas (via teléfono de teclas)*	**(619) 685-4900**
Customer Service / Suggestions *Servicio al cliente / Sugerencias*	**(619) 557-4555**
MTS Security *MTS Seguridad*	**(619) 595-4960**
Lost & Found *Objetos extraviados*	**(619) 233-3004**
Transit Store	**(619) 234-1060** 12th & Imperial Transit Center M–F 8am–5pm
For MTS online trip planning *Planificación de viajes por Internet*	**sdmts.com**

For more information on riding MTS services, pick up a Rider's Guide on a bus or at the Transit Store, or visit **sdmts.com**.
*Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en la Transit Store, o visita a **sdmts.com**.*

Thank you for riding MTS! ***¡Gracias por viajar con MTS!***

Effective SEPTEMBER 1, 2019

962
8th St. T.C. – Spring Valley
via Plaza Bl. / Paradise Valley Rd.

963
8th St. T.C. – Paradise Hills
via Plaza Bl. / Reo Dr.

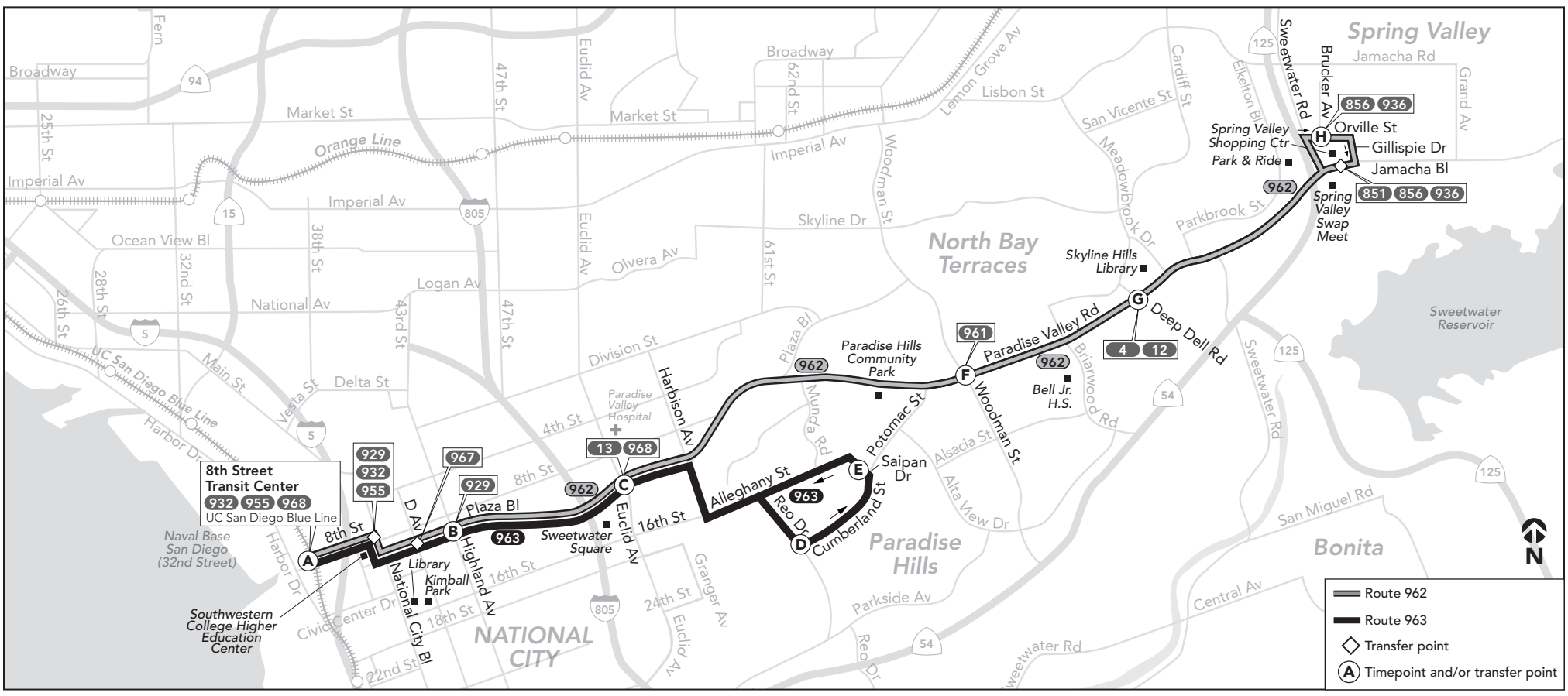
DESTINATIONS
- Bell Jr. High School (962)
- Paradise Hills Community Park (962)
- Skyline Hills Library (962)
- Southwest College Higher Education Center

TROLLEY CONNECTIONS
- 8th St.

09/19

sdmts.com
Route Alerts, Updated Schedules, Connections & More

Alternative formats available upon request. Please call: (619) 557-4555 / *Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555*



Route 963 – Monday through Friday / *lunes a viernes*

National City ➡ Paradise Hills

(A) 8th St. Transit Center **DEPART**	(B) Plaza Bl. & Highland Av.	(C) Plaza Bl. & Euclid Av.	(D) Cumberland St. & Reo Dr.	(E) Saipan Dr. & Potomac St. **ARRIVE**
—	—	—	5:27a	5:30a
—	—	—	5:57	6:00
6:03a	6:10a	6:16a	6:22	6:25
6:33	6:40	6:46	6:52	6:55
7:03	7:10	7:16	7:22	7:25
7:33	7:40	7:46	7:52	7:55
8:03	8:10	8:16	8:22	8:25
8:32	8:39	8:45	8:51	8:54
9:02	9:09	9:15	9:21	9:24
9:32	9:39	9:45	9:51	9:54
9:59	10:07	10:14	10:20	10:23
10:29	10:37	10:44	10:50	10:53
10:59	11:07	11:14	11:20	11:23
11:29	11:37	11:44	11:50	11:53
11:59	**12:07p**	**12:14p**	**12:20p**	**12:23p**
12:29p	**12:37**	**12:44**	**12:50**	**12:53**
12:59	**1:07**	**1:14**	**1:20**	**1:23**
1:29	**1:37**	**1:45**	**1:52**	**1:55**
1:59	**2:07**	**2:15**	**2:22**	**2:25**
2:32	**2:40**	**2:48**	**2:55**	**2:58**
3:02	**3:10**	**3:18**	**3:25**	**3:28**
3:32	**3:40**	**3:48**	**3:55**	**3:58**
4:02	**4:10**	**4:18**	**4:25**	**4:28**
4:32	**4:40**	**4:48**	**4:55**	**4:58**
5:03	**5:10**	**5:18**	**5:24**	**5:27**
5:33	**5:40**	**5:48**	**5:54**	**5:57**
6:03	**6:10**	**6:18**	**6:24**	**6:27**
6:33	**6:40**	**6:48**	**6:54**	**6:57**
7:04	**7:11**	**7:18**	**7:24**	**7:27**
7:44	**7:51**	**7:58**	**8:04**	**8:07**
8:29	**8:35**	**8:41**	**8:46**	**8:49**
9:14	**9:20**	**9:26**	**9:31**	**9:34**
9:59	**10:05**	**10:11**	**10:16**	**10:19**

Paradise Hills ➡ National City

(E) Saipan Dr. & Potomac St. **DEPART**	(C) Plaza Bl. & Euclid Av.	(B) Plaza Bl. & Highland Av.	(A) 8th St. Transit Center **ARRIVE**
5:31a	5:39a	5:43a	5:50a
6:01	6:09	6:13	6:20
6:29	6:37	6:41	6:50
6:57	7:06	7:11	7:20
7:27	7:36	7:41	7:50
7:57	8:06	8:11	8:18
8:27	8:36	8:41	8:48
8:56	9:05	9:10	9:17
9:26	9:35	9:40	9:47
9:56	10:05	10:10	10:17
10:26	10:35	10:40	10:47
10:56	11:05	11:10	11:17
11:26	11:35	11:40	11:47
11:56	**12:05p**	**12:10p**	**12:17p**
12:26p	**12:35**	**12:40**	**12:47**
12:56	**1:05**	**1:10**	**1:17**
1:26	**1:35**	**1:40**	**1:47**
1:57	**2:06**	**2:11**	**2:18**
2:27	**2:36**	**2:42**	**2:50**
3:00	**3:09**	**3:15**	**3:23**
3:30	**3:39**	**3:45**	**3:53**
4:00	**4:09**	**4:15**	**4:23**
4:30	**4:39**	**4:45**	**4:53**
5:00	**5:09**	**5:14**	**5:21**
5:29	**5:38**	**5:43**	**5:50**
5:59	**6:08**	**6:13**	**6:20**
6:29	**6:37**	**6:42**	**6:49**
6:59	**7:07**	**7:12**	**7:19**
7:29	**7:37**	**7:42**	**7:49**
8:14	**8:21**	**8:25**	**8:32**
9:14	**9:21**	**9:25**	**9:32**

Route 963 – Saturday and Sunday / *sábado y domingo*

National City ➡ Paradise Hills

(A) 8th St. Transit Center **DEPART**	(B) Plaza Bl. & Highland Av.	(C) Plaza Bl. & Euclid Av.	(D) Cumberland St. & Reo Dr.	(E) Saipan Dr. & Potomac St. **ARRIVE**
—	—	—	5:57a	6:00a
6:29a	6:35a	6:41a	6:47	6:50
7:29	7:35	7:41	7:47	7:50
8:29	8:35	8:41	8:47	8:50
9:29	9:36	9:43	9:49	9:52
10:29	10:36	10:43	10:49	10:52
11:29	11:36	11:43	11:49	11:52
12:29p	**12:36p**	**12:43p**	**12:49p**	**12:52p**
1:29	**1:36**	**1:44**	**1:51**	**1:54**
2:29	**2:36**	**2:44**	**2:51**	**2:54**
3:29	**3:36**	**3:44**	**3:51**	**3:54**
4:29	**4:36**	**4:44**	**4:51**	**4:54**
5:29	**5:36**	**5:43**	**5:49**	**5:52**
6:29	**6:35**	**6:41**	**6:47**	**6:50**
7:29	**7:35**	**7:41**	**7:47**	**7:50**

Paradise Hills ➡ National City

(E) Saipan Dr. & Potomac St. **DEPART**	(C) Plaza Bl. & Euclid Av.	(B) Plaza Bl. & Highland Av.	(A) 8th St. Transit Center **ARRIVE**
6:00a	6:06a	6:10a	6:16a
7:00	7:06	7:10	7:16
7:57	8:04	8:09	8:16
8:57	9:04	9:09	9:16
9:57	10:04	10:09	10:16
10:56	11:04	11:09	11:16
11:56	**12:04p**	**12:09p**	**12:16p**
12:56p	**1:04**	**1:09**	**1:16**
1:56	**2:04**	**2:09**	**2:16**
2:56	**3:04**	**3:09**	**3:16**
3:56	**4:04**	**4:09**	**4:16**
4:56	**5:04**	**5:09**	**5:16**
5:57	**6:04**	**6:09**	**6:16**
6:58	**7:05**	**7:10**	**7:16**

Route 962 – Monday through Friday / *lunes a viernes*

National City ➡ Paradise Hills ➡ Spring Valley

Ⓐ 8th St. Transit Center **DEPART**	Ⓑ Plaza Bl. & Highland Av.	Ⓒ Plaza Bl. & Euclid Av.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓗ Orville St. & Brucker Av. **ARRIVE**
5:26a	5:32a	5:37a	5:44a	5:47a	5:53a
5:56	6:02	6:08	6:15	6:18	6:25
6:12	6:18	6:24	6:31	6:34	6:41
6:27	6:34	6:40	6:48	6:51	6:58
6:42	6:49	6:55	7:03	7:06	7:13
6:57	7:04	7:10	7:18	7:21	7:28
7:12	7:19	7:25	7:33	7:36	7:43
7:27	7:34	7:40	7:48	7:51	7:58
7:42	7:49	7:55	8:03	8:06	8:13
7:57	8:04	8:10	8:18	8:21	8:28
8:12	8:19	8:25	8:33	8:36	8:43
8:27	8:34	8:40	8:48	8:51	8:58
8:42	8:49	8:55	9:03	9:06	9:13
8:59	9:06	9:12	9:20	9:23	9:30
9:14	9:22	9:29	9:37	9:40	9:47
9:29	9:37	9:44	9:52	9:55	10:02
9:44	9:52	9:59	10:07	10:10	10:17
9:59	10:07	10:14	10:22	10:25	10:32
10:14	10:22	10:29	10:37	10:40	10:47
10:29	10:37	10:44	10:52	10:55	11:02
10:44	10:52	10:59	11:07	11:10	11:17
10:59	11:07	11:14	11:22	11:25	11:32
11:14	11:22	11:29	11:37	11:40	11:47
11:29	11:37	11:44	11:52	11:55	**12:02p**
11:44	11:52	11:59	**12:07p**	**12:10p**	**12:17**
11:59	**12:07p**	**12:14p**	**12:22**	**12:25**	**12:32**
12:14p	**12:22**	**12:29**	**12:37**	**12:40**	**12:47**
12:29	**12:37**	**12:44**	**12:52**	**12:55**	**1:02**
12:44	**12:52**	**12:59**	**1:07**	**1:10**	**1:17**
12:59	**1:07**	**1:14**	**1:22**	**1:25**	**1:32**
1:14	**1:22**	**1:30**	**1:38**	**1:41**	**1:49**
1:29	**1:37**	**1:45**	**1:53**	**1:56**	**2:04**
1:44	**1:52**	**2:00**	**2:08**	**2:11**	**2:19**
1:59	**2:07**	**2:15**	**2:23**	**2:26**	**2:34**
2:14	**2:22**	**2:30**	**2:38**	**2:41**	**2:49**
2:29	**2:37**	**2:45**	**2:53**	**2:56**	**3:04**
2:44	**2:52**	**3:00**	**3:08**	**3:11**	**3:19**
2:59	**3:07**	**3:15**	**3:23**	**3:26**	**3:34**
3:14	**3:22**	**3:30**	**3:38**	**3:41**	**3:49**
3:27	**3:35**	**3:43**	**3:51**	**3:54**	**4:02**
3:42	**3:50**	**3:58**	**4:06**	**4:09**	**4:17**
3:57	**4:05**	**4:13**	**4:21**	**4:24**	**4:32**
4:12	**4:20**	**4:28**	**4:36**	**4:39**	**4:47**
4:27	**4:35**	**4:43**	**4:51**	**4:54**	**5:02**
4:42	**4:50**	**4:58**	**5:06**	**5:09**	**5:17**
4:57	**5:05**	**5:13**	**5:21**	**5:24**	**5:32**
5:12	**5:20**	**5:28**	**5:36**	**5:39**	**5:47**
5:27	**5:35**	**5:43**	**5:51**	**5:54**	**6:02**
5:42	**5:50**	**5:57**	**6:05**	**6:08**	**6:15**
5:57	**6:05**	**6:12**	**6:20**	**6:23**	**6:30**
6:27	**6:34**	**6:40**	**6:48**	**6:51**	**6:58**
6:59	**7:06**	**7:12**	**7:20**	**7:23**	**7:30**
7:29	**7:36**	**7:42**	**7:50**	**7:53**	**8:00**
8:14	**8:20**	**8:26**	**8:33**	**8:36**	**8:43**
8:59	**9:05**	**9:10**	**9:17**	**9:20**	**9:26**
9:44	**9:50**	**9:55**	**10:02**	**10:05**	**10:11**
10:29	**10:35**	**10:40**	**10:47**	**10:50**	**10:56**

Spring Valley ➡ Paradise Hills ➡ National City

Ⓗ Orville St. & Brucker Av. **DEPART**	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓒ Plaza Bl. & Euclid Av.	Ⓑ Plaza Bl. & Highland Av.	Ⓐ 8th St. Transit Center **ARRIVE**
5:05a	5:11a	5:15a	5:21a	5:25a	5:32a
5:35	5:41	5:45	5:51	5:55	6:02
6:01	6:08	6:12	6:19	6:23	6:32
6:16	6:23	6:27	6:34	6:38	6:47
6:31	6:38	6:42	6:49	6:53	7:02
6:44	6:51	6:55	7:02	7:06	7:15
6:57	7:04	7:08	7:16	7:21	7:30
7:12	7:19	7:23	7:31	7:36	7:45
7:27	7:34	7:38	7:46	7:51	8:00
7:42	7:49	7:53	8:01	8:06	8:15
7:59	8:06	8:10	8:18	8:23	8:30
8:14	8:21	8:25	8:33	8:38	8:45
8:29	8:36	8:40	8:48	8:53	9:00
8:44	8:51	8:55	9:03	9:08	9:15
8:59	9:06	9:10	9:18	9:23	9:30
9:14	9:21	9:25	9:33	9:38	9:45
9:29	9:36	9:40	9:48	9:53	10:00
9:44	9:51	9:55	10:03	10:08	10:15
9:59	10:06	10:10	10:18	10:23	10:30
10:14	10:21	10:25	10:33	10:38	10:45
10:29	10:36	10:40	10:48	10:53	11:00
10:44	10:51	10:55	11:03	11:08	11:15
10:59	11:06	11:10	11:18	11:23	11:30
11:14	11:21	11:25	11:33	11:38	11:45
11:29	11:36	11:40	11:48	11:53	**12:00p**
11:44	11:51	11:55	**12:03p**	**12:08p**	**12:15**
11:59	**12:06p**	**12:10p**	**12:18**	**12:23**	**12:30**
12:14p	**12:21**	**12:25**	**12:33**	**12:38**	**12:45**
12:29	**12:36**	**12:40**	**12:48**	**12:53**	**1:00**
12:44	**12:51**	**12:55**	**1:03**	**1:08**	**1:15**
12:59	**1:06**	**1:10**	**1:18**	**1:23**	**1:30**
1:14	**1:21**	**1:25**	**1:33**	**1:38**	**1:45**
1:29	**1:36**	**1:40**	**1:48**	**1:53**	**2:00**
1:44	**1:51**	**1:55**	**2:03**	**2:08**	**2:15**
1:59	**2:06**	**2:10**	**2:18**	**2:23**	**2:30**
2:14	**2:22**	**2:26**	**2:34**	**2:40**	**2:48**
2:29	**2:37**	**2:41**	**2:49**	**2:55**	**3:03**
2:44	**2:52**	**2:56**	**3:04**	**3:10**	**3:18**
2:59	**3:07**	**3:11**	**3:19**	**3:25**	**3:33**
3:14	**3:22**	**3:26**	**3:34**	**3:40**	**3:48**
3:29	**3:37**	**3:41**	**3:49**	**3:55**	**4:03**
3:44	**3:52**	**3:56**	**4:04**	**4:10**	**4:18**
3:59	**4:07**	**4:11**	**4:19**	**4:25**	**4:33**
4:14	**4:22**	**4:26**	**4:34**	**4:40**	**4:48**
4:29	**4:37**	**4:41**	**4:49**	**4:55**	**5:03**
4:44	**4:52**	**4:56**	**5:04**	**5:10**	**5:18**
5:01	**5:09**	**5:13**	**5:21**	**5:26**	**5:33**
5:16	**5:24**	**5:28**	**5:36**	**5:41**	**5:48**
5:31	**5:39**	**5:43**	**5:51**	**5:56**	**6:03**
5:46	**5:54**	**5:58**	**6:06**	**6:11**	**6:18**
6:01	**6:09**	**6:13**	**6:21**	**6:26**	**6:33**
6:33	**6:40**	**6:44**	**6:51**	**6:56**	**7:03**
7:04	**7:11**	**7:15**	**7:22**	**7:27**	**7:34**
7:47	**7:54**	**7:58**	**8:05**	**8:10**	**8:17**
8:35	**8:41**	**8:45**	**8:51**	**8:55**	**9:02**
9:20	**9:26**	**9:30**	**9:36**	**9:40**	**9:47**

Route 962 – Saturday / *sábado*

National City ➡ Paradise Hills ➡ Spring Valley

Ⓐ 8th St. Transit Center **DEPART**	Ⓑ Plaza Bl. & Highland Av.	Ⓒ Plaza Bl. & Euclid Av.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓗ Orville St. & Brucker Av. **ARRIVE**
5:44a	5:50a	5:55a	6:02a	6:05a	6:11a
6:44	6:50	6:56	7:03	7:06	7:13
7:14	7:20	7:26	7:33	7:36	7:43
7:44	7:50	7:56	8:04	8:07	8:14
8:14	8:20	8:26	8:34	8:37	8:44
8:44	8:50	8:56	9:04	9:07	9:14
9:14	9:21	9:28	9:36	9:39	9:46
9:44	9:51	9:58	10:06	10:09	10:16
10:14	10:21	10:28	10:36	10:39	10:46
10:44	10:51	10:58	11:06	11:09	11:16
11:14	11:21	11:28	11:36	11:39	11:46
11:44	11:51	11:58	**12:06p**	**12:09p**	**12:16p**
12:14p	**12:21p**	**12:28p**	**12:36**	**12:39**	**12:46**
12:44	**12:51**	**12:58**	**1:06**	**1:09**	**1:16**
1:14	**1:21**	**1:29**	**1:37**	**1:40**	**1:48**
1:44	**1:51**	**1:59**	**2:07**	**2:10**	**2:18**
2:14	**2:21**	**2:29**	**2:37**	**2:40**	**2:48**
2:44	**2:51**	**2:59**	**3:07**	**3:10**	**3:18**
3:14	**3:21**	**3:29**	**3:37**	**3:40**	**3:48**
3:44	**3:51**	**3:59**	**4:07**	**4:10**	**4:18**
4:14	**4:21**	**4:29**	**4:37**	**4:40**	**4:48**
4:44	**4:51**	**4:59**	**5:07**	**5:10**	**5:18**
5:14	**5:21**	**5:29**	**5:37**	**5:40**	**5:48**
5:44	**5:51**	**5:58**	**6:06**	**6:09**	**6:16**
6:14	**6:20**	**6:26**	**6:34**	**6:37**	**6:44**
6:44	**6:50**	**6:56**	**7:04**	**7:07**	**7:14**
7:14	**7:20**	**7:26**	**7:33**	**7:36**	**7:43**
7:59	**8:05**	**8:11**	**8:19**	**8:22**	**8:29**
8:44	**8:50**	**8:56**	**9:03**	**9:06**	**9:13**

Spring Valley ➡ Paradise Hills ➡ National City

Ⓗ Orville St. & Brucker Av. **DEPART**	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓒ Plaza Bl. & Euclid Av.	Ⓑ Plaza Bl. & Highland Av.	Ⓐ 8th St. Transit Center **ARRIVE**
5:34a	5:40a	5:44a	5:50a	5:54a	5:59a
6:18	6:25	6:29	6:36	6:40	6:46
7:01	7:08	7:12	7:19	7:23	7:29
7:31	7:38	7:42	7:49	7:53	7:59
8:00	8:07	8:11	8:19	8:24	8:31
8:30	8:37	8:41	8:49	8:54	9:01
9:00	9:07	9:11	9:19	9:24	9:31
9:30	9:37	9:41	9:49	9:54	10:01
10:00	10:07	10:11	10:19	10:24	10:31
10:30	10:37	10:41	10:49	10:54	11:01
11:00	11:07	11:11	11:19	11:24	11:31
11:30	11:37	11:41	11:49	11:54	**12:01p**
12:00p	**12:07p**	**12:11p**	**12:19p**	**12:24p**	**12:31**
12:30	**12:37**	**12:41**	**12:49**	**12:54**	**1:01**
1:00	**1:07**	**1:11**	**1:19**	**1:24**	**1:31**
1:30	**1:37**	**1:41**	**1:49**	**1:54**	**2:01**
2:00	**2:07**	**2:11**	**2:19**	**2:24**	**2:31**
2:30	**2:37**	**2:41**	**2:49**	**2:54**	**3:01**
3:00	**3:07**	**3:11**	**3:19**	**3:24**	**3:31**
3:30	**3:37**	**3:41**	**3:49**	**3:54**	**4:01**
4:00	**4:07**	**4:11**	**4:19**	**4:24**	**4:31**
4:30	**4:37**	**4:41**	**4:49**	**4:54**	**5:01**
5:00	**5:07**	**5:11**	**5:19**	**5:24**	**5:31**
5:30	**5:37**	**5:41**	**5:49**	**5:54**	**6:01**
6:00	**6:07**	**6:11**	**6:19**	**6:24**	**6:31**
6:32	**6:39**	**6:43**	**6:50**	**6:55**	**7:01**
7:02	**7:09**	**7:13**	**7:20**	**7:25**	**7:31**
7:49	**7:56**	**8:00**	**8:07**	**8:12**	**8:18**
8:36	**8:42**	**8:46**	**8:52**	**8:56**	**9:02**

Route 962 – Sunday / *domingo*

National City ➡ Paradise Hills ➡ Spring Valley

Ⓐ 8th St. Transit Center **DEPART**	Ⓑ Plaza Bl. & Highland Av.	Ⓒ Plaza Bl. & Euclid Av.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓗ Orville St. & Brucker Av. **ARRIVE**
6:44a	6:50a	6:56a	7:03a	7:06a	7:13a
7:14	7:20	7:26	7:33	7:36	7:43
7:44	7:50	7:56	8:04	8:07	8:14
8:14	8:20	8:26	8:34	8:37	8:44
8:44	8:50	8:56	9:04	9:07	9:14
9:14	9:21	9:28	9:36	9:39	9:46
9:44	9:51	9:58	10:06	10:09	10:16
10:14	10:21	10:28	10:36	10:39	10:46
10:44	10:51	10:58	11:06	11:09	11:16
11:14	11:21	11:28	11:36	11:39	11:46
11:44	11:51	11:58	**12:06p**	**12:09p**	**12:16p**
12:14p	**12:21p**	**12:28p**	**12:36**	**12:39**	**12:46**
12:44	**12:51**	**12:58**	**1:06**	**1:09**	**1:16**
1:14	**1:21**	**1:29**	**1:37**	**1:40**	**1:48**
1:44	**1:51**	**1:59**	**2:07**	**2:10**	**2:18**
2:14	**2:21**	**2:29**	**2:37**	**2:40**	**2:48**
2:44	**2:51**	**2:59**	**3:07**	**3:10**	**3:18**
3:14	**3:21**	**3:29**	**3:37**	**3:40**	**3:48**
3:44	**3:51**	**3:59**	**4:07**	**4:10**	**4:18**
4:14	**4:21**	**4:29**	**4:37**	**4:40**	**4:48**
4:44	**4:51**	**4:59**	**5:07**	**5:10**	**5:18**
5:14	**5:21**	**5:29**	**5:37**	**5:40**	**5:48**
5:44	**5:51**	**5:58**	**6:06**	**6:09**	**6:16**
6:14	**6:20**	**6:26**	**6:34**	**6:37**	**6:44**
6:59	**7:05**	**7:11**	**7:19**	**7:22**	**7:29**
7:59	**8:05**	**8:11**	**8:19**	**8:22**	**8:29**

Spring Valley ➡ Paradise Hills ➡ National City

Ⓗ Orville St. & Brucker Av. **DEPART**	Ⓖ Paradise Valley Rd. & Deep Dell Rd.	Ⓕ Paradise Valley Rd. & Woodman St.	Ⓒ Plaza Bl. & Euclid Av.	Ⓑ Plaza Bl. & Highland Av.	Ⓐ 8th St. Transit Center **ARRIVE**
6:18a	6:25a	6:29a	6:36a	6:40a	6:46a
7:01	7:08	7:12	7:19	7:23	7:29
7:31	7:38	7:42	7:49	7:53	7:59
8:00	8:07	8:11	8:19	8:24	8:31
8:30	8:37	8:41	8:49	8:54	9:01
9:00	9:07	9:11	9:19	9:24	9:31
9:30	9:37	9:41	9:49	9:54	10:01
10:00	10:07	10:11	10:19	10:24	10:31
10:30	10:37	10:41	10:49	10:54	11:01
11:00	11:07	11:11	11:19	11:24	11:31
11:30	11:37	11:41	11:49	11:54	**12:01p**
12:00p	**12:07p**	**12:11p**	**12:19p**	**12:24p**	**12:31**
12:30	**12:37**	**12:41**	**12:49**	**12:54**	**1:01**
1:00	**1:07**	**1:11**	**1:19**	**1:24**	**1:31**
1:30	**1:37**	**1:41**	**1:49**	**1:54**	**2:01**
2:00	**2:07**	**2:11**	**2:19**	**2:24**	**2:31**
2:30	**2:37**	**2:41**	**2:49**	**2:54**	**3:01**
3:00	**3:07**	**3:11**	**3:19**	**3:24**	**3:31**
3:30	**3:37**	**3:41**	**3:49**	**3:54**	**4:01**
4:00	**4:07**	**4:11**	**4:19**	**4:24**	**4:31**
4:30	**4:37**	**4:41**	**4:49**	**4:54**	**5:01**
5:00	**5:07**	**5:11**	**5:19**	**5:24**	**5:31**
5:30	**5:37**	**5:41**	**5:49**	**5:54**	**6:01**
6:17	**6:24**	**6:28**	**6:35**	**6:40**	**6:46**
7:02	**7:09**	**7:13**	**7:20**	**7:25**	**7:31**
7:49	**7:56**	**8:00**	**8:07**	**8:12**	**8:18**

A Saturday or Sunday schedule will be operated on the following holidays and observed holidays >>> New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas

Se operará con horario de sábado o domingo durante los siguientes días festivos y feriados observados

Appendix F: Near-Term (Opening Day Year 2022) Without Project AM & PM Synchro Worksheets

Provided on the following page in 11”X17” format.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	161	118	29	199	30	143	33	382	322	54	317	93
Future Volume (veh/h)	161	118	29	199	30	143	33	382	322	54	317	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	187	137	18	216	33	80	35	402	175	62	364	61
Peak Hour Factor	0.86	0.86	0.86	0.92	0.92	0.92	0.95	0.95	0.95	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	218	1111	144	277	577	551	43	752	323	78	1009	167
Arrive On Green	0.13	0.37	0.37	0.09	0.33	0.33	0.03	0.33	0.33	0.05	0.35	0.35
Sat Flow, veh/h	1674	2973	385	3248	1758	1464	1674	2273	978	1674	2866	476
Grp Volume(v), veh/h	187	76	79	216	33	80	35	294	283	62	211	214
Grp Sat Flow(s),veh/h/ln	1674	1670	1688	1624	1758	1464	1674	1670	1581	1674	1670	1672
Q Serve(g_s), s	12.0	3.3	3.4	7.2	1.4	4.0	2.3	15.7	16.1	4.0	10.3	10.5
Cycle Q Clear(g_c), s	12.0	3.3	3.4	7.2	1.4	4.0	2.3	15.7	16.1	4.0	10.3	10.5
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.62	1.00		0.28
Lane Grp Cap(c), veh/h	218	624	631	277	577	551	43	552	523	78	588	588
V/C Ratio(X)	0.86	0.12	0.13	0.78	0.06	0.15	0.82	0.53	0.54	0.79	0.36	0.36
Avail Cap(c_a), veh/h	370	624	631	452	577	551	105	552	523	154	588	588
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	22.6	22.6	49.3	25.3	22.7	53.3	29.9	30.0	51.9	26.4	26.5
Incr Delay (d2), s/veh	9.7	0.4	0.4	1.8	0.2	0.6	12.9	3.6	4.0	6.6	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	1.4	1.4	3.0	0.6	1.5	1.1	6.8	6.6	1.8	4.4	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	23.0	23.0	51.1	25.5	23.3	66.2	33.5	34.0	58.5	28.1	28.2
LnGrp LOS	E	C	C	D	C	C	E	C	C	E	C	C
Approach Vol, veh/h		342			329			612			487	
Approach Delay, s/veh		41.3			41.8			35.6			32.0	
Approach LOS		D			D			D			C	

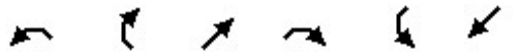
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	41.7	13.1	46.0	6.9	44.0	18.0	41.0
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	10.1	35.5	15.3	41.1	6.9	38.7	24.3	32.1
Max Q Clear Time (g_c+I1), s	6.0	18.1	9.2	5.4	4.3	12.5	14.0	6.0
Green Ext Time (p_c), s	0.0	2.2	0.2	0.7	0.0	1.7	0.4	0.3

Intersection Summary	
HCM 6th Ctrl Delay	36.9
HCM 6th LOS	D

Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	187	171	216	33	155	35	741	62	471
v/c Ratio	0.71	0.14	0.63	0.06	0.22	0.38	0.65	0.51	0.38
Control Delay	60.6	21.8	58.2	31.2	4.4	65.5	28.9	66.6	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	60.6	21.8	58.2	31.2	4.6	65.5	28.9	66.6	27.2
Queue Length 50th (ft)	135	37	81	18	0	26	189	45	131
Queue Length 95th (ft)	196	63	121	46	42	62	273	90	180
Internal Link Dist (ft)		411		232			590		334
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	371	1235	454	568	716	105	1138	154	1250
Starvation Cap Reductn	0	0	0	0	162	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.14	0.48	0.06	0.28	0.33	0.65	0.40	0.38

Intersection Summary

Min green cannot be less than 2 seconds, (Phase 6).



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	460	228	467	459
Future Volume (vph)	0	0	460	228	467	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	479	238	486	478
RTOR Reduction (vph)	0	0	0	152	0	0
Lane Group Flow (vph)	0	0	479	86	486	478
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			13.5	13.5	11.4	37.3
Effective Green, g (s)			13.5	13.5	11.4	37.3
Actuated g/C Ratio			0.36	0.36	0.31	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1268	567	1039	3505
v/s Ratio Prot			c0.14	0.05	c0.14	0.14
v/s Ratio Perm						
v/c Ratio			0.38	0.15	0.47	0.14
Uniform Delay, d1			8.8	8.0	10.5	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.2	0.1	0.3	0.0
Delay (s)			9.0	8.2	10.8	0.0
Level of Service			A	A	B	A
Approach Delay (s)	0.0		8.7			5.5
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.3	Sum of lost time (s)	12.4
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	479	238	486	478
v/c Ratio	0.39	0.34	0.47	0.14
Control Delay	9.9	3.0	13.4	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.9	3.0	13.4	0.1
Queue Length 50th (ft)	35	0	35	0
Queue Length 95th (ft)	68	27	103	0
Internal Link Dist (ft)	334			699
Turn Bay Length (ft)		275	450	
Base Capacity (vph)	3342	1506	3400	3505
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.16	0.14	0.14

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	36	261	0	589	74	0
Future Volume (veh/h)	36	261	0	589	74	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	41	214	0	633	99	0
Peak Hour Factor	0.87	0.87	0.93	0.93	0.75	0.75
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	374	333	0	1216	1216	0
Arrive On Green	0.22	0.22	0.00	0.36	0.36	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	41	214	0	633	99	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	0.6	3.9	0.0	4.5	0.6	0.0
Cycle Q Clear(g_c), s	0.6	3.9	0.0	4.5	0.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	374	333	0	1216	1216	0
V/C Ratio(X)	0.11	0.64	0.00	0.52	0.08	0.00
Avail Cap(c_a), veh/h	1934	1721	0	4960	5180	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.4	10.7	0.0	7.6	6.3	0.0
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	0.0	0.8	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	12.7	0.0	7.9	6.3	0.0
LnGrp LOS	A	B	A	A	A	A
Approach Vol, veh/h	255			633	99	
Approach Delay, s/veh	12.2			7.9	6.3	
Approach LOS	B			A	A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		17.4				17.4	12.9
Change Period (Y+Rc), s		6.4				* 6.4	6.1
Max Green Setting (Gmax), s		47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s		2.6				6.5	5.9
Green Ext Time (p_c), s		0.6				4.5	0.8

Intersection Summary		
HCM 6th Ctrl Delay	8.9	
HCM 6th LOS	A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	41	300	633	99
v/c Ratio	0.11	0.53	0.45	0.07
Control Delay	12.9	6.2	8.1	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.9	6.2	8.1	6.2
Queue Length 50th (ft)	5	0	34	4
Queue Length 95th (ft)	26	43	71	11
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1664	1504	3505	3505
Starvation Cap Reductn	0	0	111	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.20	0.19	0.03

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	76	94	445	68	0	153	124	322	0	0	711	177
Future Volume (vph)	76	94	445	68	0	153	124	322	0	0	711	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1463	3221		1485	3221	3320			3320	1467
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1463	3221		1485	3221	3320			3320	1467
Peak-hour factor, PHF	0.78	0.78	0.78	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	97	121	571	72	0	163	133	346	0	0	765	190
RTOR Reduction (vph)	0	0	512	0	0	63	0	0	0	0	0	71
Lane Group Flow (vph)	97	121	59	72	0	100	133	346	0	0	765	119
Confl. Peds. (#/hr)			1						1			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	16.8	16.8	10.4	9.5		68.2	11.9	40.0			36.3	45.8
Effective Green, g (s)	16.8	16.8	10.4	9.5		61.4	11.9	40.0			36.3	45.8
Actuated g/C Ratio	0.17	0.17	0.10	0.09		0.61	0.12	0.40			0.36	0.46
Clearance Time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	277	292	151	304		908	381	1322			1200	669
v/s Ratio Prot	0.06	c0.07		c0.02		0.01	c0.04	c0.10			c0.23	0.02
v/s Ratio Perm			0.04			0.05						0.06
v/c Ratio	0.35	0.41	0.39	0.24		0.11	0.35	0.26			0.64	0.18
Uniform Delay, d1	37.0	37.4	42.0	42.1		8.1	40.7	20.3			26.6	16.2
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	0.8	1.0	1.7	0.4		0.1	0.6	0.1			1.1	0.1
Delay (s)	37.7	38.4	43.7	42.5		8.2	41.2	20.4			27.7	16.3
Level of Service	D	D	D	D		A	D	C			C	B
Approach Delay (s)		42.2			18.7			26.2			25.4	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.4	Sum of lost time (s)	25.9
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	97	121	571	72	163	133	346	765	190
v/c Ratio	0.35	0.42	0.86	0.24	0.15	0.35	0.26	0.64	0.25
Control Delay	39.4	40.7	17.9	49.3	2.0	47.2	26.3	32.3	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	40.7	17.9	49.3	2.0	47.2	26.3	32.3	7.2
Queue Length 50th (ft)	52	66	0	20	0	36	62	188	15
Queue Length 95th (ft)	88	107	23	58	33	92	196	415	85
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	809	852	817	981	1087	1014	1521	1315	1034
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.70	0.07	0.15	0.13	0.23	0.58	0.18

Intersection Summary

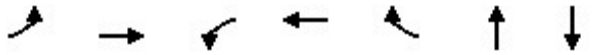
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	2	10	739	23	3	829	14	16	3	6	10	4
Future Volume (vph)	2	10	739	23	3	829	14	16	3	6	10	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		1.00			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.97			0.90
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1660	3303		1660	3320	1437		1631			1533
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (perm)		1660	3303		1660	3320	1437		1631			1533
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.94	0.94	0.94	0.63	0.63	0.63	0.89	0.89
Adj. Flow (vph)	2	12	880	27	3	882	15	25	5	10	11	4
RTOR Reduction (vph)	0	0	1	0	0	0	6	0	0	0	0	44
Lane Group Flow (vph)	0	14	906	0	3	882	9	0	40	0	0	20
Confl. Peds. (#/hr)				5			6			4		
Confl. Bikes (#/hr)				1								
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		1.0	46.7		0.7	46.4	46.4		7.0			8.2
Effective Green, g (s)		1.0	46.7		0.7	46.4	46.4		7.0			8.2
Actuated g/C Ratio		0.01	0.59		0.01	0.59	0.59		0.09			0.10
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		20	1947		14	1945	841		144			158
v/s Ratio Prot		c0.01	c0.27		0.00	0.27			c0.02			c0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.70	0.47		0.21	0.45	0.01		0.28			0.13
Uniform Delay, d1		39.0	9.2		39.0	9.2	6.8		33.7			32.2
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		71.8	0.8		7.6	0.8	0.0		1.1			0.4
Delay (s)		110.8	10.0		46.5	10.0	6.9		34.8			32.6
Level of Service		F	A		D	B	A		C			C
Approach Delay (s)			11.5			10.1			34.8			32.6
Approach LOS			B			B			C			C

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	79.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	44
Future Volume (vph)	44
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.89
Adj. Flow (vph)	49
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	7
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

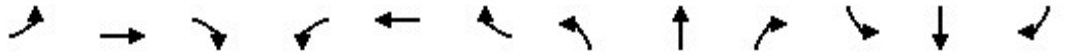
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	14	907	3	882	15	40	64
v/c Ratio	0.09	0.42	0.02	0.41	0.02	0.18	0.26
Control Delay	40.6	15.6	42.0	16.0	0.0	31.8	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	15.6	42.0	16.0	0.0	31.8	15.5
Queue Length 50th (ft)	5	91	1	88	0	15	6
Queue Length 95th (ft)	30	#411	13	#489	0	37	43
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	456	2144	142	2141	960	712	738
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.42	0.02	0.41	0.02	0.06	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	424	155	47	843	90	325	200	73	79	130	243
Future Volume (veh/h)	155	424	155	47	843	90	325	200	73	79	130	243
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	168	461	86	51	906	82	349	215	40	84	138	203
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	237	1555	878	101	1897	171	415	832	410	182	592	369
Arrive On Green	0.07	0.47	0.47	0.03	0.42	0.42	0.13	0.25	0.25	0.06	0.18	0.18
Sat Flow, veh/h	3248	3340	1477	3248	4480	404	3248	3340	1460	3248	3340	1464
Grp Volume(v), veh/h	168	461	86	51	646	342	349	215	40	84	138	203
Grp Sat Flow(s),veh/h/ln	1624	1670	1477	1624	1600	1684	1624	1670	1460	1624	1670	1464
Q Serve(g_s), s	4.8	8.2	2.4	1.5	13.9	14.0	10.0	4.9	1.9	2.4	3.4	11.5
Cycle Q Clear(g_c), s	4.8	8.2	2.4	1.5	13.9	14.0	10.0	4.9	1.9	2.4	3.4	11.5
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	237	1555	878	101	1355	713	415	832	410	182	592	369
V/C Ratio(X)	0.71	0.30	0.10	0.51	0.48	0.48	0.84	0.26	0.10	0.46	0.23	0.55
Avail Cap(c_a), veh/h	419	1555	878	419	1355	713	453	1579	737	453	1579	801
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	15.8	8.4	45.5	19.9	19.9	40.6	28.7	25.4	43.6	33.7	31.1
Incr Delay (d2), s/veh	3.9	0.5	0.2	3.9	1.2	2.3	12.5	0.2	0.1	1.8	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.1	0.8	0.6	5.2	5.8	4.7	2.0	0.7	1.0	1.4	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	16.3	8.6	49.4	21.1	22.2	53.1	28.9	25.5	45.4	33.9	32.4
LnGrp LOS	D	B	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		715			1039			604			425	
Approach Delay, s/veh		22.6			22.8			42.7			35.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	49.4	16.5	22.2	11.3	45.4	9.7	29.1
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	3.5	10.2	12.0	13.5	6.8	16.0	4.4	6.9
Green Ext Time (p_c), s	0.1	3.6	0.2	1.6	0.2	7.3	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	29.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	461	168	51	1003	349	215	78	84	138	259
v/c Ratio	0.49	0.28	0.16	0.21	0.48	0.74	0.28	0.15	0.30	0.29	0.61
Control Delay	47.9	18.5	2.4	47.7	22.5	51.9	33.2	5.6	47.4	37.7	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	18.5	2.4	47.7	22.5	51.9	33.2	5.6	47.4	37.7	28.0
Queue Length 50th (ft)	47	81	0	14	141	100	59	0	24	40	103
Queue Length 95th (ft)	103	188	35	41	290	#238	95	28	59	67	168
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	438	1669	1019	438	2107	474	1658	604	474	1658	468
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.28	0.16	0.12	0.48	0.74	0.13	0.13	0.18	0.08	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	185	96	52	447	145	286	45	592	278	88	687	267
Future Volume (veh/h)	185	96	52	447	145	286	45	592	278	88	687	267
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	210	109	31	481	156	205	48	630	209	96	747	224
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	236	619	170	537	463	497	61	953	316	117	1060	318
Arrive On Green	0.14	0.24	0.24	0.17	0.26	0.26	0.04	0.39	0.39	0.07	0.42	0.42
Sat Flow, veh/h	1674	2587	710	3248	1758	1490	1674	2464	816	1674	2518	755
Grp Volume(v), veh/h	210	69	71	481	156	205	48	427	412	96	495	476
Grp Sat Flow(s),veh/h/ln	1674	1670	1627	1624	1758	1490	1674	1670	1610	1674	1670	1603
Q Serve(g_s), s	16.0	4.3	4.5	18.9	9.3	13.8	3.7	27.4	27.4	7.4	31.8	31.8
Cycle Q Clear(g_c), s	16.0	4.3	4.5	18.9	9.3	13.8	3.7	27.4	27.4	7.4	31.8	31.8
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.51	1.00		0.47
Lane Grp Cap(c), veh/h	236	400	389	537	463	497	61	646	623	117	703	675
V/C Ratio(X)	0.89	0.17	0.18	0.90	0.34	0.41	0.79	0.66	0.66	0.82	0.70	0.70
Avail Cap(c_a), veh/h	326	400	389	682	463	497	115	646	623	192	703	675
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	39.2	39.3	53.2	38.7	33.5	62.2	32.8	32.8	59.6	31.0	31.0
Incr Delay (d2), s/veh	19.4	0.9	1.0	10.8	2.0	2.5	8.4	5.2	5.5	5.2	5.9	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	1.9	1.9	8.5	4.3	5.4	1.7	12.0	11.6	3.3	13.8	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	40.2	40.4	63.9	40.7	36.0	70.5	38.0	38.3	64.9	36.9	37.1
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		350			842			887			1067	
Approach Delay, s/veh		60.7			52.8			39.9			39.5	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	55.6	25.2	36.0	8.8	60.0	22.0	39.1
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	14.9	48.7	27.3	31.1	8.9	54.7	25.3	33.1
Max Q Clear Time (g_c+I1), s	9.4	29.4	20.9	6.5	5.7	33.8	18.0	15.8
Green Ext Time (p_c), s	0.0	3.6	0.6	0.6	0.0	4.4	0.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	210	168	481	156	308	48	926	96	1037
v/c Ratio	0.79	0.20	0.84	0.34	0.46	0.49	0.72	0.65	0.73
Control Delay	75.2	28.1	67.3	44.9	18.6	80.3	37.9	80.4	35.6
Queue Delay	0.0	0.0	2.5	1.9	2.1	0.0	0.0	0.0	28.2
Total Delay	75.2	28.1	69.7	46.8	20.7	80.3	37.9	80.4	63.8
Queue Length 50th (ft)	179	40	212	114	104	42	341	83	388
Queue Length 95th (ft)	263	73	277	188	192	87	456	146	502
Internal Link Dist (ft)		411		232			590		334
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	333	821	698	464	715	117	1286	196	1427
Starvation Cap Reductn	0	0	115	188	268	0	0	0	435
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.20	0.83	0.57	0.69	0.41	0.72	0.49	1.05

Intersection Summary

Min green cannot be less than 2 seconds, (Phase 6).

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	836	229	572	1062
Future Volume (vph)	0	0	836	229	572	1062
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.97	0.97	0.91	0.91
Adj. Flow (vph)	0	0	862	236	629	1167
RTOR Reduction (vph)	0	0	0	135	0	0
Lane Group Flow (vph)	0	0	862	101	629	1167
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			21.0	21.0	16.9	50.3
Effective Green, g (s)			21.0	21.0	16.9	50.3
Actuated g/C Ratio			0.42	0.42	0.34	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1463	654	1142	3505
v/s Ratio Prot			c0.25	0.06	c0.19	0.33
v/s Ratio Perm						
v/c Ratio			0.59	0.16	0.55	0.33
Uniform Delay, d1			11.3	9.1	13.6	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	0.6	0.1
Delay (s)			11.9	9.2	14.2	0.1
Level of Service			B	A	B	A
Approach Delay (s)	0.0		11.4			5.0
Approach LOS	A		B			A

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	50.3	Sum of lost time (s)	12.4
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	862	236	629	1167
v/c Ratio	0.60	0.30	0.55	0.33
Control Delay	13.9	3.1	16.3	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.9	3.1	16.3	0.3
Queue Length 50th (ft)	95	1	73	0
Queue Length 95th (ft)	176	35	143	0
Internal Link Dist (ft)	334			699
Turn Bay Length (ft)		275	450	
Base Capacity (vph)	2898	1336	3339	3505
Starvation Cap Reductn	34	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.18	0.19	0.33

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	138	780	0	450	98	0
Future Volume (veh/h)	138	780	0	450	98	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	152	775	0	495	124	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.79	0.79
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	926	824	0	761	761	0
Arrive On Green	0.55	0.55	0.00	0.23	0.23	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	152	775	0	495	124	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	2.5	27.7	0.0	7.7	1.7	0.0
Cycle Q Clear(g_c), s	2.5	27.7	0.0	7.7	1.7	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	926	824	0	761	761	0
V/C Ratio(X)	0.16	0.94	0.00	0.65	0.16	0.00
Avail Cap(c_a), veh/h	1025	912	0	2629	2745	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.3	11.9	0.0	20.0	17.7	0.0
Incr Delay (d2), s/veh	0.1	16.3	0.0	0.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	10.2	0.0	2.7	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.4	28.2	0.0	20.9	17.8	0.0
LnGrp LOS	A	C	A	C	B	A
Approach Vol, veh/h	927			495	124	
Approach Delay, s/veh	24.6			20.9	17.8	
Approach LOS	C			C	B	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	19.4				19.4	37.7
Change Period (Y+Rc), s	6.4				* 6.4	6.1
Max Green Setting (Gmax), s	47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s	3.7				9.7	29.7
Green Ext Time (p_c), s	0.7				3.4	2.0

Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	152	857	495	124
v/c Ratio	0.26	0.81	0.44	0.12
Control Delay	10.7	8.9	12.9	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.7	8.9	12.9	11.7
Queue Length 50th (ft)	18	7	32	7
Queue Length 95th (ft)	67	94	119	30
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1524	1467	3287	3282
Starvation Cap Reductn	0	0	81	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.58	0.15	0.04

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	264	181	639	127	0	362	285	568	0	0	1009	213
Future Volume (vph)	264	181	639	127	0	362	285	568	0	0	1009	213
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	278	191	673	134	0	381	300	598	0	0	1062	224
RTOR Reduction (vph)	0	0	455	0	0	114	0	0	0	0	0	65
Lane Group Flow (vph)	278	191	218	134	0	267	300	598	0	0	1062	159
Confl. Peds. (#/hr)			1									9
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	27.8	27.8	24.1	11.3		82.0	17.8	33.7			39.9	51.2
Effective Green, g (s)	27.8	27.8	24.1	11.3		75.2	17.8	33.7			39.9	51.2
Actuated g/C Ratio	0.23	0.23	0.20	0.09		0.61	0.15	0.27			0.33	0.42
Clearance Time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	376	396	287	296		910	467	911			1079	609
v/s Ratio Prot	c0.17	0.11		c0.04		0.04	0.09	0.18			c0.32	0.02
v/s Ratio Perm			c0.15			0.14						0.08
v/c Ratio	0.74	0.48	0.76	0.45		0.29	0.64	0.66			0.98	0.26
Uniform Delay, d1	44.1	41.2	46.6	52.8		11.2	49.4	39.4			41.1	23.4
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	7.4	0.9	11.2	1.1		0.2	3.0	1.7			23.4	0.2
Delay (s)	51.5	42.1	57.8	53.9		11.4	52.5	41.1			64.5	23.6
Level of Service	D	D	E	D		B	D	D			E	C
Approach Delay (s)		53.7			22.4			44.9			57.4	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	122.7	Sum of lost time (s)	25.9
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	278	191	673	134	381	300	598	1062	224
v/c Ratio	0.74	0.48	0.91	0.45	0.35	0.65	0.66	0.99	0.33
Control Delay	57.1	45.8	26.6	61.3	3.6	58.1	45.5	67.2	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	45.8	26.6	61.3	3.6	58.1	45.5	67.2	13.4
Queue Length 50th (ft)	201	129	77	51	21	113	217	419	48
Queue Length 95th (ft)	330	222	#403	103	88	197	358	#831	144
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	659	694	752	799	1085	826	1239	1075	897
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.28	0.89	0.17	0.35	0.36	0.48	0.99	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

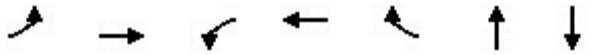
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	31	1206	27	15	1075	22	25	5	15	43	6
Future Volume (vph)	7	31	1206	27	15	1075	22	25	5	15	43	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		0.99			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.95			0.92
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1660	3308		1660	3320	1446		1615			1569
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (perm)		1660	3308		1660	3320	1446		1615			1569
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.95	0.95	0.95	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	7	32	1243	28	16	1132	23	32	6	19	54	8
RTOR Reduction (vph)	0	0	1	0	0	0	11	0	0	0	0	46
Lane Group Flow (vph)	0	39	1270	0	16	1132	12	0	57	0	0	98
Confl. Peds. (#/hr)				2			3			5		
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		3.1	41.9		0.7	39.5	39.5		7.5			12.1
Effective Green, g (s)		3.1	41.9		0.7	39.5	39.5		7.5			12.1
Actuated g/C Ratio		0.04	0.53		0.01	0.50	0.50		0.10			0.15
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		65	1758		14	1664	724		153			240
v/s Ratio Prot		c0.02	c0.38		0.01	0.34			c0.04			c0.06
v/s Ratio Perm							0.01					
v/c Ratio		0.60	0.72		1.14	0.68	0.02		0.37			0.41
Uniform Delay, d1		37.2	14.0		39.0	14.9	9.9		33.4			30.1
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		14.0	2.6		291.3	2.3	0.0		1.5			1.1
Delay (s)		51.3	16.6		330.3	17.1	9.9		35.0			31.3
Level of Service		D	B		F	B	A		C			C
Approach Delay (s)			17.7			21.3			35.0			31.3
Approach LOS			B			C			C			C

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	16.6
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	65
Future Volume (vph)	65
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.79
Adj. Flow (vph)	82
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

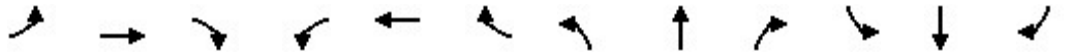
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	39	1271	16	1132	23	57	144
v/c Ratio	0.23	0.68	0.12	0.66	0.03	0.25	0.48
Control Delay	40.4	20.4	43.5	23.6	0.0	32.6	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	20.4	43.5	23.6	0.0	32.6	24.4
Queue Length 50th (ft)	15	179	6	149	0	21	33
Queue Length 95th (ft)	65	#805	36	#742	0	62	92
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	454	1861	141	1723	802	700	755
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.68	0.11	0.66	0.03	0.08	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	965	368	71	814	91	417	323	150	187	285	364
Future Volume (veh/h)	291	965	368	71	814	91	417	323	150	187	285	364
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	310	1027	202	76	866	81	453	351	105	199	303	331
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	355	1437	803	123	1600	149	384	949	472	260	821	522
Arrive On Green	0.11	0.43	0.43	0.04	0.36	0.36	0.12	0.28	0.28	0.08	0.25	0.25
Sat Flow, veh/h	3248	3340	1456	3248	4460	415	3248	3340	1465	3248	3340	1461
Grp Volume(v), veh/h	310	1027	202	76	620	327	453	351	105	199	303	331
Grp Sat Flow(s),veh/h/ln	1624	1670	1456	1624	1600	1676	1624	1670	1465	1624	1670	1461
Q Serve(g_s), s	10.6	28.5	8.2	2.6	17.4	17.5	13.3	9.5	5.9	6.8	8.5	21.3
Cycle Q Clear(g_c), s	10.6	28.5	8.2	2.6	17.4	17.5	13.3	9.5	5.9	6.8	8.5	21.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	1437	803	123	1148	602	384	949	472	260	821	522
V/C Ratio(X)	0.87	0.71	0.25	0.62	0.54	0.54	1.18	0.37	0.22	0.77	0.37	0.63
Avail Cap(c_a), veh/h	355	1437	803	355	1148	602	384	1338	643	384	1338	748
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	26.4	13.3	53.4	28.7	28.7	49.6	32.2	27.9	50.8	35.2	30.3
Incr Delay (d2), s/veh	20.6	3.1	0.8	5.0	1.8	3.5	105.1	0.2	0.2	5.3	0.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	11.7	2.8	1.1	6.9	7.5	11.0	3.9	2.1	2.9	3.5	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	29.4	14.1	58.4	30.5	32.2	154.7	32.5	28.1	56.1	35.5	31.5
LnGrp LOS	E	C	B	E	C	C	F	C	C	E	D	C
Approach Vol, veh/h		1539			1023			909			833	
Approach Delay, s/veh		35.6			33.2			92.9			38.8	
Approach LOS		D			C			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	53.4	17.6	33.0	16.6	45.4	13.3	37.3
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	4.6	30.5	15.3	23.3	12.6	19.5	8.8	11.5
Green Ext Time (p_c), s	0.1	5.5	0.0	3.2	0.0	6.5	0.3	2.9

Intersection Summary	
HCM 6th Ctrl Delay	47.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	310	1027	391	76	963	453	351	163	199	303	387
v/c Ratio	0.76	0.66	0.40	0.30	0.49	1.02	0.52	0.35	0.55	0.52	0.77
Control Delay	57.8	27.2	6.0	50.0	25.1	94.0	39.8	19.0	51.1	41.2	36.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	27.2	6.0	50.0	25.1	94.0	39.8	19.0	51.1	41.2	36.4
Queue Length 50th (ft)	97	252	34	23	156	148	108	52	61	95	186
Queue Length 95th (ft)	#212	484	140	55	276	#335	155	100	119	134	282
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	410	1547	988	410	1970	443	1549	537	443	1549	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.66	0.40	0.19	0.49	1.02	0.23	0.30	0.45	0.20	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix G: Near-Term (Opening Day Year 2022) With Project AM & PM Synchro Worksheets

Provided on the following page in 11”X17” format.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWU	SWL	SWT
Lane Configurations												
Traffic Volume (veh/h)	163	118	29	199	30	152	33	386	322	22	54	321
Future Volume (veh/h)	163	118	29	199	30	152	33	386	322	22	54	321
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758		1758	1758
Adj Flow Rate, veh/h	190	137	18	216	33	90	35	406	175		62	369
Peak Hour Factor	0.86	0.86	0.86	0.92	0.92	0.92	0.95	0.95	0.95		0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3		3	3
Cap, veh/h	167	868	112	270	484	402	43	965	411		79	1270
Arrive On Green	0.10	0.29	0.29	0.08	0.28	0.28	0.03	0.42	0.42		0.05	0.44
Sat Flow, veh/h	1674	2973	384	3248	1758	1463	1674	2281	971		1674	2857
Grp Volume(v), veh/h	190	76	79	216	33	90	35	296	285		62	214
Grp Sat Flow(s),veh/h/ln	1674	1670	1688	1624	1758	1463	1674	1670	1582		1674	1670
Q Serve(g_s), s	11.6	3.9	4.0	7.6	1.6	5.5	2.4	14.4	14.7		4.3	9.5
Cycle Q Clear(g_c), s	11.6	3.9	4.0	7.6	1.6	5.5	2.4	14.4	14.7		4.3	9.5
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.61		1.00	
Lane Grp Cap(c), veh/h	167	488	493	270	484	402	43	707	670		79	742
V/C Ratio(X)	1.14	0.16	0.16	0.80	0.07	0.22	0.81	0.42	0.43		0.79	0.29
Avail Cap(c_a), veh/h	167	488	493	307	484	402	96	707	670		358	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	52.3	30.5	30.6	52.4	31.1	32.6	56.4	23.5	23.6		54.8	20.6
Incr Delay (d2), s/veh	111.5	0.7	0.7	10.9	0.3	1.3	12.6	1.8	2.0		6.4	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	1.7	1.8	3.5	0.7	2.1	1.2	6.0	5.8		1.9	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.8	31.2	31.3	63.3	31.4	33.8	68.9	25.3	25.6		61.2	21.6
LnGrp LOS	F	C	C	E	C	C	E	C	C		E	C
Approach Vol, veh/h		345			339			616				494
Approach Delay, s/veh		104.3			52.4			27.9				26.6
Approach LOS		F			D			C				C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	54.5	13.3	38.9	7.1	57.0	15.3	36.9
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	24.9	33.5	11.0	32.6	6.7	51.7	11.6	32.0
Max Q Clear Time (g_c+I1), s	6.3	16.7	9.6	6.0	4.4	11.7	13.6	7.5
Green Ext Time (p_c), s	0.1	2.2	0.1	0.7	0.0	1.8	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	46.8
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.

Movement	SWR
Lane Configurations	
Traffic Volume (veh/h)	95
Future Volume (veh/h)	95
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1758
Adj Flow Rate, veh/h	63
Peak Hour Factor	0.87
Percent Heavy Veh, %	3
Cap, veh/h	215
Arrive On Green	0.44
Sat Flow, veh/h	483
Grp Volume(v), veh/h	218
Grp Sat Flow(s),veh/h/ln	1671
Q Serve(g_s), s	9.7
Cycle Q Clear(g_c), s	9.7
Prop In Lane	0.29
Lane Grp Cap(c), veh/h	743
V/C Ratio(X)	0.29
Avail Cap(c_a), veh/h	743
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	20.6
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	4.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	21.6
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

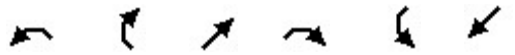
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	190	171	216	33	165	35	745	86	478
v/c Ratio	1.12	0.18	0.73	0.07	0.31	0.40	0.72	1.41	0.30
Control Delay	155.5	28.9	68.6	33.5	6.8	68.3	34.2	294.0	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Total Delay	155.5	28.9	68.6	33.5	7.2	68.3	34.2	294.0	19.4
Queue Length 50th (ft)	~170	45	85	19	0	27	213	~89	115
Queue Length 95th (ft)	#299	71	#127	46	53	62	286	#189	150
Internal Link Dist (ft)		411		232			590		121
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	169	956	311	492	531	97	1031	61	1601
Starvation Cap Reductn	0	0	0	0	122	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.18	0.69	0.07	0.40	0.36	0.72	1.41	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Min green cannot be less than 2 seconds, (Phase 6).



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	483	241	467	486
Future Volume (vph)	0	0	483	241	467	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	503	251	486	506
RTOR Reduction (vph)	0	0	0	158	0	0
Lane Group Flow (vph)	0	0	503	93	486	506
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			14.0	14.0	11.5	37.9
Effective Green, g (s)			14.0	14.0	11.5	37.9
Actuated g/C Ratio			0.37	0.37	0.30	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1294	579	1031	3505
v/s Ratio Prot			c0.14	0.06	c0.14	0.14
v/s Ratio Perm						
v/c Ratio			0.39	0.16	0.47	0.14
Uniform Delay, d1			8.8	8.0	10.7	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.2	0.1	0.3	0.0
Delay (s)			9.0	8.1	11.1	0.0
Level of Service			A	A	B	A
Approach Delay (s)	0.0		8.7			5.4
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	503	251	486	506
v/c Ratio	0.40	0.35	0.47	0.14
Control Delay	10.0	3.0	13.6	0.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.0	3.0	13.6	0.1
Queue Length 50th (ft)	37	0	38	0
Queue Length 95th (ft)	71	28	103	0
Internal Link Dist (ft)	133			699
Turn Bay Length (ft)			450	
Base Capacity (vph)	3342	1507	3400	3505
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.15	0.17	0.14	0.14

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	36	270	0	589	74	0
Future Volume (veh/h)	36	270	0	589	74	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	41	224	0	633	99	0
Peak Hour Factor	0.87	0.87	0.93	0.93	0.75	0.75
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	385	342	0	1209	1209	0
Arrive On Green	0.23	0.23	0.00	0.36	0.36	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	41	224	0	633	99	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	0.6	4.2	0.0	4.6	0.6	0.0
Cycle Q Clear(g_c), s	0.6	4.2	0.0	4.6	0.6	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	385	342	0	1209	1209	0
V/C Ratio(X)	0.11	0.65	0.00	0.52	0.08	0.00
Avail Cap(c_a), veh/h	1913	1702	0	4907	5125	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.3	10.7	0.0	7.7	6.4	0.0
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.1	0.0	0.9	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	12.8	0.0	8.0	6.5	0.0
LnGrp LOS	A	B	A	A	A	A
Approach Vol, veh/h	265			633	99	
Approach Delay, s/veh	12.3			8.0	6.5	
Approach LOS	B			A	A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		17.5				17.5	13.1
Change Period (Y+Rc), s		6.4				* 6.4	6.1
Max Green Setting (Gmax), s		47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s		2.6				6.6	6.2
Green Ext Time (p_c), s		0.6				4.5	0.9

Intersection Summary		
HCM 6th Ctrl Delay		9.0
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	41	310	633	99
v/c Ratio	0.11	0.53	0.46	0.07
Control Delay	12.9	6.3	8.1	6.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.9	6.3	8.1	6.2
Queue Length 50th (ft)	5	0	34	4
Queue Length 95th (ft)	26	43	72	11
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1664	1504	3505	3505
Starvation Cap Reductn	0	0	110	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.21	0.19	0.03

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	89	94	445	68	0	157	137	333	0	0	722	177
Future Volume (vph)	89	94	445	68	0	157	137	333	0	0	722	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1463	3221		1485	3221	3320			3320	1466
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1463	3221		1485	3221	3320			3320	1466
Peak-hour factor, PHF	0.78	0.78	0.78	0.94	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	121	571	72	0	167	147	358	0	0	776	190
RTOR Reduction (vph)	0	0	512	0	0	64	0	0	0	0	0	69
Lane Group Flow (vph)	114	121	59	72	0	103	147	358	0	0	776	121
Confl. Peds. (#/hr)			1						1			5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	16.9	16.9	10.5	9.5		70.0	12.2	41.5			37.6	47.1
Effective Green, g (s)	16.9	16.9	10.5	9.5		63.2	12.2	41.5			37.6	47.1
Actuated g/C Ratio	0.17	0.17	0.10	0.09		0.62	0.12	0.41			0.37	0.46
Clearance Time (s)	7.1	7.1	4.0	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	274	289	150	299		919	384	1349			1222	676
v/s Ratio Prot	0.07	c0.07		c0.02		0.01	c0.05	c0.11			c0.23	0.02
v/s Ratio Perm			0.04			0.06						0.07
v/c Ratio	0.42	0.42	0.39	0.24		0.11	0.38	0.27			0.64	0.18
Uniform Delay, d1	38.2	38.2	42.8	43.0		8.0	41.5	20.2			26.6	16.1
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	1.0	1.0	1.7	0.4		0.1	0.6	0.1			1.1	0.1
Delay (s)	39.2	39.2	44.5	43.4		8.0	42.1	20.3			27.7	16.3
Level of Service	D	D	D	D		A	D	C			C	B
Approach Delay (s)		43.0			18.7			26.6			25.4	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	102.1	Sum of lost time (s)	25.9
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	114	121	571	72	167	147	358	776	190
v/c Ratio	0.42	0.42	0.86	0.24	0.15	0.39	0.27	0.64	0.25
Control Delay	41.6	41.4	18.0	49.8	2.0	47.9	26.3	32.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	41.4	18.0	49.8	2.0	47.9	26.3	32.3	7.4
Queue Length 50th (ft)	63	67	0	20	0	41	64	192	16
Queue Length 95th (ft)	103	107	23	58	33	101	203	426	88
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	795	837	812	964	1094	997	1501	1292	1035
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.14	0.70	0.07	0.15	0.15	0.24	0.60	0.18

Intersection Summary

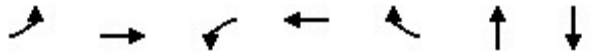
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	7	12	743	23	3	833	14	16	3	6	10	4
Future Volume (vph)	7	12	743	23	3	833	14	16	3	6	10	4
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		1.00			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.97			0.90
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (prot)		1660	3303		1660	3320	1437		1631			1531
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.99
Satd. Flow (perm)		1660	3303		1660	3320	1437		1631			1531
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.94	0.94	0.94	0.63	0.63	0.63	0.89	0.89
Adj. Flow (vph)	8	14	885	27	3	886	15	25	5	10	11	4
RTOR Reduction (vph)	0	0	1	0	0	0	6	0	0	0	0	47
Lane Group Flow (vph)	0	22	911	0	3	886	9	0	40	0	0	20
Confl. Peds. (#/hr)				5			6			4		
Confl. Bikes (#/hr)				1								
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		1.1	46.4		0.7	46.0	46.0		7.0			8.2
Effective Green, g (s)		1.1	46.4		0.7	46.0	46.0		7.0			8.2
Actuated g/C Ratio		0.01	0.59		0.01	0.58	0.58		0.09			0.10
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		23	1942		14	1935	837		144			159
v/s Ratio Prot		c0.01	c0.28		0.00	0.27			c0.02			c0.01
v/s Ratio Perm							0.01					
v/c Ratio		0.96	0.47		0.21	0.46	0.01		0.28			0.13
Uniform Delay, d1		38.9	9.2		38.8	9.4	6.9		33.6			32.1
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		166.5	0.8		7.6	0.8	0.0		1.1			0.4
Delay (s)		205.4	10.1		46.4	10.1	6.9		34.6			32.5
Level of Service		F	B		D	B	A		C			C
Approach Delay (s)			14.7			10.2			34.6			32.5
Approach LOS			B			B			C			C

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	16.6
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	46
Future Volume (vph)	46
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.89
Adj. Flow (vph)	52
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	7
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

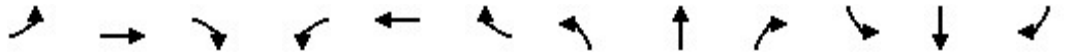
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	22	912	3	886	15	40	67
v/c Ratio	0.14	0.43	0.02	0.42	0.02	0.18	0.27
Control Delay	40.1	15.7	42.0	16.3	0.0	31.7	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	15.7	42.0	16.3	0.0	31.7	15.2
Queue Length 50th (ft)	8	92	1	88	0	15	6
Queue Length 95th (ft)	41	#416	13	#504	0	37	44
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	458	2139	142	2130	956	714	741
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.43	0.02	0.42	0.02	0.06	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	424	155	49	843	90	334	202	75	79	132	243
Future Volume (veh/h)	155	424	155	49	843	90	334	202	75	79	132	243
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	168	461	86	53	906	82	359	217	43	84	140	203
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	237	1547	879	103	1890	171	424	841	415	182	592	368
Arrive On Green	0.07	0.46	0.46	0.03	0.42	0.42	0.13	0.25	0.25	0.06	0.18	0.18
Sat Flow, veh/h	3248	3340	1477	3248	4480	404	3248	3340	1461	3248	3340	1464
Grp Volume(v), veh/h	168	461	86	53	646	342	359	217	43	84	140	203
Grp Sat Flow(s),veh/h/ln	1624	1670	1477	1624	1600	1684	1624	1670	1461	1624	1670	1464
Q Serve(g_s), s	4.8	8.2	2.4	1.5	14.0	14.1	10.3	5.0	2.1	2.4	3.4	11.6
Cycle Q Clear(g_c), s	4.8	8.2	2.4	1.5	14.0	14.1	10.3	5.0	2.1	2.4	3.4	11.6
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	237	1547	879	103	1350	711	424	841	415	182	592	368
V/C Ratio(X)	0.71	0.30	0.10	0.52	0.48	0.48	0.85	0.26	0.10	0.46	0.24	0.55
Avail Cap(c_a), veh/h	417	1547	879	417	1350	711	451	1573	735	451	1573	798
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	16.0	8.4	45.7	20.1	20.1	40.7	28.7	25.3	43.8	33.8	31.2
Incr Delay (d2), s/veh	3.9	0.5	0.2	4.0	1.2	2.3	13.4	0.2	0.1	1.8	0.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	3.1	0.8	0.7	5.3	5.8	4.9	2.0	0.7	1.0	1.4	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	16.5	8.6	49.6	21.3	22.4	54.1	28.8	25.4	45.6	34.0	32.5
LnGrp LOS	D	B	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		715			1041			619			427	
Approach Delay, s/veh		22.8			23.1			43.3			35.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	49.4	16.8	22.3	11.3	45.4	9.7	29.4
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	3.5	10.2	12.3	13.6	6.8	16.1	4.4	7.0
Green Ext Time (p_c), s	0.1	3.6	0.1	1.6	0.2	7.2	0.1	1.6

Intersection Summary	
HCM 6th Ctrl Delay	29.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	461	168	53	1003	359	217	81	84	140	259
v/c Ratio	0.49	0.28	0.17	0.22	0.48	0.76	0.28	0.15	0.30	0.29	0.61
Control Delay	48.0	18.5	2.4	47.7	22.5	53.0	33.2	5.5	47.4	37.8	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.0	18.5	2.4	47.7	22.5	53.0	33.2	5.5	47.4	37.8	28.0
Queue Length 50th (ft)	47	81	0	14	142	103	60	0	24	40	103
Queue Length 95th (ft)	103	188	35	42	290	#247	95	29	59	67	168
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	438	1666	1018	438	2106	474	1657	607	474	1657	468
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.28	0.17	0.12	0.48	0.76	0.13	0.13	0.18	0.08	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWU	SWL	SWT
Lane Configurations												
Traffic Volume (veh/h)	187	96	52	447	145	296	45	596	278	24	88	691
Future Volume (veh/h)	187	96	52	447	145	296	45	596	278	24	88	691
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758		1758	1758
Adj Flow Rate, veh/h	212	109	31	481	156	215	48	634	209		96	751
Peak Hour Factor	0.88	0.88	0.88	0.93	0.93	0.93	0.94	0.94	0.94		0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3		3	3
Cap, veh/h	234	594	163	497	427	362	61	1022	337		118	1128
Arrive On Green	0.14	0.23	0.23	0.15	0.24	0.24	0.04	0.41	0.41		0.07	0.45
Sat Flow, veh/h	1674	2587	710	3248	1758	1490	1674	2468	813		1674	2516
Grp Volume(v), veh/h	212	69	71	481	156	215	48	429	414		96	499
Grp Sat Flow(s),veh/h/ln	1674	1670	1627	1624	1758	1490	1674	1670	1611		1674	1670
Q Serve(g_s), s	16.9	4.5	4.8	19.9	10.0	17.3	3.9	27.4	27.5		7.7	31.8
Cycle Q Clear(g_c), s	16.9	4.5	4.8	19.9	10.0	17.3	3.9	27.4	27.5		7.7	31.8
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.50		1.00	
Lane Grp Cap(c), veh/h	234	384	374	497	427	362	61	692	667		118	749
V/C Ratio(X)	0.91	0.18	0.19	0.97	0.37	0.59	0.79	0.62	0.62		0.82	0.67
Avail Cap(c_a), veh/h	244	384	374	497	427	362	117	692	667		469	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	57.4	41.9	42.0	57.0	42.6	45.4	64.7	31.3	31.3		62.1	29.4
Incr Delay (d2), s/veh	33.1	1.0	1.1	32.2	2.4	7.0	8.4	4.1	4.3		5.1	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	2.0	2.1	10.4	4.7	7.1	1.8	11.8	11.5		3.4	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.4	42.9	43.1	89.2	45.0	52.4	73.1	35.4	35.6		67.2	34.0
LnGrp LOS	F	D	D	F	D	D	E	D	D		E	C
Approach Vol, veh/h		352			852			891				1073
Approach Delay, s/veh		71.6			71.8			37.5				37.1
Approach LOS		E			E			D				D

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	61.4	24.4	36.0	9.0	66.0	22.6	37.8
Change Period (Y+Rc), s	4.1	5.3	3.7	4.9	4.1	5.3	3.7	4.9
Max Green Setting (Gmax), s	37.9	32.3	20.7	31.1	9.5	60.7	19.7	32.1
Max Q Clear Time (g_c+I1), s	9.7	29.5	21.9	6.8	5.9	33.8	18.9	19.3
Green Ext Time (p_c), s	0.1	1.1	0.0	0.6	0.0	4.7	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	50.4
HCM 6th LOS	D

Notes

User approved ignoring U-Turning movement.

Movement	SWR
Lane Configurations	
Traffic Volume (veh/h)	269
Future Volume (veh/h)	269
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	0.98
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1758
Adj Flow Rate, veh/h	226
Peak Hour Factor	0.92
Percent Heavy Veh, %	3
Cap, veh/h	339
Arrive On Green	0.45
Sat Flow, veh/h	757
Grp Volume(v), veh/h	478
Grp Sat Flow(s),veh/h/ln	1603
Q Serve(g_s), s	31.8
Cycle Q Clear(g_c), s	31.8
Prop In Lane	0.47
Lane Grp Cap(c), veh/h	718
V/C Ratio(X)	0.67
Avail Cap(c_a), veh/h	718
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	29.4
Incr Delay (d2), s/veh	4.8
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	13.1
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	34.2
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

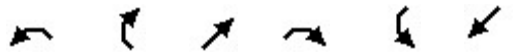
Lane Group	SEL	SET	NWL	NWT	NWR	NEL	NET	SWL	SWT
Lane Group Flow (vph)	213	168	481	156	318	48	930	122	1043
v/c Ratio	0.89	0.22	0.96	0.36	0.52	0.50	1.16	2.30	0.67
Control Delay	95.6	29.3	89.8	48.1	7.8	81.2	128.4	665.1	31.3
Queue Delay	0.0	0.0	14.8	2.4	0.8	0.0	0.0	0.0	19.0
Total Delay	95.6	29.3	104.6	50.5	8.5	81.2	128.4	665.1	50.3
Queue Length 50th (ft)	193	42	227	121	0	43	~505	~180	377
Queue Length 95th (ft)	#325	73	#337	190	80	87	#643	#315	466
Internal Link Dist (ft)		411		232			590		114
Turn Bay Length (ft)	50		125			50		175	
Base Capacity (vph)	246	779	502	431	610	118	805	53	1559
Starvation Cap Reductn	0	0	32	172	98	0	0	0	533
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.22	1.02	0.60	0.62	0.41	1.16	2.30	1.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Min green cannot be less than 2 seconds, (Phase 6).



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	0	0	862	243	572	1092
Future Volume (vph)	0	0	862	243	572	1092
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.8	6.8	5.6	3.0
Lane Util. Factor			0.95	1.00	0.97	0.95
Frt			1.00	0.85	1.00	1.00
Flt Protected			1.00	1.00	0.95	1.00
Satd. Flow (prot)			3505	1568	3400	3505
Flt Permitted			1.00	1.00	0.95	1.00
Satd. Flow (perm)			3505	1568	3400	3505
Peak-hour factor, PHF	0.92	0.92	0.97	0.97	0.91	0.91
Adj. Flow (vph)	0	0	889	251	629	1200
RTOR Reduction (vph)	0	0	0	134	0	0
Lane Group Flow (vph)	0	0	889	117	629	1200
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type			NA	Prot	Prot	NA
Protected Phases			2	2	1	6
Permitted Phases						
Actuated Green, G (s)			21.4	21.4	17.1	50.9
Effective Green, g (s)			21.4	21.4	17.1	50.9
Actuated g/C Ratio			0.42	0.42	0.34	1.00
Clearance Time (s)			6.8	6.8	5.6	3.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			1473	659	1142	3505
v/s Ratio Prot			c0.25	0.07	c0.19	0.34
v/s Ratio Perm						
v/c Ratio			0.60	0.18	0.55	0.34
Uniform Delay, d1			11.5	9.2	13.8	0.0
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.7	0.1	0.6	0.1
Delay (s)			12.2	9.4	14.3	0.1
Level of Service			B	A	B	A
Approach Delay (s)	0.0		11.5			5.0
Approach LOS	A		B			A

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	12.4
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NET	NER	SWL	SWT
Lane Group Flow (vph)	889	251	629	1200
v/c Ratio	0.61	0.32	0.55	0.34
Control Delay	14.1	3.5	16.6	0.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.1	3.5	16.6	0.3
Queue Length 50th (ft)	101	3	74	0
Queue Length 95th (ft)	183	40	146	0
Internal Link Dist (ft)	139			699
Turn Bay Length (ft)			450	
Base Capacity (vph)	2869	1325	3333	3505
Starvation Cap Reductn	42	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.31	0.19	0.19	0.34

Intersection Summary

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	138	790	0	450	98	0
Future Volume (veh/h)	138	790	0	450	98	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1758	1758	0	1758	1758	0
Adj Flow Rate, veh/h	152	786	0	495	124	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.79	0.79
Percent Heavy Veh, %	3	3	0	3	3	0
Cap, veh/h	934	831	0	757	757	0
Arrive On Green	0.56	0.56	0.00	0.23	0.23	0.00
Sat Flow, veh/h	1674	1490	0	3516	3516	0
Grp Volume(v), veh/h	152	786	0	495	124	0
Grp Sat Flow(s),veh/h/ln	1674	1490	0	1670	1670	0
Q Serve(g_s), s	2.6	28.7	0.0	7.8	1.7	0.0
Cycle Q Clear(g_c), s	2.6	28.7	0.0	7.8	1.7	0.0
Prop In Lane	1.00	1.00	0.00			0.00
Lane Grp Cap(c), veh/h	934	831	0	757	757	0
V/C Ratio(X)	0.16	0.95	0.00	0.65	0.16	0.00
Avail Cap(c_a), veh/h	1010	899	0	2590	2705	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.2	12.0	0.0	20.4	18.0	0.0
Incr Delay (d2), s/veh	0.1	17.6	0.0	1.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	10.8	0.0	2.7	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	29.7	0.0	21.3	18.1	0.0
LnGrp LOS	A	C	A	C	B	A
Approach Vol, veh/h	938			495	124	
Approach Delay, s/veh	25.9			21.3	18.1	
Approach LOS	C			C	B	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		19.6				19.6	38.5
Change Period (Y+Rc), s		6.4				* 6.4	6.1
Max Green Setting (Gmax), s		47.0				* 45	35.0
Max Q Clear Time (g_c+I1), s		3.7				9.8	30.7
Green Ext Time (p_c), s		0.7				3.4	1.7

Intersection Summary		
HCM 6th Ctrl Delay		23.8
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	SBL	SBR	SET	NWT
Lane Group Flow (vph)	152	868	495	124
v/c Ratio	0.25	0.82	0.45	0.12
Control Delay	10.4	9.0	13.5	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.4	9.0	13.5	12.2
Queue Length 50th (ft)	19	9	36	8
Queue Length 95th (ft)	67	100	123	31
Internal Link Dist (ft)	441		232	307
Turn Bay Length (ft)				
Base Capacity (vph)	1510	1461	3276	3271
Starvation Cap Reductn	0	0	79	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.10	0.59	0.15	0.04

Intersection Summary

HCM 6th Edition methodology does not support custom phasing.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	278	181	639	127	0	366	299	580	0	0	1021	213
Future Volume (vph)	278	181	639	127	0	366	299	580	0	0	1021	213
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Lane Util. Factor	1.00	1.00	1.00	0.97		1.00	0.97	0.95			0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00		1.00	1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Flt Permitted	0.95	1.00	1.00	0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	1660	1748	1465	3221		1485	3221	3320			3320	1461
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	293	191	673	134	0	385	315	611	0	0	1075	224
RTOR Reduction (vph)	0	0	456	0	0	107	0	0	0	0	0	65
Lane Group Flow (vph)	293	191	217	134	0	278	315	611	0	0	1075	159
Confl. Peds. (#/hr)			1									9
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	custom	Prot		pm+ov	Prot	NA			NA	pm+ov
Protected Phases	8	8		7		5	5	2			6	7
Permitted Phases			1			1 2 5 7						6
Actuated Green, G (s)	29.0	29.0	24.1	11.4		82.6	18.5	34.2			39.7	51.1
Effective Green, g (s)	29.0	29.0	24.1	11.4		75.8	18.5	34.2			39.7	51.1
Actuated g/C Ratio	0.23	0.23	0.19	0.09		0.61	0.15	0.27			0.32	0.41
Clearance Time (s)	7.1	7.1	6.1	5.8		6.1	6.1	6.8			6.9	5.8
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	386	407	283	294		904	478	912			1058	599
v/s Ratio Prot	c0.18	0.11		c0.04		0.05	0.10	0.18			c0.32	0.02
v/s Ratio Perm			c0.15			0.14						0.08
v/c Ratio	0.76	0.47	0.77	0.46		0.31	0.66	0.67			1.02	0.27
Uniform Delay, d1	44.5	41.1	47.6	53.6		11.7	50.0	40.1			42.4	24.3
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	8.3	0.9	11.8	1.1		0.2	3.3	1.9			31.7	0.2
Delay (s)	52.8	42.0	59.4	54.7		11.9	53.3	42.0			74.1	24.5
Level of Service	D	D	E	D		B	D	D			E	C
Approach Delay (s)		54.8			23.0			45.9			65.6	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	124.5	Sum of lost time (s)	25.9
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBL	NBT	NBR	SBL	SBR	NEL	NET	SWT	SWR
Lane Group Flow (vph)	293	191	673	134	385	315	611	1075	224
v/c Ratio	0.76	0.47	0.91	0.46	0.36	0.66	0.67	1.02	0.33
Control Delay	58.3	45.5	27.2	62.2	4.2	58.8	46.4	75.3	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	45.5	27.2	62.2	4.2	58.8	46.4	75.3	13.9
Queue Length 50th (ft)	216	130	82	52	29	121	227	~443	50
Queue Length 95th (ft)	349	223	#404	103	105	205	366	#857	146
Internal Link Dist (ft)		762					699	1175	
Turn Bay Length (ft)	275		275	225		100			175
Base Capacity (vph)	649	683	748	787	1072	813	1220	1055	883
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.28	0.90	0.17	0.36	0.39	0.50	1.02	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

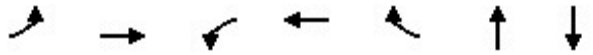
HCM 6th Edition methodology expects strict NEMA phasing.

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	9	37	1210	27	15	1079	22	25	5	15	43	6
Future Volume (vph)	9	37	1210	27	15	1079	22	25	5	15	43	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Lane Util. Factor		1.00	0.95		1.00	0.95	1.00		1.00			1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00	0.97		0.99			0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Frt		1.00	1.00		1.00	1.00	0.85		0.95			0.92
Flt Protected		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (prot)		1660	3308		1660	3320	1446		1615			1567
Flt Permitted		0.95	1.00		0.95	1.00	1.00		0.97			0.98
Satd. Flow (perm)		1660	3308		1660	3320	1446		1615			1567
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.95	0.95	0.95	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	9	38	1247	28	16	1136	23	32	6	19	54	8
RTOR Reduction (vph)	0	0	1	0	0	0	12	0	0	0	0	47
Lane Group Flow (vph)	0	47	1274	0	16	1136	11	0	57	0	0	100
Confl. Peds. (#/hr)				2			3			5		
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA
Protected Phases	5	5	2		1	6		3	3		4	4
Permitted Phases							6					
Actuated Green, G (s)		5.0	41.8		0.7	37.5	37.5		7.5			12.1
Effective Green, g (s)		5.0	41.8		0.7	37.5	37.5		7.5			12.1
Actuated g/C Ratio		0.06	0.53		0.01	0.48	0.48		0.10			0.15
Clearance Time (s)		3.7	4.9		3.7	4.9	4.9		4.0			4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			3.0
Lane Grp Cap (vph)		105	1756		14	1581	689		153			240
v/s Ratio Prot		c0.03	c0.39		0.01	0.34			c0.04			c0.06
v/s Ratio Perm							0.01					
v/c Ratio		0.45	0.73		1.14	0.72	0.02		0.37			0.42
Uniform Delay, d1		35.5	14.1		39.0	16.4	10.9		33.4			30.1
Progression Factor		1.00	1.00		1.00	1.00	1.00		1.00			1.00
Incremental Delay, d2		3.0	2.7		291.3	2.8	0.0		1.5			1.2
Delay (s)		38.5	16.7		330.3	19.2	10.9		34.9			31.3
Level of Service		D	B		F	B	B		C			C
Approach Delay (s)			17.5			23.3			34.9			31.3
Approach LOS			B			C			C			C

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	16.6
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	67
Future Volume (vph)	67
Ideal Flow (vphpl)	1800
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.79
Adj. Flow (vph)	85
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	3%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

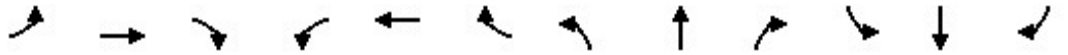
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	47	1275	16	1136	23	57	147
v/c Ratio	0.26	0.69	0.12	0.71	0.03	0.25	0.49
Control Delay	40.2	20.5	43.6	26.6	0.1	32.6	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	20.5	43.6	26.6	0.1	32.6	24.3
Queue Length 50th (ft)	18	181	6	220	0	21	34
Queue Length 95th (ft)	74	#809	36	#756	0	62	93
Internal Link Dist (ft)		1175		338		169	281
Turn Bay Length (ft)	175		200		100		
Base Capacity (vph)	454	1858	141	1599	752	702	756
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.69	0.11	0.71	0.03	0.08	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	965	368	73	814	91	427	325	152	187	287	364
Future Volume (veh/h)	291	965	368	73	814	91	427	325	152	187	287	364
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758	1758
Adj Flow Rate, veh/h	310	1027	202	78	866	81	464	353	107	199	305	331
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	355	1434	801	125	1600	149	384	949	474	260	822	522
Arrive On Green	0.11	0.43	0.43	0.04	0.36	0.36	0.12	0.28	0.28	0.08	0.25	0.25
Sat Flow, veh/h	3248	3340	1456	3248	4460	415	3248	3340	1465	3248	3340	1461
Grp Volume(v), veh/h	310	1027	202	78	620	327	464	353	107	199	305	331
Grp Sat Flow(s),veh/h/ln	1624	1670	1456	1624	1600	1676	1624	1670	1465	1624	1670	1461
Q Serve(g_s), s	10.6	28.5	8.2	2.7	17.4	17.5	13.3	9.5	6.0	6.8	8.5	21.3
Cycle Q Clear(g_c), s	10.6	28.5	8.2	2.7	17.4	17.5	13.3	9.5	6.0	6.8	8.5	21.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	1434	801	125	1148	601	384	949	474	260	822	522
V/C Ratio(X)	0.87	0.72	0.25	0.62	0.54	0.54	1.21	0.37	0.23	0.77	0.37	0.63
Avail Cap(c_a), veh/h	355	1434	801	355	1148	601	384	1338	644	384	1338	748
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.4	26.5	13.4	53.3	28.7	28.8	49.7	32.3	27.9	50.8	35.2	30.3
Incr Delay (d2), s/veh	20.7	3.1	0.8	5.0	1.8	3.5	116.3	0.2	0.2	5.3	0.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	11.7	2.8	1.2	6.9	7.6	11.6	3.9	2.1	2.9	3.5	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	29.6	14.1	58.3	30.5	32.3	165.9	32.5	28.1	56.1	35.5	31.5
LnGrp LOS	E	C	B	E	C	C	F	C	C	E	D	C
Approach Vol, veh/h		1539			1025			924			835	
Approach Delay, s/veh		35.7			33.2			99.0			38.8	
Approach LOS		D			C			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	53.4	17.6	33.0	16.6	45.4	13.3	37.3
Change Period (Y+Rc), s	* 4.3	5.0	* 4.3	5.3	* 4.3	5.0	* 4.3	5.3
Max Green Setting (Gmax), s	* 12	40.4	* 13	45.1	* 12	40.4	* 13	45.1
Max Q Clear Time (g_c+I1), s	4.7	30.5	15.3	23.3	12.6	19.5	8.8	11.5
Green Ext Time (p_c), s	0.1	5.4	0.0	3.2	0.0	6.5	0.3	2.9

Intersection Summary	
HCM 6th Ctrl Delay	49.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	310	1027	391	78	963	464	353	165	199	305	387
v/c Ratio	0.76	0.67	0.40	0.30	0.49	1.05	0.52	0.35	0.55	0.52	0.77
Control Delay	57.9	27.4	6.0	50.1	25.2	100.7	39.8	19.1	51.2	41.2	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	27.4	6.0	50.1	25.2	100.7	39.8	19.1	51.2	41.2	36.3
Queue Length 50th (ft)	97	253	34	24	156	~155	110	53	61	96	186
Queue Length 95th (ft)	#212	485	141	56	276	#345	155	101	119	135	282
Internal Link Dist (ft)		187			627		3540			560	
Turn Bay Length (ft)	125		150	75		275		175	200		275
Base Capacity (vph)	409	1543	987	409	1968	442	1547	537	442	1547	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.67	0.40	0.19	0.49	1.05	0.23	0.31	0.45	0.20	0.77

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Appendix H: Near-Term (Opening Day Year 2022) With Project AM & PM Queueing Synchro Worksheets

Provided on the following page in 11”X17” format.

Intersection	
Int Delay, s/veh	0.4

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	0	36	687	36	0	486
Future Vol, veh/h	0	36	687	36	0	486
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	747	39	0	528

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	393	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	518	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	518	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	12.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWT
Capacity (veh/h)	-	-	518	-
HCM Lane V/C Ratio	-	-	0.076	-
HCM Control Delay (s)	-	-	12.5	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	0	40	1063	40	0	1092
Future Vol, veh/h	0	40	1063	40	0	1092
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	1155	43	0	1187

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	599	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	381	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	381	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	15.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWT
Capacity (veh/h)	-	-	381	-
HCM Lane V/C Ratio	-	-	0.114	-
HCM Control Delay (s)	-	-	15.7	-
HCM Lane LOS	-	-	C	-
HCM 95th %tile Q(veh)	-	-	0.4	-

Appendix I: Radar Device Certificates

Certificate of Accuracy For Doppler Radar Unit

This is to certify that on the date below, the following applicable tests and measurements have been performed on the Speed Measuring Radar Device:

Manufactured by Pocket Radar Inc.

Model PR1000-TA Serial # 1350KA100S21601

Antenna 1 Serial # N/A Antenna 2 Serial # N/A

SIGNAL TEST

Applied Signal (Hz)	Test Signal Frequency Conversion to MPH	Radar Readout +/- 1 MPH
1441	20	20
2162	30	30
2882	40	40
3606	50	50
4323	60	60
5044	70	70
5764	80	80
6485	90	90

Transmitter Frequency: Antenna 1 24.116 Ghz Antenna 2 N/A Ghz

This Speed Measuring Radar Device is certified accurate within +/- 1 mph in stationary mode, and / or +/- 2 mph in moving mode, using equipment with accuracy traceable to National Institute of Standards and Technology. The transmitter frequency of this Speed Measuring Radar Device has been tested and found to be within the prescribed limits as established by the Federal Communications Commission, NHTSA, and IACP.

By _____ Date 9/22/17

Dennis Fogle FCC Licensed Calibration Technician

The Radar Shop Inc.
We Keep You Beaming!

1601 S. Grove – Wichita, KS. 67211 - (316) 263-5300 - www.radarservice.com

Certificate of Accuracy For Doppler Radar Unit

This is to certify that on the date below, the following applicable tests and measurements have been performed on the Speed Measuring Radar Device:

Manufactured by Pocket Radar Inc.

Model PR1000-TA Serial #1350KA10052200

Antenna 1 Serial # N/A Antenna 2 Serial # N/A

SIGNAL TEST

Applied Signal (Hz)	Test Signal Frequency Conversion to MPH	Radar Readout +/- 1 MPH
1441	20	20
2162	30	30
2882	40	40
3606	50	50
4323	60	60
5044	70	70
5764	80	80
6485	90	90

Transmitter Frequency: Antenna 1 24.120 Ghz Antenna 2 N/A Ghz

This Speed Measuring Radar Device is certified accurate within +/- 1 mph in stationary mode, and / or +/- 2 mph in moving mode, using equipment with accuracy traceable to National Institute of Standards and Technology. The transmitter frequency of this Speed Measuring Radar Device has been tested and found to be within the prescribed limits as established by the Federal Communications Commission, NHTSA, and IACP.

By Dennis Fogle Date 9/22/17

Dennis Fogle FCC Licensed Calibration Technician

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Appendix J: Radar Speed Survey Results

Speed Ranges	Number of Vehicles	Percent of Total	Percent Accumulation
10	0	0%	0%
11	0	0%	0%
12	0	0%	0%
13	0	0%	0%
14	0	0%	0%
15	0	0%	0%
16	0	0%	0%
17	0	0%	0%
18	0	0%	0%
19	0	0%	0%
20	0	0%	0%
21	0	0%	0%
22	0	0%	0%
23	0	0%	0%
24	0	0%	0%
25	0	0%	0%
26	0	0%	0%
27	0	0%	0%
28	0	0%	0%
29	0	0%	0%
30	0	0%	0%
31	0	0%	0%
32	0	0%	0%
33	0	0%	0%
34	2	2%	2%
35	0	0%	2%
36	0	0%	2%
37	0	0%	2%
38	0	0%	2%
39	0	0%	2%
40	1	1%	3%
41	5	5%	8%
42	3	3%	11%
43	3	3%	14%
44	6	6%	20%
45	5	5%	25%
46	10	10%	35%
47	8	8%	43%
48	6	6%	49%
49	10	10%	59%
50	9	9%	68%
51	5	5%	73%
52	10	10%	83%
53	1	1%	84%
54	3	3%	87%
55	3	3%	90%
56	2	2%	92%
57	0	0%	92%
58	1	1%	93%
59	3	3%	96%
60	2	2%	98%
61	0	0%	98%
62	0	0%	98%
63	1	1%	99%
64	0	0%	99%
65	1	1%	100%
Total Vehicles	100		

Recorder: Anthony Abalos

Location:

Paradise Valley Road (300' W/O Elkelton Blvd.)

Approach:

EB

Surface:

Dry

Weather:

Sunny

Date:

4/16/2020

Time:

12:15 P.M. - 1:15 P.M.

Survey Statistics:

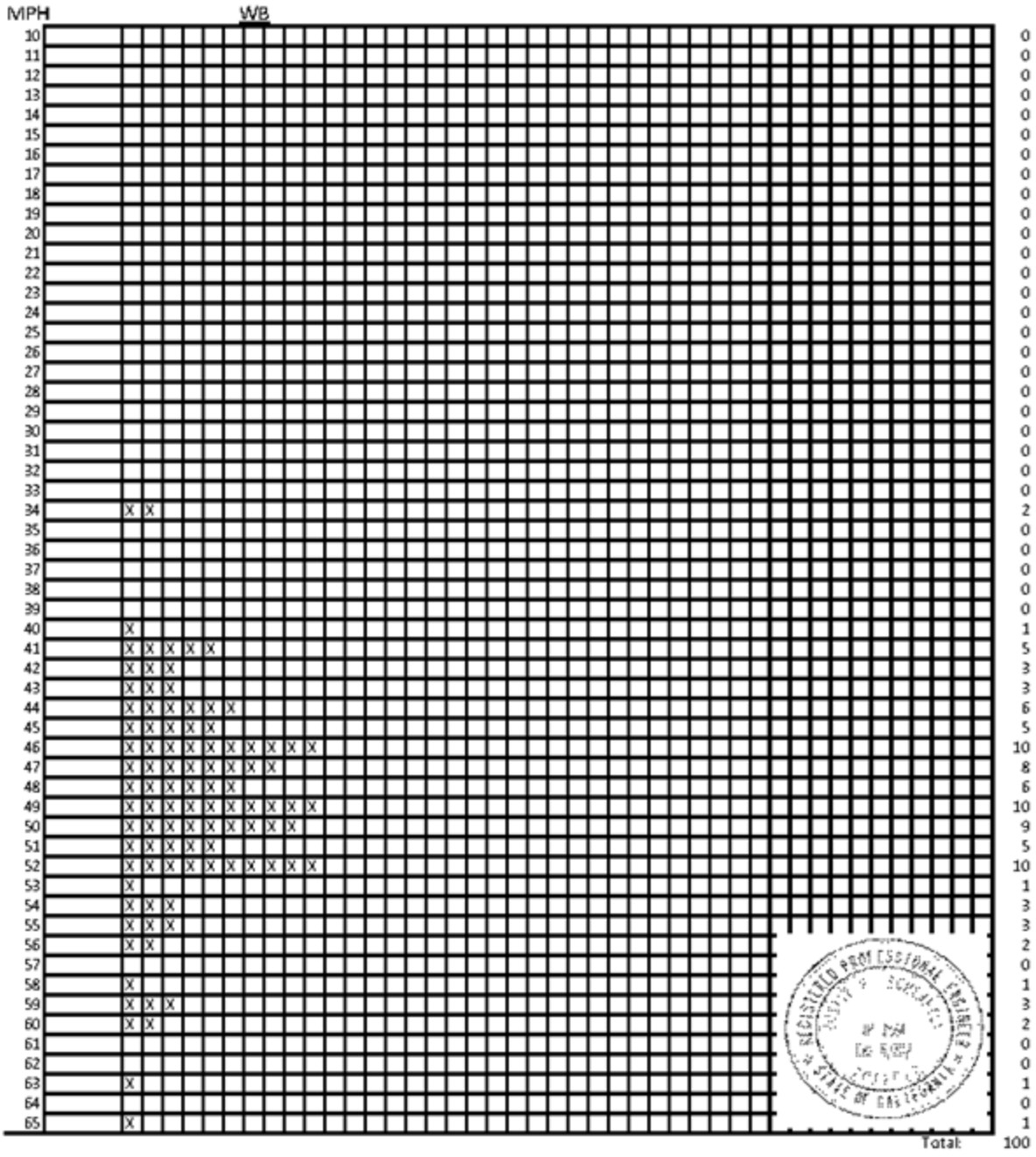
Posted Speed:	45	MPH
Average Speed:	49	MPH
Median Speed: (50th Percentile)	49	MPH
Modal Speed:	52	MPH
85th Percentile Speed:	54	MPH
10 MPH Pace:	43 - 52	MPH
Percent in Pace:	72%	

Comments:

Location: Paradise Valley Road (300' W/O Elkelton Blvd.) Approach: EB Surface: Dry

Date: 4/16/2020 Time: 12:15 P.M. - 1:15 P.M. Weather: Sunny

Posted Speed: 45 Recorder: Anthony Abalos



Appendix K: Intersectional Sight Distance Evaluation Ground Level Pictures

From Driveway

From EB Approach at 3.5 feet in elevation

From EB Approach at 4.25 feet in elevation

Appendix L: Supplemental Field Observation Pictures

Setback distance measurement from the face of Curb (10 feet setback distance)

Approximate location from project driveway 550 feet southwest along Paradise Valley Road