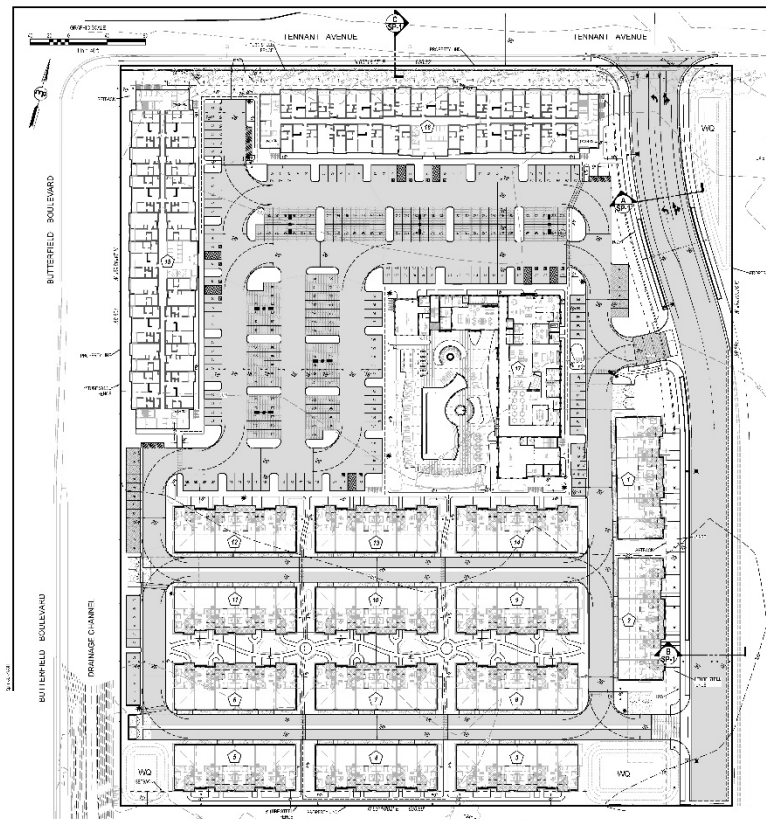


Traffic Impact Study

740 Tennant Development City of Morgan Hill, CA

DRAFT



July 2024

Traffic Impact Study

740 Tennant Avenue Residential Development

City of Morgan Hill, California

July 3, 2024



TABLE OF CONTENTS

Table of Contents	i
List of Tables	ii
List of Figures	iii
List of Appendices	iii
Executive Summary	4
Project Overview.....	4
Project Trip Summary	4
Level of Service and Queuing Summary	5
2024 Existing Conditions	5
2024 Existing Conditions plus Project	5
2040 Cumulative Conditions	6
2040 Cumulative Conditions plus Project.....	6
Additional Transportation Analyses Summary	7
Pedestrian Impacts.....	7
Bicycle Impacts	7
Transit Impacts.....	7
Site Access Management.....	7
Internal Circulation.....	7
Parking	7
1.0 Introduction	8
1.1 Study Purpose	8
1.2 Study Locations	8
1.2.1 Study Intersections	8
1.3 Study Scenarios	8
2.0 Study Methodology	12
2.1 Level of Service Methodology	12
2.1.1 Signalized Intersections.....	12
2.1.2 Unsignalized Intersections	13
2.1.3 Level of Service Standards.....	14
3.0 2024 Existing Conditions	15
3.1 Existing Setting and Roadway System.....	15
3.2 Existing Pedestrian Facilities.....	16
3.3 Existing Bicycle Facilities	16
3.4 Existing Transit Facilities.....	17
3.5 Existing Traffic Volumes and Lane Configuration	21
3.6 Intersection Level of Service Analysis	24
3.7 Queuing Analysis	25
4.0 2024 Existing Conditions plus Project	27
4.1 Project Trip Generation	27

4.2 Project Trip Distribution and Assignment.....	27
4.3 Intersection Level of Service Analysis	33
4.4 Queuing Analysis	34
5.0 2040 Cumulative Conditions.....	37
5.1 Inherent Regional Growth.....	37
5.2 Intersection Level of Service Analysis	40
5.3 Queuing Analysis	41
6.0 2040 Cumulative Conditions plus Project.....	44
6.1 Intersection Level of Service Analysis	44
6.2 Queuing Analysis	47
8.0 Additional Analysis.....	50
8.1 Alternative Modes of Transportation.....	50
8.1.1 Pedestrian Impacts	50
8.1.2 Bicycle Impacts.....	50
8.1.3 Transit Impacts.....	51
8.2 Site Access Management, Internal Circulation, and Parking	51
8.2.1 Site Access Management.....	51
8.2.2 Internal Circulation	51
8.2.3 Parking	52

LIST OF TABLES

Table 1: Level of Service Definitions for Signalized Intersections	13
Table 2: Level of Service Definitions for Stop-Controlled Intersections	14
Table 3: Existing Bus Services	17
Table 4: 2024 Existing Conditions – Intersection Level of Service Analysis Results	24
Table 5: Queuing Analysis Results – 2024 Existing Conditions	25
Table 6: Project Trip Generation and Comparison (ITE TGM 11 th Ed.; Peak Hour of the Adjacent Street)	29
Table 7: 2024 Existing Conditions plus Project – Intersection Level of Service Analysis Results.....	33
Table 8: Queuing Analysis Results – 2024 Existing Conditions plus Project.....	35
Table 9: 2040 Cumulative Conditions – Intersection Level of Service Analysis Results.....	40
Table 10: Queuing Analysis Results – 2024 Cumulative Conditions	42
Table 11: 2040 Cumulative Plus Project Conditions – Intersection Level of Service Analysis Results	45
Table 12: Queuing Analysis Results – 2024 Cumulative Conditions plus Project	48

LIST OF FIGURES

Figure 1: Vicinity Map 10

Figure 2: Site Plan 11

Figure 3: 2024 Existing Conditions – Pedestrian Network 18

Figure 4: 2024 Existing Conditions – Bike Network 19

Figure 5: 2024 Existing Conditions – Transit Network 20

Figure 6: 2024 Existing Conditions - Lane Configuration and Control 22

Figure 7: 2024 Existing Conditions – Intersection Peak Hour Traffic Volumes 23

Figure 8: Project Trip Distribution 30

Figure 9: Project Trip Assignment 31

Figure 10: 2024 Existing Conditions plus Project – Intersection Peak Hour Traffic Volumes 32

Figure 11: Inherent Regional Growth Volumes (2024 to 2040) 38

Figure 12: 2040 Cumulative Conditions – Intersection Peak Hour Traffic Volumes 39

Figure 13: 2040 Cumulative Plus Project Conditions – Intersection Peak Hour Traffic Volumes 46

LIST OF APPENDICES

Appendix A: HCM Methodology

Appendix B: Intersection Turning Movement Counts

Appendix C: 2024 Existing Conditions Capacity Analysis Worksheets

Appendix D: 2024 Existing Conditions plus Project Capacity Analysis Worksheets

Appendix E: 2040 Cumulative Conditions Capacity Analysis Worksheets

Appendix F: 2040 Cumulative Conditions plus Project Capacity Analysis Worksheets

Appendix G: Queuing Analysis Worksheets

EXECUTIVE SUMMARY

This report summarizes the results of a Traffic Impact Study (TIS) that was conducted for the proposed 740 Tennant Avenue Residential Development (the "Project" / "Development"), located west of US 101 in the southern portion of the City of Morgan Hill (the "City"), California.

This TIS uses methodologies that are consistent with State and City guidelines and standards. This document was prepared in accordance with best professional practices and standards that assess the impacts of a proposed development on the transportation system, and as appropriate, recommends improvements to lessen or negate those impacts. Transportation analyses, as presented in this TIS, involve the evaluation of existing and anticipated future roadway conditions, including with and without the proposed development, and recommend transportation improvements to offset both the impacts of the increase in future traffic volumes and the changes in traffic operations due to the development. The analysis herein is intended to assist public officials and developers balance the interrelations between efficient traffic movements and necessary lane access.

Project Overview

The Project would construct 84 townhomes and 175 apartments on a greenfield site at the southeast corner of Tennant Avenue & Butterfield Boulevard, with roadway network access provided at Tennant Avenue & Juan Hernandez Drive.

The purpose of this TIS is to evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed Project. The report includes intersection level of service (LOS) capacity analyses of key intersections, evaluations, and recommendations concerning Project site access and on-site circulation for vehicles, bicycles, and pedestrians.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed Project, six study intersections were identified with input from City staff and evaluated during the weekday morning (a.m.) peak hour and weekday afternoon (p.m.) peak hour under four study scenarios. The study intersections were evaluated under the following scenarios:

- 2024 Existing Conditions, without and with the Development;
- 2040 Cumulative Conditions, without and with the Development.

Project Trip Summary

Using the methodology presented in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition (TGM), the proposed development is expected to generate approximately 2,071 vehicular trips during a typical weekday, including 150 a.m. peak hour trips (36 inbound, 114 outbound) and 170 p.m. peak hour trips (102 inbound, 68 outbound).

Level of Service and Queuing Summary

In line with the City of Morgan Hill guidelines and standards, this TIS considers intersection operating conditions of level of service (LOS) "E" or better to be acceptable.

2024 Existing Conditions

Intersection LOS

All study intersections operate within jurisdictional thresholds during both peak hours.

Queuing Analysis

The following locations experience queues that exceed existing storage lengths:

- Study Intersection 1: Tennant Avenue & Monterey Road/Edmundson Avenue
 - Eastbound left (both peak hours)
 - Northbound left (both peak hours)
 - Southbound left (p.m. peak hour)
- Study Intersection 2: Tennant Avenue & Butterfield Boulevard
 - Westbound left (both peak hours)
 - Westbound right (a.m. peak hour)
 - Southbound left (p.m. peak hour)

2024 Existing Conditions plus Project

Intersection LOS

All study intersections continue to operate with jurisdictional thresholds during both peak hours with added traffic from the Project. The study intersections are expected to see an average increase in delays by approximately 2.7 seconds during the peak hours.

Queuing Analysis

The turn bays at the study intersection operate relatively similar to "No Project" conditions, with the following exceptions:

- Study Intersection 2: Tennant Avenue & Butterfield Boulevard
 - Northbound Right – The existing queue increases from 192 feet to 264 feet (a net increase of 72 feet or approximately three vehicles). This added queue should be able to be accommodated within the existing right turn taper.
- Study Intersection 3: Tennant Avenue & Juan Hernandez Drive
 - Westbound left – The existing queue increases by 97 feet (approximately four vehicles), which will cause the projected queue during the p.m. peak hour to exceed the storage length by 35 feet. This added queue should be able to be accommodated within the existing left turn taper; however, it is recommended that the Applicant coordinate with the City to determine if it will be necessary to extend the storage bay by removing portions of the existing median.

Recommendations

- Coordinate with the City to determine if it will be necessary to extend the westbound left storage bay at Tennant Avenue & Juan Hernandez Drive (Study Intersection 3) by removing portions of the existing median.

2040 Cumulative Conditions

Intersection LOS

All study intersections operate above jurisdictional thresholds during both peak hours.

Queuing Analysis

The following locations experience queues that exceed existing storage lengths:

- 1) Tennant Avenue & Monterey Road/Edmundson Avenue
 - Eastbound left (both peak hours)
 - Northbound left (both peak hours)
 - Southbound left (p.m. peak hour)
- 2) Tennant Avenue & Butterfield Boulevard
 - Eastbound left (both peak hours)
 - Westbound left (both peak hours)
 - Westbound right (a.m. peak hour)
 - Northbound right (a.m. peak hour)
 - Southbound left (p.m. peak hour)
- 4) Tennant Avenue & US 101 southbound ramps
 - Southbound right (a.m. peak hour)

2040 Cumulative Conditions plus Project

Intersection LOS

All study intersections continue to operate with jurisdictional thresholds during both peak hours with added traffic from the Project. The study intersections are expected to see an average increase in delays by approximately 2.5 seconds during the peak hours.

Queuing Analysis

The turn bays at the study intersection operate relatively similar to “No Project” conditions, with the following exceptions:

- Study Intersection 3: Tennant Avenue & Juan Hernandez Drive
 - Westbound left – The existing queue increases by 100 feet (approximately four vehicles), which will cause the projected queue during the p.m. peak hour to exceed the storage length by 39 feet. This added queue should be able to be accommodated within the existing left turn taper; however, it is recommended that the Applicant coordinate with the

City to determine if it will be necessary to extend the storage bay by removing portions of the existing median.

Recommendations

- Coordinate with the City to determine if it will be necessary to extend the westbound left storage bay at Tennant Avenue & Juan Hernandez Drive (Study Intersection 3) by removing portions of the existing median.

Additional Transportation Analyses Summary

Pedestrian Impacts

The proposed Project would not result in any conflicts with applicable or adopted policies, plans, or programs related to pedestrian facilities. The proposed Project would not decrease the performance or safety of existing pedestrian facilities. Thus, the proposed Project would not result in any such conflicts; therefore, the impact on pedestrian facilities is expected to be **less-than-significant**.

Bicycle Impacts

The proposed Project would not result in any conflicts or inconsistencies with existing bicycle facilities or with adopted bicycle system plans, policies, or programs related to bicycle facilities. The proposed Project would not decrease the performance or safety of bicycle facilities. Thus, the proposed Project would not result in any such conflicts; therefore, the impact on bicycle facilities is expected to be **less-than-significant**.

Transit Impacts

As the proposed Project would not conflict with a program, plan, ordinance, or policy regarding existing or planned transit facilities, the impact on transit facilities is expected to be **less-than-significant**.

Site Access Management

Two full-movement access points are proposed along the proposed extension of Juan Hernandez Drive with the proposed Project. Both are adequately spaced from one another. Vehicular access management impacts of the proposed Project are considered to be **less-than-significant**.

Internal Circulation

Since the proposed Project would provide adequate access to all proposed lots and facilities in the development site, and since the proposed Project would not have negative effects on access to existing lots or facilities within the City, the proposed Project's impacts on internal circulation would be **less-than-significant**.

Parking

The Project provides 453 parking spaces, which is 66 more spaces than the 387 required spaces according to City of Morgan Hill standards. The Project would provide adequate parking facilities that are **consistent** with the City's standards.

1.0 INTRODUCTION

This report summarizes the results of a Traffic Impact Study (TIS) that was conducted for the proposed 740 Tennant Avenue Residential Development (the “Project”) west of US 101 in the southern portion of the City of Morgan Hill (the “City”), California. The Project would construct 84 townhomes and 175 apartments at the southeast corner of Tennant Avenue & Butterfield Boulevard, with access at Tennant Avenue & Juan Hernandez Drive.

This chapter discusses the TIS purpose, the Project study area, and the scenarios analyzed. **Figure 1** shows the Project study area and the Project site location. **Figure 2** shows the Project’s site plan.

1.1 Study Purpose

The purpose of this report is to provide summaries of changes in traffic impacts on the surrounding roadway network as a result of the proposed Project. A LOS analysis was conducted to determine the proposed Project’s impacts on the surrounding roadway network and consistency with the City of Morgan Hill’s plans and standards.

1.2 Study Locations

1.2.1 Study Intersections

TJKM evaluated traffic conditions at six study intersections during the weekday morning (a.m.) and weekday afternoon (p.m.) peak hours. The study intersections were selected based on TJKM’s working knowledge of the area and with input and approval from the City of Morgan Hill.

The peak periods observed were 7–9 a.m. and 4–6 p.m. The study intersections and their corresponding traffic controls are listed below:

1. Tennant Avenue & Monterey Road (Signalized)
2. Tennant Avenue & Butterfield Boulevard (Signalized)
3. Tennant Avenue & Juan Hernandez Drive (Future Project Driveway; Signalized)
4. Tennant Avenue & US 101 Southbound Ramps (Signalized)
5. Tennant Avenue & US 101 Northbound Ramps (Signalized)
6. Tennant Avenue & Condit Road (One-way Stop Control)

Figure 1 shows the location of the study intersections.

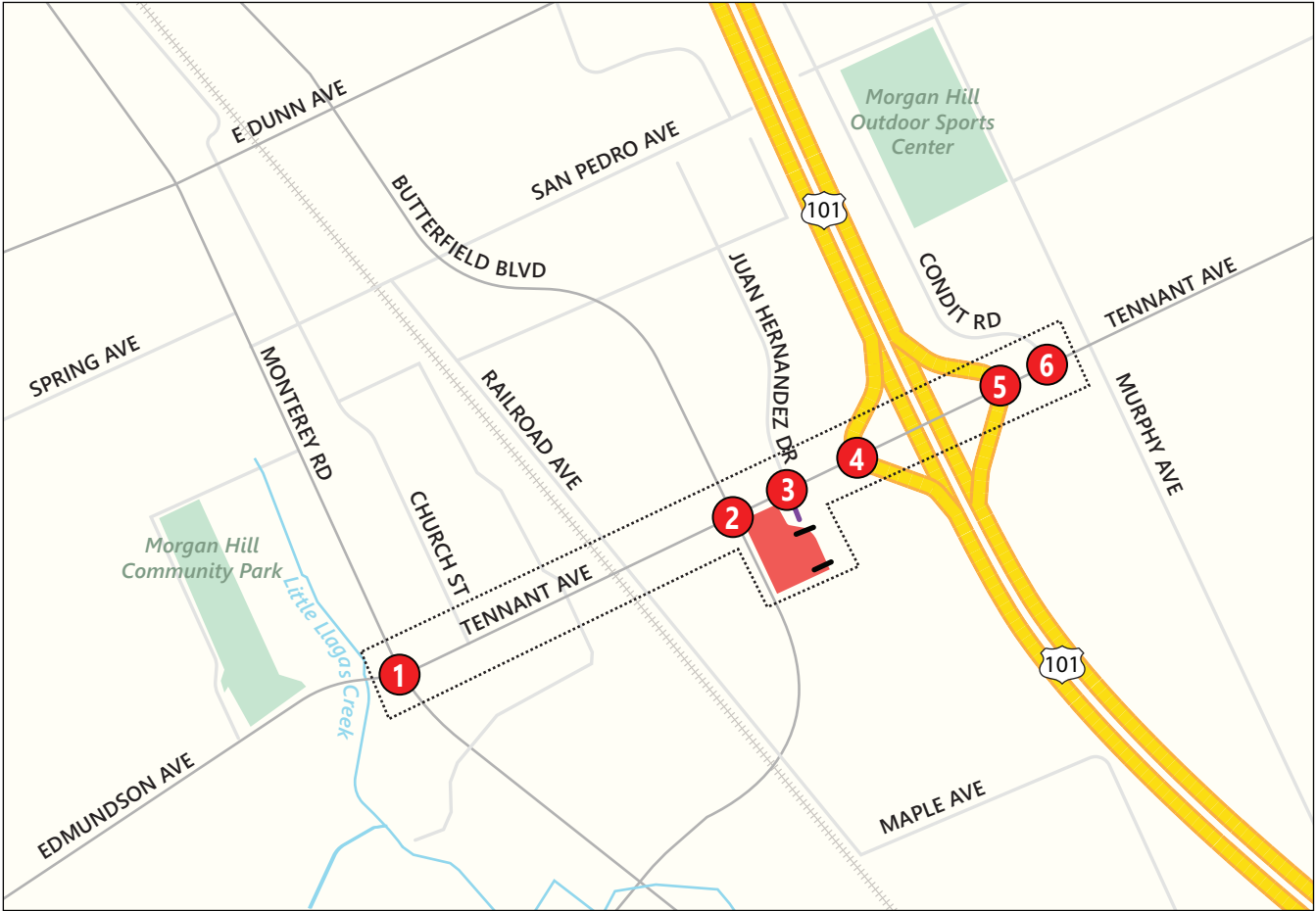
1.3 Study Scenarios

The roadway network operations within the Project study area were analyzed under the following scenarios:

1. **2024 Existing Conditions** – This scenario evaluates the study locations based on existing traffic volumes, lane geometry, and traffic controls.
2. **2024 Existing Conditions plus Project** – This scenario is identical to 2024 Existing Conditions but with the addition of traffic from the proposed Project.

3. **2040 Cumulative Conditions** – This scenario considers the development of the City and surrounding communities to the year 2040, projecting existing 2024 traffic volumes to the year 2040 using a compounding annual growth rate of approximately 1.338 percent per year. This growth rate was derived from the Santa Clara Valley Transportation Authority (VTA) Travel Demand Model (TDM).
4. **2040 Cumulative Conditions plus Project** – This scenario is identical to 2040 Cumulative Conditions but with the addition of traffic from the proposed Project.

Figure 1: Vicinity Map

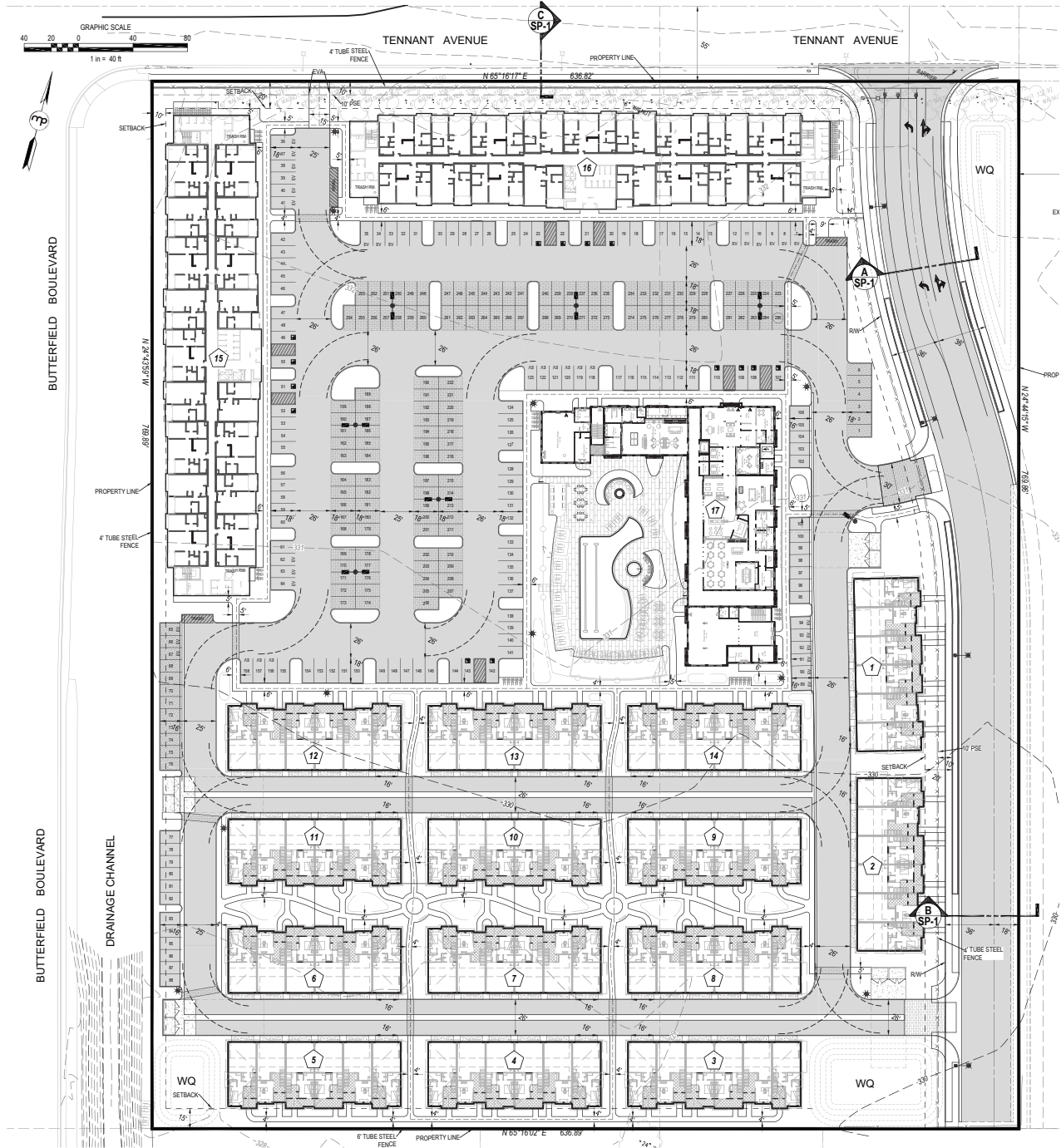


LEGEND

- Project Location
- Study Area
- Study Intersection
- Future Roadway Extension
- Future Driveway



Figure 2: Site Plan



2.0 STUDY METHODOLOGY

Traffic impacts related to the proposed Project were evaluated for both compliance with applicable regulatory documents. Effective as of July 1, 2020, intersection Level of Service (LOS) can no longer be used to determine significant impacts under the California Environmental Quality Act (CEQA). However, the CEQA guidelines do not exclude the use of LOS analyses when determining consistency with plans and standards for jurisdictions or agencies, such as with the City of Morgan Hill.

2.1 Level of Service Methodology

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the free-flow operating conditions and F representing the severely congested flow with high delays. Typically, LOS C is considered an ideal condition as it represents stable flow and efficient use of the transportation facility. Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets. The following sections provide a detailed study methodology based on the type of intersections.

Each of the study intersections was analyzed using *Synchro*, Version 11 software using methodology presented in either the Transportation Research Board's (TRB) Highway Capacity Manual 2000 (HCM 2000) or Highway Capacity Manual, 6th Edition (HCM 6) depending on applicability. The LOS assessment under all scenarios is based on current traffic controls unless otherwise noted.

2.1.1 Signalized Intersections

The study intersections under traffic signal control are analyzed using the HCM 2000 methodology for signalized intersections described in Chapter 16. This methodology determines LOS based on average control delay per vehicle for the overall intersection during peak hour intersection operating conditions. For all signalized intersections, the HCM 2000 methodology was used in lieu of HCM 6 due to some of the signalized intersections having configurations or conditions that are outside the limits of the methodology (i.e., non-standard lane configurations, leading pedestrian intervals, etc.).

Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. **Table 1** summarizes the relationship between the control delay and LOS for signalized intersections. The LOS assessments under all scenarios are based on current traffic controls and signal timings unless otherwise noted.

The LOS methodology for signalized intersections is described in detail in **Appendix A**.

Table 1: Level of Service Definitions for Signalized Intersections

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: Transportation Research Board's (TRB) *Highway Capacity Manual 2000*

2.1.2 Unsignalized Intersections

The study intersections under one/two-way stop control (OWSC / TWSC) and all-way stop control (AWSC) are analyzed using the HCM 6 methodology described in Chapters 20 and 21, respectively. LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At one- or two-way stop-controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersection is presented for all-way stop-controlled intersections.

Table 2 summarizes the relationship between delay and LOS for unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections, as drivers expect less delay at stop-controlled intersections.

The LOS methodology for unsignalized intersections is described in detail in **Appendix A**.

Table 2: Level of Service Definitions for Stop-Controlled Intersections

Level of Service	Description	Control Delay Range (sec/veh)	v/c Range
A	Usually no conflicting traffic. Drivers can easily find gaps in traffic to maneuver. v/c is low.	≤ 10	≤ 1.0
B	Occasionally some delay due to conflicting traffic. Drivers can find gaps in traffic. v/c is low.	≤ 15	≤ 1.0
C	There is some noticeable delay due to conflicting traffic. Drivers are still able to find gaps in traffic.	≤ 25	≤ 1.0
D	Drivers experience delays due to fewer gaps in traffic to maneuver. Lane group v/c creeps closer to 1.0.	≤ 35	≤ 1.0
E	Delay approaches driver tolerance levels. Drivers will occasionally find gaps in traffic to maneuver. Lane group v/c	≤ 50	≤ 1.0
F	Delay exceeds driver tolerance levels or v/c exceeds 1.0 or both.	> 50	> 1.0

Source: Transportation Research Board's (TRB) *Highway Capacity Manual, 6th Edition*

2.1.3 Level of Service Standards

Although level of service is no longer used for identifying impacts under CEQA, level of service analysis is still used for determining consistency with adopted agency plans and standards. Where standards refer to significant environmental impacts, this analysis instead identifies these as significant inconsistencies with adopted plans.

The City of Morgan Hill discusses specific standards in its General Plan on page TR-16 (Policy TR-3.4):

LOS E during peak hours of travel is acceptable for the following identified freeway ramps, road segments, and intersections:

- *Tennant Avenue and Monterey Road*
- *Tennant Avenue and Butterfield Boulevard*
- *Tennant Avenue Freeway Zone: from Butterfield/Tennant to Condit/Tennant Freeway Ramps*

As all study intersections fall within the locations discussed above, a threshold of LOS E will be used. For the purposes of this analysis, operating conditions at study intersections will be considered inconsistent with the City of Morgan Hill plans and standards if traffic impacts, specific to the proposed Project, cause LOS to fall below LOS E.

Additionally, unsignalized intersections would not be considered impacted unless they also meet the California Manual on Uniform Traffic Control Devices (2014 Ed.) (CA MUTCD) peak hour signal warrant (Warrant 3).

3.0 2024 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

3.1 Existing Setting and Roadway System

Relevant roadways in the Project's vicinity are discussed below:

State Route 101 (US 101) is a six-lane north-south freeway that connects the City of Morgan Hill with surrounding cities and communities such as Madrone, San Martin, and Gilroy, as well as farther regional destinations such as the San Francisco Bay Area to the north and the Central Coast to the south. US 101 bisects the City of Morgan Hill and serves as the main transportation artery for regional traffic. The posted speed limit is 65 miles per hour (mph).

Tennant Avenue is an east-west six-lane major arterial from the US 101 ramps to Butterfield Boulevard and a four-lane major arterial from the US 101 ramps to Murphy Avenue. The Project site would be accessible by an extension of Juan Hernandez Drive south of Tennant Avenue that would connect to driveways on the Project site. On-street parking is not permitted. The posted speed limit is 40 mph.

Monterey Road is a north-south four-lane arterial that runs along the western side of the City of Morgan Hill. The roadway provides direct access to downtown Morgan Hill for the Project site. On-street parking is present on both sides near the Project site. The posted speed limit is 35 mph.

Butterfield Boulevard is a north-south four-lane arterial that runs between Monterey Road and US 101 east of the Union Pacific Railroad right-of-way. The roadway directly borders the Project site to the west and provides access to downtown Morgan Hill. On-street parking is not permitted on both sides near the Project site. The posted speed limit is 45 mph.

Juan Hernandez Drive is a north-south local roadway that shares an intersection with Tennant Avenue northeast of the Project site. The Project would extend Juan Hernandez Drive south from its intersection with Tennant Drive to provide the Project direct access to the local roadway network. On-street parking is present on both sides north of Tennant Avenue. The posted speed limit is 35 mph.

Condit Road is a two-lane north-south collector that runs east of US 101. The roadway widens north of Tennant Avenue to connect two interchanges with US 101 within the City of Morgan Hill. On-street parking is not present near the intersection with Tennant Avenue. The posted speed limit is 40 mph.

3.2 Existing Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal “walkable” community includes wider sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, and easy access to transit facilities and services.

Pedestrian facilities consist of marked crosswalks, concrete sidewalks, pedestrian signals, and off-street paths that provide safe and convenient routes for pedestrians to access destinations such as institutions, businesses, public transportation, and recreational facilities.

Within the study area, marked crosswalks and concrete sidewalks are present at and between signalized intersections along Tennant Boulevard except for intermittent gaps between Vineyard Boulevard and the US 101 southbound ramps. Concrete sidewalks are present on both sides of Butterfield Boulevard along the Project frontage south of Tennant Avenue.

Concrete curb cuts with tactile surfaces and countdown pedestrian signal heads are present at most corners of signalized intersections within the study area.

A graphic illustrating existing pedestrian facilities is provided in **Figure 3**.

3.3 Existing Bicycle Facilities

Bicycle paths, lanes, and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following four classes:

- **Class I (Multiuse Trail):** A completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- **Class II (Bike Lane):** A designated lane for the exclusive use or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited but with vehicle parking and cross-flows by pedestrians and motorists permitted.
- **Class III (Bike Route):** A route designated by signs or pavement markings and shared with pedestrians and motorists.
- **Class IV (Separated Bikeway):** An on-street facility reserved for use by bicyclists with physical separation between the bikeway and travel lanes. Physical separation consists of vertical elements that may include curbs, landscaping, bollards, or parking lanes.

Within the study area, Class II bike lanes are present on both sides of Tennant Avenue and Butterfield Boulevard. Multi-use trails are planned for Butterfield Boulevard, Juan Hernandez Drive, and Condit Road within the City of Morgan Hill's 2017 Bikeways, Trails, Parks, and Recreation Master Plan.

A graphic illustrating existing bicycle facilities is provided in **Figure 4**.

3.4 Existing Transit Facilities

The Santa Clara Valley Transportation Authority (VTA) is a public agency that operates fixed-route bus and light rail services throughout Santa Clara County. Bus services are categorized as "Frequent," "Local," "Express," and "Shuttles." Within the study area, the VTA operates the "Rapid Bus" Route 568, the "Frequent Bus" Route 68, and the "Express" Route 121 along Monterey Road. Routes 568 and 68 connect the Gilroy Transit Center with San Jose Diridon Station, while Route 121 connects Gilroy with the Lockheed Martin Transit Center in Sunnyvale.

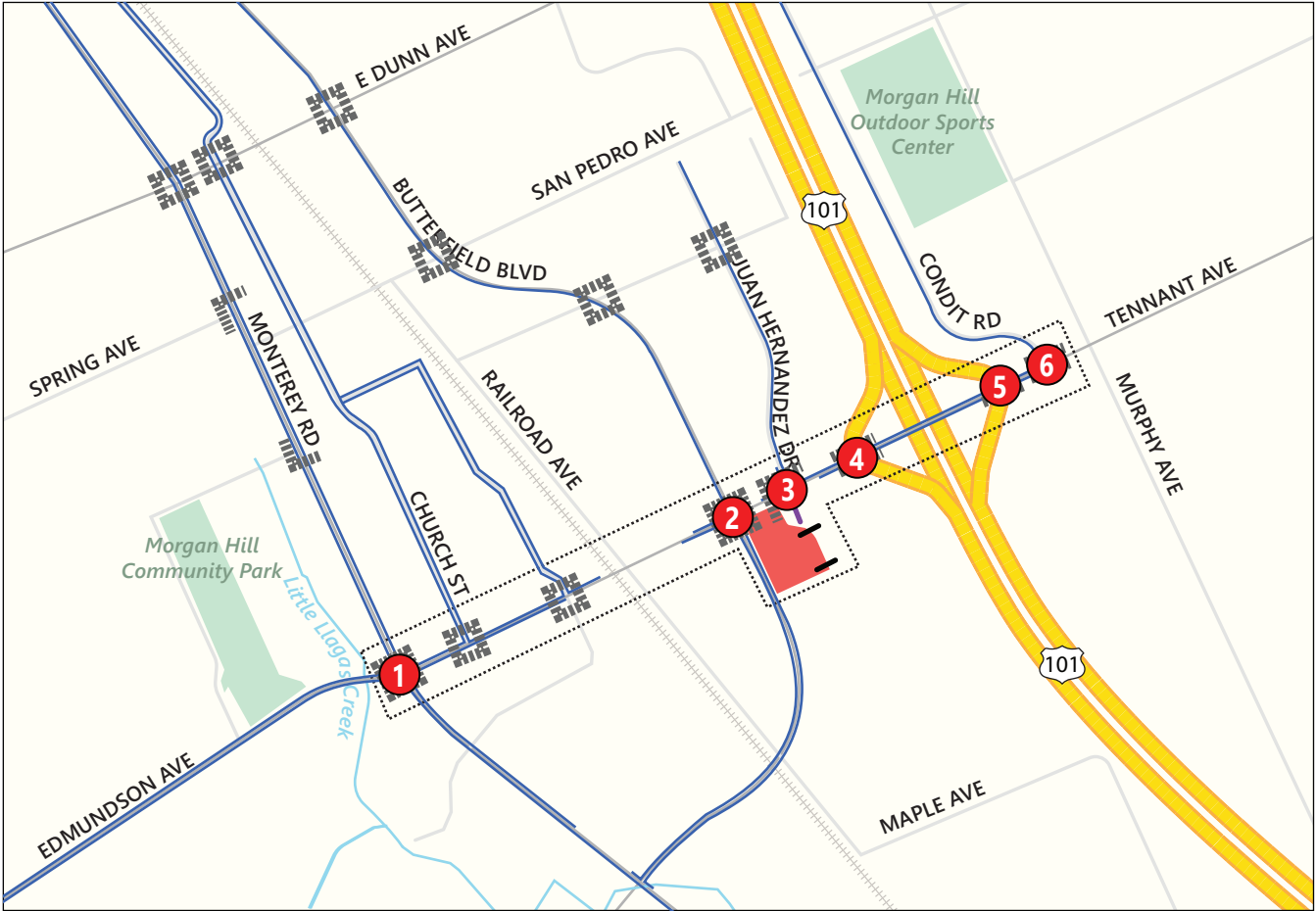
Table 3 shows the operating hours of the Wheatland Route. **Figure 5** shows the existing transit facilities in the City of Wheatland.

Table 3: Existing Bus Services

Route #	From	To	Weekdays		Weekend	
			Operating Hours	Headway (min)	Operating Hours	Headway (min)
568	Gilroy Transit Center	San Jose Diridon Station	4:47 a.m. – 1:23 a.m. (next day).	30	-	-
68	Gilroy Transit Center	San Jose Diridon Station	4:14 a.m. – 1:23 a.m. (next day)	15	5:14 a.m. – 1:01 a.m. (Sat) 5:16 a.m. – 1:21 a.m. (Sun)	20 (Sat) 30 (Sun)
121	Gilroy Transit Center	Lockheed Martin Transit Center	4:26 a.m. – 6:50 p.m.	60	-	-

Source: <https://www.vta.org/go/routes>

Figure 3: 2024 Existing Pedestrian Facilities

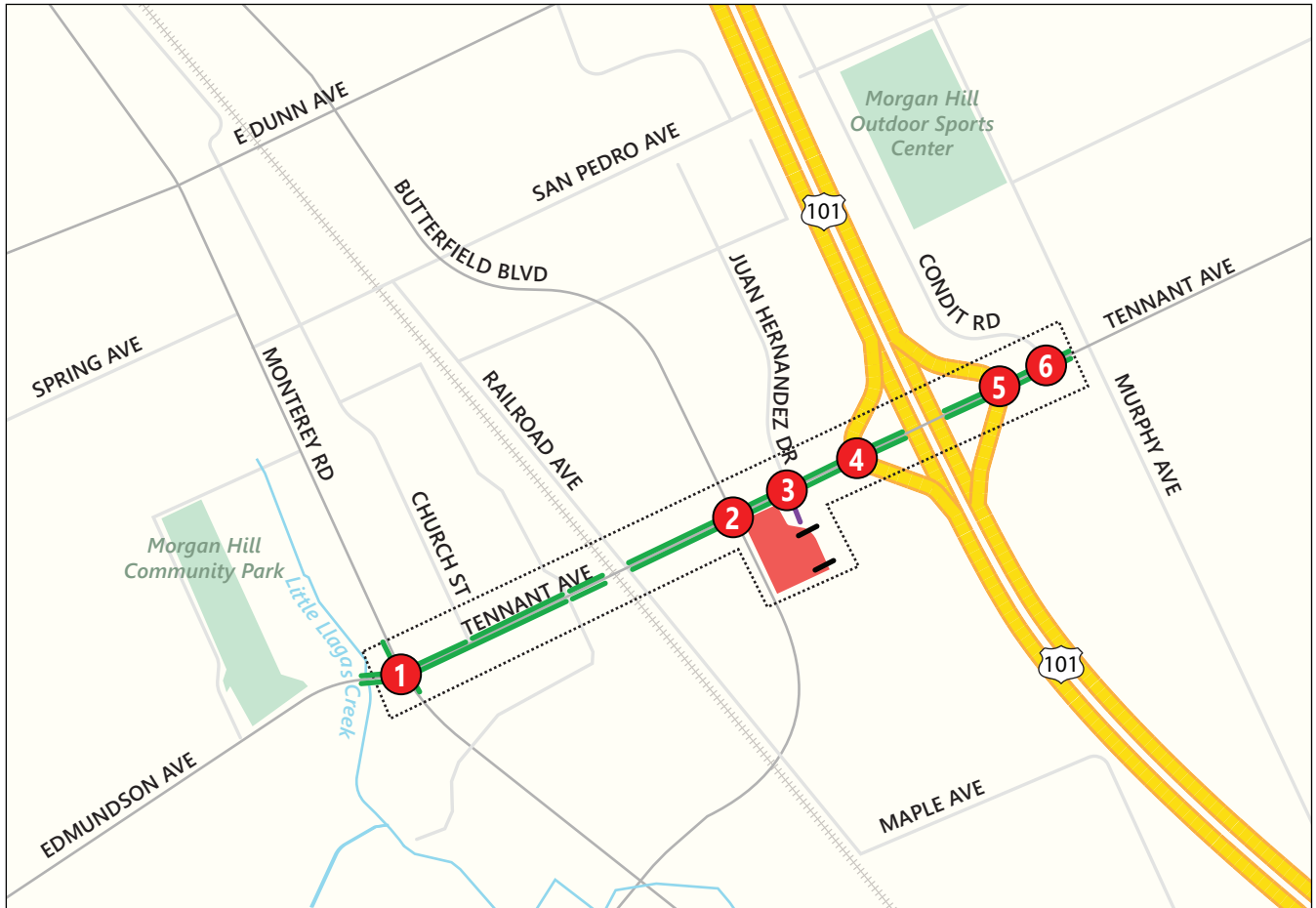


LEGEND

- | | | |
|--|--|---|
|  Project Location |  Future Roadway Extension |  Marked Crosswalk |
|  Study Area |  Future Driveway |  Concrete Sidewalk |
|  Study Intersection | | |



Figure 4: 2024 Existing Bicycle Facilities

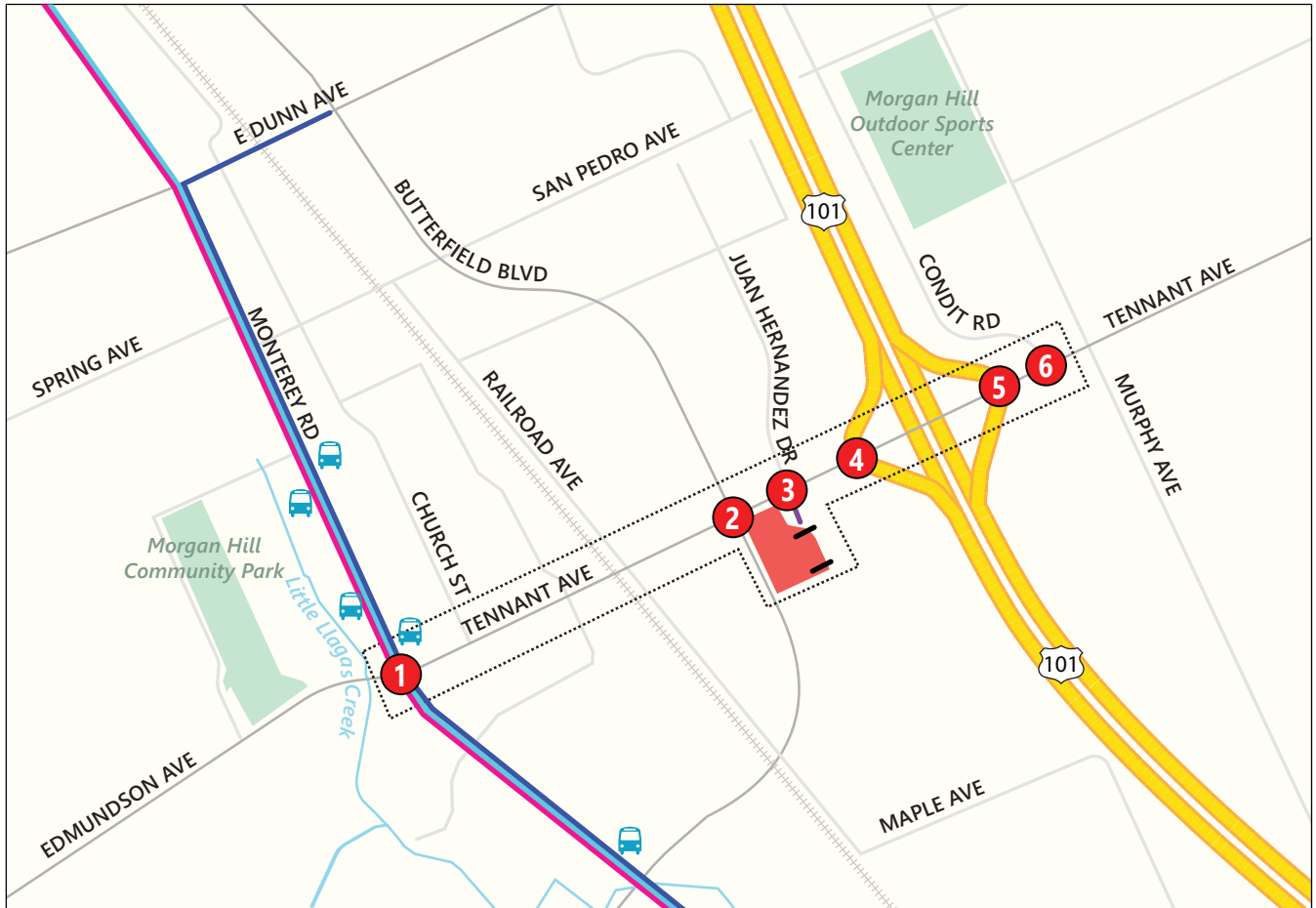


LEGEND

- | | |
|---|--|
| ■ Project Location | — Future Roadway Extension |
| Study Area | — Future Driveway |
| ⊗ Study Intersection | — Class II Bike Lane |



Figure 5: 2024 Existing Transit Facilities



LEGEND

Project Location

Study Area

Study Intersection

Future Roadway Extension

Future Driveway

VTA "Rapid Bus" Route 568

VTA "Frequent Bus" Route 68

VTA "Express" Route 121

Bus Stop



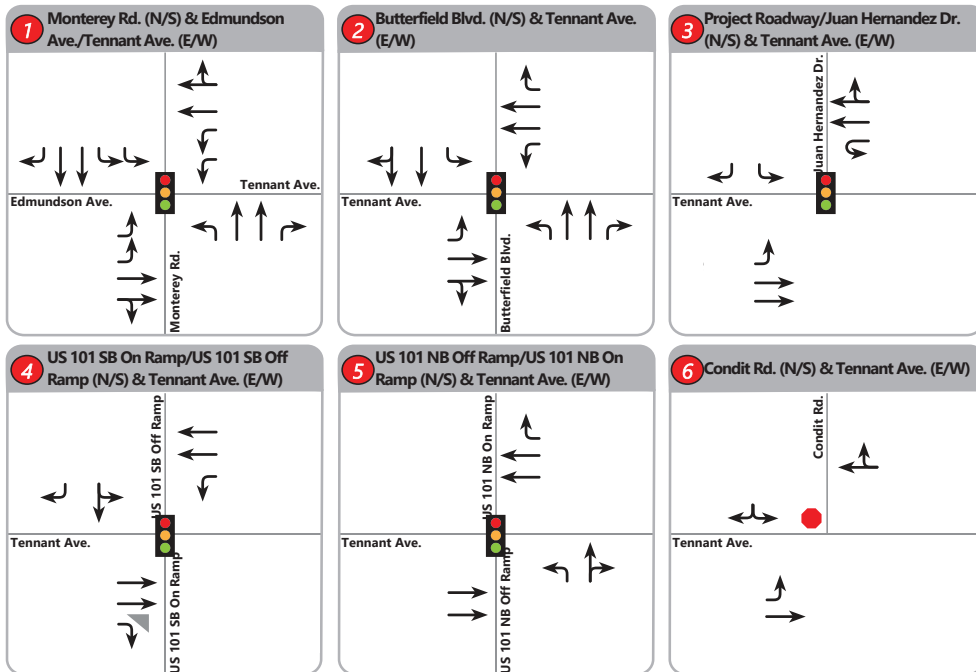
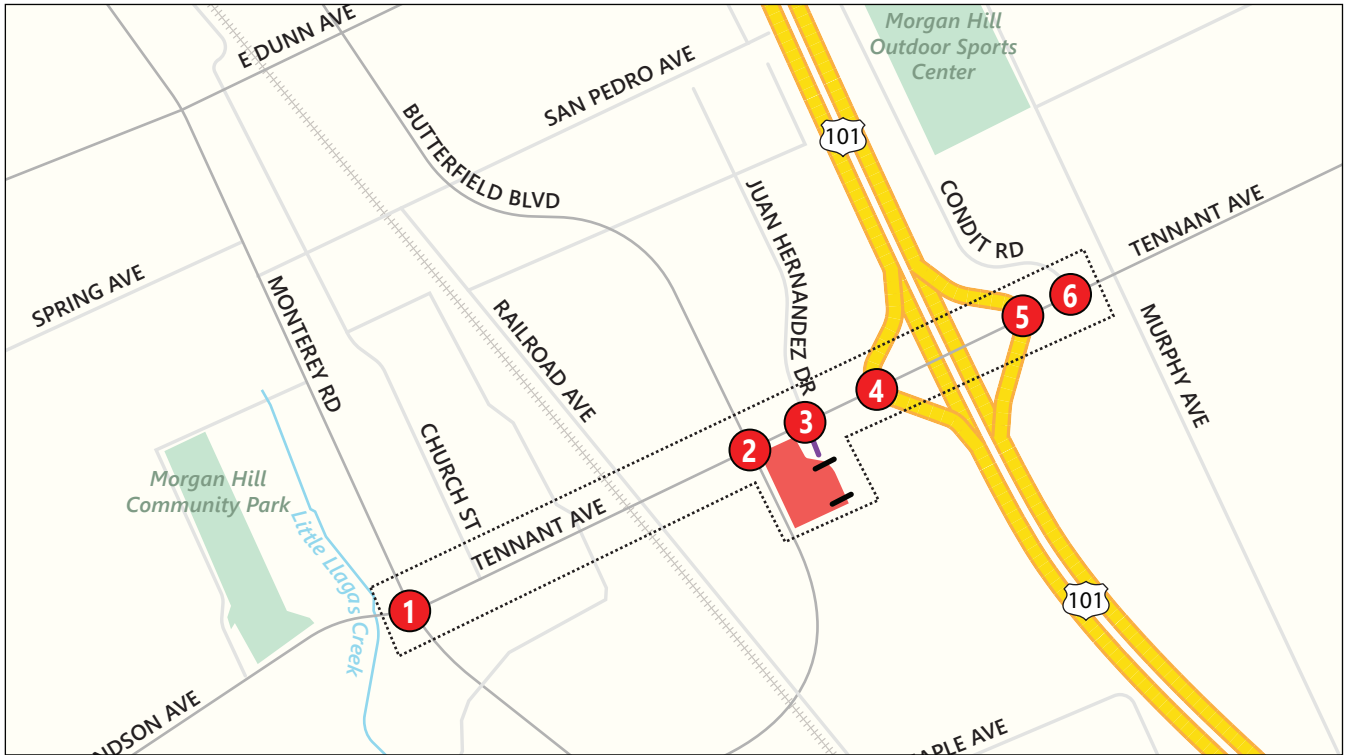
3.5 Existing Traffic Volumes and Lane Configuration

In order to determine the weekday morning (a.m.) and the weekday afternoon (p.m.) turning movement traffic volumes, intersection turning movement counts (TMC) of vehicles, bicycles, and pedestrians were collected at the study intersections on Thursday, May 30, 2024, during the weekday morning and weekday afternoon peak periods (7–9 a.m. and 4–6 p.m., respectively).

The TMC data is included in **Appendix B**.

The existing lane geometries and traffic control at each study intersection are illustrated in **Figure 6**, and intersection turning movement volumes at each study intersection are illustrated in **Figure 7**.

Figure 6: Existing Lane Geometry and Traffic Controls

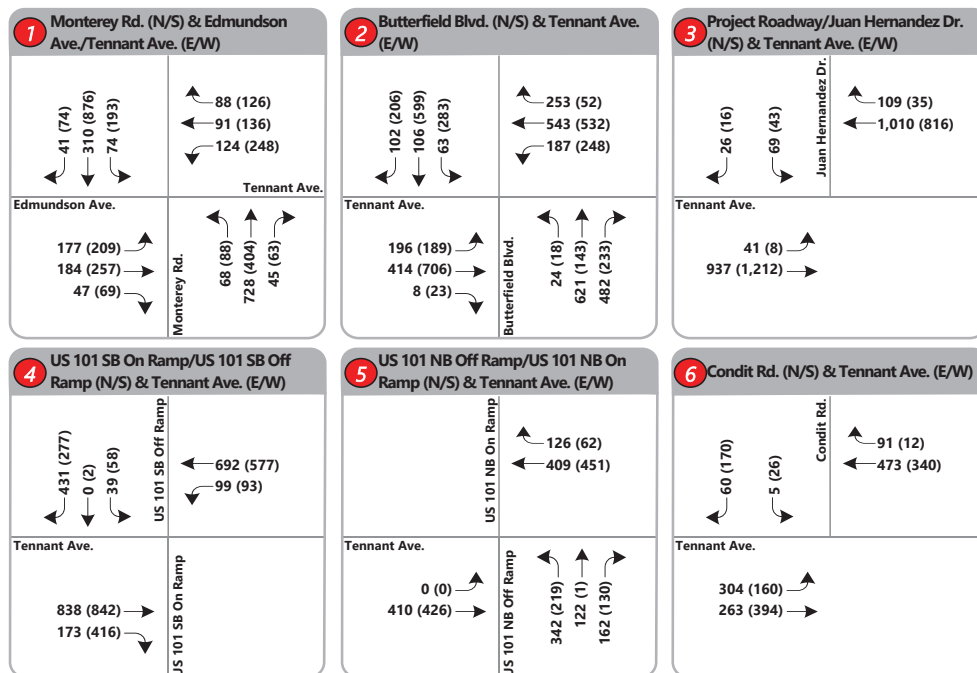
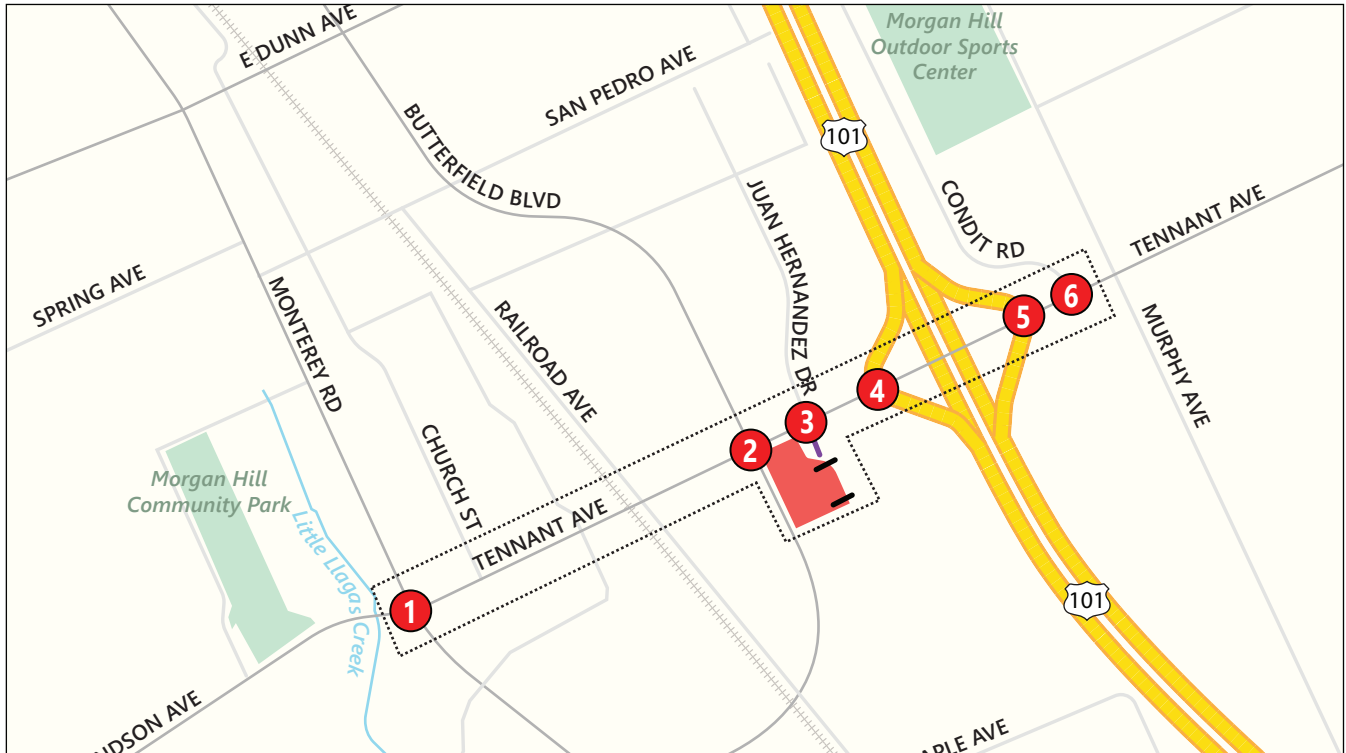


LEGEND

- Project Location
- Future Roadway Extension
- Study Intersection
- Stop Sign
- Traffic Signal
- Study Area
- Future Driveway



Figure 7: 2024 Existing Conditions - Intersection Peak Hour Traffic Volumes



LEGEND

- Project Location
- Study Area
- ✕ Study Intersection
- Future Roadway Extension
- Future Driveway
- XX AM Peak Hour Volumes
- (XX) PM Peak Hour Volumes



3.6 Intersection Level of Service Analysis

Existing intersection lane configurations and turning movement volumes were used to calculate the level of service for the study intersections during each peak hour. Existing signal timings were obtained from the City and Caltrans. The results of the level of service analysis for Existing Conditions are summarized in **Table 4**. Intersections that operated at unacceptable LOS are shown in red. Detailed calculation sheets for the Existing Conditions scenario are contained in **Appendix C**.

As shown below, no study intersections experience unacceptable LOS during both the a.m. and p.m. peak hours.

Table 4: 2024 Existing Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type	Peak Hour	Existing Conditions	
				Delay (sec / veh)	Delay-Based LOS
1	Tennant Ave. & Monterey Rd.	Signal	a.m.	22.7	C
			p.m.	27.9	C
2	Tennant Ave. & Butterfield Rd.	Signal	a.m.	30.1	C
			p.m.	33.4	C
3	Tennant Ave. & Juan Hernandez Dr.	Signal	a.m.	9.6	A
			p.m.	7.7	A
4	Tennant Ave. & US 101 SB Ramps	Signal	a.m.	14.2	B
			p.m.	7.7	A
5	Tennant Ave. & US 101 NB Ramps	Signal	a.m.	8.4	A
			p.m.	7.4	A
6	Tennant Ave. & Condit Rd.	OWSC	a.m.	20.8	C (SB)
			p.m.	18.3	C (SB)

Notes:

1. Signal = Signalized; OWSC = One-Way Stop Control

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop-controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

3.7 Queuing Analysis

Existing intersection lane configurations and existing turning movement volumes were used to calculate anticipated 95th percentile queues (herein referred to as “maximum” queues) for study intersections that have dedicated turn lanes (Study Intersections 1, 2, 3, 4, and 5).

The results of the queueing analysis for the 2024 Existing Conditions scenario are shown in **Table 5**. Turn pockets that experienced maximum queues that would exceed their respective storage bay capacities are shown in red (note that the ability to store vehicles in the turn lane tapers was not considered in the overall storage capacity, as such, most intersections may accommodate additional vehicular queues before spillback conditions occur). Detailed calculation sheets are contained in **Appendix G**.

The following locations experience queues that exceed existing storage lengths:

- Study Intersection 1: Tennant Avenue & Monterey Road/Edmundson Avenue
 - Eastbound left (both peak hours)
 - Northbound left (both peak hours)
 - Southbound left (p.m. peak hour)
- Study Intersection 2: Tennant Avenue & Butterfield Boulevard
 - Westbound left (both peak hours)
 - Westbound right (a.m. peak hour)
 - Southbound left (p.m. peak hour)

Table 5: Queuing Analysis Results – 2024 Existing Conditions

No.	Intersection	Storage Length ¹ (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)
1	Tennant Ave. & Monterey Rd./Edmundson Ave.			
	<i>Eastbound Approach</i>			
	Left	140	142	177
	<i>Westbound Approach</i>			
	Left	295	88	202
	<i>Northbound Approach</i>			
	Left	110	147	185
	Right	115	0	12
	<i>Southbound Approach</i>			
	Left	105	54	145
	Right	115	0	19
2	Tennant Ave. & Butterfield Blvd.			
	<i>Eastbound Approach</i>			
	Left	390	292	263

No.	Intersection	Storage Length ¹ (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)
3	<i>Westbound Approach</i>			
	Left	130	269	383
	Right	130	149	0
	<i>Northbound Approach</i>			
	Left	190	50	43
	Right	220	192	71
	<i>Southbound Approach</i>			
	Left	290	141	422
	Tennant Ave. & Juan Hernandez Dr.			
4	<i>Eastbound Approach</i>			
	Left	295	43	14
	<i>Westbound Approach</i>			
	Left	80	11	8
	<i>Southbound Approach</i>			
	Left	130	57	40
5	Tennant Ave. & US 101 SB Ramps			
	<i>Eastbound Approach</i>			
	Right	235	23	33
	<i>Westbound Approach</i>			
	Left	295	98	45
	<i>Southbound Approach</i>			
5	Right	340	240	66
	Tennant Ave. & US 101 NB Ramps			
	<i>Westbound Approach</i>			
	Right	140	21	14
5	<i>Northbound Approach</i>			
	Left	450	177	105

Notes:

1. Storage lengths do not include portions of taper length.

2. 95th-percentile queues are reported as "maximum" queues for this analysis.

4.0 2024 EXISTING CONDITIONS PLUS PROJECT

This section describes the impacts of the proposed project at the study intersections and surrounding roadway system. The 2024 Existing Conditions plus Project scenario consists of existing traffic volumes and roadway facilities plus new traffic generated by the proposed Project.

The amount of traffic added to the roadway system by the proposed development is estimated using a three-step process:

- Trip Generation (Section 4.1) – Estimates the amount of traffic added to the roadway network,
- Trip Distribution (Section 4.2)– Estimates the direction of travel to and from the project site, and
- Trip Assignment (Section 4.2) – The new trips are assigned to specific street segments and intersection turning movements.

4.1 Project Trip Generation

To estimate trips generated by the proposed development for the weekday morning (a.m.) and weekday afternoon (p.m.) peak periods, as well as for weekday daily trips, TJKM utilized the published trip generation rates from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition (TGM) and consistent with the methodology published in ITE's Trip Generation Handbook, 3rd Edition (TGH).

TJKM utilized published trip rates from the ITE Land Use Code (LUC) 215 (Single-family Attached Housing) and LUC 221 (Multifamily Mid-rise Housing) to estimate the trips generated by the proposed Project's residential units. **Table 6** displays the estimated number of trips generated by the proposed Project by daily average and by peak hour. The proposed Project is expected to generate approximately 2,071 vehicular trips during a typical weekday, including 150 a.m. peak hour trips (36 inbound, 114 outbound) and 170 p.m. peak hour trips (102 inbound, 68 outbound).

Of note, the analysis herein excludes the reductions due to pass-by or internal trip capture due to the lack of non-residential uses within the site.

4.2 Project Trip Distribution and Assignment

Trip distribution is a process of developing study assumptions that estimate the direction vehicular trips will arrive and depart the study site. Trip assignment estimates specific streets and turning movements at study intersections for project-related or site traffic.

Trip distribution and assignment assumptions for the proposed Project were developed based on existing travel patterns, knowledge of the study area, and engineering judgment.

The trip distribution of vehicles for both peak hours is listed below:

- 10 percent to/from the north via Butterfield Boulevard
- 45 percent to/from the north via US 101
- 5 percent to/from the east via Tennant Avenue
- 20 percent to/from the south via US 101

- 5 percent to/from the south via Butterfield Boulevard
- 15 percent to/from the west via Tennant Avenue

Figure 8 illustrates the trip distribution for both peak hours. **Figure 9** shows the assignment for Project site trips. **Figure 10** displays the resulting 2024 Existing Conditions plus Project traffic volumes.

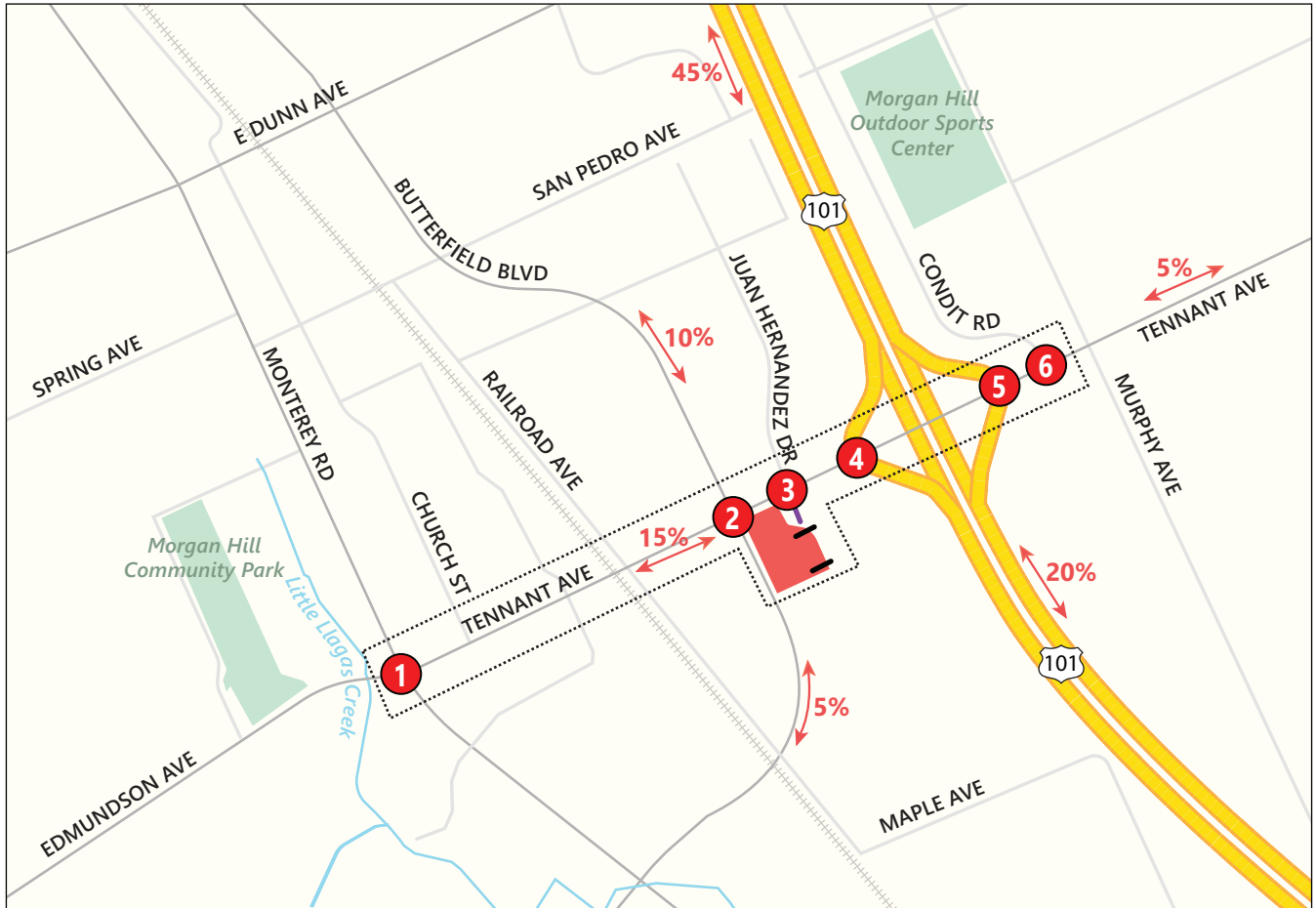
Table 6: Project Trip Generation and Comparison (ITE TGM 11th Ed.; Peak Hour of the Adjacent Street)

Land Use (ITE Code)	Size		Daily Trips	In:Out	A.M. Peak			In:Out	P.M. Peak		
					In	Out	Total		In	Out	Total
Multifamily Housing (Mid-Rise) (221)	175	DU	788	23:77	15	50	65	61:39	42	27	69
Single Family Attached (215)	84	DU	1,283	25:75	21	64	85	59:41	60	41	101
Total Trips			2,071		36	114	150		102	68	170

Notes:

1. General: Multiple ITE land use codes (LUC) have fitted curve equations (EQ) for various analysis periods in addition to rates. The methodology in the ITE's Trip Generation Handbook (3rd Ed.) was utilized to determine which was used.

Figure 8: Project Trip Distribution

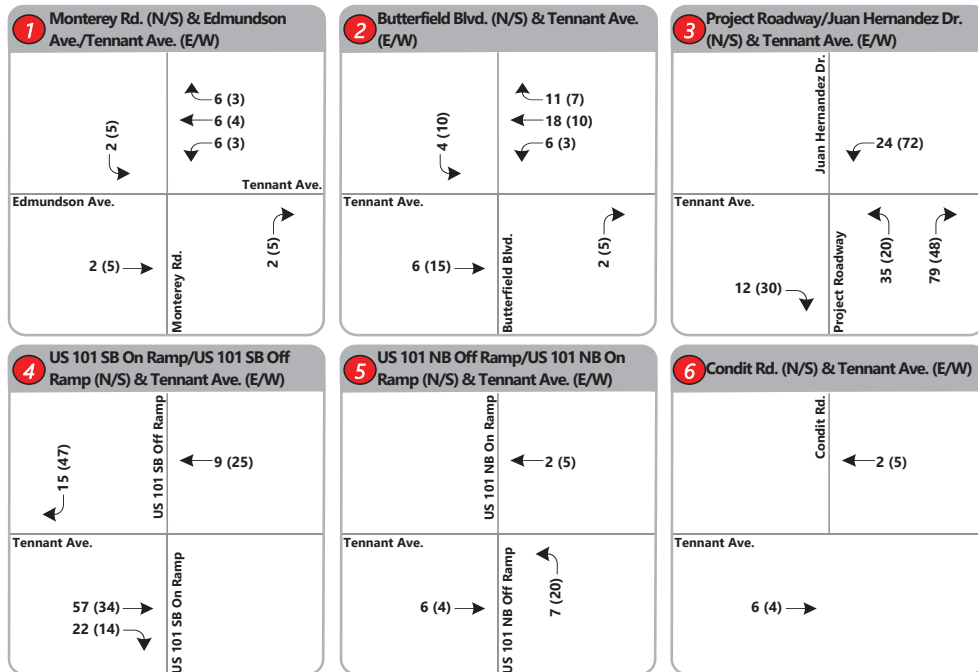
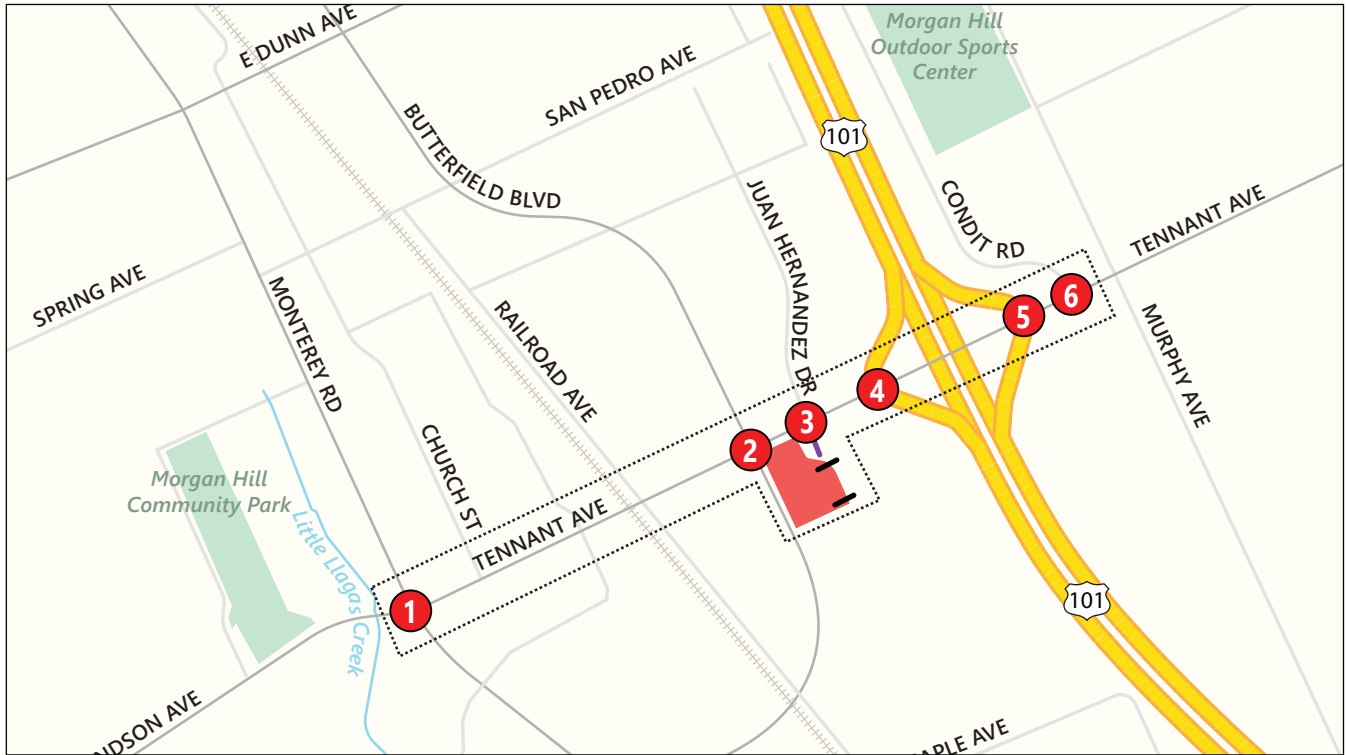


LEGEND

- Project Location
- Study Area
- X Study Intersection
- ↔ XX% Trip Distribution
- Future Roadway Extension
- Future Driveway



Figure 9: Project Trip Assignment



LEGEND

■ Project Location

 Study Area

X Study Intersection

— Future Roadway Extension

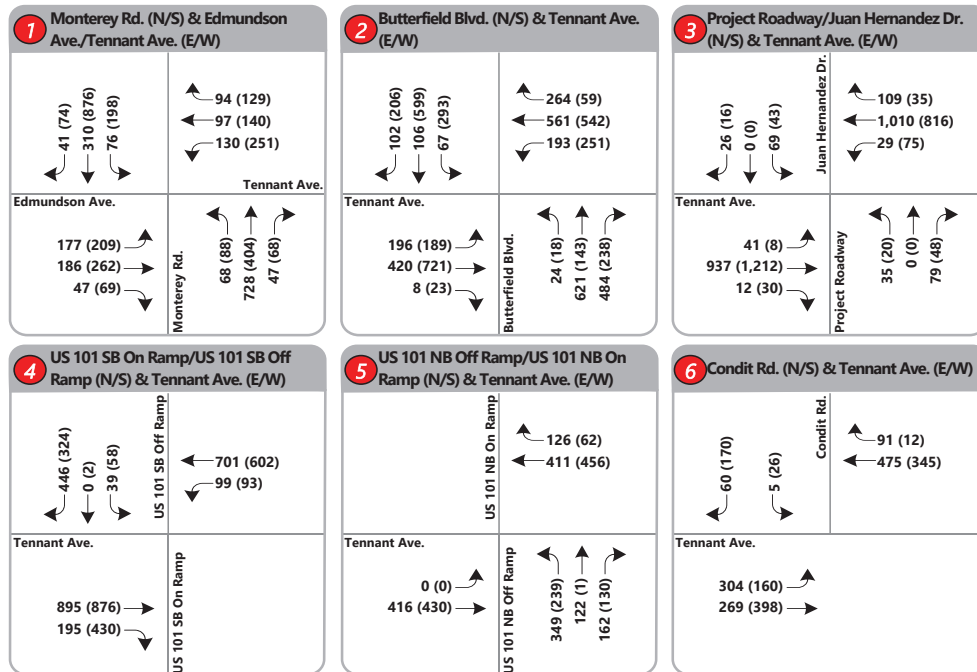
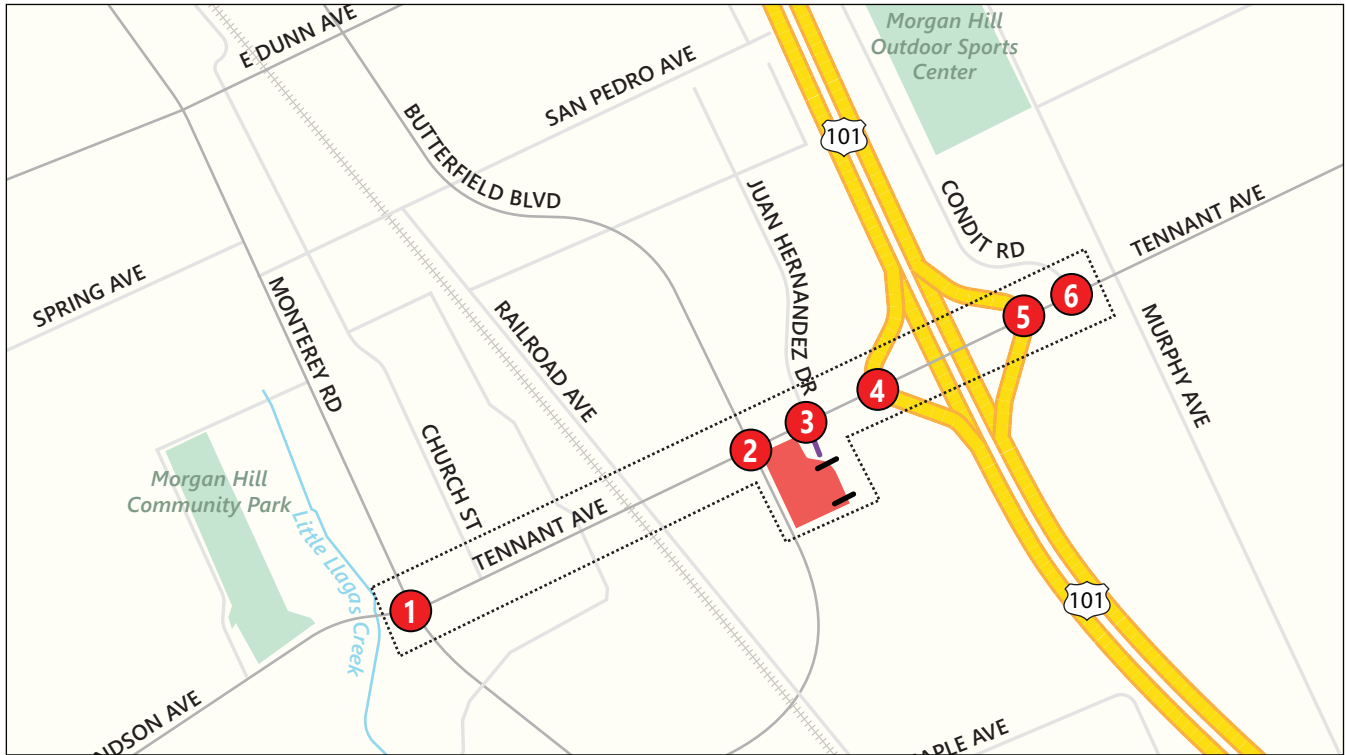
— Future Driveway

XX AM Peak Hour Trips

(XX) PM Peak Hour Trips



Figure 10: 2024 Existing Conditions plus Project - Intersection Peak Hour Traffic Volumes



LEGEND

■ Project Location

 Study Area

X Study Intersection

— Future Roadway Extension

— Future Driveway

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes



4.3 Intersection Level of Service Analysis

The intersection level of service analysis results for the 2024 Existing Conditions plus Project scenario are summarized in **Table 7**. The results for 2024 Existing Conditions are included for comparison. Intersections that operated at unacceptable thresholds are shown in red, and intersections that degraded between “No Project” conditions to “Plus Project” conditions per the applicable thresholds are likewise shown in red. Detailed calculation sheets for 2024 Existing Conditions plus Project are contained in **Appendix D**.

The table below shows that all study intersections under the 2024 Existing Conditions plus Project scenario remain at LOS that are consistent with the standards and plans of the City of Morgan Hill.

Table 7: 2024 Existing Conditions plus Project – Intersection Level of Service Analysis Results

No.	Intersection	Control Type	Peak Hour	Existing Conditions		Existing Plus Project Conditions		Change in Delay (sec / veh)
				Delay (sec / veh)	Delay-Based LOS	Delay (sec / veh)	Delay-Based LOS	
1	Tennant Ave. & Monterey Rd.	Signal	a.m.	22.7	C	22.8	C	+0.1
			p.m.	27.9	C	28.1	C	+0.2
2	Tennant Ave. & Butterfield Rd.	Signal	a.m.	30.1	C	44.9	D	+14.8
			p.m.	33.4	C	34.1	C	+0.7
3	Tennant Ave. & Juan Hernandez Dr.	Signal	a.m.	9.6	A	16.3	B	+6.7
			p.m.	7.7	A	13.7	B	+6.0
4	Tennant Ave. & US 101 SB Ramps	Signal	a.m.	14.2	B	16.0	B	+1.8
			p.m.	7.7	A	8.3	A	+0.6
5	Tennant Ave. & US 101 NB Ramps	Signal	a.m.	8.4	A	8.5	A	+0.1
			p.m.	7.4	A	7.4	A	0.0
6	Tennant Ave. & Condit Rd.	OWSC	a.m.	20.8	C (SB)	21.0	C (SB)	+0.2
			p.m.	18.3	C (SB)	18.6	C (SB)	+0.3

Notes:

1. Signal = Signalized; OWSC = One-Way Stop Control

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop-controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

“-” indicates not applicable.

4.4 Queuing Analysis

The results of the queuing analysis for the 2024 Existing Conditions scenario are shown in **Table 11**. The results of the queuing analysis for the 2024 Existing Conditions plus Project scenario are also shown for comparison. Turn pockets that experienced maximum queues that would exceed their respective storage bay capacities are shown in red. Detailed calculation sheets are contained in **Appendix G**.

The turn bays at the study intersection operate relatively similar to “No Project” conditions, with the following exceptions:

- Study Intersection 2: Tennant Avenue & Butterfield Boulevard
 - Northbound Right – The existing queue increases from 192 feet to 264 feet (a net increase of 72 feet or approximately three vehicles). This added queue should be able to be accommodated within the existing right turn taper.
- Study Intersection 3: Tennant Avenue & Juan Hernandez Drive
 - Westbound left – The existing queue increases by 97 feet (approximately four vehicles), which will cause the projected queue during the p.m. peak hour to exceed the storage length by 35 feet. This added queue should be able to be accommodated within the existing left turn taper; however, it is recommended that the Applicant coordinate with the City to determine if it will be necessary to extend the storage bay by removing portions of the existing median.

TJKM recommends that the applicant coordinate with the City to determine if it will be necessary to extend the westbound left storage bay at Tennant Avenue & Juan Hernandez Drive (Study Intersection 3) by removing portions of the existing median.

Table 8: Queuing Analysis Results – 2024 Existing Conditions plus Project

No.	Intersection	Storage Length ¹ (ft)	Existing Conditions		Existing Conditions plus Project		Change in Queue Length (ft)	
			a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour	p.m. Peak Hour
1	Tennant Ave. & Monterey Rd./Edmundson Ave.							
	<i>Eastbound Approach</i>							
	Left	140	142	177	142	177	0	0
	<i>Westbound Approach</i>							
	Left	295	88	202	94	205	+6	+3
	<i>Northbound Approach</i>							
	Left	110	147	185	147	185	0	0
	Right	115	0	12	0	16	0	+4
	<i>Southbound Approach</i>							
	Left	105	54	145	55	150	+1	+5
	Right	115	0	19	0	19	0	0
2	Tennant Ave. & Butterfield Blvd.							
	<i>Eastbound Approach</i>							
	Left	390	292	263	367	263	+75	0
	<i>Westbound Approach</i>							
	Left	130	269	383	360	388	+91	+5
	Right	130	149	0	148	0	-1	0
	<i>Northbound Approach</i>							
	Left	190	50	43	47	43	-3	0
	Right	220	192	71	264	71	+72	0
	<i>Southbound Approach</i>							
	Left	290	141	422	138	442	-3	+20
3	Tennant Ave. & Juan Hernandez Dr.							
	<i>Eastbound Approach</i>							
	Left	295	43	14	64	19	+21	+5
	<i>Westbound Approach</i>							
	Left	80	11	8	49	105	+38	+97
	<i>Northbound Approach</i>							
	Left	160	0	0	53	34	+53	+34
	<i>Southbound Approach</i>							
	Left	130	57	40	84	57	+27	+17

No.	Intersection	Storage Length ¹ (ft)	Existing Conditions		Existing Conditions plus Project		Change in Queue Length (ft)	
			a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour	p.m. Peak Hour
4	Tennant Ave. & US 101 SB Ramps							
	<i>Eastbound Approach</i>							
	Right	235	23	33	24	37	+1	+4
	<i>Westbound Approach</i>							
	Left	295	98	45	105	53	+7	+8
	<i>Southbound Approach</i>							
	Right	340	240	66	256	90	+16	+24
5	Tennant Ave. & US 101 NB Ramps							
	<i>Westbound Approach</i>							
	Right	140	21	14	21	15	0	+1
	<i>Northbound Approach</i>							
	Left	450	177	105	181	114	+4	+9

Notes:

1. Storage lengths do not include portions of taper length.

2. 95th-percentile queues are reported as "maximum" queues for this analysis.

5.0 2040 CUMULATIVE CONDITIONS

This section discusses the effects of regional growth on the local roadway network that occurs in the period between 2024 and 2040.

5.1 Inherent Regional Growth

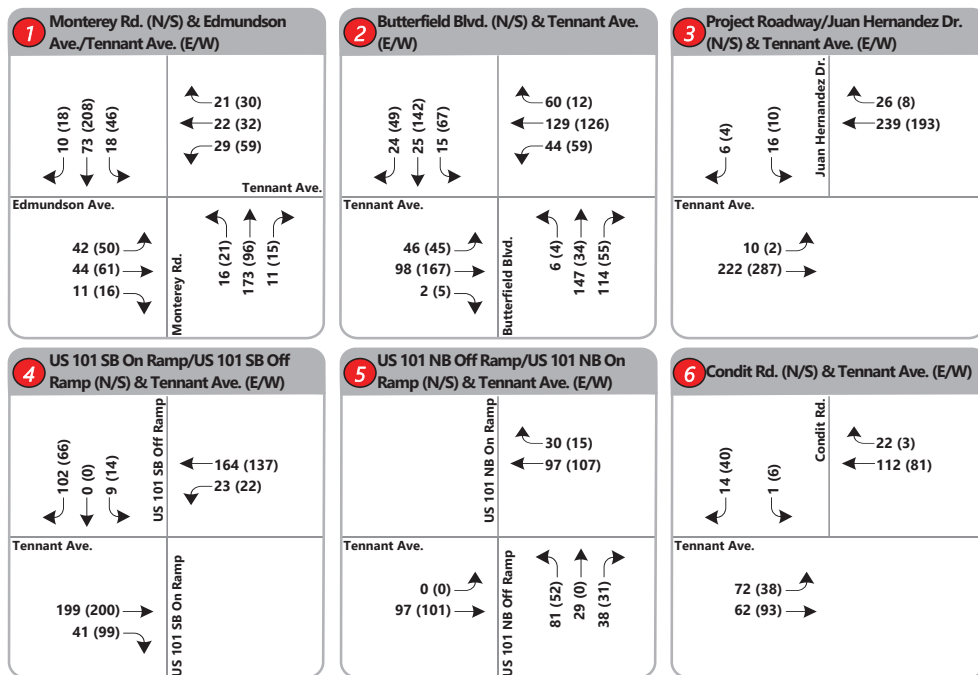
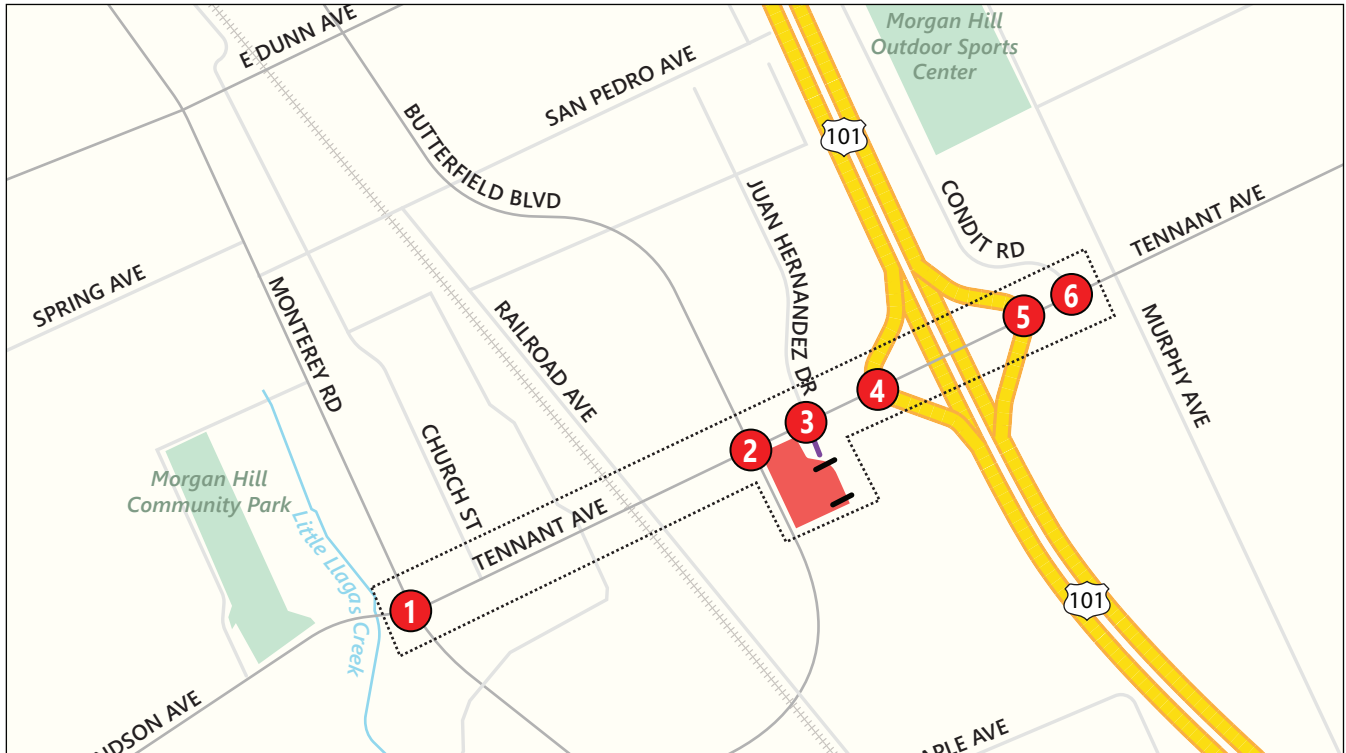
In order to account for the increased demand on the traffic network, an inherent growth rate was applied to obtain the cumulative scenarios by peak hour. This "inherent" growth rates were applied to account for regional development within the at-large area, which would ultimately result in increased roadway demand. Furthermore, the inherent growth rates are anticipated to account for any potential background development to be constructed within the immediate vicinity of the proposed development by 2040.

According to the VTA TDM, traffic volumes on the local roadway network of Morgan Hill were estimated to grow by 1.338 percent per year during both the a.m. and p.m. peak hours from 2025 (the current base year of the latest model) to 2040 (horizon year of the model). Thus, the annual growth rate of 1.338 percent compounds to an approximately 23.7 percent growth factor over the 16-year study period from 2024 to 2040. The growth factor was then applied to all 2024 Existing Conditions movements at the study intersections to generate inherent regional growth volumes.

The inherent regional growth volumes (for the period between 2024 and 2040) are illustrated in **Figure 11**.

The 2024 Existing Conditions peak hour traffic volumes were combined with the inherent regional growth volumes to estimate the 2040 Cumulative Conditions peak hour traffic volumes, as illustrated in **Figure 12**.

Figure 11: Inherent Regional Growth Volumes (2024 to 2040) - Intersection Peak Hour Traffic Volumes



LEGEND

■ Project Location

 Study Area

X Study Intersection

— Future Roadway Extension

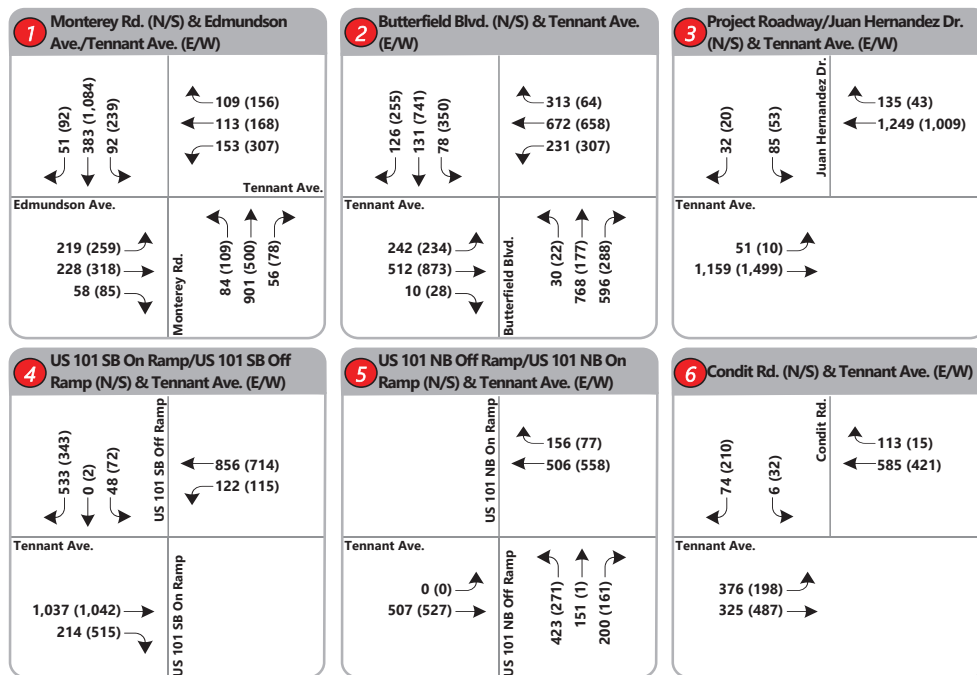
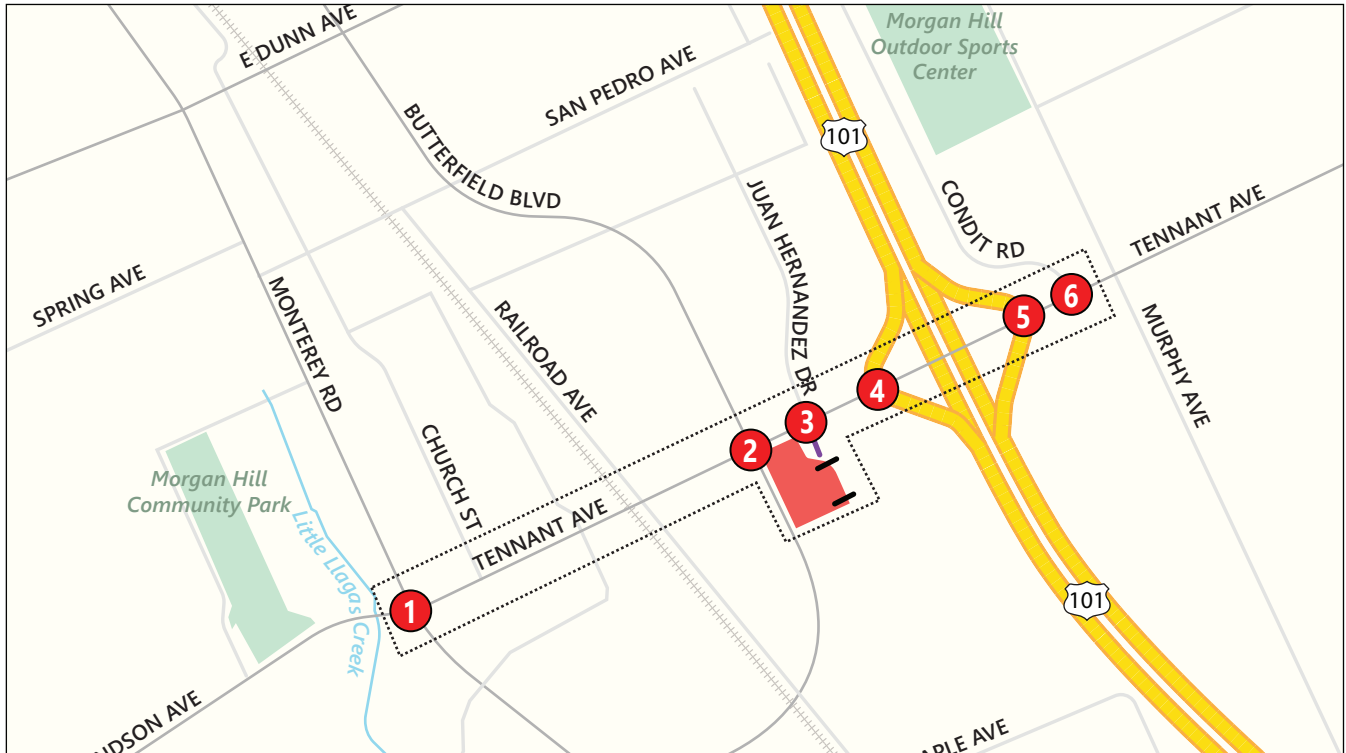
— Future Driveway

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes



Figure 12: 2040 Cumulative Conditions - Intersection Peak Hour Traffic Volumes



LEGEND

- Project Location
- Study Area
- X Study Intersection
- Future Roadway Extension
- Future Driveway
- XX AM Peak Hour Volumes
- (XX) PM Peak Hour Volumes



5.2 Intersection Level of Service Analysis

For 2040 Cumulative Conditions, all geometric and timing parameters are identical to 2024 Existing Conditions. The intersection LOS analysis results for 2040 Cumulative Conditions are summarized in **Table 9**. Intersections that operated at unacceptable LOS are shown in red. Detailed calculation sheets for 2040 Cumulative Conditions are contained in **Appendix E**.

The table below shows that all study intersections under the 2024 Existing Conditions plus Project scenario remain at LOS that are consistent with the standards and plans of the City of Morgan Hill.

Table 9: 2040 Cumulative Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type	Peak Hour	Cumulative Conditions	
				Delay (sec / veh)	Delay-Based LOS
1	Tennant Ave. & Monterey Rd.	Signal	a.m.	26.5	C
			p.m.	47.6	D
2	Tennant Ave. & Butterfield Rd.	Signal	a.m.	47.9	D
			p.m.	58.1	E
3	Tennant Ave. & Juan Hernandez Dr.	Signal	a.m.	12.8	B
			p.m.	8.5	A
4	Tennant Ave. & US 101 SB Ramps	Signal	a.m.	30.8	C
			p.m.	9.5	A
5	Tennant Ave. & US 101 NB Ramps	Signal	a.m.	9.5	A
			p.m.	7.7	A
6	Tennant Ave. & Condit Rd.	OWSC	a.m.	46.8	E (SB)
			p.m.	34.7	D (SB)

Notes:

1. Signal = Signalized; OWSC = One-Way Stop Control

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

3. Delay measured in seconds per vehicle. For signalized and all-way stop controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

5.3 Queuing Analysis

Existing intersection lane configurations and Cumulative 2040 turning movement volumes were used to calculate anticipated 95th percentile queues (herein referred to as “maximum” queues) for study intersections that have dedicated turn lanes (Study Intersections 1, 2, 3, 4, and 5). Peak hour factors were calculated from the existing turning movement counts (on a by-intersection basis).

The results of the queueing analysis for the 2024 Cumulative Conditions scenario are shown in **Table 10**. Turn pockets that experienced maximum queues that would exceed their respective storage bay capacities are shown in red. Detailed calculation sheets are contained in **Appendix G**.

The following locations experience queues that exceed existing storage lengths:

- 1) Tennant Avenue & Monterey Road/Edmundson Avenue
 - Eastbound left (both peak hours)
 - Northbound left (both peak hours)
 - Southbound left (p.m. peak hour)
- 2) Tennant Avenue & Butterfield Boulevard
 - Eastbound left (both peak hours)
 - Westbound left (both peak hours)
 - Westbound right (a.m. peak hour)
 - Northbound right (a.m. peak hour)
 - Southbound left (p.m. peak hour)
- 4) Tennant Avenue & US 101 southbound ramps
 - Southbound right (a.m. peak hour)

Table 10: Queuing Analysis Results – 2024 Cumulative Conditions

No.	Intersection	Storage Length ¹ (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)
1	Tennant Ave. & Monterey Rd./Edmundson Ave.			
	<i>Eastbound Approach</i>			
	Left	140	184	225
	<i>Westbound Approach</i>			
	Left	295	118	257
	<i>Northbound Approach</i>			
	Left	110	182	229
	Right	115	7	24
	<i>Southbound Approach</i>			
	Left	105	65	189
	Right	115	3	32
2	Tennant Ave. & Butterfield Blvd.			
	<i>Eastbound Approach</i>			
	Left	390	391	393
	<i>Westbound Approach</i>			
	Left	130	366	549
	Right	130	242	0
	<i>Northbound Approach</i>			
	Left	190	61	52
	Right	220	467	75
	<i>Southbound Approach</i>			
	Left	290	179	609
3	Tennant Ave. & Juan Hernandez Dr.			
	<i>Eastbound Approach</i>			
	Left	295	52	17
	<i>Westbound Approach</i>			
	Left	80	13	9
	<i>Southbound Approach</i>			
	Left	130	67	46
4	Tennant Ave. & US 101 SB Ramps			
	<i>Eastbound Approach</i>			
	Right	235	24	43
	<i>Westbound Approach</i>			
	Left	295	135	109

No.	Intersection	Storage Length ¹ (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)
5	<i>Southbound Approach</i>			
	Right	340	357	118
	Tennant Ave. & US 101 NB Ramps			
	<i>Westbound Approach</i>			
	Right	140	23	16
	<i>Northbound Approach</i>			
	Left	450	268	130

Notes:

1. Storage lengths do not include portions of taper length.

2. 95th-percentile queues are reported as "maximum" queues for this analysis.

6.0 2040 CUMULATIVE CONDITIONS PLUS PROJECT

This section describes the impacts of the proposed Project at the study intersections and surrounding roadway system. The 2040 Cumulative plus Project Conditions scenario consists of cumulative traffic volumes and roadway facilities plus new traffic generated by the proposed Project. The 2040 Cumulative plus Project peak hour traffic volumes are illustrated in **Figure 13**.

Lane geometry and traffic control for the 2040 Cumulative plus Project Conditions are identical to 2040 Cumulative Conditions.

6.1 Intersection Level of Service Analysis

The intersection level of service analysis results for the 2040 Cumulative Conditions plus Project scenario are summarized in **Table 11**. The results for 2040 Cumulative Conditions are included for comparison purposes. Intersections that operated at unacceptable thresholds are shown in red, and intersections that degraded between “No Project” conditions to “Plus Project” conditions per the applicable thresholds are likewise shown in red. Detailed calculation sheets for 2040 Cumulative Conditions plus Project are contained in **Appendix F**.

The table below shows that all study intersections under the 2024 Existing Conditions plus Project scenario remain at LOS that are consistent with the standards and plans of the City of Morgan Hill.

Note that the LOS at Tennant Avenue & Condit Road (Study Intersection 6) declines from LOS D to LOS E during the p.m. peak hour despite an increase in delay of only 1.1 seconds due to the threshold between LOS D and LOS E of 35.0 seconds. This is still within the City’s LOS standard.

Table 11: 2040 Cumulative Plus Project Conditions – Intersection Level of Service Analysis Results

No.	Intersection	Control Type	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions		Change in Delay (sec / veh)
				Delay (sec / veh)	Delay-Based LOS	Delay (sec / veh)	Delay-Based LOS	
1	Tennant Ave. & Monterey Rd.	Signal	a.m.	26.5	C	26.5	C	+0.0
			p.m.	47.6	D	48.5	D	+0.9
2	Tennant Ave. & Butterfield Rd.	Signal	a.m.	47.9	D	49.8	D	+1.9
			p.m.	58.1	E	60.3	E	+2.2
3	Tennant Ave. & Juan Hernandez Dr.	Signal	a.m.	12.8	B	21.5	C	+8.7
			p.m.	8.5	A	15.4	B	+6.9
4	Tennant Ave. & US 101 SB Ramps	Signal	a.m.	30.8	C	33.3	C	+2.5
			p.m.	9.5	A	10.6	B	+1.1
5	Tennant Ave. & US 101 NB Ramps	Signal	a.m.	9.5	A	9.6	A	+0.1
			p.m.	7.7	A	7.8	A	+0.1
6	Tennant Ave. & Condit Rd.	OWSC	a.m.	46.8	E (SB)	48.7	E (SB)	+1.9
			p.m.	34.7	D (SB)	35.8	E (SB)	+1.1

Notes:

1. Signal = Signalized; OWSC = One-Way Stop Control

2. a.m. = a.m. Peak Hour; p.m. = p.m. Peak Hour

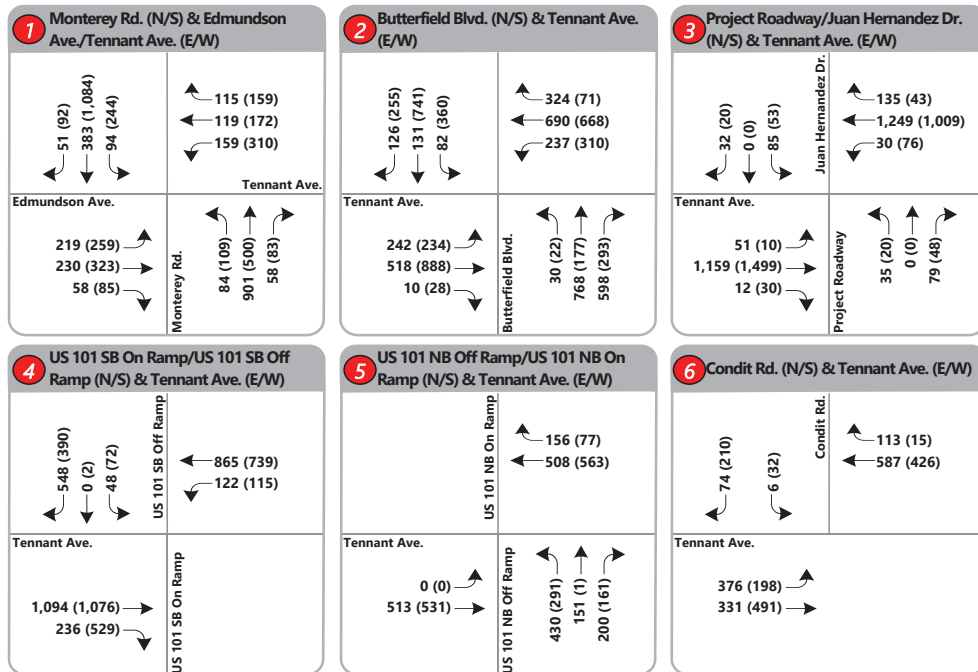
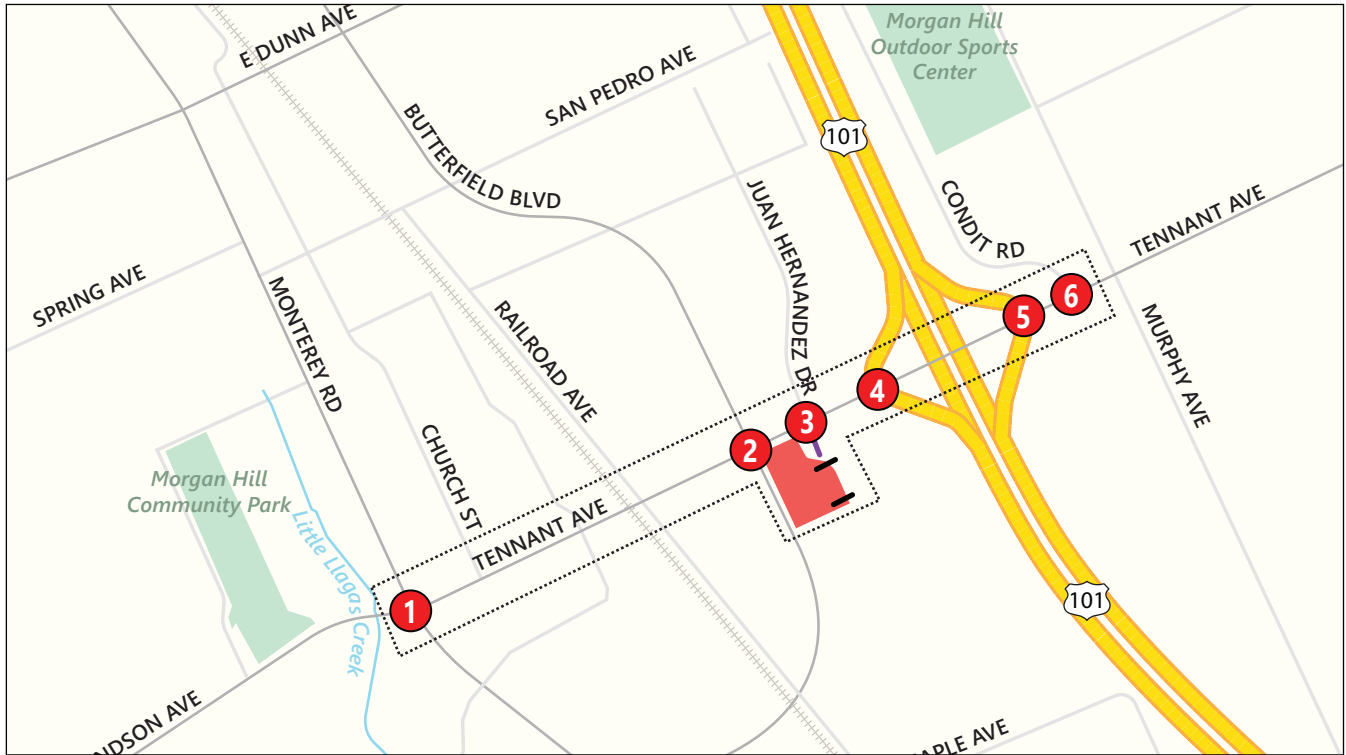
3. Delay measured in seconds per vehicle. For signalized and all-way stop-controlled intersections, the delay represents the average control delay for all turning movements. For one- and two-way stop-controlled intersections, the delay represents the worse average control delay for a given approach.

4. LOS = Level of Service

Red indicates unacceptable LOS.

"-" indicates not applicable.

Figure 13: 2040 Cumulative Conditions plus Project - Intersection Peak Hour Traffic Volumes



LEGEND

■ Project Location

 Study Area

⊗ Study Intersection

— Future Roadway Extension

— Future Driveway

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes



6.2 Queuing Analysis

The results of the queueing analysis for the 2040 Cumulative Conditions plus Project scenario are shown in **Table 12**. The results of the queueing analysis for the 2040 Cumulative Conditions plus Project scenario are also shown for comparison. Turn pockets that experienced maximum queues that would exceed their respective storage bay capacities are shown in red. Detailed calculation sheets are contained in **Appendix G**.

The turn bays at the study intersection operate relatively similar to “No Project” conditions, with the following exceptions:

- Study Intersection 3: Tennant Avenue & Juan Hernandez Drive
 - Westbound left – The existing queue increases by 100 feet (approximately four vehicles), which will cause the projected queue during the p.m. peak hour to exceed the storage length by 39 feet. This added queue should be able to be accommodated within the existing left turn taper; however, it is recommended that the Applicant coordinate with the City to determine if it will be necessary to extend the storage bay by removing portions of the existing median.

TJKM recommends that the applicant coordinate with the City to determine if it will be necessary to extend the westbound left storage bay at Tennant Avenue & Juan Hernandez Drive (Study Intersection 3) by removing portions of the existing median.

Table 12: Queuing Analysis Results – 2024 Cumulative Conditions plus Project

No.	Intersection	Storage Length ¹ (ft)	Cumulative Conditions		Cumulative Conditions plus Project		Change in Queue Length (ft)	
			a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour	p.m. Peak Hour
1	Tennant Ave. & Monterey Rd./Edmundson Ave.							
	<i>Eastbound Approach</i>							
	Left	140	184	225	184	225	0	0
	<i>Westbound Approach</i>							
	Left	295	118	257	125	261	+7	+4
	<i>Northbound Approach</i>							
	Left	110	182	229	182	229	0	0
	Right	115	7	24	9	26	+2	+2
	<i>Southbound Approach</i>							
	Left	105	65	189	65	194	0	+5
	Right	115	3	32	3	32	0	0
2	Tennant Ave. & Butterfield Blvd.							
	<i>Eastbound Approach</i>							
	Left	390	391	393	391	393	0	0
	<i>Westbound Approach</i>							
	Left	130	366	549	378	556	+12	+7
	Right	130	242	0	256	0	+14	0
	<i>Northbound Approach</i>							
	Left	190	61	52	61	52	0	0
	Right	220	467	75	472	75	+5	0
	<i>Southbound Approach</i>							
	Left	290	179	609	187	631	+8	+22
3	Tennant Ave. & Juan Hernandez Dr.							
	<i>Eastbound Approach</i>							
	Left	295	52	17	88	24	+36	+7
	<i>Westbound Approach</i>							
	Left	80	13	9	51	109	+38	+100
	<i>Northbound Approach</i>							
	Left	160	0	0	54	34	+54	+34
	<i>Southbound Approach</i>							

No.	Intersection	Storage Length ¹ (ft)	Cumulative Conditions		Cumulative Conditions plus Project		Change in Queue Length (ft)	
			a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour Max Queue ² (ft)	p.m. Peak Hour Max Queue ² (ft)	a.m. Peak Hour	p.m. Peak Hour
	Left	130	67	46	100	67	+33	+21
4	Tennant Ave. & US 101 SB Ramps							
	<i>Eastbound Approach</i>							
	Right	235	24	43	25	44	+1	+1
	<i>Westbound Approach</i>							
	Left	295	135	109	135	113	0	+4
	<i>Southbound Approach</i>							
	Right	340	357	118	372	147	+15	+29
5	Tennant Ave. & US 101 NB Ramps							
	<i>Westbound Approach</i>							
	Right	140	23	16	23	16	0	0
	<i>Northbound Approach</i>							
	Left	450	268	130	275	142	+7	+12

Notes:

1. Storage lengths do not include portions of taper length.
2. 95th-percentile queues are reported as "maximum" queues for this analysis.

8.0 ADDITIONAL ANALYSIS

The following sections provide additional analyses of other transportation issues associated with the project site, including:

- Alternative Modes of Transportation;
- Site Access Management, Internal Circulation, and Parking.

Unlike the LOS impact methodology, the analyses in these sections are generally based on professional judgment in accordance with the standards and methods employed by traffic engineers and planners.

8.1 Alternative Modes of Transportation

8.1.1 Pedestrian Impacts

A significant impact occurs if a proposed project conflicts with applicable or adopted policies, plans, or programs related to pedestrian facilities or otherwise decreases the performance or safety of pedestrian facilities.

The City of Morgan Hill has adopted the following requirement in Section 12.02.090 of its Municipal Code:

Improvements on Streets. Said permittee [(developer)] shall provide for the improvement of said unimproved street by the installation, at the permittee's sole cost, including but not limited to all of the following improvements as required in the city standards which said unimproved street shall lack: curbs, gutters, driveways, sidewalks, storm drains, complete paving to curb, street lighting, medians, traffic signals, signing and striping, bus stops, street trees, walkways, landscaping, sewer lines, water lines undergrounding existing overhead services and non-access facilities.

A tentative map of the proposed Project displayed in **Figure 2** shows that five-foot wide concrete sidewalks would be built on the south side of Tennant Avenue where none currently exists. Additionally, the Project would include five-foot concrete sidewalks on both sides of the extension of Juan Hernandez Drive within the property line of the Project.

Thus, the proposed Project would not result in any such conflicts; therefore, the impact on pedestrian facilities is expected to be **less-than-significant**.

8.1.2 Bicycle Impacts

A significant impact on bicyclists occurs if a proposed project disrupts existing bicycle facilities or creates inconsistencies with adopted bicycle system plans, guidelines, programs, or policies, or otherwise decreases the performance or safety of bicycle facilities.

Tennant Avenue and Butterfield Boulevard both include Class II bike lanes on both sides of the roadways near the proposed Project site. A tentative map of the proposed Project displayed in **Figure 2** shows that the Project would not encroach upon the existing bicycle facilities on Tennant Avenue or Butterfield Boulevard.

Thus, the proposed Project would not result in any such conflicts; therefore, the impact on bicycle facilities is expected to be **less-than-significant**.

8.1.3 Transit Impacts

A significant impact occurs if a project conflicts with a program, plan, ordinance, or policy regarding existing or planned transit facilities.

The nearest transit facility to the proposed Project site is located approximately two-thirds of a mile to the west. The proposed Project is additionally not anticipated to conflict with any program, plan, ordinance, or policy regarding existing or planned transit facilities.

Thus, the impact on transit facilities is expected to be **less-than-significant**.

8.2 Site Access Management, Internal Circulation, and Parking

8.2.1 Site Access Management

The proposed Project is a greenfield development and would be accessible via two proposed full-movement intersections along the proposed extension of Juan Hernandez Drive (Juan Hernandez Drive & Project Driveway North and Juan Hernandez Drive & Project Driveway South). According to the tentative map shown in **Figure 2**, the proposed intersections would be approximately 370 feet apart, and Juan Hernandez Drive & Project Driveway North would be approximately 280 feet south of Tennant Avenue & Juan Hernandez Drive. The adequate distances between the proposed and existing intersections indicate little potential interaction between intersection functional areas.

Finally, the two proposed intersections would provide an adequate level of robustness in site accessibility if one intersection were blocked due to an incident.

Thus, access management impacts of the proposed development are considered **less-than-significant**.

8.2.2 Internal Circulation

A significant impact would occur if the internal circulation of a proposed project conflicts with or creates inconsistencies with adopted plans, guidelines, or policies or does not provide adequate access within the site.

A tentative map of the proposed Project in **Figure 2** shows that all proposed buildings would be fronted by internal roadways. All internal roadways are 26 feet in width, allowing enough room for bi-directional vehicular traffic and for vehicles to back-up/pull-in to garages and/or driveways.

Turning radii along internal roadways are additionally kept consistent to prevent the need for two-movement turns.

Since the proposed Project would provide adequate access to all proposed lots and facilities in the development site, the proposed Project's impacts on internal circulation would be **less-than-significant**.

8.2.3 Parking

A significant impact would occur if the off-street parking facilities of a proposed project conflicts with or creates inconsistencies with adopted plans, guidelines, or policies or do not provide adequate access within the site.

The Project provides 453 parking spaces, which is 66 more spaces than the 387 required spaces according to City of Morgan Hill standards.

Parking spaces are typically nine feet wide and 18 feet deep, which meets the minimum requirements of the City of Morgan Hill's parking lot dimensions in Section 18.72.060 of the municipal code.

Section 11B-208.2 of the 2022 California Access Compliance Advisory Reference Manual requires nine accessible parking spaces for parking facilities with 401 to 500 parking spaces. The proposed Project exceeds the requirement by providing 14 accessible parking spaces.

Section 4.106.4.2.2 of the 2022 California Green Building Standards Code requires ten percent of the total number of parking spaces on a multifamily development project with 20 or more dwelling units to be electric vehicle (EV) capable. This equates to approximately 45 EV-capable spaces. The Project would provide 11 parking spaces with EV chargers. Another 34 parking spaces would be capable of accommodating EV chargers in the future, meeting the requirements of the 2022 California Green Building Standards Code.

Thus, the proposed Project does not conflict with or create inconsistencies with adopted plans, guidelines, or policies regarding parking and does not prevent adequate access within the site. The proposed Project's impacts on parking would be less-than-significant.

Appendix A: HCM Methodology

APPENDIX A

LEVEL OF SERVICE

The description and procedures for calculating capacity and level of service are found in Transportation Research Board, Highway Capacity Manual 2000. Highway Capacity Manual 2000 represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels.

A general description of service levels for various types of facilities is shown in Table A-I

Table A-I: Level of Service Description

	Uninterrupted Flow	Interrupted Flow
Facility Type	Freeways Multi-lane Highways Two-lane Highways Urban Streets	Signalized Intersections Unsignalized Intersections Two-way Stop Control All-way Stop Control
LOS		
A	Free-flow	Very low delay.
B	Stable flow. Presence of other users noticeable.	Low delay.
C	Stable flow. Comfort and convenience starts to decline.	Acceptable delay.
D	High density stable flow.	Tolerable delay.
E	Unstable flow.	Limit of acceptable delay.
F	Forced or breakdown flow.	Unacceptable delay

Source: Highway Capacity Manual 2000

Urban Streets

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas.

Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials.

Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals.

Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control. As a result, these factors also affect quality of service.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway density, spacing between signalized intersections, existence of parking, level of pedestrian activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic control (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds, however, such controls are needed to establish right-of-way.

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service. The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

Level-of-service A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.

Level-of-service B describes reasonably unimpeded operations. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.

Level-of-service C describes stable operations, however, ability to maneuver and change lanes in midblock location may be more restricted than at level-of-service B. Longer queues, adverse signal coordination, or both may contribute to lower travel speeds.

Level-of-service D borders on a range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. Level-of-service D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors.

Level-of-service E is characterized by significant delays and lower travel speeds. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level-of-service F is characterized by urban street flow at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.

The methodology to determine level of service stratifies urban streets into four classifications. The classifications are complex, and are related to functional and design categories. Table A-II describes the functional and design categories, while Table A-III relates these to the urban street classification.

Once classified, the urban street is divided into segments for analysis. An urban street segment is a one-way section of street encompassing a series of blocks or links terminating at a signalized intersection. Adjacent segments of urban streets may be combined to form larger street sections, provided that the segments have similar demand flows and characteristics.

Levels of service are related to the average travel speed of vehicles along the urban street segment or section.

Travel times for existing conditions are obtained by field measurements. The maximum-car technique is used. The vehicle is driven at the posted speed limit unless impeded by actual traffic conditions. In the maximum-car technique, a safe level of vehicular operation is maintained by observing proper following distances and by changing speeds at reasonable rates of acceleration and deceleration. The maximum-car technique provides the best base for measuring traffic performance.

An observer records the travel time and locations and duration of delay. The beginning and ending points are the centers of intersections. Delays include times waiting in queues at signalized intersections. The travel speed is determined by dividing the length of the segment by the travel time. Once the travel speed on the arterial is determined, the level of service is found by comparing the speed to the criteria in Table A-IV. Level-of-service criteria vary for the different classifications of urban street, reflecting differences in driver expectations.

Table A-II: Functional and Design Categories for Urban Streets

Criterion	Functional Category			
	Principal Arterial		Minor Arterial	
Mobility function	Very important		Important	
Access function	Very minor		Substantial	
Points connected	Freeways, important activity centers, major traffic generators		Principal arterials	
Predominant trips served	Relatively long trips between major points and through trips entering, leaving, and passing through city		Trips of moderate length within relatively small geographical areas	
Criterion	Design Category			
	High-Speed	Suburban	Intermediate	Urban
Driveway access density	Very low density	Low density	Moderate density	High density
Arterial type	Multilane divided; undivided or two-lane with shoulders	Multilane divided; undivided or two-lane with shoulders	Multilane divided or undivided; one way, two lane	Undivided one way; two way, two or more lanes
Parking	No	No	Some	Usually
Separate left-turn lanes	Yes	Yes	Usually	Some
Signals per mile	0.5 to 2	1 to 5	4 to 10	6 to 12
Speed limits	45 to 55 mph	40 to 45 mph	30 to 40 mph	25 to 35 mph
Pedestrian activity	Very little	Little	Some	Usually
Roadside development	Low density	Low to medium density	Medium to moderate density	High density

Source: Highway Capacity Manual 2000

Table A-III: Urban Street Class based on Function and Design Categories

Design Category	Functional Category	
	Principal Arterial	Minor Arterial
High-Speed	I	Not applicable
Suburban	II	II
Intermediate	II	III or IV
Urban	III or IV	IV

Source: Highway Capacity Manual 2000

Table A-IV: Urban Street Levels of Service by Class

Urban Street Class	I	II	III	IV
Range of Free Flow Speeds (mph)	45 to 55	35 to 45	30 to 35	25 to 35
Typical Free Flow Speed (mph)	50	40	33	30
Level of Service	Average Travel Speed (mph)			
A	>42	>35	>30	>25
B	>34	>28	>24	>19
C	>27	>22	>18	>13
D	>21	>17	>14	>9
E	>16	>13	>10	>7
F	≤16	≤13	≤10	≤7

Source: Highway Capacity Manual 2000

Interrupted Flow

One of the more important elements limiting, and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop and yield signs. These all operate quite differently and have differing impacts on overall flow.

Signalized Intersections

The capacity of a highway is related primarily to the geometric characteristics of the facility, as well as to the composition of the traffic stream on the facility. Geometrics are a fixed, or non-varying, characteristic of a facility.

At the signalized intersection, an additional element is introduced into the concept of capacity: time allocation. A traffic signal essentially allocates time among conflicting traffic movements seeking use of the same physical space. The way in which time is allocated has a significant impact on the operation of the intersection and on the capacity of the intersection and its approaches.

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, *i. e.*, in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, level of service criteria for traffic signals are stated in terms of average control delay per vehicle, typically for a 15-minute analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the ratio of green time to cycle length and the volume to capacity ratio for the lane group.

For each intersection analyzed the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. A level of service designation is given to the control delay to better describe the level of operation. A description of levels of service for signalized intersections can be found in Table A-V

Table A-V: Description of Level of Service for Signalized Intersections

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: Highway Capacity Manual 2000

The use of control delay, which may also be referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*, and represents a departure from previous updates. In the third edition, published in 1985 and the 1994 update to the third edition, delay only included stopped delay. Thus, the level of service criteria listed in Table A-V differs from earlier criteria.

Unsignalized Intersections

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 *Highway Capacity Manual*. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, *i. e.*, in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

Two-Way Stop Controlled Intersections

Two-way stop controlled intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through a stop-controlled intersection, compared with a free-flow vehicle if it were not required

to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in Table A-VI.

Table A-VI: Description of Level of Service for Two-Way Stop Controlled Intersections

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: Highway Capacity Manual 2000

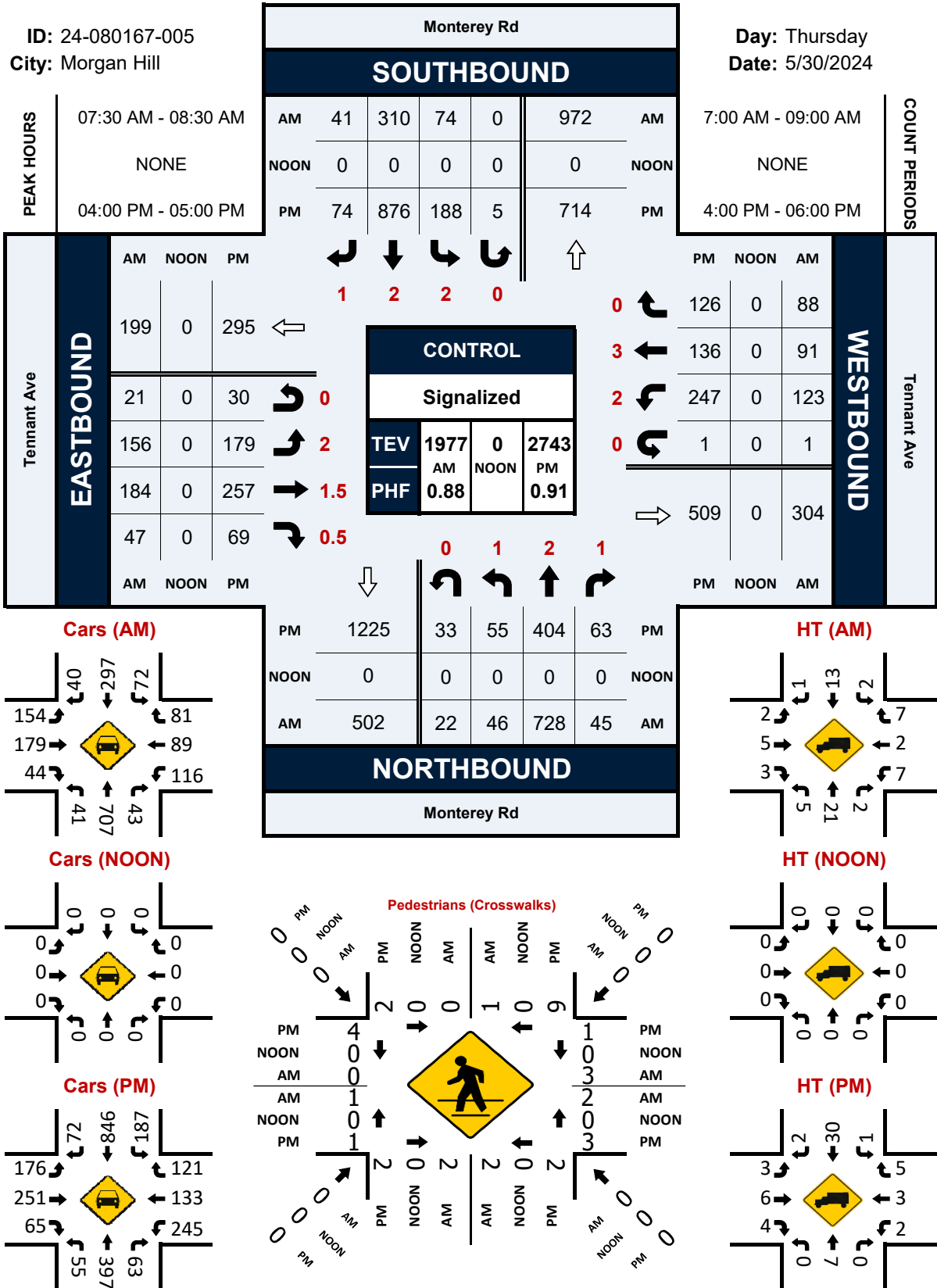
Appendix B: Intersection Turning Movement Counts

Monterey Rd & Tennant Ave

Peak Hour Turning Movement Count

ID: 24-080167-005
City: Morgan Hill

Day: Thursday
Date: 5/30/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: Monterey Rd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-005
Date: 5/30/2024

Data - Total

NS/EW Streets:	Monterey Rd				Monterey Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	8	171	11	1	17	48	5	0	17	28	2	2	17	11	13	0	351
7:15 AM	8	187	9	9	8	62	2	0	32	30	10	2	21	13	12	0	405
7:30 AM	5	202	13	3	15	91	7	0	40	49	15	6	31	11	20	0	508
7:45 AM	19	227	12	4	31	80	8	0	37	38	13	6	31	31	22	0	559
8:00 AM	7	168	13	11	14	56	12	0	44	49	11	4	33	29	25	1	477
8:15 AM	15	131	7	4	14	83	14	0	35	48	8	5	28	20	21	0	433
8:30 AM	15	123	18	4	23	99	8	1	21	30	11	3	28	27	21	0	432
8:45 AM	4	130	12	6	27	107	14	0	32	40	18	5	35	32	33	1	496
TOTAL VOLUMES :	NL 81	NT 1339	NR 95	NU 42	SL 149	ST 626	SR 70	SU 1	EL 258	ET 312	ER 88	EU 33	WL 224	WT 174	WR 167	WU 2	TOTAL 3661
APPROACH %'s :	5.20%	86.00%	6.10%	2.70%	17.61%	74.00%	8.27%	0.12%	37.34%	45.15%	12.74%	4.78%	39.51%	30.69%	29.45%	0.35%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	46	728	45	22	74	310	41	0	156	184	47	21	123	91	88	1	1977
PEAK HR FACTOR :	0.605	0.802	0.865	0.500	0.597	0.852	0.732	0.000	0.886	0.939	0.783	0.875	0.932	0.734	0.880	0.250	0.884
	0.802				0.893				0.927				0.861				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	17	85	10	9	66	233	15	0	39	77	22	8	57	32	27	0	697
4:15 PM	10	123	20	8	47	230	16	3	69	68	13	8	69	45	25	1	755
4:30 PM	12	90	18	8	36	205	17	1	38	59	18	4	73	24	34	0	637
4:45 PM	16	106	15	8	39	208	26	1	33	53	16	10	48	35	40	0	654
5:00 PM	20	83	5	11	42	229	26	3	26	55	20	8	53	39	34	1	655
5:15 PM	15	107	21	10	43	239	16	1	29	36	19	8	60	35	25	0	664
5:30 PM	10	124	20	10	51	256	24	0	37	47	13	7	64	30	35	0	728
5:45 PM	11	112	17	13	42	214	17	1	34	44	17	9	49	24	18	2	624
TOTAL VOLUMES :	NL 111	NT 830	NR 126	NU 77	SL 366	ST 1814	SR 157	SU 10	EL 305	ET 439	ER 138	EU 62	WL 473	WT 264	WR 238	WU 4	TOTAL 5414
APPROACH %'s :	9.70%	72.55%	11.01%	6.73%	15.59%	77.29%	6.69%	0.43%	32.31%	46.50%	14.62%	6.57%	48.31%	26.97%	24.31%	0.41%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	55	404	63	33	188	876	74	5	179	257	69	30	247	136	126	1	2743
PEAK HR FACTOR :	0.809	0.821	0.788	0.917	0.712	0.940	0.712	0.417	0.649	0.834	0.784	0.750	0.846	0.756	0.788	0.250	0.908
	0.862				0.910				0.847				0.911				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Monterey Rd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-005
Date: 5/30/2024

Data - Cars

NS/EW Streets:	Monterey Rd				Monterey Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	8	163	11	1	14	45	5	0	16	26	2	2	15	11	11	0	330
7:15 AM	8	184	8	9	6	60	2	0	32	30	10	2	20	12	11	0	394
7:30 AM	4	199	13	3	14	86	7	0	40	48	14	6	29	9	20	0	492
7:45 AM	18	220	11	4	31	76	8	0	36	36	12	6	31	31	19	0	539
8:00 AM	6	162	12	11	13	56	11	0	43	47	11	4	31	29	22	1	459
8:15 AM	13	126	7	4	14	79	14	0	35	48	7	5	25	20	20	0	417
8:30 AM	15	117	16	4	23	94	8	1	21	29	11	3	28	25	21	0	416
8:45 AM	3	124	12	6	27	101	13	0	31	38	17	5	33	31	32	1	474
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	75	1295	90	42	142	597	68	1	254	302	84	33	212	168	156	2	3521
PEAK HR :	4.99%	86.22%	5.99%	2.80%	17.57%	73.89%	8.42%	0.12%	37.74%	44.87%	12.48%	4.90%	39.41%	31.23%	29.00%	0.37%	
PEAK HR VOL :	41	707	43	22	72	297	40	0	154	179	44	21	116	89	81	1	TOTAL
PEAK HR FACTOR :	0.569	0.803	0.827	0.500	0.581	0.863	0.714	0.000	0.895	0.932	0.786	0.875	0.935	0.718	0.920	0.250	1907
		0.803				0.889				0.921				0.864			0.885

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	17	83	10	9	66	227	15	0	37	76	21	8	57	32	25	0	683
4:15 PM	10	120	20	8	47	222	15	3	69	66	12	8	68	44	25	1	738
4:30 PM	12	90	18	8	36	192	16	1	37	56	17	4	72	23	31	0	613
4:45 PM	16	104	15	8	38	205	26	1	33	53	15	10	48	34	40	0	646
5:00 PM	20	80	5	11	42	227	26	3	25	55	19	8	53	38	33	1	646
5:15 PM	14	103	21	10	42	235	16	1	29	35	19	8	58	35	25	0	651
5:30 PM	10	120	18	10	50	252	24	0	35	47	12	7	63	30	35	0	713
5:45 PM	11	110	16	13	42	209	17	1	33	42	17	9	48	24	17	2	611
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	110	810	123	77	363	1769	155	10	298	430	132	62	467	260	231	4	5301
PEAK HR :	9.82%	72.32%	10.98%	6.88%	15.80%	77.01%	6.75%	0.44%	32.32%	46.64%	14.32%	6.72%	48.54%	27.03%	24.01%	0.42%	
PEAK HR VOL :	55	397	63	33	187	846	72	5	176	251	65	30	245	133	121	1	TOTAL
PEAK HR FACTOR :	0.809	0.827	0.788	0.917	0.708	0.932	0.692	0.417	0.638	0.826	0.774	0.750	0.851	0.756	0.756	0.250	2680
		0.867				0.901				0.842				0.906			0.908

National Data & Surveying Services

Intersection Turning Movement Count

Location: Monterey Rd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-005
Date: 5/30/2024

Data - HT

NS/EW Streets:	Monterey Rd				Monterey Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	0	8	0	0	3	3	0	0	1	2	0	0	2	0	2	0	21
7:15 AM	0	3	1	0	2	2	0	0	0	0	0	0	1	1	1	0	11
7:30 AM	1	3	0	0	1	5	0	0	0	1	1	0	2	2	0	0	16
7:45 AM	1	7	1	0	0	4	0	0	1	2	1	0	0	0	3	0	20
8:00 AM	1	6	1	0	1	0	1	0	1	2	0	0	2	0	3	0	18
8:15 AM	2	5	0	0	0	4	0	0	0	0	1	0	3	0	1	0	16
8:30 AM	0	6	2	0	0	5	0	0	0	1	0	0	0	2	0	0	16
8:45 AM	1	6	0	0	0	6	1	0	1	2	1	0	2	1	1	0	22
TOTAL VOLUMES :	NL 6	NT 44	NR 5	NU 0	SL 7	ST 29	SR 2	SU 0	EL 4	ET 10	ER 4	EU 0	WL 12	WT 6	WR 11	WU 0	TOTAL 140
APPROACH %'s :	10.91%	80.00%	9.09%	0.00%	18.42%	76.32%	5.26%	0.00%	22.22%	55.56%	22.22%	0.00%	41.38%	20.69%	37.93%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM				2	13	1	0	2	5	3	0	7	2	7	0	TOTAL 70
PEAK HR VOL :	5	21	2	0	2	13	1	0	2	5	3	0	7	2	7	0	
PEAK HR FACTOR :	0.625	0.750	0.500	0.000	0.500	0.650	0.250	0.000	0.500	0.625	0.750	0.000	0.583	0.250	0.583	0.000	0.875
			0.778				0.667				0.625				0.800		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	0	2	0	0	0	6	0	0	2	1	1	0	0	0	2	0	14
4:15 PM	0	3	0	0	0	8	1	0	0	2	1	0	1	1	0	0	17
4:30 PM	0	0	0	0	0	13	1	0	1	3	1	0	1	1	3	0	24
4:45 PM	0	2	0	0	1	3	0	0	0	0	1	0	0	1	0	0	8
5:00 PM	0	3	0	0	0	2	0	0	1	0	1	0	0	1	1	0	9
5:15 PM	1	4	0	0	1	4	0	0	0	1	0	0	2	0	0	0	13
5:30 PM	0	4	2	0	1	4	0	0	2	0	1	0	1	0	0	0	15
5:45 PM	0	2	1	0	0	5	0	0	1	2	0	0	1	0	1	0	13
TOTAL VOLUMES :	NL 1	NT 20	NR 3	NU 0	SL 3	ST 45	SR 2	SU 0	EL 7	ET 9	ER 6	EU 0	WL 6	WT 4	WR 7	WU 0	TOTAL 113
APPROACH %'s :	4.17%	83.33%	12.50%	0.00%	6.00%	90.00%	4.00%	0.00%	31.82%	40.91%	27.27%	0.00%	35.29%	23.53%	41.18%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM				1	30	2	0	3	6	4	0	2	3	5	0	TOTAL 63
PEAK HR VOL :	0	7	0	0	1	30	2	0	3	6	4	0	2	3	5	0	
PEAK HR FACTOR :	0.000	0.583	0.000	0.000	0.250	0.577	0.500	0.000	0.375	0.500	1.000	0.000	0.500	0.750	0.417	0.000	0.656
			0.583				0.589				0.650				0.500		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Monterey Rd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-005
Date: 5/30/2024

Data - Bikes

NS/EW Streets:	Monterey Rd				Monterey Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 1	NR 0	NU 0	SL 0	ST 1	SR 0	SU 0	EL 0	ET 0	ER 1	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0	100.00%	0.00%	0.00%	0	0	0	0
PEAK HR :	07:30 AM - 08:30 AM																TOTAL 2
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	1.5 ET	0.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 1	ST 0	SR 0	SU 0	EL 0	ET 1	ER 1	EU 0	WL 0	WT 1	WR 0	WU 0	TOTAL 4
APPROACH %'s :	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0
PEAK HR :	04:00 PM - 05:00 PM																TOTAL 2
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500

National Data & Surveying Services

Intersection Turning Movement Count

Location: Monterey Rd & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-005
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Monterey Rd		Monterey Rd		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	1
7:30 AM	0	1	0	0	1	0	0	0	2
7:45 AM	0	0	1	1	0	1	0	0	3
8:00 AM	0	0	1	1	0	2	1	0	5
8:15 AM	0	0	0	0	1	0	0	0	1
8:30 AM	0	0	0	1	0	0	1	0	2
8:45 AM	0	0	0	0	1	1	0	0	2
TOTAL VOLUMES :	EB 0	WB 1	EB 2	WB 3	NB 3	SB 4	NB 2	SB 1	TOTAL 16
APPROACH %'s :	0.00%	100.00%	40.00%	60.00%	42.86%	57.14%	66.67%	33.33%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	1	2	2	2	3	1	0	11
PEAK HR FACTOR :	0.250	0.250	0.500	0.500	0.500	0.375	0.250	0.250	0.550

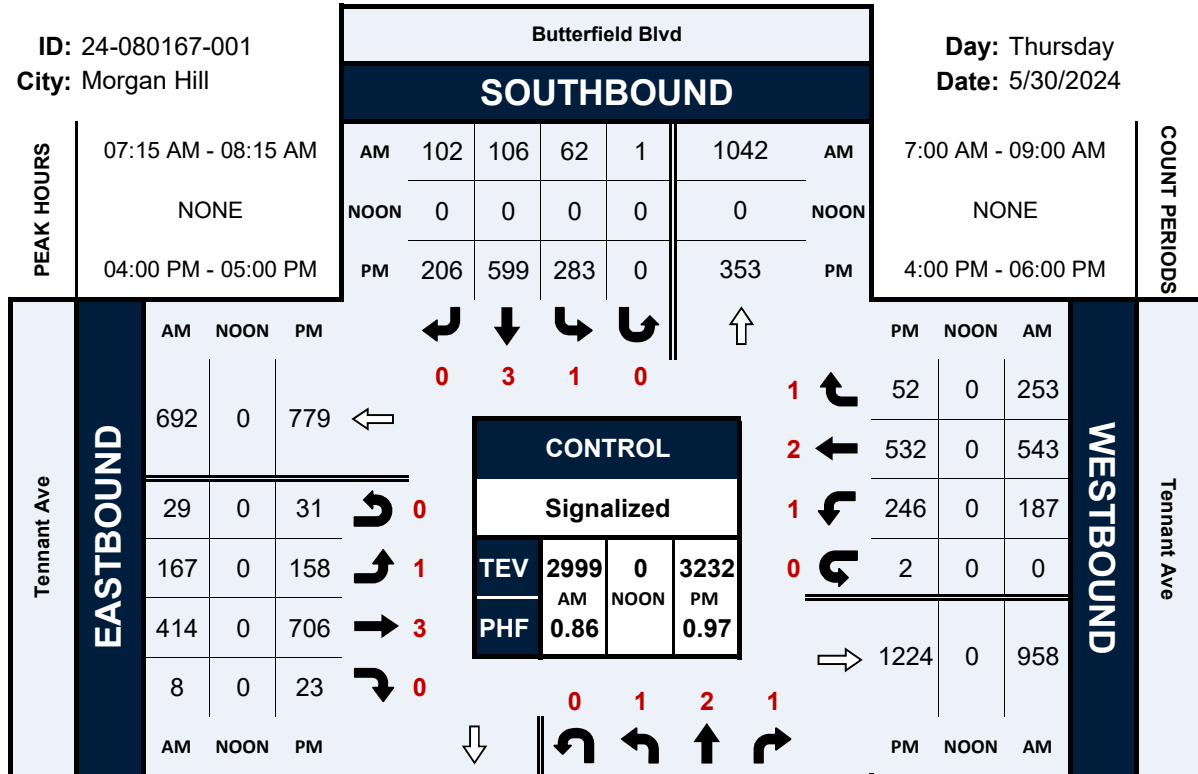
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	2	0	1	1	0	0	0	4
4:15 PM	0	0	1	0	1	1	1	0	4
4:30 PM	0	1	0	1	1	0	0	1	4
4:45 PM	2	6	1	0	0	0	0	3	12
5:00 PM	2	0	0	0	0	1	0	0	3
5:15 PM	2	2	0	0	0	0	0	0	4
5:30 PM	3	0	1	2	2	0	1	1	10
5:45 PM	0	2	1	0	0	0	0	0	3
TOTAL VOLUMES :	EB 9	WB 13	EB 4	WB 4	NB 5	SB 2	NB 2	SB 5	TOTAL 44
APPROACH %'s :	40.91%	59.09%	50.00%	50.00%	71.43%	28.57%	28.57%	71.43%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	2	9	2	2	3	1	1	4	24
PEAK HR FACTOR :	0.250	0.375	0.500	0.500	0.750	0.250	0.250	0.333	0.500

Butterfield Blvd & Tennant Ave

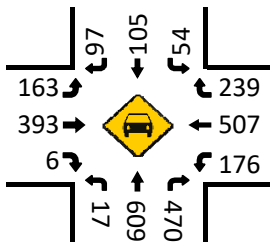
Peak Hour Turning Movement Count

ID: 24-080167-001
City: Morgan Hill

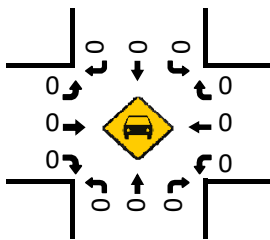
Day: Thursday
Date: 5/30/2024



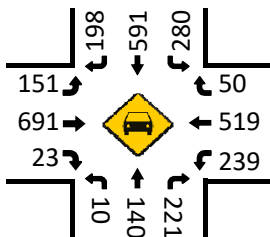
Cars (AM)



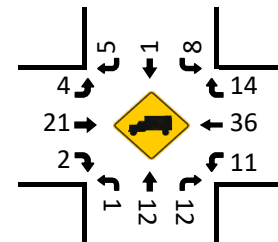
Cars (NOON)



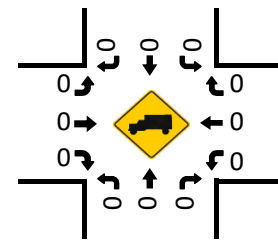
Cars (PM)



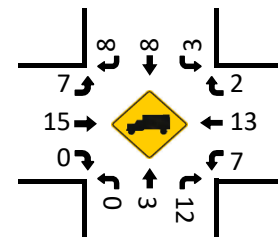
HT (AM)



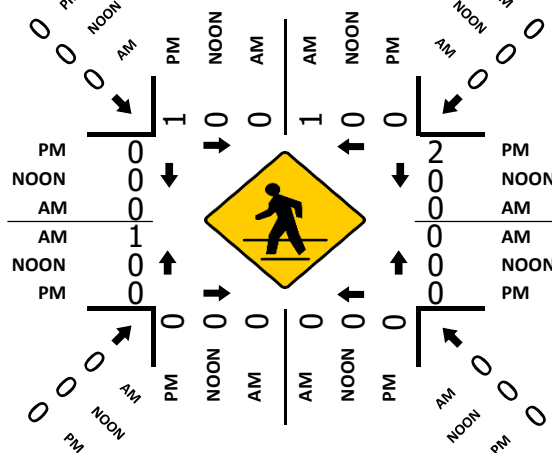
HT (NOON)



HT (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Butterfield Blvd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-001
Date: 5/30/2024

Data - Total

NS/EW Streets:	Butterfield Blvd				Butterfield Blvd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	5	218	109	0	7	18	12	1	46	67	1	1	16	85	48	0	634
7:15 AM	6	200	101	1	12	13	15	0	27	83	2	6	31	86	69	0	652
7:30 AM	4	164	140	0	17	30	22	0	59	106	2	6	34	117	53	0	754
7:45 AM	3	151	136	1	17	38	45	0	36	117	2	12	66	184	67	0	875
8:00 AM	5	106	105	4	16	25	20	1	45	108	2	5	56	156	64	0	718
8:15 AM	5	82	108	4	14	26	17	0	39	88	2	5	54	135	51	1	631
8:30 AM	7	89	92	2	8	31	21	1	36	94	2	5	54	151	30	0	623
8:45 AM	9	54	100	5	15	26	21	0	36	103	1	4	61	162	22	0	619
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	44	1064	891	17	106	207	173	3	324	766	14	44	372	1076	404	1	5506
	2.18%	52.78%	44.20%	0.84%	21.68%	42.33%	35.38%	0.61%	28.22%	66.72%	1.22%	3.83%	20.08%	58.07%	21.80%	0.05%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	18	621	482	6	62	106	102	1	167	414	8	29	187	543	253	0	2999
PEAK HR FACTOR :	0.750	0.776	0.861	0.375	0.912	0.697	0.567	0.250	0.708	0.885	1.000	0.604	0.708	0.738	0.917	0.000	0.857
	0.915				0.678				0.893				0.775				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	0	31	60	0	75	152	66	0	43	185	7	10	67	107	11	0	814
4:15 PM	4	49	73	2	65	128	47	0	35	192	8	7	61	149	11	2	833
4:30 PM	5	29	49	2	78	196	52	0	46	153	4	7	54	131	23	0	829
4:45 PM	1	34	51	4	65	123	41	0	34	176	4	7	64	145	7	0	756
5:00 PM	1	33	69	1	69	153	58	1	40	169	9	8	51	93	7	0	762
5:15 PM	1	39	62	0	62	148	48	0	37	156	5	6	75	110	9	0	758
5:30 PM	3	39	74	1	67	123	53	0	31	151	5	8	74	126	11	0	766
5:45 PM	0	29	54	1	50	129	60	0	28	117	6	3	60	93	15	0	645
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	15	283	492	11	531	1152	425	1	294	1299	48	56	506	954	94	2	6163
	1.87%	35.33%	61.42%	1.37%	25.18%	54.62%	20.15%	0.05%	17.32%	76.55%	2.83%	3.30%	32.52%	61.31%	6.04%	0.13%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	10	143	233	8	283	599	206	0	158	706	23	31	246	532	52	2	3232
PEAK HR FACTOR :	0.500	0.730	0.798	0.500	0.907	0.764	0.780	0.000	0.859	0.919	0.719	0.775	0.918	0.893	0.565	0.250	0.970
	0.770				0.834				0.937				0.933				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Butterfield Blvd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-001
Date: 5/30/2024

Data - Cars

NS/EW Streets:	Butterfield Blvd				Butterfield Blvd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	4	214	105	0	4	18	11	1	45	57	1	1	16	82	45	0	604
7:15 AM	5	199	93	1	10	12	15	0	27	79	1	5	27	78	64	0	616
7:30 AM	4	161	137	0	15	30	19	0	56	98	1	6	32	110	49	0	718
7:45 AM	3	146	135	1	14	38	44	0	35	111	2	12	64	172	65	0	842
8:00 AM	5	103	105	4	15	25	19	1	45	105	2	5	53	147	61	0	695
8:15 AM	5	79	104	4	14	26	15	0	38	86	2	5	52	130	50	1	611
8:30 AM	5	87	89	2	7	28	21	1	35	90	2	5	51	141	30	0	594
8:45 AM	8	52	94	5	14	25	19	0	34	97	1	3	58	154	21	0	585
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	39	1041	862	17	93	202	163	3	315	723	12	42	353	1014	385	1	5265
	1.99%	53.14%	44.00%	0.87%	20.17%	43.82%	35.36%	0.65%	28.85%	66.21%	1.10%	3.85%	20.14%	57.84%	21.96%	0.06%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	17	609	470	6	54	105	97	1	163	393	6	28	176	507	239	0	2871
PEAK HR FACTOR :	0.850	0.765	0.858	0.375	0.900	0.691	0.551	0.250	0.728	0.885	0.750	0.583	0.688	0.737	0.919	0.000	0.852
			0.912				0.669				0.916				0.766		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	0	30	58	0	74	151	63	0	42	179	7	9	66	100	11	0	790
4:15 PM	4	48	73	2	64	125	44	0	32	190	8	7	58	147	11	2	815
4:30 PM	5	29	44	2	77	194	50	0	45	150	4	7	52	129	21	0	809
4:45 PM	1	33	46	4	65	121	41	0	32	172	4	7	63	143	7	0	739
5:00 PM	1	32	66	1	66	146	56	1	40	166	9	8	50	89	7	0	738
5:15 PM	1	39	60	0	60	146	47	0	37	155	5	6	71	110	9	0	746
5:30 PM	3	35	71	1	67	121	52	0	31	149	5	8	71	123	11	0	748
5:45 PM	0	29	52	1	49	126	60	0	28	114	6	3	58	92	15	0	633
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	15	275	470	11	522	1130	413	1	287	1275	48	55	489	933	92	2	6018
	1.95%	35.67%	60.96%	1.43%	25.27%	54.70%	19.99%	0.05%	17.24%	76.58%	2.88%	3.30%	32.26%	61.54%	6.07%	0.13%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	10	140	221	8	280	591	198	0	151	691	23	30	239	519	50	2	3153
PEAK HR FACTOR :	0.500	0.729	0.757	0.500	0.909	0.762	0.786	0.000	0.839	0.909	0.719	0.833	0.905	0.883	0.595	0.250	0.967
			0.746				0.833				0.944				0.929		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Butterfield Blvd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-001
Date: 5/30/2024

Data - HT

NS/EW Streets:	Butterfield Blvd				Butterfield Blvd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	1	4	4	0	3	0	1	0	1	10	0	0	0	3	3	0	30
7:15 AM	1	1	8	0	2	1	0	0	0	4	1	1	4	8	5	0	36
7:30 AM	0	3	3	0	2	0	3	0	3	8	1	0	2	7	4	0	36
7:45 AM	0	5	1	0	3	0	1	0	1	6	0	0	2	12	2	0	33
8:00 AM	0	3	0	0	1	0	1	0	0	3	0	0	3	9	3	0	23
8:15 AM	0	3	4	0	0	0	2	0	1	2	0	0	2	5	1	0	20
8:30 AM	2	2	3	0	1	3	0	0	1	4	0	0	3	10	0	0	29
8:45 AM	1	2	6	0	1	1	2	0	2	6	0	1	3	8	1	0	34
TOTAL VOLUMES :	NL 5	NT 23	NR 29	NU 0	SL 13	ST 5	SR 10	SU 0	EL 9	ET 43	ER 2	EU 2	WL 19	WT 62	WR 19	WU 0	TOTAL 241
APPROACH %'s :	8.77%	40.35%	50.88%	0.00%	46.43%	17.86%	35.71%	0.00%	16.07%	76.79%	3.57%	3.57%	19.00%	62.00%	19.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM				8	1	5	0	4	21	2	1	11	36	14	0	TOTAL 128
PEAK HR VOL :	1	12	12	0	8	1	5	0	4	21	2	1	11	36	14	0	0.889
PEAK HR FACTOR :	0.250	0.600	0.375	0.000	0.667	0.250	0.417	0.000	0.333	0.656	0.500	0.250	0.688	0.750	0.700	0.000	
		0.625				0.700				0.583				0.897			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	0	1	2	0	1	1	3	0	1	6	0	1	1	7	0	0	24
4:15 PM	0	1	0	0	1	3	3	0	3	2	0	0	3	2	0	0	18
4:30 PM	0	0	5	0	1	2	2	0	1	3	0	0	2	2	0	0	20
4:45 PM	0	1	5	0	0	2	0	0	2	4	0	0	1	2	0	0	17
5:00 PM	0	1	3	0	3	7	2	0	0	3	0	0	1	4	0	0	24
5:15 PM	0	0	2	0	2	2	1	0	0	1	0	0	4	0	0	0	12
5:30 PM	0	4	3	0	0	2	1	0	0	2	0	0	3	3	0	0	18
5:45 PM	0	0	2	0	1	3	0	0	0	3	0	0	2	1	0	0	12
TOTAL VOLUMES :	NL 0	NT 8	NR 22	NU 0	SL 9	ST 22	SR 12	SU 0	EL 7	ET 24	ER 0	EU 1	WL 17	WT 21	WR 2	WU 0	TOTAL 145
APPROACH %'s :	0.00%	26.67%	73.33%	0.00%	20.93%	51.16%	27.91%	0.00%	21.88%	75.00%	0.00%	3.13%	42.50%	52.50%	5.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM				3	8	8	0	7	15	0	1	7	13	2	0	TOTAL 79
PEAK HR VOL :	0	3	12	0	3	8	8	0	7	15	0	1	7	13	2	0	0.823
PEAK HR FACTOR :	0.000	0.750	0.600	0.000	0.750	0.667	0.667	0.000	0.583	0.625	0.000	0.250	0.583	0.464	0.250	0.000	
		0.625				0.679				0.719				0.688			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Butterfield Blvd & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-001
Date: 5/30/2024

Data - Bikes

NS/EW Streets:	Butterfield Blvd				Butterfield Blvd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 1	SU 0	EL 0	ET 1	ER 0	EU 0	WL 3	WT 1	WR 0	WU 0	TOTAL 6
APPROACH %'s :	0.00%				0.00% 0.00% 100.00% 0.00%				0.00% 100.00% 0.00% 0.00%				75.00% 25.00% 0.00% 0.00%				
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.375
				0.250								0.500					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	1 NR	0 NU	1 SL	3 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 0	NR 1	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 2	ER 0	EU 1	WL 0	WT 1	WR 0	WU 0	TOTAL 5
APPROACH %'s :	0.00% 0.00% 100.00% 0.00%								0.00% 66.67% 0.00% 33.33%				0.00% 100.00% 0.00% 0.00%				
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	2	0	1	0	1	0	0	5
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.250	0.000	0.000	0.625
				0.250				0.750				0.250					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Butterfield Blvd & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-001
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Butterfield Blvd		Butterfield Blvd		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	1	0	0	0	0	1	0	2
	0.00%	100.00%					100.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	1	0	2
PEAK HR FACTOR :		0.250					0.250	0.250	0.250

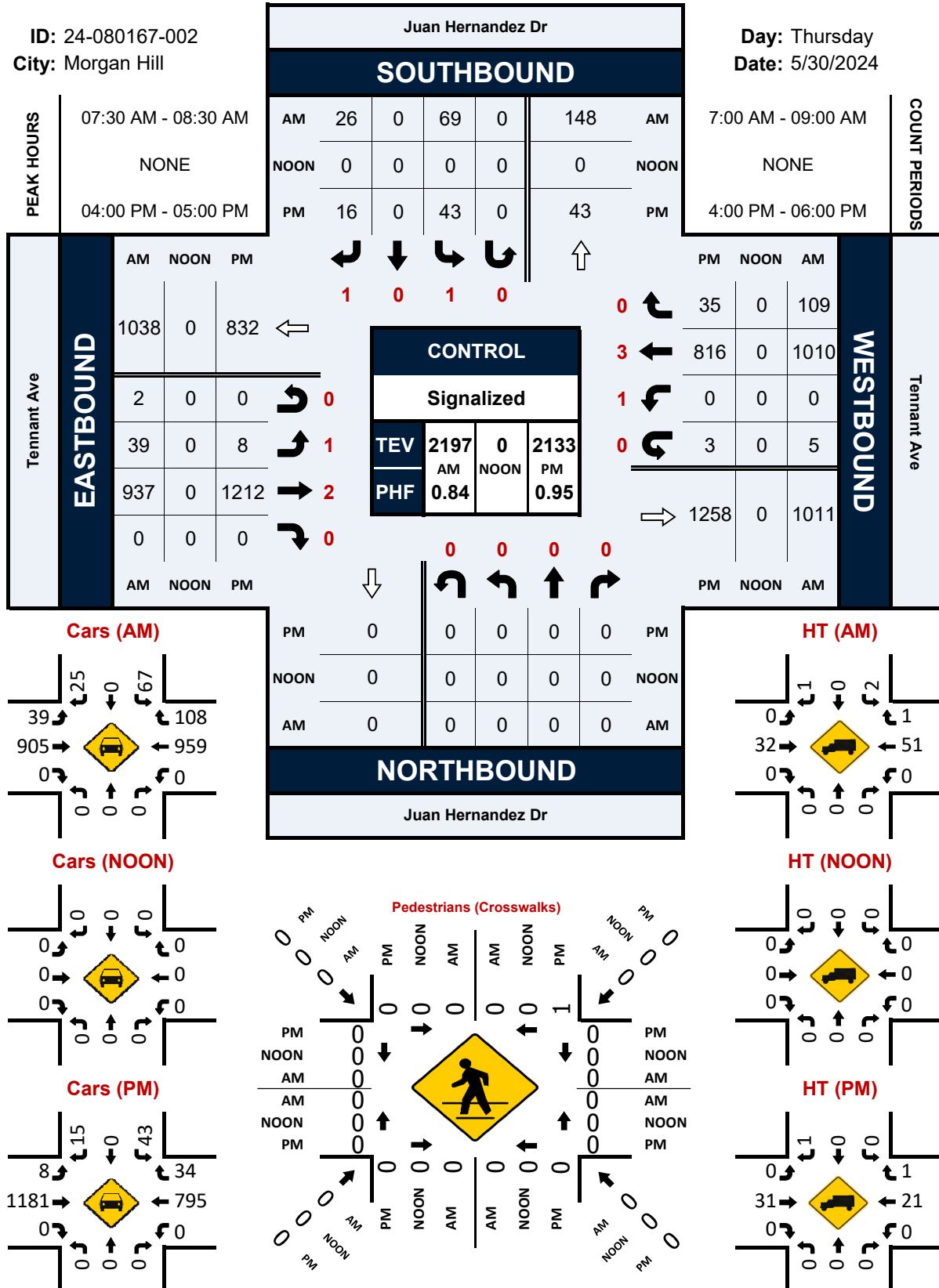
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	1	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	2	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	0	0	0	0	2	0	0	3
	100.00%	0.00%			0.00%	100.00%			
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	1	0	0	0	0	2	0	0	3
PEAK HR FACTOR :	0.250				0.250	0.250			0.375

Juan Hernandez Dr & Tennant Ave

Peak Hour Turning Movement Count

ID: 24-080167-002
City: Morgan Hill

Day: Thursday
Date: 5/30/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: Juan Hernandez Dr & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-002
Date: 5/30/2024

Data - Total

NS/EW Streets:	Juan Hernandez Dr				Juan Hernandez Dr				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	9	0	3	0	4	179	0	0	0	150	15	1	361
7:15 AM	0	0	0	0	8	0	3	0	10	179	0	0	0	179	8	0	387
7:30 AM	0	0	0	0	16	0	7	0	18	245	0	1	0	214	50	3	554
7:45 AM	0	0	0	0	31	0	14	0	12	264	0	0	0	300	35	0	656
8:00 AM	0	0	0	0	10	0	3	0	6	223	0	0	0	258	15	1	516
8:15 AM	0	0	0	0	12	0	2	0	3	205	0	1	0	238	9	1	471
8:30 AM	0	0	0	0	19	0	7	0	2	186	0	0	0	229	12	1	456
8:45 AM	0	0	0	0	12	0	6	0	4	221	0	0	0	239	8	0	490
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	117	0	45	0	59	1702	0	2	0	1807	152	7	3891
PEAK HR :	07:30 AM - 08:30 AM				72.22%	0.00%	27.78%	0.00%	3.35%	96.54%	0.00%	0.11%	0.00%	91.91%	7.73%	0.36%	
PEAK HR VOL :	0	0	0	0	69	0	26	0	39	937	0	2	0	1010	109	5	2197
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.556	0.000	0.464	0.000	0.542	0.887	0.000	0.500	0.000	0.842	0.545	0.417	0.837
							0.528				0.886				0.839		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	8	0	3	0	4	321	0	0	0	195	2	0	533
4:15 PM	0	0	0	0	8	0	4	0	1	327	0	0	0	207	11	1	559
4:30 PM	0	0	0	0	11	0	3	0	3	281	0	0	0	211	9	1	519
4:45 PM	0	0	0	0	16	0	6	0	0	283	0	0	0	203	13	1	522
5:00 PM	0	0	0	0	20	0	4	0	6	310	0	0	0	147	11	0	498
5:15 PM	0	0	0	0	11	0	3	0	0	280	0	0	0	200	9	0	503
5:30 PM	0	0	0	0	14	0	6	0	6	286	0	0	0	196	7	0	515
5:45 PM	0	0	0	0	6	0	5	0	0	221	0	0	0	169	8	0	409
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	94	0	34	0	20	2309	0	0	0	1528	70	3	4058
PEAK HR :	04:00 PM - 05:00 PM				73.44%	0.00%	26.56%	0.00%	0.86%	99.14%	0.00%	0.00%	0.00%	95.44%	4.37%	0.19%	
PEAK HR VOL :	0	0	0	0	43	0	16	0	8	1212	0	0	0	816	35	3	2133
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.672	0.000	0.667	0.000	0.500	0.927	0.000	0.000	0.000	0.967	0.673	0.750	0.954
							0.670				0.930				0.966		

Intersection Turning Movement Count

Control: Signalized

Date: 5/30/2024

Data - Cars

NS/EW Streets:	Juan Hernandez Dr				Juan Hernandez Dr				Tennant Ave				Tennant Ave					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	0	0	0	1	0	1	0	1	2	0	0	1	3	0	0		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	7:00 AM	0	0	0	0	8	0	3	0	4	162	0	0	0	142	13	1	333
	7:15 AM	0	0	0	0	8	0	3	0	10	165	0	0	0	164	7	0	357
	7:30 AM	0	0	0	0	16	0	7	0	18	232	0	1	0	201	49	3	527
	7:45 AM	0	0	0	0	30	0	13	0	12	254	0	0	0	284	35	0	628
	8:00 AM	0	0	0	0	10	0	3	0	6	219	0	0	0	244	15	1	498
	8:15 AM	0	0	0	0	11	0	2	0	3	200	0	1	0	230	9	1	457
8:30 AM	0	0	0	0	17	0	7	0	2	177	0	0	0	216	12	1	432	
8:45 AM	0	0	0	0	11	0	6	0	4	209	0	0	0	226	8	0	464	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	0	0	0	0	111	0	44	0	59	1618	0	2	0	1707	148	7	3696	
PEAK HR :	07:30 AM - 08:30 AM				71.61%	0.00%	28.39%	0.00%	3.51%	96.37%	0.00%	0.12%	0.00%	91.68%	7.95%	0.38%		
PEAK HR VOL :	0	0	0	0	67	0	25	0	39	905	0	2	0	959	108	5	2110	
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.558	0.000	0.481	0.000	0.542	0.891	0.000	0.500	0.000	0.844	0.551	0.417	0.840	
	0.535				0.535				0.889				0.840					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	0	0	0	1	1	0	0	1	2	0	0	1	3	0	0		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	4:00 PM	0	0	0	0	8	0	3	0	4	311	0	0	0	187	2	0	515
	4:15 PM	0	0	0	0	8	0	3	0	1	324	0	0	0	202	10	1	549
	4:30 PM	0	0	0	0	11	0	3	0	3	272	0	0	0	206	9	1	505
	4:45 PM	0	0	0	0	16	0	6	0	0	274	0	0	0	200	13	1	510
	5:00 PM	0	0	0	0	20	0	4	0	6	301	0	0	0	142	10	0	483
	5:15 PM	0	0	0	0	11	0	3	0	0	275	0	0	0	196	9	0	494
5:30 PM	0	0	0	0	12	0	6	0	6	281	0	0	0	190	7	0	502	
5:45 PM	0	0	0	0	5	0	5	0	0	215	0	0	0	164	8	0	397	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	0	0	0	0	91	0	33	0	20	2253	0	0	0	1487	68	3	3955	
PEAK HR :	04:00 PM - 05:00 PM				73.39%	0.00%	26.61%	0.00%	0.88%	99.12%	0.00%	0.00%	0.00%	95.44%	4.36%	0.19%		
PEAK HR VOL :	0	0	0	0	43	0	15	0	8	1181	0	0	0	795	34	3	2079	
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.672	0.000	0.625	0.000	0.500	0.911	0.000	0.000	0.000	0.965	0.654	0.750	0.947	
					0.659				0.915				0.963					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Juan Hernandez Dr & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-002
Date: 5/30/2024

Data - HT

NS/EW Streets:	Juan Hernandez Dr				Juan Hernandez Dr				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	1	0	0	0	0	17	0	0	0	8	2	0	28
7:15 AM	0	0	0	0	0	0	0	0	0	14	0	0	0	15	1	0	30
7:30 AM	0	0	0	0	0	0	0	0	0	13	0	0	0	13	1	0	27
7:45 AM	0	0	0	0	1	0	1	0	0	10	0	0	0	16	0	0	28
8:00 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	14	0	0	18
8:15 AM	0	0	0	0	1	0	0	0	0	5	0	0	0	8	0	0	14
8:30 AM	0	0	0	0	2	0	0	0	0	9	0	0	0	13	0	0	24
8:45 AM	0	0	0	0	1	0	0	0	0	12	0	0	0	13	0	0	26
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 6	ST 0	SR 1	SU 0	EL 0	ET 84	ER 0	EU 0	WL 0	WT 100	WR 4	WU 0	TOTAL 195
APPROACH %'s :					85.71%	0.00%	14.29%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	96.15%	3.85%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	2	0	1	0	0	32	0	0	0	51	1	0	87
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.615	0.000	0.000	0.000	0.797	0.250	0.000	0.777
							0.375				0.615				0.813		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	10	0	0	0	8	0	0	18
4:15 PM	0	0	0	0	0	0	1	0	0	3	0	0	0	5	1	0	10
4:30 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	0	14
4:45 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0	0	12
5:00 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	5	1	0	15
5:15 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0	0	9
5:30 PM	0	0	0	0	2	0	0	0	0	5	0	0	0	6	0	0	13
5:45 PM	0	0	0	0	1	0	0	0	0	6	0	0	0	5	0	0	12
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 3	ST 0	SR 1	SU 0	EL 0	ET 56	ER 0	EU 0	WL 0	WT 41	WR 2	WU 0	TOTAL 103
APPROACH %'s :					75.00%	0.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	95.35%	4.65%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	31	0	0	0	21	1	0	54
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.775	0.000	0.000	0.000	0.656	0.250	0.000	0.750
							0.250				0.775				0.688		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Juan Hernandez Dr & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-002
Date: 5/30/2024

Data - Bikes

NS/EW Streets:	Juan Hernandez Dr				Juan Hernandez Dr				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 1	ER 0	EU 0	WL 0	WT 4	WR 0	WU 0	TOTAL 5
APPROACH %'s :	0.00%				0.00%				100.00%				0.00%				
PEAK HR :	07:30 AM - 08:30 AM				0	0	0	0	0	0	0	0	0	1	0	0	TOTAL 1
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0.250	0.000	0.000	0.250
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 1	SU 0	EL 0	ET 4	ER 0	EU 0	WL 0	WT 1	WR 0	WU 0	TOTAL 6
APPROACH %'s :	0.00%				0.00%				100.00%				0.00%				
PEAK HR :	04:00 PM - 05:00 PM				0	0	0	0	0	4	0	0	0	1	0	0	TOTAL 5
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1.000	0.000	0.000	0	0.250	0.000	0.000	0.625
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.250	0.000	0.000	0.625

National Data & Surveying Services

Intersection Turning Movement Count

Location: Juan Hernandez Dr & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-002
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Juan Hernandez Dr		Juan Hernandez Dr		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

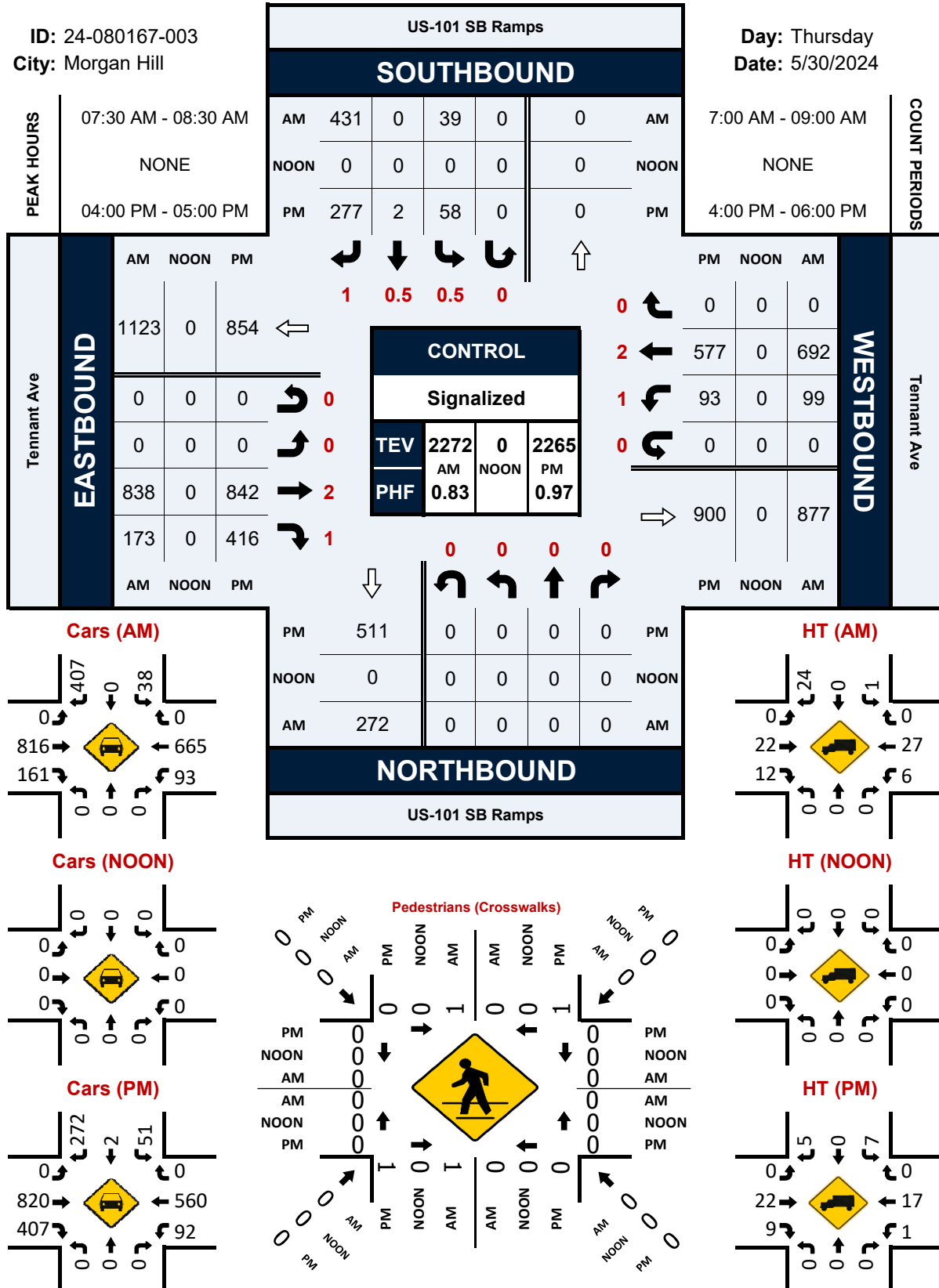
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	1	0	0	0	0	0	0	2
	50.00%	50.00%							
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250							0.250

US-101 SB Ramps & Tennant Ave

Peak Hour Turning Movement Count

ID: 24-080167-003
City: Morgan Hill

Day: Thursday
Date: 5/30/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 SB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-003
Date: 5/30/2024

Data - Total

NS/EW Streets:	US-101 SB Ramps				US-101 SB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	17	0	62	0	0	149	40	0	8	107	0	0	383
7:15 AM	0	0	0	0	5	0	70	0	0	141	46	0	10	115	0	0	387
7:30 AM	0	0	0	0	10	0	99	0	0	219	38	0	30	167	0	0	563
7:45 AM	0	0	0	0	16	0	132	0	0	243	59	0	32	206	0	0	688
8:00 AM	0	0	0	0	9	0	102	0	0	184	44	0	27	169	0	0	535
8:15 AM	0	0	0	0	4	0	98	0	0	192	32	0	10	150	0	0	486
8:30 AM	0	0	0	0	9	0	117	0	0	158	48	0	20	127	0	0	479
8:45 AM	0	0	0	0	12	0	133	0	0	189	44	0	11	112	0	0	501
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	82	0	813	0	0	1475	351	0	148	1153	0	0	4022
PEAK HR :	07:30 AM - 08:30 AM				39	0	431	0	0	838	173	0	99	692	0	0	2272
PEAK HR VOL :	0	0	0	0	0.609	0.000	0.816	0.000	0.000	0.862	0.733	0.000	0.773	0.840	0.000	0.000	0.826
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.794				0.837				0.831				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	25	1	68	0	0	203	129	0	17	131	0	0	574
4:15 PM	0	0	0	0	11	0	58	0	0	233	101	0	16	164	0	0	583
4:30 PM	0	0	0	0	8	1	76	0	0	205	91	0	32	141	0	0	554
4:45 PM	0	0	0	0	14	0	75	0	0	201	95	0	28	141	0	0	554
5:00 PM	0	0	0	0	19	1	60	0	0	245	88	0	25	100	0	0	538
5:15 PM	0	0	0	0	12	1	72	0	0	199	93	0	21	135	0	0	533
5:30 PM	0	0	0	0	15	0	71	0	0	196	104	0	18	132	0	0	536
5:45 PM	0	0	0	0	20	0	65	0	0	164	63	0	10	117	0	0	439
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	124	4	545	0	0	1646	764	0	167	1061	0	0	4311
PEAK HR :	04:00 PM - 05:00 PM				58	2	277	0	0	842	416	0	93	577	0	0	2265
PEAK HR VOL :	0	0	0	0	0.580	0.500	0.911	0.000	0.000	0.903	0.806	0.000	0.727	0.880	0.000	0.000	0.971
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.896				0.942				0.931				

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 SB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-003
Date: 5/30/2024

Data - Cars

NS/EW Streets:	US-101 SB Ramps				US-101 SB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	15	0	59	0	0	142	29	0	4	98	0	0	347
7:15 AM	0	0	0	0	2	0	64	0	0	131	42	0	9	106	0	0	354
7:30 AM	0	0	0	0	10	0	91	0	0	208	36	0	29	162	0	0	536
7:45 AM	0	0	0	0	16	0	127	0	0	239	52	0	30	194	0	0	658
8:00 AM	0	0	0	0	8	0	94	0	0	182	42	0	25	164	0	0	515
8:15 AM	0	0	0	0	4	0	95	0	0	187	31	0	9	145	0	0	471
8:30 AM	0	0	0	0	9	0	109	0	0	151	44	0	20	122	0	0	455
8:45 AM	0	0	0	0	12	0	122	0	0	180	40	0	10	110	0	0	474
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	76	0	761	0	0	1420	316	0	136	1101	0	0	3810
PEAK HR :	07:30 AM - 08:30 AM				9.08%	0.00%	90.92%	0.00%	0.00%	81.80%	18.20%	0.00%	10.99%	89.01%	0.00%	0.00%	
PEAK HR VOL :	0	0	0	0	38	0	407	0	0	816	161	0	93	665	0	0	2180
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.594	0.000	0.801	0.000	0.000	0.854	0.774	0.000	0.775	0.857	0.000	0.000	0.828
							0.778				0.839				0.846		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	21	1	66	0	0	198	125	0	17	125	0	0	553
4:15 PM	0	0	0	0	11	0	56	0	0	231	100	0	16	160	0	0	574
4:30 PM	0	0	0	0	7	1	75	0	0	198	88	0	32	136	0	0	537
4:45 PM	0	0	0	0	12	0	75	0	0	193	94	0	27	139	0	0	540
5:00 PM	0	0	0	0	19	0	57	0	0	240	85	0	24	97	0	0	522
5:15 PM	0	0	0	0	11	1	70	0	0	195	91	0	21	133	0	0	522
5:30 PM	0	0	0	0	13	0	66	0	0	189	104	0	18	131	0	0	521
5:45 PM	0	0	0	0	18	0	63	0	0	157	63	0	10	114	0	0	425
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	112	3	528	0	0	1601	750	0	165	1035	0	0	4194
PEAK HR :	04:00 PM - 05:00 PM				17.42%	0.47%	82.12%	0.00%	0.00%	68.10%	31.90%	0.00%	13.75%	86.25%	0.00%	0.00%	
PEAK HR VOL :	0	0	0	0	51	2	272	0	0	820	407	0	92	560	0	0	2204
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.607	0.500	0.907	0.000	0.000	0.887	0.814	0.000	0.719	0.875	0.000	0.000	0.960
							0.923				0.927				0.926		

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 SB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-003
Date: 5/30/2024

Data - HT

NS/EW Streets:	US-101 SB Ramps				US-101 SB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	2	0	3	0	0	7	11	0	4	9	0	0	36
7:15 AM	0	0	0	0	3	0	6	0	0	10	4	0	1	9	0	0	33
7:30 AM	0	0	0	0	0	0	8	0	0	11	2	0	1	5	0	0	27
7:45 AM	0	0	0	0	0	0	5	0	0	4	7	0	2	12	0	0	30
8:00 AM	0	0	0	0	1	0	8	0	0	2	2	0	2	5	0	0	20
8:15 AM	0	0	0	0	0	0	3	0	0	5	1	0	1	5	0	0	15
8:30 AM	0	0	0	0	0	0	8	0	0	7	4	0	0	5	0	0	24
8:45 AM	0	0	0	0	0	0	11	0	0	9	4	0	1	2	0	0	27
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 6	ST 0	SR 52	SU 0	EL 0	ET 55	ER 35	EU 0	WL 12	WT 52	WR 0	WU 0	TOTAL 212
APPROACH %'s :					10.34%	0.00%	89.66%	0.00%	0.00%	61.11%	38.89%	0.00%	18.75%	81.25%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM				1	0	24	0	0	22	12	0	6	27	0	0	TOTAL 92
PEAK HR VOL :	0	0	0	0	0.250	0.000	0.750	0.000	0.000	0.500	0.429	0.000	0.750	0.563	0.000	0.000	0.767
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.694				0.654				0.589				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	4	0	2	0	0	5	4	0	0	6	0	0	21
4:15 PM	0	0	0	0	0	0	2	0	0	2	1	0	0	4	0	0	9
4:30 PM	0	0	0	0	1	0	1	0	0	7	3	0	0	5	0	0	17
4:45 PM	0	0	0	0	2	0	0	0	0	8	1	0	1	2	0	0	14
5:00 PM	0	0	0	0	0	1	3	0	0	5	3	0	1	3	0	0	16
5:15 PM	0	0	0	0	1	0	2	0	0	4	2	0	0	2	0	0	11
5:30 PM	0	0	0	0	2	0	5	0	0	7	0	0	0	1	0	0	15
5:45 PM	0	0	0	0	2	0	2	0	0	7	0	0	0	3	0	0	14
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 12	ST 1	SR 17	SU 0	EL 0	ET 45	ER 14	EU 0	WL 2	WT 26	WR 0	WU 0	TOTAL 117
APPROACH %'s :					40.00%	3.33%	56.67%	0.00%	0.00%	76.27%	23.73%	0.00%	7.14%	92.86%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM				7	0	5	0	0	22	9	0	1	17	0	0	TOTAL 61
PEAK HR VOL :	0	0	0	0	0.438	0.000	0.625	0.000	0.000	0.688	0.563	0.000	0.250	0.708	0.000	0.000	0.726
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500				0.775				0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 SB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-003
Date: 5/30/2024

Data - Bikes

NS/EW Streets:	US-101 SB Ramps				US-101 SB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 1	ER 0	EU 0	WL 0	WT 4	WR 0	WU 0	TOTAL 5
APPROACH %'s :	0.00% 0.00% 0.00% 0.00%				0.00% 0.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				TOTAL 1
PEAK HR :	07:30 AM - 08:30 AM				0				0				0				TOTAL 1
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	0.5 ST	1 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 4	ER 0	EU 0	WL 0	WT 1	WR 0	WU 0	TOTAL 5
APPROACH %'s :	0.00% 0.00% 0.00% 0.00%				0.00% 0.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				0.00% 100.00% 0.00% 0.00%				TOTAL 5
PEAK HR :	04:00 PM - 05:00 PM				0				0				0				TOTAL 5
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.250	0.000	0.000	0.625

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 SB Ramps & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-003
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	US-101 SB Ramps		US-101 SB Ramps		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	1	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	0	1	0	0	0	0	0	2
	100.00%	0.00%	100.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	1	0	1	0	0	0	0	0	2
PEAK HR FACTOR :	0.250		0.250						0.250
		0.250		0.250					

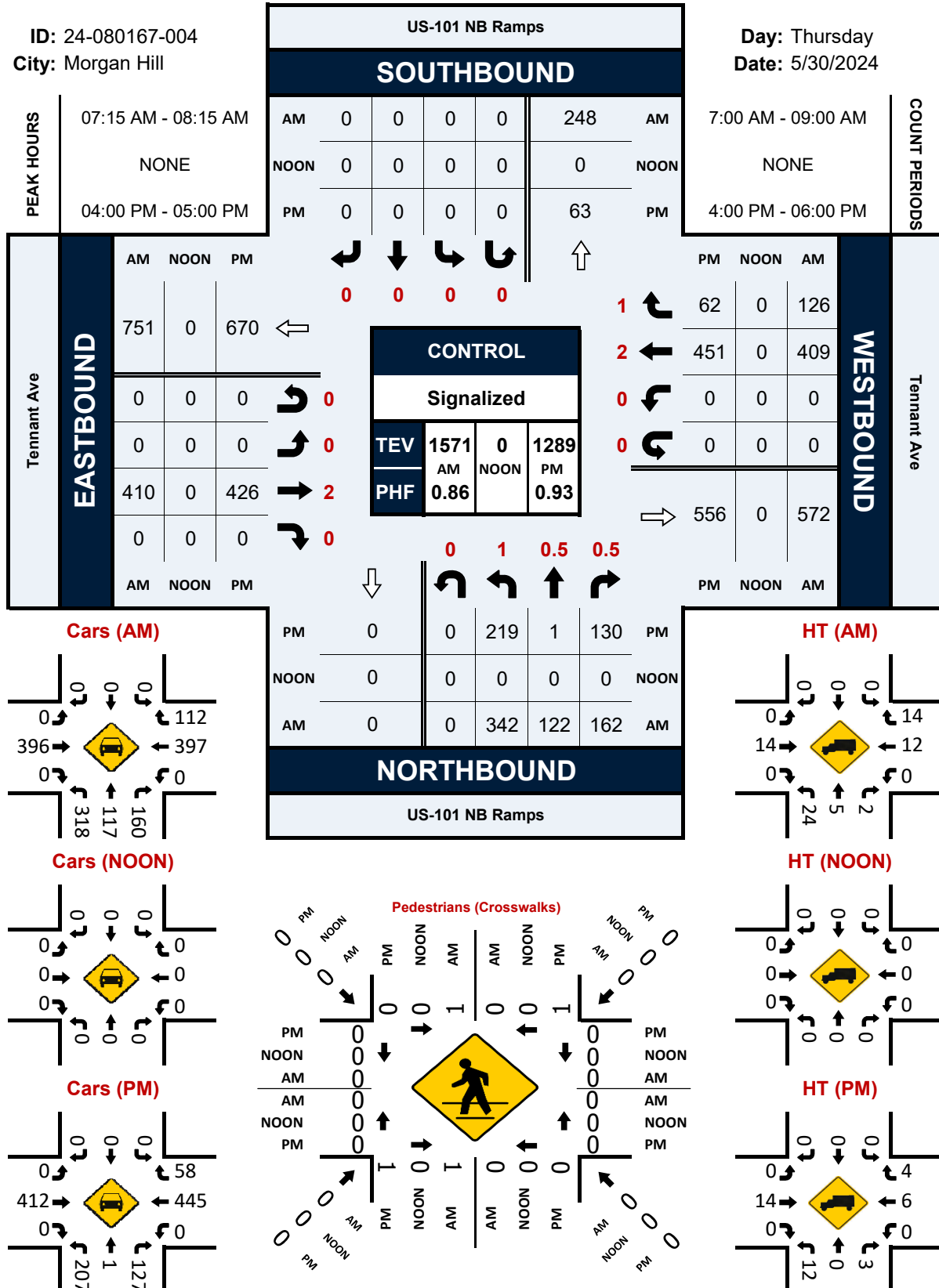
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	1	1	0	0	0	0	0	3
	50.00%	50.00%	100.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	1	1	0	0	0	0	0	2
PEAK HR FACTOR :		0.250	0.250						0.250
		0.250		0.250					

US-101 NB Ramps & Tennant Ave

Peak Hour Turning Movement Count

ID: 24-080167-004
City: Morgan Hill

Day: Thursday
Date: 5/30/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 NB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-004
Date: 5/30/2024

Data - Total

NS/EW Streets:	US-101 NB Ramps				US-101 NB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	0.5 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
7:00 AM	68	32	47	0	0	0	0	0	0	68	0	0	0	51	29	0	295
7:15 AM	65	53	36	0	0	0	0	0	0	81	0	0	0	55	30	0	320
7:30 AM	87	21	41	0	0	0	0	0	0	108	0	0	0	116	32	0	405
7:45 AM	110	19	43	0	0	0	0	0	0	132	0	0	0	122	29	0	455
8:00 AM	80	29	42	0	0	0	0	0	0	89	0	0	0	116	35	0	391
8:15 AM	92	10	33	0	0	0	0	0	0	79	0	0	0	71	28	0	313
8:30 AM	68	4	25	0	0	0	0	0	0	74	0	0	0	76	20	0	267
8:45 AM	53	0	19	0	0	0	0	0	0	66	0	0	0	70	16	0	224
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	623	168	286	0	0	0	0	0	0	697	0	0	0	677	219	0	2670
PEAK HR :	57.85%	15.60%	26.56%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	75.56%	24.44%	0.00%	
PEAK HR VOL :	342	122	162	0	0	0	0	0	0	410	0	0	0	409	126	0	TOTAL
PEAK HR FACTOR :	0.777	0.575	0.942	0.000	0.000	0.000	0.000	0.000	0.000	0.777	0.000	0.000	0.000	0.838	0.900	0.000	1571
			0.910							0.777				0.886			0.863

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	0.5 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
4:00 PM	36	1	31	0	0	0	0	0	0	122	0	0	0	111	13	0	314
4:15 PM	54	0	31	0	0	0	0	0	0	122	0	0	0	126	14	0	347
4:30 PM	62	0	37	0	0	0	0	0	0	86	0	0	0	114	19	0	318
4:45 PM	67	0	31	0	0	0	0	0	0	96	0	0	0	100	16	0	310
5:00 PM	46	1	27	0	0	0	0	0	0	113	0	0	0	79	23	0	289
5:15 PM	65	0	31	0	0	0	0	0	0	106	0	0	0	92	17	0	311
5:30 PM	57	1	28	0	0	0	0	0	0	92	0	0	0	94	13	0	285
5:45 PM	50	0	36	0	0	0	0	0	0	101	0	0	0	74	12	0	273
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	437	3	252	0	0	0	0	0	0	838	0	0	0	790	127	0	2447
PEAK HR :	63.15%	0.43%	36.42%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	86.15%	13.85%	0.00%	
PEAK HR VOL :	219	1	130	0	0	0	0	0	0	426	0	0	0	451	62	0	TOTAL
PEAK HR FACTOR :	0.817	0.250	0.878	0.000	0.000	0.000	0.000	0.000	0.000	0.873	0.000	0.000	0.000	0.895	0.816	0.000	1289
			0.884							0.873				0.916			0.929

Location: US-101 NB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Data - Cars

NS/EW Streets:	US-101 NB Ramps					US-101 NB Ramps					Tennant Ave					Tennant Ave					
AM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	1	0.5	0.5	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
	7:00 AM	60	32	47	0	0	0	0	0	0	61	0	0	0	0	45	27	0	272		
	7:15 AM	59	53	36	0	0	0	0	0	0	75	0	0	0	0	52	25	0	300		
	7:30 AM	81	20	40	0	0	0	0	0	0	105	0	0	0	0	115	29	0	390		
	7:45 AM	101	17	42	0	0	0	0	0	0	129	0	0	0	0	118	27	0	434		
	8:00 AM	77	27	42	0	0	0	0	0	0	87	0	0	0	0	112	31	0	376		
	8:15 AM	88	9	32	0	0	0	0	0	0	78	0	0	0	0	69	26	0	302		
	8:30 AM	64	4	25	0	0	0	0	0	0	73	0	0	0	0	75	19	0	260		
8:45 AM	51	0	19	0	0	0	0	0	0	62	0	0	0	0	69	15	0	216			
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
APPROACH %'s:	581	162	283	0	0	0	0	0	0	670	0	0	0	0	655	199	0	2550			
PEAK HR:	07:15 AM - 08:15 AM										0.00%					0.00%					TOTAL
PEAK HR VOL:	318	117	160	0	0	0	0	0	0	396	0	0	0	0	397	112	0	1500			
PEAK HR FACTOR:	0.787	0.552	0.952	0.000	0.000	0.000	0.000	0.000	0.000	0.767	0.000	0.000	0.000	0.000	0.841	0.903	0.000	0.864			
										0.767					0.878						
PM	NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					
	1	0.5	0.5	0	0	0	0	0	0	0	2	0	0	0	0	2	1	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
	4:00 PM	33	1	30	0	0	0	0	0	0	114	0	0	0	0	109	13	0	300		
	4:15 PM	51	0	31	0	0	0	0	0	121	0	0	0	0	125	13	0	341			
	4:30 PM	59	0	37	0	0	0	0	0	85	0	0	0	0	112	17	0	310			
	4:45 PM	64	0	29	0	0	0	0	0	92	0	0	0	0	99	15	0	299			
	5:00 PM	45	1	27	0	0	0	0	0	111	0	0	0	0	76	22	0	282			
	5:15 PM	65	0	31	0	0	0	0	0	104	0	0	0	0	91	17	0	308			
	5:30 PM	56	1	28	0	0	0	0	0	88	0	0	0	0	94	12	0	279			
5:45 PM	48	0	36	0	0	0	0	0	97	0	0	0	0	73	12	0	266				
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
APPROACH %'s:	421	3	249	0	0	0	0	0	0	812	0	0	0	0	779	121	0	2385			
PEAK HR:	04:00 PM - 05:00 PM										0.00%					0.00%					TOTAL
PEAK HR VOL:	207	1	127	0	0	0	0	0	0	412	0	0	0	0	445	58	0	1250			
PEAK HR FACTOR:	0.809	0.250	0.858	0.000	0.000	0.000	0.000	0.000	0.000	0.851	0.000	0.000	0.000	0.000	0.890	0.853	0.000	0.916			
										0.851					0.911						

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 NB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Project ID: 24-080167-004
Date: 5/30/2024

Data - HT

NS/EW Streets:	US-101 NB Ramps				US-101 NB Ramps				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	0.5 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
7:00 AM	8	0	0	0	0	0	0	0	0	7	0	0	0	6	2	0	23
7:15 AM	6	0	0	0	0	0	0	0	0	6	0	0	0	3	5	0	20
7:30 AM	6	1	1	0	0	0	0	0	0	3	0	0	0	1	3	0	15
7:45 AM	9	2	1	0	0	0	0	0	0	3	0	0	0	4	2	0	21
8:00 AM	3	2	0	0	0	0	0	0	0	2	0	0	0	4	4	0	15
8:15 AM	4	1	1	0	0	0	0	0	0	1	0	0	0	2	2	0	11
8:30 AM	4	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	7
8:45 AM	2	0	0	0	0	0	0	0	0	4	0	0	0	1	1	0	8
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	42	6	3	0	0	0	0	0	0	27	0	0	0	22	20	0	120
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	24	5	2	0	0	0	0	0	0	14	0	0	0	12	14	0	71
PEAK HR FACTOR :	0.667	0.625	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.000	0.000	0.750	0.700	0.000	0.845
	0.646								0.583				0.813				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	0.5 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
4:00 PM	3	0	1	0	0	0	0	0	0	8	0	0	0	2	0	0	14
4:15 PM	3	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	6
4:30 PM	3	0	0	0	0	0	0	0	0	1	0	0	0	2	2	0	8
4:45 PM	3	0	2	0	0	0	0	0	0	4	0	0	0	1	1	0	11
5:00 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	3	1	0	7
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:30 PM	1	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	6
5:45 PM	2	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	7
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	16	0	3	0	0	0	0	0	0	26	0	0	0	11	6	0	62
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	12	0	3	0	0	0	0	0	0	14	0	0	0	6	4	0	39
PEAK HR FACTOR :	1.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.438	0.000	0.000	0.000	0.750	0.500	0.000	0.696
	0.750								0.438				0.625				

Location: US-101 NB Ramps & Tennant Ave
City: Morgan Hill
Control: Signalized

Data - Bikes

NS/EW Streets:		US-101 NB Ramps				US-101 NB Ramps				Tennant Ave				Tennant Ave							
AM	NORTHBOUND								SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	0.5	0.5	0	0	0	0	0	0	2	0	0	0	0	1	2	1	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0			
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0			
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0				
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0				
TOTAL VOLUMES : APPROACH %'s :		NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 1	ER 0	EU 0	WL 0	WT 4	WR 0	WU 0	TOTAL 5			
PEAK HR :		07:15 AM - 08:15 AM																TOTAL			
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1			
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250			

PM	NORTHBOUND								SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	0.5	0.5	0	0	0	0	0	2	0	0	0	0	2	1	0	0				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
	4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0				
	4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0				
	4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0				
	4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0				
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
TOTAL VOLUMES : APPROACH %'s :		NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 4	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 4			
PEAK HR :		04:00 PM - 05:00 PM																TOTAL			
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4			
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000			

National Data & Surveying Services

Intersection Turning Movement Count

Location: US-101 NB Ramps & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-004
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	US-101 NB Ramps		US-101 NB Ramps		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	1	0	1	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 1	WB 0	EB 1	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 2
APPROACH %'s :	100.00%	0.00%	100.00%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	1	0	1	0	0	0	0	0	2
PEAK HR FACTOR :	0.250		0.250						0.250
		0.250		0.250					

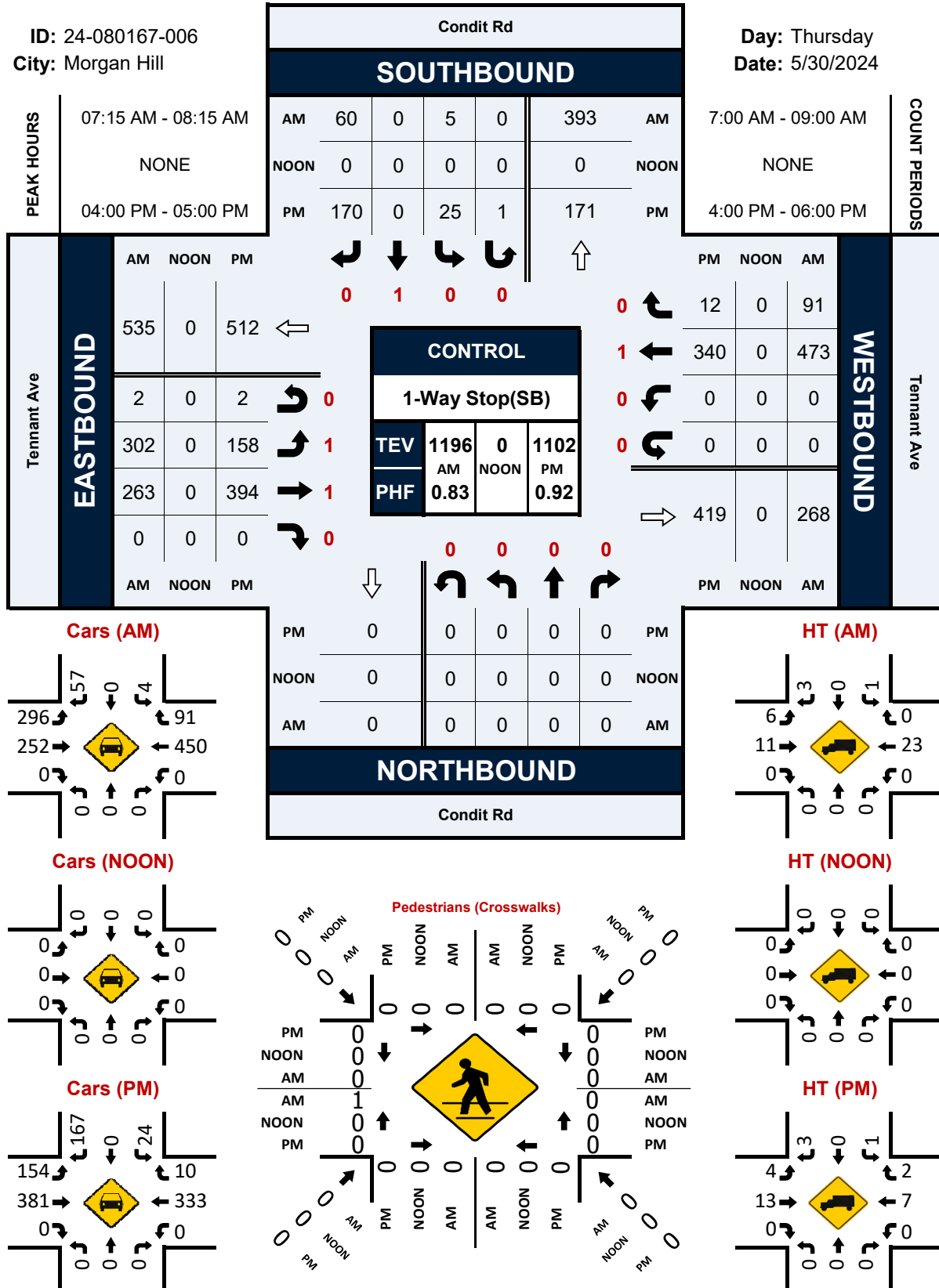
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 0	WB 1	EB 1	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 2
APPROACH %'s :	0.00%	100.00%	100.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	1	1	0	0	0	0	0	2
PEAK HR FACTOR :		0.250	0.250						0.250
		0.250		0.250					

Condit Rd & Tennant Ave

Peak Hour Turning Movement Count

ID: 24-080167-006
City: Morgan Hill

Day: Thursday
Date: 5/30/2024



National Data & Surveying Services

Intersection Turning Movement Count

Location: Condit Rd & Tennant Ave
City: Morgan Hill
Control: 1-Way Stop(SB)

Project ID: 24-080167-006
Date: 5/30/2024

Data - Total

NS/EW Streets:	Condit Rd				Condit Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	7	0	73	41	0	1	0	71	33	0	226
7:15 AM	0	0	0	0	1	0	12	0	71	47	0	0	0	74	35	0	240
7:30 AM	0	0	0	0	1	0	13	0	69	73	0	1	0	133	17	0	307
7:45 AM	0	0	0	0	1	0	17	0	89	91	0	1	0	138	25	0	362
8:00 AM	0	0	0	0	2	0	18	0	73	52	0	0	0	128	14	0	287
8:15 AM	0	0	0	0	0	0	26	0	73	45	0	0	0	73	8	0	225
8:30 AM	0	0	0	0	3	0	23	0	52	46	0	0	0	79	7	0	210
8:45 AM	0	0	0	0	2	0	19	0	25	61	0	0	0	62	2	0	171
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	10	0	135	0	525	456	0	3	0	758	141	0	2028
PEAK HR :	07:15 AM - 08:15 AM				6.90%	0.00%	93.10%	0.00%	53.35%	46.34%	0.00%	0.30%	0.00%	84.32%	15.68%	0.00%	
PEAK HR VOL :	0	0	0	0	5	0	60	0	302	263	0	2	0	473	91	0	1196
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.625	0.000	0.833	0.000	0.848	0.723	0.000	0.500	0.000	0.857	0.650	0.000	0.826
							0.813				0.783				0.865		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	7	0	47	0	33	117	0	1	0	75	5	0	285
4:15 PM	0	0	0	0	4	0	43	1	49	102	0	1	0	96	3	0	299
4:30 PM	0	0	0	0	9	0	51	0	38	88	0	0	0	83	4	0	273
4:45 PM	0	0	0	0	5	0	29	0	38	87	0	0	0	86	0	0	245
5:00 PM	0	0	0	0	4	0	38	0	39	101	0	2	0	62	3	0	249
5:15 PM	0	0	0	0	7	0	48	0	35	100	0	1	0	60	2	0	253
5:30 PM	0	0	0	0	11	0	47	0	43	75	0	2	0	58	1	0	237
5:45 PM	0	0	0	0	3	0	37	0	54	83	0	0	0	50	0	0	227
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	50	0	340	1	329	753	0	7	0	570	18	0	2068
PEAK HR :	04:00 PM - 05:00 PM				12.79%	0.00%	86.96%	0.26%	30.21%	69.15%	0.00%	0.64%	0.00%	96.94%	3.06%	0.00%	
PEAK HR VOL :	0	0	0	0	25	0	170	1	158	394	0	2	0	340	12	0	1102
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.694	0.000	0.833	0.250	0.806	0.842	0.000	0.500	0.000	0.885	0.600	0.000	0.921
							0.817				0.911				0.889		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Condit Rd & Tennant Ave
City: Morgan Hill
Control: 1-Way Stop(SB)

Project ID: 24-080167-006
Date: 5/30/2024

Data - Cars

NS/EW Streets:	Condit Rd				Condit Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	6	0	72	36	0	1	0	65	33	0	213
7:15 AM	0	0	0	0	1	0	11	0	69	42	0	0	0	67	35	0	225
7:30 AM	0	0	0	0	1	0	12	0	68	70	0	1	0	130	17	0	299
7:45 AM	0	0	0	0	0	0	17	0	86	90	0	1	0	132	25	0	351
8:00 AM	0	0	0	0	2	0	17	0	73	50	0	0	0	121	14	0	277
8:15 AM	0	0	0	0	0	0	26	0	71	45	0	0	0	69	8	0	219
8:30 AM	0	0	0	0	3	0	23	0	52	45	0	0	0	77	6	0	206
8:45 AM	0	0	0	0	2	0	18	0	24	58	0	0	0	60	2	0	164
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	9	0	130	0	515	436	0	3	0	721	140	0	1954
PEAK HR :	07:15 AM - 08:15 AM				6.47%	0.00%	93.53%	0.00%	53.98%	45.70%	0.00%	0.31%	0.00%	83.74%	16.26%	0.00%	
PEAK HR VOL :	0	0	0	0	4	0	57	0	296	252	0	2	0	450	91	0	TOTAL
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.838	0.000	0.860	0.700	0.000	0.500	0.000	0.852	0.650	0.000	1152
							0.803				0.777				0.861		0.821

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	7	0	46	0	31	110	0	1	0	74	4	0	273
4:15 PM	0	0	0	0	4	0	43	1	49	102	0	1	0	94	3	0	297
4:30 PM	0	0	0	0	8	0	49	0	37	87	0	0	0	80	3	0	264
4:45 PM	0	0	0	0	5	0	29	0	37	82	0	0	0	85	0	0	238
5:00 PM	0	0	0	0	4	0	38	0	38	100	0	2	0	58	3	0	243
5:15 PM	0	0	0	0	7	0	48	0	35	98	0	1	0	59	2	0	250
5:30 PM	0	0	0	0	11	0	47	0	41	73	0	2	0	57	1	0	232
5:45 PM	0	0	0	0	3	0	36	0	53	81	0	0	0	50	0	0	223
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	49	0	336	1	321	733	0	7	0	557	16	0	2020
PEAK HR :	04:00 PM - 05:00 PM				12.69%	0.00%	87.05%	0.26%	30.25%	69.09%	0.00%	0.66%	0.00%	97.21%	2.79%	0.00%	
PEAK HR VOL :	0	0	0	0	24	0	167	1	154	381	0	2	0	333	10	0	TOTAL
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.750	0.000	0.852	0.250	0.786	0.866	0.000	0.500	0.000	0.886	0.625	0.000	1072
							0.842				0.883				0.884		0.902

National Data & Surveying Services

Intersection Turning Movement Count

Location: Condit Rd & Tennant Ave
City: Morgan Hill
Control: 1-Way Stop(SB)

Project ID: 24-080167-006
Date: 5/30/2024

Data - HT

NS/EW Streets:	Condit Rd				Condit Rd				Tennant Ave				Tennant Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	1	0	1	5	0	0	0	6	0	0	13
7:15 AM	0	0	0	0	0	0	1	0	2	5	0	0	0	7	0	0	15
7:30 AM	0	0	0	0	0	0	1	0	1	3	0	0	0	3	0	0	8
7:45 AM	0	0	0	0	1	0	0	0	3	1	0	0	0	6	0	0	11
8:00 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	7	0	0	10
8:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	6
8:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4
8:45 AM	0	0	0	0	0	0	1	0	1	3	0	0	0	2	0	0	7
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 1	ST 0	SR 5	SU 0	EL 10	ET 20	ER 0	EU 0	WL 0	WT 37	WR 1	WU 0	TOTAL 74
APPROACH %'s :					16.67%	0.00%	83.33%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%	97.37%	2.63%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM				1	0	3	0	6	11	0	0	0	23	0	0	TOTAL 44
PEAK HR VOL :	0	0	0	0	0.250	0.000	0.750	0.000	0.500	0.550	0.000	0.000	0.000	0.821	0.000	0.000	0.733
PEAK HR FACTOR :	0.000	0.000	0.000	0.000			1.000			0.607				0.821			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	1	0	2	7	0	0	0	1	1	0	12
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
4:30 PM	0	0	0	0	1	0	2	0	1	1	0	0	0	3	1	0	9
4:45 PM	0	0	0	0	0	0	0	0	1	5	0	0	0	1	0	0	7
5:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	4	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	1	0	0	5
5:45 PM	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	4
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 1	ST 0	SR 4	SU 0	EL 8	ET 20	ER 0	EU 0	WL 0	WT 13	WR 2	WU 0	TOTAL 48
APPROACH %'s :					20.00%	0.00%	80.00%	0.00%	28.57%	71.43%	0.00%	0.00%	0.00%	86.67%	13.33%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM				1	0	3	0	4	13	0	0	0	7	2	0	TOTAL 30
PEAK HR VOL :	0	0	0	0	0.250	0.000	0.375	0.000	0.500	0.464	0.000	0.000	0.000	0.583	0.500	0.000	0.625
PEAK HR FACTOR :	0.000	0.000	0.000	0.000			0.333			0.472				0.563			

National Data & Surveying Services

Location: Condit Rd & Tennant Ave
City: Morgan Hill

Project ID: 24-080167-006
Date: 5/30/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Condit Rd		Condit Rd		Tennant Ave		Tennant Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	1	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
	0	0	0	0	0	0	1 100.00%	0 0.00%	1
PEAK HR :	07:15 AM - 08:15 AM		0	0	0	0	1 0.250 0.250	0	TOTAL
PEAK HR VOL :	0	0							1
PEAK HR FACTOR :									0.250

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	EB 0	WB 0	EB 0	WB 0	NB 0	SB 0	NB 0	SB 0	TOTAL 0
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Appendix C: 2024 Existing Conditions Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Existing AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	184	47	124	91	88	68	728	45	74	310	41
Future Volume (vph)	177	184	47	124	91	88	68	728	45	74	310	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3369		3303	3166		1626	3505	1530	3400	3471	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3369		3303	3166		1626	3505	1530	3400	3471	1563
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	201	209	53	141	103	100	77	827	51	84	352	47
RTOR Reduction (vph)	0	26	0	0	80	0	0	0	33	0	0	31
Lane Group Flow (vph)	201	236	0	141	123	0	77	827	18	84	352	16
Confl. Peds. (#/hr)			4			1			5			1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	3%	6%	6%	2%	8%	11%	3%	4%	3%	4%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	7.3	13.8		7.4	13.9		6.0	25.1	25.1	5.1	24.2	24.2
Effective Green, g (s)	7.3	13.8		7.4	13.9		6.0	25.1	25.1	5.1	24.2	24.2
Actuated g/C Ratio	0.10	0.20		0.11	0.20		0.09	0.36	0.36	0.07	0.35	0.35
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	362	666		350	630		139	1260	550	248	1203	541
v/s Ratio Prot	c0.06	c0.07		0.04	0.04		c0.05	c0.24		0.02	0.10	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.55	0.35		0.40	0.19		0.55	0.65	0.03	0.33	0.29	0.03
Uniform Delay, d1	29.7	24.1		29.1	23.2		30.6	18.7	14.4	30.7	16.5	15.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.3		0.7	0.1		4.7	1.2	0.0	0.8	0.1	0.0
Delay (s)	31.5	24.4		29.8	23.4		35.3	19.9	14.5	31.5	16.7	15.0
Level of Service	C	C		C	C		D	B	B	C	B	B
Approach Delay (s/veh)		27.5			26.0			20.9			19.1	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			22.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			69.8				Sum of lost time (s)			18.4		
Intersection Capacity Utilization			55.1%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Existing AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	414	8	187	543	253	24	621	482	63	106	102
Future Volume (veh/h)	196	414	8	187	543	253	24	621	482	63	106	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1530	1900	1811	1796	1900	1811	1870	1707	1885	1826
Adj Flow Rate, veh/h	228	481	9	217	631	175	28	722	274	73	123	119
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	5	25	0	6	7	0	6	2	13	1	5
Cap, veh/h	271	913	17	260	874	386	52	978	451	91	559	495
Arrive On Green	0.15	0.26	0.26	0.14	0.25	0.25	0.03	0.28	0.28	0.06	0.31	0.31
Sat Flow, veh/h	1781	3484	65	1810	3441	1520	1810	3441	1585	1626	1798	1590
Grp Volume(v), veh/h	228	239	251	217	631	175	28	722	274	73	122	120
Grp Sat Flow(s),veh/h/ln	1781	1735	1814	1810	1721	1520	1810	1721	1585	1626	1791	1597
Q Serve(g_s), s	10.0	9.5	9.5	9.4	13.5	7.8	1.2	15.3	12.0	3.6	4.1	4.5
Cycle Q Clear(g_c), s	10.0	9.5	9.5	9.4	13.5	7.8	1.2	15.3	12.0	3.6	4.1	4.5
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	454	475	260	874	386	52	978	451	91	557	497
V/C Ratio(X)	0.84	0.53	0.53	0.83	0.72	0.45	0.54	0.74	0.61	0.81	0.22	0.24
Avail Cap(c_a), veh/h	379	831	870	385	1649	729	113	1585	730	121	847	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	25.4	25.4	33.4	27.4	25.3	38.5	26.0	24.9	37.5	20.5	20.6
Incr Delay (d2), s/veh	11.5	0.9	0.9	9.6	1.1	0.8	8.2	1.1	1.3	24.1	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	3.8	3.9	4.6	5.3	2.7	0.6	5.8	4.3	1.9	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	26.3	26.3	43.1	28.5	26.1	46.7	27.1	26.2	61.6	20.6	20.8
LnGrp LOS	D	C	C	D	C	C	D	C	C	E	C	C
Approach Vol, veh/h		718			1023			1024			315	
Approach Delay, s/veh		32.1			31.2			27.4			30.2	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.5	25.9	7.6	30.3	17.1	25.3	9.8	28.1				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	17.1	38.5	5.0	38.0	17.1	38.5	6.0	37.0				
Max Q Clear Time (g_c+l1), s	11.4	11.5	3.2	6.5	12.0	15.5	5.6	17.3				
Green Ext Time (p_c), s	0.3	2.8	0.0	1.3	0.3	4.8	0.0	5.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			30.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Existing AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	937	0	5	1010	109	0	0	0	69	0	26
Future Volume (veh/h)	41	937	0	5	1010	109	0	0	0	69	0	26
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1885				1856	1900	1841
Adj Flow Rate, veh/h	49	1115	0	6	1202	130				82	0	31
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	0	0	5	1				3	0	4
Cap, veh/h	92	1968	0	15	1624	175				195	0	177
Arrive On Green	0.05	0.56	0.00	0.01	0.52	0.52				0.11	0.00	0.11
Sat Flow, veh/h	1810	3618	0	1810	3151	340				1767	0	1610
Grp Volume(v), veh/h	49	1115	0	6	660	672				82	0	31
Grp Sat Flow(s),veh/h/ln	1810	1763	0	1810	1735	1756				1767	0	1610
Q Serve(g_s), s	1.2	9.3	0.0	0.1	13.5	13.6				2.0	0.0	0.8
Cycle Q Clear(g_c), s	1.2	9.3	0.0	0.1	13.5	13.6				2.0	0.0	0.8
Prop In Lane	1.00		0.00	1.00		0.19				1.00		1.00
Lane Grp Cap(c), veh/h	92	1968	0	15	894	905				195	0	177
V/C Ratio(X)	0.53	0.57	0.00	0.41	0.74	0.74				0.42	0.00	0.17
Avail Cap(c_a), veh/h	203	2430	0	199	1192	1206				1323	0	1205
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	6.5	0.0	22.4	8.6	8.6				18.9	0.0	18.3
Incr Delay (d2), s/veh	4.7	0.3	0.0	17.7	1.7	1.7				1.4	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.9	0.0	0.1	3.4	3.5				0.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.8	6.7	0.0	40.1	10.3	10.4				20.3	0.0	18.8
LnGrp LOS	C	A		D	B	B				C		B
Approach Vol, veh/h		1164			1338						113	
Approach Delay, s/veh		7.5			10.5						19.9	
Approach LOS		A			B						B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	5.3	30.3		9.9	7.2	28.3						
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9	4.9						
Max Green Setting (Gmax), s	5.0	31.3		34.0	5.1	31.2						
Max Q Clear Time (g_c+l1), s	2.1	11.3		4.0	3.2	15.6						
Green Ext Time (p_c), s	0.0	7.7		0.4	0.0	7.8						
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				9.6								
HCM 6th LOS				A								

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Existing AM
06/30/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (vph)	0	838	173	99	692	0	0	0	0	39	0	431
Future Volume (vph)	0	838	173	99	692	0	0	0	0	39	0	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1477	1703	3471						1752	1524
Flt Permitted		1.00	1.00	0.19	1.00						0.95	1.00
Satd. Flow (perm)		3505	1477	355	3471						1752	1524
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	1010	208	119	834	0	0	0	0	47	0	519
RTOR Reduction (vph)	0	0	116	0	0	0	0	0	0	0	0	61
Lane Group Flow (vph)	0	1010	92	119	834	0	0	0	0	0	47	458
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	7%	6%	4%	0%	0%	0%	0%	3%	0%	6%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		21.6	21.6	21.6	21.6						17.8	17.8
Effective Green, g (s)		21.6	21.6	21.6	21.6						17.8	17.8
Actuated g/C Ratio		0.44	0.44	0.44	0.44						0.36	0.36
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1548	652	156	1533						637	554
v/s Ratio Prot		0.29			0.24							
v/s Ratio Perm			0.06	c0.34							0.03	c0.30
v/c Ratio		0.65	0.14	0.76	0.54						0.07	0.82
Uniform Delay, d1		10.7	8.1	11.4	10.0						10.1	14.1
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.9	0.0	19.5	0.3						0.0	9.7
Delay (s)		11.7	8.2	31.0	10.4						10.2	23.9
Level of Service		B	A	C	B						B	C
Approach Delay (s/veh)		11.1			13.0			0.0			22.8	
Approach LOS		B			B			A			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			14.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			48.9			Sum of lost time (s)			9.5			
Intersection Capacity Utilization			53.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

5: US-101 NB Ramps & Tennant Ave

Timing Plan: Existing AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	410	0	0	409	126	342	122	162	0	0	0
Future Volume (veh/h)	0	410	0	0	409	126	342	122	162	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1856	1737	1796	1841	1885			
Adj Flow Rate, veh/h	0	477	0	0	476	49	398	142	188			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	3	0	0	3	11	7	4	1			
Cap, veh/h	0	1177	0	0	1177	480	600	252	334			
Arrive On Green	0.00	0.33	0.00	0.00	0.33	0.33	0.35	0.35	0.35			
Sat Flow, veh/h	0	3711	0	0	3618	1439	1711	718	951			
Grp Volume(v), veh/h	0	477	0	0	476	49	398	0	330			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1763	1439	1711	0	1670			
Q Serve(g_s), s	0.0	3.1	0.0	0.0	3.1	0.7	5.9	0.0	4.8			
Cycle Q Clear(g_c), s	0.0	3.1	0.0	0.0	3.1	0.7	5.9	0.0	4.8			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.57			
Lane Grp Cap(c), veh/h	0	1177	0	0	1177	480	600	0	586			
V/C Ratio(X)	0.00	0.41	0.00	0.00	0.40	0.10	0.66	0.00	0.56			
Avail Cap(c_a), veh/h	0	3052	0	0	3052	1246	1101	0	1074			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.7	0.0	0.0	7.7	6.9	8.3	0.0	7.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.1	1.3	0.0	0.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.0	0.0	0.6	0.1	1.4	0.0	1.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	8.0	0.0	0.0	8.0	7.0	9.5	0.0	8.8			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		477			525			728				
Approach Delay, s/veh		8.0			7.9			9.2				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.0				15.0		15.2				
Change Period (Y+Rc), s		4.9				4.9		4.6				
Max Green Setting (Gmax), s		26.1				26.1		19.4				
Max Q Clear Time (g_c+l1), s		5.1				5.1		7.9				
Green Ext Time (p_c), s		2.9				3.1		2.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					8.4							
HCM 6th LOS					A							

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	304	263	473	91	5	60
Future Vol, veh/h	304	263	473	91	5	60
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	366	317	570	110	6	72

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	680	0	0 1674 626
Stage 1	-	-	- 625 -
Stage 2	-	-	- 1049 -
Critical Hdwy	4.12	-	- 6.6 6.25
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.218	-	- 3.68 3.345
Pot Cap-1 Maneuver	912	-	- 95 479
Stage 1	-	-	- 501 -
Stage 2	-	-	- 312 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	912	-	- 57 479
Mov Cap-2 Maneuver	-	-	- 57 -
Stage 1	-	-	- 300 -
Stage 2	-	-	- 312 -

Approach	EB	WB	SB
HCM Control Delay, s/v	6.2	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	912	-	-	-	305
HCM Lane V/C Ratio	0.402	-	-	-	0.257
HCM Control Delay (s/veh)	11.6	-	-	-	20.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q (veh)	2	-	-	-	1

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Existing PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	209	257	69	248	136	126	88	404	63	193	876	74
Future Volume (vph)	209	257	69	248	136	126	88	404	63	193	876	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3388		3467	3223		1805	3539	1592	3467	3505	1544
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3388		3467	3223		1805	3539	1592	3467	3505	1544
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	230	282	76	273	149	138	97	444	69	212	963	81
RTOR Reduction (vph)	0	27	0	0	107	0	0	0	46	0	0	51
Lane Group Flow (vph)	230	331	0	273	180	0	97	444	23	212	963	30
Confl. Peds. (#/hr)			4			11			4			5
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	2%	2%	6%	1%	2%	4%	0%	2%	0%	1%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.7	16.1		7.7	17.1		5.6	25.7	25.7	8.0	28.1	28.1
Effective Green, g (s)	6.7	16.1		7.7	17.1		5.6	25.7	25.7	8.0	28.1	28.1
Actuated g/C Ratio	0.09	0.21		0.10	0.23		0.07	0.34	0.34	0.11	0.37	0.37
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	303	718		351	726		133	1198	539	365	1297	571
v/s Ratio Prot	0.07	c0.10		c0.08	0.06		0.05	0.13		c0.06	c0.27	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.75	0.46		0.77	0.24		0.72	0.37	0.04	0.58	0.74	0.05
Uniform Delay, d1	33.8	26.1		33.2	24.1		34.4	18.9	16.8	32.3	20.7	15.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.4	0.4		10.3	0.1		18.0	0.1	0.0	2.3	2.3	0.0
Delay (s)	44.2	26.5		43.6	24.3		52.4	19.1	16.8	34.7	23.0	15.3
Level of Service	D	C		D	C		D	B	B	C	C	B
Approach Delay (s/veh)		33.4			33.7			24.2			24.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			27.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			75.9			Sum of lost time (s)			18.4			
Intersection Capacity Utilization			67.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Existing PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	706	23	248	532	52	18	143	233	283	599	206
Future Volume (veh/h)	189	706	23	248	532	52	18	143	233	283	599	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1870	1900	1856	1870	1841	1900	1870	1826	1885	1885	1841
Adj Flow Rate, veh/h	195	728	24	256	548	16	19	147	38	292	618	212
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	2	0	3	2	4	0	2	5	1	1	4
Cap, veh/h	235	940	31	297	1073	465	38	495	214	335	798	273
Arrive On Green	0.13	0.27	0.27	0.17	0.30	0.30	0.02	0.14	0.14	0.19	0.30	0.30
Sat Flow, veh/h	1753	3509	116	1767	3554	1539	1810	3554	1541	1795	2618	897
Grp Volume(v), veh/h	195	369	383	256	548	16	19	147	38	292	423	407
Grp Sat Flow(s),veh/h/ln	1753	1777	1848	1767	1777	1539	1810	1777	1541	1795	1791	1724
Q Serve(g_s), s	9.3	16.4	16.4	12.1	10.9	0.6	0.9	3.2	1.9	13.5	18.4	18.5
Cycle Q Clear(g_c), s	9.3	16.4	16.4	12.1	10.9	0.6	0.9	3.2	1.9	13.5	18.4	18.5
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	235	476	495	297	1073	465	38	495	214	335	546	525
V/C Ratio(X)	0.83	0.77	0.77	0.86	0.51	0.03	0.49	0.30	0.18	0.87	0.77	0.78
Avail Cap(c_a), veh/h	413	818	851	420	1645	712	118	1533	665	475	1130	1087
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	29.0	29.0	34.7	24.7	21.1	41.5	33.2	32.6	33.9	27.1	27.2
Incr Delay (d2), s/veh	7.3	2.7	2.6	12.1	0.4	0.0	9.5	0.3	0.4	11.9	2.4	2.5
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	4.3	6.9	7.2	5.9	4.4	0.2	0.5	1.3	0.7	6.6	7.6	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.5	31.7	31.6	46.8	25.1	21.1	51.0	33.5	33.0	45.8	29.5	29.7
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		947			820			204			1122	
Approach Delay, s/veh		34.1			31.8			35.0			33.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.3	27.9	7.1	31.4	16.4	30.8	21.3	17.2				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	20.4	39.5	5.6	54.1	20.2	39.7	22.7	37.0				
Max Q Clear Time (g_c+l1), s	14.1	18.4	2.9	20.5	11.3	12.9	15.5	5.2				
Green Ext Time (p_c), s	0.4	4.4	0.0	5.4	0.3	3.7	0.5	0.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.4									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Existing PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1212	0	3	816	35	0	0	0	43	0	16
Future Volume (veh/h)	8	1212	0	3	816	35	0	0	0	43	0	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1856	1856				1900	1900	1811
Adj Flow Rate, veh/h	8	1276	0	3	859	37				45	0	17
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	3	3				0	0	6
Cap, veh/h	19	1858	0	7	1790	77				219	0	195
Arrive On Green	0.01	0.53	0.00	0.00	0.52	0.52				0.12	0.00	0.12
Sat Flow, veh/h	1810	3618	0	1810	3440	148				1810	0	1610
Grp Volume(v), veh/h	8	1276	0	3	440	456				45	0	17
Grp Sat Flow(s),veh/h/ln	1810	1763	0	1810	1763	1825				1810	0	1610
Q Serve(g_s), s	0.2	11.1	0.0	0.1	6.6	6.6				0.9	0.0	0.4
Cycle Q Clear(g_c), s	0.2	11.1	0.0	0.1	6.6	6.6				0.9	0.0	0.4
Prop In Lane	1.00		0.00	1.00		0.08				1.00		1.00
Lane Grp Cap(c), veh/h	19	1858	0	7	917	950				219	0	195
V/C Ratio(X)	0.42	0.69	0.00	0.40	0.48	0.48				0.21	0.00	0.09
Avail Cap(c_a), veh/h	219	2693	0	219	1347	1394				1487	0	1323
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	7.3	0.0	20.5	6.3	6.3				16.4	0.0	16.2
Incr Delay (d2), s/veh	13.7	0.5	0.0	31.9	0.4	0.4				0.5	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.2	0.0	0.1	1.4	1.4				0.4	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	7.7	0.0	52.4	6.7	6.7				16.9	0.0	16.3
LnGrp LOS	C	A		D	A	A				B		B
Approach Vol, veh/h		1284			899						62	
Approach Delay, s/veh		7.9			6.9						16.7	
Approach LOS		A			A						B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	5.1	26.7		9.6	5.3	26.4						
Change Period (Y+Rc), s	4.9	4.9		4.6	4.9	4.9						
Max Green Setting (Gmax), s	5.0	31.6		34.0	5.0	31.6						
Max Q Clear Time (g_c+l1), s	2.1	13.1		2.9	2.2	8.6						
Green Ext Time (p_c), s	0.0	8.7		0.2	0.0	5.6						
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			7.7									
HCM 6th LOS			A									

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Existing PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	842	416	93	577	0	0	0	0	58	2	277
Future Volume (vph)	0	842	416	93	577	0	0	0	0	58	2	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1545	1787	3505						1624	1583
Flt Permitted		1.00	1.00	0.28	1.00						0.95	1.00
Satd. Flow (perm)		3505	1545	545	3505						1624	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	868	429	96	595	0	0	0	0	60	2	286
RTOR Reduction (vph)	0	0	226	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	0	868	203	96	595	0	0	0	0	0	62	145
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	0%	3%	2%	1%	3%	0%	0%	0%	0%	12%	0%	2%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		18.5	18.5	18.5	18.5						11.1	11.1
Effective Green, g (s)		18.5	18.5	18.5	18.5						11.1	11.1
Actuated g/C Ratio		0.47	0.47	0.47	0.47						0.28	0.28
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1658	731	257	1658						461	449
v/s Ratio Prot		c0.25			0.17							
v/s Ratio Perm			0.13	0.18							0.04	c0.09
v/c Ratio		0.52	0.27	0.37	0.35						0.13	0.32
Uniform Delay, d1		7.2	6.2	6.5	6.5						10.4	11.0
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.3	0.2	0.9	0.1						0.1	0.4
Delay (s)		7.5	6.4	7.5	6.6						10.5	11.4
Level of Service		A	A	A	A						B	B
Approach Delay (s/veh)		7.1			6.7			0.0			11.2	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			7.7			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			39.1			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			54.5%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Existing PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	426	0	0	451	62	219	1	130	0	0	0
Future Volume (veh/h)	0	426	0	0	451	62	219	1	130	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1885	1796	1811	1900	1870			
Adj Flow Rate, veh/h	0	458	0	0	485	24	235	1	140			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	3	0	0	1	7	6	0	2			
Cap, veh/h	0	1221	0	0	1240	526	594	4	551			
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.35	0.34	0.34	0.34			
Sat Flow, veh/h	0	3711	0	0	3676	1520	1725	11	1600			
Grp Volume(v), veh/h	0	458	0	0	485	24	235	0	141			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1791	1520	1725	0	1612			
Q Serve(g_s), s	0.0	2.8	0.0	0.0	3.0	0.3	3.0	0.0	1.8			
Cycle Q Clear(g_c), s	0.0	2.8	0.0	0.0	3.0	0.3	3.0	0.0	1.8			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.99			
Lane Grp Cap(c), veh/h	0	1221	0	0	1240	526	594	0	555			
V/C Ratio(X)	0.00	0.38	0.00	0.00	0.39	0.05	0.40	0.00	0.25			
Avail Cap(c_a), veh/h	0	3336	0	0	3389	1438	1098	0	1026			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.1	0.0	0.0	7.2	6.3	7.2	0.0	6.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	0.4	0.0	0.2			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.0	0.6	0.1	0.7	0.0	0.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	7.3	0.0	0.0	7.4	6.3	7.7	0.0	7.1			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		458			509			376				
Approach Delay, s/veh		7.3			7.3			7.4				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		14.6				14.6		14.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		27.5				27.5		18.5				
Max Q Clear Time (g_c+l1), s		4.8				5.0		5.0				
Green Ext Time (p_c), s		2.8				3.1		1.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				7.4								
HCM 6th LOS				A								

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	160	394	340	12	26	170
Future Vol, veh/h	160	394	340	12	26	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	174	428	370	13	28	185

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	383	0	0 1153 377
Stage 1	-	-	- 377 -
Stage 2	-	-	- 776 -
Critical Hdwy	4.12	-	- 6.6 6.25
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.218	-	- 3.68 3.345
Pot Cap-1 Maneuver	1175	-	- 201 663
Stage 1	-	-	- 656 -
Stage 2	-	-	- 424 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1175	-	- 171 663
Mov Cap-2 Maneuver	-	-	- 171 -
Stage 1	-	-	- 559 -
Stage 2	-	-	- 424 -

Approach	EB	WB	SB
HCM Control Delay, s/v	2.5	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1175	-	-	-	480
HCM Lane V/C Ratio	0.148	-	-	-	0.444
HCM Control Delay (s/veh)	8.6	-	-	-	18.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.5	-	-	-	2.2

Appendix D: 2024 Existing Conditions plus Project Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Existing + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	186	47	130	97	94	68	728	47	76	310	41
Future Volume (vph)	177	186	47	130	97	94	68	728	47	76	310	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3370		3303	3165		1626	3505	1530	3400	3471	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3370		3303	3165		1626	3505	1530	3400	3471	1563
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	201	211	53	148	110	107	77	827	53	86	352	47
RTOR Reduction (vph)	0	25	0	0	86	0	0	0	34	0	0	31
Lane Group Flow (vph)	201	239	0	148	131	0	77	827	19	86	352	16
Confl. Peds. (#/hr)			4			1			5			1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	3%	6%	6%	2%	8%	11%	3%	4%	3%	4%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	7.3	13.9		7.4	14.0		6.0	25.1	25.1	5.1	24.2	24.2
Effective Green, g (s)	7.3	13.9		7.4	14.0		6.0	25.1	25.1	5.1	24.2	24.2
Actuated g/C Ratio	0.10	0.20		0.11	0.20		0.09	0.36	0.36	0.07	0.35	0.35
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	362	670		349	633		139	1258	549	248	1201	541
v/s Ratio Prot	c0.06	c0.07		0.04	0.04		c0.05	c0.24		0.03	0.10	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.55	0.35		0.42	0.20		0.55	0.65	0.03	0.34	0.29	0.03
Uniform Delay, d1	29.7	24.1		29.2	23.3		30.6	18.7	14.5	30.8	16.6	15.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.3		0.8	0.1		4.7	1.2	0.0	0.8	0.1	0.0
Delay (s)	31.6	24.4		30.0	23.4		35.3	20.0	14.5	31.6	16.7	15.1
Level of Service	C	C		C	C		D	C	B	C	B	B
Approach Delay (s/veh)		27.5			26.1			20.9			19.2	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			22.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			69.9				Sum of lost time (s)			18.4		
Intersection Capacity Utilization			55.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Existing + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	420	8	193	561	264	24	621	484	67	106	102
Future Volume (veh/h)	196	420	8	193	561	264	24	621	484	67	106	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1530	1900	1811	1796	1900	1811	1870	1707	1885	1826
Adj Flow Rate, veh/h	228	488	9	224	652	193	28	722	354	78	123	119
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	5	25	0	6	7	0	6	2	13	1	5
Cap, veh/h	188	925	17	191	914	404	53	1043	481	97	600	530
Arrive On Green	0.11	0.27	0.27	0.11	0.27	0.27	0.03	0.30	0.30	0.06	0.33	0.33
Sat Flow, veh/h	1781	3485	64	1810	3441	1521	1810	3441	1585	1626	1798	1590
Grp Volume(v), veh/h	228	243	254	224	652	193	28	722	354	78	122	120
Grp Sat Flow(s),veh/h/ln	1781	1735	1814	1810	1721	1521	1810	1721	1585	1626	1791	1597
Q Serve(g_s), s	8.1	9.2	9.2	8.1	13.2	8.2	1.2	14.2	15.4	3.6	3.8	4.1
Cycle Q Clear(g_c), s	8.1	9.2	9.2	8.1	13.2	8.2	1.2	14.2	15.4	3.6	3.8	4.1
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	461	482	191	914	404	53	1043	481	97	597	533
V/C Ratio(X)	1.21	0.53	0.53	1.17	0.71	0.48	0.53	0.69	0.74	0.81	0.21	0.22
Avail Cap(c_a), veh/h	188	871	911	191	1728	763	118	1661	765	127	888	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	24.0	24.1	34.3	25.5	23.7	36.7	23.6	24.0	35.6	18.3	18.4
Incr Delay (d2), s/veh	134.1	0.9	0.9	119.0	1.1	0.9	7.9	0.8	2.2	23.8	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	3.6	3.8	9.7	5.1	2.8	0.6	5.3	5.4	2.0	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	168.4	25.0	25.0	153.3	26.6	24.6	44.6	24.4	26.2	59.4	18.4	18.6
LnGrp LOS	F	C	C	F	C	C	D	C	C	E	B	B
Approach Vol, veh/h		725			1069			1104			320	
Approach Delay, s/veh		70.1			52.8			25.5			28.5	
Approach LOS		E			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	25.3	7.5	30.9	13.0	25.3	9.9	28.6				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	8.1	38.5	5.0	38.0	8.1	38.5	6.0	37.0				
Max Q Clear Time (g_c+l1), s	10.1	11.2	3.2	6.1	10.1	15.2	5.6	17.4				
Green Ext Time (p_c), s	0.0	2.8	0.0	1.3	0.0	5.0	0.0	5.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			44.9									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Existing + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	937	12	29	1010	109	35	0	79	69	0	26
Future Volume (veh/h)	41	937	12	29	1010	109	35	0	79	69	0	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1885	1900	1900	1900	1856	1900	1841
Adj Flow Rate, veh/h	49	1115	14	35	1202	130	42	0	94	82	0	31
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	3	0	0	5	1	0	0	0	3	0	4
Cap, veh/h	81	1800	23	65	1562	168	156	0	138	143	0	130
Arrive On Green	0.04	0.50	0.50	0.04	0.50	0.50	0.09	0.00	0.09	0.08	0.00	0.08
Sat Flow, veh/h	1810	3565	45	1810	3151	340	1810	0	1610	1767	0	1610
Grp Volume(v), veh/h	49	551	578	35	660	672	42	0	94	82	0	31
Grp Sat Flow(s),veh/h/ln	1810	1763	1847	1810	1735	1756	1810	0	1610	1767	0	1610
Q Serve(g_s), s	1.7	14.8	14.8	1.2	20.3	20.5	1.4	0.0	3.7	2.9	0.0	1.2
Cycle Q Clear(g_c), s	1.7	14.8	14.8	1.2	20.3	20.5	1.4	0.0	3.7	2.9	0.0	1.2
Prop In Lane	1.00		0.02	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	81	890	933	65	860	871	156	0	138	143	0	130
V/C Ratio(X)	0.60	0.62	0.62	0.54	0.77	0.77	0.27	0.00	0.68	0.57	0.00	0.24
Avail Cap(c_a), veh/h	146	1302	1365	141	1276	1292	499	0	444	918	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.8	11.7	11.7	31.1	13.5	13.5	28.1	0.0	29.1	29.1	0.0	28.3
Incr Delay (d2), s/veh	6.9	0.7	0.7	6.8	1.7	1.7	0.9	0.0	5.7	3.6	0.0	0.9
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	0.9	4.7	5.0	0.6	6.6	6.8	0.6	0.0	1.6	1.3	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.7	12.4	12.4	37.9	15.1	15.2	29.0	0.0	34.8	32.7	0.0	29.2
LnGrp LOS	D	B	B	D	B	B	C		C	C		C
Approach Vol, veh/h	1178			1367			136			113		
Approach Delay, s/veh	13.5			15.8			33.0			31.7		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	38.0		10.2	7.9	37.4		10.1				
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9	4.9		4.5				
Max Green Setting (Gmax), s	5.1	48.5		34.1	5.3	48.3		18.1				
Max Q Clear Time (g_c+l1), s	3.2	16.8		4.9	3.7	22.5		5.7				
Green Ext Time (p_c), s	0.0	8.3		0.4	0.0	10.0		0.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				16.3								
HCM 6th LOS				B								

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Existing + Proj AM
06/30/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (vph)	0	895	195	99	701	0	0	0	0	39	0	446
Future Volume (vph)	0	895	195	99	701	0	0	0	0	39	0	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1477	1703	3471						1752	1524
Flt Permitted		1.00	1.00	0.17	1.00						0.95	1.00
Satd. Flow (perm)		3505	1477	310	3471						1752	1524
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	1078	235	119	845	0	0	0	0	47	0	537
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	0	0	0	59
Lane Group Flow (vph)	0	1078	106	119	845	0	0	0	0	0	47	478
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	7%	6%	4%	0%	0%	0%	0%	3%	0%	6%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		23.1	23.1	23.1	23.1						18.7	18.7
Effective Green, g (s)		23.1	23.1	23.1	23.1						18.7	18.7
Actuated g/C Ratio		0.45	0.45	0.45	0.45						0.36	0.36
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1578	665	139	1562						638	555
v/s Ratio Prot		0.31			0.24							
v/s Ratio Perm			0.07	c0.38							0.03	c0.31
v/c Ratio		0.68	0.15	0.85	0.54						0.07	0.86
Uniform Delay, d1		11.1	8.3	12.6	10.2						10.6	15.0
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		1.2	0.1	37.1	0.3						0.0	12.9
Delay (s)		12.4	8.4	49.8	10.6						10.6	28.0
Level of Service		B	A	D	B						B	C
Approach Delay (s/veh)		11.7			15.4			0.0			26.6	
Approach LOS		B			B			A			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			16.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			51.3			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			54.9%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Existing + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	416	0	0	411	126	349	122	162	0	0	0
Future Volume (veh/h)	0	416	0	0	411	126	349	122	162	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1856	1737	1796	1841	1885			
Adj Flow Rate, veh/h	0	484	0	0	478	49	406	142	188			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	3	0	0	3	11	7	4	1			
Cap, veh/h	0	1171	0	0	1171	478	607	255	337			
Arrive On Green	0.00	0.33	0.00	0.00	0.33	0.33	0.35	0.35	0.35			
Sat Flow, veh/h	0	3711	0	0	3618	1439	1711	718	951			
Grp Volume(v), veh/h	0	484	0	0	478	49	406	0	330			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1763	1439	1711	0	1670			
Q Serve(g_s), s	0.0	3.2	0.0	0.0	3.2	0.7	6.1	0.0	4.8			
Cycle Q Clear(g_c), s	0.0	3.2	0.0	0.0	3.2	0.7	6.1	0.0	4.8			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.57			
Lane Grp Cap(c), veh/h	0	1171	0	0	1171	478	607	0	592			
V/C Ratio(X)	0.00	0.41	0.00	0.00	0.41	0.10	0.67	0.00	0.56			
Avail Cap(c_a), veh/h	0	3035	0	0	3035	1239	1095	0	1068			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.8	0.0	0.0	7.8	7.0	8.3	0.0	7.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.1	1.3	0.0	0.8			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	0.7	0.1	1.5	0.0	1.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	8.1	0.0	0.0	8.1	7.1	9.6	0.0	8.7			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		484			527			736				
Approach Delay, s/veh		8.1			8.0			9.2				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.0				15.0		15.3				
Change Period (Y+Rc), s		4.9				4.9		4.6				
Max Green Setting (Gmax), s		26.1				26.1		19.4				
Max Q Clear Time (g_c+l1), s		5.2				5.2		8.1				
Green Ext Time (p_c), s		2.9				3.1		2.7				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					8.5							
HCM 6th LOS					A							

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	304	269	475	91	5	60
Future Vol, veh/h	304	269	475	91	5	60
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	366	324	572	110	6	72

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	682	0	0 1683 628
Stage 1	-	-	- 627 -
Stage 2	-	-	- 1056 -
Critical Hdwy	4.12	-	- 6.6 6.25
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.218	-	- 3.68 3.345
Pot Cap-1 Maneuver	911	-	- 94 477
Stage 1	-	-	- 500 -
Stage 2	-	-	- 309 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	911	-	- 56 477
Mov Cap-2 Maneuver	-	-	- 56 -
Stage 1	-	-	- 299 -
Stage 2	-	-	- 309 -

Approach	EB	WB	SB
HCM Control Delay, s/v	6.1	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	911	-	-	-	302
HCM Lane V/C Ratio	0.402	-	-	-	0.259
HCM Control Delay (s/veh)	11.6	-	-	-	21
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q (veh)	2	-	-	-	1

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Existing + Proj PM
06/30/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕		↔↔	↕↕		↔	↕↕	↕	↔↔	↕↕	↕
Traffic Volume (vph)	209	262	69	251	140	129	88	404	68	198	876	74
Future Volume (vph)	209	262	69	251	140	129	88	404	68	198	876	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3390		3467	3224		1805	3539	1592	3467	3505	1544
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3390		3467	3224		1805	3539	1592	3467	3505	1544
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	230	288	76	276	154	142	97	444	75	218	963	81
RTOR Reduction (vph)	0	26	0	0	110	0	0	0	50	0	0	51
Lane Group Flow (vph)	230	338	0	276	186	0	97	444	25	218	963	30
Confl. Peds. (#/hr)			4			11			4			5
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	2%	2%	6%	1%	2%	4%	0%	2%	0%	1%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.7	16.2		7.7	17.2		5.6	25.7	25.7	8.0	28.1	28.1
Effective Green, g (s)	6.7	16.2		7.7	17.2		5.6	25.7	25.7	8.0	28.1	28.1
Actuated g/C Ratio	0.09	0.21		0.10	0.23		0.07	0.34	0.34	0.11	0.37	0.37
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	302	722		351	729		133	1196	538	364	1295	570
v/s Ratio Prot	0.07	c0.10		c0.08	0.06		0.05	0.13		c0.06	c0.27	
v/s Ratio Perm									0.02			0.02
v/c Ratio	0.76	0.46		0.78	0.25		0.72	0.37	0.04	0.59	0.74	0.05
Uniform Delay, d1	33.8	26.1		33.3	24.1		34.4	19.0	16.9	32.4	20.8	15.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.7	0.4		11.0	0.1		18.0	0.1	0.0	2.6	2.3	0.0
Delay (s)	44.6	26.6		44.3	24.3		52.4	19.2	16.9	35.1	23.1	15.4
Level of Service	D	C		D	C		D	B	B	D	C	B
Approach Delay (s/veh)		33.6			34.0			24.1			24.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			28.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			76.0			Sum of lost time (s)			18.4			
Intersection Capacity Utilization			67.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 2: Butterfield Blvd & Tennant Ave

Timing Plan: Existing + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	721	23	251	542	59	18	143	238	293	599	206
Future Volume (veh/h)	189	721	23	251	542	59	18	143	238	293	599	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1870	1900	1856	1870	1841	1900	1870	1826	1885	1885	1841
Adj Flow Rate, veh/h	195	743	24	259	559	18	19	147	39	302	618	212
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	2	0	3	2	4	0	2	5	1	1	4
Cap, veh/h	235	953	31	300	1091	472	38	473	205	344	795	272
Arrive On Green	0.13	0.27	0.27	0.17	0.31	0.31	0.02	0.13	0.13	0.19	0.30	0.30
Sat Flow, veh/h	1753	3512	113	1767	3554	1539	1810	3554	1540	1795	2618	897
Grp Volume(v), veh/h	195	376	391	259	559	18	19	147	39	302	423	407
Grp Sat Flow(s),veh/h/ln	1753	1777	1848	1767	1777	1539	1810	1777	1540	1795	1791	1724
Q Serve(g_s), s	9.4	17.0	17.0	12.4	11.3	0.7	0.9	3.3	2.0	14.2	18.7	18.8
Cycle Q Clear(g_c), s	9.4	17.0	17.0	12.4	11.3	0.7	0.9	3.3	2.0	14.2	18.7	18.8
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	235	482	502	300	1091	472	38	473	205	344	544	523
V/C Ratio(X)	0.83	0.78	0.78	0.86	0.51	0.04	0.50	0.31	0.19	0.88	0.78	0.78
Avail Cap(c_a), veh/h	407	806	838	414	1620	702	116	1510	655	468	1113	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	29.3	29.3	35.2	24.8	21.2	42.2	34.1	33.6	34.2	27.6	27.6
Incr Delay (d2), s/veh	7.4	2.8	2.7	13.0	0.4	0.0	9.6	0.4	0.4	13.3	2.4	2.5
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	4.3	7.2	7.5	6.2	4.5	0.2	0.5	1.4	0.7	7.1	7.7	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.1	32.1	32.0	48.2	25.2	21.2	51.8	34.5	34.0	47.5	30.1	30.2
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		962			836			205			1132	
Approach Delay, s/veh		34.5			32.2			36.0			34.8	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.7	28.5	7.1	31.7	16.6	31.6	22.0	16.9				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	20.4	39.5	5.6	54.1	20.2	39.7	22.7	37.0				
Max Q Clear Time (g_c+l1), s	14.4	19.0	2.9	20.8	11.4	13.3	16.2	5.3				
Green Ext Time (p_c), s	0.4	4.4	0.0	5.4	0.3	3.7	0.5	0.9				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			34.1									
HCM 6th LOS			C									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Existing + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1212	30	75	816	35	20	0	48	43	0	16
Future Volume (veh/h)	8	1212	30	75	816	35	20	0	48	43	0	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1856	1856	1900	1900	1900	1900	1900	1811
Adj Flow Rate, veh/h	8	1276	32	79	859	37	21	0	51	45	0	17
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, %	0	3	0	0	3	3	0	0	0	0	0	6
Cap, veh/h	19	1714	43	110	1851	80	105	0	93	149	0	133
Arrive On Green	0.01	0.49	0.49	0.06	0.54	0.54	0.06	0.00	0.06	0.08	0.00	0.08
Sat Flow, veh/h	1810	3512	88	1810	3440	148	1810	0	1610	1810	0	1610
Grp Volume(v), veh/h	8	640	668	79	440	456	21	0	51	45	0	17
Grp Sat Flow(s),veh/h/ln	1810	1763	1837	1810	1763	1825	1810	0	1610	1810	0	1610
Q Serve(g_s), s	0.3	17.7	17.8	2.6	9.3	9.3	0.7	0.0	1.9	1.4	0.0	0.6
Cycle Q Clear(g_c), s	0.3	17.7	17.8	2.6	9.3	9.3	0.7	0.0	1.9	1.4	0.0	0.6
Prop In Lane	1.00		0.05	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	19	860	897	110	949	982	105	0	93	149	0	133
V/C Ratio(X)	0.43	0.74	0.74	0.72	0.46	0.46	0.20	0.00	0.55	0.30	0.00	0.13
Avail Cap(c_a), veh/h	152	1373	1431	200	1419	1469	539	0	480	1013	0	901
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	12.5	12.5	28.0	8.6	8.6	27.3	0.0	27.8	26.2	0.0	25.8
Incr Delay (d2), s/veh	14.5	1.3	1.3	8.6	0.4	0.3	0.9	0.0	4.9	1.1	0.0	0.4
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	0.2	5.6	5.9	1.3	2.7	2.8	0.3	0.0	0.8	0.6	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.4	13.8	13.8	36.6	9.0	9.0	28.2	0.0	32.8	27.4	0.0	26.3
LnGrp LOS	D	B	B	D	A	A	C		C	C		C
Approach Vol, veh/h	1316				975				72		62	
Approach Delay, s/veh	14.0				11.2				31.4		27.1	
Approach LOS	B				B				C		C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	34.5		9.6	5.5	37.6		8.0				
Change Period (Y+Rc), s	4.9	4.9		4.6	4.9	4.9		4.5				
Max Green Setting (Gmax), s	6.7	47.3		34.0	5.1	48.9		18.1				
Max Q Clear Time (g_c+l1), s	4.6	19.8		3.4	2.3	11.3		3.9				
Green Ext Time (p_c), s	0.0	9.9		0.2	0.0	6.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh	13.7											
HCM 6th LOS	B											

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Existing + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (vph)	0	876	430	93	602	0	0	0	0	58	2	324
Future Volume (vph)	0	876	430	93	602	0	0	0	0	58	2	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1545	1787	3505						1624	1583
Flt Permitted		1.00	1.00	0.26	1.00						0.95	1.00
Satd. Flow (perm)		3505	1545	504	3505						1624	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	903	443	96	621	0	0	0	0	60	2	334
RTOR Reduction (vph)	0	0	235	0	0	0	0	0	0	0	0	128
Lane Group Flow (vph)	0	903	208	96	621	0	0	0	0	0	62	206
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	0%	3%	2%	1%	3%	0%	0%	0%	0%	12%	0%	2%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		19.3	19.3	19.3	19.3						12.3	12.3
Effective Green, g (s)		19.3	19.3	19.3	19.3						12.3	12.3
Actuated g/C Ratio		0.47	0.47	0.47	0.47						0.30	0.30
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1645	725	236	1645						486	473
v/s Ratio Prot		c0.26			0.18							
v/s Ratio Perm			0.13	0.19							0.04	c0.13
v/c Ratio		0.54	0.28	0.40	0.37						0.12	0.43
Uniform Delay, d1		7.7	6.6	7.1	7.0						10.4	11.6
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.3	0.2	1.1	0.1						0.1	0.6
Delay (s)		8.1	6.9	8.2	7.1						10.6	12.2
Level of Service		A	A	A	A						B	B
Approach Delay (s/veh)		7.7			7.3			0.0			11.9	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			8.3			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			41.1			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			55.4%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Existing + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	430	0	0	456	62	239	1	130	0	0	0
Future Volume (veh/h)	0	430	0	0	456	62	239	1	130	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1885	1796	1811	1900	1870			
Adj Flow Rate, veh/h	0	462	0	0	490	24	257	1	140			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	3	0	0	1	7	6	0	2			
Cap, veh/h	0	1221	0	0	1240	526	594	4	551			
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.35	0.34	0.34	0.34			
Sat Flow, veh/h	0	3711	0	0	3676	1520	1725	11	1600			
Grp Volume(v), veh/h	0	462	0	0	490	24	257	0	141			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1791	1520	1725	0	1612			
Q Serve(g_s), s	0.0	2.9	0.0	0.0	3.0	0.3	3.3	0.0	1.8			
Cycle Q Clear(g_c), s	0.0	2.9	0.0	0.0	3.0	0.3	3.3	0.0	1.8			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.99			
Lane Grp Cap(c), veh/h	0	1221	0	0	1240	526	594	0	555			
V/C Ratio(X)	0.00	0.38	0.00	0.00	0.40	0.05	0.43	0.00	0.25			
Avail Cap(c_a), veh/h	0	3336	0	0	3389	1438	1098	0	1026			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.1	0.0	0.0	7.2	6.3	7.3	0.0	6.9			
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	0.5	0.0	0.2			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.0	0.6	0.1	0.7	0.0	0.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	7.3	0.0	0.0	7.4	6.3	7.8	0.0	7.1			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		462			514			398				
Approach Delay, s/veh		7.3			7.4			7.6				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		14.6				14.6		14.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		27.5				27.5		18.5				
Max Q Clear Time (g_c+l1), s		4.9				5.0		5.3				
Green Ext Time (p_c), s		2.9				3.1		1.3				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				7.4								
HCM 6th LOS				A								

Intersection

Int Delay, s/veh 4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	160	398	345	12	26	170
Future Vol, veh/h	160	398	345	12	26	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	174	433	375	13	28	185

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	388	0	0 1163 382
Stage 1	-	-	- 382 -
Stage 2	-	-	- 781 -
Critical Hdwy	4.12	-	- 6.6 6.25
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.218	-	- 3.68 3.345
Pot Cap-1 Maneuver	1170	-	- 198 659
Stage 1	-	-	- 652 -
Stage 2	-	-	- 421 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1170	-	- 168 659
Mov Cap-2 Maneuver	-	-	- 168 -
Stage 1	-	-	- 555 -
Stage 2	-	-	- 421 -

Approach	EB	WB	SB
HCM Control Delay, s/v	2.5	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1170	-	-	-	475
HCM Lane V/C Ratio	0.149	-	-	-	0.449
HCM Control Delay (s/veh)	8.6	-	-	-	18.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.5	-	-	-	2.3

Appendix E: 2040 Cumulative Conditions Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Cumulative AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	228	58	153	113	109	84	901	56	92	383	51
Future Volume (vph)	219	228	58	153	113	109	84	901	56	92	383	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3368		3303	3166		1626	3505	1530	3400	3471	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3368		3303	3166		1626	3505	1530	3400	3471	1563
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	249	259	66	174	128	124	95	1024	64	105	435	58
RTOR Reduction (vph)	0	25	0	0	98	0	0	0	39	0	0	36
Lane Group Flow (vph)	249	300	0	174	154	0	95	1024	25	105	435	22
Confl. Peds. (#/hr)			4			1			5			1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	3%	6%	6%	2%	8%	11%	3%	4%	3%	4%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	7.1	15.7		7.5	16.1		5.9	30.0	30.0	5.0	29.1	29.1
Effective Green, g (s)	7.1	15.7		7.5	16.1		5.9	30.0	30.0	5.0	29.1	29.1
Actuated g/C Ratio	0.09	0.20		0.10	0.21		0.08	0.39	0.39	0.07	0.38	0.38
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	321	690		323	665		125	1372	599	221	1318	593
v/s Ratio Prot	c0.07	c0.09		0.05	0.05		c0.06	c0.29		0.03	0.13	
v/s Ratio Perm									0.02			0.01
v/c Ratio	0.77	0.43		0.53	0.23		0.76	0.74	0.04	0.47	0.33	0.03
Uniform Delay, d1	33.9	26.5		32.9	25.1		34.6	20.0	14.4	34.5	16.8	14.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.1	0.4		1.7	0.1		23.3	2.2	0.0	1.6	0.1	0.0
Delay (s)	45.1	27.0		34.6	25.2		58.0	22.2	14.4	36.1	16.9	14.9
Level of Service	D	C		C	C		E	C	B	D	B	B
Approach Delay (s/veh)		34.8			29.1			24.7			20.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		26.5					HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		76.6					Sum of lost time (s)		18.4			
Intersection Capacity Utilization		60.7%					ICU Level of Service		B			
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Cumulative AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	512	10	231	672	313	30	768	596	78	131	126
Future Volume (veh/h)	242	512	10	231	672	313	30	768	596	78	131	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1530	1900	1811	1796	1900	1811	1870	1707	1885	1826
Adj Flow Rate, veh/h	281	595	12	269	781	272	35	893	441	91	152	147
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	5	25	0	6	7	0	6	2	13	1	5
Cap, veh/h	283	970	20	287	960	424	55	1092	503	91	614	547
Arrive On Green	0.16	0.28	0.28	0.16	0.28	0.28	0.03	0.32	0.32	0.06	0.34	0.34
Sat Flow, veh/h	1781	3478	70	1810	3441	1521	1810	3441	1585	1626	1791	1596
Grp Volume(v), veh/h	281	297	310	269	781	272	35	893	441	91	152	147
Grp Sat Flow(s),veh/h/ln	1781	1735	1813	1810	1721	1521	1810	1721	1585	1626	1791	1596
Q Serve(g_s), s	17.0	16.0	16.0	15.8	22.8	16.9	2.1	25.8	28.4	6.0	6.6	7.2
Cycle Q Clear(g_c), s	17.0	16.0	16.0	15.8	22.8	16.9	2.1	25.8	28.4	6.0	6.6	7.2
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	484	506	287	960	424	55	1092	503	91	614	547
V/C Ratio(X)	0.99	0.61	0.61	0.94	0.81	0.64	0.64	0.82	0.88	1.01	0.25	0.27
Avail Cap(c_a), veh/h	283	620	648	287	1229	543	84	1182	544	91	632	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	33.8	33.8	44.8	36.2	34.1	51.7	33.9	34.8	50.9	25.4	25.6
Incr Delay (d2), s/veh	51.8	1.3	1.2	36.6	3.4	1.6	11.9	4.3	14.2	96.0	0.2	0.3
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	11.3	6.7	7.0	9.8	9.7	6.2	1.1	10.8	12.3	4.8	2.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	97.1	35.1	35.0	81.4	39.6	35.8	63.6	38.2	49.0	146.8	25.6	25.9
LnGrp LOS	F	D	D	F	D	D	E	D	D	F	C	C
Approach Vol, veh/h		888			1322			1369			390	
Approach Delay, s/veh		54.7			47.3			42.3			54.0	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	34.9	8.5	42.3	22.0	34.9	11.3	39.5				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	17.1	38.5	5.0	38.0	17.1	38.5	6.0	37.0				
Max Q Clear Time (g_c+l1), s	17.8	18.0	4.1	9.2	19.0	24.8	8.0	30.4				
Green Ext Time (p_c), s	0.0	3.3	0.0	1.6	0.0	5.1	0.0	3.8				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			47.9									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary 3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Cumulative AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1159	0	6	1249	135	0	0	0	85	0	32
Future Volume (veh/h)	51	1159	0	6	1249	135	0	0	0	85	0	32
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1885				1856	1900	1841
Adj Flow Rate, veh/h	61	1380	0	7	1487	161				101	0	38
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84				0.84	0.84	0.84
Percent Heavy Veh, %	0	3	0	0	5	1				3	0	4
Cap, veh/h	102	2135	0	17	1761	189				180	0	164
Arrive On Green	0.06	0.61	0.00	0.01	0.56	0.56				0.10	0.00	0.10
Sat Flow, veh/h	1810	3618	0	1810	3153	338				1767	0	1610
Grp Volume(v), veh/h	61	1380	0	7	811	837				101	0	38
Grp Sat Flow(s),veh/h/ln	1810	1763	0	1810	1735	1757				1767	0	1610
Q Serve(g_s), s	1.7	13.2	0.0	0.2	20.1	20.8				2.8	0.0	1.1
Cycle Q Clear(g_c), s	1.7	13.2	0.0	0.2	20.1	20.8				2.8	0.0	1.1
Prop In Lane	1.00		0.00	1.00		0.19				1.00		1.00
Lane Grp Cap(c), veh/h	102	2135	0	17	969	981				180	0	164
V/C Ratio(X)	0.60	0.65	0.00	0.42	0.84	0.85				0.56	0.00	0.23
Avail Cap(c_a), veh/h	178	2135	0	174	1043	1056				1158	0	1055
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	6.6	0.0	25.6	9.5	9.7				22.2	0.0	21.4
Incr Delay (d2), s/veh	5.5	0.7	0.0	15.8	5.8	6.5				2.7	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.9	0.0	0.2	6.2	6.7				1.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.4	7.3	0.0	41.3	15.3	16.2				24.9	0.0	22.1
LnGrp LOS	C	A		D	B	B				C		C
Approach Vol, veh/h	1441			1655			139					
Approach Delay, s/veh	8.3			15.9			24.1					
Approach LOS	A			B			C					
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	5.4	36.3		10.2	7.8	33.9						
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9	4.9						
Max Green Setting (Gmax), s	5.0	31.3		34.0	5.1	31.2						
Max Q Clear Time (g_c+l1), s	2.2	15.2		4.8	3.7	22.8						
Green Ext Time (p_c), s	0.0	8.8		0.5	0.0	6.1						
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				12.8								
HCM 6th LOS				B								

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Cumulative AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (vph)	0	1037	214	122	856	0	0	0	0	48	0	533
Future Volume (vph)	0	1037	214	122	856	0	0	0	0	48	0	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1477	1703	3471						1752	1524
Flt Permitted		1.00	1.00	0.15	1.00						0.95	1.00
Satd. Flow (perm)		3505	1477	286	3471						1752	1524
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	1249	258	147	1031	0	0	0	0	58	0	642
RTOR Reduction (vph)	0	0	140	0	0	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	1249	118	147	1031	0	0	0	0	0	58	609
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	7%	6%	4%	0%	0%	0%	0%	3%	0%	6%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		25.1	25.1	25.1	25.1						20.4	20.4
Effective Green, g (s)		25.1	25.1	25.1	25.1						20.4	20.4
Actuated g/C Ratio		0.46	0.46	0.46	0.46						0.37	0.37
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1599	674	130	1584						649	565
v/s Ratio Prot		0.36			0.30							
v/s Ratio Perm			0.08	c0.51							0.03	c0.40
v/c Ratio		0.78	0.17	1.13	0.65						0.08	1.07
Uniform Delay, d1		12.6	8.8	14.9	11.5						11.2	17.3
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		2.5	0.1	118.3	0.9						0.0	60.3
Delay (s)		15.1	8.9	133.3	12.5						11.3	77.6
Level of Service		B	A	F	B						B	E
Approach Delay (s/veh)		14.1			27.6			0.0			72.1	
Approach LOS		B			C			A			E	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			30.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.10									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			64.6%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Cumulative AM
06/30/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	507	0	0	506	156	423	151	200	0	0	0
Future Volume (veh/h)	0	507	0	0	506	156	423	151	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1856	1737	1796	1841	1885			
Adj Flow Rate, veh/h	0	590	0	0	588	64	492	176	233			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	3	0	0	3	11	7	4	1			
Cap, veh/h	0	1110	0	0	1110	453	679	285	377			
Arrive On Green	0.00	0.31	0.00	0.00	0.31	0.31	0.40	0.40	0.40			
Sat Flow, veh/h	0	3711	0	0	3618	1439	1711	718	951			
Grp Volume(v), veh/h	0	590	0	0	588	64	492	0	409			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1763	1439	1711	0	1670			
Q Serve(g_s), s	0.0	4.5	0.0	0.0	4.5	1.1	8.0	0.0	6.4			
Cycle Q Clear(g_c), s	0.0	4.5	0.0	0.0	4.5	1.1	8.0	0.0	6.4			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.57			
Lane Grp Cap(c), veh/h	0	1110	0	0	1110	453	679	0	662			
V/C Ratio(X)	0.00	0.53	0.00	0.00	0.53	0.14	0.72	0.00	0.62			
Avail Cap(c_a), veh/h	0	2793	0	0	2793	1140	1007	0	983			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.3	0.0	0.0	9.3	8.1	8.4	0.0	7.9			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.4	0.1	1.5	0.0	0.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	1.1	0.2	1.9	0.0	1.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.7	0.0	0.0	9.7	8.2	9.9	0.0	8.9			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		590			652			901				
Approach Delay, s/veh		9.7			9.5			9.4				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.3				15.3		17.7				
Change Period (Y+Rc), s		4.9				4.9		4.6				
Max Green Setting (Gmax), s		26.1				26.1		19.4				
Max Q Clear Time (g_c+l1), s		6.5				6.5		10.0				
Green Ext Time (p_c), s		3.6				3.8		3.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					9.5							
HCM 6th LOS					A							

Intersection

Int Delay, s/veh 6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	376	325	585	113	6	74
Future Vol, veh/h	376	325	585	113	6	74
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	453	392	705	136	7	89

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	841	0	0 2071 774
Stage 1	-	-	- 773 -
Stage 2	-	-	- 1298 -
Critical Hdwy	4.12	-	- 6.6 6.25
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.218	-	- 3.68 3.345
Pot Cap-1 Maneuver	794	-	- 53 394
Stage 1	-	-	- 425 -
Stage 2	-	-	- 235 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	794	-	- 23 394
Mov Cap-2 Maneuver	-	-	- 23 -
Stage 1	-	-	- 182 -
Stage 2	-	-	- 235 -

Approach	EB	WB	SB
HCM Control Delay, s/v	8.3	0	46.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	794	-	-	-	178
HCM Lane V/C Ratio	0.571	-	-	-	0.541
HCM Control Delay (s/veh)	15.4	-	-	-	46.8
HCM Lane LOS	C	-	-	-	E
HCM 95th %tile Q (veh)	3.7	-	-	-	2.8

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Cumulative PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	318	85	307	168	156	109	500	78	239	1084	92
Future Volume (vph)	259	318	85	307	168	156	109	500	78	239	1084	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3389		3467	3222		1805	3539	1591	3467	3505	1543
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3389		3467	3222		1805	3539	1591	3467	3505	1543
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	285	349	93	337	185	171	120	549	86	263	1191	101
RTOR Reduction (vph)	0	27	0	0	132	0	0	0	52	0	0	58
Lane Group Flow (vph)	285	415	0	337	224	0	120	549	34	263	1191	43
Confl. Peds. (#/hr)			4			11			4			5
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	2%	2%	6%	1%	2%	4%	0%	2%	0%	1%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.5	18.5		7.6	19.6		5.5	34.3	34.3	7.9	36.7	36.7
Effective Green, g (s)	6.5	18.5		7.6	19.6		5.5	34.3	34.3	7.9	36.7	36.7
Actuated g/C Ratio	0.07	0.21		0.09	0.23		0.06	0.40	0.40	0.09	0.42	0.42
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	257	723		303	728		114	1400	629	315	1483	653
v/s Ratio Prot	0.08	c0.12		c0.10	0.07		0.07	0.16		c0.08	c0.34	
v/s Ratio Perm									0.02			0.03
v/c Ratio	1.10	0.57		1.11	0.30		1.05	0.39	0.05	0.83	0.80	0.06
Uniform Delay, d1	40.1	30.5		39.5	27.9		40.6	18.7	16.1	38.7	21.8	14.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	88.5	1.1		85.3	0.2		99.1	0.1	0.0	17.1	3.2	0.0
Delay (s)	128.6	31.6		124.8	28.1		139.7	18.9	16.2	55.8	25.0	14.8
Level of Service	F	C		F	C		F	B	B	E	C	B
Approach Delay (s/veh)		69.6			75.1			37.8			29.6	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			47.6			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			86.7			Sum of lost time (s)			18.4			
Intersection Capacity Utilization			76.3%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Cumulative PM

06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	873	28	307	658	64	22	177	288	350	741	255
Future Volume (veh/h)	234	873	28	307	658	64	22	177	288	350	741	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1870	1900	1856	1870	1841	1900	1870	1826	1885	1885	1841
Adj Flow Rate, veh/h	241	900	29	316	678	19	23	182	58	361	764	263
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	2	0	3	2	4	0	2	5	1	1	4
Cap, veh/h	268	1024	33	304	1104	478	41	612	265	344	893	307
Arrive On Green	0.15	0.29	0.29	0.17	0.31	0.31	0.02	0.17	0.17	0.19	0.34	0.34
Sat Flow, veh/h	1753	3512	113	1767	3554	1539	1810	3554	1542	1795	2614	900
Grp Volume(v), veh/h	241	455	474	316	678	19	23	182	58	361	523	504
Grp Sat Flow(s),veh/h/ln	1753	1777	1848	1767	1777	1539	1810	1777	1542	1795	1791	1723
Q Serve(g_s), s	16.0	28.9	28.9	20.4	19.2	1.0	1.5	5.3	3.8	22.7	32.2	32.2
Cycle Q Clear(g_c), s	16.0	28.9	28.9	20.4	19.2	1.0	1.5	5.3	3.8	22.7	32.2	32.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	268	518	539	304	1104	478	41	612	265	344	611	588
V/C Ratio(X)	0.90	0.88	0.88	1.04	0.61	0.04	0.57	0.30	0.22	1.05	0.86	0.86
Avail Cap(c_a), veh/h	299	593	617	304	1191	516	86	1110	482	344	818	787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	39.9	39.9	49.0	34.8	28.5	57.3	42.8	42.2	47.9	36.3	36.3
Incr Delay (d2), s/veh	26.1	13.0	12.5	61.8	0.8	0.0	11.8	0.3	0.4	61.9	6.9	7.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	14.1	14.6	14.0	8.2	0.4	0.8	2.3	1.5	15.7	14.5	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	75.4	52.9	52.5	110.8	35.6	28.5	69.2	43.0	42.6	109.7	43.2	43.4
LnGrp LOS	E	D	D	F	D	C	E	D	D	F	D	D
Approach Vol, veh/h		1170			1013			263			1388	
Approach Delay, s/veh		57.4			58.9			45.2			60.6	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.3	39.4	8.0	45.7	23.0	41.7	28.0	25.7				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	20.4	39.5	5.6	54.1	20.2	39.7	22.7	37.0				
Max Q Clear Time (g_c+l1), s	22.4	30.9	3.5	34.2	18.0	21.2	24.7	7.3				
Green Ext Time (p_c), s	0.0	3.6	0.0	6.2	0.2	4.2	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			58.1									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary 3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Cumulative PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1499	0	4	1009	43	0	0	0	53	0	20
Future Volume (veh/h)	10	1499	0	4	1009	43	0	0	0	53	0	20
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1856	1856				1900	1900	1811
Adj Flow Rate, veh/h	11	1578	0	4	1062	45				56	0	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	3	3				0	0	6
Cap, veh/h	26	2036	0	10	1958	83				194	0	173
Arrive On Green	0.01	0.58	0.00	0.01	0.57	0.57				0.11	0.00	0.11
Sat Flow, veh/h	1810	3618	0	1810	3442	146				1810	0	1610
Grp Volume(v), veh/h	11	1578	0	4	544	563				56	0	21
Grp Sat Flow(s),veh/h/ln	1810	1763	0	1810	1763	1826				1810	0	1610
Q Serve(g_s), s	0.3	15.9	0.0	0.1	8.9	9.0				1.3	0.0	0.5
Cycle Q Clear(g_c), s	0.3	15.9	0.0	0.1	8.9	9.0				1.3	0.0	0.5
Prop In Lane	1.00		0.00	1.00		0.08				1.00		1.00
Lane Grp Cap(c), veh/h	26	2036	0	10	1003	1038				194	0	173
V/C Ratio(X)	0.43	0.77	0.00	0.41	0.54	0.54				0.29	0.00	0.12
Avail Cap(c_a), veh/h	194	2395	0	194	1197	1240				1322	0	1177
HCM Platoon Ratio	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	0.00	1.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	22.7	7.5	0.0	23.1	6.3	6.3				19.1	0.0	18.8
Incr Delay (d2), s/veh	10.8	1.4	0.0	25.0	0.5	0.4				0.8	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.4	0.0	0.1	1.9	1.9				0.5	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.5	8.9	0.0	48.1	6.7	6.7				19.9	0.0	19.1
LnGrp LOS	C	A		D	A	A				B		B
Approach Vol, veh/h		1589			1111						77	
Approach Delay, s/veh		9.1			6.9						19.7	
Approach LOS		A			A						B	
Timer - Assigned Phs	1	2		4	5	6						
Phs Duration (G+Y+Rc), s	5.2	31.8		9.6	5.6	31.4						
Change Period (Y+Rc), s	4.9	4.9		4.6	4.9	4.9						
Max Green Setting (Gmax), s	5.0	31.6		34.0	5.0	31.6						
Max Q Clear Time (g_c+l1), s	2.1	17.9		3.3	2.3	11.0						
Green Ext Time (p_c), s	0.0	8.9		0.2	0.0	7.0						
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			8.5									
HCM 6th LOS			A									

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Cumulative PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1042	515	115	714	0	0	0	0	72	2	343
Future Volume (vph)	0	1042	515	115	714	0	0	0	0	72	2	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1545	1787	3505						1622	1583
Flt Permitted		1.00	1.00	0.19	1.00						0.95	1.00
Satd. Flow (perm)		3505	1545	373	3505						1622	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1074	531	119	736	0	0	0	0	74	2	354
RTOR Reduction (vph)	0	0	271	0	0	0	0	0	0	0	0	90
Lane Group Flow (vph)	0	1074	260	119	736	0	0	0	0	0	76	264
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	0%	3%	2%	1%	3%	0%	0%	0%	0%	12%	0%	2%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		22.2	22.2	22.2	22.2						13.6	13.6
Effective Green, g (s)		22.2	22.2	22.2	22.2						13.6	13.6
Actuated g/C Ratio		0.49	0.49	0.49	0.49						0.30	0.30
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1717	757	182	1717						486	475
v/s Ratio Prot		0.31			0.21							
v/s Ratio Perm			0.17	c0.32							0.05	c0.17
v/c Ratio		0.62	0.34	0.65	0.42						0.15	0.55
Uniform Delay, d1		8.4	7.0	8.6	7.4						11.6	13.3
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.7	0.2	8.1	0.1						0.1	1.4
Delay (s)		9.2	7.3	16.8	7.6						11.7	14.7
Level of Service		A	A	B	A						B	B
Approach Delay (s/veh)		8.5			8.9			0.0			14.2	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			9.5			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			45.3			Sum of lost time (s)			9.5			
Intersection Capacity Utilization			60.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Cumulative PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	527	0	0	558	77	271	1	161	0	0	0
Future Volume (veh/h)	0	527	0	0	558	77	271	1	161	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1885	1796	1811	1900	1870			
Adj Flow Rate, veh/h	0	567	0	0	600	31	291	1	173			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	3	0	0	1	7	6	0	2			
Cap, veh/h	0	1221	0	0	1240	526	593	3	551			
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.35	0.34	0.34	0.34			
Sat Flow, veh/h	0	3711	0	0	3676	1520	1725	9	1602			
Grp Volume(v), veh/h	0	567	0	0	600	31	291	0	174			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1791	1520	1725	0	1612			
Q Serve(g_s), s	0.0	3.6	0.0	0.0	3.8	0.4	3.9	0.0	2.3			
Cycle Q Clear(g_c), s	0.0	3.6	0.0	0.0	3.8	0.4	3.9	0.0	2.3			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.99			
Lane Grp Cap(c), veh/h	0	1221	0	0	1240	526	593	0	554			
V/C Ratio(X)	0.00	0.46	0.00	0.00	0.48	0.06	0.49	0.00	0.31			
Avail Cap(c_a), veh/h	0	3336	0	0	3389	1438	1098	0	1026			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.4	0.0	0.0	7.5	6.3	7.5	0.0	7.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	0.6	0.0	0.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	0.7	0.1	0.9	0.0	0.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	7.7	0.0	0.0	7.8	6.4	8.2	0.0	7.3			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		567			631			465				
Approach Delay, s/veh		7.7			7.7			7.8				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		14.6				14.6		14.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		27.5				27.5		18.5				
Max Q Clear Time (g_c+l1), s		5.6				5.8		5.9				
Green Ext Time (p_c), s		3.6				3.9		1.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					7.7							
HCM 6th LOS					A							

Intersection						
Int Delay, s/veh	7.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	198	487	421	15	32	210
Future Vol, veh/h	198	487	421	15	32	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	215	529	458	16	35	228
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	474	0	-	0	1425	466
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	959	-
Critical Hdwy	4.12	-	-	-	6.6	6.25
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.218	-	-	-	3.68	3.345
Pot Cap-1 Maneuver	1088	-	-	-	136	590
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1088	-	-	-	109	590
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	345	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	2.6	0		34.7		
HCM LOS				D		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1088	-	-	-	373	
HCM Lane V/C Ratio	0.198	-	-	-	0.705	
HCM Control Delay (s/veh)	9.1	-	-	-	34.7	
HCM Lane LOS	A	-	-	-	D	
HCM 95th %tile Q (veh)	0.7	-	-	-	5.2	

Appendix F: 2040 Cumulative Conditions plus Project Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Cumulative + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	230	58	159	119	115	84	901	58	94	383	51
Future Volume (vph)	219	230	58	159	119	115	84	901	58	94	383	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3369		3303	3166		1626	3505	1530	3400	3471	1563
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3369		3303	3166		1626	3505	1530	3400	3471	1563
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	249	261	66	181	135	131	95	1024	66	107	435	58
RTOR Reduction (vph)	0	25	0	0	103	0	0	0	40	0	0	36
Lane Group Flow (vph)	249	302	0	181	163	0	95	1024	26	107	435	22
Confl. Peds. (#/hr)			4			1			5			1
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	1%	3%	6%	6%	2%	8%	11%	3%	4%	3%	4%	2%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	7.1	15.8		7.5	16.2		5.9	30.0	30.0	5.0	29.1	29.1
Effective Green, g (s)	7.1	15.8		7.5	16.2		5.9	30.0	30.0	5.0	29.1	29.1
Actuated g/C Ratio	0.09	0.21		0.10	0.21		0.08	0.39	0.39	0.07	0.38	0.38
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	320	694		322	668		125	1370	598	221	1316	593
v/s Ratio Prot	c0.07	c0.09		0.05	0.05		c0.06	c0.29		0.03	0.13	
v/s Ratio Perm									0.02			0.01
v/c Ratio	0.77	0.43		0.56	0.24		0.76	0.74	0.04	0.48	0.33	0.03
Uniform Delay, d1	34.0	26.5		33.0	25.1		34.7	20.0	14.4	34.6	16.8	14.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.3	0.4		2.2	0.1		23.3	2.2	0.0	1.6	0.1	0.0
Delay (s)	45.3	26.9		35.2	25.3		58.0	22.3	14.4	36.2	17.0	15.0
Level of Service	D	C		D	C		E	C	B	D	B	B
Approach Delay (s/veh)		34.9			29.3			24.7			20.2	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		26.6					HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		76.7					Sum of lost time (s)		18.4			
Intersection Capacity Utilization		61.0%					ICU Level of Service		B			
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Cumulative + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	518	10	237	690	324	30	768	598	82	131	126
Future Volume (veh/h)	242	518	10	237	690	324	30	768	598	82	131	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1826	1530	1900	1811	1796	1900	1811	1870	1707	1885	1826
Adj Flow Rate, veh/h	281	602	12	276	802	286	35	893	443	95	152	147
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	5	25	0	6	7	0	6	2	13	1	5
Cap, veh/h	280	987	20	284	977	432	54	1090	502	90	612	546
Arrive On Green	0.16	0.28	0.28	0.16	0.28	0.28	0.03	0.32	0.32	0.06	0.34	0.34
Sat Flow, veh/h	1781	3479	69	1810	3441	1521	1810	3441	1585	1626	1791	1596
Grp Volume(v), veh/h	281	300	314	276	802	286	35	893	443	95	152	147
Grp Sat Flow(s),veh/h/ln	1781	1735	1813	1810	1721	1521	1810	1721	1585	1626	1791	1596
Q Serve(g_s), s	17.1	16.3	16.3	16.5	23.7	18.1	2.1	26.1	28.9	6.0	6.6	7.3
Cycle Q Clear(g_c), s	17.1	16.3	16.3	16.5	23.7	18.1	2.1	26.1	28.9	6.0	6.6	7.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	492	515	284	977	432	54	1090	502	90	612	546
V/C Ratio(X)	1.00	0.61	0.61	0.97	0.82	0.66	0.64	0.82	0.88	1.06	0.25	0.27
Avail Cap(c_a), veh/h	280	613	641	284	1217	538	83	1169	539	90	625	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	33.8	33.8	45.7	36.4	34.4	52.2	34.3	35.3	51.4	25.8	26.0
Incr Delay (d2), s/veh	55.0	1.2	1.2	45.4	3.8	2.2	12.1	4.5	15.1	112.4	0.2	0.3
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	11.6	6.8	7.1	10.8	10.1	6.6	1.1	11.0	12.6	5.2	2.8	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	100.9	35.0	34.9	91.0	40.2	36.5	64.3	38.8	50.4	163.9	26.0	26.2
LnGrp LOS	F	C	C	F	D	D	E	D	D	F	C	C
Approach Vol, veh/h		895			1364			1371			394	
Approach Delay, s/veh		55.7			49.7			43.2			59.3	
Approach LOS		E			D			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.0	35.8	8.6	42.5	22.0	35.8	11.3	39.8				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	17.1	38.5	5.0	38.0	17.1	38.5	6.0	37.0				
Max Q Clear Time (g_c+l1), s	18.5	18.3	4.1	9.3	19.1	25.7	8.0	30.9				
Green Ext Time (p_c), s	0.0	3.4	0.0	1.6	0.0	5.1	0.0	3.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			49.8									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Cumulative + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1159	12	30	1249	135	35	0	79	85	0	32
Future Volume (veh/h)	51	1159	12	30	1249	135	35	0	79	85	0	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1885	1900	1900	1900	1856	1900	1841
Adj Flow Rate, veh/h	61	1380	14	36	1487	161	42	0	94	101	0	38
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	3	0	0	5	1	0	0	0	3	0	4
Cap, veh/h	84	1996	20	62	1723	185	150	0	133	152	0	138
Arrive On Green	0.05	0.56	0.56	0.03	0.55	0.55	0.08	0.00	0.08	0.09	0.00	0.09
Sat Flow, veh/h	1810	3576	36	1810	3153	338	1810	0	1610	1767	0	1610
Grp Volume(v), veh/h	61	680	714	36	811	837	42	0	94	101	0	38
Grp Sat Flow(s),veh/h/ln	1810	1763	1849	1810	1735	1757	1810	0	1610	1767	0	1610
Q Serve(g_s), s	2.7	22.3	22.4	1.6	32.1	33.2	1.8	0.0	4.6	4.5	0.0	1.8
Cycle Q Clear(g_c), s	2.7	22.3	22.4	1.6	32.1	33.2	1.8	0.0	4.6	4.5	0.0	1.8
Prop In Lane	1.00		0.02	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	984	1032	62	948	960	150	0	133	152	0	138
V/C Ratio(X)	0.73	0.69	0.69	0.58	0.86	0.87	0.28	0.00	0.71	0.66	0.00	0.27
Avail Cap(c_a), veh/h	119	1063	1115	115	1041	1055	407	0	362	749	0	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.9	12.8	12.8	38.3	15.6	15.8	34.6	0.0	35.9	35.6	0.0	34.4
Incr Delay (d2), s/veh	12.3	1.8	1.7	8.3	6.7	7.6	1.0	0.0	6.6	4.9	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	7.7	8.1	0.8	12.1	12.9	0.8	0.0	2.0	2.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.2	14.5	14.5	46.5	22.2	23.4	35.7	0.0	42.6	40.6	0.0	35.5
LnGrp LOS	D	B	B	D	C	C	D		D	D		D
Approach Vol, veh/h	1455			1684			136			139		
Approach Delay, s/veh	16.0			23.4			40.4			39.2		
Approach LOS	B			C			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	49.8		11.8	8.6	48.9		11.2				
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9	4.9		4.5				
Max Green Setting (Gmax), s	5.1	48.5		34.1	5.3	48.3		18.1				
Max Q Clear Time (g_c+l1), s	3.6	24.4		6.5	4.7	35.2		6.6				
Green Ext Time (p_c), s	0.0	10.2		0.5	0.0	8.7		0.4				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh				21.5								
HCM 6th LOS				C								

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Cumulative + Proj AM
06/30/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑
Traffic Volume (vph)	0	1094	236	122	865	0	0	0	0	48	0	548
Future Volume (vph)	0	1094	236	122	865	0	0	0	0	48	0	548
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1477	1703	3471						1752	1524
Flt Permitted		1.00	1.00	0.15	1.00						0.95	1.00
Satd. Flow (perm)		3505	1477	286	3471						1752	1524
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	1318	284	147	1042	0	0	0	0	58	0	660
RTOR Reduction (vph)	0	0	154	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	1318	130	147	1042	0	0	0	0	0	58	628
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	7%	6%	4%	0%	0%	0%	0%	3%	0%	6%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		25.1	25.1	25.1	25.1						20.4	20.4
Effective Green, g (s)		25.1	25.1	25.1	25.1						20.4	20.4
Actuated g/C Ratio		0.46	0.46	0.46	0.46						0.37	0.37
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1599	674	130	1584						649	565
v/s Ratio Prot		0.38			0.30							
v/s Ratio Perm			0.09	c0.51							0.03	c0.41
v/c Ratio		0.82	0.19	1.13	0.65						0.08	1.11
Uniform Delay, d1		13.0	8.9	14.9	11.6						11.2	17.3
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		3.5	0.1	118.3	0.9						0.0	72.1
Delay (s)		16.6	9.0	133.3	12.6						11.3	89.4
Level of Service		B	A	F	B						B	F
Approach Delay (s/veh)		15.2			27.5			0.0			83.1	
Approach LOS		B			C			A			F	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			33.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			65.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Cumulative + Proj AM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	513	0	0	508	156	430	151	200	0	0	0
Future Volume (veh/h)	0	513	0	0	508	156	430	151	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1856	1737	1796	1841	1885			
Adj Flow Rate, veh/h	0	597	0	0	591	64	500	176	233			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	3	0	0	3	11	7	4	1			
Cap, veh/h	0	1110	0	0	1110	453	683	287	380			
Arrive On Green	0.00	0.31	0.00	0.00	0.31	0.31	0.40	0.40	0.40			
Sat Flow, veh/h	0	3711	0	0	3618	1439	1711	718	951			
Grp Volume(v), veh/h	0	597	0	0	591	64	500	0	409			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1763	1439	1711	0	1670			
Q Serve(g_s), s	0.0	4.6	0.0	0.0	4.6	1.1	8.2	0.0	6.5			
Cycle Q Clear(g_c), s	0.0	4.6	0.0	0.0	4.6	1.1	8.2	0.0	6.5			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.57			
Lane Grp Cap(c), veh/h	0	1110	0	0	1110	453	683	0	667			
V/C Ratio(X)	0.00	0.54	0.00	0.00	0.53	0.14	0.73	0.00	0.61			
Avail Cap(c_a), veh/h	0	2769	0	0	2769	1130	999	0	975			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.4	0.0	0.0	9.4	8.2	8.5	0.0	7.9			
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.4	0.1	1.5	0.0	0.9			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.0	1.1	0.2	2.0	0.0	1.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.8	0.0	0.0	9.8	8.3	10.0	0.0	8.9			
LnGrp LOS		A			A	A	B		A			
Approach Vol, veh/h		597			655			909				
Approach Delay, s/veh		9.8			9.6			9.5				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.4				15.4		17.9				
Change Period (Y+Rc), s		4.9				4.9		4.6				
Max Green Setting (Gmax), s		26.1				26.1		19.4				
Max Q Clear Time (g_c+l1), s		6.6				6.6		10.2				
Green Ext Time (p_c), s		3.7				3.8		3.0				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					9.6							
HCM 6th LOS					A							

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	376	331	587	113	6	74
Future Vol, veh/h	376	331	587	113	6	74
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	453	399	707	136	7	89
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	843	0	-	0	2080	776
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	1305	-
Critical Hdwy	4.12	-	-	-	6.6	6.25
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.218	-	-	-	3.68	3.345
Pot Cap-1 Maneuver	793	-	-	-	52	393
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	233	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	793	-	-	-	22	393
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	233	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	8.2	0		48.7		
HCM LOS				E		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	793	-	-	-	174	
HCM Lane V/C Ratio	0.571	-	-	-	0.554	
HCM Control Delay (s/veh)	15.4	-	-	-	48.7	
HCM Lane LOS	C	-	-	-	E	
HCM 95th %tile Q (veh)	3.7	-	-	-	2.9	

HCM Signalized Intersection Capacity Analysis

1: Monterey Rd & W Edmundson Ave/Tennant Ave

Timing Plan: Cumulative + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	323	85	310	172	159	109	500	83	244	1084	92
Future Volume (vph)	259	323	85	310	172	159	109	500	83	244	1084	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Lane Util. Factor	0.97	0.95		0.97	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3391		3467	3222		1805	3539	1591	3467	3505	1543
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3391		3467	3222		1805	3539	1591	3467	3505	1543
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	285	355	93	341	189	175	120	549	91	268	1191	101
RTOR Reduction (vph)	0	26	0	0	135	0	0	0	55	0	0	58
Lane Group Flow (vph)	285	422	0	341	229	0	120	549	36	268	1191	43
Confl. Peds. (#/hr)			4			11			4			5
Confl. Bikes (#/hr)						1						1
Heavy Vehicles (%)	2%	2%	6%	1%	2%	4%	0%	2%	0%	1%	3%	3%
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			4
Actuated Green, G (s)	6.5	18.8		7.6	19.9		5.5	34.3	34.3	7.9	36.7	36.7
Effective Green, g (s)	6.5	18.8		7.6	19.9		5.5	34.3	34.3	7.9	36.7	36.7
Actuated g/C Ratio	0.07	0.22		0.09	0.23		0.06	0.39	0.39	0.09	0.42	0.42
Clearance Time (s)	4.6	4.6		4.6	4.6		4.6	4.6	4.6	4.6	4.6	4.6
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	256	732		302	736		114	1395	627	314	1478	650
v/s Ratio Prot	0.08	c0.12		c0.10	0.07		0.07	0.16		c0.08	c0.34	
v/s Ratio Perm									0.02			0.03
v/c Ratio	1.11	0.57		1.12	0.31		1.05	0.39	0.05	0.85	0.80	0.06
Uniform Delay, d1	40.2	30.5		39.6	27.8		40.7	18.8	16.3	38.9	22.0	14.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	90.0	1.1		91.2	0.2		99.1	0.1	0.0	19.5	3.3	0.0
Delay (s)	130.3	31.6		130.9	28.1		139.8	19.0	16.3	58.5	25.3	14.9
Level of Service	F	C		F	C		F	B	B	E	C	B
Approach Delay (s/veh)		70.0			77.8			37.8			30.3	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM 2000 Control Delay (s/veh)		48.5					HCM 2000 Level of Service		D			
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		87.0					Sum of lost time (s)		18.4			
Intersection Capacity Utilization		76.4%					ICU Level of Service		D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM 6th Signalized Intersection Summary

2: Butterfield Blvd & Tennant Ave

Timing Plan: Cumulative + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	888	28	310	668	71	22	177	293	360	741	255
Future Volume (veh/h)	234	888	28	310	668	71	22	177	293	360	741	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1870	1900	1856	1870	1841	1900	1870	1826	1885	1885	1841
Adj Flow Rate, veh/h	241	915	29	320	689	22	23	182	59	371	764	263
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	2	0	3	2	4	0	2	5	1	1	4
Cap, veh/h	268	1034	33	302	1111	481	40	614	266	342	891	307
Arrive On Green	0.15	0.29	0.29	0.17	0.31	0.31	0.02	0.17	0.17	0.19	0.34	0.34
Sat Flow, veh/h	1753	3514	111	1767	3554	1539	1810	3554	1542	1795	2614	900
Grp Volume(v), veh/h	241	463	481	320	689	22	23	182	59	371	523	504
Grp Sat Flow(s),veh/h/ln	1753	1777	1849	1767	1777	1539	1810	1777	1542	1795	1791	1723
Q Serve(g_s), s	16.1	29.6	29.6	20.4	19.7	1.2	1.5	5.3	3.9	22.7	32.4	32.4
Cycle Q Clear(g_c), s	16.1	29.6	29.6	20.4	19.7	1.2	1.5	5.3	3.9	22.7	32.4	32.4
Prop In Lane	1.00		0.06	1.00		1.00	1.00		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	268	523	544	302	1111	481	40	614	266	342	611	587
V/C Ratio(X)	0.90	0.88	0.88	1.06	0.62	0.05	0.57	0.30	0.22	1.08	0.86	0.86
Avail Cap(c_a), veh/h	297	589	613	302	1184	513	85	1103	479	342	813	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	40.1	40.1	49.4	34.9	28.6	57.7	43.0	42.4	48.2	36.6	36.6
Incr Delay (d2), s/veh	26.5	13.8	13.4	67.8	0.9	0.0	11.9	0.3	0.4	73.3	7.0	7.3
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	8.9	14.5	15.0	14.5	8.4	0.4	0.8	2.3	1.5	16.8	14.7	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1	53.9	53.5	117.2	35.8	28.6	69.6	43.2	42.8	121.5	43.6	43.9
LnGrp LOS	E	D	D	F	D	C	E	D	D	F	D	D
Approach Vol, veh/h		1185			1031			264			1398	
Approach Delay, s/veh		58.3			60.9			45.4			64.4	
Approach LOS		E			E			D			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.3	40.0	8.0	45.9	23.1	42.2	28.0	25.9				
Change Period (Y+Rc), s	4.9	4.9	5.3	5.3	4.9	4.9	5.3	5.3				
Max Green Setting (Gmax), s	20.4	39.5	5.6	54.1	20.2	39.7	22.7	37.0				
Max Q Clear Time (g_c+l1), s	22.4	31.6	3.5	34.4	18.1	21.7	24.7	7.3				
Green Ext Time (p_c), s	0.0	3.4	0.0	6.2	0.1	4.3	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			60.3									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary

3: Tennant Ave & Juan Hernandez Dr

Timing Plan: Cumulative + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1499	30	76	1009	43	20	0	48	53	0	20
Future Volume (veh/h)	10	1499	30	76	1009	43	20	0	48	53	0	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1856	1856	1900	1900	1900	1900	1900	1811
Adj Flow Rate, veh/h	11	1578	32	80	1062	45	21	0	51	56	0	21
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, %	0	3	0	0	3	3	0	0	0	0	0	6
Cap, veh/h	25	1944	39	103	2044	87	97	0	86	128	0	114
Arrive On Green	0.01	0.55	0.55	0.06	0.59	0.59	0.05	0.00	0.05	0.07	0.00	0.07
Sat Flow, veh/h	1810	3532	72	1810	3442	146	1810	0	1610	1810	0	1610
Grp Volume(v), veh/h	11	786	824	80	544	563	21	0	51	56	0	21
Grp Sat Flow(s),veh/h/ln	1810	1763	1841	1810	1763	1826	1810	0	1610	1810	0	1610
Q Serve(g_s), s	0.4	25.5	25.7	3.1	12.8	12.8	0.8	0.0	2.2	2.1	0.0	0.9
Cycle Q Clear(g_c), s	0.4	25.5	25.7	3.1	12.8	12.8	0.8	0.0	2.2	2.1	0.0	0.9
Prop In Lane	1.00		0.04	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	25	970	1013	103	1047	1084	97	0	86	128	0	114
V/C Ratio(X)	0.44	0.81	0.81	0.77	0.52	0.52	0.22	0.00	0.59	0.44	0.00	0.18
Avail Cap(c_a), veh/h	131	1182	1234	172	1222	1265	464	0	413	872	0	776
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	12.9	12.9	32.8	8.4	8.4	32.0	0.0	32.6	31.4	0.0	30.9
Incr Delay (d2), s/veh	11.8	3.6	3.5	11.5	0.4	0.4	1.1	0.0	6.3	2.3	0.0	0.8
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	0.3	8.7	9.2	1.6	3.7	3.9	0.4	0.0	1.0	1.0	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.4	16.5	16.5	44.3	8.8	8.8	33.1	0.0	38.9	33.8	0.0	31.6
LnGrp LOS	D	B	B	D	A	A	C		D	C		C
Approach Vol, veh/h		1621			1187			72			77	
Approach Delay, s/veh		16.7			11.2			37.2			33.2	
Approach LOS		B			B			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	43.7		9.6	5.9	46.8		8.3				
Change Period (Y+Rc), s	4.9	4.9		4.6	4.9	4.9		4.5				
Max Green Setting (Gmax), s	6.7	47.3		34.0	5.1	48.9		18.1				
Max Q Clear Time (g_c+l1), s	5.1	27.7		4.1	2.4	14.8		4.2				
Green Ext Time (p_c), s	0.0	11.1		0.2	0.0	8.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh			15.4									
HCM 6th LOS			B									

HCM Signalized Intersection Capacity Analysis

4: US-101 SB Ramps & Tennant Ave

Timing Plan: Cumulative + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1076	529	115	739	0	0	0	0	72	2	390
Future Volume (vph)	0	1076	529	115	739	0	0	0	0	72	2	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3505	1545	1787	3505						1622	1583
Flt Permitted		1.00	1.00	0.18	1.00						0.95	1.00
Satd. Flow (perm)		3505	1545	343	3505						1622	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1109	545	119	762	0	0	0	0	74	2	402
RTOR Reduction (vph)	0	0	279	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	0	1109	266	119	762	0	0	0	0	0	76	320
Confl. Peds. (#/hr)			1			1						
Confl. Bikes (#/hr)			4			1						
Heavy Vehicles (%)	0%	3%	2%	1%	3%	0%	0%	0%	0%	12%	0%	2%
Turn Type		NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4	8						6		6
Actuated Green, G (s)		23.2	23.2	23.2	23.2						14.8	14.8
Effective Green, g (s)		23.2	23.2	23.2	23.2						14.8	14.8
Actuated g/C Ratio		0.49	0.49	0.49	0.49						0.31	0.31
Clearance Time (s)		4.9	4.9	4.9	4.9						4.6	4.6
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1711	754	167	1711						505	493
v/s Ratio Prot		0.32			0.22							
v/s Ratio Perm			0.17	c0.35							0.05	c0.20
v/c Ratio		0.64	0.35	0.71	0.44						0.15	0.64
Uniform Delay, d1		9.0	7.5	9.5	7.9						11.8	14.1
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.8	0.2	13.4	0.1						0.1	2.9
Delay (s)		9.9	7.7	22.9	8.1						11.9	17.0
Level of Service		A	A	C	A						B	B
Approach Delay (s/veh)		9.2			10.1			0.0			16.2	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay (s/veh)			10.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			47.5			Sum of lost time (s)				9.5		
Intersection Capacity Utilization			61.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary 5: US-101 NB Ramps & Tennant Ave

Timing Plan: Cumulative + Proj PM
06/30/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑	↑	↑	↑				
Traffic Volume (veh/h)	0	531	0	0	563	77	291	1	161	0	0	0
Future Volume (veh/h)	0	531	0	0	563	77	291	1	161	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	0	1856	0	0	1885	1796	1811	1900	1870			
Adj Flow Rate, veh/h	0	571	0	0	605	31	313	1	173			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	0	3	0	0	1	7	6	0	2			
Cap, veh/h	0	1221	0	0	1240	526	593	3	551			
Arrive On Green	0.00	0.35	0.00	0.00	0.35	0.35	0.34	0.34	0.34			
Sat Flow, veh/h	0	3711	0	0	3676	1520	1725	9	1602			
Grp Volume(v), veh/h	0	571	0	0	605	31	313	0	174			
Grp Sat Flow(s),veh/h/ln	0	1763	0	0	1791	1520	1725	0	1612			
Q Serve(g_s), s	0.0	3.7	0.0	0.0	3.9	0.4	4.2	0.0	2.3			
Cycle Q Clear(g_c), s	0.0	3.7	0.0	0.0	3.9	0.4	4.2	0.0	2.3			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		0.99			
Lane Grp Cap(c), veh/h	0	1221	0	0	1240	526	593	0	554			
V/C Ratio(X)	0.00	0.47	0.00	0.00	0.49	0.06	0.53	0.00	0.31			
Avail Cap(c_a), veh/h	0	3336	0	0	3389	1438	1098	0	1026			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.4	0.0	0.0	7.5	6.3	7.6	0.0	7.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	0.7	0.0	0.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	0.8	0.1	1.0	0.0	0.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	7.7	0.0	0.0	7.8	6.4	8.4	0.0	7.3			
LnGrp LOS		A			A	A	A		A			
Approach Vol, veh/h		571			636			487				
Approach Delay, s/veh		7.7			7.7			8.0				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		14.6				14.6		14.5				
Change Period (Y+Rc), s		4.5				4.5		4.5				
Max Green Setting (Gmax), s		27.5				27.5		18.5				
Max Q Clear Time (g_c+l1), s		5.7				5.9		6.2				
Green Ext Time (p_c), s		3.6				3.9		1.6				
Intersection Summary												
HCM 6th Ctrl Delay, s/veh					7.8							
HCM 6th LOS					A							

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	198	491	426	15	32	210
Future Vol, veh/h	198	491	426	15	32	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	5	0	20	5
Mvmt Flow	215	534	463	16	35	228
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	479	0	-	0	1435	471
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	964	-
Critical Hdwy	4.12	-	-	-	6.6	6.25
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.218	-	-	-	3.68	3.345
Pot Cap-1 Maneuver	1083	-	-	-	134	587
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	343	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	107	587
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	343	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	2.6	0		35.8		
HCM LOS				E		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1083	-	-	-	368	
HCM Lane V/C Ratio	0.199	-	-	-	0.715	
HCM Control Delay (s/veh)	9.1	-	-	-	35.8	
HCM Lane LOS	A	-	-	-	E	
HCM 95th %tile Q (veh)	0.7	-	-	-	5.3	

Appendix G: Queuing Analysis Worksheets

Queues

Timing Plan: Existing AM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	201	262	141	203	77	827	51	84	352	47
v/c Ratio	0.55	0.38	0.40	0.28	0.55	0.65	0.08	0.25	0.31	0.08
Control Delay (s/veh)	42.2	23.1	39.4	14.0	54.6	23.4	0.2	38.0	18.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.2	23.1	39.4	14.0	54.6	23.4	0.2	38.0	18.6	0.2
Queue Length 50th (ft)	39	43	27	18	30	143	0	15	50	0
Queue Length 95th (ft)	#142	87	#88	49	#147	315	0	54	125	0
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	359	2054	358	1971	138	2113	963	347	2151	1009
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.13	0.39	0.10	0.56	0.39	0.05	0.24	0.16	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing AM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	228	490	217	631	294	28	722	560	73	242
v/c Ratio	0.77	0.52	0.75	0.70	0.57	0.30	0.71	0.73	0.74	0.19
Control Delay (s/veh)	61.1	33.4	60.0	37.9	19.1	59.9	36.1	14.6	91.6	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	61.1	33.4	60.0	37.9	19.1	59.9	36.1	14.6	91.6	13.4
Queue Length 50th (ft)	140	141	132	191	70	18	214	70	47	29
Queue Length 95th (ft)	#292	195	#269	257	149	50	300	192	#141	60
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	311	1354	317	1348	687	92	1296	862	98	1333
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.36	0.68	0.47	0.43	0.30	0.56	0.65	0.74	0.18

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing AM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	49	1115	6	1332	82	31
v/c Ratio	0.28	0.49	0.03	0.68	0.32	0.08
Control Delay (s/veh)	30.6	7.1	26.4	11.8	26.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	7.1	26.4	11.8	26.0	0.4
Queue Length 50th (ft)	17	71	2	173	27	0
Queue Length 95th (ft)	43	183	11	240	57	0
Internal Link Dist (ft)		566		541		1158
Turn Bay Length (ft)	295		80		130	
Base Capacity (vph)	169	2254	166	1956	1097	1032
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.49	0.04	0.68	0.07	0.03
Intersection Summary						

Queues

Timing Plan: Existing AM

4: US-101 SB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1010	208	119	834	47	519
v/c Ratio	0.65	0.27	0.76	0.54	0.07	0.84
Control Delay (s/veh)	13.5	2.7	48.7	12.0	11.5	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.5	2.7	48.7	12.0	11.5	28.3
Queue Length 50th (ft)	124	0	30	95	10	122
Queue Length 95th (ft)	157	23	#98	124	24	#240
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1848	877	187	1830	750	707
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.24	0.64	0.46	0.06	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing AM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	477	476	147	398	330
v/c Ratio	0.38	0.38	0.24	0.61	0.44
Control Delay (s/veh)	10.4	10.4	3.2	15.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.4	10.4	3.2	15.5	8.2
Queue Length 50th (ft)	36	36	0	54	23
Queue Length 95th (ft)	67	67	21	177	96
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2492	2492	1053	891	961
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.19	0.14	0.45	0.34
Intersection Summary					

Queues

Timing Plan: Existing PM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	230	358	273	287	97	444	69	212	963	81
v/c Ratio	0.76	0.48	0.78	0.34	0.73	0.37	0.11	0.58	0.75	0.12
Control Delay (s/veh)	56.0	26.1	53.9	13.9	71.9	21.1	2.0	44.0	26.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.0	26.1	53.9	13.9	71.9	21.1	2.0	44.0	26.2	2.9
Queue Length 50th (ft)	52	68	61	29	43	75	0	46	185	0
Queue Length 95th (ft)	#177	124	#202	67	#185	165	12	#145	385	19
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	299	1805	349	1809	132	1817	868	363	1909	888
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.20	0.78	0.16	0.73	0.24	0.08	0.58	0.50	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing PM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	195	752	256	548	54	19	147	240	292	830
v/c Ratio	0.71	0.78	0.76	0.50	0.09	0.20	0.31	0.59	0.76	0.66
Control Delay (s/veh)	60.2	43.2	59.5	33.9	0.3	60.5	44.5	11.7	56.7	32.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.2	43.2	59.5	33.9	0.3	60.5	44.5	11.7	56.7	32.2
Queue Length 50th (ft)	120	234	160	155	0	12	48	0	181	226
Queue Length 95th (ft)	#263	368	#383	258	0	43	85	71	#422	378
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	330	1311	336	1323	659	95	1233	684	382	1758
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.57	0.76	0.41	0.08	0.20	0.12	0.35	0.76	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing PM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	8	1276	3	896	45	17
v/c Ratio	0.03	0.60	0.01	0.42	0.16	0.04
Control Delay (s/veh)	22.3	7.9	22.3	6.2	20.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.3	7.9	22.3	6.2	20.6	0.1
Queue Length 50th (ft)	2	74	1	44	10	0
Queue Length 95th (ft)	14	226	8	137	40	0
Internal Link Dist (ft)		566		541		1158
Turn Bay Length (ft)	295		80		130	
Base Capacity (vph)	205	2526	205	2511	1399	1225
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.51	0.01	0.36	0.03	0.01
Intersection Summary						

Queues

Timing Plan: Existing PM

4: US-101 SB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	868	429	96	595	62	286
v/c Ratio	0.52	0.45	0.37	0.36	0.13	0.48
Control Delay (s/veh)	8.5	2.5	11.7	7.2	13.1	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.5	2.5	11.7	7.2	13.1	8.2
Queue Length 50th (ft)	56	0	11	35	10	15
Queue Length 95th (ft)	117	33	45	75	34	66
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	2290	1157	355	2290	862	933
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.37	0.27	0.26	0.07	0.31
Intersection Summary						

Queues

Timing Plan: Existing PM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	458	485	67	235	141
v/c Ratio	0.34	0.35	0.11	0.40	0.22
Control Delay (s/veh)	8.1	8.2	2.8	12.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.1	8.2	2.8	12.2	3.7
Queue Length 50th (ft)	25	26	0	25	0
Queue Length 95th (ft)	63	66	14	105	29
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2983	3042	1267	975	967
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.16	0.05	0.24	0.15
Intersection Summary					

Queues

Timing Plan: Existing + Proj AM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	201	264	148	217	77	827	53	86	352	47
v/c Ratio	0.55	0.38	0.42	0.30	0.55	0.65	0.08	0.25	0.31	0.08
Control Delay (s/veh)	42.3	23.3	39.7	13.9	54.7	23.4	0.2	38.2	18.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.3	23.3	39.7	13.9	54.7	23.4	0.2	38.2	18.7	0.2
Queue Length 50th (ft)	39	44	28	20	30	144	0	16	50	0
Queue Length 95th (ft)	#142	88	#94	52	#147	315	0	55	125	0
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	359	2049	357	1970	138	2108	961	347	2147	1007
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.13	0.41	0.11	0.56	0.39	0.06	0.25	0.16	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj AM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	228	497	224	652	307	28	722	563	78	242
v/c Ratio	1.36	0.51	1.30	0.67	0.57	0.26	0.67	0.78	0.69	0.17
Control Delay (s/veh)	231.7	28.5	212.0	32.0	17.7	52.2	30.2	20.9	77.3	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	231.7	28.5	212.0	32.0	17.7	52.2	30.2	20.9	77.3	10.5
Queue Length 50th (ft)	~166	118	~160	164	65	15	177	119	42	19
Queue Length 95th (ft)	#367	176	#360	237	148	47	267	264	#138	54
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	167	1539	171	1534	757	105	1474	865	112	1505
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.32	1.31	0.43	0.41	0.27	0.49	0.65	0.70	0.16

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

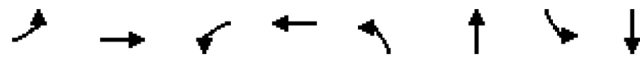
Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj AM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	1129	35	1332	42	94	82	31
v/c Ratio	0.41	0.54	0.30	0.69	0.25	0.19	0.41	0.07
Control Delay (s/veh)	53.5	14.0	49.7	17.8	43.2	0.9	44.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.5	14.0	49.7	17.9	43.2	0.9	44.2	0.3
Queue Length 50th (ft)	27	215	19	282	23	0	44	0
Queue Length 95th (ft)	#64	288	49	373	53	0	84	0
Internal Link Dist (ft)		566		541		258		1158
Turn Bay Length (ft)	295		80		160		130	
Base Capacity (vph)	118	2171	114	2039	405	646	742	818
Starvation Cap Reductn	0	76	0	76	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.54	0.31	0.68	0.10	0.15	0.11	0.04

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj AM

06/30/2024

4: US-101 SB Ramps & Tennant Ave



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1078	235	119	845	47	537
v/c Ratio	0.68	0.29	0.85	0.54	0.07	0.87
Control Delay (s/veh)	14.2	2.7	68.6	12.1	11.6	32.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.2	2.7	68.6	12.1	11.6	32.1
Queue Length 50th (ft)	136	0	32	97	10	130
Queue Length 95th (ft)	171	24	#105	126	24	#256
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1746	853	154	1730	709	672
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.28	0.77	0.49	0.07	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj AM

06/30/2024

5: US-101 NB Ramps & Tennant Ave



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	484	478	147	406	330
v/c Ratio	0.39	0.38	0.24	0.61	0.44
Control Delay (s/veh)	10.5	10.5	3.3	15.8	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.5	10.5	3.3	15.8	8.1
Queue Length 50th (ft)	38	37	0	55	23
Queue Length 95th (ft)	69	68	21	181	96
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2478	2478	1049	886	957
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.19	0.14	0.46	0.34
Intersection Summary					

Queues

Timing Plan: Existing + Proj PM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	230	364	276	296	97	444	75	218	963	81
v/c Ratio	0.77	0.49	0.79	0.35	0.73	0.37	0.12	0.60	0.75	0.12
Control Delay (s/veh)	56.3	26.3	54.9	14.0	72.1	21.1	2.5	44.6	26.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.3	26.3	54.9	14.0	72.1	21.1	2.5	44.6	26.3	2.9
Queue Length 50th (ft)	52	70	62	30	43	75	0	48	186	0
Queue Length 95th (ft)	#177	126	#205	68	#185	165	16	#150	385	19
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	298	1804	348	1807	132	1813	866	363	1906	887
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.20	0.79	0.16	0.73	0.24	0.09	0.60	0.51	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj PM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	195	767	259	559	61	19	147	245	302	830
v/c Ratio	0.71	0.79	0.77	0.51	0.10	0.20	0.31	0.59	0.79	0.66
Control Delay (s/veh)	60.5	43.5	60.9	34.0	0.3	60.7	44.6	11.7	59.3	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.5	43.5	60.9	34.0	0.3	60.7	44.6	11.7	59.3	32.5
Queue Length 50th (ft)	121	241	164	159	0	12	49	0	190	228
Queue Length 95th (ft)	#263	377	#388	264	0	43	85	71	#442	378
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	328	1305	334	1316	656	94	1227	685	380	1749
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.59	0.78	0.42	0.09	0.20	0.12	0.36	0.79	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

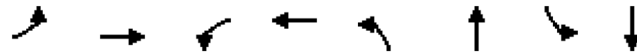
Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj PM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	1308	79	896	21	51	45	17
v/c Ratio	0.06	0.71	0.50	0.39	0.14	0.09	0.26	0.03
Control Delay (s/veh)	40.8	17.5	51.4	8.3	39.7	0.3	40.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.8	17.5	51.4	8.3	39.7	0.3	40.4	0.1
Queue Length 50th (ft)	4	256	40	95	10	0	22	0
Queue Length 95th (ft)	19	366	#105	206	34	0	57	0
Internal Link Dist (ft)		566		541		240		1158
Turn Bay Length (ft)	295		80		160		130	
Base Capacity (vph)	118	2126	155	2339	420	696	790	864
Starvation Cap Reductn	0	13	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.62	0.51	0.38	0.05	0.07	0.06	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Existing + Proj PM

06/30/2024

4: US-101 SB Ramps & Tennant Ave

	→	↘	↙	←	↓	↗
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	903	443	96	621	62	334
v/c Ratio	0.55	0.46	0.41	0.38	0.12	0.55
Control Delay (s/veh)	9.6	2.8	14.2	8.1	12.7	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.6	2.8	14.2	8.1	12.7	10.5
Queue Length 50th (ft)	60	0	11	37	11	28
Queue Length 95th (ft)	142	37	53	92	33	90
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	2200	1134	316	2200	828	896
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.39	0.30	0.28	0.07	0.37
Intersection Summary						

Queues

Timing Plan: Existing + Proj PM

06/30/2024

5: US-101 NB Ramps & Tennant Ave



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	462	490	67	257	141
v/c Ratio	0.35	0.36	0.11	0.43	0.21
Control Delay (s/veh)	8.5	8.5	3.0	12.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.5	8.5	3.0	12.4	3.6
Queue Length 50th (ft)	25	27	0	28	0
Queue Length 95th (ft)	65	69	15	114	29
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2937	2995	1248	960	954
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.16	0.16	0.05	0.27	0.15
Intersection Summary					

Queues

Timing Plan: Cumulative AM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	249	325	174	252	95	1024	64	105	435	58
v/c Ratio	0.76	0.45	0.54	0.33	0.76	0.74	0.09	0.34	0.34	0.09
Control Delay (s/veh)	55.7	26.4	45.4	14.8	78.9	25.6	1.4	42.5	18.8	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.7	26.4	45.4	14.8	78.9	25.6	1.4	42.5	18.8	0.8
Queue Length 50th (ft)	59	65	40	27	44	203	0	24	67	0
Queue Length 95th (ft)	#184	109	#118	58	#182	413	7	65	154	3
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	324	1852	322	1795	124	1902	877	312	1936	919
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.18	0.54	0.14	0.77	0.54	0.07	0.34	0.22	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative AM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	281	607	269	781	364	35	893	693	91	299
v/c Ratio	1.02	0.60	0.96	0.78	0.68	0.43	0.83	0.91	1.05	0.23
Control Delay (s/veh)	110.7	36.5	95.4	42.3	29.4	71.6	44.2	35.7	167.3	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	110.7	36.5	95.4	42.3	29.4	71.6	44.2	35.7	167.3	14.2
Queue Length 50th (ft)	~233	200	~205	275	154	26	321	257	~77	41
Queue Length 95th (ft)	#391	245	#366	327	242	#61	393	#467	#179	72
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	273	1187	278	1182	601	81	1136	778	86	1265
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.51	0.97	0.66	0.61	0.43	0.79	0.89	1.06	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative AM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	61	1380	7	1648	101	38
v/c Ratio	0.36	0.62	0.04	0.85	0.37	0.10
Control Delay (s/veh)	32.9	8.8	27.0	18.6	26.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.9	8.8	27.0	18.6	26.4	0.5
Queue Length 50th (ft)	21	104	2	260	34	0
Queue Length 95th (ft)	52	258	13	#414	67	0
Internal Link Dist (ft)		566		541		1158
Turn Bay Length (ft)	295		80		130	
Base Capacity (vph)	167	2224	164	1933	1083	1018
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.62	0.04	0.85	0.09	0.04

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1249	258	147	1031	58	642
v/c Ratio	0.78	0.31	1.13	0.65	0.08	1.07
Control Delay (s/veh)	17.0	2.6	143.4	13.9	11.7	78.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.0	2.6	143.4	13.9	11.7	78.6
Queue Length 50th (ft)	169	0	~58	128	12	~231
Queue Length 95th (ft)	211	24	#135	162	28	#357
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1599	814	130	1584	649	598
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.32	1.13	0.65	0.09	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative AM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	590	588	181	492	409
v/c Ratio	0.47	0.46	0.28	0.71	0.53
Control Delay (s/veh)	11.8	11.7	3.2	20.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.8	11.7	3.2	20.2	10.1
Queue Length 50th (ft)	59	59	0	84	39
Queue Length 95th (ft)	84	84	23	#268	132
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2256	2256	980	807	883
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.26	0.18	0.61	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative PM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	285	442	337	356	120	549	86	263	1191	101
v/c Ratio	1.10	0.59	1.11	0.41	1.05	0.39	0.12	0.84	0.80	0.14
Control Delay (s/veh)	128.6	31.5	128.0	15.7	144.0	20.9	3.4	65.4	28.4	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	128.6	31.5	128.0	15.7	144.0	20.9	3.4	65.4	28.4	4.4
Queue Length 50th (ft)	~94	111	~112	46	~74	102	0	74	270	0
Queue Length 95th (ft)	#225	155	#257	81	#229	206	24	#189	#556	32
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	257	1561	301	1596	114	1566	763	313	1646	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.28	1.12	0.22	1.05	0.35	0.11	0.84	0.72	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative PM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	241	929	316	678	66	23	182	297	361	1027
v/c Ratio	0.84	0.88	1.07	0.63	0.11	0.27	0.28	0.57	1.08	0.81
Control Delay (s/veh)	78.2	53.7	122.8	41.9	0.4	71.7	43.6	9.1	120.6	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.2	53.7	122.8	41.9	0.4	71.7	43.6	9.1	120.6	40.8
Queue Length 50th (ft)	203	393	~317	261	0	19	67	0	~363	411
Queue Length 95th (ft)	#393	#564	#549	360	0	52	102	75	#609	497
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	288	1148	294	1158	594	83	1079	669	334	1543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.81	1.07	0.59	0.11	0.28	0.17	0.44	1.08	0.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative PM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	SBL	SBT
Lane Group Flow (vph)	11	1578	4	1107	56	21
v/c Ratio	0.06	0.70	0.02	0.49	0.22	0.05
Control Delay (s/veh)	23.7	9.9	23.2	6.7	22.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.7	9.9	23.2	6.7	22.4	0.3
Queue Length 50th (ft)	3	108	1	61	14	0
Queue Length 95th (ft)	17	#347	9	187	46	0
Internal Link Dist (ft)		566		541		1158
Turn Bay Length (ft)	295		80		130	
Base Capacity (vph)	181	2229	181	2216	1235	1096
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.71	0.02	0.50	0.05	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

4: US-101 SB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1074	531	119	736	76	354
v/c Ratio	0.62	0.51	0.65	0.43	0.15	0.63
Control Delay (s/veh)	11.1	3.1	33.5	8.9	13.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.1	3.1	33.5	8.9	13.1	14.6
Queue Length 50th (ft)	88	0	19	53	16	52
Queue Length 95th (ft)	194	43	#109	120	38	118
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1984	1104	210	1984	746	798
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.48	0.57	0.37	0.10	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative PM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	567	600	83	291	174
v/c Ratio	0.41	0.43	0.13	0.49	0.26
Control Delay (s/veh)	9.0	9.1	2.8	13.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.0	9.1	2.8	13.6	3.6
Queue Length 50th (ft)	33	35	0	35	0
Queue Length 95th (ft)	81	86	16	130	32
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2832	2888	1209	925	940
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.21	0.07	0.31	0.19
Intersection Summary					

Queues

Timing Plan: Cumulative + Proj AM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	249	327	181	266	95	1024	66	107	435	58
v/c Ratio	0.77	0.45	0.56	0.34	0.76	0.74	0.09	0.34	0.34	0.09
Control Delay (s/veh)	55.8	26.4	46.0	14.8	78.9	25.6	1.6	42.6	18.8	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.8	26.4	46.0	14.8	78.9	25.6	1.6	42.6	18.8	0.8
Queue Length 50th (ft)	59	66	42	28	44	204	0	24	68	0
Queue Length 95th (ft)	#184	109	#125	61	#182	413	9	65	154	3
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	323	1851	322	1797	124	1901	877	312	1935	918
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.18	0.56	0.15	0.77	0.54	0.08	0.34	0.22	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj AM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	281	614	276	802	377	35	893	695	95	299
v/c Ratio	1.03	0.60	1.00	0.79	0.70	0.43	0.84	0.92	1.11	0.23
Control Delay (s/veh)	113.0	36.4	103.7	42.7	30.5	72.1	44.8	37.1	181.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	113.0	36.4	103.7	42.7	30.5	72.1	44.8	37.1	181.5	14.3
Queue Length 50th (ft)	~236	203	~224	285	165	26	325	264	~84	42
Queue Length 95th (ft)	#391	247	#378	337	256	#61	393	#472	#187	72
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	271	1179	276	1174	598	80	1129	774	85	1259
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.52	1.00	0.68	0.63	0.44	0.79	0.90	1.12	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

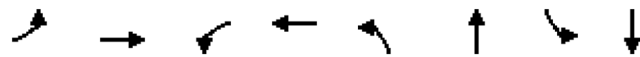
Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj AM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	1394	36	1648	42	94	101	38
v/c Ratio	0.56	0.66	0.34	0.88	0.27	0.21	0.48	0.08
Control Delay (s/veh)	64.5	16.8	52.6	26.8	44.6	1.1	46.1	0.4
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.5	16.8	52.6	27.8	44.6	1.1	46.1	0.4
Queue Length 50th (ft)	35	308	20	425	23	0	55	0
Queue Length 95th (ft)	#88	404	51	#601	54	0	100	0
Internal Link Dist (ft)		566		541		258		1158
Turn Bay Length (ft)	295		80		160		130	
Base Capacity (vph)	108	2091	104	1857	369	595	675	766
Starvation Cap Reductn	0	69	0	65	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.69	0.35	0.92	0.11	0.16	0.15	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj AM

4: US-101 SB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1318	284	147	1042	58	660
v/c Ratio	0.82	0.34	1.13	0.65	0.08	1.10
Control Delay (s/veh)	18.9	2.7	143.4	14.1	11.7	89.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.9	2.7	143.4	14.1	11.7	89.7
Queue Length 50th (ft)	184	0	~58	130	12	~246
Queue Length 95th (ft)	227	25	#135	165	28	#372
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1599	828	130	1584	649	597
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.34	1.13	0.66	0.09	1.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj AM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	597	591	181	500	409
v/c Ratio	0.47	0.47	0.29	0.72	0.52
Control Delay (s/veh)	11.9	11.8	3.2	20.5	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.9	11.8	3.2	20.5	10.0
Queue Length 50th (ft)	60	59	0	86	39
Queue Length 95th (ft)	85	85	23	#275	132
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2243	2243	976	802	879
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.26	0.19	0.62	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj PM

1: Monterey Rd & W Edmundson Ave/Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	285	448	341	364	120	549	91	268	1191	101
v/c Ratio	1.10	0.59	1.14	0.42	1.05	0.39	0.13	0.85	0.80	0.14
Control Delay (s/veh)	129.9	31.5	134.3	15.6	145.2	21.1	3.9	68.1	28.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	129.9	31.5	134.3	15.6	145.2	21.1	3.9	68.1	28.7	4.4
Queue Length 50th (ft)	~94	113	~114	47	~74	102	0	76	270	0
Queue Length 95th (ft)	#225	157	#261	82	#229	206	26	#194	#556	32
Internal Link Dist (ft)		783		3290		855			440	
Turn Bay Length (ft)	140		295		110		115	105		115
Base Capacity (vph)	257	1557	299	1592	114	1560	760	312	1639	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.29	1.14	0.23	1.05	0.35	0.12	0.86	0.73	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj PM

2: Butterfield Blvd & Tennant Ave

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	241	944	320	689	73	23	182	302	371	1027
v/c Ratio	0.85	0.89	1.09	0.64	0.12	0.28	0.28	0.58	1.11	0.81
Control Delay (s/veh)	78.8	53.9	128.6	41.9	0.4	71.7	43.8	9.1	131.8	41.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.8	53.9	128.6	41.9	0.4	71.7	43.8	9.1	131.8	41.2
Queue Length 50th (ft)	203	401	~324	266	0	19	67	0	~381	411
Queue Length 95th (ft)	#393	#580	#556	366	0	52	102	75	#631	497
Internal Link Dist (ft)		3290		566			1215			1601
Turn Bay Length (ft)	390		130		130	190		220	290	
Base Capacity (vph)	287	1141	293	1151	592	82	1073	670	332	1535
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.83	1.09	0.60	0.12	0.28	0.17	0.45	1.12	0.67

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

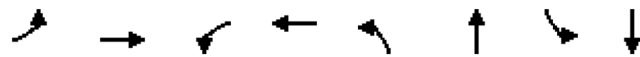
Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj PM

3: Tennant Ave & Juan Hernandez Dr

06/30/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	1610	80	1107	21	51	56	21
v/c Ratio	0.10	0.82	0.56	0.47	0.15	0.10	0.32	0.04
Control Delay (s/veh)	42.7	21.8	56.9	9.2	41.1	0.4	42.7	0.2
Queue Delay	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.7	22.0	56.9	9.3	41.1	0.4	42.7	0.2
Queue Length 50th (ft)	6	372	43	133	11	0	29	0
Queue Length 95th (ft)	24	#548	#109	280	34	0	67	0
Internal Link Dist (ft)		566		541		283		1158
Turn Bay Length (ft)	295		80		160		130	
Base Capacity (vph)	108	1942	141	2333	383	655	720	806
Starvation Cap Reductn	0	40	0	322	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.85	0.57	0.55	0.05	0.08	0.08	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj PM

4: US-101 SB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1109	545	119	762	76	402
v/c Ratio	0.65	0.52	0.71	0.44	0.15	0.70
Control Delay (s/veh)	12.0	3.2	41.9	9.6	12.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.0	3.2	41.9	9.6	12.9	17.7
Queue Length 50th (ft)	105	0	23	63	16	69
Queue Length 95th (ft)	203	44	#113	125	38	147
Internal Link Dist (ft)	541			1345	1829	
Turn Bay Length (ft)		235	295			340
Base Capacity (vph)	1891	1084	184	1891	711	761
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.50	0.65	0.40	0.11	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

Timing Plan: Cumulative + Proj PM

5: US-101 NB Ramps & Tennant Ave

06/30/2024



Lane Group	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	571	605	83	313	174
v/c Ratio	0.42	0.43	0.13	0.52	0.26
Control Delay (s/veh)	9.1	9.2	2.9	14.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.1	9.2	2.9	14.2	3.6
Queue Length 50th (ft)	34	36	0	39	0
Queue Length 95th (ft)	82	86	16	142	32
Internal Link Dist (ft)	1345	188			1692
Turn Bay Length (ft)			140	450	
Base Capacity (vph)	2802	2857	1197	916	932
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.21	0.07	0.34	0.19
Intersection Summary					