Appendix H
Transportation Analysis

Fenton Parkway Bridge Transportation Study

Prepared for:
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SD22-0461

FEHR PEERS

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1. Introduction and Project Overview

1.1 Introduction

This study summarizes the estimated change in Vehicle Miles Travelled (VMT) resulting from the construction of the proposed Fenton Parkway Bridge project and supports the project's preliminary engineering efforts. The proposed project is a two-lane roadway extension of Fenton Parkway south as a bridge over the San Diego River from River Park Road to Camino Del Rio North. The roadway extension also includes new left-turn lanes and a traffic signal modification at the Fenton Parkway-Mission City Parkway intersection at Camino del Rio North. A new traffic signal will be installed at the Fenton Parkway/River Park Road intersection. The proposed project includes separated bike lanes and sidewalks on both sides of the bridge and will provide a new high-water crossing over the San Diego River. The project site is located near the southwest corner of the San Diego State University (SDSU) Mission Valley site development and within the City of San Diego jurisdictional boundaries. The SDSU Mission Valley site is under the jurisdiction of the California State University (CSU) system.

CSU is serving as the lead agency for purposes of conducting environmental and engineering studies for the proposed project and will lead permitting and construction for the proposed project. The City of San Diego will ultimately have jurisdiction over and maintain the street extension, bridge structure, and associated operating features. CSU has published a Transportation Impact Study Manual (March 2019) that describes the methodology for analyzing transportation-related impacts resulting from the implementation of campus master plans, new or modified land uses, and other land development projects. However, it does not specifically address infrastructure only projects such as road or bridge additions. To that end, guidelines published by the City of San Diego were used to conduct the impact analysis of the proposed Fenton Parkway Bridge. It is important to note that both the CSU and City guidelines use VMT as the primary metric for transportation analyses for environmental documentation purposes.

Per the City of San Diego *Transportation Study Manual (TSM)* (September 19, 2022), "any [transportation] project that results in an increase in additional motor vehicle capacity (such as constructing a new roadway or adding additional vehicle lanes on an existing roadway) has the potential to increase vehicle travel, referred to as "induced vehicle travel." However, some projects are determined to not result in a significant environmental impact including the "implementation of roadways that are included in community plans approved after the comprehensive General Plan Update in 2008 if conditions are substantially improved for active transportation modes." Based on this criterion and other supporting documentation in the *TSM*, the proposed Fenton Parkway Bridge would not result in a significant impact since it was included in the Mission Valley Community Plan (MVCP) update approved in 2020, and it will provide new high-quality pedestrian and bicycle network connections between existing and proposed land uses. However, the bridge in the MVCP was planned with a higher vehicle capacity than is currently

included in the proposed project. As such, a new VMT analysis was completed to determine the potential impacts of the current project.

The comparison of the estimated changes in VMT without and with the roadway extension determines if the new extension is expected to reduce area VMT by providing a more direct route for vehicles between origins and destinations, or if the extension is expected to increase VMT in the project vicinity. An evaluation of the project's effects on the level of service (LOS) and delay on the local transportation network is also provided for informational purposes, but not for purposes of evaluating whether the proposed project would have a significant impact on the environment. Pursuant to CEQA Guidelines section 15064.3(a), "a project's effect on automobile delay shall not constitute a significant environmental impact."

1.2 SB 743 Background

California Senate Bill (SB) 743, signed by the Governor in 2013, fundamentally changed the focus of transportation impact analysis in the California Environmental Quality Act (CEQA) from measuring impacts to drivers, to measuring the impact of driving. The change was made by replacing Level of Service (LOS) with VMT. This shift in transportation impact focus better aligns transportation impact analysis and mitigation outcomes with the State's goals to reduce greenhouse gas ("GHG") emissions, encourage infill development, and improve public health through more active transportation.

In January 2019, the Natural Resources Agency (NRA) finalized updates to CEQA guidelines including the incorporation of SB 743 modifications. To comply with the new legislation, both CSU and the City of San Diego established a VMT analysis methodologies, established VMT thresholds for CEQA transportation impacts, and identified possible mitigation strategies in their respective *TSMs*. As noted in Section 1.1, City of San Diego impact criteria were used for this analysis to specifically address an infrastructure project for which the City will operate and maintain. While the City of San Diego has established desired levels of service for roadway segments and intersections in its impact analysis guidelines, mitigation of traffic delay is no longer permitted under CEQA.

1.3 Study Intent

The intent of this document is to summarize the project's potential effects on VMT and the local transportation system for the proposed Fenton Parkway Bridge project based on the City of San Diego's TSM, which constitutes the City's SB743 guidelines pertaining to CEQA. This study's primary focus is to identify CEQA transportation (VMT) impacts related to the proposed project. This document also includes a Local Mobility Analysis (LMA) consistent with the City of San Diego's TSM. This LMA is solely for informational purposes and is not an analysis required by CEQA or Cal State University's (CSU's) policies.

While LOS no longer informs CEQA impacts, this study also summarizes the expected operations of the two intersections at the termini of the street extension and bridge: Fenton Parkway at River Park Road, and Fenton Parkway-Mission City Parkway at Camino del Rio North for informational purposes. The study quantifies forecasted changes in delay and expected operations at the study intersections caused by the

shifts in travel patterns with the addition of the proposed project. These analyses are provided for informational purposes in terms of CEQA, but they will also inform the detailed design elements for the bridge such as the length of turn pockets at the study intersections. The scope of this analysis does not include identifying additional roadway changes/improvements for non-CEQA effects.

1.4 Project Description

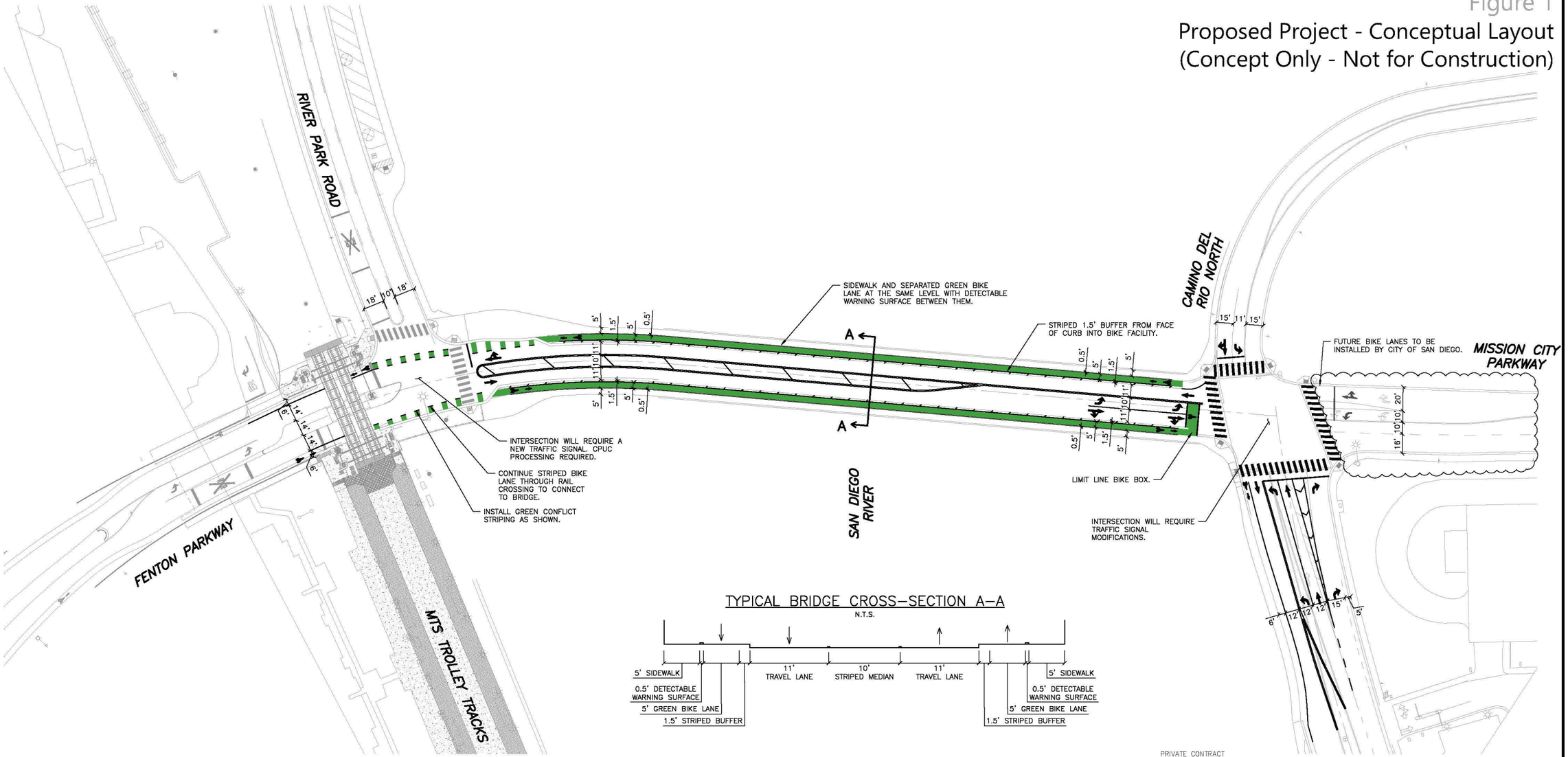
The proposed project would extend Fenton Parkway from its southern terminus at the future Fenton Parkway/River Park Road intersection to Camino del Rio North and provide a new high-water crossing over the San Diego River. Construction of the future southwest entrance into the SDSU Mission Valley site development, which is being constructed separately from and in advance of the proposed project, will include the at-grade crossing of the Metropolitan Transit System (MTS) trolley tracks south of the existing roadway terminus and the Fenton Parkway/ River Park Road intersection. South of the Fenton Parkway/River Park Road intersection, a new bridge structure will be constructed, and the Fenton Parkway Bridge will intersect Camino del Rio North directly opposite Mission City Parkway.

The Fenton Parkway Bridge is proposed to be built with one travel lane in each direction (northbound and southbound) with separate left-turn lanes provided at each intersection where turns are permitted. On the bridge structure between the two permanent travel lanes, the roadway will include a striped median that will connect the two separate left-turn lanes. These turn lanes and median could serve as a second travel lane in either direction during special events at the stadium or during an emergency evacuation event when additional vehicle capacity is needed. The roadway and bridge will also include an elevated bicycle lane in each direction adjacent to (and at the same grade as) a sidewalk for pedestrians. The bicycle lanes will provide an extension of the existing bicycle lanes on Fenton Parkway north of the trolley tracks. These proposed project features will: 1) separate pedestrians and bicyclists from vehicle traffic, expand the active transportation network between land uses on the north and south sides of the San Diego River, 2) increase access to the Fenton Parkway trolley station to patrons south of the river, and 3) enhance safety for non-automobile travelers in this corridor. **Figure 1** shows a conceptual plan of the proposed bridge and its design features and connections.

SDSU anticipates completing construction of the proposed project in 2027, if it is approved.

Figure 1

Proposed Project - Conceptual Layout
(Concept Only - Not for Construction)



TYPICAL BRIDGE CROSS–SECTION A–A

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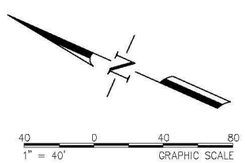

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REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER T. STRATTON No. 58124 Exp. 3/31/25 CIVIL STATE OF CALIFORNIA

PRELIMINARY NOT FOR CONSTRUCTION

PRIVATE CONTRACT

WARNING
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

SIGNING AND STRIPING PLAN FOR:

FENTON PARKWAY BRIDGE
OVER SAN DIEGO RIVER
FENTON PARKWAY BETWEEN RIVER PARK RD & CAMINO DEL RIO NORTH

DEVELOPMENT SERVICES DEPARTMENT
SHEET XX OF XX SHEETS

PMT NO.

APPROVED:
FOR CITY ENGINEER DATE

PRJ NO. XXXXXXX

DESCRIPTION	BY	APPROVED	DATE
ORIGINAL	FP		
AS BUILTS			

XXXX-XXXX NAD83 COORDINATES

XXX-XXXX LAMBERT COORDINATES

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CONTRACTOR DATE STARTED
INSPECTOR DATE COMPLETED

30% PLAN(S) – NOT FOR CONSTRUCTION

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2. VMT Analysis Methodology

Per the City of San Diego *Transportation Study Manual* (September 2022), VMT analysis for transportation projects should compare the area total VMT with the project against the area total VMT without the project to determine if a proposed project will result in an increase in regional VMT (per Table 4: Transportation VMT Analysis Methodology by Land Use on Page 28). The area total VMT should use the "boundary method," which evaluates the daily volume on every roadway segment multiplied by the length of every roadway segment within a given area that reflects the potentially affected radius of a proposed project. Justification for the chosen analysis areas is described in the subsequent sections. A net increase in area total VMT indicates that the project may have a significant impact, while a decrease in area total VMT is considered a less than significant impact. Consistent with the directions in Table 4 of the TSM, the transportation VMT analysis was conducted using the SANDAG travel demand model.

2.1 SANDAG Travel Demand Model and Analytical Methodology

The SANDAG activity-based travel demand model (ABM) is the best planning tool available for forecasting future traffic volumes resulting from changes in land use, the transportation network (including roadways and pedestrian, bicycle and transit facilities and services), and anticipated changes in mobility patterns (e.g., working from home). This tool is effective at estimating changes in the roadway network like a new roadway connection that will shorten travel times for some vehicle trips and improve access to adjacent land uses and transit stations.

Fehr & Peers performed custom model runs using the ABM2+ version of the SANDAG model that includes a scenario for the 2019 SANDAG Regional Plan/Sustainable Community Strategy (RP/SCS) also known as the Federal RTP. This version of the model includes land use plans for cities in the region that are generally reflective of their General Plan land use assumptions, but it does not include the road user charge (RUC) that was originally included in the subsequent 2021 RP, but later rescinded by the SANDAG Board. The SANDAG model includes a 2016 Base Year and future year scenarios in 2035 and 2050, and the specific scenario study years for this project are described in the next section.

The version of the ABM2+ model obtained from SANDAG did not include the planned land uses for the San Diego State University (SDSU) Mission Valley site development located on the site of the former SDCCU stadium. The site development is anticipated to ultimately include 4,600 dwelling units, 1.6 million square feet (sf) of educational, research, entrepreneurial and technology uses, 95,000 sf of retail, grocery, and restaurant uses, and a 400-room hotel, as well as 85 acres of active and passive river park uses. These land uses were coded with appropriate demographic information in the appropriate traffic analysis zones in the model, and the model was run without and with the proposed Fenton Parkway Bridge to determine the change in VMT as noted above, as well as projected traffic growth on the study roadways analyzed from an operational perspective (see Chapters 4 through 6).

2.2 VMT Study Area and Scenarios

To evaluate the transportation impacts of the proposed Fenton Parkway Bridge for purposes of CEQA analysis, an areawide evaluation was conducted to determine the estimated project effect on VMT. Fehr & Peers evaluated a three-mile buffer and five-mile buffer around the project site to conduct the VMT assessment. The use of these geographies as opposed to the entire SANDAG region limits the effect of model "noise" or potential variations in results due to the size of the regional model (which includes all of San Diego County) and captures all the vehicle travel that we would expect to be affected by the new connection. The three-mile radius was chosen based on the proximity of alternative routes that provide adjacent crossings of the river in the project vicinity (especially between SR 163 and Interstate 15), as well as parallel roadways to Friars Road and Camino del Rio North and South (e.g., Aero Drive and El Cajon Boulevard), which could be directly affected by new connection. The five-mile radius includes additional regional facilities such as SR 52, SR 94, and I-5 to highlight the scale of changes in VMT over a larger area.

The project's effect on VMT was evaluated for the following scenarios:

- Year 2027 No Project Alternative
- Year 2027 With Project Alternative
- Year 2050 No Project Alternative
- Year 2050 With Project Alternative

The results of the VMT assessment are presented in Chapter 3.

3. VMT Assessment

3.1 VMT Results

Year 2027 VMT forecasts are summarized in **Table 1**. Model ADT plots with and without project are provided in **Appendix A**. These results were forecast using the SANDAG ABM 2+ 2035 without and with project model scenarios and SANDAG ABM2+ 2016 model scenario. VMT is projected to decrease within a three-mile and five-mile radius of the project by 7,170 VMT and 9,452 VMT, respectively. This suggests that drivers who would otherwise take a longer alternative route are able to use the Fenton Parkway Bridge and shorten their trip length, reducing VMT overall. Accordingly, the proposed project has a less than significant transportation impact to VMT in 2027.

Table 1: Year 2027 VMT Estimates Without and With Project

Analysis Area	No Project VMT	With Project VMT	Total Change in VMT	Percent Change in VMT With Project
Three-mile radius	8,304,209	8,297,038	-7,170	-0.09%
Five-mile radius	18,948,278	18,938,826	-9,452	-0.05%

Source: SANDAG ABM2+ Model modified with planned land uses in SDSU Mission Valley site development traffic analysis zones (TAZs); Fehr & Peers, 2023.

Year 2050 VMT forecasts are summarized in **Table 2**. Between the 2035 and 2050 SANDAG model scenarios within three miles of the proposed project, growth in roadway segment ADT is around 4% and growth in VMT is around 4%. Given the relatively small change in ADT and VMT, travel patterns are expected to be similar in 2035 and 2050 and the addition of the Fenton Parkway Bridge to the 2050 roadway network is anticipated to have a similar effect on VMT as in the 2035 model scenario. Under Year 2050 conditions, a net reduction in area VMT is expected, and the proposed project has a less than significant VMT impact.

Based on the VMT information presented above, the Fenton Parkway Bridge is not anticipated to increase VMT in either 2035 or 2050 compared to the No Build alternatives.

Table 2: Year 2050 VMT Estimates Without and With Project

Analysis Area	No Project VMT	With Project VMT	Total Change in VMT	Percent Change in VMT With Project
Three-mile radius	9,134,284	9,126,397	-7,887	-0.09%
Five-mile radius	20,847,774	20,837,375	-10,399	-0.05%

Source: SANDAG ABM2+ Model modified with planned land uses in SDSU Mission Valley site development traffic analysis zones (TAZs); Fehr & Peers, 2023.

4. Local Mobility Analysis Methodology Per City TSM

In addition to the VMT impact assessment, the remaining chapters in this study evaluate Opening Year (2027) and Design Year (2050) No Project and With Project scenarios at two (2) study intersections based on LOS operation ratings and multimodal quality and connectivity. As noted in Section 1.1: Introduction, a proposed bridge along the same alignment as the proposed project was included in the Mission Valley Community Plan (2020) update and environmental studies were conducted for the overall plan transportation features and land use changes at a programmatic level. Accordingly, the LMA study area for the current proposed project is focused on the bridge itself and its connections to immediately adjacent existing streets and multimodal facilities.

The City of San Diego's analysis criteria for signalized intersections is to maintain LOS E or better within a half mile of a major transit station. The project is within half a mile of the Fenton Parkway MTS trolley station. CEQA requirements have changed and LOS no longer constitutes CEQA impacts. The analysis is nevertheless provided for information purposes and to determine if operations could result in excessive queuing or a potential safety impact. The operations analysis focuses on the existing Camino Del Rio North/Mission City Parkway intersection and the future Fenton Parkway/River Park Way intersection, both of which are the street extension and bridge termini.

4.1 Intersection Analysis Methodology

Typical weekday peak hour intersection operations analysis was conducted using methodologies contained in the Highway Capacity Manual (HCM) 6th Edition which are considered as the state-of-the-practice methodologies for evaluating intersection operations.

The HCM 6 methodology for signalized intersections estimates the average control delay for vehicles at the intersection, while the methodology for unsignalized intersections estimates the worst-case movement control delay for two-way stop-controlled intersections and the average control delay for all-way stop-controlled intersections. The level of service (LOS) was calculated for each study facility to evaluate traffic operations during the morning (AM) and afternoon (PM) peak hours. LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. Descriptions of the LOS letter grades for both signalized and unsignalized intersections are provided in **Table 3**.

In accordance with the City of San Diego Transportation Study Manual, LOS "E" or better is considered acceptable at all study area intersections within a half mile path of a major transit stop. If project-related traffic causes operations to degrade LOS "F", improvements are required to offset the increase in delay.

Table 3: Level of Service Definitions for Intersections (6th Edition Highway Capacity Operations Method)

LOS	Unsignalized: Average Control Delay (seconds/vehicle)	Signalized: Average Stopped Delay per Vehicle (seconds)	Description
A	<10.0	<10.0	Operations with very low delay occurring with favorable progression and/or short cycle length.
B	>10.0 to 15.0	>10.0 to 20.0	Operations with low delay occurring with good progression and/or short cycle lengths.
C	>15.0 to 25.0	>20.0 to 35.0	Operations with average delays resulting from fair progression and or/longer cycle lengths. Individual cycle failures begin to appear.
D	>25.0 to 35.0	>35.0 to 55.0	Operations with longer delays due to a combination of unfavorable progression, or long cycle lengths. Many vehicles stop and individual cycle failures are noticeable.
E	>35.0 to 50.0	>55.0 to 80.0	Operations with high delay values indicating poor progression, or long cycle lengths. Many vehicles stop and individual cycle failures are noticeable.
F	>50.0	>80.0	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.

Source: *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis*

4.2 Roadway Capacity Analysis

Roadway segment operations were evaluated to determine the average daily traffic (ADT) expected on the new roadway compared to capacities by roadway classification in the City of San Diego Circulation Element. The proposed Fenton Parkway Bridge includes two lanes of travel, which corresponds to a Collector in the City of San Diego's Roadway Classifications table.

Collectors are two-lane, undivided roadways that provide property access and link properties to secondary, major, and principal arterials.

5. Existing (2023) Conditions

This section describes the existing pedestrian, bicycle, and transit facilities, as well as the study area roadway network. A discussion of the existing intersection LOS operation results is also included in this section.

5.1 Local Roadway Network

The primary roadways connecting to and surrounding the proposed project are described below:

Fenton Parkway is a north-south roadway that extends from the trolley line to a cul-de-sac with driveways to the Portofino and Escala residential complexes. It functions as a four-lane major arterial and is bounded by a combination of residential and commercial uses. There is no posted speed limit. A planned at-grade crossing of the Metropolitan Transit System (MTS) trolley tracks on Fenton Parkway south of the existing roadway terminus and the Fenton Parkway/ River Park Road intersection is under construction and will be completed prior to construction of the Fenton Parkway bridge.

River Park Road is a two-lane roadway along the western side of the SDSU Mission Valley Site Development which will include a future southwest entrance into the SDSU Mission Valley site development, upon completion of construction and before the construction of the proposed project.

Mission City Parkway is a north-south roadway that runs between Camino Del Rio North and Camino Del Rio South and crosses over Interstate 8. It functions as a two-lane collector and is bounded by commercial uses. The posted speed limit is 35 mph.

Camino del Rio North is an east-west roadway that extends from Camino de La Siesta to Fairmount Avenue where it connects with Alvarado Canyon Road. It functions as a two-lane collector with a center left-turn lane between Camino de La Siesta and Mission Center Road, as a three-lane major arterial (two lanes in the westbound direction and one in the eastbound direction) from Mission Center Road to Camino del Este, as a four-lane major arterial from Camino del Este to Mission City Parkway, as a two-lane collector with a center left-turn lane from Mission City Parkway to Ward Road, and as four-lane collector from Ward Road to Fairmount Avenue. Camino del Rio North is fronted by a combination of retail, hotel and residential uses. The posted speed limit ranges from 35 to 45 mph.

5.2 Existing Transit Facilities and Services

MTS provides bus and trolley service near the proposed Fenton Parkway Bridge, including an existing Green Line trolley stop at the north end of the proposed bridge. The trolley's Green Line provides service along the San Diego River corridor, and several MTS bus routes provide service within the study area. Detailed descriptions of each service are presented below.

The Green Line provides daily service between Santee to Downtown San Diego, extending along the San Diego River and passing through the northern end of the proposed project area. This route includes the station at Fenton Parkway near Fenton Parkway & Rio San Diego Drive. During weekdays, this line operates from 4:52 AM to 12:38 AM in the westbound direction, and 3:53 AM to 12:15 AM in the eastbound direction. Observations at this station during the peak periods indicate numerous available seats on trains with few, if any, passengers standing.

Bus Route 18 provides weekday service from the Grantville Trolley Station to Qualcomm Way/Texas Street. In the study area, this route travels along Camino del Rio N and Qualcomm Way and includes a stop at Camino del Rio N & Mission City Parkway. This route operates from 7:08 AM to 5:30 PM in a loop beginning and ending at the Grantville Trolley Station.

5.3 Existing Pedestrian Facilities and Activity

Pedestrian facilities are available immediately adjacent to the project site and comprise sidewalks, paths, crosswalks, pedestrian push buttons, and pedestrian signal heads at signalized intersections. Sidewalks are present along both sides of all street segments within the study area, except for Camino del Rio North east of Mission City Parkway and the east side of Mission City Parkway south of Camino del Rio North. Pedestrian push buttons are provided at the Camino Del Rio North/Mission City Parkway intersection. Sidewalks are provided on both sides of Fenton Parkway north of the MTS trolley tracks but end at the terminus of the street at the tracks. The sidewalk on the east side of the street provide direct access to the Fenton Parkway Station platform area.

5.4 Existing Bicycle Facilities and Activity

Several bicycle facilities exist on streets in the immediate vicinity of the project site. A multi-use path (the San Diego River Trail) connects to the north platform at the Fenton Parkway Trolley Station. Bike lanes currently exist on Fenton Parkway south of Friars Road and terminate north of the MTS trolley tracks. Lanes are also provided on the section of Camino Del Rio North that is west of Mission City Parkway.

5.5 Safety Review

Appendix C of the City's Systemic Safety the Data-Driven Path to Vision Zero (2019) document provides methodology for identifying systemic safety hotspots for pedestrians, bicyclists, and vehicles throughout the City. These are locations where, based on intersection geometry, control, and ADT, pedestrians and bicyclist have a higher likelihood of being involved in a crash involving a vehicle.

Each of the study intersections was compared to the systemic hotspot criteria to determine if they constitute a systemic hotspot. All of the City's intersection footprint criteria include a four-lane roadway (i.e., with two through lanes in each direction) at signalized intersections or the intersection of two two-lane roadways with side street stop control. None of the existing roadways and intersections at the end of the bridge alignment include these configurations. As such, no systemic hotspots are present under existing conditions.

5.6 Existing Traffic Volumes, Lane Configurations, and Operations

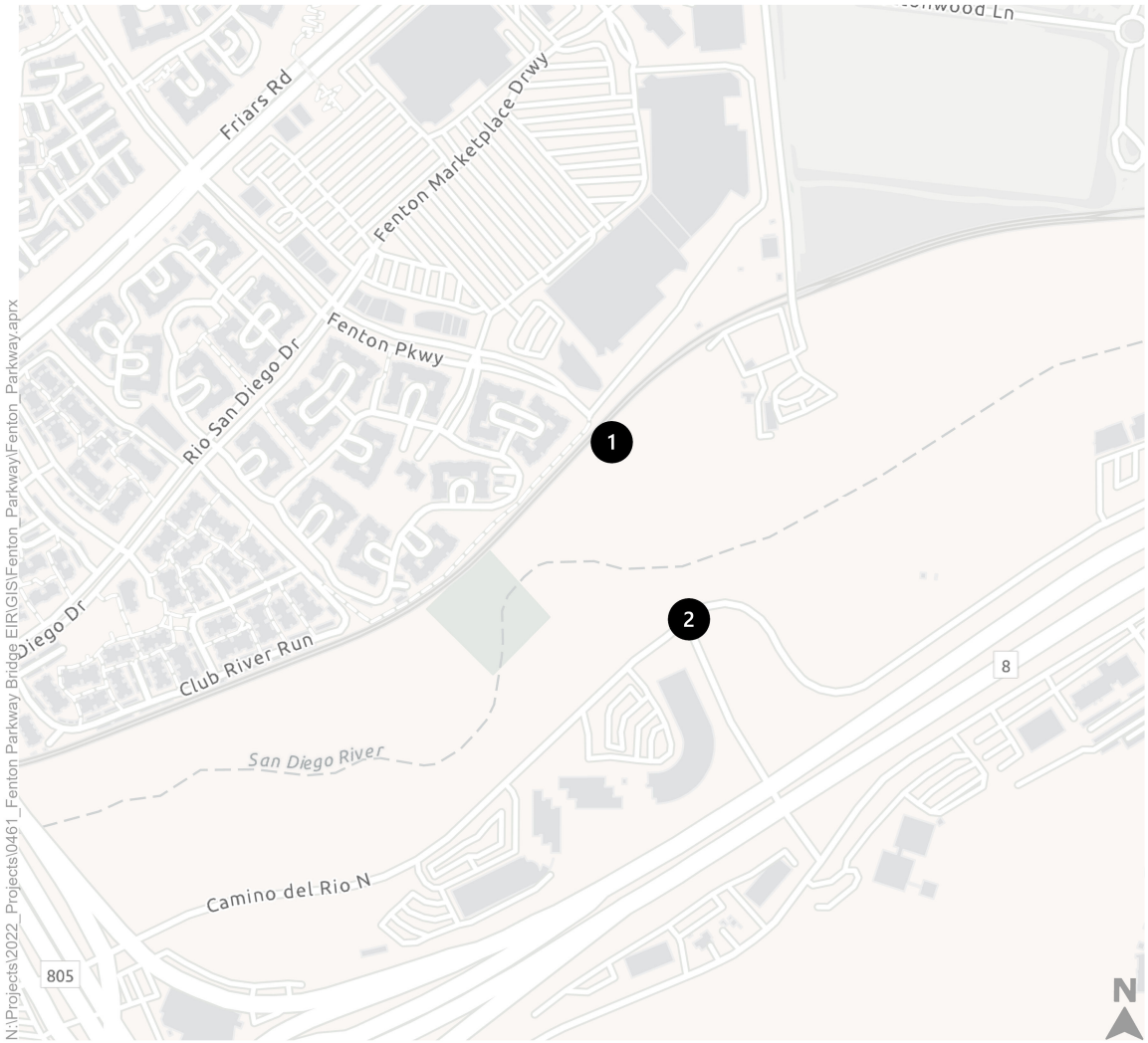
Traffic counts at study intersections were collected in March 2023. Counts were compared to historic data for intersections in the study area, including 2016 counts from the Mission Valley Community Plan Update and 2019 counts from the SDSU Mission Valley Master Plan Transportation Impact Analysis Report. 2023 peak hour counts were lower than both 2019 and 2016 counts by between 15% and 30%, indicating a lasting shift in travel patterns resulting from the COVID-19 pandemic due to increased work from home and increased prevalence of virtual meetings and appointments. Counts collected in 2023 are provided in **Appendix B**.

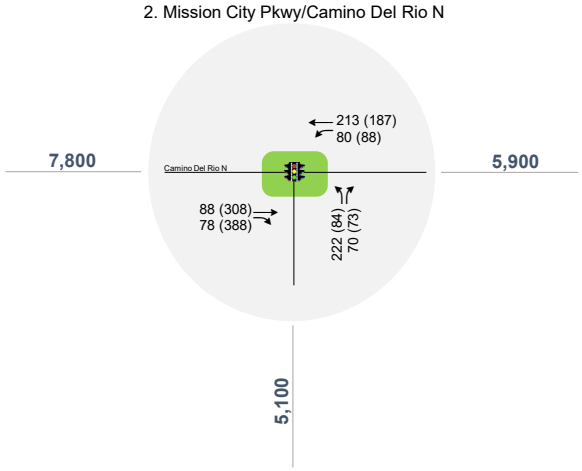
Existing intersection turning movement counts and lane configurations are shown on **Figure 2**. This data was used to quantify traffic operations at each of the study intersections. **Table 4** shows current operations at the only existing study intersection: Camino Del Rio Noth/Mission City Parkway. Level of Service worksheets are provided in **Appendix C**. The intersection currently operates with little delay during both peak hours, and ADT on all study roadways is well below capacity.

Table 4: Existing (2023) Intersection Level of Service

Intersection	Traffic Control	Peak Hour	Existing (2023) Conditions		Meets City LOS Criteria?
			Delay (sec/veh)	LOS[1]	
1. Fenton Parkway/River Park Road	Signalized	AM	-	-	-
		PM	-	-	-
2. Fenton Parkway/Camino Del Rio North/Mission City Parkway	Signalized	AM	9.3	A	Yes
		PM	8.3	A	Yes

Source: Fehr & Peers
Notes: [1] LOS calculations performed using the HCM 6 method. LOS results that do not meet the city's LOS criteria highlighted in **bold**.





Study Intersection
AM Peak Hour
(PM) Traffic Volume

Signalized
Lane Configuration

ADT Average Daily Traffic

AM PM A-C D E F Level of Service

Figure 2

Peak Hour Intersection Data and Average Daily Traffic
Existing (2023) Conditions

6. Future Conditions

6.1 Planned Roadway Improvements

At the north end of the proposed project's bridge alignment and prior to its construction, Fenton Parkway will be extended for a short distance across the MTS Green Line trolley tracks. The new terminus of Fenton Parkway will be connected to an extension of River Park Road and provide a new access to the southwest corner of the SDSU Mission Valley site development. This new "L-shaped" intersection will be controlled by a stop sign on the River Park Road approach, and the Fenton Parkway approaches to the tracks will include gate arms and signals to prevent vehicles from crossing the tracks as trolleys approach and depart the Fenton Parkway Station. No other street improvements are planned on roadways at either end of the proposed street extension and bridge alignment.

6.2 Traffic Volume Forecasts

Traffic forecasts for the study intersections and roadway segments were developed using the "difference methodology". This approach is consistent with methodologies delineated in the National Cooperative Highway Research Program Report (NCHRP) 765 published by the Transportation Research Board (TRB): *Analytical Travel Forecasting Approaches for Project Level Planning and Design* (Transportation Research Board, 2014) and is considered state of the practice for adjusting raw model forecasts for use in traffic operations assessment.

The difference methodology uses the Base Year and Future Year model outputs to calculate the annual growth at study facilities. This growth was added to the Existing Year traffic counts (**Figure 1**) obtained in 2023 to develop the Opening Year (2027) and Design Year (2050) traffic forecasts for No Build Alternatives. Volumes for the new roadway were forecast by applying proportional changes in model volumes when the new facility is added to forecast volumes with the project constructed. Traffic volumes with and without the project were developed for the following scenarios:

- Opening Year - Opening Year (2027) forecasts were developed using the difference method, accounting for seven (7) years of growth.
- Design Year – Design Year (2050) forecasts were developed using the difference method, accounting for 27 years of growth.

6.3 Opening Year (2027) Conditions

To evaluate the potential effect of traffic generated by the roadway extension on the surrounding street system, Opening Year (2027) traffic volumes were developed to reflect traffic increases due to regional and local growth. Opening Year (2027) future traffic conditions also consider traffic generated by other projects which are proposed, approved, or under construction within the vicinity of the project site, including the SDSU Mission Valley site development.

Figure 3 presents the Opening Year (2027) No Project peak hour turning movement volumes, lane configurations, LOS, and segment average daily traffic (ADT) volumes. **Figure 4** presents the same information for Opening Year (2027) With Project conditions.

As noted in the Project Description, a new traffic signal will be installed at the Fenton Parkway/River Park Road intersection, and it will be integrated with the trolley crossing signal on Fenton Parkway just north of River Park Road. To that end, trolley operations were considered when analyzing vehicle operations at the Fenton Parkway/River Park Road intersection. Although reduced trolley headways from 15 minutes to 7.5 minutes are not expected to be implemented at some point beyond 2027, this change in trolley operations was assumed in this study to provide a more conservative analysis. With train headways assumed to be twice as frequent as they currently are, this would result in a train arriving on average every 3.75 minutes assuming they did not overlap at all. The crossing gates were assumed to be down for 60 seconds per train, during which time westbound left-turns from River Park Road to southbound Fenton Parkway would be permitted, but no other movements would be allowed at the intersection. The summary of intersection LOS results for Opening Year (2027) conditions are shown in **Table 5** below. As shown in **Table 4** below, construction of the Fenton Parkway Bridge increases delay at Fenton Parkway/Camino Del Rio North/Mission City Parkway which reflects additional vehicles at the intersection utilizing the new connection.

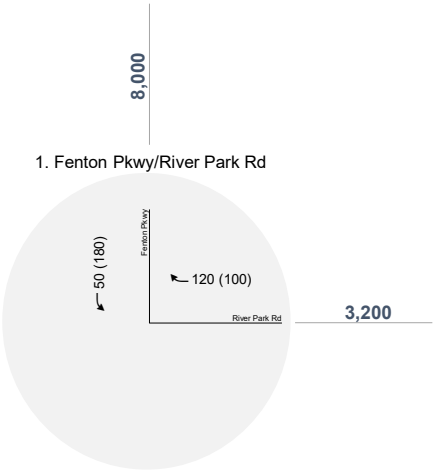
Table 5: Opening Year (2027) Intersection Level of Service

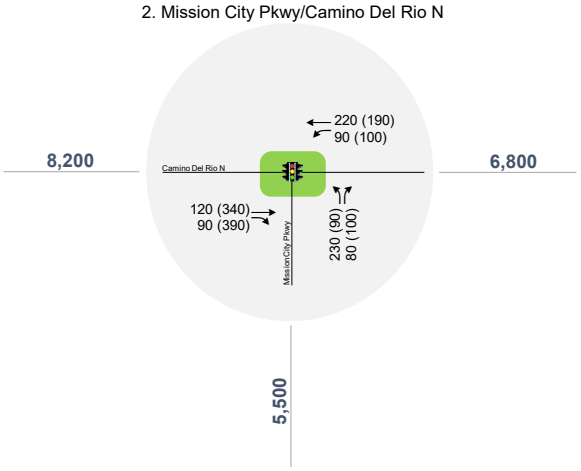
Intersection	Traffic Control	Peak Hour	Opening Year (2027) No Project Conditions		Opening Year (2027) With Project Conditions		Delay Change (sec/veh)	Meets City LOS Criteria?
			Delay (sec/veh)	LOS[1]	Delay (sec/veh)	LOS[1]		
1. Fenton Parkway/River Park Road	Signalized	AM	-	-	19.1	B	19.1	Yes
		PM	-	-	39.8	D	39.8	Yes
2. Fenton Parkway/Camino Del Rio North/Mission City Parkway	Signalized	AM	9.6	A	34.6	D	25	Yes
		PM	8.7	A	28.5	C	19.8	Yes

Source: Fehr & Peers
Notes: [1]LOS calculations performed using the HCM 6 method. LOS results that don't meet the city's LOS criteria highlighted in **bold**.

No ADT forecasts shown on **Figure 3** with the proposed street extension and bridge in place are projected to exceed the daily roadway capacity of 15,000 vpd. Because both study intersections are projected to operate at acceptable levels and they represent the constraint points of the segment, no segment impact was identified under this scenario.

While the scope of this analysis focuses on identifying CEQA impacts related to VMT, it also includes an assessment of planned and needed roadway capacity for the Fenton Parkway Bridge. Current design plans for the Fenton Parkway Bridge are anticipated to be effective at keeping delays at acceptable levels for both study intersections.

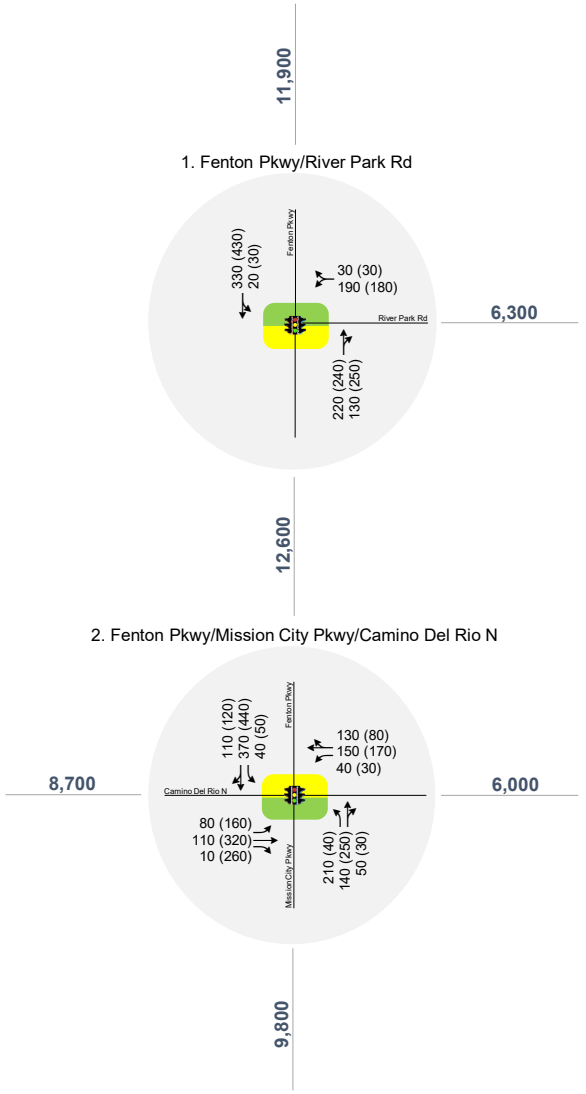




(#) Study Intersection
AM (PM) Peak Hour Traffic Volume
Signalized
Lane Configuration
ADT Average Daily Traffic
New Roads
AM PM A-C D E F Level of Service

Figure 3

Peak Hour Intersection Data and Average Daily Traffic
Opening Year (2030) No Project



Study Intersection
AM Peak Hour
(PM) Traffic Volume

Signalized
Lane Configuration

ADT Average Daily Traffic
New Roads

AM / PM — A-C | D | E | F — Level of Service

Figure 4

Peak Hour Intersection Data and Average Daily Traffic
Opening Year (2027) No Project

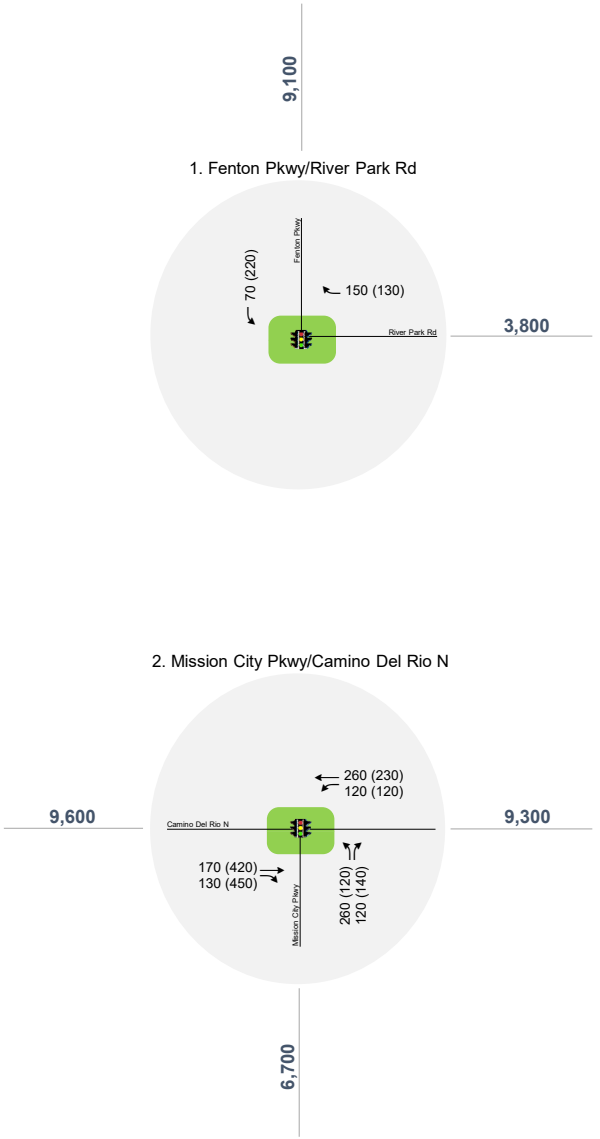
6.4 Design Year (2050) Conditions

To evaluate the potential effect of traffic generated by the roadway extension on the surrounding street system, Design Year (2050) traffic volumes were developed to reflect traffic increases due to regional and local growth. **Figure 5** presents the Design Year (2050) No Project peak hour turning movement volumes, lane configurations, LOS, and average daily traffic. **Figure 6** presents the Design Year (2050) With Project peak hour turning movement volumes, lane configurations, LOS, and average daily traffic. The summary of intersection LOS results for Design Year (2050) conditions are shown in **Table 6**.

Construction of the proposed Fenton Parkway Bridge increases delay at Fenton Parkway/Camino Del Rio North/Mission City Parkway which reflects additional vehicles at the intersection utilizing the new connection. Average daily traffic on the proposed Fenton Parkway Bridge is expected to be around capacity in 2050; however, both intersections to the north and south of the bridge operate acceptably during the peak hours. Therefore, traffic operations throughout the day are expected to meet City LOS criteria and delay is expected to fall within the acceptable range.

Trolley operations were considered when analyzing the Fenton Parkway/River Park Road intersection. Train headways were assumed to be twice as frequent as they currently are, with a train arriving on average every 3.75 minutes. Gates were assumed to be down for 60 seconds per train, during which time westbound left-turns would be permitted but no other movements would be allowed at the intersection. The intersection is forecast to operate just beyond the LOS D/LOS E threshold with an average of 57 seconds of delay per vehicle. This is considered a conservative estimate since this analysis uses the maximum time per hour that gates would be down. It is likely that eastbound and westbound trains would sometimes arrive at the station at the same time such that the average time gates are down would be less than two minutes.

While the scope of this analysis focuses on identifying CEQA impacts related to VMT, it also includes an assessment of planned and needed roadway capacity for the Fenton Parkway Bridge. Current plans for the Fenton Parkway Bridge are anticipated to be effective at keeping delays at acceptable levels for both study intersections.



(#) Study Intersection
AM Peak Hour
(PM) Traffic Volume

Signalized
Lane Configuration

ADT Average Daily Traffic
New Roads

AM PM A-C D E F Level of Service

Figure 5

Peak Hour Intersection Data and Average Daily Traffic
Design Year (2050) No Project

Study Intersection
AM Peak Hour
(PM) Traffic Volume

Signalized
Lane Configuration

ADT Average Daily Traffic
New Roads

AM / PM A-C D E F Level of Service

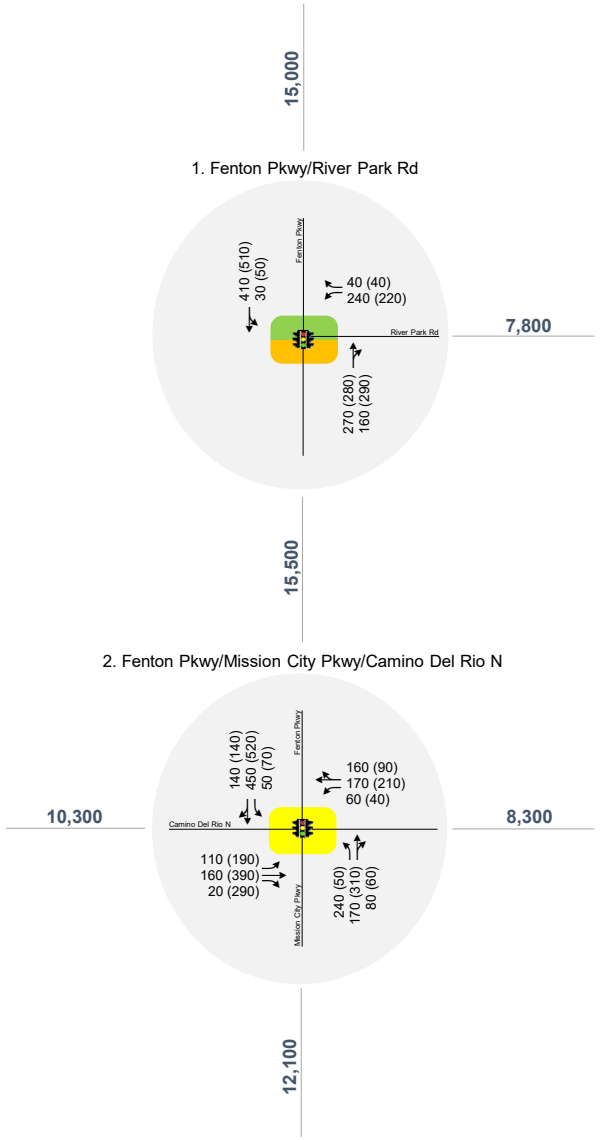


Figure 6

Peak Hour Intersection Data and Average Daily Traffic
Design Year (2050) With Project

Table 6: Design Year (2050) Intersection Level of Service

Intersection	Traffic Control	Peak Hour	Design Year (2050) No Project Conditions		Design Year (2050) With Project Conditions		Delay Change (sec/veh)	Meets City LOS Criteria?
			Delay (sec/veh)	LOS[1]	Delay (sec/veh)	LOS[1]		
1. Fenton Parkway/River Park Road	Signalized	AM	-	-	20.7	C	20.7	Yes
		PM	-	-	57.0	E	57.0	Yes
2. Fenton Parkway/Camino Del Rio North/Mission City Parkway	Signalized	AM	10.3	B	53.6	D	43.3	Yes
		PM	9.7	A	41.1	D	31.4	Yes

Source: Fehr & Peers
Notes: [1] LOS calculations performed using the HCM 6 method. LOS results that do not meet the city's LOS criteria highlighted in **bold**.

6.5 Pedestrian, Bicycle and Transit Evaluation

As noted in Section 1.4: Project Description, the proposed project includes an elevated bicycle path in each direction adjacent to (and at the same grade as) a sidewalk for pedestrians. The bicycle paths will provide an extension of the existing standard bicycle lanes on Fenton Parkway north of the trolley tracks, and they will provide a new connection to existing bicycle lanes on Camino del Rio N west of Mission City Parkway and future paths within the SDSU Mission Valley site and river park (estimated to be operational by end of 2023). The elevated paths will provide an enhanced level of protection for cyclists and help to encourage this mode of travel. At some point in the future, the City of San Diego is also expected to install bicycle lanes on Mission City Parkway that will connect to existing buffered bike lanes on Camino del Rio South east of Mission City Parkway. The Fenton Parkway Bridge bicycle facilities are a critical element to enhancing connectivity, increasing accessibility, and enhancing safety for bicyclists in Mission Valley.

The provision of the sidewalks on the new bridge will enhance walkability for commuters and recreational pedestrians in this area of Mission Valley. Employees in buildings along the Camino del Rio North and South corridors will be able to walk to the future (estimated to be operational by end of 2023) river park uses within the SDSU Mission Valley site, as well as to restaurant and retail opportunities within Fenton Marketplace, all of which will be within a ½-mile distance.

Expansion of the active transportation network between land uses on the north and south sides of the San Diego River will increase walk and bike access to the Fenton Parkway trolley station, specifically for patrons with origins and destinations south of the river. These individuals do not currently have access to higher quality transit such as the trolley or a Rapid/express bus route. In addition, the new bridge will provide a new roadway connection that could be used by MTS buses to shorten trips from trolley stations to origins and destinations outside the typical maximum walking distance of ½-mile to fixed rail transit. With all of these multi-modal benefits and controlled intersection crossings, no pedestrian, bicycle or transit impacts are anticipated with implementation of the proposed project.

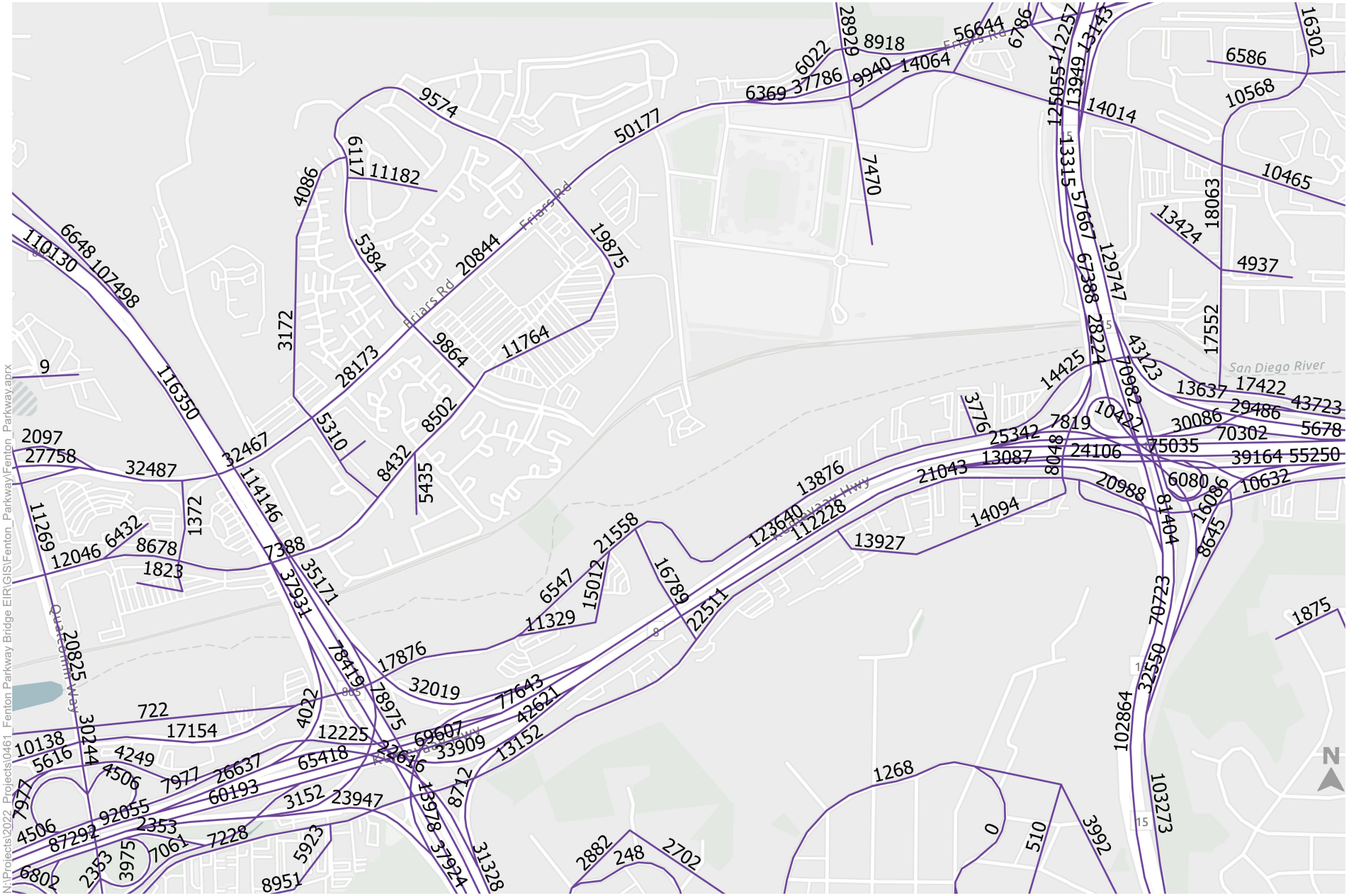
7. Conclusion

The transportation study for the proposed Fenton Parkway Bridge project was conducted based on the the City of San Diego *TSM* standards for evaluating VMT. The study evaluated the estimated change in total area VMT resulting from the implementation of the project and concludes that the proposed project will result in a reduction in regional VMT. The comparison of the estimated changes in VMT without and with the roadway extension determined that the proposed extension is not expected to increase area VMT because the project provides a more direct route to and from destinations. Therefore, the project is expected to have a less than significant transportation impact to VMT pursuant to CEQA.

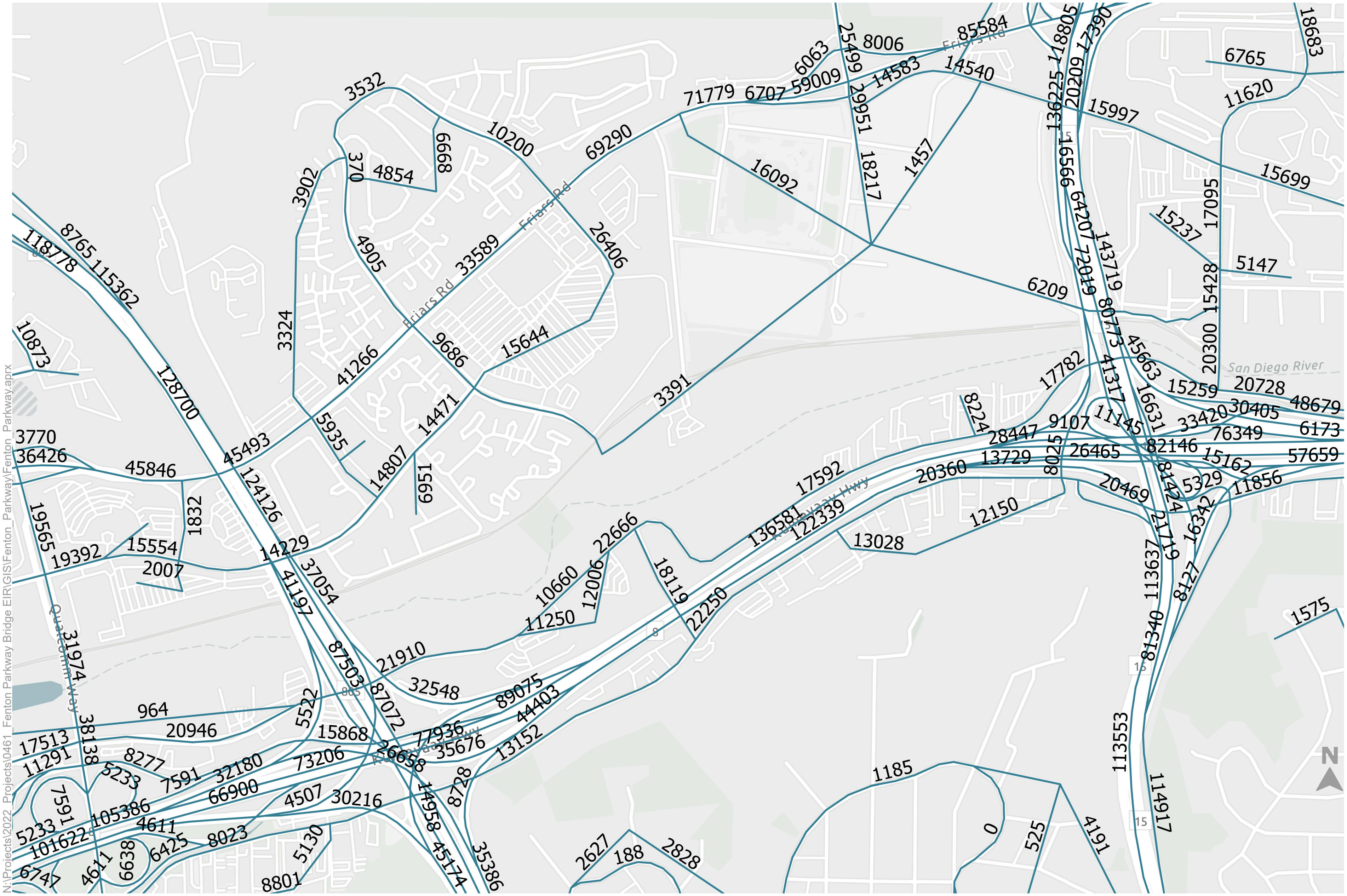
Intersection and roadway capacity analysis was also conducted to provide information about the operational effects of the project to the local transportation network with the addition of the new roadway connection. The proposed capacity of the Fenton Parkway Bridge and new/reconfigured intersections is sufficient for the estimated daily and peak hour traffic demand under Opening Year (2030) and Design Year (2050) conditions and will not cause any roadways to operate at an undesirable LOS.

The proposed Fenton Parkway Bridge will also provide additional pedestrian and bicycle connectivity to an area with very limited north-south connectivity, substantially reducing trip lengths for those modes and greatly encouraging their use. The provision of controlled intersection crossings and designated bicycle facilities through intersections will enhance multimodal safety, in addition to enhancing first-mile/last mile access to the existing Fenton Parkway trolley station.

Appendix A: Model ADT Plots



2016 Base Year Model ADT



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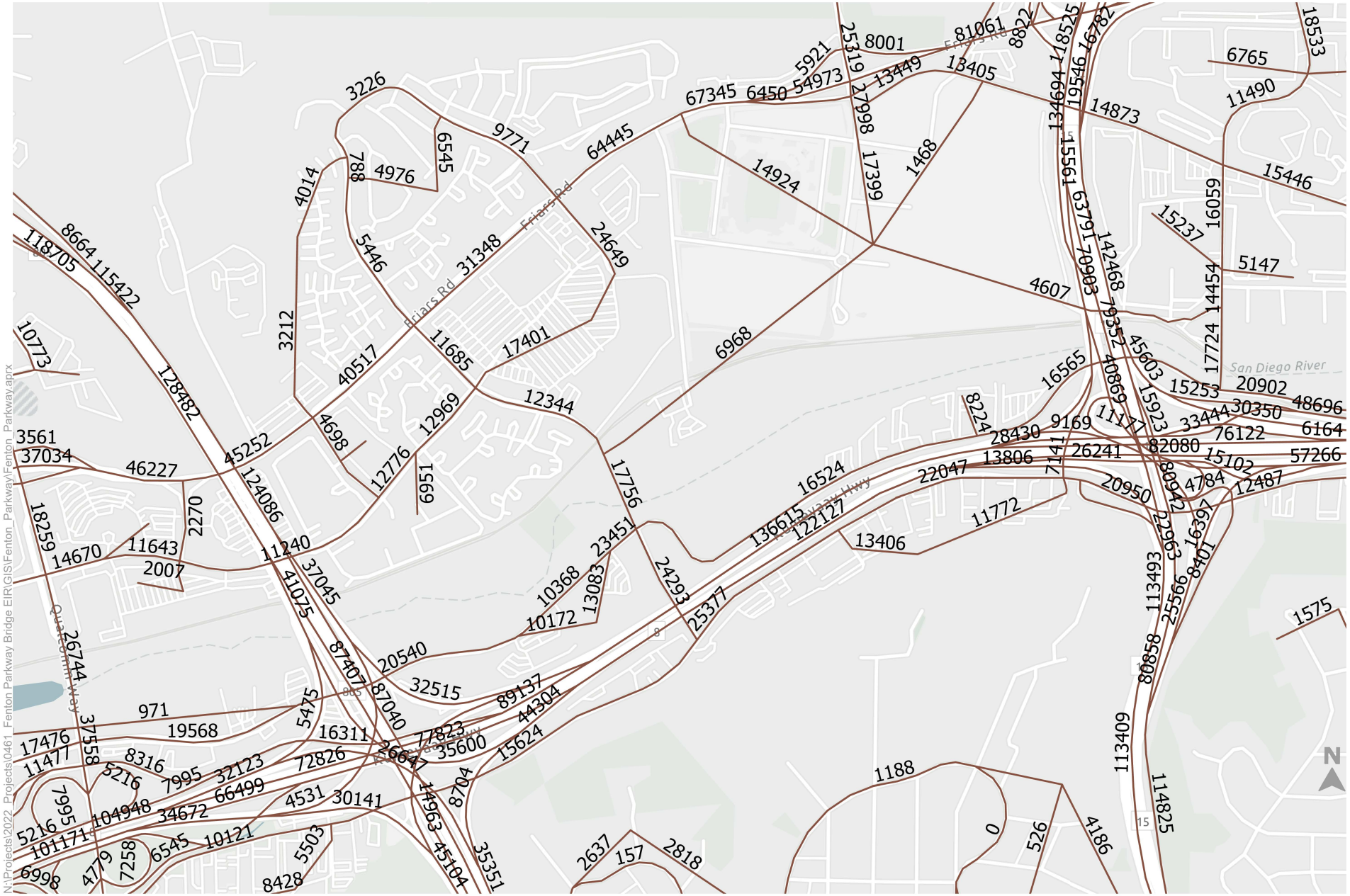
Appendix A

2035 No Project Model ADT



Appendix A

2035 With Project Model ADT

Appendix B: Existing Counts

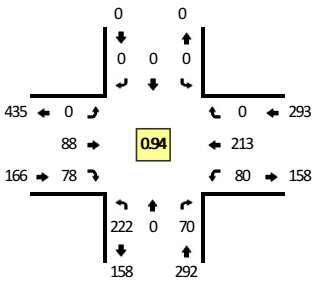
Type of peak hour being reported: Intersection Peak

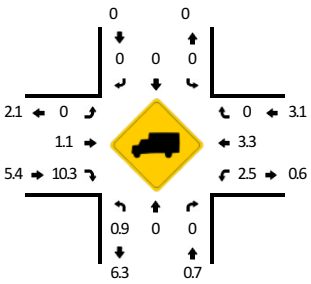
Method for determining peak hour: Total Entering Volume

LOCATION: Mission City Pkwy -- Cam del Rio N
CITY/STATE: San Diego, CA

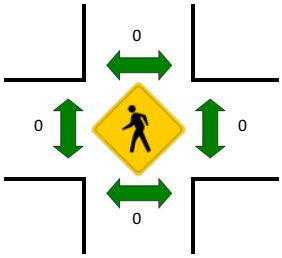
QC JOB #: 16107901
DATE: Wed, Mar 8 2023

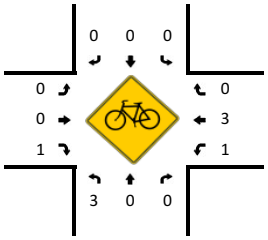
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

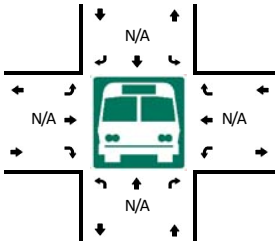


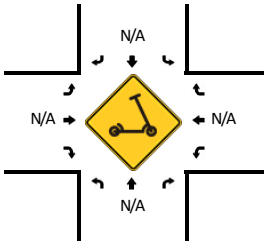


Quality Counts
DATA THAT DRIVES COMMUNITIES









5-Min Count Period Beginning At	Mission City Pkwy (Northbound)				Mission City Pkwy (Southbound)				Cam del Rio N (Eastbound)				Cam del Rio N (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	11	0	2	0	0	0	0	0	0	1	5	0	2	6	0	0	27	
7:05 AM	8	0	2	0	0	0	0	0	0	1	3	0	2	7	0	0	23	
7:10 AM	5	0	2	0	0	0	0	0	0	4	2	0	8	15	0	0	36	
7:15 AM	12	0	1	0	0	0	0	0	0	3	4	0	2	10	0	0	32	
7:20 AM	9	0	3	0	0	0	0	0	0	4	7	0	3	10	0	0	36	
7:25 AM	14	0	2	0	0	0	0	0	0	3	1	0	1	14	0	0	35	
7:30 AM	4	0	0	0	0	0	0	0	0	6	3	0	2	15	0	0	30	
7:35 AM	13	0	2	0	0	0	0	0	0	4	2	0	6	17	0	0	44	
7:40 AM	16	0	6	0	0	0	0	0	0	11	5	0	5	10	0	0	53	
7:45 AM	11	0	5	0	0	0	0	0	0	5	3	0	10	17	0	0	51	
7:50 AM	16	0	5	0	0	0	0	0	0	8	10	0	12	16	0	0	67	
7:55 AM	15	0	2	0	0	0	0	0	0	6	5	0	3	15	0	0	46	480
8:00 AM	24	0	3	0	0	0	0	0	0	8	6	0	13	25	0	0	79	532
8:05 AM	22	0	3	0	0	0	0	0	0	5	3	0	7	19	0	0	59	568
8:10 AM	21	0	8	0	0	0	0	0	0	2	5	0	7	18	0	0	61	593
8:15 AM	16	0	3	0	0	0	0	0	0	7	3	0	6	20	0	0	55	616
8:20 AM	20	0	9	0	0	0	0	0	0	10	12	0	3	18	0	0	72	652
8:25 AM	17	0	4	0	0	0	0	0	0	8	9	0	8	18	0	0	64	681
8:30 AM	24	0	8	0	0	0	0	0	0	3	6	0	4	14	0	0	59	710
8:35 AM	12	0	7	0	0	0	0	0	0	10	4	0	4	12	0	0	49	715
8:40 AM	22	0	8	0	0	0	0	0	0	8	6	0	5	16	0	0	65	727
8:45 AM	14	0	9	0	0	0	0	0	0	7	7	0	8	17	0	0	62	738
8:50 AM	16	0	4	0	0	0	0	0	0	7	8	0	8	25	0	0	68	739
8:55 AM	14	0	4	0	0	0	0	0	0	13	9	0	7	11	0	0	58	751

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	268	0	56	0	0	0	0	0	0	60	56	0	108	248	0	0	796
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	12	0	0		0	0	0		0	0	0		0	8	0		20
Scooters																	

Comments:

Report generated on 5/11/2023 9:12 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

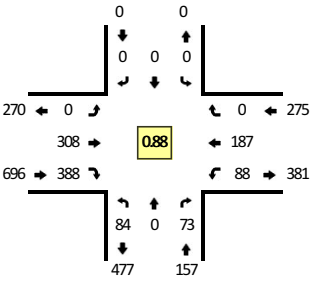
Type of peak hour being reported: Intersection Peak

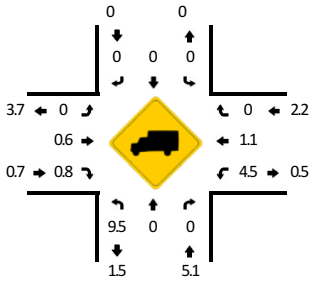
Method for determining peak hour: Total Entering Volume

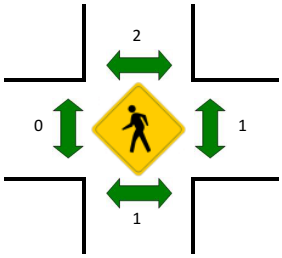
LOCATION: Mission City Pkwy -- Cam del Rio N
CITY/STATE: San Diego, CA

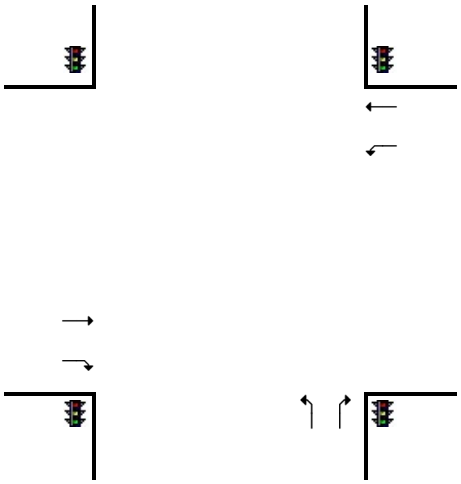
QC JOB #: 16107902
DATE: Wed, Mar 8 2023

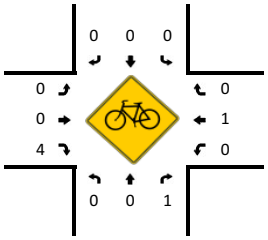
Peak-Hour: 4:20 PM -- 5:20 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

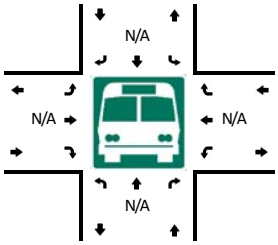


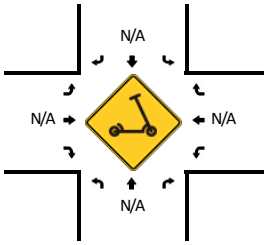












5-Min Count Period Beginning At	Mission City Pkwy (Northbound)				Mission City Pkwy (Southbound)				Cam del Rio N (Eastbound)				Cam del Rio N (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	0	4	0	0	0	0	0	0	18	25	0	6	20	0	0	80	
4:05 PM	8	0	4	0	0	0	0	0	0	22	16	0	5	14	0	0	69	
4:10 PM	7	0	7	0	0	0	0	0	0	32	33	0	8	17	0	0	104	
4:15 PM	16	0	2	0	0	0	0	0	0	18	29	0	9	17	0	0	91	
4:20 PM	8	0	6	0	0	0	0	0	0	22	29	0	5	16	0	0	86	
4:25 PM	4	0	3	0	0	0	0	0	0	29	39	0	4	17	0	0	96	
4:30 PM	5	0	9	1	0	0	0	0	0	12	30	0	3	18	0	0	78	
4:35 PM	6	0	9	0	0	0	0	0	0	22	26	0	9	15	0	0	87	
4:40 PM	7	0	5	0	0	0	0	0	0	16	25	0	5	15	0	0	73	
4:45 PM	1	0	9	0	0	0	0	0	0	31	29	0	17	13	0	0	100	
4:50 PM	16	0	5	0	0	0	0	0	0	24	28	0	6	15	0	0	94	
4:55 PM	8	0	6	0	0	0	0	0	0	29	35	0	7	17	0	0	102	1060
5:00 PM	8	0	3	0	0	0	0	0	0	30	30	0	10	10	0	0	91	1071
5:05 PM	5	0	7	0	0	0	0	0	0	32	50	0	8	19	0	0	121	1123
5:10 PM	8	0	4	0	0	0	0	0	0	29	27	0	8	21	0	0	97	1116
5:15 PM	7	0	7	0	0	0	0	0	0	32	40	0	6	11	0	0	103	1128
5:20 PM	5	0	4	0	0	0	0	0	0	19	28	0	6	12	0	0	74	1116
5:25 PM	3	0	6	0	0	0	0	0	0	29	36	0	7	17	0	0	98	1118
5:30 PM	7	0	2	0	0	0	0	0	0	12	26	0	3	11	0	0	61	1101
5:35 PM	6	0	4	0	0	0	0	0	0	30	26	0	6	18	0	0	90	1104
5:40 PM	7	0	3	0	0	0	0	0	0	14	24	0	6	12	0	0	66	1097
5:45 PM	9	0	1	0	0	0	0	0	0	14	25	0	5	10	0	0	64	1061
5:50 PM	11	0	2	0	0	0	0	0	0	9	12	0	2	10	0	0	46	1013
5:55 PM	15	0	5	0	0	0	0	0	0	26	23	0	3	12	0	0	84	995

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	0	72	0	0	0	0	0	0	372	468	0	88	204	0	0	1284
Heavy Trucks	8	0	0		0	0	0		0	4	0		8	0	0		20
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	4		0	0	0		0	0	4		0	0	0		8
Scooters																	

Comments:

Report generated on 5/11/2023 9:12 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of report: Tube Count - Volume Data

LOCATION: Fenton Parkway east of Rio San Diego Dr **QC JOB #:** 16107903

SPECIFIC LOCATION: **DIRECTION:** EB

CITY/STATE: San Diego, CA **DATE:** Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			12	9		11			11	
01:00 AM			9	10		10			10	
02:00 AM			4	3		4			4	
03:00 AM			3	3		3			3	
04:00 AM			3	5		4			4	
05:00 AM			8	8		8			8	
06:00 AM			25	31		28			28	
07:00 AM			43	47		45			45	
08:00 AM			54	69		62			62	
09:00 AM			100	98		99			99	
10:00 AM			**184**	147		**166**			**166**	
11:00 AM			150	**176**		163			163	
12:00 PM			169	**204**		**187**			**187**	
01:00 PM			159	176		168			168	
02:00 PM			**171**	151		161			161	
03:00 PM			133	146		140			140	
04:00 PM			155	166		161			161	
05:00 PM			168	149		159			159	
06:00 PM			128	136		132			132	
07:00 PM			94	98		96			96	
08:00 PM			71	76		74			74	
09:00 PM			42	47		45			45	
10:00 PM			25	30		28			28	
11:00 PM			18	13		16			16	
Day Total			1928	1998		1970			1970	
% Weekday Average			97.9%	101.4%						
% Week Average			97.9%	101.4%		100%				
AM Peak Volume			10:00 AM 184	11:00 AM 176		10:00 AM 166			10:00 AM 166	
PM Peak Volume			2:00 PM 171	12:00 PM 204		12:00 PM 187			12:00 PM 187	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Fenton Parkway east of Rio San Diego Dr **QC JOB #:** 16107903

SPECIFIC LOCATION: **DIRECTION:** WB

CITY/STATE: San Diego, CA **DATE:** Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			6	4		5			5	
01:00 AM			4	5		5			5	
02:00 AM			2	2		2			2	
03:00 AM			2	3		3			3	
04:00 AM			3	5		4			4	
05:00 AM			16	19		18			18	
06:00 AM			40	36		38			38	
07:00 AM			69	65		67			67	
08:00 AM			64	68		66			66	
09:00 AM			54	70		62			62	
10:00 AM			97	103		100			100	
11:00 AM			**186**	**176**		**181**			**181**	
12:00 PM			**204**	**193**		**199**			**199**	
01:00 PM			192	173		183			183	
02:00 PM			148	186		167			167	
03:00 PM			175	147		161			161	
04:00 PM			153	146		150			150	
05:00 PM			168	164		166			166	
06:00 PM			146	153		150			150	
07:00 PM			97	120		109			109	
08:00 PM			77	91		84			84	
09:00 PM			51	48		50			50	
10:00 PM			22	19		21			21	
11:00 PM			9	10		10			10	
Day Total			1985	2006		2001			2001	
% Weekday Average			99.2%	100.2%						
% Week Average			99.2%	100.2%		100%				
AM Peak Volume			11:00 AM 186	11:00 AM 176		11:00 AM 181			11:00 AM 181	
PM Peak Volume			12:00 PM 204	12:00 PM 193		12:00 PM 199			12:00 PM 199	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Cam del Rio N west of Mission City Pkwy
QC JOB #: 16107904
SPECIFIC LOCATION:
DIRECTION: EB
CITY/STATE: San Diego, CA
DATE: Apr 5 2023 - Apr 6 2023

Start Time	Mon	Tue	Wed 5 Apr 23	Thu 6 Apr 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			32	47		40			40	
01:00 AM			11	28		20			20	
02:00 AM			6	19		13			13	
03:00 AM			1	4		3			3	
04:00 AM			2	4		3			3	
05:00 AM			13	19		16			16	
06:00 AM			30	35		33			33	
07:00 AM			108	108		108			108	
08:00 AM			178	170		174			174	
09:00 AM			201	188		195			195	
10:00 AM			176	186		181			181	
11:00 AM			**223**	**245**		**234**			**234**	
12:00 PM			299	300		300			300	
01:00 PM			315	344		330			330	
02:00 PM			324	348		336			336	
03:00 PM			392	409		401			401	
04:00 PM			**516**	582		549			549	
05:00 PM			510	**654**		**582**			**582**	
06:00 PM			318	339		329			329	
07:00 PM			174	207		191			191	
08:00 PM			169	179		174			174	
09:00 PM			117	115		116			116	
10:00 PM			91	73		82			82	
11:00 PM			67	56		62			62	
Day Total			4273	4659		4472			4472	
% Weekday Average			95.6%	104.2%						
% Week Average			95.6%	104.2%		100%				
AM Peak Volume			11:00 AM 223	11:00 AM 245		11:00 AM 234			11:00 AM 234	
PM Peak Volume			4:00 PM 516	5:00 PM 654		5:00 PM 582			5:00 PM 582	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Cam del Rio N west of Mission City Pkwy
QC JOB #: 16107904
SPECIFIC LOCATION:
DIRECTION: WB
CITY/STATE: San Diego, CA
DATE: Apr 5 2023 - Apr 6 2023

Start Time	Mon	Tue	Wed 5 Apr 23	Thu 6 Apr 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			6	11		9			9	
01:00 AM			13	8		11			11	
02:00 AM			6	13		10			10	
03:00 AM			13	6		10			10	
04:00 AM			20	20		20			20	
05:00 AM			25	24		25			25	
06:00 AM			86	72		79			79	
07:00 AM			249	265		257			257	
08:00 AM			**321**	**299**		**310**			**310**	
09:00 AM			208	208		208			208	
10:00 AM			210	191		201			201	
11:00 AM			228	228		228			228	
12:00 PM			276	**290**		**283**			**283**	
01:00 PM			**277**	275		276			276	
02:00 PM			201	217		209			209	
03:00 PM			220	203		212			212	
04:00 PM			262	271		267			267	
05:00 PM			277	286		282			282	
06:00 PM			192	156		174			174	
07:00 PM			113	119		116			116	
08:00 PM			77	74		76			76	
09:00 PM			52	36		44			44	
10:00 PM			28	23		26			26	
11:00 PM			4	18		11			11	
Day Total			3364	3313		3344			3344	
% Weekday Average			100.6%	99.1%						
% Week Average			100.6%	99.1%		100%				
AM Peak Volume			8:00 AM 321	8:00 AM 299		8:00 AM 310			8:00 AM 310	
PM Peak Volume			1:00 PM 277	12:00 PM 290		12:00 PM 283			12:00 PM 283	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Cam del Rio N east of Mission City Pkwy **QC JOB #:** 16107905

SPECIFIC LOCATION: **DIRECTION:** EB

CITY/STATE: San Diego, CA **DATE:** Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			15	23		19			19	
01:00 AM			3	8		6			6	
02:00 AM			6	11		9			9	
03:00 AM			1	2		2			2	
04:00 AM			2	2		2			2	
05:00 AM			5	6		6			6	
06:00 AM			27	27		27			27	
07:00 AM			84	73		79			79	
08:00 AM			145	118		132			132	
09:00 AM			**167**	137		152			152	
10:00 AM			141	161		151			151	
11:00 AM			151	**177**		**164**			**164**	
12:00 PM			216	211		214			214	
01:00 PM			226	238		232			232	
02:00 PM			219	234		227			227	
03:00 PM			256	237		247			247	
04:00 PM			317	**300**		**309**			**309**	
05:00 PM			**334**	280		307			307	
06:00 PM			202	185		194			194	
07:00 PM			111	130		121			121	
08:00 PM			87	96		92			92	
09:00 PM			56	67		62			62	
10:00 PM			30	21		26			26	
11:00 PM			26	18		22			22	
Day Total			2827	2762		2802			2802	
% Weekday Average			100.9%	98.6%						
% Week Average			100.9%	98.6%		100%				
AM Peak Volume			9:00 AM 167	11:00 AM 177		11:00 AM 164			11:00 AM 164	
PM Peak Volume			5:00 PM 334	4:00 PM 300		4:00 PM 309			4:00 PM 309	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Cam del Rio N east of Mission City Pkwy | **QC JOB #:** 16107905

SPECIFIC LOCATION: | **DIRECTION:** WB

CITY/STATE: San Diego, CA | **DATE:** Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			5	7		6			6	
01:00 AM			5	9		7			7	
02:00 AM			8	3		6			6	
03:00 AM			3	5		4			4	
04:00 AM			9	6		8			8	
05:00 AM			14	13		14			14	
06:00 AM			60	60		60			60	
07:00 AM			195	234		215			215	
08:00 AM			**288**	**322**		**305**			**305**	
09:00 AM			233	254		244			244	
10:00 AM			183	211		197			197	
11:00 AM			216	228		222			222	
12:00 PM			253	246		250			250	
01:00 PM			216	234		225			225	
02:00 PM			215	251		233			233	
03:00 PM			180	207		194			194	
04:00 PM			**266**	251		**259**			**259**	
05:00 PM			242	**272**		257			257	
06:00 PM			161	164		163			163	
07:00 PM			102	107		105			105	
08:00 PM			76	66		71			71	
09:00 PM			43	35		39			39	
10:00 PM			20	27		24			24	
11:00 PM			14	10		12			12	
Day Total			3007	3222		3120			3120	
% Weekday Average			96.4%	103.3%						
% Week Average			96.4%	103.3%		100%				
AM Peak Volume			8:00 AM 288	8:00 AM 322		8:00 AM 305			8:00 AM 305	
PM Peak Volume			4:00 PM 266	5:00 PM 272		4:00 PM 259			4:00 PM 259	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Mission City Pkwy South of Cam del Rio N **QC JOB #:** 16107906

SPECIFIC LOCATION: **DIRECTION:** NB

CITY/STATE: San Diego, CA **DATE:** Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			1	6		4			4	
01:00 AM			0	3		2			2	
02:00 AM			1	1		1			1	
03:00 AM			2	0		1			1	
04:00 AM			9	8		9			9	
05:00 AM			27	26		27			27	
06:00 AM			63	64		64			64	
07:00 AM			157	192		175			175	
08:00 AM			**287**	**247**		**267**			**267**	
09:00 AM			184	161		173			173	
10:00 AM			109	119		114			114	
11:00 AM			135	149		142			142	
12:00 PM			138	136		137			137	
01:00 PM			142	129		136			136	
02:00 PM			116	114		115			115	
03:00 PM			106	135		121			121	
04:00 PM			**156**	**140**		**148**			**148**	
05:00 PM			125	130		128			128	
06:00 PM			94	77		86			86	
07:00 PM			55	45		50			50	
08:00 PM			31	34		33			33	
09:00 PM			28	15		22			22	
10:00 PM			15	6		11			11	
11:00 PM			6	3		5			5	
Day Total			1987	1940		1971			1971	
% Weekday Average			100.8%	98.4%						
% Week Average			100.8%	98.4%		100%				
AM Peak Volume			8:00 AM 287	8:00 AM 247		8:00 AM 267			8:00 AM 267	
PM Peak Volume			4:00 PM 156	4:00 PM 140		4:00 PM 148			4:00 PM 148	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: Mission City Pkwy South of Cam del Rio N
QC JOB #: 16107906
SPECIFIC LOCATION:
DIRECTION: SB
CITY/STATE: San Diego, CA
DATE: Mar 8 2023 - Mar 9 2023

Start Time	Mon	Tue	Wed 8 Mar 23	Thu 9 Mar 23	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			20	29		25			25	
01:00 AM			8	22		15			15	
02:00 AM			7	12		10			10	
03:00 AM			0	3		2			2	
04:00 AM			1	0		1			1	
05:00 AM			12	14		13			13	
06:00 AM			32	29		31			31	
07:00 AM			102	89		96			96	
08:00 AM			151	149		150			150	
09:00 AM			138	132		135			135	
10:00 AM			118	144		131			131	
11:00 AM			**165**	**151**		**158**			**158**	
12:00 PM			205	233		219			219	
01:00 PM			222	214		218			218	
02:00 PM			218	240		229			229	
03:00 PM			267	263		265			265	
04:00 PM			406	345		376			376	
05:00 PM			**410**	**480**		**445**			**445**	
06:00 PM			221	196		209			209	
07:00 PM			108	117		113			113	
08:00 PM			114	109		112			112	
09:00 PM			70	61		66			66	
10:00 PM			72	33		53			53	
11:00 PM			44	26		35			35	
Day Total			3111	3091		3107			3107	
% Weekday Average			100.1%	99.5%						
% Week Average			100.1%	99.5%		100%				
AM Peak Volume			11:00 AM 165	11:00 AM 151		11:00 AM 158			11:00 AM 158	
PM Peak Volume			5:00 PM 410	5:00 PM 480		5:00 PM 445			5:00 PM 445	

Comments:

Report generated on 5/11/2023 9:15 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Appendix C: Level of Service Worksheets

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	88	78	80	213	222	70
Future Volume (veh/h)	88	78	80	213	222	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	93	20	84	224	234	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	386	310	156	872	335	299
Arrive On Green	0.21	0.21	0.09	0.47	0.19	0.19
Sat Flow, veh/h	1870	1502	1781	1870	1781	1585
Grp Volume(v), veh/h	93	20	84	224	234	21
Grp Sat Flow(s),veh/h/ln	1870	1502	1781	1870	1781	1585
Q Serve(g_s), s	1.1	0.3	1.2	1.9	3.2	0.3
Cycle Q Clear(g_c), s	1.1	0.3	1.2	1.9	3.2	0.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	386	310	156	872	335	299
V/C Ratio(X)	0.24	0.06	0.54	0.26	0.70	0.07
Avail Cap(c_a), veh/h	1938	1556	608	2899	1408	1253
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.6	8.3	11.4	4.2	9.9	8.7
Incr Delay (d2), s/veh	0.3	0.1	2.9	0.2	2.6	0.1
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	0.1	0.4	0.2	1.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.0	8.4	14.3	4.4	12.5	8.8
LnGrp LOS	A	A	B	A	B	A
Approach Vol, veh/h	113			308	255	
Approach Delay, s/veh	8.9			7.1	12.2	
Approach LOS	A			A	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		9.4	6.8	9.9		16.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		20.6	8.9	27.0		40.4
Max Q Clear Time (g_c+I1), s		5.2	3.2	3.1		3.9
Green Ext Time (p_c), s		0.6	0.1	0.4		1.2

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	308	388	88	187	84	73
Future Volume (veh/h)	308	388	88	187	84	73
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	324	166	93	197	88	14
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	599	487	165	1077	175	156
Arrive On Green	0.32	0.32	0.09	0.58	0.10	0.10
Sat Flow, veh/h	1870	1520	1781	1870	1781	1585
Grp Volume(v), veh/h	324	166	93	197	88	14
Grp Sat Flow(s),veh/h/ln	1870	1520	1781	1870	1781	1585
Q Serve(g_s), s	3.9	2.3	1.4	1.4	1.3	0.2
Cycle Q Clear(g_c), s	3.9	2.3	1.4	1.4	1.3	0.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	599	487	165	1077	175	156
V/C Ratio(X)	0.54	0.34	0.57	0.18	0.50	0.09
Avail Cap(c_a), veh/h	1830	1487	594	2758	1310	1166
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.7	7.2	12.0	2.8	11.8	11.3
Incr Delay (d2), s/veh	0.8	0.4	3.0	0.1	2.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.4	0.5	0.0	0.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.5	7.6	15.0	2.9	14.0	11.6
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	490			290	102	
Approach Delay, s/veh	8.2			6.8	13.7	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	7.2	7.0	13.3	20.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.3	9.2	27.0	40.7
Max Q Clear Time (g_c+I1), s	3.3	3.4	5.9	3.4
Green Ext Time (p_c), s	0.2	0.1	2.2	1.1

Intersection Summary	
HCM 6th Ctrl Delay	8.3
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	90	90	220	230	80
Future Volume (veh/h)	120	90	90	220	230	80
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	126	19	95	232	242	19
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	387	311	169	879	344	306
Arrive On Green	0.21	0.21	0.09	0.47	0.19	0.19
Sat Flow, veh/h	1870	1502	1781	1870	1781	1585
Grp Volume(v), veh/h	126	19	95	232	242	19
Grp Sat Flow(s),veh/h/ln	1870	1502	1781	1870	1781	1585
Q Serve(g_s), s	1.5	0.3	1.4	2.0	3.4	0.3
Cycle Q Clear(g_c), s	1.5	0.3	1.4	2.0	3.4	0.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	387	311	169	879	344	306
V/C Ratio(X)	0.33	0.06	0.56	0.26	0.70	0.06
Avail Cap(c_a), veh/h	1891	1518	634	2871	1334	1187
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	9.0	8.5	11.6	4.3	10.1	8.8
Incr Delay (d2), s/veh	0.5	0.1	2.9	0.2	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.5	0.2	1.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	8.6	14.5	4.4	12.7	8.9
LnGrp LOS	A	A	B	A	B	A
Approach Vol, veh/h	145			327	261	
Approach Delay, s/veh	9.4			7.4	12.4	
Approach LOS	A			A	B	

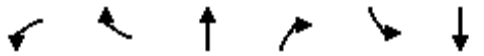
Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		9.7	7.0	10.0		17.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		20.0	9.5	27.0		41.0
Max Q Clear Time (g_c+I1), s		5.4	3.4	3.5		4.0
Green Ext Time (p_c), s		0.6	0.1	0.6		1.3

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	340	390	100	190	90	100
Future Volume (veh/h)	340	390	100	190	90	100
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	358	169	105	200	95	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	625	509	175	1100	181	161
Arrive On Green	0.33	0.33	0.10	0.59	0.10	0.10
Sat Flow, veh/h	1870	1521	1781	1870	1781	1585
Grp Volume(v), veh/h	358	169	105	200	95	16
Grp Sat Flow(s),veh/h/ln	1870	1521	1781	1870	1781	1585
Q Serve(g_s), s	4.6	2.4	1.6	1.4	1.5	0.3
Cycle Q Clear(g_c), s	4.6	2.4	1.6	1.4	1.5	0.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	625	509	175	1100	181	161
V/C Ratio(X)	0.57	0.33	0.60	0.18	0.52	0.10
Avail Cap(c_a), veh/h	1741	1416	583	2643	1228	1093
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.9	7.2	12.5	2.8	12.4	11.8
Incr Delay (d2), s/veh	0.8	0.4	3.3	0.1	2.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.4	0.6	0.0	0.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.8	7.6	15.8	2.8	14.7	12.1
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	527			305	111	
Approach Delay, s/veh	8.4			7.3	14.3	
Approach LOS	A			A	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		7.5	7.4	14.2		21.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		20.0	9.5	27.0		41.0
Max Q Clear Time (g_c+I1), s		3.5	3.6	6.6		3.4
Green Ext Time (p_c), s		0.2	0.1	2.4		1.1

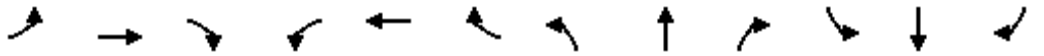
Intersection Summary	
HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	190	30	220	130	20	330
Future Volume (vph)	190	30	220	130	20	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.95	0.98			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.95			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1511	1740			1856
Flt Permitted	0.95	1.00	1.00			0.97
Satd. Flow (perm)	1770	1511	1740			1804
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	200	32	232	137	21	347
RTOR Reduction (vph)	0	25	13	0	0	0
Lane Group Flow (vph)	200	7	356	0	0	368
Confl. Peds. (#/hr)	10	10		10	10	
Confl. Bikes (#/hr)		5		5		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8 15 16		2 9			6 13
Permitted Phases		8 16			6 13	
Actuated Green, G (s)	29.0	16.4	26.7			26.7
Effective Green, g (s)	29.0	16.4	26.7			26.7
Actuated g/C Ratio	0.39	0.22	0.36			0.36
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	696	336	630			653
v/s Ratio Prot	c0.11		c0.20			
v/s Ratio Perm		0.00				0.20
v/c Ratio	0.29	0.02	0.57			0.56
Uniform Delay, d1	15.3	22.4	18.8			18.8
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.0	1.2			1.1
Delay (s)	15.5	22.4	20.0			19.9
Level of Service	B	C	C			B
Approach Delay (s)	16.5		20.0			19.9
Approach LOS	B		C			B

Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	73.7	Sum of lost time (s)	22.5
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

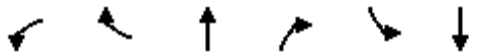
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	110	10	40	150	130	210	140	50	40	370	110
Future Volume (veh/h)	80	110	10	40	150	130	210	140	50	40	370	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.97	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	116	4	42	158	100	221	147	41	42	389	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	412	331	68	206	130	251	660	184	68	521	141
Arrive On Green	0.06	0.22	0.22	0.04	0.20	0.20	0.14	0.47	0.47	0.04	0.37	0.37
Sat Flow, veh/h	1781	1870	1505	1781	1045	662	1781	1395	389	1781	1405	379
Grp Volume(v), veh/h	84	116	4	42	0	258	221	0	188	42	0	494
Grp Sat Flow(s),veh/h/ln	1781	1870	1505	1781	0	1707	1781	0	1784	1781	0	1784
Q Serve(g_s), s	3.6	4.0	0.2	1.8	0.0	11.2	9.5	0.0	4.9	1.8	0.0	18.8
Cycle Q Clear(g_c), s	3.6	4.0	0.2	1.8	0.0	11.2	9.5	0.0	4.9	1.8	0.0	18.8
Prop In Lane	1.00		1.00	1.00		0.39	1.00		0.22	1.00		0.21
Lane Grp Cap(c), veh/h	109	412	331	68	0	337	251	0	844	68	0	662
V/C Ratio(X)	0.77	0.28	0.01	0.62	0.00	0.77	0.88	0.00	0.22	0.62	0.00	0.75
Avail Cap(c_a), veh/h	239	646	520	114	0	469	251	0	844	144	0	662
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	25.4	23.8	37.0	0.0	29.7	33.0	0.0	12.1	37.0	0.0	21.4
Incr Delay (d2), s/veh	11.0	0.4	0.0	8.7	0.0	4.9	28.5	0.0	0.6	8.7	0.0	7.5
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	1.8	1.7	0.1	0.9	0.0	4.7	5.9	0.0	1.9	0.9	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	25.7	23.9	45.8	0.0	34.6	61.4	0.0	12.7	45.8	0.0	28.9
LnGrp LOS	D	C	C	D	A	C	E	A	B	D	A	C
Approach Vol, veh/h		204			300			409			536	
Approach Delay, s/veh		34.5			36.2			39.1			30.2	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	41.5	7.5	21.7	15.5	33.5	9.3	19.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	33.7	5.0	27.0	11.0	29.0	10.5	21.5
Max Q Clear Time (g_c+I1), s	3.8	6.9	3.8	6.0	11.5	20.8	5.6	13.2
Green Ext Time (p_c), s	0.0	1.0	0.0	0.5	0.0	2.0	0.1	0.9

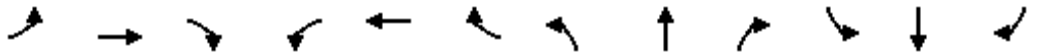
Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	180	30	240	250	30	430
Future Volume (vph)	180	30	240	250	30	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.89	0.96			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.93			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1414	1661			1857
Flt Permitted	0.95	1.00	1.00			0.85
Satd. Flow (perm)	1770	1414	1661			1592
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	189	32	253	263	32	453
RTOR Reduction (vph)	0	28	17	0	0	0
Lane Group Flow (vph)	189	4	499	0	0	485
Confl. Peds. (#/hr)	10	10		10	10	
Confl. Bikes (#/hr)		5		5		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8 15 16		2 9			6 13
Permitted Phases		8 15			6 13	
Actuated Green, G (s)	86.4	26.4	117.0			117.0
Effective Green, g (s)	86.4	26.4	117.0			117.0
Actuated g/C Ratio	0.39	0.12	0.53			0.53
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	690	168	877			841
v/s Ratio Prot	c0.11		0.30			
v/s Ratio Perm		0.00				c0.30
v/c Ratio	0.27	0.02	0.57			0.58
Uniform Delay, d1	46.1	86.1	35.2			35.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.1	0.9			2.9
Delay (s)	46.3	86.2	36.1			38.3
Level of Service	D	F	D			D
Approach Delay (s)	52.1		36.1			38.3
Approach LOS	D		D			D

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	221.4	Sum of lost time (s)	22.5
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	320	260	30	170	80	40	250	30	50	440	120
Future Volume (veh/h)	160	320	260	30	170	80	40	250	30	50	440	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		0.96	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	337	91	32	179	62	42	263	25	53	463	117
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	513	415	58	249	86	70	673	64	80	582	147
Arrive On Green	0.12	0.27	0.27	0.03	0.19	0.19	0.04	0.40	0.40	0.05	0.41	0.41
Sat Flow, veh/h	1781	1870	1515	1781	1306	452	1781	1675	159	1781	1428	361
Grp Volume(v), veh/h	168	337	91	32	0	241	42	0	288	53	0	580
Grp Sat Flow(s),veh/h/ln	1781	1870	1515	1781	0	1758	1781	0	1835	1781	0	1789
Q Serve(g_s), s	6.7	11.7	3.4	1.3	0.0	9.4	1.7	0.0	8.1	2.1	0.0	20.8
Cycle Q Clear(g_c), s	6.7	11.7	3.4	1.3	0.0	9.4	1.7	0.0	8.1	2.1	0.0	20.8
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.09	1.00		0.20
Lane Grp Cap(c), veh/h	207	513	415	58	0	335	70	0	737	80	0	729
V/C Ratio(X)	0.81	0.66	0.22	0.55	0.00	0.72	0.60	0.00	0.39	0.66	0.00	0.80
Avail Cap(c_a), veh/h	236	693	562	124	0	541	122	0	737	178	0	729
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.5	23.5	20.5	34.8	0.0	27.7	34.5	0.0	15.5	34.3	0.0	19.0
Incr Delay (d2), s/veh	17.2	1.4	0.3	7.8	0.0	2.9	8.0	0.0	1.6	8.9	0.0	8.7
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	3.7	4.8	1.1	0.7	0.0	3.9	0.9	0.0	3.4	1.1	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.7	24.9	20.8	42.7	0.0	30.6	42.6	0.0	17.1	43.2	0.0	27.7
LnGrp LOS	D	C	C	D	A	C	D	A	B	D	A	C
Approach Vol, veh/h		596			273			330			633	
Approach Delay, s/veh		31.0			32.0			20.3			29.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	33.9	6.9	24.5	7.4	34.3	13.0	18.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.3	27.5	5.1	27.1	5.0	29.8	9.7	22.5
Max Q Clear Time (g_c+I1), s	4.1	10.1	3.3	13.7	3.7	22.8	8.7	11.4
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	2.1	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	170	130	120	260	260	120
Future Volume (veh/h)	170	130	120	260	260	120
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	32	126	274	274	31
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	394	316	195	888	386	344
Arrive On Green	0.21	0.21	0.11	0.47	0.22	0.22
Sat Flow, veh/h	1870	1503	1781	1870	1781	1585
Grp Volume(v), veh/h	179	32	126	274	274	31
Grp Sat Flow(s),veh/h/ln	1870	1503	1781	1870	1781	1585
Q Serve(g_s), s	2.4	0.5	2.0	2.6	4.2	0.5
Cycle Q Clear(g_c), s	2.4	0.5	2.0	2.6	4.2	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	394	316	195	888	386	344
V/C Ratio(X)	0.45	0.10	0.64	0.31	0.71	0.09
Avail Cap(c_a), veh/h	1732	1392	580	2630	1222	1087
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.0	9.3	12.4	4.7	10.6	9.1
Incr Delay (d2), s/veh	0.8	0.1	3.5	0.2	2.4	0.1
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	0.1	0.7	0.3	1.3	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.9	9.4	16.0	4.9	13.0	9.2
LnGrp LOS	B	A	B	A	B	A
Approach Vol, veh/h	211			400	305	
Approach Delay, s/veh	10.6			8.4	12.6	
Approach LOS	B			A	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.8	7.7	10.6		18.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		20.0	9.5	27.0		41.0
Max Q Clear Time (g_c+I1), s		6.2	4.0	4.4		4.6
Green Ext Time (p_c), s		0.8	0.1	0.9		1.6

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	420	450	120	230	120	140
Future Volume (veh/h)	420	450	120	230	120	140
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.96	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	442	208	126	242	126	28
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	692	564	185	1143	205	182
Arrive On Green	0.37	0.37	0.10	0.61	0.11	0.11
Sat Flow, veh/h	1870	1525	1781	1870	1781	1585
Grp Volume(v), veh/h	442	208	126	242	126	28
Grp Sat Flow(s),veh/h/ln	1870	1525	1781	1870	1781	1585
Q Serve(g_s), s	6.4	3.3	2.2	1.9	2.2	0.5
Cycle Q Clear(g_c), s	6.4	3.3	2.2	1.9	2.2	0.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	692	564	185	1143	205	182
V/C Ratio(X)	0.64	0.37	0.68	0.21	0.62	0.15
Avail Cap(c_a), veh/h	1538	1253	515	2335	1085	965
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.5	7.5	14.2	2.9	13.8	13.1
Incr Delay (d2), s/veh	1.0	0.4	4.3	0.1	3.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.6	0.9	0.1	0.8	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	7.9	18.5	2.9	16.8	13.5
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	650			368	154	
Approach Delay, s/veh	9.0			8.3	16.2	
Approach LOS	A			A	B	

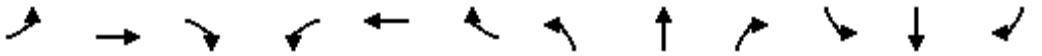
Timer - Assigned Phs		2	3	4			8
Phs Duration (G+Y+Rc), s		8.3	7.9	16.7			24.6
Change Period (Y+Rc), s		4.5	4.5	4.5			4.5
Max Green Setting (Gmax), s		20.0	9.5	27.0			41.0
Max Q Clear Time (g_c+I1), s		4.2	4.2	8.4			3.9
Green Ext Time (p_c), s		0.3	0.1	3.0			1.4

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	240	40	270	160	30	410
Future Volume (vph)	240	40	270	160	30	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.94	0.98			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.95			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1495	1738			1855
Flt Permitted	0.95	1.00	1.00			0.95
Satd. Flow (perm)	1770	1495	1738			1771
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	253	42	284	168	32	432
RTOR Reduction (vph)	0	26	11	0	0	0
Lane Group Flow (vph)	253	16	441	0	0	464
Confl. Peds. (#/hr)	10	10		10	10	
Confl. Bikes (#/hr)		5		5		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8 15 16		2 9			6 13
Permitted Phases		8 15			6 13	
Actuated Green, G (s)	31.6	20.7	37.2			37.2
Effective Green, g (s)	31.6	20.7	37.2			37.2
Actuated g/C Ratio	0.36	0.24	0.43			0.43
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	644	356	744			759
v/s Ratio Prot	c0.14		0.25			
v/s Ratio Perm		0.01				c0.26
v/c Ratio	0.39	0.05	0.59			0.61
Uniform Delay, d1	20.5	25.4	19.0			19.2
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.4	0.1	1.3			1.5
Delay (s)	20.9	25.5	20.3			20.7
Level of Service	C	C	C			C
Approach Delay (s)	21.5		20.3			20.7
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	22.5
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

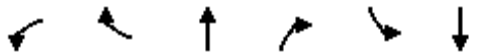
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	160	20	60	170	160	240	170	80	50	450	140
Future Volume (veh/h)	110	160	20	60	170	160	240	170	80	50	450	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.96	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	168	5	63	179	130	253	179	68	53	474	136
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	475	383	82	213	155	237	562	214	76	484	139
Arrive On Green	0.08	0.25	0.25	0.05	0.22	0.22	0.13	0.44	0.44	0.04	0.35	0.35
Sat Flow, veh/h	1781	1870	1511	1781	983	714	1781	1277	485	1781	1383	397
Grp Volume(v), veh/h	116	168	5	63	0	309	253	0	247	53	0	610
Grp Sat Flow(s),veh/h/ln	1781	1870	1511	1781	0	1697	1781	0	1762	1781	0	1780
Q Serve(g_s), s	5.3	6.1	0.2	2.9	0.0	14.4	11.0	0.0	7.6	2.4	0.0	28.1
Cycle Q Clear(g_c), s	5.3	6.1	0.2	2.9	0.0	14.4	11.0	0.0	7.6	2.4	0.0	28.1
Prop In Lane	1.00		1.00	1.00		0.42	1.00		0.28	1.00		0.22
Lane Grp Cap(c), veh/h	147	475	383	82	0	369	237	0	776	76	0	623
V/C Ratio(X)	0.79	0.35	0.01	0.77	0.00	0.84	1.07	0.00	0.32	0.70	0.00	0.98
Avail Cap(c_a), veh/h	226	610	493	108	0	440	237	0	776	135	0	623
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.3	25.3	23.1	39.1	0.0	31.0	35.9	0.0	15.1	39.1	0.0	26.6
Incr Delay (d2), s/veh	9.8	0.4	0.0	20.9	0.0	11.6	78.2	0.0	1.1	11.1	0.0	31.3
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	2.6	2.6	0.1	1.7	0.0	6.7	9.7	0.0	3.0	1.3	0.0	16.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	25.8	23.2	60.0	0.0	42.7	114.1	0.0	16.2	50.2	0.0	57.9
LnGrp LOS	D	C	C	E	A	D	F	A	B	D	A	E
Approach Vol, veh/h		289			372			500			663	
Approach Delay, s/veh		34.3			45.6			65.7			57.3	
Approach LOS		C			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	41.0	8.3	25.5	15.5	33.5	11.4	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.3	33.7	5.0	27.0	11.0	29.0	10.5	21.5
Max Q Clear Time (g_c+I1), s	4.4	9.6	4.9	8.1	13.0	30.1	7.3	16.4
Green Ext Time (p_c), s	0.0	1.4	0.0	0.7	0.0	0.0	0.1	0.8

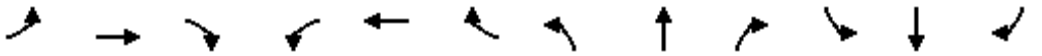
Intersection Summary	
HCM 6th Ctrl Delay	53.6
HCM 6th LOS	D



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	220	40	280	290	50	510
Future Volume (vph)	220	40	280	290	50	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.89	0.96			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.93			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1415	1661			1854
Flt Permitted	0.95	1.00	1.00			0.64
Satd. Flow (perm)	1770	1415	1661			1185
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	42	295	305	53	537
RTOR Reduction (vph)	0	32	16	0	0	0
Lane Group Flow (vph)	232	10	584	0	0	590
Confl. Peds. (#/hr)	10	10		10	10	
Confl. Bikes (#/hr)		5		5		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8 15 16		2 9			6 13
Permitted Phases		8 15			6 13	
Actuated Green, G (s)	87.9	27.9	116.0			116.0
Effective Green, g (s)	87.9	27.9	116.0			116.0
Actuated g/C Ratio	0.40	0.13	0.52			0.52
Clearance Time (s)						
Vehicle Extension (s)						
Lane Grp Cap (vph)	701	177	868			619
v/s Ratio Prot	c0.13		0.35			
v/s Ratio Perm		0.01				c0.50
v/c Ratio	0.33	0.05	0.67			0.95
Uniform Delay, d1	46.6	85.4	39.0			50.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.3	0.1	2.1			24.9
Delay (s)	46.8	85.5	41.0			75.3
Level of Service	D	F	D			E
Approach Delay (s)	52.8		41.0			75.3
Approach LOS	D		D			E

Intersection Summary			
HCM 2000 Control Delay	57.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	221.9	Sum of lost time (s)	22.5
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	390	290	40	210	90	50	310	60	70	520	140
Future Volume (veh/h)	190	390	290	40	210	90	50	310	60	70	520	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.96	1.00		0.96
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	200	411	126	42	221	77	53	326	56	74	547	138
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	573	466	68	276	96	78	575	99	95	546	138
Arrive On Green	0.13	0.31	0.31	0.04	0.21	0.21	0.04	0.37	0.37	0.05	0.38	0.38
Sat Flow, veh/h	1781	1870	1519	1781	1305	455	1781	1545	265	1781	1428	360
Grp Volume(v), veh/h	200	411	126	42	0	298	53	0	382	74	0	685
Grp Sat Flow(s),veh/h/ln	1781	1870	1519	1781	0	1759	1781	0	1810	1781	0	1789
Q Serve(g_s), s	8.6	15.3	4.9	1.8	0.0	12.6	2.3	0.0	13.2	3.2	0.0	30.0
Cycle Q Clear(g_c), s	8.6	15.3	4.9	1.8	0.0	12.6	2.3	0.0	13.2	3.2	0.0	30.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.15	1.00		0.20
Lane Grp Cap(c), veh/h	238	573	466	68	0	372	78	0	674	95	0	684
V/C Ratio(X)	0.84	0.72	0.27	0.62	0.00	0.80	0.68	0.00	0.57	0.78	0.00	1.00
Avail Cap(c_a), veh/h	243	643	522	113	0	477	113	0	674	148	0	684
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.2	24.2	20.6	37.2	0.0	29.4	37.0	0.0	19.6	36.7	0.0	24.2
Incr Delay (d2), s/veh	22.2	3.4	0.3	8.8	0.0	7.4	10.0	0.0	3.4	12.8	0.0	34.9
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	4.9	6.6	1.7	0.9	0.0	5.7	1.2	0.0	5.8	1.7	0.0	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.4	27.5	20.9	45.9	0.0	36.8	47.0	0.0	23.0	49.5	0.0	59.1
LnGrp LOS	E	C	C	D	A	D	D	A	C	D	A	F
Approach Vol, veh/h		737			340			435			759	
Approach Delay, s/veh		34.0			37.9			25.9			58.2	
Approach LOS		C			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	33.7	7.5	28.6	7.9	34.5	15.0	21.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	28.5	5.0	27.0	5.0	30.0	10.7	21.3
Max Q Clear Time (g_c+I1), s	5.2	15.2	3.8	17.3	4.3	32.0	10.6	14.6
Green Ext Time (p_c), s	0.0	1.9	0.0	1.9	0.0	0.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D