

Traffic Impact Analysis Report

Red Tail Fairfield Traffic Study

Fairfield, California

October 26, 2021



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EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Analysis (TIA) conducted for the proposed residential development located at 1776 Sunset Avenue in Fairfield, California. The project consists of the construction of 130 multi-family dwelling units over 8.71 acres of open space, and will provide open space, playground, recreation area and pool, and a dog park. The proposed project will have one vehicular access driveway and one emergency access driveway. The 130 dwelling units will be built within 26 buildings, including 13 two-story and 13 three-story plans. Additionally the project will provide 260 garage spaces and 32 open spaces.

This report provides the intersection level of service (LOS) related to the project. Additionally, the report also includes 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, three study intersections and two study segments were evaluated during the weekday morning (a.m.) peak hour and evening (p.m.) peak hour under four study scenarios. The study intersections and segments were evaluated under *No Project* and *Plus Project* scenarios for Existing Conditions and Cumulative Conditions. For the purpose of this analysis, potential traffic operational effects from the proposed project are identified based on established operational thresholds described in the report.

VMT Analysis

Based on City of Fairfield Guidelines, the project will require mitigation measures in order to meet VMT requirements. The project's TAZs generate a VMT value that is slightly higher than the threshold average VMT rate per multifamily dwelling unit in the City of Fairfield.

Project Trip Generation

The proposed project is expected to generate approximately 47 weekday a.m. peak hour trips (12 inbound, 35 outbound), and 57 weekday p.m. peak hour trips (35 inbound, 22 outbound).

Existing Conditions

Under this scenario, the study intersections operate within applicable jurisdictional Level of Service (LOS) standards (LOS D) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS F during the p.m. peak hour.

Existing plus Project Conditions

Under this scenario, the study intersections continue to operate within applicable jurisdictional LOS standards (LOS D or better) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during one or both peak hours. Mitigation measures, such as lane restriping and signal timing improvements, improve LOS to acceptable levels.

Cumulative Conditions

Under this scenario, the study intersections operate within applicable jurisdictional Level of Service (LOS) standards (LOS D) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during one or more peak hours.

Cumulative plus Project Conditions

Under this scenario, the study intersections continue to operate within applicable jurisdictional LOS standards (LOS D or better) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during the both peak hours. Mitigation measures, such as lane restriping and signal timing improvements, improve operations to LOS E or better.

Queuing Analysis

Queueing operations were evaluated at the study intersections under no Project and plus Project scenarios. The addition of project traffic would add less than one vehicle to the existing queue. Hence, the proposed project is expected to have a ***less than significant*** impact on queuing at the study intersections

Signal Warrant Analysis

The intersection at E. Tabor Avenue/Clay Bank Road (Intersection #3) meets thresholds in the CA MUTCD peak hour signal warrant under all scenarios. However, the intersection is projected to operate with acceptable LOS under all scenarios without signalization.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via Sunset Avenue. The existing sidewalk and bike lanes on Sunset Avenue will allow for pedestrian and bicycle access. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Impacts

The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***.

Transit Impacts

The project site is within walking distance to various bus stops that provide local and regional access via FAST Transit. Impacts to transit service are expected to be ***less than significant***.

Sight Distance

Based on preliminary review of the project access on Sunset Avenue, sight distance obstructions are not expected at the project driveway. To ensure adequate visibility, TJKM recommends the project maintain landscaping to below eye level (below 2.5 feet or ground-level landscaping) in the immediate vicinity of the project driveway.

Parking

Based on the project site plan, project provides 292 vehicular parking spaces. The proposed number of parking spaces will be adequate. Based on the proposed parking spaces to be provided on site, the project is not anticipated to affect parking demand on City streets.

Queueing at Project Driveway

The driveway is expected to have an outbound queue of less than one vehicle during both peak periods under Existing plus Project and Cumulative plus Project Conditions. Outbound queues at the project driveway are expected to be ***less than significant***.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Analysis (TIA) for the proposed residential development located at 1776 Sunset Avenue in Fairfield, California.

1.1 PROJECT DESCRIPTION

The project consists of the construction of 26 two- and three-story buildings consisting of 130 two- to three-bedroom units. The proposed project will have one vehicular access driveway and one emergency access driveway. The construction will occur over 8.71 acres of open space, and the project will provide open space, playground, recreation area and pool, and a dog park. Additionally the project will provide 292 vehicular parking spaces, including 260 garage spaces and 32 open spaces. Currently, the project site is open space and zoned as Residential (Medium Density). The proposed project complies with the density assigned for this zoning.

The following section discusses the TIA Purpose, study intersections, and analysis scenarios.

1.2 PROJECT PURPOSE

The purpose of the Traffic Impact Analysis is to evaluate the impacts on the transportation infrastructure due to the addition of the traffic from the proposed project. The report also includes evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians, queuing analysis at the study intersections, and parking supply.

1.3 STUDY INTERSECTIONS

TJKM evaluated traffic conditions at three study intersections during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with City of Fairfield staff. The peak periods were between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. The study intersections and associated traffic controls are as follows:

1. E. Tabor Avenue/Sunset Avenue (Signalized)
2. E. Travis Boulevard/Sunset Avenue (Signalized)
3. E. Tabor Avenue/Clay Bank Road (All-Way Stop Control)

TJKM also analyzed the following two roadway segments:

1. Sunset Avenue between Travis Boulevard and Tabor Avenue
2. E. Tabor Avenue between Sunset Avenue and Blossom Avenue

Appendix A contains the data sheets for the collected intersection and segment volumes. **Figure 1** illustrates the study intersection and the vicinity map of the proposed project. **Figure 2** shows the proposed project site plan.

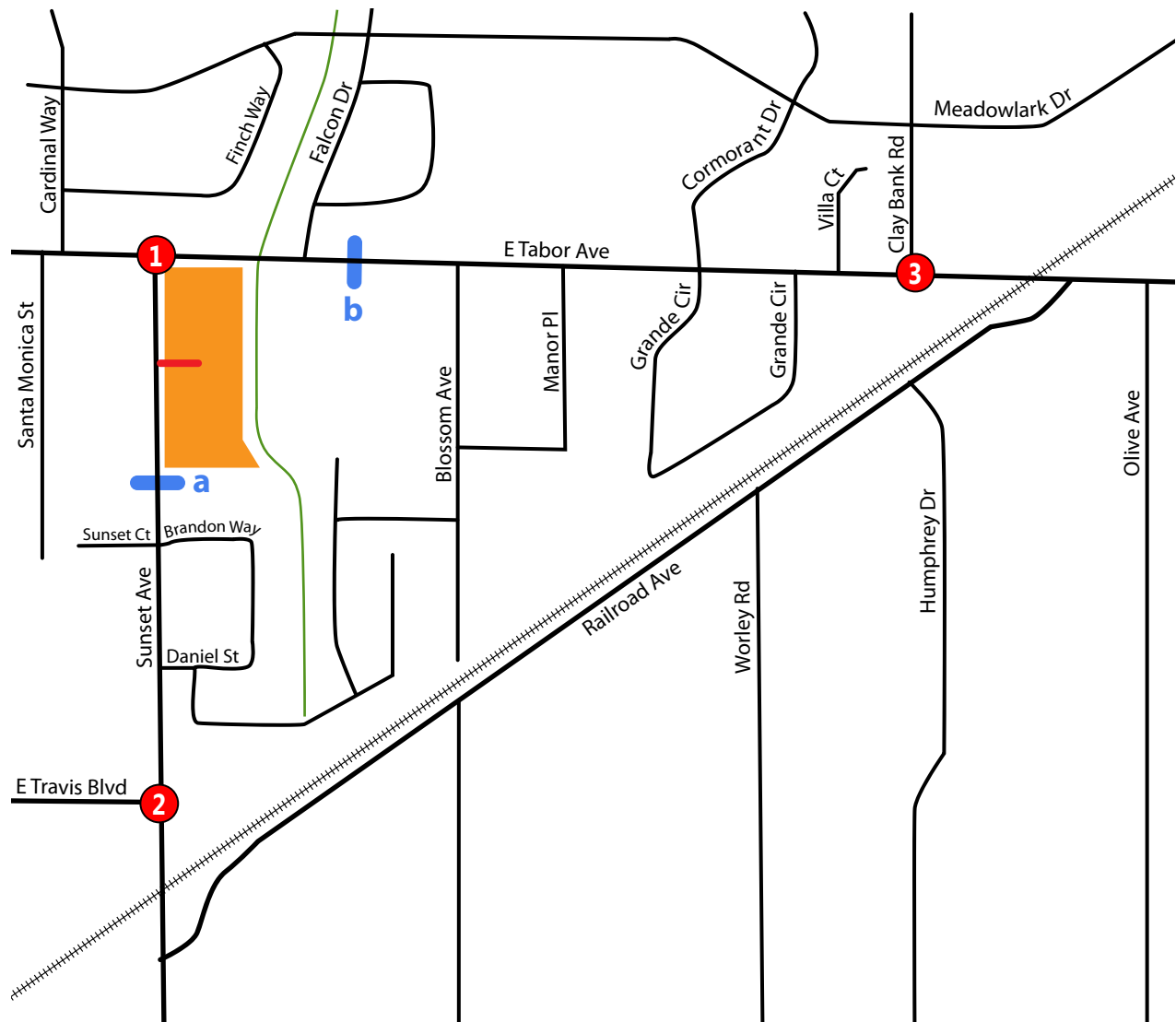
1.4 ANALYSIS SCENARIOS

This study addresses the following four traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on existing traffic volumes, lane geometry, and traffic controls.

- **Existing plus Project Conditions** – This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.
- **Cumulative Conditions** – This scenario evaluates the study intersections based on cumulative (Year 2040) traffic volumes, lane geometry and traffic controls.
- **Cumulative plus Project Conditions** – This scenario is identical to Cumulative Conditions, but with the addition of traffic from the proposed project.

Figure 1: Vicinity Map

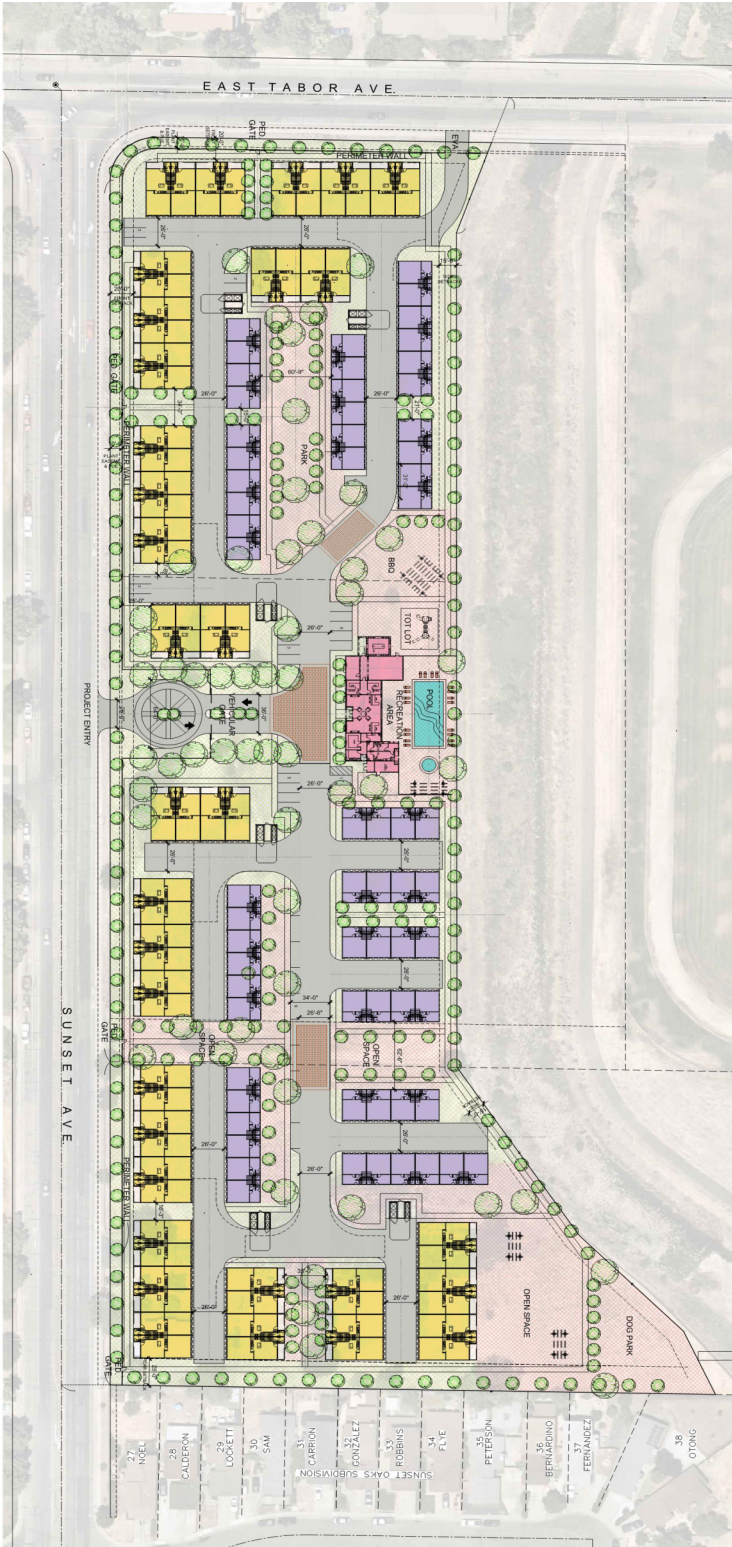


LEGEND

- Project Site
- Project Driveway
- x Study Intersection
- x Study Segment



Figure 2: Site Plan



2.0 DESCRIPTION OF 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.

2.1 EXISTING SETTING AND ROADWAY SYSTEM

Sunset Avenue is a two- to four-lane, north-south roadway that extends between E. Tabor Avenue in the north and State Route 12 (SR 12) in the south. It is classified as a minor arterial between E. Tabor Avenue and Travis Boulevard and a major arterial, south of Travis Boulevard. Sunset Avenue mainly provides access to commercial land uses and residential neighborhoods. In the project vicinity, Sunset Avenue features three- to four-lanes, Class II bike lanes, continuous sidewalks and continuous overhead street lights. The posted speed limit on Sunset Avenue is 35 miles per hour (mph) in the project vicinity.

E. Tabor Avenue is a two- to four-lane, east-west minor arterial roadway that extends from North Texas Street and the Fairfield Linear Park in the west to Charleston Street in the east. This roadway primarily serves residential and commercial land uses and provides direct access to an elementary and middle school. In the project vicinity, E. Tabor Avenue features two travel lanes, Class II bike lanes, continuous sidewalks, bus stops and continuous overhead street lights. The posted speed limit on E. Tabor Avenue is 35 mph.

Travis Boulevard is a four-to-six lane roadway that extends from Oliver Road in the west and Sunset Avenue in the east with. Travis Boulevard provides a direct connection to Interstate-80 (I-80) to the west. It is classified as a local street west of I-80 and a major arterial east of I-80. Travis Boulevard provides direct access to Solano Town Center/Fairfield Gateway, the City's regional shopping center, along with the North Bay Medical Center. There are Class II bike lanes between Oliver Road and Holiday Lane and Class III bike lanes east of the I-80 interchange. Travis Boulevard mainly serves commercial land uses and residential neighborhoods. The posted speed limit on Travis Boulevard is between 30 and 35 mph.

Clay Bank Road is a four-lane minor arterial that connects residential neighborhoods in the north to Air Base Parkway in the south. Clay Bank Road primarily serves residential land uses, along with the Western Business Park and the Solano County Office of Education. The posted speed limit on Clay Bank Road is 35 mph.

2.2 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 wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, easy access to transit facilities and services and a network of pedestrian facilities. Pedestrian facilities are comprised of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities. Continuous sidewalks exist along both sides of Sunset Avenue, E. Tabor Avenue and E. Travis Boulevard in the project study area. Standard

crosswalks and curb ramps connect the sidewalks. A Class I pathway exists along the eastern frontage of the project site, and is accessible via E. Tabor Avenue.

The existing pedestrian facilities in the study area are shown in **Figure 3**.

2.3 EXISTING BICYCLE FACILITIES

Bicycle facilities should meet guidelines and design standard of Cities and the California Department of Transportation (Caltrans) in the Highway Design Manual. The Highway Design Manual identifies four types of bikeway facilities:

- **Class I Shared-Use Path:** Class I bikeways are a completely separate right-of-way designed for the exclusive use of cyclists and pedestrians, with minimal crossings for motorists. These paths are often located along creeks, canals, and rail lines.
- **Class II Bike Lanes:** Class II bike lanes use special lane markings, pavement legends, and signage. Bike lanes provide designated street space for bicyclists, typically adjacent to outer vehicle travel lanes. Buffered bike lanes increase separation through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (e.g., driveways or intersections).
- **Class III Bike Routes:** Bike routes provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and or traffic calming treatments, and provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets. Bicycle Boulevards further enhance bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables.
- **Class IV Bikeways:** Class IV bikeways, also known as cycle tracks or separated bikeways, are set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Separated bikeways were adopted by Caltrans in 2015. Separation may include grade separation, flexible posts, physical barriers, or on-street parking.

In the project vicinity, a Class I shared-use path exists immediately east of the project site, and is accessible via E. Tabor Avenue. Class II bike lanes exist on Sunset Avenue, E. Tabor Avenue, and for a short segment along E. Travis Boulevard. The Solano Countywide Active Transportation Plan (ATP) (2020) plans to extend the Class I pathway. No bicycle facilities are planned in the immediate vicinity of the project site.

2.4 EXISTING TRANSIT FACILITIES

Transit agencies that provide local and regional transit service to the City of Fairfield include the Fairfield and Suisun Transit (FAST)/DART Paratransit, Rio Vista Delta Breeze, SolTrans, Napa County VINE Transit, and Capitol Corridor. However, FAST is the only agency that provides service in the vicinity of the project. DART is the ADA Paratransit complement to FAST local fixed routes. DART operates parallel to the fixed route bus system during the same days and hours. This service is an origin-to-destination, shared ride service within the Cities of Fairfield and Suisun City. DART travels within a $\frac{3}{4}$ mile area on either side and at the ends of fixed route corridors. Eight bus stops exist within 0.5-miles of the project site. The transit stops can be accessed via the existing pedestrian and bicycle facilities. **Table 1** summarizes the existing FAST service in the project vicinity.

Table 1: Existing Transit Service

Route	From	To	Weekdays		Weekends	
			Operating Hours	Headway (minutes)	Operating Hours	Headway (minutes)
2	Solano Town Center	Fairfield-Vacaville Transit Center	6:15 a.m. – 7:01 p.m.	30-60	9:45 a.m. – 4:41 p.m.	60
4	Smart & Final	David Grant Medical Center	6:25 a.m. – 6:24 p.m. (No Mid-day Service)	60	10:25 a.m. – 4:24 p.m.	60
6	Solano Town Center	Mayfield Circle/Lawler Ranch Pkwy	6:15 a.m. – 7:32 p.m.	45	9:15 a.m. – 4:32 p.m.	45

Source: fasttransit.org

2.5 COLLISION HISTORY

TJKM conducted collision analysis at the study intersections for the latest three-year period (January 1, 2017 through December 31, 2019). The latest year, 2020, was excluded from the analysis as a drop in the previous trend occurred due to COVID-19 stay at home orders. TJKM collected collision data from the Transportation Injury Maps System (TIMS), which excludes property damage only collisions. **Table 2** presents the results of the intersection collision analysis. The intersection at E. Tabor Avenue/Clay Bank Road (Intersection #3) experiences collisions at a higher rate than similar intersections in the state of California. In the three year analysis time period, three vehicle involved collisions and one bicycle involved collision occurred at the intersection at E. Tabor Avenue/Clay Bank Road (Intersection #3). Three of the collisions resulted in complaints of pain and two resulted in either severe injuries or other visible injuries. The collision types observed at all three intersections mainly consist of broadside collisions caused by a variety of violations, including driving under the influence of alcohol or drugs, improper turning, automobile right of way, and traffic signals and signs.

Table 2: Intersection Collision Analysis

#	Study Intersections	Total Collisions Involved With (2017-2019) ¹				Daily Vol (ADT)	Intersection Collision Rate (RSE)	Statewide Average Collision Rate	Intersection Collision Rate > Statewide Average Collision Rate?
		Veh	Ped	Bic	All (A)				
1	Sunset Avenue/E Tabor Ave	1	0	1	2	15,140	0.18	0.43	No
2	Sunset Ave/E Travis Blvd	2	0	0	2	18,690	0.10	0.43	No
3	E Tabor Ave/Clay Bank Rd	3	0	1	4	12,505	0.29	0.28	Yes
Totals		6	0	2	8				

Notes:

1. Veh = Vehicle; Ped = Pedestrian; Bic = Bicycle

RSE = $1000000 \cdot A / (365 \cdot T \cdot ADT)$

RSE = Observed collision rate; # of acc./mil. vehicle

A = Number of collisions over study period

T = Total number of years over which intersection accidents were collected; January 1, 2017 to December 31, 2019 = 3.0 years

ADT = Average Daily Intersection Traffic

TJKM also conducted collision analysis at the study segments for the latest three-year period (January 1, 2017 through December 31, 2019). The same methodologies detailed above were used for the segment analysis. **Table 3** presents the findings for the segment collision analysis. During the three year analysis period, a total of 11 collisions were observed along the two study segments. The majority of the observed collisions resulted in complaints of pain. The types of collisions mainly consist of broadside, rear end and head on collisions. The collision types observed at the study segments were caused by a variety of violations, majorly consisting of automobile right of way, unsafe speed and travelling on the wrong side of the road. These collisions may be reduced through measures, such as high visibility striping or roadway markings, street lighting, traffic calming improvements, and signage.

Table 3: Segment Collision Analysis

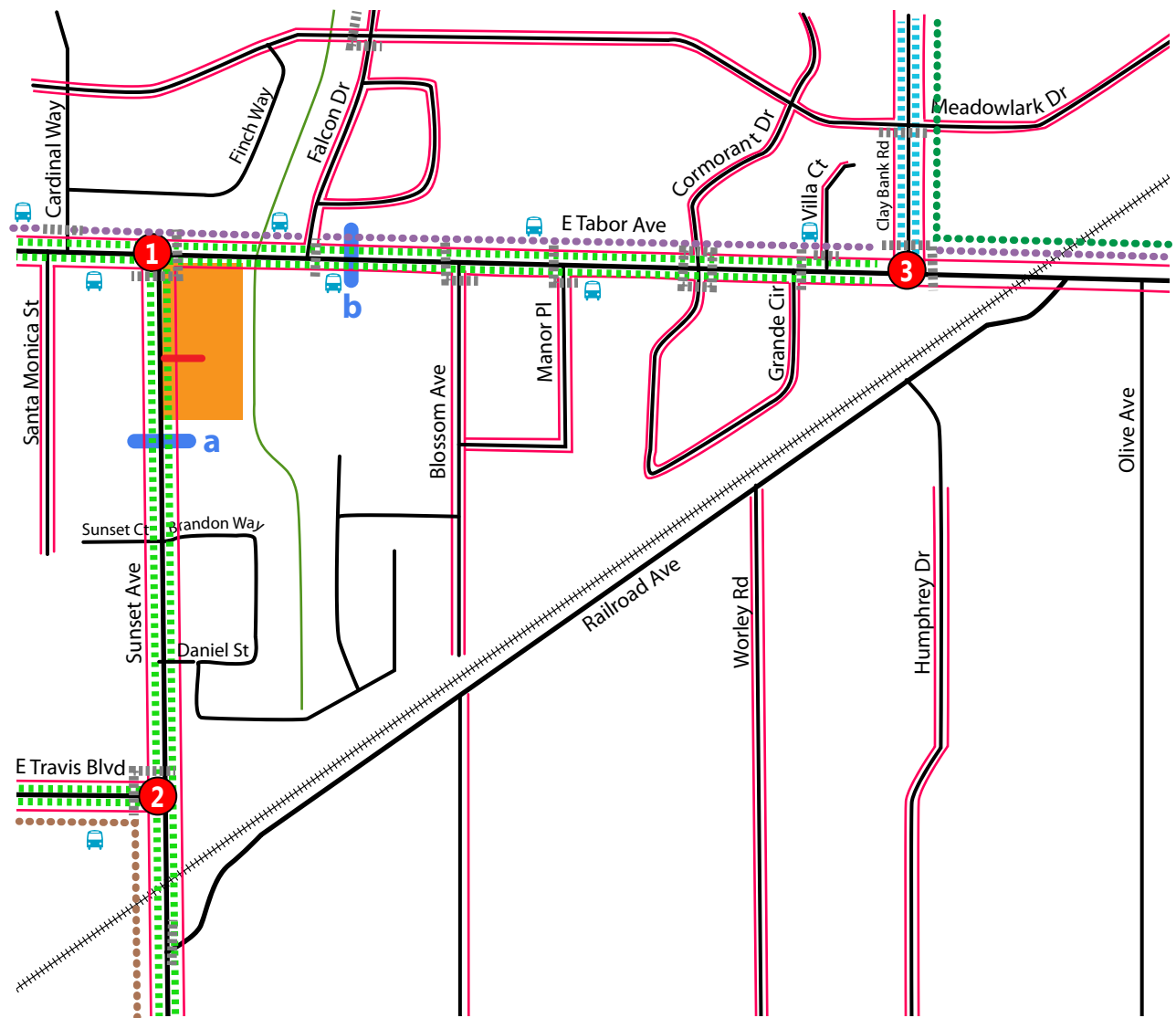
#	Study Segment	Total Collisions Involved With ¹				Speed- Involved Collisions	Daily Vol (ADT)
		Veh	Ped	Bic	All		
1	Sunset Avenue b/w E Travis Blvd & E Tabor Ave	4	0	1	5	1	12,470
2	E Tabor Ave b/w Sunset Ave & Blossom Ave	3	0	3	6	2	11,609

Notes:

Total collisions that occurred between January 1, 2017 and December 31, 2019.

1. Veh = Vehicle-vehicle involved collisions; Ped = Pedestrian-vehicle involved collisions; Bic = Bicycle-vehicle involved collisions.

Figure 3: Existing Pedestrian, Bicycle, and Transit Facilities



LEGEND

	Project Site		Marked Crosswalk		Transit Stop
	Project Driveway		Class I Pathway		FAST Transit Route 2
	Study Intersection		Class II Bike Lane		FAST Transit Route 6
	Study Segment		Class III Bike Route		FAST Transit Route 4
	Sidewalk				



3.0 CEQA TRANSPORTATION ANALYSIS

Traffic impacts related to the proposed project were evaluated for both compliance with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). In CEQA published by the Governor's Office of Planning and Research (OPR), the August 2020 Technical Memorandum prepared by DKS describing the VMT methodology adopted by the City of Fairfield. As of August 2020, intersection level of service (LOS) can no longer be used to determine significant CEQA impacts.

3.1 VEHICLE MILES TRAVELED (VMT) METHODOLOGY

In accordance with Senate Bill 743 (SB 743) and the resulting changes to the CEQA Guidelines published by the Natural Resources Agency, local agencies may no longer use measures of vehicle delay such as Level of Service (LOS) to quantify transportation impacts on the environment. CEQA guidelines specify VMT as the required measure of impact. Projects should first be compared to screening criteria to see whether they may be presumed less than significant. If projects do not meet any of the screening criteria, an analysis of project VMT is required.

The City of Fairfield Guidelines were updated in December 2020 to include Project VMT Screening Transportation Analysis. The City states the following projects may be exempt from VMT analysis:

- Small projects
- Projects within a half mile of high-quality transit
- Affordable housing projects (100 percent affordable units)
- Locally serving projects
- Projects located in areas that have been shown to generate VMT below the significance threshold

For VMT forecasting, the Fairfield Senate Bill 743 Implementation Procedures (August 2020, page 5) recommends that the estimated VMT for a proposed project be obtained by either:

- Incorporating the project land uses into the Fairfield Travel Demand Model and running a project scenario.
- Stand-alone VMT analysis (based on the market area of retail establishment) or use of other available tools (Napa-Solano Activity Based Model).

3.2 VEHICLES MILES TRAVELED (VMT) ANALYSIS

TJKM conducted a VMT (Vehicle Miles Traveled) analysis for the proposed residential project on Sunset Avenue. The project consists of 130 multi-family housing units on an 8.71-acre site east of Interstate 80. Currently, the project site is open space and zoned as Residential (Medium Density).

The project is located between two TAZs in the City of Fairfield (#126 and #145). Based off of VMT per unit numbers provided by the city, the average rate for multifamily dwelling units is **45.6** VMT per unit for the project. This value is slightly higher than the 85% threshold set by the city's VMT guidelines, which states that multifamily residential units have to fall under **44** VMT per unit in order to be insignificant. The project's location is within an area that is slightly higher than the threshold significance value.

In order to meet the significance threshold, the project would have to reduce its VMT per unit by **1.6** or by **3.6%**.

The project will provide pedestrian network improvements around the area in addition to planting of street trees and open space improvements. According to Fairfield guidelines, pedestrian improvements have a VMT reduction effectiveness of **2%**.

In addition to pedestrian improvements, the project site is located near a Fairfield Fast Transit bus stop and will encourage voluntary participation in Commute Trip Reduction Programs for its residents. Encouraging rideshare and transit use further reduces the site's VMT impacts by **2%**.

With these two mitigation measures a **4%** reduction is achieved, bringing the Sunset Avenue project's VMT per unit numbers to below the 44 VMT per unit threshold and making its VMT to have less than significant transportation impacts.

Appendix B contains the Multifamily Residential VMT by TAZ map.

4.0 LOCAL TRANSPORTATION ANALYSIS

4.1 LEVEL OF SERVICE ANALYSIS 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 and convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely-congested flow with high delays). In accordance with the City's Traffic Study Guidelines, the intersection capacity analysis was conducted using the Synchro 10th Edition software to implement the Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016) (HCM) methodology to determine the overall intersection delay. The HCM methodology calculates the average delay, in seconds, of a vehicle passing through the intersection in any direction.

Signalized Intersections

At signalized intersections, LOS is reported in average intersection delay. As described in the Circulation Element of the City of Fairfield General Plan, signalized intersections operate acceptably at LOS D or better at arterial streets, LOS C or better at collector streets, and LOS B or better at local streets. The standard LOS for this project is LOS D or better, as all intersections are located on major and minor arterials in the City of Fairfield.

Unsignalized Intersections

For all-way stop controlled intersections, the LOS results are provided as overall delay, similar to that of signalized intersections. For two-way stop intersections, levels of service are reported separately for each movement. Thus, unacceptable LOS can occur for a small number of vehicles but result in a large increase in delay. Generally, unsignalized intersections are considered to operate acceptable at LOS E or better. However, some intersections may yield LOS E or F but are considered to operate acceptably under the following conditions:

- Total delay less than 4.0 vehicle-hours for single lane approach with low volume
- Total delay less than 5.0 vehicle-hours for multilane approach with low volume

The average delay is used to determine the intersection LOS according to the LOS definitions provided in **Table 4**.

Table 4: Level of Service Definitions for Intersections

Level of Service	Description	Delay (seconds)	
		Signalized Intersections	Unsignalized Intersections
A	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.	≤ 10.0	0.0-10.0
B	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	> 10.0 and ≤ 20.0	10.1-15.0
C	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	> 20.0 and ≤ 35.0	15.1-25.0
D	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	> 35.0 and ≤ 55.0	25.1-35.0
E	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	> 55.0 and ≤ 80.0	35.1-50.0
F	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	> 80.0	> 50.0

Source: Highway Capacity Manual, 6th Edition (Transportation Research Board, 2016)

4.2 SIGNIFICANT IMPACT CRITERIA/LEVEL OF SERVICE STANDARDS

The significance of the potential impacts of Project generated traffic at the study intersection was determined using criteria identified in the City of Fairfield Traffic Study Guidelines (December 2020). The Traffic Study Guidelines indicate that a project is considered to have a significant transportation impact when the level of service exceeds any of the thresholds under any scenario. Additionally, the guidelines mention that LOS E is permitted when the reduction in congestion is insignificant compared to construction cost of the needed improvements or when preserving other goals, pedestrian or bicycle facilities, community character, or urban design.

4.3 SIGNAL WARRANTS METHODOLOGY

To assess the need for signalization of a stop-controlled intersection, California Manual on Uniform Traffic Control Devices (California Department of Transportation [Caltrans], 2014) (CA MUTCD) presents nine signal warrants. Satisfying one or more of the signal warrants could justify signalization of an intersection; however, the full set of warrants should be considered as part of an evaluation and an engineering study should be conducted before the decision to install a signal is made. In this study, TJKM evaluated the peak hour signal warrant (Warrant #3).

4.4 EXISTING PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS

The existing operations of the study intersections were evaluated for the highest one-hour volumes during weekday morning and evening peak periods. New turning movement counts for vehicles, bicycles, and pedestrians were conducted during the weekday a.m. peak period (7:00-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) at all study intersections in August 2021. **Appendix A** includes all data sheets for

the collected vehicle, bicycle, and pedestrian counts. **Figure 4** illustrates the existing lane geometry, traffic controls and peak hour volumes at the study intersections.

In addition, TJKM collected 24-hour average daily traffic counts along two roadway segments within the vicinity of the project. TJKM used the same methodology to project the average daily traffic volumes along the study roadway segments.

4.5 INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

Existing intersection lane configurations, and turning movement volumes are used to calculate the level of service for the study intersection during each peak hour. The results of the level of service (LOS) analysis using Synchro 10 software program for Existing Conditions are summarized in **Table 5**. Under this scenario, all study intersections operate at the applicable jurisdictional service levels of service (LOS C or better) during both peak hours, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS F during the p.m. peak hour. **Appendix C** contains the detailed LOS calculation sheets under Existing Conditions.

Table 5: Intersection Level of Service Analysis – Existing Conditions

#	Intersection	Control	Peak Hour ²	Existing Conditions	
				Delay ³	LOS ⁴
1	Sunset Ave/E. Tabor Ave	Signal	A.M.	52.2	D
			P.M.	84.7	F
2	Sunset Ave/E. Travis Blvd	Signal	A.M.	46.2	D
			P.M.	60.7	F
3	E. Tabor Ave/Clay Bank Rd	AWSC ¹	A.M.	18.6	C
			P.M.	14.9	B

Notes:

1. AWSC – All-way stop control

2. AM – morning peak hour, PM – evening peak hour

3. Delay – Average control delay for the entire intersection is presented for signalized and AWSC intersections.

4. LOS – Level of Service.

Bold indicates unacceptable level of service.

4.6 ROADWAY SEGMENT ANALYSIS – EXISTING CONDITIONS

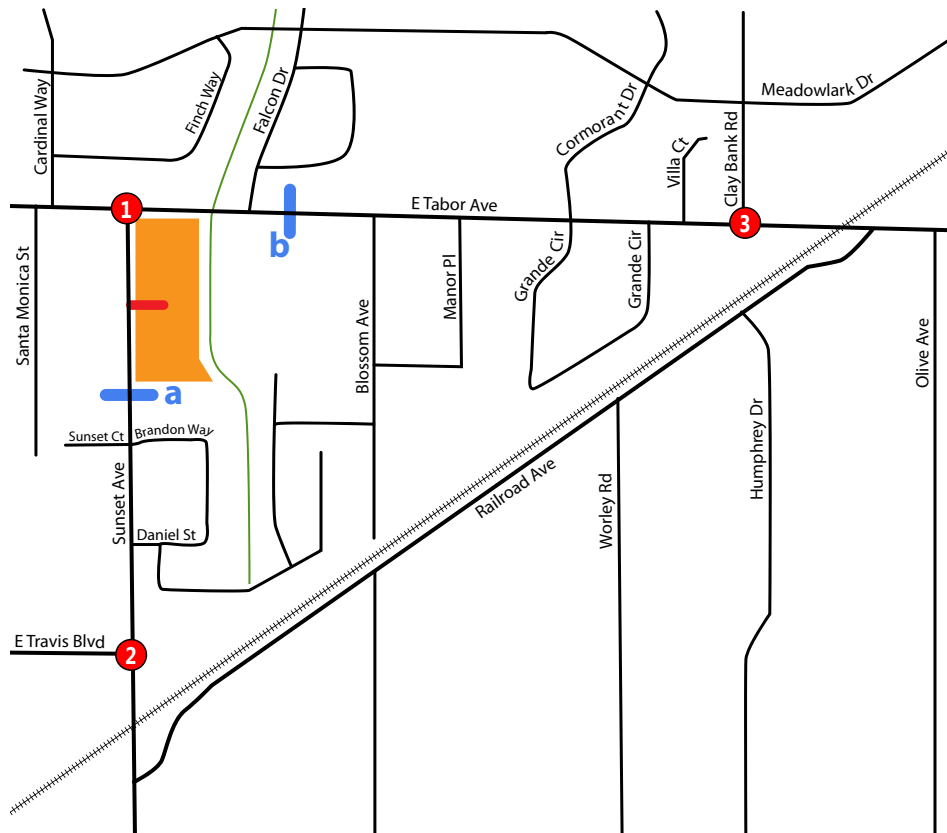
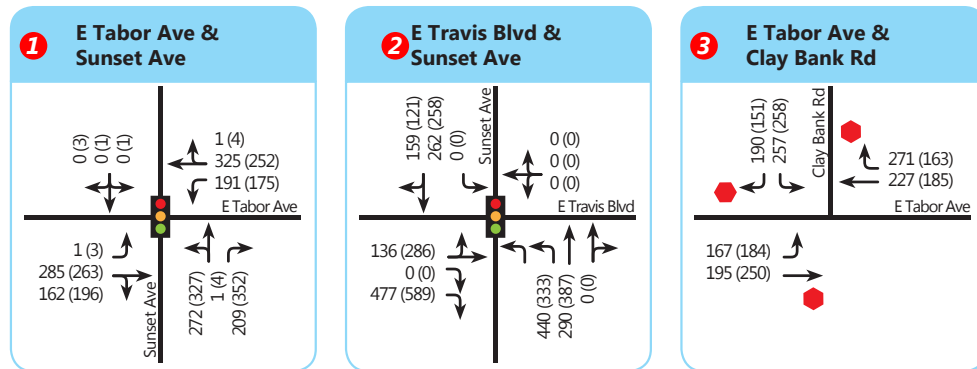
Under Existing Conditions, the average daily traffic on Sunset Avenue, between E. Travis Boulevard and E. Tabor Avenue is 12,470 vehicles per day, with the major flow in the northbound direction; E. Tabor Avenue, between Sunset Avenue and Blossom Avenue is 11,609 vehicles per day, with even flow between the eastbound and westbound directions.

4.7 SIGNAL WARRANT ANALYSIS – EXISTING CONDITIONS

TJKM evaluated the intersection of E. Tabor Avenue/Clay Bank Road (Intersection #3) for the peak hour signal warrant (Warrant #3). Currently, the intersection is a three-legged, all-way stop controlled intersection with two approach lanes for all legs. The intersection has stop signs as well as lane markings. Signal warrants were evaluated using the turning movement counts collected at E. Tabor Avenue/Clay Bank Road during the a.m. (7:00 a.m.-9:00 a.m.) and p.m. (4:00 p.m.-6:00 p.m.) peak periods. Under

Existing Conditions, the intersection meets the thresholds for the peak hour signal warrant. **Appendix I** contains the peak hour signal warrants completed for E. Tabor Avenue/Clay Bank Road.

Figure 4: Existing Conditions Lane Geometry, Traffic Control, and Peak Hour Traffic Volumes



LEGEND

	Project Site	XX	AM Peak Hour Volumes
	Project Driveway	(XX)	PM Peak Hour Volumes
	Study Intersection		Stop Sign
	Study Segment		Traffic Signal



5.0 EXISTING PLUS PROJECT CONDITIONS

The impacts of the proposed project on the transportation system are discussed in this chapter. First, the method used to estimate the amount of traffic generated by the project is described. Then, the results of the level of service calculations for Existing plus Project Conditions are presented. (Existing plus Project Conditions are defined as Existing Conditions plus traffic generated by the proposed project). A comparison of intersections under Existing plus Project Conditions and Existing Conditions is presented and the impacts of the project on the study intersections are discussed.

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

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

5.1 PROJECT TRIP GENERATION

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the Institute of Transportation Engineers' (ITE) publication *Trip Generation (10th Edition)*. TJKM used the published trip rates for the ITE land use Multifamily Housing (ITE Code 221).

Table 6 shows the trip generation expected to be generated by the proposed project. The project is expected to generate 47 net new a.m. peak hour trips (12 inbound, 35 outbound) and 57 net new p.m. peak hour trips (35 inbound, 22 outbound).

Table 6: Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		Rate	AM Peak		Total	Rate	PM Peak		Total
			Rate	Trips		In/ out %	In/ out			In/ out %	In/ out	
Multifamily Housing (Mid-Rise) ¹ (221)	130	DU	5.44	707	0.36	26/74	12/35	47	0.44	61/39	35/22	57
Total Trips				707			12/35	47			35/22	57

Source - ITE Trip Generation Manual, 10th Edition (2017).

¹Multifamily Housing (Mid-Rise) (ITE Land Use Code 221) vehicle trip rates are based upon number of dwelling units.

5.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area. Assignment determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution.

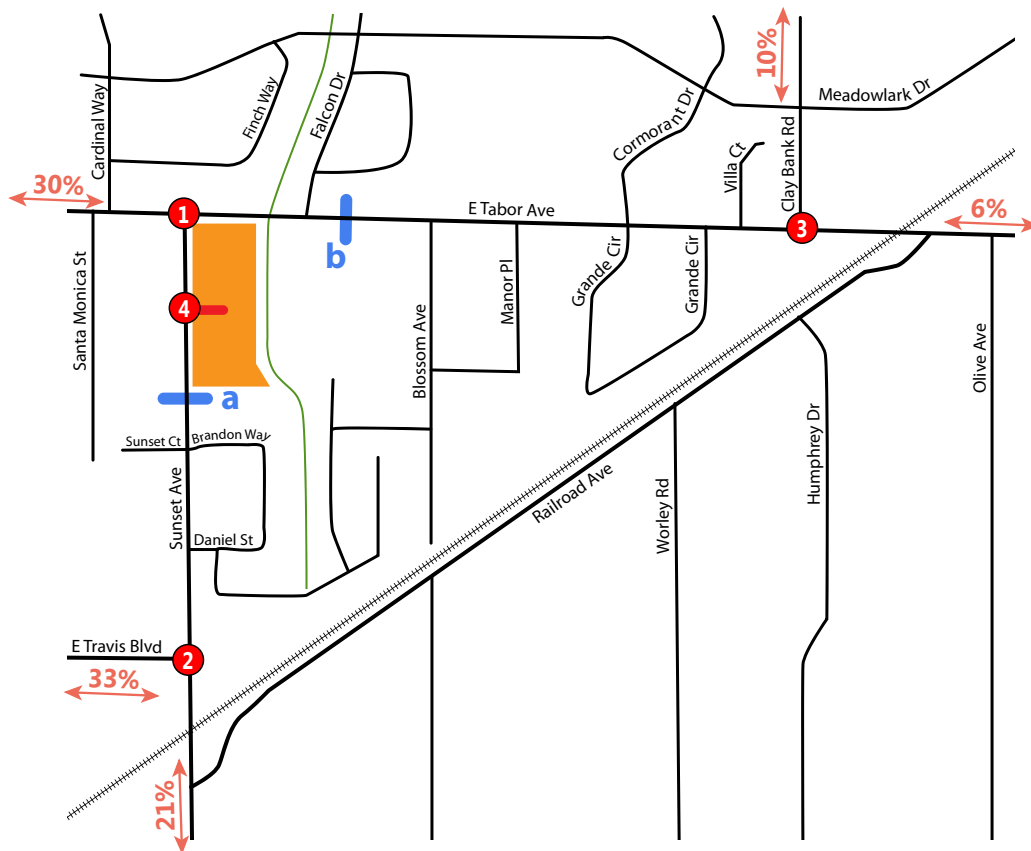
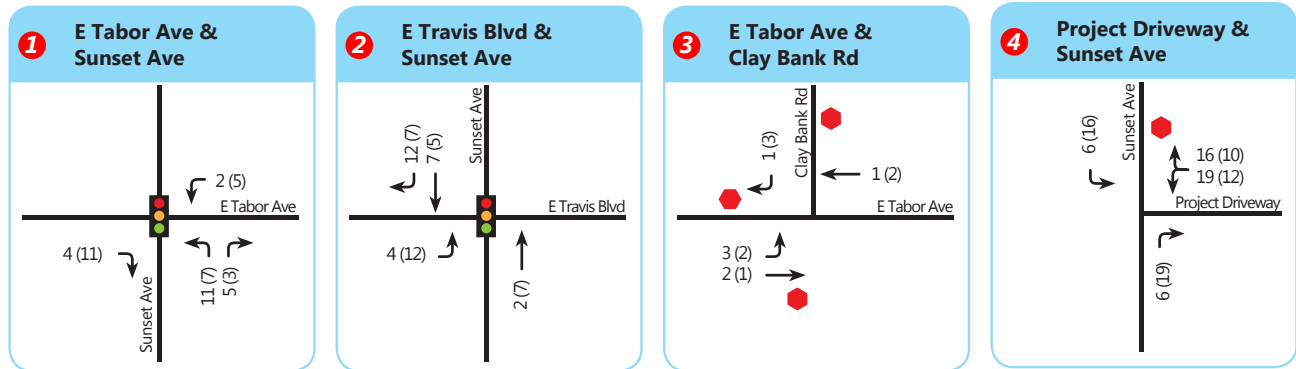
Trip distribution assumptions for the proposed project were developed based on the existing travel pattern. TJKM's knowledge of the study area, and consultation with City of Fairfield staff.

The distribution assumptions are as follows:

- 33 percent to/from E. Travis Boulevard (West)
- 30 percent to/from E. Tabor Avenue (West)
- 21 percent to/from Sunset Avenue (South)
- 10 percent to/from Clay Bank Road (North)
- 6 percent to/from E. Tabor Avenue (East)

Figure 5 illustrates the trip distribution percentages and trip assignment developed for the proposed project. The assigned project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Figure 5: Trip Distribution and Assignment



LEGEND

- Project Site
- Project Driveway
- Study Intersection
- Study Segment
- Trip Distribution
- XX AM Peak Hour Project Trips
- (XX) PM Peak Hour Project Trips
- Stop Sign
- Traffic Signal



5.3 INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Intersection levels of service were calculated with the addition of new traffic projected to be added by the proposed project to existing volumes to evaluate operating conditions at the study intersection and identify potential impacts to the roadway system. The results of the intersection level of service analysis for Existing plus Project Conditions are summarized in **Table 7**. The results for Existing Conditions are included for comparison purposes, along with the projected increases in delay. The changes in delay between Existing and Existing plus Project Conditions are used to identify significant impacts. **Figure 6** shows projected turning movement volumes at the study intersections for Existing plus Project Conditions.

Under this scenario, all study intersections operate within the applicable City of Fairfield standards (LOS D or better), for both peak hours, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during one or both peak hours. **Appendix D** provides detailed LOS calculation sheets for Existing plus Project scenario.

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

#	Study Intersections	Control ¹	Peak Hour ²	Existing Conditions		Existing Plus Project Conditions		Change in Delay ⁴	Significant? (Y/N)	Existing Plus Project Mitigations	
				Delay ³	LOS ⁴	Delay ³	LOS ⁴			Delay ³	LOS ⁴
1	Sunset Ave/E. Tabor Ave	Signal	A.M.	52.2	D	55.2	E	3.0	N	54.1	D
			P.M.	84.7	F	90.5	F	5.8	Y	50.2	D
2	Sunset Ave/E. Travis Blvd	Signal	A.M.	46.2	D	46.5	D	0.3	N	47.9	D
			P.M.	60.7	F	64.3	E	3.6	Y	51.6	D
3	E. Tabor Ave/Clay Bank Rd	AWSC	A.M.	18.6	C	18.7	C	0.1	N	-	-
			P.M.	14.9	B	15.0	B	0.1	N	-	-
4	Sunset Ave/Project Dwy*	OWSC	A.M.	-	-	12.7	B	-	N	-	-
			P.M.	-	-	14.5	B	-	N	-	-

Notes:

*Intersection only analyzed in plus Project Conditions

1. AWSC – All-way stop control; OWSC – One-way stop control

2. AM – morning peak hour, PM – evening peak hour

3. Delay – Average control delay for entire intersection is presented for signalized and AWSC intersections;

Total control delay for the worst movement is presented for side-street stop – controlled intersections.

4. LOS – Level of Service.

5. Change in delay between Existing and Existing plus Project Conditions

Although the intersections also operate at unacceptable LOS F under Existing (no project) Conditions, the project impact is still considered significant as LOS thresholds are exceeded. The following mitigations would improve intersection operations to acceptable jurisdictional standards of LOS D or better:

- Sunset Avenue/E. Tabor Avenue (Intersection #1) – operates at LOS F during the p.m. peak under Existing and Existing plus Project Conditions. The addition of project traffic increases delay by 5.8 seconds per vehicle during the p.m. peak. Intersection operations are expected to improve to LOS D with restriping of northbound approach to consist of one exclusive left-turn lane and a shared

through-right lane, and increasing the phase splits at the eastbound and westbound approaches mainly, thus increasing the overall cycle length. With mitigations, the intersection operates at LOS D during both peak hours.

- Sunset Avenue/E. Travis Boulevard (Intersection #2) – operates at LOS F and E during the p.m. peak hour under Existing and Existing plus Project Conditions, respectively. The addition of project traffic increases delay by 3.6 seconds per vehicle during the p.m. peak. Intersection operations are expected to improve to LOS D by increasing the eastbound phase split, thus increasing the overall cycle length. With mitigations, the intersection operates at LOS D during both peak hours.

Appendix E contains the detailed LOS calculation sheets for the mitigations detailed above.

5.4 ROADWAY SEGMENT ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

Under Existing plus Project Conditions, the average daily traffic on Sunset Avenue, between E. Travis Boulevard and E. Tabor Avenue is 13,240 vehicles per day; E. Tabor Avenue, between Sunset Avenue and Blossom Avenue is 11,963 vehicles per day.

5.4 QUEUING ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

TJKM conducted a vehicle queueing and storage analysis for exclusive left and right turn pockets at the study intersections for Existing and Existing plus Project Conditions. The 95th percentile queues were calculated using Synchro 10.0 software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 8** summarizes the 95th percentile queue lengths at selected study intersections under Existing and Existing plus Project scenarios. The 95th percentile queue lengths exceed the available storage pockets at the westbound left-turn approach of Sunset Avenue/E. Tabor Avenue (Intersection #1) and at the northbound left-turn approach of Sunset Avenue/E. Travis Boulevard (Intersection #2). It should be noted that 95th percentile queues also exceed the available storage pockets under Existing (no project) Conditions, and project would add less than one vehicle (1 vehicle=25 feet) to the average design queue length. Hence, project impacts to queue lengths are ***less than significant***.

Table 8: 95th Percentile Queues at Study Intersections – Existing Scenarios

#	Intersection	Lane Group	Storage Length	Existing Conditions		Existing plus Project Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Sunset Ave/E. Tabor Ave	EBL	50	5	10	5	10	0	0
		WBL	195	270	245	275	255	5	10
2	Sunset Ave/E. Travis Blvd	NBL	100	255	175	255	175	0	0

Notes: Storage length, 95th percentile queue, and change in queue length are expressed in feet per lane

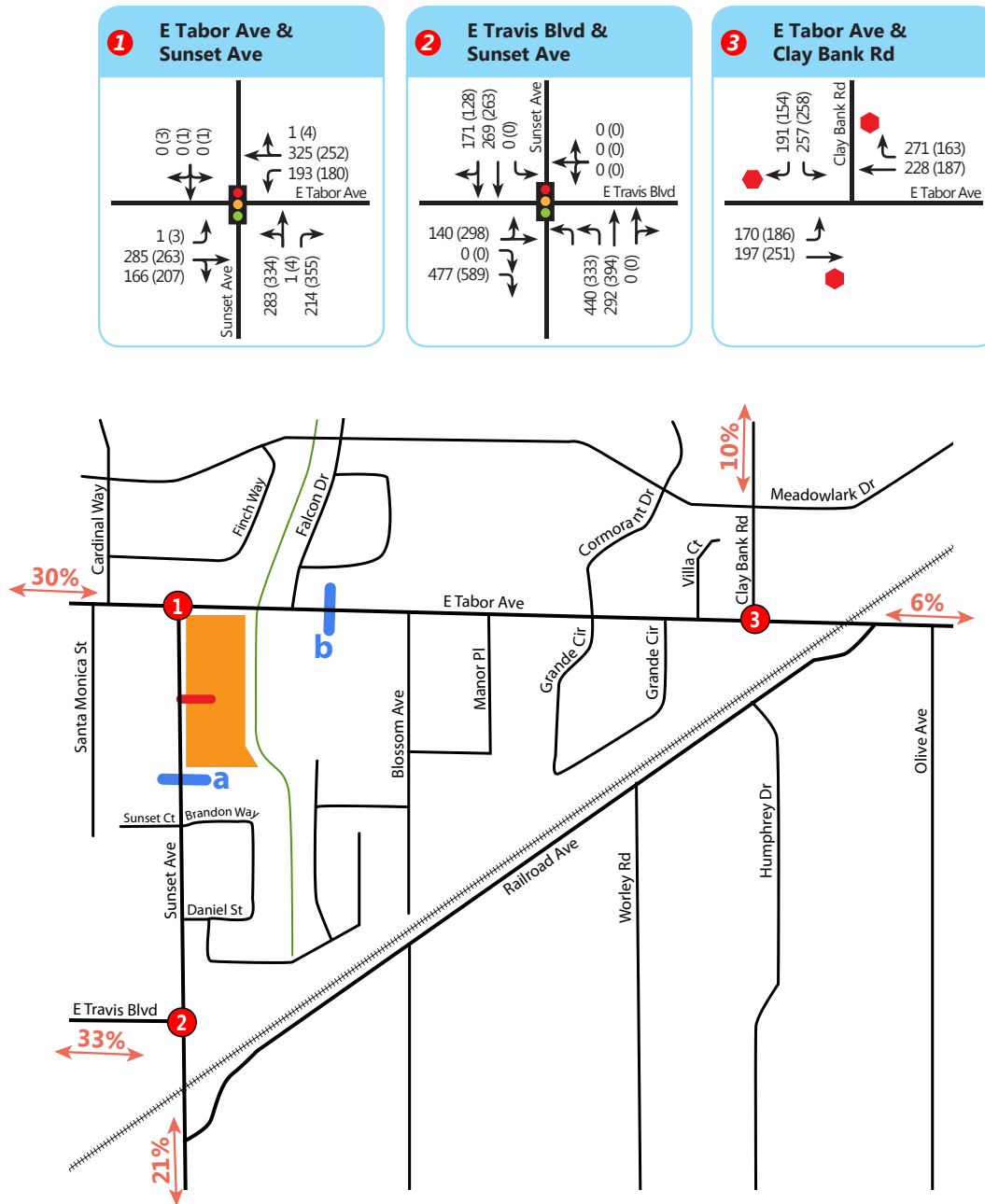
AM – morning peak hour, PM – evening peak hour

1 vehicle = 25 feet

5.5 SIGNAL WARRANT ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

The intersection of E. Tabor Avenue/Clay Bank Road (Intersection #3) meets the thresholds of the peak hour signal warrant (Warrant #3) under Existing (no project) Conditions. Thus, it can be assumed that the signal warrant is also met under Existing plus Project Conditions.

Figure 6: Existing plus Project Peak Hour Traffic Volumes



LEGEND

- Project Site
- Project Driveway
- Study Intersection
- Study Segment
- Trip Distribution
- AM Peak Hour Volumes
- PM Peak Hour Volumes
- Stop Sign
- Traffic Signal



6.0 CUMMULATIVE (YEAR 2040) CONDITIONS

This section describes Cumulative Conditions in the immediate project site vicinity. In addition, Cumulative Conditions traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

6.1 CUMULATIVE PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS

TJKM considered the City of Fairfield General Plan, Solano County General Plan, and City of Fairfield Capital Improvement Program for roadway improvements under Cumulative Conditions. Although the City of Fairfield General Plan identified E. Tabor Avenue as a roadway needing improvement in the future, specific improvements were not identified in the project vicinity. Thus, existing roadway and intersection lane configurations are used to calculate the level of service for the study intersections under this scenario. The Cumulative Conditions operations of the study intersections were evaluated for the highest one-hour volumes during weekday morning and evening peak periods. TJKM produced Cumulative Conditions turning movement counts by applying growth factors to the vehicle, bicycle, and pedestrian counts conducted in August 2021. Growth factors were derived from the City of Fairfield Travel Demand Model for the year 2040. TJKM applied a growth factor of 1.22 for the a.m. peak and 1.42 for the p.m. peak. Additionally, the peak hour factors were increased to 0.92 where applicable and signal timings were optimized to reflect future signal timing updates. **Figure 7** illustrates the lane geometry, traffic controls and peak hour volumes at the study intersections under Cumulative Conditions.

In addition, TJKM applied a daily growth factor of 1.29 to the collected 24-hour average daily traffic counts along the two study segments.

6.2 INTERSECTION LEVEL OF SERVICE ANALYSIS – CUMULATIVE CONDITIONS

The results of the level of service (LOS) analysis using Synchro 10 software program for Cumulative Conditions are summarized in **Table 9**. Under this scenario, the study intersection at E. Tabor Avenue/Clay Bank Road (Intersection #3) operates at acceptable LOS D or better during both peak hours, but the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2) operate at unacceptable LOS E or F during one or both peak hours. **Appendix F** contains the detailed LOS calculation sheets under Cumulative Conditions.

Table 9: Intersection Level of Service Analysis – Cumulative Conditions

#	Intersection	Control	Peak Hour ²	Cumulative Conditions Delay ³	LOS ⁴
1	Sunset Ave/E. Tabor Ave	Signal	A.M.	51.5	D
			P.M.	246.4	F
2	Sunset Ave/E. Travis Blvd	Signal	A.M.	73.4	E
			P.M.	62.4	E
3	E. Tabor Ave/Clay Bank Rd	AWSC ¹	A.M.	22.7	C
			P.M.	29.3	D

Notes:

1. AWSC – All-way stop control

2. AM – morning peak hour, PM – evening peak hour
3. Delay –Average control delay for the entire intersection is presented for signalized and AWSC intersections.
4. LOS – Level of Service.

Bold indicates unacceptable level of service.

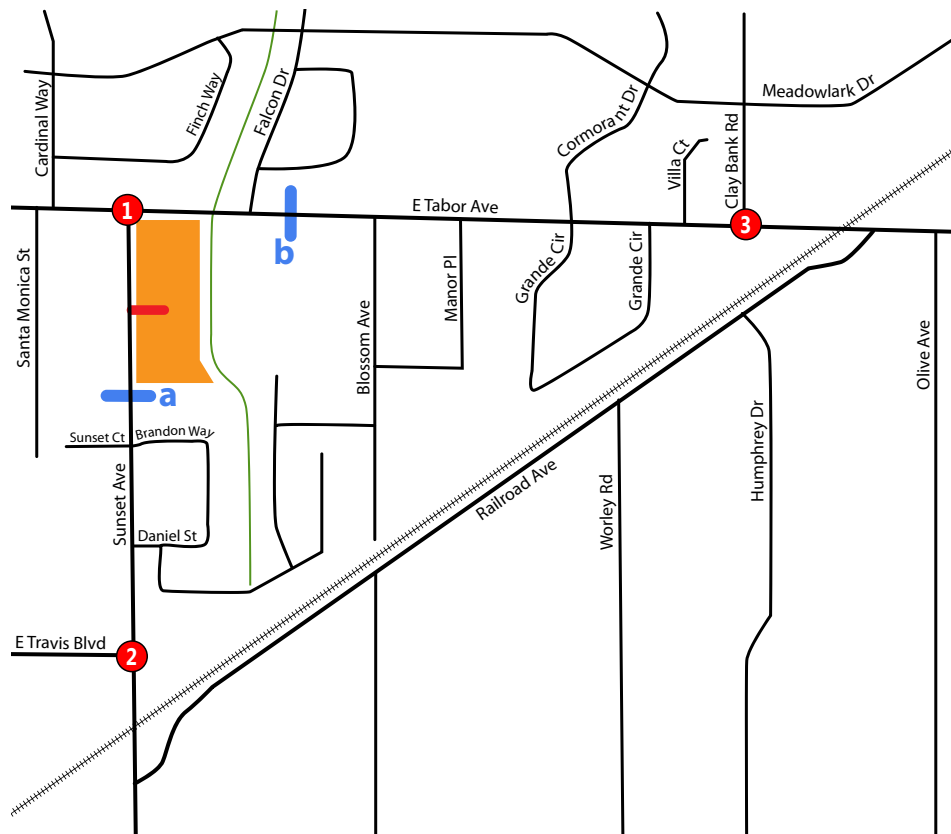
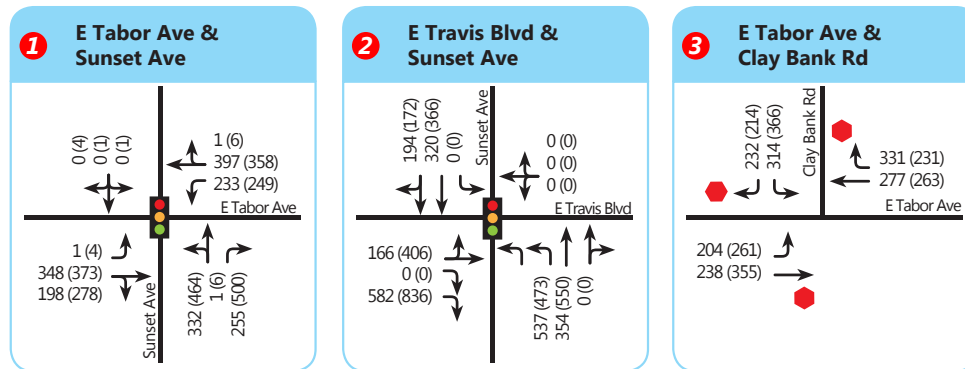
6.3 ROADWAY SEGMENT ANALYSIS – CUMULATIVE CONDITIONS

Under Cumulative Conditions, the average daily traffic on Sunset Avenue, between E. Travis Boulevard and E. Tabor Avenue is 16,086 vehicles per day; E. Tabor Avenue, between Sunset Avenue and Blossom Avenue is 14,976 vehicles per day.

6.4 SIGNAL WARRANT ANALYSIS – CUMULATIVE CONDITIONS

TJKM evaluated the intersection of E. Tabor Avenue/Clay Bank Road (Intersection #3) for the peak hour signal warrant (Warrant #3). Signal warrants were evaluated by applying the peak hour growth factors to the turning movement counts collected at E. Tabor Avenue/Clay Bank Road during the a.m. (7:00 a.m.- 9:00 a.m.) and p.m. (4:00 p.m.-6:00 p.m.) peak periods. Under Cumulative Conditions, the intersection meets the thresholds for the peak hour signal warrant. **Appendix I** contains the peak hour signal warrants completed for E. Tabor Avenue/Clay Bank Road.

Figure 7: Cumulative Conditions Lane Geometry, Traffic Control and Peak Hour Traffic Volumes



LEGEND

	Project Site	XX	AM Peak Hour Volumes
	Project Driveway	(XX)	PM Peak Hour Volumes
	Study Intersection		Stop Sign
	Study Segment		Traffic Signal



7.0 CUMULATIVE PLUS PROJECT CONDITIONS

Intersection levels of service were calculated with the addition of new traffic projected to be added by the proposed project to the Cumulative Conditions volumes to evaluate operating conditions at the study intersection and identify potential impacts to the roadway system.

7.1 INTERSECTION LEVEL OF SERVICE ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

The results of the intersection level of service analysis for Cumulative plus Project Conditions are summarized in **Table 10**. The results for Cumulative Conditions are included for comparison purposes, along with the projected increases in delay. The changes in delay between Cumulative and Cumulative plus Project Conditions are used to identify significant impacts. **Figure 8** shows projected turning movement volumes at the study intersections for this scenario.

Under this scenario, all study intersections operate at acceptable LOS D or better for both peak hours, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during both peak hours. **Appendix G** provides detailed LOS calculation sheets for Cumulative plus Project scenario.

Table 10: Intersection Level of Service Analysis – Cumulative plus Project Conditions

#	Study Intersections	Control ¹	Peak Hour ²	Cumulative Conditions		Cumulative plus Project Conditions		Change in Delay ⁴	Significant? (Y/N)	Cumulative plus Project Mitigations	
				Delay ³	LOS ⁴	Delay ³	LOS ⁴			Delay ³	LOS ⁴
1	Sunset Ave/E. Tabor Ave	Signal	A.M.	51.5	D	53.4	D	1.9	N	50.5	D
			P.M.	246.4	F	254.4	F	8.0	Y	76.7	E
2	Sunset Ave/E. Travis Blvd	Signal	A.M.	73.4	E	73.5	E	0.1	Y	54.3	D
			P.M.	62.4	E	63.9	E	1.5	Y	59.1	E
3	E. Tabor Ave/Clay Bank Rd	AWSC	A.M.	22.7	C	22.8	C	0.1	N	-	-
			P.M.	29.3	D	29.5	D	0.2	N	-	-
4	Sunset Ave/Project Dwy*	OWSC	A.M.	-	-	14.0	B	-	N	-	-
			P.M.	-	-	18.9	C	-	N	-	-

Notes:

*Intersection only analyzed in plus Project Conditions

1. AWSC – All-way stop control; OWSC – One-way stop control

2. AM – morning peak hour, PM – evening peak hour

3. Delay – Average control delay for entire intersection is presented for signalized and AWSC intersections;

Total control delay for the worst movement is presented for side-street stop – controlled intersections.

4. LOS – Level of Service.

5. Change in delay between no Project and plus Project Conditions

Bold indicates unacceptable level of service.

Although the intersections also operate at unacceptable LOS E and F under Cumulative Conditions, the project impact is still considered significant as LOS thresholds are exceeded. The following mitigations would improve intersection operations to acceptable jurisdictional standards of LOS D or better:

- Sunset Avenue/E. Tabor Avenue (Intersection #1) – operates at LOS E and F during both peak hours under Cumulative (no Project) and Cumulative plus Project scenarios. The addition of project traffic increases delay by a maximum of 8.0 seconds per vehicle. Roadway improvements, such as intersection and segment widenings, are required to decrease delay to acceptable levels. However, intersection operations are expected to improve to LOS E or better with optimized signal timing to prioritize eastbound and westbound approaches. With mitigations, the intersection operates at LOS D and E during the a.m. and p.m. peak hours, respectively. The City of Fairfield General Plan states that lower intersection operations are permitted when urban design, community character pedestrian and bicycle access, or other goals restrict improvements or when the reduction in congestion is insignificant compared to construction cost of the needed improvements. Because the intersection already operates unacceptably without project traffic, and additional mitigations would require right of way acquisition, the impact is significant and unavoidable.
- Sunset Avenue/E. Travis Boulevard (Intersection #2) – operates at LOS E during both peak hours under Cumulative (no Project) and Cumulative plus Project scenarios. The addition of project traffic increases delay by a maximum of 1.5 seconds per vehicle. Intersection operations are expected to improve through increasing the northbound phase split, thus increasing the overall cycle length. With mitigations, the intersection operates at LOS D and E during a.m. and p.m. peak hours, respectively. In order to achieve acceptable LOS D or better during both peak periods, addition of an exclusive southbound right turn lane is required. This addition would require right of way acquisition, and demolition and reconstruction of the western sidewalk. The City of Fairfield General Plan states that lower intersection operations are permitted when urban design, community character pedestrian and bicycle access, or other goals restrict improvements or when construction cost of improvements are insignificant compared to the reduction in congestion. Because the intersection already operates unacceptably without project traffic, and mitigations would require right of way acquisition, and demolition and reconstruction of the western sidewalk, the impact is significant and unavoidable.

Appendix H contains the detailed LOS calculation sheets for the mitigations detailed above.

7.2 ROADWAY SEGMENT ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Under Cumulative plus Project Conditions, the average daily traffic on Sunset Avenue, between E. Travis Boulevard and E. Tabor Avenue is 16,856 vehicles per day; E. Tabor Avenue, between Sunset Avenue and Blossom Avenue is 15,330 vehicles per day.

7.3 QUEUING ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

TJKM conducted a vehicle queueing and storage analysis for exclusive left and right turn pockets at the study intersections for Cumulative and Cumulative plus Project Conditions. The 95th percentile queues were calculated using Synchro 10.0 software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 11** summarizes the 95th percentile queue lengths at selected study intersections. The 95th percentile queue lengths exceed the available storage pockets at the westbound left-turn approach of Sunset Avenue/E. Tabor Avenue (Intersection #1) and at the northbound left-turn approach of Sunset Avenue/E. Travis Boulevard (Intersection #2). However, queues also exceed

the available storage pockets under Cumulative (no project) Conditions, and project would add a maximum of 15 feet, or less than one vehicle (1 vehicle=25 feet), to the average design queue length. Hence, project impacts to queue lengths are ***less than significant***.

Table 11: 95th Percentile Queues at Study Intersections – Cumulative Scenarios

#	Intersection	Lane Group	Storage Length	Cumulative Conditions		Cumulative plus Project Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Sunset Ave/E. Tabor Ave	EBL	50	5	15	5	15	0	0
		WBL	195	390	430	395	445	5	15
2	Sunset Ave/E. Travis Blvd	NBL	100	450	340	450	340	0	0

Notes: Storage length, 95th percentile queue, and change in queue length are expressed in feet per lane

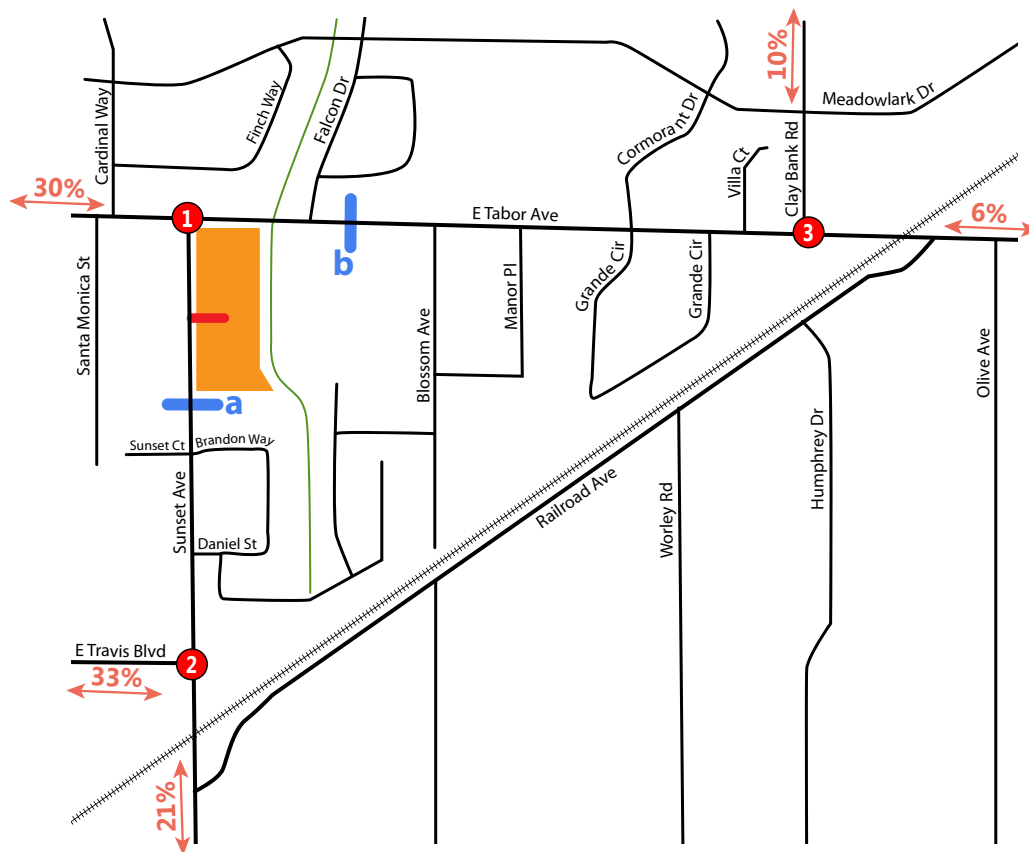
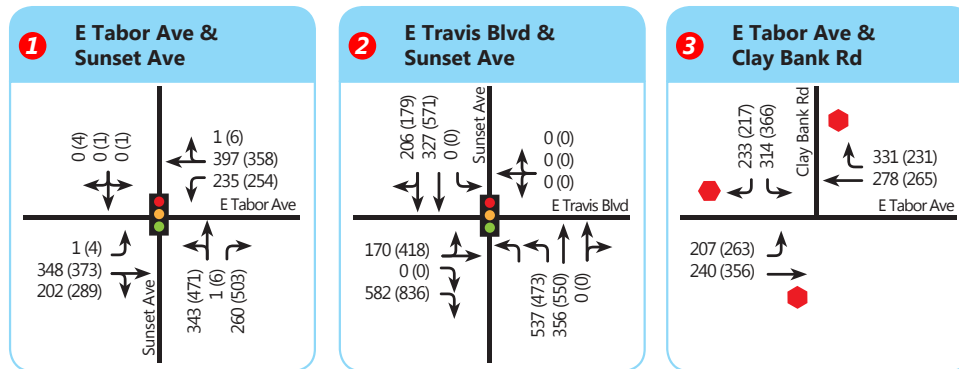
AM – morning peak hour, PM – evening peak hour

1 vehicle = 25 feet

7.4 SIGNAL WARRANT ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

The intersection of E. Tabor Avenue/Clay Bank Road (Intersection #3) meets the thresholds of the peak hour signal warrant (Warrant #3) under Cumulative (no project) Conditions. Thus, it can be assumed that the signal warrant is also met under Cumulative plus Project Conditions.

Figure 8: Cumulative Plus Project Peak Hour Traffic Volumes



LEGEND

- Project Site
- Project Driveway
- Study Intersection
- Study Segment
- Trip Distribution
- AM Peak Hour Volumes
- PM Peak Hour Volumes
- Stop Sign
- Traffic Signal



8.0 ADDITIONAL ANALYSES

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

- Site Access and Onsite Circulation;
- Pedestrian, Bicycle, and Transit Impacts
- Parking Analysis
- Sight Distance

Unlike the LOS impact methodology, the analyses in these sections is based on professional judgment in accordance with the standards and methods employed by traffic engineers. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to the project environment.

8.1 SITE ACCESS AND ON-SITE CIRCULATION

This section analyzes site access and internal circulation for vehicles, pedestrians and bicycles based on the site plan presented in **Figure 2** (dated March 22, 2021). TJKM reviewed internal and external access for the project site for vehicles, pedestrians, and bicycles.

Vehicle Access

Site access would be provided via one 26 feet (ft.) access driveway along Sunset Avenue. The driveway will accommodate vehicular traffic entering and exiting the project site. The project driveway is approximately 648 feet south of the Sunset Avenue and E. Tabor Avenue intersection.

The proposed driveway will be gated, however the vehicular gate is offset from the entrance driveway to avoid queue spill back into the public streets during peak periods. When entering the project site, vehicles will travel past a 64 ft. diameter roundabout before reaching the vehicular gate. The access driveway is expected to be adequate for passenger vehicles accessing the site.

TJKM also examined the project site plan (**Figure 2**) in order to evaluate the adequacy of on-site circulation for vehicles, garbage trucks, delivery trucks and emergency vehicles. Circulation aisles range between 26 ft. and 34 ft. and accommodate two-way travel. Based on preliminary analysis the turning radii appear to be adequate for the garbage and delivery trucks. There are six proposed garbage pickup areas throughout the project site. They are located along the curbs of the circulation aisles for easy access by garbage trucks. Delivery trucks will also access the project site via the driveway on Sunset Avenue and will circulate through the project site. Conflicts are not observed within the parking lot. Emergency vehicles can access the project via the proposed emergency vehicle access (EVA) on E. Tabor Avenue. The EVA driveway connects emergency vehicles to two circulation aisles, one of which will lead to the recreation area and southern dwelling units, and the other to the northern dwelling units. Overall, the proposed on-site vehicle circulation is adequate and should not result in any significant operational issues on City streets.

8.2 PEDESTRIAN, BICYCLE, AND TRANSIT IMPACTS

Pedestrian Access

Pedestrian access to the project site will be facilitated by continuous, existing sidewalks along both sides of Sunset Avenue and E. Tabor Avenue. Additionally, two crosswalks at the intersection of Sunset Avenue and E. Tabor Avenue provide connect pedestrians on E. Tabor Avenue to the sidewalk along the project frontages. The site plan illustrates one pedestrian access gate along the project frontage on E. Tabor Avenue, and three pedestrian access gates along the project frontage on Sunset Avenue. The pedestrian gates are supplemented with clear pedestrian pathways that connect to the internal pedestrian network. The project proposes to use textured pavement to highlight areas with high pedestrian activity, such as in front of the barbeque area, recreation area, and open space areas. There is continuous existing street lighting via overhead street lights on both sides of Sunset Avenue and E. Tabor Avenue. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Access

In terms of bicycle access to the project site, there are currently Class II bicycle facilities along Sunset Avenue and E. Tabor Avenue and a Class I pathway accessible via E. Tabor Avenue. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***.

Transit Access

The project site is within 0.5-mile distance of eight Fast Transit bus stops that are located along E. Tabor Avenue and E. Travis Boulevard. Fast Transit provides local and regional access within the City of Fairfield and throughout Solano County on Mondays through Saturdays. The existing pedestrian facilities in the project vicinity provide adequate connect pedestrians to local transit stops. Impacts to transit service are expected to be ***less than significant***.

8.3 SIGHT DISTANCE ANALYSIS

Sight distance is evaluated to determine if a driver will have adequate visibility to enter a roadway safely without resulting in a conflict with traffic already on the roadway. The project access points should be free and clear of any obstructions that would materially and adversely affect sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on adjacent roadways.

According to the Highway Design Manual (HDM), Chapter 200, 2020, the required minimum stopping sight distance for design speed of 35 mph (Sunset Avenue) is 250 feet. The line of sight between vehicles exiting the project site at Sunset Avenue and vehicles travelling northbound and southbound on Sunset Avenue is clear and visible for at least 250 feet. As shown in the site plan, the project proposes to provide landscaping along the entire project frontage on Sunset Avenue. TJKM recommends the project restrict landscaping adjacent to the project driveway to be below eye level (3.5 feet) to avoid obstructions to the sight distance.

8.4 PARKING ANALYSIS

The proposed project provides 292 parking spaces, of which 260 are garage spaces for residents and 32 are open spaces for guests. **Table 12** provides a summary of parking requirements and parking spaces required. Based on the City of Fairfield parking requirements (*Fairfield Municipal Code, Section 25.20, Table 25-5*), 260 parking spaces are required for the proposed project. The project will be providing 292 parking spaces, satisfying the parking requirements.

Table 12: Summary of Vehicular Parking Requirements

Land Use Type	Project Size	Unit	Parking Requirements	Required Parking Spaces	Provided Parking Spaces
Multifamily dwellings	130	DU	1 covered and 1 uncovered per unit larger than 260 square feet	260	292
Total				260	292

Source: City of Fairfield Municipal Code

Notes: DU = Dwelling Units

8.5 QUEUEING ANALYSIS AT PROJECT DRIVEWAY

TJKM conducted a vehicle queuing analysis at the project driveway along Sunset Avenue. The 95th percentile (maximum) queues were analyzed using the HCM 6th Queue methodology contained in Synchro 10 software. **Table 13** summarizes the 95th percentile queue lengths at the project driveway under both plus Project scenarios. Under Existing plus Project and Cumulative plus Project Conditions, the 95th percentile queues at the outbound approach of project driveway are expected to be less than one vehicle length. Based on the site plan, the throat depth between Sunset Avenue and the project gate is expected to adequately accommodate the peak hour queues. Hence, queue back-up at the project driveway is expected to be **less than significant**.

Table 13: 95th Percentile Queues at Project Driveways

Intersection	Control	Existing plus Project Conditions		Cumulative plus Project Conditions	
		AM	PM	AM	PM
Sunset Avenue/ Project Driveway	One-Way Stop	5	5	7.5	7.5

Notes:

95th percentile queue length is expressed in feet per lane.

Reported values of 95th percentile queues are for the outbound movements at the project driveways.

1 vehicle=25 feet

9.0 CONCLUSIONS AND RECOMMENDATIONS

VMT Analysis

Based on City of Fairfield Guidelines, the project will require mitigation measures in order to meet VMT requirements. The project's TAZs generate a VMT value that is slightly higher than the threshold average VMT rate per multifamily dwelling unit in the City of Fairfield.

Project Trip Generation

The proposed project is expected to generate approximately 47 weekday a.m. peak hour trips (12 inbound, 35 outbound), and 57 weekday p.m. peak hour trips (35 inbound, 22 outbound).

Existing Conditions

Under this scenario, the study intersections operate within applicable jurisdictional Level of Service (LOS) standards (LOS D) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS F during the p.m. peak hour.

Existing plus Project Conditions

Under this scenario, the study intersections continue to operate within applicable jurisdictional LOS standards (LOS D or better) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during one or both peak hours. Mitigation measures, such as lane restriping and signal timing improvements improve LOS to acceptable levels.

Cumulative Conditions

Under this scenario, the study intersections operate within applicable jurisdictional Level of Service (LOS) standards (LOS D) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during one or more peak hours.

Cumulative plus Project Conditions

Under this scenario, the study intersections continue to operate within applicable jurisdictional LOS standards (LOS D or better) during the a.m. and p.m. peak hour, except the intersections at Sunset Avenue/E. Tabor Avenue (Intersection #1) and Sunset Avenue/E. Travis Boulevard (Intersection #2), which operate at LOS E and F during the both peak hours. Mitigation measures, such as lane restriping and signal timing improvements improve operations to LOS E.

Queuing Analysis

Queueing operations were evaluated at the study intersections under no Project and plus Project scenarios. The addition of project traffic would add less than one vehicle to the existing queue. Hence, the

proposed project is expected to have a **less than significant** impact on queuing at the study intersections

Signal Warrant Analysis

The intersection at E. Tabor Avenue/Clay Bank Road (Intersection #3) meets thresholds in the CA MUTCD peak hour signal warrant under all scenarios. However, the intersection is projected to operate with acceptable LOS under all scenarios without signalization.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via Sunset Avenue. The existing sidewalk and bike lanes on Sunset Avenue will allow for pedestrian and bicycle access. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is **less than significant**.

Bicycle Impacts

The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is **less than significant**.

Transit Impacts

The project site is within walking distance to various bus stops that provide local and regional access via FAST Transit. Impacts to transit service are expected to be **less than significant**.

Sight Distance

Based on preliminary review of the project access on Sunset Avenue, sight distance obstructions are not expected at the project driveway. To ensure adequate visibility, TJKM recommends the project maintain landscaping to below eye level (below 2.5 feet or ground-level landscaping) in the immediate vicinity of the project driveway.

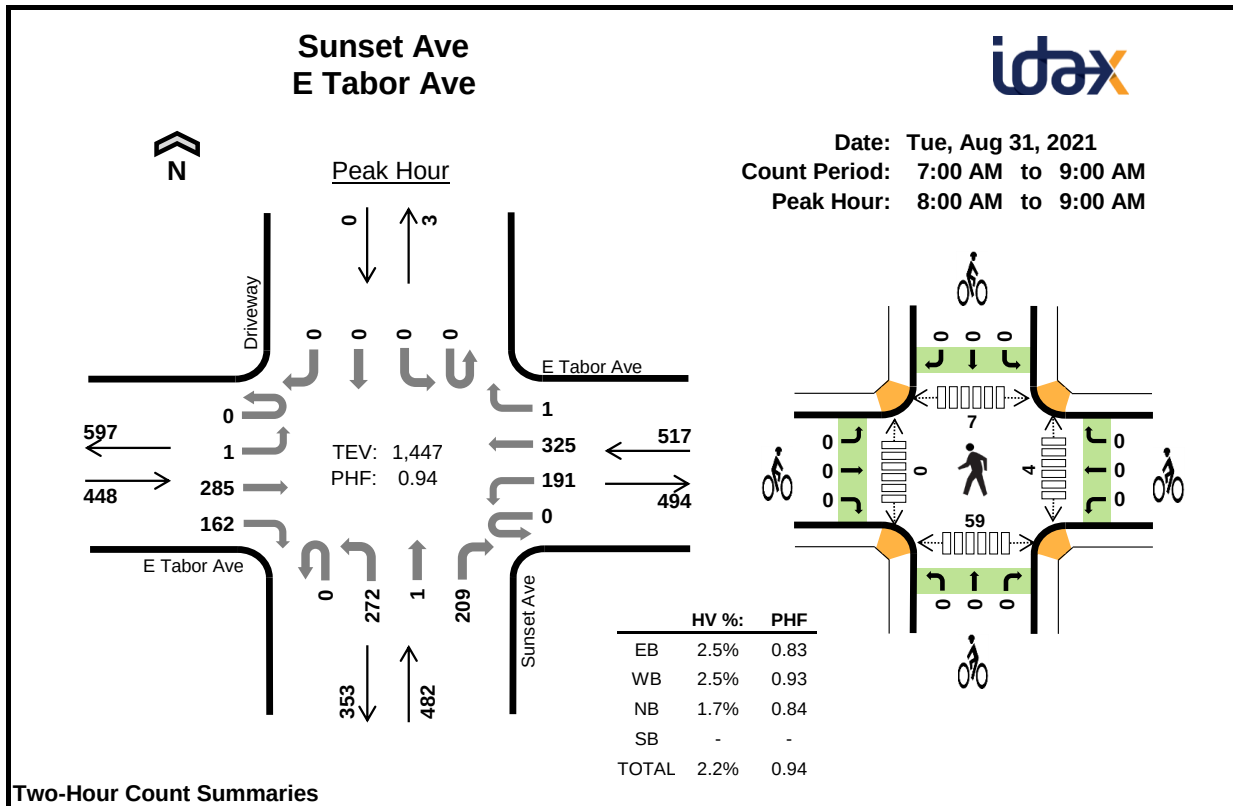
Parking

Based on the project site plan, project provides 292 vehicular parking spaces. The proposed number of parking spaces will be adequate. Based on the proposed parking spaces to be provided on site, the project is not anticipated to affect parking demand on City streets.

Queueing at Project Driveway

The driveway is expected to have an outbound queue of less than one vehicle during both peak periods under Existing plus Project and Cumulative plus Project Conditions. Outbound queues at the project driveway are expected to be **less than significant**.

Appendix A – Existing Peak Hour Turning Movement Counts



Interval Start		E Tabor Ave				E Tabor Ave				Sunset Ave				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	20	20	0	38	29	0	0	52	0	29	0	0	0	0	188	0
7:15 AM		0	0	23	25	0	23	46	0	0	82	0	35	0	0	0	0	234	0
7:30 AM		0	0	34	29	0	61	79	1	0	99	0	47	0	0	0	1	351	0
7:45 AM		0	0	45	34	0	61	99	0	0	66	0	44	0	0	0	1	350	1,123
8:00 AM		0	1	64	35	0	48	79	0	0	63	0	39	0	0	0	0	329	1,264
8:15 AM		0	0	67	59	0	45	72	0	0	74	0	47	0	0	0	0	364	1,394
8:30 AM		0	0	91	44	0	52	82	0	0	65	0	50	0	0	0	0	384	1,427
8:45 AM		0	0	63	24	0	46	92	1	0	70	1	73	0	0	0	0	370	1,447
Count Total		0	1	407	270	0	374	578	2	0	571	1	364	0	0	0	2	2,570	0
Peak Hour	All	0	1	285	162	0	191	325	1	0	272	1	209	0	0	0	0	1,447	0
	HV	0	0	8	3	0	3	10	0	0	7	0	1	0	0	0	0	32	0
	HV%	-	0%	3%	2%	-	2%	3%	0%	-	3%	0%	0%	-	-	-	-	2%	0

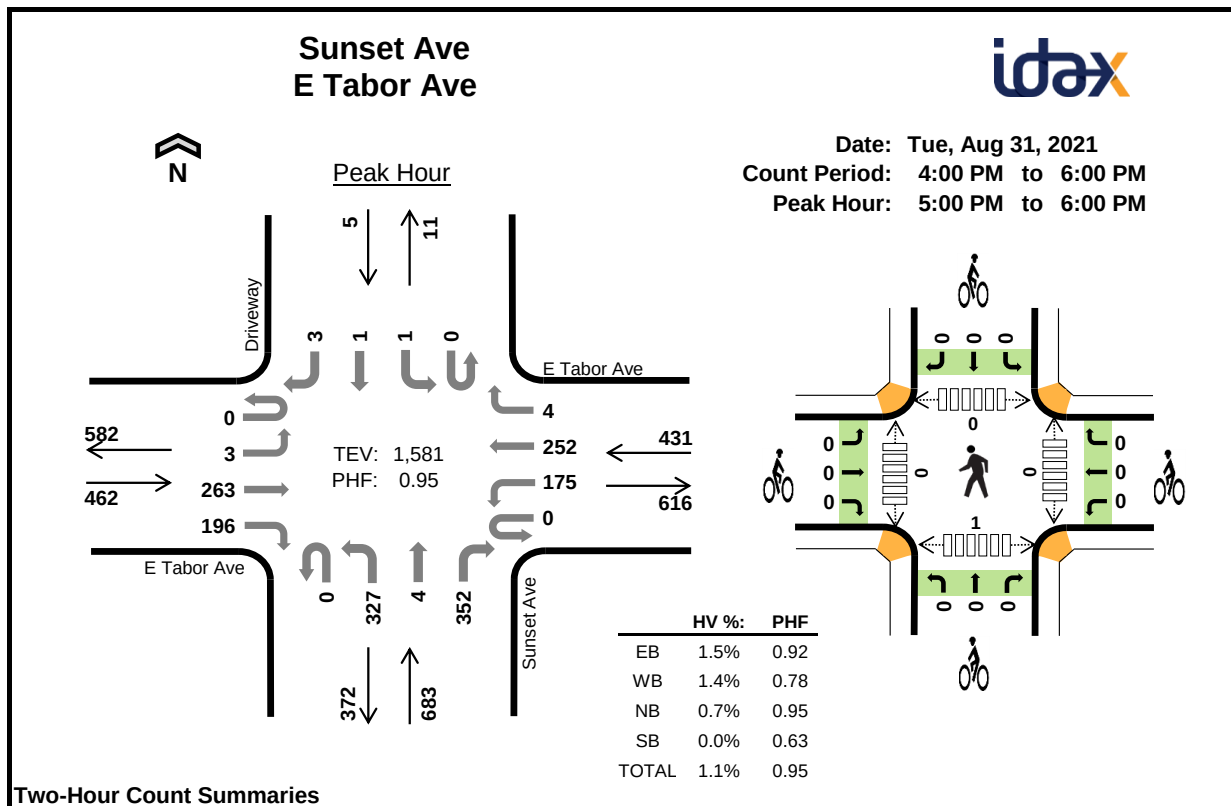
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0
7:15 AM	2	2	1	0	5	0	0	0	0	0	2	0	1	0	3
7:30 AM	1	2	1	0	4	0	0	0	0	0	1	0	0	0	1
7:45 AM	4	0	1	0	5	0	0	0	0	0	0	0	1	0	1
8:00 AM	2	1	2	0	5	0	0	0	0	0	2	0	2	3	7
8:15 AM	3	2	3	0	8	0	0	0	0	0	2	0	3	6	11
8:30 AM	5	5	3	0	13	0	0	0	0	0	0	0	2	36	38
8:45 AM	1	5	0	0	6	0	0	0	0	0	0	0	0	14	14
Count Total	18	20	11	0	49	0	0	1	0	1	7	0	9	59	75
Peak Hour	11	13	8	0	32	0	0	0	0	0	4	0	7	59	70

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	E Tabor Ave				E Tabor Ave				Sunset Ave				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0	5	0
7:30 AM	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	4	0
7:45 AM	0	0	2	2	0	0	0	0	0	1	0	0	0	0	0	0	5	17
8:00 AM	0	0	1	1	0	0	1	0	0	2	0	0	0	0	0	0	5	19
8:15 AM	0	0	2	1	0	0	2	0	0	3	0	0	0	0	0	0	8	22
8:30 AM	0	0	5	0	0	2	3	0	0	2	0	1	0	0	0	0	13	31
8:45 AM	0	0	0	1	0	1	4	0	0	0	0	0	0	0	0	0	6	32
Count Total	0	0	13	5	0	6	14	0	0	8	0	3	0	0	0	0	49	0
Peak Hour	0	0	8	3	0	3	10	0	0	7	0	1	0	0	0	0	32	0

Two-Hour Count Summaries - Bikes																		
Interval Start	E Tabor Ave			E Tabor Ave			Sunset Ave			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:30 AM	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				
8:00 AM	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				
8:30 AM	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				
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	1	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		E Tabor Ave				E Tabor Ave				Sunset Ave				Driveway				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	4:00 PM	0	0	59	69	0	43	72	0	0	44	1	82	0	0	0	0	370	0
	4:15 PM	0	1	66	48	0	48	58	0	0	59	0	72	0	1	0	0	353	0
	4:30 PM	0	0	54	41	0	50	67	0	0	67	0	75	0	0	0	0	354	0
	4:45 PM	0	1	48	57	0	44	59	0	0	60	0	77	0	0	0	0	346	1,423
	5:00 PM	0	0	62	49	0	34	62	1	0	89	1	89	0	1	0	1	389	1,442
	5:15 PM	0	2	69	44	0	42	52	1	0	75	2	103	0	0	1	0	391	1,480
	5:30 PM	0	1	70	54	0	50	51	0	0	78	0	81	0	0	0	1	386	1,512
	5:45 PM	0	0	62	49	0	49	87	2	0	85	1	79	0	0	0	1	415	1,581
Count Total		0	5	490	411	0	360	508	4	0	557	5	658	0	2	1	3	3,004	0
Peak Hour	All	0	3	263	196	0	175	252	4	0	327	4	352	0	1	1	3	1,581	0
	HV	0	0	6	1	0	1	5	0	0	1	0	4	0	0	0	0	18	0
	HV%	-	0%	2%	1%	-	1%	2%	0%	-	0%	0%	1%	-	0%	0%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

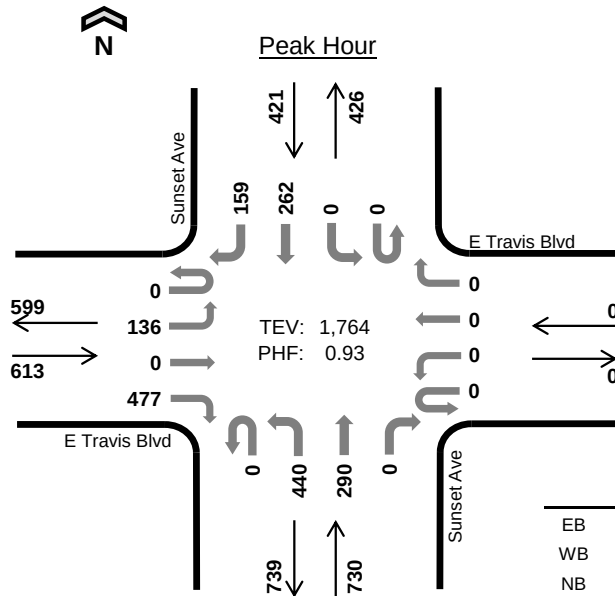
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	5	0	0	10	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	0	5	0	7	0	0	0	0	0	0	0	3	0	3
4:30 PM	2	2	2	0	6	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	1	1	2
5:00 PM	2	1	1	0	4	0	0	0	0	0	0	0	0	1	1
5:15 PM	2	1	3	0	6	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	3	1	0	5	0	0	0	0	0	0	0	0	0	0
Count Total	18	13	12	0	43	0	0	0	0	0	0	0	4	2	6
Peak Hour	7	6	5	0	18	0	0	0	0	0	0	0	0	1	1

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	E Tabor Ave				E Tabor Ave				Sunset Ave				Driveway				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	2	0	1	4	0	0	0	0	0	0	0	0	0	10	0
4:15 PM	0	0	2	0	0	0	0	0	0	2	0	3	0	0	0	0	7	0
4:30 PM	0	0	1	1	0	0	2	0	0	1	0	1	0	0	0	0	6	0
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	25
5:00 PM	0	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	4	19
5:15 PM	0	0	2	0	0	0	1	0	0	1	0	2	0	0	0	0	6	18
5:30 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	15
5:45 PM	0	0	1	0	0	1	2	0	0	0	0	1	0	0	0	0	5	18
Count Total	0	0	14	4	0	2	11	0	0	4	0	8	0	0	0	0	43	0
Peak Hour	0	0	6	1	0	1	5	0	0	1	0	4	0	0	0	0	18	0

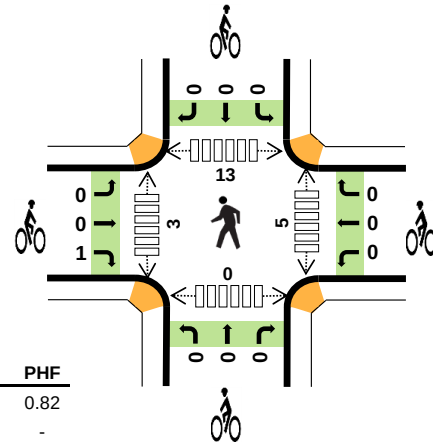
Two-Hour Count Summaries - Bikes																		
Interval Start	E Tabor Ave			E Tabor Ave			Sunset Ave			Driveway			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	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				
5:00 PM	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				
5:30 PM	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				
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sunset Ave E Travis Blvd



Date: Tue, Aug 31, 2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.0%	0.82
WB	-	-
NB	1.2%	0.84
SB	1.7%	0.86
TOTAL	1.2%	0.93

Two-Hour Count Summaries

Interval Start		E Travis Blvd				E Travis Blvd				Sunset Ave				Sunset Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	25	0	49	0	0	0	0	0	36	48	0	0	0	51	24	233	0
7:15 AM		0	21	0	53	0	0	0	0	0	55	91	0	0	0	42	24	286	0
7:30 AM		0	28	0	77	0	0	0	0	0	121	97	0	0	0	57	39	419	0
7:45 AM		0	32	0	121	0	0	0	0	0	137	59	0	0	0	75	48	472	1,410
8:00 AM		0	41	0	127	0	0	0	0	0	98	54	0	0	0	52	39	411	1,588
8:15 AM		0	35	0	152	0	0	0	0	0	84	80	0	0	0	78	33	462	1,764
8:30 AM		0	56	0	85	0	0	0	0	0	69	75	0	0	0	69	52	406	1,751
8:45 AM		0	60	0	101	0	0	0	0	0	72	83	0	0	0	63	65	444	1,723
Count Total		0	298	0	765	0	0	0	0	0	672	587	0	0	0	487	324	3,133	0
Peak Hour	All	0	136	0	477	0	0	0	0	0	440	290	0	0	0	262	159	1,764	0
	HV	0	1	0	5	0	0	0	0	0	6	3	0	0	0	5	2	22	0
	HV%	-	1%	-	1%	-	-	-	-	-	1%	1%	-	-	-	2%	1%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

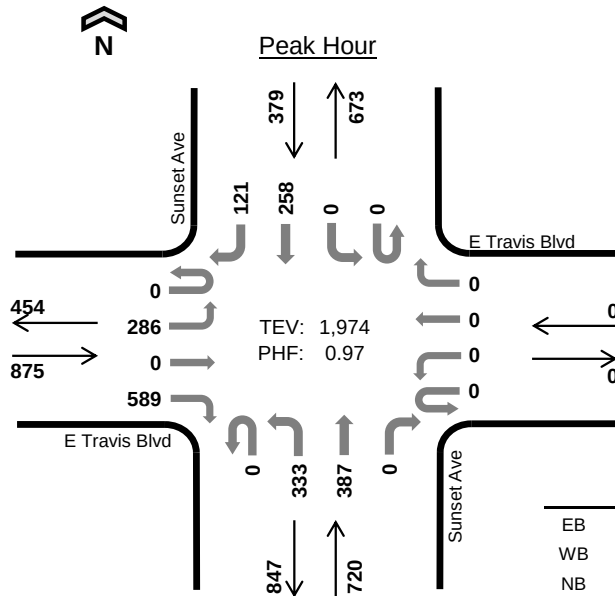
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	1	2	5	0	0	1	0	1	0	5	1	0	6
7:15 AM	0	0	4	1	5	0	0	1	0	1	0	0	1	0	1
7:30 AM	0	0	0	2	2	0	0	0	0	0	1	0	6	0	7
7:45 AM	2	0	0	1	3	1	0	0	0	1	2	3	0	0	5
8:00 AM	2	0	4	1	7	0	0	0	0	0	1	0	4	0	5
8:15 AM	2	0	5	3	10	0	0	0	0	0	1	0	3	0	4
8:30 AM	4	0	3	1	8	1	0	0	0	1	0	3	5	0	8
8:45 AM	1	0	4	3	8	0	0	0	0	0	0	0	0	0	0
Count Total	13	0	21	14	48	2	0	2	0	4	5	11	20	0	36
Peak Hour	6	0	9	7	22	1	0	0	0	1	5	3	13	0	21

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	E Travis Blvd				E Travis Blvd				Sunset Ave				Sunset Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	2	0	5	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	1	0	5	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0
7:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3	15
8:00 AM	0	1	0	1	0	0	0	0	0	0	3	1	0	0	0	1	0	7	17
8:15 AM	0	0	0	2	0	0	0	0	0	0	3	2	0	0	0	3	0	10	22
8:30 AM	0	2	0	2	0	0	0	0	0	0	2	1	0	0	0	1	0	8	28
8:45 AM	0	0	0	1	0	0	0	0	0	0	3	1	0	0	0	3	0	8	33
Count Total	0	4	0	9	0	0	0	0	0	0	15	6	0	0	0	12	2	48	0
Peak Hour	0	1	0	5	0	0	0	0	0	0	6	3	0	0	0	5	2	22	0

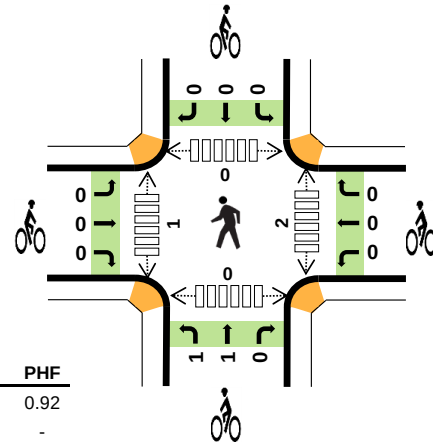
Two-Hour Count Summaries - Bikes																	
Interval Start	E Travis Blvd			E Travis Blvd			Sunset Ave			Sunset Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0			
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	3			
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	2			
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
Count Total	1	0	1	0	0	0	0	2	0	0	0	0	4	0			
Peak Hour	0	0	1	0	0	0	0	0	0	0	0	0	1	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sunset Ave E Travis Blvd



Date: Tue, Aug 31, 2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.9%	0.92
WB	-	-
NB	0.8%	0.99
SB	0.5%	0.92
TOTAL	0.8%	0.97

Two-Hour Count Summaries

Interval Start		E Travis Blvd				E Travis Blvd				Sunset Ave				Sunset Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	57	0	129	0	0	0	0	0	89	72	0	0	1	87	34	469	0
4:15 PM		0	50	0	140	0	0	0	0	0	70	71	0	0	0	61	40	432	0
4:30 PM		0	60	0	154	0	0	0	0	0	84	90	0	0	0	64	26	478	0
4:45 PM		0	59	0	126	0	0	0	0	0	69	102	0	0	0	71	34	461	1,840
5:00 PM		0	74	0	163	0	0	0	0	0	84	94	0	0	0	59	24	498	1,869
5:15 PM		0	87	0	146	0	0	0	0	0	78	102	0	0	0	65	33	511	1,948
5:30 PM		0	61	0	143	0	0	0	0	0	88	92	0	0	0	71	32	487	1,957
5:45 PM		0	64	0	137	0	0	0	0	0	83	99	0	0	0	63	32	478	1,974
Count Total		0	512	0	1,138	0	0	0	0	0	645	722	0	0	1	541	255	3,814	0
Peak Hour	All	0	286	0	589	0	0	0	0	0	333	387	0	0	0	258	121	1,974	0
	HV	0	3	0	5	0	0	0	0	0	4	2	0	0	0	2	0	16	0
	HV%	-	1%	-	1%	-	-	-	-	-	1%	1%	-	-	-	1%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

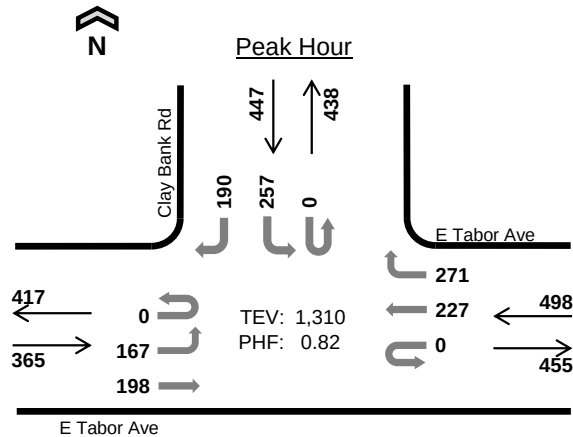
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	0	1	2	6	0	0	0	0	0	1	0	0	0	1
4:15 PM	5	0	2	1	8	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	2	1	4	0	0	0	0	0	0	1	0	2	3
4:45 PM	3	0	0	0	3	0	0	0	0	0	1	0	0	0	1
5:00 PM	1	0	1	1	3	0	0	1	0	1	0	0	0	0	0
5:15 PM	3	0	1	1	5	0	0	0	0	0	1	0	0	0	1
5:30 PM	2	0	2	0	4	0	0	0	0	0	1	1	0	0	2
5:45 PM	2	0	2	0	4	0	0	1	0	1	0	0	0	0	0
Count Total	20	0	11	6	37	0	0	2	0	2	4	2	0	2	8
Peak Hour	8	0	6	2	16	0	0	2	0	2	2	1	0	0	3

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	E Travis Blvd				E Travis Blvd				Sunset Ave				Sunset Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	0	2	0	0	0	0	0	1	0	0	0	0	0	1	1	6	0
4:15 PM	0	3	0	2	0	0	0	0	0	1	1	0	0	0	0	1	0	8	0
4:30 PM	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	4	0
4:45 PM	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	21
5:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	3	18
5:15 PM	0	1	0	2	0	0	0	0	0	0	1	0	0	0	0	1	0	5	15
5:30 PM	0	0	0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	4	15
5:45 PM	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	4	16
Count Total	0	8	0	12	0	0	0	0	0	7	4	0	0	0	4	2		37	0
Peak Hour	0	3	0	5	0	0	0	0	0	4	2	0	0	0	2	0		16	0

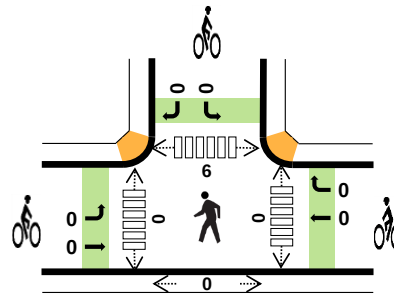
Two-Hour Count Summaries - Bikes																	
Interval Start	E Travis Blvd			E Travis Blvd			Sunset Ave			Sunset Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	1	0	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
Count Total	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0
Peak Hour	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Clay Bank Rd E Tabor Ave



Date: Tue, Aug 31, 2021
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.6%	0.81
WB	1.2%	0.77
NB	-	-
SB	1.6%	0.89
TOTAL	1.5%	0.82

Two-Hour Count Summaries

Interval Start		E Tabor Ave				E Tabor Ave				0				Clay Bank Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	20	28	0	0	0	24	45	0	0	0	0	0	24	0	20	161	0
7:15 AM		0	29	31	0	0	0	36	66	0	0	0	0	0	38	0	13	213	0
7:30 AM		0	51	58	0	0	0	58	93	0	0	0	0	0	68	0	33	361	0
7:45 AM		0	52	61	0	0	0	66	95	0	0	0	0	0	65	0	60	399	1,134
8:00 AM		0	31	35	0	0	0	59	48	0	0	0	0	0	58	0	43	274	1,247
8:15 AM		0	33	44	0	0	0	44	35	0	0	0	0	0	66	0	54	276	1,310
8:30 AM		0	47	47	0	0	0	45	41	0	0	0	0	0	38	0	46	264	1,213
8:45 AM		0	38	51	0	0	0	40	37	0	0	0	0	0	21	0	40	227	1,041
Count Total		0	301	355	0	0	0	372	460	0	0	0	0	0	378	0	309	2,175	0
Peak Hour	All	0	167	198	0	0	0	227	271	0	0	0	0	0	257	0	190	1,310	0
	HV	0	3	3	0	0	0	4	2	0	0	0	0	0	6	0	1	19	0
	HV%	-	2%	2%	-	-	-	2%	1%	-	-	-	-	-	2%	-	1%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

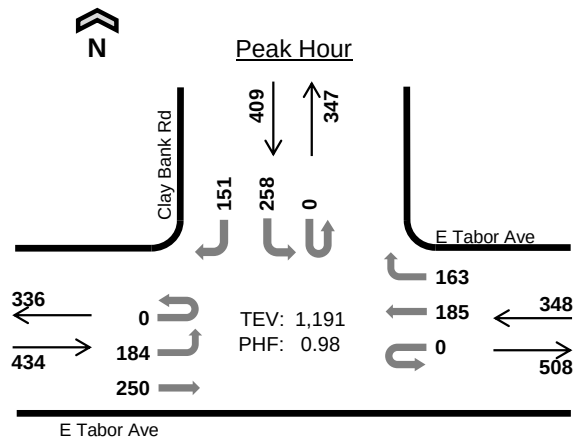
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	3	0	1	6	0	1	0	0	1	0	0	10	0	10
7:15 AM	1	5	0	0	6	0	2	0	0	2	0	0	2	0	2
7:30 AM	3	1	0	4	8	0	0	0	0	0	0	0	3	0	3
7:45 AM	2	1	0	2	5	0	0	0	0	0	0	0	2	0	2
8:00 AM	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1
8:15 AM	1	1	0	1	3	0	0	0	0	0	0	0	0	0	0
8:30 AM	2	6	0	2	10	0	0	0	0	0	0	0	0	0	0
8:45 AM	3	4	0	2	9	0	0	0	0	0	0	0	0	0	0
Count Total	14	24	0	12	50	0	3	0	0	3	0	0	18	0	18
Peak Hr	6	6	0	7	19	0	0	0	0	0	0	0	6	0	6

Two-Hour Count Summaries - Heavy Vehicles																			
Interval Start	E Tabor Ave				E Tabor Ave				0				Clay Bank Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	1	0	0	0	1	2	0	0	0	0	0	0	0	0	1	6	0
7:15 AM	0	0	1	0	0	0	1	4	0	0	0	0	0	0	0	0	0	6	0
7:30 AM	0	2	1	0	0	0	0	1	0	0	0	0	0	0	3	0	1	8	0
7:45 AM	0	1	1	0	0	0	0	1	0	0	0	0	0	0	2	0	0	5	25
8:00 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	22
8:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	3	19
8:30 AM	0	1	1	0	0	0	3	3	0	0	0	0	0	0	0	0	2	10	21
8:45 AM	0	2	1	0	0	0	1	3	0	0	0	0	0	0	2	0	0	9	25
Count Total	0	7	7	0	0	0	10	14	0	0	0	0	0	0	8	0	4	50	0
Peak Hour	0	3	3	0	0	0	4	2	0	0	0	0	0	0	6	0	1	19	0

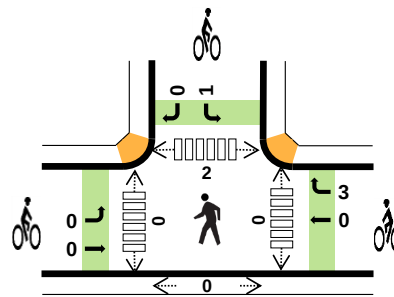
Two-Hour Count Summaries - Bikes																		
Interval Start	E Tabor Ave			E Tabor Ave			0			Clay Bank Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0				
7:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2	0				
7:30 AM	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	3				
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2				
8:15 AM	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				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Count Total	0	0	0	0	3	0	0	0	0	0	0	0	3	0				
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Clay Bank Rd E Tabor Ave



Date: Tue, Aug 31, 2021
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	1.4%	0.86
WB	1.1%	0.90
NB	-	-
SB	1.2%	0.97
TOTAL	1.3%	0.98

Two-Hour Count Summaries

Interval Start		E Tabor Ave				E Tabor Ave				0				Clay Bank Rd				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	43	59	0	0	0	52	39	0	0	0	0	0	59	0	43	295	0
4:15 PM		0	53	51	0	0	0	57	52	0	0	0	0	0	59	0	33	305	0
4:30 PM		0	55	49	0	0	0	53	28	0	0	0	0	0	55	0	36	276	0
4:45 PM		0	43	45	0	0	0	38	45	0	0	0	0	0	49	0	34	254	1,130
5:00 PM		0	50	58	0	0	0	50	47	0	0	0	0	0	68	0	29	302	1,137
5:15 PM		0	51	60	0	0	0	43	44	0	0	0	0	0	57	0	46	301	1,133
5:30 PM		0	50	76	0	0	0	42	31	0	0	0	0	0	65	0	40	304	1,161
5:45 PM		0	33	56	0	0	0	50	41	0	0	0	0	0	68	0	36	284	1,191
Count Total		0	378	454	0	0	0	385	327	0	0	0	0	0	480	0	297	2,321	0
Peak Hour	All	0	184	250	0	0	0	185	163	0	0	0	0	0	258	0	151	1,191	0
	HV	0	2	4	0	0	0	2	2	0	0	0	0	0	3	0	2	15	0
	HV%	-	1%	2%	-	-	-	1%	1%	-	-	-	-	-	1%	-	1%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	4	0	2	9	0	0	0	0	0	0	0	0	0	0
4:15 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0
4:30 PM	3	1	0	2	6	0	1	0	0	1	0	0	1	0	1
4:45 PM	1	2	0	0	3	1	1	0	0	2	0	0	0	0	0
5:00 PM	3	2	0	0	5	0	1	0	0	1	0	0	1	0	1
5:15 PM	0	1	0	1	2	0	1	0	1	2	0	0	0	0	0
5:30 PM	2	0	0	3	5	0	1	0	0	1	0	0	0	0	0
5:45 PM	1	1	0	1	3	0	0	0	0	0	0	0	1	0	1
Count Total	15	12	0	9	36	1	5	0	1	7	0	0	3	0	3
Peak Hr	6	4	0	5	15	0	3	0	1	4	0	0	2	0	2

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	E Tabor Ave				E Tabor Ave				0				Clay Bank Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	0	0	0	2	2	0	0	0	0	0	1	0	1	9	0
4:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0
4:30 PM	0	0	3	0	0	0	1	0	0	0	0	0	0	2	0	0	6	0
4:45 PM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	21
5:00 PM	0	1	2	0	0	0	0	2	0	0	0	0	0	0	0	0	5	17
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	16
5:30 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	5	15
5:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	3	15
Count Total	0	4	11	0	0	0	6	6	0	0	0	0	0	6	0	3	36	0
Peak Hour	0	2	4	0	0	0	2	2	0	0	0	0	0	3	0	2	15	0

Two-Hour Count Summaries - Bikes																		
Interval Start	E Tabor Ave			E Tabor Ave			0			Clay Bank Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0				
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	2	3				
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	4				
5:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	2	6				
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	6				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4				
Count Total	0	1	0	0	2	3	0	0	0	1	0	0	7	0				
Peak Hour	0	0	0	0	0	3	0	0	0	1	0	0	4	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Location: Sunset Ave, Between Travis Blvd & E Tabor Ave
Date Range: 8/31/2021 - 9/6/2021
Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	8/31/2021			9/1/2021			9/2/2021			9/3/2021			9/4/2021			9/5/2021			9/6/2021					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	46	39	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	39	85
1:00 AM	25	31	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	31	56
2:00 AM	25	11	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	11	36
3:00 AM	32	28	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	28	60
4:00 AM	55	76	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	76	131
5:00 AM	111	109	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	111	109	220
6:00 AM	173	211	384	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	173	211	384
7:00 AM	417	291	708	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	417	291	708
8:00 AM	454	371	825	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454	371	825
9:00 AM	340	233	573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340	233	573
10:00 AM	330	257	587	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	257	587
11:00 AM	373	294	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	373	294	667
12:00 PM	412	328	740	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	412	328	740
1:00 PM	410	308	718	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	410	308	718
2:00 PM	519	369	888	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	519	369	888
3:00 PM	635	432	1,067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	635	432	1,067
4:00 PM	508	415	923	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	508	415	923
5:00 PM	628	390	1,018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	628	390	1,018
6:00 PM	484	330	814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	484	330	814
7:00 PM	401	304	705	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	401	304	705
8:00 PM	312	230	542	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312	230	542
9:00 PM	225	137	362	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	225	137	362
10:00 PM	122	93	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	122	93	215
11:00 PM	84	62	146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	62	146
Total	7,121	5,349	12,470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,121	5,349	12,470
Percent	57%	43%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57%	43%	-
AM Peak	08:00	08:00	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	08:00	08:00	08:00
Vol.	454	371	825	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	454	371	825
PM Peak	15:00	15:00	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15:00	15:00	15:00
Vol.	635	432	1,067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	635	432	1,067

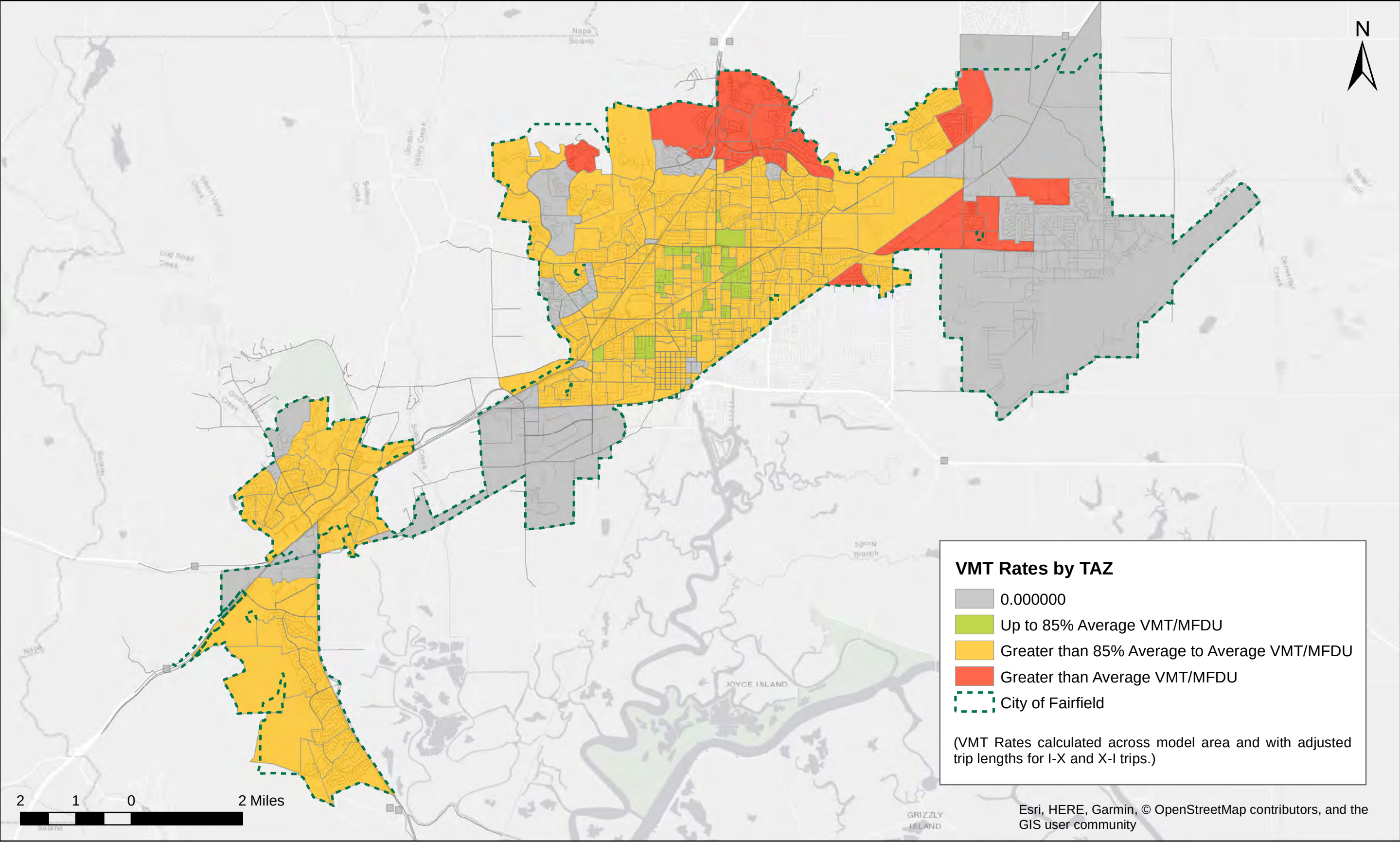
1. Mid-week average includes data between Tuesday and Thursday.

Location: E Tabor Ave, Between Sunset Ave & Blossom Ave
Date Range: 8/31/2021 - 9/6/2021
Site Code: 02

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	8/31/2021			9/1/2021			9/2/2021			9/3/2021			9/4/2021			9/5/2021			9/6/2021					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	44	33	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	33	77
1:00 AM	26	21	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	21	47
2:00 AM	26	27	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	27	53
3:00 AM	25	29	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	29	54
4:00 AM	17	72	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	72	89
5:00 AM	89	160	249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	160	249
6:00 AM	129	190	319	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129	190	319
7:00 AM	243	398	641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	243	398	641
8:00 AM	428	475	903	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	428	475	903
9:00 AM	247	284	531	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	247	284	531
10:00 AM	258	292	550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	258	292	550
11:00 AM	273	336	609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	273	336	609
12:00 PM	317	312	629	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	317	312	629
1:00 PM	325	307	632	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	325	307	632
2:00 PM	384	420	804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	384	420	804
3:00 PM	572	430	1,002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	572	430	1,002
4:00 PM	472	403	875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	472	403	875
5:00 PM	571	378	949	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	571	378	949
6:00 PM	381	353	734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	381	353	734
7:00 PM	362	265	627	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	362	265	627
8:00 PM	298	257	555	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	298	257	555
9:00 PM	186	135	321	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	186	135	321
10:00 PM	103	99	202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	103	99	202
11:00 PM	92	65	157	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92	65	157
Total	5,868	5,741	11,609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,868	5,741	11,609
Percent	51%	49%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51%	49%	-
AM Peak	08:00	08:00	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	08:00	08:00	08:00
Vol.	428	475	903	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	428	475	903
PM Peak	15:00	15:00	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15:00	15:00	15:00
Vol.	572	430	1,002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	572	430	1,002

1. Mid-week average includes data between Tuesday and Thursday.

Appendix B – Multifamily Residential VMT by TAZ for the City of Fairfield



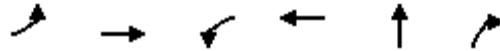
Appendix C – Existing Conditions Intersection Level of Service and Queuing Analysis Work Sheets

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Existing Conditions

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	538	205	350	325	249
v/c Ratio	0.00	0.96	1.08	0.60	0.58	0.32
Control Delay	36.0	60.0	129.1	31.7	26.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	60.0	129.1	31.7	26.2	3.6
Queue Length 50th (ft)	1	290	~134	171	143	0
Queue Length 95th (ft)	5	#434	#271	263	210	34
Internal Link Dist (ft)		630		3551	296	
Turn Bay Length (ft)	50		195			
Base Capacity (vph)	202	561	190	585	557	782
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	0.00	0.96	1.08	0.60	0.58	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	285	162	191	325	1	272	1	209	0	0	0
Future Volume (veh/h)	1	285	162	191	325	1	272	1	209	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	343	195	205	349	1	324	1	249	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.84	0.84	0.84	0.25	0.25	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	343	195	192	586	2	661	2	650	0	771	0
Arrive On Green	0.11	0.31	0.31	0.11	0.31	0.31	0.41	0.41	0.41	0.00	0.00	0.00
Sat Flow, veh/h	1781	1093	621	1781	1864	5	1414	4	1577	0	1870	0
Grp Volume(v), veh/h	1	0	538	205	0	350	325	0	249	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1715	1781	0	1869	1419	0	1577	0	1870	0
Q Serve(g_s), s	0.0	0.0	28.8	9.9	0.0	14.5	16.1	0.0	10.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	28.8	9.9	0.0	14.5	16.1	0.0	10.1	0.0	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	203	0	539	192	0	587	663	0	650	0	771	0
V/C Ratio(X)	0.00	0.00	1.00	1.07	0.00	0.60	0.49	0.00	0.38	0.00	0.00	0.00
Avail Cap(c_a), veh/h	203	0	539	192	0	587	663	0	650	0	771	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	36.1	0.0	31.5	41.0	0.0	26.6	20.6	0.0	18.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	38.5	84.7	0.0	4.4	2.6	0.0	1.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.1	8.7	0.0	6.9	5.5	0.0	3.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	0.0	70.0	125.7	0.0	31.0	23.2	0.0	20.6	0.0	0.0	0.0
LnGrp LOS	D	A	E	F	A	C	C	A	C	A	A	A
Approach Vol, veh/h		539			555			574			0	
Approach Delay, s/veh		70.0			66.0			22.1			0.0	
Approach LOS		E			E			C				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.0	15.0	34.0		43.0	15.0	34.0				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		37.9	9.9	28.9		37.9	10.5	28.9				
Max Q Clear Time (g_c+I1), s		18.1	11.9	30.8		0.0	2.0	16.5				
Green Ext Time (p_c), s		2.7	0.0	0.0		0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			52.2									
HCM 6th LOS			D									

Queues

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Existing Conditions

Timing Plan: AM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	166	582	524	345	490
v/c Ratio	0.65	0.46	0.85	0.26	0.50
Control Delay	63.4	2.4	63.9	27.9	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	2.4	63.9	27.9	32.0
Queue Length 50th (ft)	128	0	213	101	139
Queue Length 95th (ft)	185	10	256	128	181
Internal Link Dist (ft)	1364			956	1198
Turn Bay Length (ft)			100		
Base Capacity (vph)	255	1279	615	1320	978
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	0.65	0.46	0.85	0.26	0.50
Intersection Summary					

HCM 6th Signalized Intersection Summary

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Existing Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	0	477	0	0	0	440	290	0	0	262	159
Future Volume (veh/h)	136	0	477	0	0	0	440	290	0	0	262	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	0	582	0	0	0	524	345	0	0	305	185
Peak Hour Factor	0.82	0.82	0.82	0.25	0.25	0.25	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	0	893	0	464	0	620	1326	0	141	586	346
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.18	0.37	0.00	0.00	0.27	0.27
Sat Flow, veh/h	1733	0	2727	0	1870	0	3456	3647	0	1781	2146	1268
Grp Volume(v), veh/h	166	0	582	0	0	0	524	345	0	0	251	239
Grp Sat Flow(s),veh/h/ln	1733	0	1363	0	1870	0	1728	1777	0	1781	1777	1637
Q Serve(g_s), s	11.3	0.0	18.0	0.0	0.0	0.0	18.3	8.4	0.0	0.0	15.0	15.5
Cycle Q Clear(g_c), s	11.3	0.0	18.0	0.0	0.0	0.0	18.3	8.4	0.0	0.0	15.0	15.5
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.77
Lane Grp Cap(c), veh/h	250	0	893	0	464	0	620	1326	0	141	485	447
V/C Ratio(X)	0.66	0.00	0.65	0.00	0.00	0.00	0.85	0.26	0.00	0.00	0.52	0.53
Avail Cap(c_a), veh/h	250	0	893	0	464	0	620	1326	0	141	485	447
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	0.0	36.3	0.0	0.0	0.0	49.6	27.2	0.0	0.0	38.4	38.6
Incr Delay (d2), s/veh	13.1	0.0	3.7	0.0	0.0	0.0	13.3	0.5	0.0	0.0	3.9	4.5
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	5.8	0.0	8.1	0.0	0.0	0.0	9.0	3.6	0.0	0.0	7.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.7	0.0	40.0	0.0	0.0	0.0	62.9	27.7	0.0	0.0	42.4	43.2
LnGrp LOS	E	A	D	A	A	A	E	C	A	A	D	D
Approach Vol, veh/h		748			0			869			490	
Approach Delay, s/veh		45.3			0.0			48.9			42.7	
Approach LOS		D						D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	51.7		22.7	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	46.6		* 18	22.4	34.1		31.0				
Max Q Clear Time (g_c+I1), s	0.0	10.4		20.0	20.3	17.5		0.0				
Green Ext Time (p_c), s	0.0	2.3		0.0	0.5	2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 46.2

HCM 6th LOS D

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Existing Conditions
Timing Plan: AM Peak

Intersection

Intersection Delay, s/veh	18.6
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	167	195	227	271	257	190
Future Vol, veh/h	167	195	227	271	257	190
Peak Hour Factor	0.81	0.81	0.77	0.77	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	206	241	295	352	289	213
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	16.9	19.1	19.4
HCM LOS	C	C	C

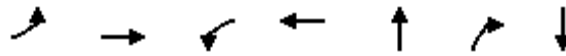
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	167	195	227	271	257	190
LT Vol	167	0	0	0	257	0
Through Vol	0	195	227	0	0	0
RT Vol	0	0	0	271	0	190
Lane Flow Rate	206	241	295	352	289	213
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.448	0.489	0.581	0.624	0.637	0.398
Departure Headway (Hd)	7.818	7.305	7.091	6.385	7.937	6.712
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	462	494	510	567	456	538
Service Time	5.556	5.043	4.825	4.107	5.647	4.422
HCM Lane V/C Ratio	0.446	0.488	0.578	0.621	0.634	0.396
HCM Control Delay	16.8	16.9	19.2	19.1	23.6	13.8
HCM Lane LOS	C	C	C	C	C	B
HCM 95th-tile Q	2.3	2.6	3.7	4.3	4.3	1.9

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Existing Conditions

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	3	499	224	328	348	371	9
v/c Ratio	0.01	0.87	1.18	0.56	0.63	0.43	0.01
Control Delay	36.3	45.0	160.3	30.7	27.6	3.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	45.0	160.3	30.7	27.6	3.6	12.2
Queue Length 50th (ft)	2	252	~158	157	157	0	1
Queue Length 95th (ft)	10	#435	#244	202	254	52	7
Internal Link Dist (ft)		630		3551	296		104
Turn Bay Length (ft)	50		195				
Base Capacity (vph)	202	573	190	584	554	870	680
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.87	1.18	0.56	0.63	0.43	0.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	263	196	175	252	4	327	4	352	1	1	3
Future Volume (veh/h)	3	263	196	175	252	4	327	4	352	1	1	3
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	286	213	224	323	5	344	4	371	2	2	5
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.95	0.95	0.95	0.63	0.63	0.63
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	313	233	192	577	9	262	2	653	48	57	71
Arrive On Green	0.11	0.31	0.31	0.11	0.31	0.31	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1781	995	741	1781	1837	28	446	5	1585	0	138	173
Grp Volume(v), veh/h	3	0	499	224	0	328	348	0	371	9	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1736	1781	0	1865	451	0	1585	311	0	0
Q Serve(g_s), s	0.1	0.0	25.5	9.9	0.0	13.5	0.0	0.0	16.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	25.5	9.9	0.0	13.5	37.9	0.0	16.5	37.9	0.0	0.0
Prop In Lane	1.00		0.43	1.00		0.02	0.99		1.00	0.22		0.56
Lane Grp Cap(c), veh/h	203	0	545	192	0	586	264	0	653	176	0	0
V/C Ratio(X)	0.01	0.00	0.91	1.17	0.00	0.56	1.32	0.00	0.57	0.05	0.00	0.00
Avail Cap(c_a), veh/h	203	0	545	192	0	586	264	0	653	176	0	0
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.2	0.0	30.4	41.0	0.0	26.3	32.6	0.0	20.8	21.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	22.4	117.8	0.0	3.8	167.9	0.0	3.6	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	13.5	10.5	0.0	6.4	18.2	0.0	6.4	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	52.8	158.8	0.0	30.1	200.6	0.0	24.3	21.8	0.0	0.0
LnGrp LOS	D	A	D	F	A	C	F	A	C	C	A	A
Approach Vol, veh/h		502			552			719			9	
Approach Delay, s/veh		52.7			82.3			109.6			21.8	
Approach LOS		D			F			F			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.0	15.0	34.0		43.0	15.0	34.0				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		37.9	9.9	28.9		37.9	10.5	28.9				
Max Q Clear Time (g_c+I1), s		39.9	11.9	27.5		39.9	2.1	15.5				
Green Ext Time (p_c), s		0.0	0.0	0.5		0.0	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			84.7									
HCM 6th LOS			F									

Queues
2: Sunset Ave & E. Travis Ave

Existing Conditions
Timing Plan: PM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	311	640	336	391	412
v/c Ratio	1.22	0.48	0.55	0.30	0.43
Control Delay	173.7	2.4	50.4	28.4	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	173.7	2.4	50.4	28.4	33.1
Queue Length 50th (ft)	~308	0	128	116	122
Queue Length 95th (ft)	#491	21	177	157	171
Internal Link Dist (ft)	1364			956	1188
Turn Bay Length (ft)			100		
Base Capacity (vph)	255	1327	615	1320	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	1.22	0.48	0.55	0.30	0.43

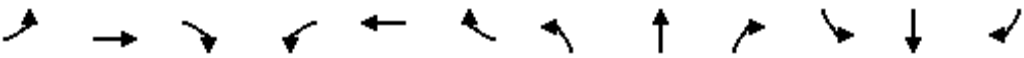
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E. Travis Blvd

Existing Conditions
Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰		↰	↱		↰	↱	
Traffic Volume (veh/h)	286	0	589	0	0	0	333	387	0	0	258	121
Future Volume (veh/h)	286	0	589	0	0	0	333	387	0	0	258	121
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	311	0	640	0	0	0	336	391	0	0	280	132
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	0	902	0	464	0	620	1326	0	141	646	296
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.18	0.37	0.00	0.00	0.27	0.27
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2365	1086
Grp Volume(v), veh/h	311	0	640	0	0	0	336	391	0	0	209	203
Grp Sat Flow(s),veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1674
Q Serve(g_s), s	18.0	0.0	18.0	0.0	0.0	0.0	11.0	9.7	0.0	0.0	12.1	12.6
Cycle Q Clear(g_c), s	18.0	0.0	18.0	0.0	0.0	0.0	11.0	9.7	0.0	0.0	12.1	12.6
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.65
Lane Grp Cap(c), veh/h	257	0	902	0	464	0	620	1326	0	141	485	457
V/C Ratio(X)	1.21	0.00	0.71	0.00	0.00	0.00	0.54	0.29	0.00	0.00	0.43	0.45
Avail Cap(c_a), veh/h	257	0	902	0	464	0	620	1326	0	141	485	457
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	37.1	0.0	0.0	0.0	46.6	27.6	0.0	0.0	37.4	37.6
Incr Delay (d2), s/veh	125.6	0.0	4.7	0.0	0.0	0.0	3.4	0.6	0.0	0.0	2.8	3.1
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	17.0	0.0	9.2	0.0	0.0	0.0	5.0	4.2	0.0	0.0	5.6	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	179.0	0.0	41.8	0.0	0.0	0.0	50.0	28.1	0.0	0.0	40.2	40.7
LnGrp LOS	F	A	D	A	A	A	D	C	A	A	D	D
Approach Vol, veh/h		951			0			727			412	
Approach Delay, s/veh		86.7			0.0			38.2			40.4	
Approach LOS		F						D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	51.7		22.7	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	46.6		* 18	22.4	34.1		31.0				
Max Q Clear Time (g_c+I1), s	0.0	11.7		20.0	13.0	14.6		0.0				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.8	2.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	60.7
HCM 6th LOS	E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Existing Conditions
Timing Plan: PM Peak

Intersection	
Intersection Delay, s/veh	14.9
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	184	250	185	163	258	151
Future Vol, veh/h	184	250	185	163	258	151
Peak Hour Factor	0.86	0.86	0.90	0.90	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	214	291	206	181	266	156
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	15.7	12.6	15.9
HCM LOS	C	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	250	185	163	258	151
LT Vol	184	0	0	0	258	0
Through Vol	0	250	185	0	0	0
RT Vol	0	0	0	163	0	151
Lane Flow Rate	214	291	206	181	266	156
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.417	0.526	0.384	0.302	0.545	0.266
Departure Headway (Hd)	7.024	6.514	6.725	6.01	7.373	6.154
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	511	552	532	594	487	581
Service Time	4.794	4.284	4.5	3.784	5.138	3.919
HCM Lane V/C Ratio	0.419	0.527	0.387	0.305	0.546	0.269
HCM Control Delay	14.8	16.4	13.7	11.4	18.7	11.2
HCM Lane LOS	B	C	B	B	C	B
HCM 95th-tile Q	2	3	1.8	1.3	3.2	1.1

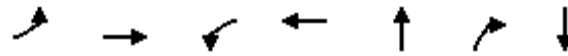
Appendix D – Existing plus Project Conditions Intersection Level of Service and Queuing Work Sheets

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	3	511	231	328	356	374	9
v/c Ratio	0.01	0.89	1.22	0.56	0.64	0.43	0.01
Control Delay	36.3	47.3	172.9	30.7	28.2	3.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	47.3	172.9	30.7	28.2	3.6	12.2
Queue Length 50th (ft)	2	260	~166	157	162	0	1
Queue Length 95th (ft)	10	#451	#253	202	262	52	7
Internal Link Dist (ft)		630		3551	297		104
Turn Bay Length (ft)	50		195				
Base Capacity (vph)	202	574	190	584	554	872	679
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.89	1.22	0.56	0.64	0.43	0.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	263	207	180	252	4	334	4	355	1	1	3
Future Volume (veh/h)	3	263	207	180	252	4	334	4	355	1	1	3
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	286	225	231	323	5	352	4	374	2	2	5
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.95	0.95	0.95	0.63	0.63	0.63
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	305	240	192	577	9	262	2	653	48	57	71
Arrive On Green	0.11	0.31	0.31	0.11	0.31	0.31	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	1781	969	763	1781	1837	28	446	5	1585	0	138	173
Grp Volume(v), veh/h	3	0	511	231	0	328	356	0	374	9	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1781	0	1865	451	0	1585	311	0	0
Q Serve(g_s), s	0.1	0.0	26.4	9.9	0.0	13.5	0.0	0.0	16.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	26.4	9.9	0.0	13.5	37.9	0.0	16.7	37.9	0.0	0.0
Prop In Lane	1.00		0.44	1.00		0.02	0.99		1.00	0.22		0.56
Lane Grp Cap(c), veh/h	203	0	544	192	0	586	264	0	653	176	0	0
V/C Ratio(X)	0.01	0.00	0.94	1.21	0.00	0.56	1.35	0.00	0.57	0.05	0.00	0.00
Avail Cap(c_a), veh/h	203	0	544	192	0	586	264	0	653	176	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.2	0.0	30.7	41.0	0.0	26.3	32.6	0.0	20.8	21.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	26.1	131.1	0.0	3.8	180.5	0.0	3.6	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	14.4	11.2	0.0	6.4	19.1	0.0	6.5	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	0.0	56.8	172.2	0.0	30.1	213.1	0.0	24.4	21.8	0.0	0.0
LnGrp LOS	D	A	E	F	A	C	F	A	C	C	A	A
Approach Vol, veh/h		514			559			730			9	
Approach Delay, s/veh		56.7			88.8			116.5			21.8	
Approach LOS		E			F			F			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.0	15.0	34.0		43.0	15.0	34.0				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		37.9	9.9	28.9		37.9	10.5	28.9				
Max Q Clear Time (g_c+I1), s		39.9	11.9	28.4		39.9	2.1	15.5				
Green Ext Time (p_c), s		0.0	0.0	0.2		0.0	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			90.5									
HCM 6th LOS			F									

Queues
2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions
Timing Plan: PM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	324	640	336	398	425
v/c Ratio	1.27	0.48	0.55	0.30	0.44
Control Delay	192.0	2.4	50.4	28.4	33.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	192.0	2.4	50.4	28.4	33.2
Queue Length 50th (ft)	~330	0	128	118	126
Queue Length 95th (ft)	#517	21	177	160	176
Internal Link Dist (ft)	1364			956	1180
Turn Bay Length (ft)			100		
Base Capacity (vph)	255	1327	615	1320	962
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	1.27	0.48	0.55	0.30	0.44

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions

Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↰		↰		↰	↰		↰	↰	
Traffic Volume (veh/h)	298	0	589	0	0	0	333	394	0	0	263	128
Future Volume (veh/h)	298	0	589	0	0	0	333	394	0	0	263	128
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	324	0	640	0	0	0	336	398	0	0	286	139
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	0	902	0	464	0	620	1326	0	141	639	302
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.18	0.37	0.00	0.00	0.27	0.27
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2339	1107
Grp Volume(v), veh/h	324	0	640	0	0	0	336	398	0	0	215	210
Grp Sat Flow(s),veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1670
Q Serve(g_s), s	18.0	0.0	18.0	0.0	0.0	0.0	11.0	9.9	0.0	0.0	12.5	13.0
Cycle Q Clear(g_c), s	18.0	0.0	18.0	0.0	0.0	0.0	11.0	9.9	0.0	0.0	12.5	13.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.66
Lane Grp Cap(c), veh/h	257	0	902	0	464	0	620	1326	0	141	485	456
V/C Ratio(X)	1.26	0.00	0.71	0.00	0.00	0.00	0.54	0.30	0.00	0.00	0.44	0.46
Avail Cap(c_a), veh/h	257	0	902	0	464	0	620	1326	0	141	485	456
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	37.1	0.0	0.0	0.0	46.6	27.6	0.0	0.0	37.6	37.7
Incr Delay (d2), s/veh	145.3	0.0	4.7	0.0	0.0	0.0	3.4	0.6	0.0	0.0	2.9	3.3
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	18.4	0.0	9.2	0.0	0.0	0.0	5.0	4.3	0.0	0.0	5.8	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	198.8	0.0	41.8	0.0	0.0	0.0	50.0	28.2	0.0	0.0	40.5	41.1
LnGrp LOS	F	A	D	A	A	A	D	C	A	A	D	D
Approach Vol, veh/h	964			0			734			425		
Approach Delay, s/veh	94.6			0.0			38.2			40.8		
Approach LOS	F						D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	51.0	51.7		22.7	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	46.6	46.6		* 18	22.4	34.1		31.0				
Max Q Clear Time (g_c+I), s	11.9	11.9		20.0	13.0	15.0		0.0				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.8	2.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay 64.3

HCM 6th LOS E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Existing plus Project Conditions
Timing Plan: PM Peak

Intersection

Intersection Delay, s/veh 15

Intersection LOS B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	186	251	187	163	258	154
Future Vol, veh/h	186	251	187	163	258	154
Peak Hour Factor	0.86	0.86	0.90	0.90	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	216	292	208	181	266	159
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left SB			WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	15.8	12.7	16
HCM LOS	C	B	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	186	251	187	163	258	154
LT Vol	186	0	0	0	258	0
Through Vol	0	251	187	0	0	0
RT Vol	0	0	0	163	0	154
Lane Flow Rate	216	292	208	181	266	159
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.423	0.529	0.389	0.303	0.546	0.272
Departure Headway (Hd)	7.04	6.53	6.743	6.028	7.389	6.171
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	510	549	532	592	487	579
Service Time	4.809	4.299	4.517	3.802	5.154	3.935
HCM Lane V/C Ratio	0.424	0.532	0.391	0.306	0.546	0.275
HCM Control Delay	14.9	16.5	13.8	11.4	18.8	11.2
HCM Lane LOS	B	C	B	B	C	B
HCM 95th-tile Q	2.1	3.1	1.8	1.3	3.2	1.1

HCM 6th TWSC
4: Sunset Ave & Project Dwy

Existing plus Project Conditions
Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	683	19	16	372
Future Vol, veh/h	12	10	683	19	16	372
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	11	742	21	17	404
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1191	382	0	0	763	0
Stage 1	753	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	193	617	-	-	847	-
Stage 1	427	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	188	617	-	-	847	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	427	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.5	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	404	847	-	
HCM Lane V/C Ratio	-	-	0.059	0.021	-	
HCM Control Delay (s)	-	-	14.5	9.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-	

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	543	208	350	338	255
v/c Ratio	0.00	0.98	1.09	0.60	0.61	0.32
Control Delay	36.0	65.7	133.7	31.7	26.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	65.7	133.7	31.7	26.9	3.5
Queue Length 50th (ft)	1	296	~138	171	150	0
Queue Length 95th (ft)	5	#445	#275	263	220	35
Internal Link Dist (ft)		630		3551	295	
Turn Bay Length (ft)	50		195			
Base Capacity (vph)	202	552	190	585	557	786
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	0.00	0.98	1.09	0.60	0.61	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	285	166	193	325	1	283	1	214	0	0	0
Future Volume (veh/h)	1	285	166	193	325	1	283	1	214	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	343	200	208	349	1	337	1	255	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.84	0.84	0.84	0.25	0.25	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	334	195	192	586	2	661	2	650	0	771	0
Arrive On Green	0.11	0.31	0.31	0.11	0.31	0.31	0.41	0.41	0.41	0.00	0.00	0.00
Sat Flow, veh/h	1781	1063	620	1781	1864	5	1414	4	1577	0	1870	0
Grp Volume(v), veh/h	1	0	543	208	0	350	338	0	255	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1683	1781	0	1869	1419	0	1577	0	1870	0
Q Serve(g_s), s	0.0	0.0	28.9	9.9	0.0	14.5	16.9	0.0	10.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	28.9	9.9	0.0	14.5	16.9	0.0	10.4	0.0	0.0	0.0
Prop In Lane	1.00		0.37	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	203	0	529	192	0	587	663	0	650	0	771	0
V/C Ratio(X)	0.00	0.00	1.03	1.09	0.00	0.60	0.51	0.00	0.39	0.00	0.00	0.00
Avail Cap(c_a), veh/h	203	0	529	192	0	587	663	0	650	0	771	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	36.1	0.0	31.6	41.0	0.0	26.6	20.9	0.0	19.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	46.2	89.5	0.0	4.4	2.8	0.0	1.8	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	17.9	9.0	0.0	6.9	5.8	0.0	3.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	0.0	77.8	130.6	0.0	31.0	23.7	0.0	20.8	0.0	0.0	0.0
LnGrp LOS	D	A	F	F	A	C	C	A	C	A	A	A
Approach Vol, veh/h		544			558			593			0	
Approach Delay, s/veh		77.7			68.1			22.4			0.0	
Approach LOS		E			E			C				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.0	15.0	34.0		43.0	15.0	34.0				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		37.9	9.9	28.9		37.9	10.5	28.9				
Max Q Clear Time (g_c+I1), s		18.9	11.9	30.9		0.0	2.0	16.5				
Green Ext Time (p_c), s		2.7	0.0	0.0		0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			55.2									
HCM 6th LOS			E									

Queues
2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions
Timing Plan: AM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	171	582	524	348	512
v/c Ratio	0.67	0.46	0.85	0.26	0.52
Control Delay	64.6	2.4	63.9	27.9	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	2.4	63.9	27.9	31.7
Queue Length 50th (ft)	133	0	213	102	143
Queue Length 95th (ft)	190	10	256	130	186
Internal Link Dist (ft)	1364			956	1180
Turn Bay Length (ft)			100		
Base Capacity (vph)	255	1279	615	1320	986
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	0.67	0.46	0.85	0.26	0.52
Intersection Summary					

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions

Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	140	0	477	0	0	0	440	292	0	0	269	171
Future Volume (veh/h)	140	0	477	0	0	0	440	292	0	0	269	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	0	582	0	0	0	524	348	0	0	313	199
Peak Hour Factor	0.82	0.82	0.82	0.25	0.25	0.25	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	0	893	0	464	0	620	1326	0	141	574	356
Arrive On Green	0.14	0.00	0.14	0.00	0.00	0.00	0.18	0.37	0.00	0.00	0.27	0.27
Sat Flow, veh/h	1733	0	2727	0	1870	0	3456	3647	0	1781	2103	1304
Grp Volume(v), veh/h	171	0	582	0	0	0	524	348	0	0	263	249
Grp Sat Flow(s), veh/h/ln	1733	0	1363	0	1870	0	1728	1777	0	1781	1777	1630
Q Serve(g_s), s	11.7	0.0	18.0	0.0	0.0	0.0	18.3	8.5	0.0	0.0	15.8	16.3
Cycle Q Clear(g_c), s	11.7	0.0	18.0	0.0	0.0	0.0	18.3	8.5	0.0	0.0	15.8	16.3
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.80
Lane Grp Cap(c), veh/h	250	0	893	0	464	0	620	1326	0	141	485	445
V/C Ratio(X)	0.68	0.00	0.65	0.00	0.00	0.00	0.85	0.26	0.00	0.00	0.54	0.56
Avail Cap(c_a), veh/h	250	0	893	0	464	0	620	1326	0	141	485	445
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	36.3	0.0	0.0	0.0	49.6	27.2	0.0	0.0	38.7	38.9
Incr Delay (d2), s/veh	14.2	0.0	3.7	0.0	0.0	0.0	13.3	0.5	0.0	0.0	4.3	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	8.1	0.0	0.0	0.0	9.0	3.7	0.0	0.0	7.4	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.0	0.0	40.0	0.0	0.0	0.0	62.9	27.7	0.0	0.0	43.1	43.9
LnGrp LOS	E	A	D	A	A	A	E	C	A	A	D	D
Approach Vol, veh/h		753			0			872			512	
Approach Delay, s/veh		45.7			0.0			48.9			43.5	
Approach LOS		D						D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	51.7			22.7	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1			* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	46.6			* 18	22.4	34.1		31.0				
Max Q Clear Time (g_c+I1), s	10.5			20.0	20.3	18.3		0.0				
Green Ext Time (p_c), s	0.0	2.4		0.0	0.5	2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 46.5

HCM 6th LOS D

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Existing plus Project Conditions
Timing Plan: AM Peak

Intersection

Intersection Delay, s/veh 18.7

Intersection LOS C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	170	197	228	271	257	191
Future Vol, veh/h	170	197	228	271	257	191
Peak Hour Factor	0.81	0.81	0.77	0.77	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	210	243	296	352	289	215
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left SB			WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	17	19.3	19.5
HCM LOS	C	C	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	170	197	228	271	257	191
LT Vol	170	0	0	0	257	0
Through Vol	0	197	228	0	0	0
RT Vol	0	0	0	271	0	191
Lane Flow Rate	210	243	296	352	289	215
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.456	0.494	0.585	0.626	0.638	0.401
Departure Headway (Hd)	7.828	7.315	7.108	6.401	7.955	6.73
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	462	494	509	567	456	537
Service Time	5.567	5.053	4.841	4.123	5.665	4.44
HCM Lane V/C Ratio	0.455	0.492	0.582	0.621	0.634	0.4
HCM Control Delay	17	17	19.4	19.3	23.7	13.9
HCM Lane LOS	C	C	C	C	C	B
HCM 95th-tile Q	2.3	2.7	3.7	4.3	4.4	1.9

HCM 6th TWSC
4: Sunset Ave & Project Dwy

Existing plus Project Conditions

Timing Plan: AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	16	482	6	6	353
Future Vol, veh/h	19	16	482	6	6	353
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	17	524	7	7	384
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	926	266	0	0	531	0
Stage 1	528	-	-	-	-	-
Stage 2	398	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	283	733	-	-	1034	-
Stage 1	557	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	280	733	-	-	1034	-
Mov Cap-2 Maneuver	404	-	-	-	-	-
Stage 1	557	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.7	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	508	1034	-	
HCM Lane V/C Ratio	-	-	0.075	0.006	-	
HCM Control Delay (s)	-	-	12.7	8.5	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Appendix E – Existing plus Project Conditions Mitigations Intersection Level of Service Work Sheets

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions with Mitigations

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	285	166	193	325	1	283	1	214	0	0	0
Future Volume (veh/h)	1	285	166	193	325	1	283	1	214	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.99	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	343	200	208	349	1	337	1	255	0	0	0
Peak Hour Factor	0.83	0.83	0.83	0.93	0.93	0.93	0.84	0.84	0.84	0.25	0.25	0.25
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	316	184	332	672	2	725	2	579	0	689	0
Arrive On Green	0.13	0.30	0.30	0.19	0.36	0.36	0.37	0.37	0.37	0.00	0.00	0.00
Sat Flow, veh/h	1781	1061	618	1781	1864	5	1781	6	1571	0	1870	0
Grp Volume(v), veh/h	1	0	543	208	0	350	337	0	256	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1679	1781	0	1869	1781	0	1577	0	1870	0
Q Serve(g_s), s	0.1	0.0	31.0	11.2	0.0	15.3	15.3	0.0	12.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	31.0	11.2	0.0	15.3	15.3	0.0	12.7	0.0	0.0	0.0
Prop In Lane	1.00		0.37	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	231	0	500	332	0	674	725	0	581	0	689	0
V/C Ratio(X)	0.00	0.00	1.09	0.63	0.00	0.52	0.46	0.00	0.44	0.00	0.00	0.00
Avail Cap(c_a), veh/h	231	0	500	332	0	674	725	0	581	0	689	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	39.4	0.0	36.5	39.0	0.0	26.2	25.6	0.0	24.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	65.2	8.6	0.0	2.8	2.1	0.0	2.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	21.3	5.6	0.0	7.1	6.7	0.0	5.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	0.0	101.7	47.6	0.0	29.0	27.7	0.0	27.2	0.0	0.0	0.0
LnGrp LOS	D	A	F	D	A	C	C	A	C	A	A	A
Approach Vol, veh/h		544			558			593			0	
Approach Delay, s/veh		101.6			35.9			27.5			0.0	
Approach LOS		F			D			C				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.4	24.5	36.1		43.4	18.0	42.6				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		38.3	19.4	31.0		38.3	13.5	37.5				
Max Q Clear Time (g_c+I1), s		17.3	13.2	33.0		0.0	2.1	17.3				
Green Ext Time (p_c), s		2.5	0.3	0.0		0.0	0.0	1.9				
Intersection Summary												
HCM 6th Ctrl Delay			54.1									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary 2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions with Mitigations

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	0	477	0	0	0	440	292	0	0	269	171
Future Volume (veh/h)	140	0	477	0	0	0	440	292	0	0	269	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	0	582	0	0	0	524	348	0	0	313	199
Peak Hour Factor	0.82	0.82	0.82	0.25	0.25	0.25	0.84	0.84	0.84	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	310	0	965	0	446	0	595	1274	0	136	552	342
Arrive On Green	0.18	0.00	0.18	0.00	0.00	0.00	0.17	0.36	0.00	0.00	0.26	0.26
Sat Flow, veh/h	1742	0	2728	0	1870	0	3456	3647	0	1781	2103	1304
Grp Volume(v), veh/h	171	0	582	0	0	0	524	348	0	0	263	249
Grp Sat Flow(s),veh/h/ln	1742	0	1364	0	1870	0	1728	1777	0	1781	1777	1630
Q Serve(g_s), s	11.6	0.0	22.9	0.0	0.0	0.0	19.2	9.1	0.0	0.0	16.7	17.3
Cycle Q Clear(g_c), s	11.6	0.0	22.9	0.0	0.0	0.0	19.2	9.1	0.0	0.0	16.7	17.3
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.80
Lane Grp Cap(c), veh/h	310	0	965	0	446	0	595	1274	0	136	466	428
V/C Ratio(X)	0.55	0.00	0.60	0.00	0.00	0.00	0.88	0.27	0.00	0.00	0.56	0.58
Avail Cap(c_a), veh/h	310	0	965	0	446	0	595	1274	0	136	466	428
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(l)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	0.0	34.9	0.0	0.0	0.0	52.5	29.7	0.0	0.0	41.5	41.7
Incr Delay (d2), s/veh	6.9	0.0	2.8	0.0	0.0	0.0	16.9	0.5	0.0	0.0	4.9	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	8.1	0.0	0.0	0.0	9.7	4.0	0.0	0.0	7.9	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	0.0	37.7	0.0	0.0	0.0	69.4	30.2	0.0	0.0	46.4	47.4
LnGrp LOS	E	A	D	A	A	A	E	C	A	A	D	D
Approach Vol, veh/h		753			0			872			512	
Approach Delay, s/veh		41.8			0.0			53.7			46.9	
Approach LOS		D						D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	51.7		27.8	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	46.6		* 23	22.4	34.1		31.0				
Max Q Clear Time (g_c+I1), s	0.0	11.1		24.9	21.2	19.3		0.0				
Green Ext Time (p_c), s	0.0	2.4		0.0	0.3	2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 47.9

HCM 6th LOS D

Notes

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

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Existing plus Project Conditions with Mitigations

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	263	207	180	252	4	334	4	355	1	1	3
Future Volume (veh/h)	3	263	207	180	252	4	334	4	355	1	1	3
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	3	286	225	231	323	5	352	4	374	2	2	5
Peak Hour Factor	0.92	0.92	0.92	0.78	0.78	0.78	0.95	0.95	0.95	0.63	0.63	0.63
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	289	227	332	662	10	417	6	578	97	105	201
Arrive On Green	0.13	0.30	0.30	0.19	0.36	0.36	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	969	762	1781	1837	28	1409	17	1571	149	286	545
Grp Volume(v), veh/h	3	0	511	231	0	328	352	0	378	9	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1781	0	1865	1409	0	1588	980	0	0
Q Serve(g_s), s	0.2	0.0	30.6	12.6	0.0	14.2	17.7	0.0	20.5	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.2	0.0	30.6	12.6	0.0	14.2	38.3	0.0	20.5	20.6	0.0	0.0
Prop In Lane	1.00		0.44	1.00		0.02	1.00		0.99	0.22		0.56
Lane Grp Cap(c), veh/h	231	0	516	332	0	673	417	0	585	403	0	0
V/C Ratio(X)	0.01	0.00	0.99	0.70	0.00	0.49	0.84	0.00	0.65	0.02	0.00	0.00
Avail Cap(c_a), veh/h	231	0	516	332	0	673	417	0	585	403	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.4	0.0	36.3	39.5	0.0	25.8	37.4	0.0	27.2	21.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	37.2	11.4	0.0	2.5	18.6	0.0	5.4	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	17.8	6.5	0.0	6.6	10.9	0.0	8.4	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	0.0	73.6	50.9	0.0	28.3	56.0	0.0	32.7	21.9	0.0	0.0
LnGrp LOS	D	A	E	D	A	C	E	A	C	C	A	A
Approach Vol, veh/h		514			559			730			9	
Approach Delay, s/veh		73.4			37.7			43.9			21.9	
Approach LOS		E			D			D			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		43.4	24.5	36.1		43.4	18.0	42.6				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		38.3	19.4	31.0		38.3	13.5	37.5				
Max Q Clear Time (g_c+I1), s		40.3	14.6	32.6		22.6	2.2	16.2				
Green Ext Time (p_c), s		0.0	0.3	0.0		0.0	0.0	1.8				
Intersection Summary												
HCM 6th Ctrl Delay			50.2									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary 2: Sunset Ave & E Travis Blvd

Existing plus Project Conditions with Mitigations

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖		↗	↖		↗	↖	↗
Traffic Volume (veh/h)	298	0	589	0	0	0	333	394	0	0	263	128
Future Volume (veh/h)	298	0	589	0	0	0	333	394	0	0	263	128
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	324	0	640	0	0	0	336	398	0	0	286	139
Peak Hour Factor	0.92	0.92	0.92	0.25	0.25	0.25	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	0	976	0	446	0	595	1274	0	136	614	290
Arrive On Green	0.18	0.00	0.18	0.00	0.00	0.00	0.17	0.36	0.00	0.00	0.26	0.26
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2339	1107
Grp Volume(v), veh/h	324	0	640	0	0	0	336	398	0	0	215	210
Grp Sat Flow(s),veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1670
Q Serve(g_s), s	23.1	0.0	23.1	0.0	0.0	0.0	11.6	10.5	0.0	0.0	13.2	13.8
Cycle Q Clear(g_c), s	23.1	0.0	23.1	0.0	0.0	0.0	11.6	10.5	0.0	0.0	13.2	13.8
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.66
Lane Grp Cap(c), veh/h	317	0	976	0	446	0	595	1274	0	136	466	438
V/C Ratio(X)	1.02	0.00	0.66	0.00	0.00	0.00	0.56	0.31	0.00	0.00	0.46	0.48
Avail Cap(c_a), veh/h	317	0	976	0	446	0	595	1274	0	136	466	438
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	35.6	0.0	0.0	0.0	49.3	30.1	0.0	0.0	40.3	40.4
Incr Delay (d2), s/veh	56.8	0.0	3.4	0.0	0.0	0.0	3.8	0.6	0.0	0.0	3.3	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.3	0.0	9.1	0.0	0.0	0.0	5.3	4.6	0.0	0.0	6.2	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.2	0.0	39.1	0.0	0.0	0.0	53.2	30.8	0.0	0.0	43.5	44.2
LnGrp LOS	F	A	D	A	A	A	D	C	A	A	D	D
Approach Vol, veh/h		964			0			734			425	
Approach Delay, s/veh		63.0			0.0			41.0			43.8	
Approach LOS		E						D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	51.7		27.8	27.5	39.2		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	46.6		* 23	22.4	34.1		31.0				
Max Q Clear Time (g_c+I1), s	0.0	12.5		25.1	13.6	15.8		0.0				
Green Ext Time (p_c), s	0.0	2.7		0.0	0.8	2.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay 51.6

HCM 6th LOS D

Notes

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

Appendix F – Cumulative Conditions Intersection Level of Service and Queuing Work Sheets

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative Conditions

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	593	251	428	362	277
v/c Ratio	0.01	0.91	0.91	0.50	0.75	0.38
Control Delay	60.0	59.8	93.1	28.8	66.9	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	59.8	93.1	28.8	66.9	13.3
Queue Length 50th (ft)	1	495	228	267	265	34
Queue Length 95th (ft)	7	#727	#390	367	371	127
Internal Link Dist (ft)		630		3551	297	
Turn Bay Length (ft)	50		195			
Base Capacity (vph)	132	649	276	860	484	727
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	0.01	0.91	0.91	0.50	0.75	0.38

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	348	198	233	397	1	332	1	255	0	0	0
Future Volume (veh/h)	1	348	198	233	397	1	332	1	255	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.99	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	378	215	251	427	1	361	1	277	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	411	234	279	862	2	558	1	563	0	669	0
Arrive On Green	0.08	0.38	0.38	0.16	0.46	0.46	0.36	0.36	0.36	0.00	0.00	0.00
Sat Flow, veh/h	1781	1092	621	1781	1865	4	1415	4	1574	0	1870	0
Grp Volume(v), veh/h	1	0	593	251	0	428	362	0	277	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1714	1781	0	1870	1418	0	1574	0	1870	0
Q Serve(g_s), s	0.1	0.0	46.2	19.4	0.0	22.4	30.8	0.0	19.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	46.2	19.4	0.0	22.4	30.8	0.0	19.2	0.0	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	134	0	645	279	0	864	559	0	563	0	669	0
V/C Ratio(X)	0.01	0.00	0.92	0.90	0.00	0.50	0.65	0.00	0.49	0.00	0.00	0.00
Avail Cap(c_a), veh/h	134	0	645	279	0	864	559	0	563	0	669	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.9	0.0	41.6	58.0	0.0	26.3	38.8	0.0	35.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	20.3	33.5	0.0	2.0	5.7	0.0	3.1	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	22.8	11.3	0.0	10.4	11.5	0.0	7.8	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	0.0	62.0	91.5	0.0	28.3	44.5	0.0	38.1	0.0	0.0	0.0
LnGrp LOS	E	A	E	F	A	C	D	A	D	A	A	A
Approach Vol, veh/h		594			679			639			0	
Approach Delay, s/veh		62.0			51.7			41.7			0.0	
Approach LOS		E			D			D				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.2	27.0	57.8		55.2	15.0	69.8				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		50.1	21.9	52.7		50.1	10.5	64.7				
Max Q Clear Time (g_c+I1), s		32.8	21.4	48.2		0.0	2.1	24.4				
Green Ext Time (p_c), s		2.9	0.0	1.6		0.0	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			51.5									
HCM 6th LOS			D									

Queues

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Cumulative Conditions

Timing Plan: AM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	180	633	584	385	559
v/c Ratio	0.42	0.44	1.20	0.34	0.62
Control Delay	47.9	2.0	158.0	36.9	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	2.0	158.0	36.9	24.7
Queue Length 50th (ft)	139	0	~331	140	185
Queue Length 95th (ft)	214	20	#451	185	m226
Internal Link Dist (ft)	1364			956	1190
Turn Bay Length (ft)			100		
Base Capacity (vph)	433	1446	487	1147	903
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	0.42	0.44	1.20	0.34	0.62

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.

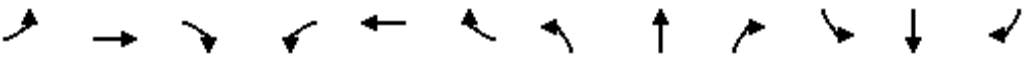
m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Cumulative Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩↩		↩↩		↩↩	↩↩		↩	↩↩	
Traffic Volume (veh/h)	166	0	582	0	0	0	537	354	0	0	320	194
Future Volume (veh/h)	166	0	582	0	0	0	537	354	0	0	320	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	0	633	0	0	0	584	385	0	0	348	211
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	428	0	1065	0	414	0	491	1152	0	126	541	322
Arrive On Green	0.25	0.00	0.25	0.00	0.00	0.00	0.14	0.32	0.00	0.00	0.25	0.25
Sat Flow, veh/h	1746	0	2730	0	1870	0	3456	3647	0	1781	2139	1272
Grp Volume(v), veh/h	180	0	633	0	0	0	584	385	0	0	288	271
Grp Sat Flow(s),veh/h/ln	1746	0	1365	0	1870	0	1728	1777	0	1781	1777	1634
Q Serve(g_s), s	12.1	0.0	25.9	0.0	0.0	0.0	19.9	11.5	0.0	0.0	20.2	20.8
Cycle Q Clear(g_c), s	12.1	0.0	25.9	0.0	0.0	0.0	19.9	11.5	0.0	0.0	20.2	20.8
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.78
Lane Grp Cap(c), veh/h	428	0	1065	0	414	0	491	1152	0	126	449	413
V/C Ratio(X)	0.42	0.00	0.59	0.00	0.00	0.00	1.19	0.33	0.00	0.00	0.64	0.66
Avail Cap(c_a), veh/h	428	0	1065	0	414	0	491	1152	0	126	449	413
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	0.0	34.2	0.0	0.0	0.0	60.0	35.8	0.0	0.0	46.6	46.8
Incr Delay (d2), s/veh	3.0	0.0	2.4	0.0	0.0	0.0	103.9	0.8	0.0	0.0	6.9	7.9
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	5.7	0.0	9.1	0.0	0.0	0.0	15.7	5.1	0.0	0.0	9.8	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.5	0.0	36.7	0.0	0.0	0.0	163.9	36.6	0.0	0.0	53.5	54.7
LnGrp LOS	D	A	D	A	A	A	F	D	A	A	D	D
Approach Vol, veh/h		813			0			969			559	
Approach Delay, s/veh		39.1			0.0			113.4			54.1	
Approach LOS		D						F			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.5		39.0	25.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	45.4		* 34	19.9	35.4		31.0				
Max Q Clear Time (g_c+I1), s	0.0	13.5		27.9	21.9	22.8		0.0				
Green Ext Time (p_c), s	0.0	2.6		2.2	0.0	2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 73.4

HCM 6th LOS E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Cumulative Conditions
Timing Plan: AM Peak

Intersection

Intersection Delay, s/veh 22.7
Intersection LOS C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	204	238	277	331	314	232
Future Vol, veh/h	204	238	277	331	314	232
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	259	301	360	341	252
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	19.3	22.3	25.8
HCM LOS	C	C	D

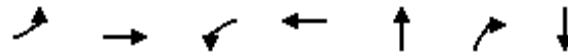
Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	204	238	277	331	314	232
LT Vol	204	0	0	0	314	0
Through Vol	0	238	277	0	0	0
RT Vol	0	0	0	331	0	232
Lane Flow Rate	222	259	301	360	341	252
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.505	0.552	0.626	0.676	0.769	0.482
Departure Headway (Hd)	8.196	7.681	7.486	6.766	8.11	6.883
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	441	471	482	536	447	525
Service Time	5.936	5.421	5.222	4.502	5.844	4.617
HCM Lane V/C Ratio	0.503	0.55	0.624	0.672	0.763	0.48
HCM Control Delay	19	19.5	22	22.5	33.2	15.9
HCM Lane LOS	C	C	C	C	D	C
HCM 95th-tile Q	2.8	3.3	4.2	5.1	6.6	2.6

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative Conditions

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	707	271	396	494	526	6
v/c Ratio	0.03	1.05	0.98	0.46	1.02	0.61	0.01
Control Delay	60.8	90.0	108.0	27.9	97.9	22.6	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	90.0	108.0	27.9	97.9	22.6	20.7
Queue Length 50th (ft)	3	~684	249	242	~410	165	1
Queue Length 95th (ft)	16	#931	#432	334	m#574	m228	11
Internal Link Dist (ft)		630		3551	297		104
Turn Bay Length (ft)	50		195				
Base Capacity (vph)	132	671	276	858	483	867	586
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	1.05	0.98	0.46	1.02	0.61	0.01

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.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	373	278	249	358	6	464	6	500	1	1	4
Future Volume (veh/h)	4	373	278	249	358	6	464	6	500	1	1	4
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	405	302	271	389	7	488	6	526	1	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	374	279	279	846	15	172	1	567	30	39	79
Arrive On Green	0.08	0.38	0.38	0.16	0.46	0.46	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	995	742	1781	1831	33	338	4	1585	0	110	220
Grp Volume(v), veh/h	4	0	707	271	0	396	494	0	526	6	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1736	1781	0	1864	342	0	1585	330	0	0
Q Serve(g_s), s	0.3	0.0	52.7	21.2	0.0	20.3	0.0	0.0	44.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	52.7	21.2	0.0	20.3	50.1	0.0	44.7	50.1	0.0	0.0
Prop In Lane	1.00		0.43	1.00		0.02	0.99		1.00	0.17		0.67
Lane Grp Cap(c), veh/h	134	0	654	279	0	862	173	0	567	148	0	0
V/C Ratio(X)	0.03	0.00	1.08	0.97	0.00	0.46	2.85	0.00	0.93	0.04	0.00	0.00
Avail Cap(c_a), veh/h	134	0	654	279	0	862	173	0	567	148	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	60.0	0.0	43.7	58.8	0.0	25.7	52.3	0.0	43.2	34.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	59.4	47.4	0.0	1.8	847.2	0.0	23.5	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	32.9	13.2	0.0	9.4	47.0	0.0	20.9	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	103.0	106.1	0.0	27.5	899.6	0.0	66.7	35.3	0.0	0.0
LnGrp LOS	E	A	F	F	A	C	F	A	E	D	A	A
Approach Vol, veh/h		711			667			1020				6
Approach Delay, s/veh		102.8			59.4			470.1				35.3
Approach LOS		F			E			F				D
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.2	27.0	57.8		55.2	15.0	69.8				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		50.1	21.9	52.7		50.1	10.5	64.7				
Max Q Clear Time (g_c+I1), s		52.1	23.2	54.7		52.1	2.3	22.3				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			246.4									
HCM 6th LOS			F									

Queues
2: Sunset Ave & E. Travis Blvd

Cumulative Conditions
Timing Plan: PM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	441	909	478	556	585
v/c Ratio	1.02	0.56	0.98	0.48	0.66
Control Delay	99.6	2.3	95.8	39.7	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	99.6	2.3	95.8	39.7	24.9
Queue Length 50th (ft)	~424	0	226	213	168
Queue Length 95th (ft)	#637	22	#340	271	m166
Internal Link Dist (ft)	1364			956	1190
Turn Bay Length (ft)			100		
Base Capacity (vph)	433	1630	487	1147	887
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	1.02	0.56	0.98	0.48	0.66
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.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E. Travis Blvd

Cumulative Conditions

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖		↗	↖		↗	↖	↗
Traffic Volume (veh/h)	406	0	836	0	0	0	473	550	0	0	366	172
Future Volume (veh/h)	406	0	836	0	0	0	473	550	0	0	366	172
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	441	0	909	0	0	0	478	556	0	0	398	187
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	0	1080	0	414	0	491	1152	0	126	596	276
Arrive On Green	0.25	0.00	0.25	0.00	0.00	0.00	0.14	0.32	0.00	0.00	0.25	0.25
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2356	1093
Grp Volume(v), veh/h	441	0	909	0	0	0	478	556	0	0	299	286
Grp Sat Flow(s),veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1672
Q Serve(g_s), s	34.3	0.0	34.3	0.0	0.0	0.0	19.3	17.5	0.0	0.0	21.2	21.6
Cycle Q Clear(g_c), s	34.3	0.0	34.3	0.0	0.0	0.0	19.3	17.5	0.0	0.0	21.2	21.6
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.65
Lane Grp Cap(c), veh/h	436	0	1080	0	414	0	491	1152	0	126	449	423
V/C Ratio(X)	1.01	0.00	0.84	0.00	0.00	0.00	0.97	0.48	0.00	0.00	0.67	0.68
Avail Cap(c_a), veh/h	436	0	1080	0	414	0	491	1152	0	126	449	423
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	39.0	0.0	0.0	0.0	59.8	37.9	0.0	0.0	47.0	47.1
Incr Delay (d2), s/veh	45.7	0.0	8.0	0.0	0.0	0.0	34.5	1.4	0.0	0.0	7.6	8.4
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	20.8	0.0	15.5	0.0	0.0	0.0	10.7	7.9	0.0	0.0	10.3	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.6	0.0	47.0	0.0	0.0	0.0	94.2	39.3	0.0	0.0	54.6	55.6
LnGrp LOS	F	A	D	A	A	A	F	D	A	A	D	E
Approach Vol, veh/h	1350				0				1034			
Approach Delay, s/veh	63.8				0.0				64.7			
Approach LOS	E								E			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	50.5		39.0	25.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	9.9	45.4		* 34	19.9	35.4		31.0				
Max Q Clear Time (g_c+I1), s	0.0	19.5		36.3	21.3	23.6		0.0				
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	2.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 62.4

HCM 6th LOS E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Cumulative Conditions
Timing Plan: PM Peak

Intersection	
Intersection Delay, s/veh	29.3
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	261	355	263	231	366	214
Future Vol, veh/h	261	355	263	231	366	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	284	386	286	251	377	221
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	31.6	20.3	34.8
HCM LOS	D	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	261	355	263	231	366	214
LT Vol	261	0	0	0	366	0
Through Vol	0	355	263	0	0	0
RT Vol	0	0	0	231	0	214
Lane Flow Rate	284	386	286	251	377	221
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.644	0.82	0.628	0.501	0.871	0.434
Departure Headway (Hd)	8.166	7.65	7.909	7.186	8.309	7.079
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	475	457	502	438	510
Service Time	5.909	5.394	5.656	4.932	6.049	4.819
HCM Lane V/C Ratio	0.641	0.813	0.626	0.5	0.861	0.433
HCM Control Delay	24.6	36.8	23.2	17	46.2	15.2
HCM Lane LOS	C	E	C	C	E	C
HCM 95th-tile Q	4.4	7.8	4.2	2.8	8.9	2.2

Appendix G – Cumulative plus Project Conditions Intersection Level of Service and Queuing Work Sheets

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative plus Project Conditions

Timing Plan: AM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	1	598	253	428	374	283
v/c Ratio	0.01	0.95	0.92	0.50	0.77	0.39
Control Delay	60.0	66.5	94.3	28.8	67.7	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.0	66.5	94.3	28.8	67.7	13.0
Queue Length 50th (ft)	1	510	230	267	276	34
Queue Length 95th (ft)	7	#757	#394	367	384	128
Internal Link Dist (ft)		630		3551	296	
Turn Bay Length (ft)	50		195			
Base Capacity (vph)	132	629	276	860	484	731
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	0.01	0.95	0.92	0.50	0.77	0.39

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative plus Project Conditions

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	348	202	235	397	1	343	1	260	0	0	0
Future Volume (veh/h)	1	348	202	235	397	1	343	1	260	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.99	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	378	220	253	427	1	373	1	283	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	400	233	279	862	2	558	1	563	0	669	0
Arrive On Green	0.08	0.38	0.38	0.16	0.46	0.46	0.36	0.36	0.36	0.00	0.00	0.00
Sat Flow, veh/h	1781	1063	619	1781	1865	4	1415	4	1574	0	1870	0
Grp Volume(v), veh/h	1	0	598	253	0	428	374	0	283	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1682	1781	0	1870	1418	0	1574	0	1870	0
Q Serve(g_s), s	0.1	0.0	48.2	19.6	0.0	22.4	32.2	0.0	19.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	48.2	19.6	0.0	22.4	32.2	0.0	19.7	0.0	0.0	0.0
Prop In Lane	1.00		0.37	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	134	0	633	279	0	864	559	0	563	0	669	0
V/C Ratio(X)	0.01	0.00	0.94	0.91	0.00	0.50	0.67	0.00	0.50	0.00	0.00	0.00
Avail Cap(c_a), veh/h	134	0	633	279	0	864	559	0	563	0	669	0
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.9	0.0	42.2	58.1	0.0	26.3	39.2	0.0	35.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	24.5	34.7	0.0	2.0	6.2	0.0	3.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	23.9	11.4	0.0	10.4	12.1	0.0	8.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	0.0	66.7	92.7	0.0	28.3	45.4	0.0	38.4	0.0	0.0	0.0
LnGrp LOS	E	A	E	F	A	C	D	A	D	A	A	A
Approach Vol, veh/h		599			681			657			0	
Approach Delay, s/veh		66.7			52.2			42.4			0.0	
Approach LOS		E			D			D				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.2	27.0	57.8		55.2	15.0	69.8				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		50.1	21.9	52.7		50.1	10.5	64.7				
Max Q Clear Time (g_c+I1), s		34.2	21.6	50.2		0.0	2.1	24.4				
Green Ext Time (p_c), s		2.9	0.0	1.0		0.0	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			53.4									
HCM 6th LOS			D									

Queues

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Cumulative plus Project Conditions

Timing Plan: AM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	185	633	584	387	579
v/c Ratio	0.43	0.44	1.20	0.34	0.64
Control Delay	48.2	2.0	158.0	36.9	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	2.0	158.0	36.9	25.5
Queue Length 50th (ft)	143	0	~331	141	195
Queue Length 95th (ft)	219	20	#451	186	m229
Internal Link Dist (ft)	1364			956	1190
Turn Bay Length (ft)			100		
Base Capacity (vph)	433	1446	487	1147	908
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	0.43	0.44	1.20	0.34	0.64

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.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Cumulative plus Project Conditions

Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰		↰	↱		↰	↱	
Traffic Volume (veh/h)	170	0	582	0	0	0	537	356	0	0	327	206
Future Volume (veh/h)	170	0	582	0	0	0	537	356	0	0	327	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	0	633	0	0	0	584	387	0	0	355	224
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	428	0	1065	0	414	0	491	1152	0	126	532	329
Arrive On Green	0.25	0.00	0.25	0.00	0.00	0.00	0.14	0.32	0.00	0.00	0.25	0.25
Sat Flow, veh/h	1746	0	2730	0	1870	0	3456	3647	0	1781	2102	1303
Grp Volume(v), veh/h	185	0	633	0	0	0	584	387	0	0	299	280
Grp Sat Flow(s),veh/h/ln	1746	0	1365	0	1870	0	1728	1777	0	1781	1777	1629
Q Serve(g_s), s	12.5	0.0	25.9	0.0	0.0	0.0	19.9	11.6	0.0	0.0	21.2	21.7
Cycle Q Clear(g_c), s	12.5	0.0	25.9	0.0	0.0	0.0	19.9	11.6	0.0	0.0	21.2	21.7
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.80
Lane Grp Cap(c), veh/h	428	0	1065	0	414	0	491	1152	0	126	449	412
V/C Ratio(X)	0.43	0.00	0.59	0.00	0.00	0.00	1.19	0.34	0.00	0.00	0.67	0.68
Avail Cap(c_a), veh/h	428	0	1065	0	414	0	491	1152	0	126	449	412
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	0.0	34.2	0.0	0.0	0.0	60.0	35.9	0.0	0.0	47.0	47.2
Incr Delay (d2), s/veh	3.2	0.0	2.4	0.0	0.0	0.0	103.9	0.8	0.0	0.0	7.6	8.8
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	5.8	0.0	9.1	0.0	0.0	0.0	15.7	5.2	0.0	0.0	10.3	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	36.7	0.0	0.0	0.0	163.9	36.7	0.0	0.0	54.6	55.9
LnGrp LOS	D	A	D	A	A	A	F	D	A	A	D	E
Approach Vol, veh/h	818			0			971			579		
Approach Delay, s/veh	39.2			0.0			113.2			55.2		
Approach LOS	D						F			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	50.5	50.5		39.0	25.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	45.4	45.4		* 34	19.9	35.4		31.0				
Max Q Clear Time (g_c+I), s	13.6	13.6		27.9	21.9	23.7		0.0				
Green Ext Time (p_c), s	0.0	2.6		2.2	0.0	2.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay 73.5

HCM 6th LOS E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Cumulative plus Project Conditions
Timing Plan: AM Peak

Intersection

Intersection Delay, s/veh 22.8

Intersection LOS C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	207	240	278	331	314	233
Future Vol, veh/h	207	240	278	331	314	233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	225	261	302	360	341	253
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left SB			WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	19.5	22.5	25.9
HCM LOS	C	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	207	240	278	331	314	233
LT Vol	207	0	0	0	314	0
Through Vol	0	240	278	0	0	0
RT Vol	0	0	0	331	0	233
Lane Flow Rate	225	261	302	360	341	253
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.513	0.557	0.63	0.678	0.77	0.485
Departure Headway (Hd)	8.205	7.69	7.501	6.781	8.126	6.899
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	441	470	483	532	447	524
Service Time	5.946	5.43	5.237	4.517	5.861	4.633
HCM Lane V/C Ratio	0.51	0.555	0.625	0.677	0.763	0.483
HCM Control Delay	19.3	19.7	22.2	22.7	33.3	16
HCM Lane LOS	C	C	C	C	D	C
HCM 95th-tile Q	2.9	3.3	4.3	5.1	6.6	2.6

HCM 6th TWSC
4: Sunset Ave & Project Dwy

Cumulative plus Project Conditions
Timing Plan: AM Peak

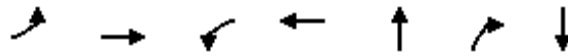
Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	16	588	6	6	431
Future Vol, veh/h	19	16	588	6	6	431
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	17	639	7	7	468
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1125	323	0	0	646	0
Stage 1	643	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	212	673	-	-	937	-
Stage 1	486	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	210	673	-	-	937	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	486	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	440	937	-	
HCM Lane V/C Ratio	-	-	0.086	0.007	-	
HCM Control Delay (s)	-	-	14	8.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

Queues

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative plus Project Conditions

Timing Plan: PM Peak



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	719	276	396	502	529	6
v/c Ratio	0.03	1.08	1.00	0.46	1.04	0.61	0.01
Control Delay	60.8	96.9	112.5	27.9	101.0	21.8	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.8	96.9	112.5	27.9	101.0	21.8	20.7
Queue Length 50th (ft)	3	~709	255	242	~406	164	1
Queue Length 95th (ft)	16	#958	#445	334	m#581	m223	11
Internal Link Dist (ft)		630		3551	297		104
Turn Bay Length (ft)	50		195				
Base Capacity (vph)	132	668	276	858	483	864	586
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	1.08	1.00	0.46	1.04	0.61	0.01

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.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative plus Project Conditions

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	373	289	254	358	6	471	6	503	1	1	4
Future Volume (veh/h)	4	373	289	254	358	6	471	6	503	1	1	4
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	405	314	276	389	7	496	6	529	1	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	367	285	279	846	15	172	1	567	30	39	79
Arrive On Green	0.08	0.38	0.38	0.16	0.46	0.46	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	976	757	1781	1831	33	338	4	1585	0	110	220
Grp Volume(v), veh/h	4	0	719	276	0	396	502	0	529	6	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1733	1781	0	1864	342	0	1585	330	0	0
Q Serve(g_s), s	0.3	0.0	52.7	21.7	0.0	20.3	0.0	0.0	45.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	52.7	21.7	0.0	20.3	50.1	0.0	45.0	50.1	0.0	0.0
Prop In Lane	1.00		0.44	1.00		0.02	0.99		1.00	0.17		0.67
Lane Grp Cap(c), veh/h	134	0	652	279	0	862	173	0	567	148	0	0
V/C Ratio(X)	0.03	0.00	1.10	0.99	0.00	0.46	2.89	0.00	0.93	0.04	0.00	0.00
Avail Cap(c_a), veh/h	134	0	652	279	0	862	173	0	567	148	0	0
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(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	60.0	0.0	43.7	58.9	0.0	25.7	52.3	0.0	43.3	34.7	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	66.6	51.6	0.0	1.8	868.0	0.0	24.4	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	34.2	13.7	0.0	9.4	48.0	0.0	21.2	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	110.2	110.5	0.0	27.5	920.3	0.0	67.7	35.3	0.0	0.0
LnGrp LOS	E	A	F	F	A	C	F	A	E	D	A	A
Approach Vol, veh/h		723			672			1031				6
Approach Delay, s/veh		109.9			61.6			482.8				35.3
Approach LOS		F			E			F				D
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		55.2	27.0	57.8		55.2	15.0	69.8				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		50.1	21.9	52.7		50.1	10.5	64.7				
Max Q Clear Time (g_c+I1), s		52.1	23.7	54.7		52.1	2.3	22.3				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			254.5									
HCM 6th LOS			F									

Queues
2: Sunset Ave & E. Travis Blvd

Cumulative plus Project Conditions

Timing Plan: PM Peak

	→	↘	↙	↑	↓
Lane Group	EBT	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	454	909	478	563	598
v/c Ratio	1.05	0.56	0.98	0.49	0.67
Control Delay	106.9	2.3	95.8	39.8	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	106.9	2.3	95.8	39.8	25.4
Queue Length 50th (ft)	~448	0	226	216	172
Queue Length 95th (ft)	#665	22	#340	275	m165
Internal Link Dist (ft)	1364			956	1190
Turn Bay Length (ft)			100		
Base Capacity (vph)	433	1630	487	1147	889
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	1.05	0.56	0.98	0.49	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.					
m Volume for 95th percentile queue is metered by upstream signal.					

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E. Travis Blvd

Cumulative plus Project Conditions

Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Volume (veh/h)	418	0	836	0	0	0	473	557	0	0	371	179
Future Volume (veh/h)	418	0	836	0	0	0	473	557	0	0	371	179
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	454	0	909	0	0	0	478	563	0	0	403	195
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	0	1080	0	414	0	491	1152	0	126	589	282
Arrive On Green	0.25	0.00	0.25	0.00	0.00	0.00	0.14	0.32	0.00	0.00	0.25	0.25
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2331	1114
Grp Volume(v), veh/h	454	0	909	0	0	0	478	563	0	0	306	292
Grp Sat Flow(s), veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1668
Q Serve(g_s), s	34.3	0.0	34.3	0.0	0.0	0.0	19.3	17.8	0.0	0.0	21.8	22.2
Cycle Q Clear(g_c), s	34.3	0.0	34.3	0.0	0.0	0.0	19.3	17.8	0.0	0.0	21.8	22.2
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.67
Lane Grp Cap(c), veh/h	436	0	1080	0	414	0	491	1152	0	126	449	422
V/C Ratio(X)	1.04	0.00	0.84	0.00	0.00	0.00	0.97	0.49	0.00	0.00	0.68	0.69
Avail Cap(c_a), veh/h	436	0	1080	0	414	0	491	1152	0	126	449	422
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	0.0	39.0	0.0	0.0	0.0	59.8	38.0	0.0	0.0	47.2	47.4
Incr Delay (d2), s/veh	53.9	0.0	8.0	0.0	0.0	0.0	34.5	1.5	0.0	0.0	8.1	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.8	0.0	15.5	0.0	0.0	0.0	10.7	8.0	0.0	0.0	10.6	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.8	0.0	47.0	0.0	0.0	0.0	94.2	39.5	0.0	0.0	55.3	56.4
LnGrp LOS	F	A	D	A	A	A	F	D	A	A	E	E
Approach Vol, veh/h	1363			0			1041			598		
Approach Delay, s/veh	66.9			0.0			64.6			55.8		
Approach LOS	E						E			E		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	50.5	50.5		39.0	25.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	45.4	45.4		* 34	19.9	35.4		31.0				
Max Q Clear Time (g_c+I), s	19.8	19.8		36.3	21.3	24.2		0.0				
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	2.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 63.9

HCM 6th LOS E

Notes

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

HCM 6th AWSC
3: E Tabor Ave & Clay Bank Rd

Cumulative plus Project Conditions
Timing Plan: PM Peak

Intersection

Intersection Delay, s/veh 29.5

Intersection LOS D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	263	356	265	231	366	217
Future Vol, veh/h	263	356	265	231	366	217
Peak Hour Factor	0.92	0.92	0.92	0.92	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	387	288	251	377	224
Number of Lanes	1	1	1	1	1	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left SB			WB
Conflicting Lanes Left	2	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	2
HCM Control Delay	32	20.5	34.8
HCM LOS	D	C	D

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	0%	100%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%
Vol Right, %	0%	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	263	356	265	231	366	217
LT Vol	263	0	0	0	366	0
Through Vol	0	356	265	0	0	0
RT Vol	0	0	0	231	0	217
Lane Flow Rate	286	387	288	251	377	224
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.649	0.824	0.634	0.502	0.872	0.441
Departure Headway (Hd)	8.179	7.664	7.926	7.202	8.322	7.093
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	472	455	500	438	508
Service Time	5.923	5.407	5.671	4.947	6.062	4.832
HCM Lane V/C Ratio	0.646	0.82	0.633	0.502	0.861	0.441
HCM Control Delay	24.9	37.3	23.5	17	46.4	15.3
HCM Lane LOS	C	E	C	C	E	C
HCM 95th-tile Q	4.5	7.9	4.3	2.8	8.9	2.2

HCM 6th TWSC
4: Sunset Ave & Project Dwy

Cumulative plus Project Conditions
Timing Plan: PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	10	970	19	16	528
Future Vol, veh/h	12	10	970	19	16	528
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	11	1054	21	17	574
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1673	538	0	0	1075	0
Stage 1	1065	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.63	6.93	-	-	4.13	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	95	488	-	-	646	-
Stage 1	293	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	91	488	-	-	646	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	293	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	18.9	0		0.3		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	282	646	-	
HCM Lane V/C Ratio	-	-	0.085	0.027	-	
HCM Control Delay (s)	-	-	18.9	10.7	0	
HCM Lane LOS	-	-	C	B	A	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	

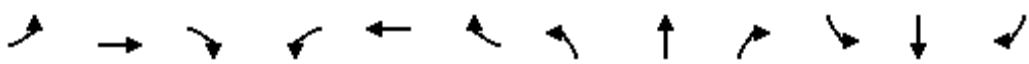
Appendix H – Cumulative plus Project Conditions Mitigations Intersection Level of Service Work Sheets

HCM 6th Signalized Intersection Summary

1: Sunset Ave/Dwy & E Tabor Ave

Cumulative plus Project Conditions - Mitigations

Timing Plan: AM Peak

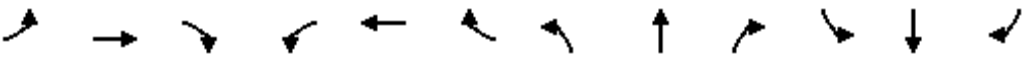
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	348	202	235	397	1	343	1	260	0	0	0
Future Volume (veh/h)	1	348	202	235	397	1	343	1	260	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.91	1.00		0.99	1.00		0.99	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1	378	220	253	427	1	373	1	283	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	410	238	284	883	2	669	648	545	0	648	0
Arrive On Green	0.08	0.38	0.38	0.16	0.47	0.47	0.35	0.35	0.35	0.00	0.00	0.00
Sat Flow, veh/h	1781	1064	619	1781	1865	4	1781	1870	1574	0	1870	0
Grp Volume(v), veh/h	1	0	598	253	0	428	373	1	283	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1683	1781	0	1870	1781	1870	1574	0	1870	0
Q Serve(g_s), s	0.1	0.0	47.4	19.5	0.0	21.9	24.2	0.0	20.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	0.0	47.4	19.5	0.0	21.9	24.2	0.0	20.1	0.0	0.0	0.0
Prop In Lane	1.00		0.37	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	134	0	648	284	0	885	669	648	545	0	648	0
V/C Ratio(X)	0.01	0.00	0.92	0.89	0.00	0.48	0.56	0.00	0.52	0.00	0.00	0.00
Avail Cap(c_a), veh/h	134	0	648	284	0	885	669	648	545	0	648	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	59.9	0.0	41.1	57.7	0.0	25.2	37.8	29.9	36.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	20.8	31.7	0.0	1.9	3.3	0.0	3.5	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	23.0	11.2	0.0	10.1	11.1	0.0	8.2	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	0.0	61.8	89.3	0.0	27.0	41.2	29.9	40.0	0.0	0.0	0.0
LnGrp LOS	E	A	E	F	A	C	D	C	D	A	A	A
Approach Vol, veh/h		599			681			657			0	
Approach Delay, s/veh		61.8			50.2			40.6			0.0	
Approach LOS		E			D			D				
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		53.6	27.4	59.0		53.6	15.0	71.4				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		48.5	22.3	53.9		48.5	10.5	66.3				
Max Q Clear Time (g_c+I1), s		26.2	21.5	49.4		0.0	2.1	23.9				
Green Ext Time (p_c), s		2.1	0.1	1.6		0.0	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			50.5									
HCM 6th LOS			D									

HCM 6th Signalized Intersection Summary

2: Sunset Avenue/Sunset Ave & E. Travis Blvd

Cumulative plus Project Conditions - Mitigations

Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰		↰	↱		↰	↱	
Traffic Volume (veh/h)	170	0	582	0	0	0	537	356	0	0	327	206
Future Volume (veh/h)	170	0	582	0	0	0	537	356	0	0	327	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	0	633	0	0	0	584	387	0	0	355	224
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	0	1278	0	362	0	711	1186	0	166	465	288
Arrive On Green	0.26	0.00	0.26	0.00	0.00	0.00	0.21	0.33	0.00	0.00	0.22	0.22
Sat Flow, veh/h	1748	0	2730	0	1870	0	3456	3647	0	1781	2102	1302
Grp Volume(v), veh/h	185	0	633	0	0	0	584	387	0	0	299	280
Grp Sat Flow(s),veh/h/ln	1748	0	1365	0	1870	0	1728	1777	0	1781	1777	1628
Q Serve(g_s), s	14.0	0.0	25.9	0.0	0.0	0.0	25.8	13.0	0.0	0.0	25.2	25.9
Cycle Q Clear(g_c), s	14.0	0.0	25.9	0.0	0.0	0.0	25.8	13.0	0.0	0.0	25.2	25.9
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.80
Lane Grp Cap(c), veh/h	451	0	1278	0	362	0	711	1186	0	166	393	360
V/C Ratio(X)	0.41	0.00	0.50	0.00	0.00	0.00	0.82	0.33	0.00	0.00	0.76	0.78
Avail Cap(c_a), veh/h	451	0	1278	0	362	0	711	1186	0	166	393	360
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(l)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	0.0	29.9	0.0	0.0	0.0	60.7	39.9	0.0	0.0	58.3	58.6
Incr Delay (d2), s/veh	2.7	0.0	1.4	0.0	0.0	0.0	10.4	0.7	0.0	0.0	13.0	15.2
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	6.6	0.0	9.0	0.0	0.0	0.0	12.3	5.9	0.0	0.0	12.7	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	31.3	0.0	0.0	0.0	71.1	40.6	0.0	0.0	71.3	73.8
LnGrp LOS	D	A	C	A	A	A	E	D	A	A	E	E
Approach Vol, veh/h		818			0			971			579	
Approach Delay, s/veh		36.0			0.0			58.9			72.5	
Approach LOS		D						E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	58.5		46.0	38.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	14.9	53.4		* 41	32.9	35.4		31.0				
Max Q Clear Time (g_c+I1), s	0.0	15.0		27.9	27.8	27.9		0.0				
Green Ext Time (p_c), s	0.0	2.7		3.4	1.1	2.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			54.3									
HCM 6th LOS			D									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th Signalized Intersection Summary

Sunset Avenue Apartments

1: Sunset Ave/Dwy & E Tabor Ave

Timing Plan: PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	373	289	254	358	6	471	6	503	1	1	4
Future Volume (veh/h)	4	373	289	254	358	6	471	6	503	1	1	4
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	4	405	314	276	389	7	496	6	529	1	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	134	376	291	284	867	16	541	648	549	96	105	341
Arrive On Green	0.08	0.38	0.38	0.16	0.47	0.47	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1781	976	757	1781	1831	33	1411	1870	1585	189	303	984
Grp Volume(v), veh/h	4	0	719	276	0	396	496	6	529	6	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1733	1781	0	1864	1411	1870	1585	1476	0	0
Q Serve(g_s), s	0.3	0.0	53.9	21.6	0.0	19.9	48.2	0.3	45.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	53.9	21.6	0.0	19.9	48.5	0.3	45.8	0.3	0.0	0.0
Prop In Lane	1.00		0.44	1.00		0.02	1.00		1.00	0.17		0.67
Lane Grp Cap(c), veh/h	134	0	667	284	0	883	541	648	549	541	0	0
V/C Ratio(X)	0.03	0.00	1.08	0.97	0.00	0.45	0.92	0.01	0.96	0.01	0.00	0.00
Avail Cap(c_a), veh/h	134	0	667	284	0	883	541	648	549	541	0	0
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	60.0	0.0	43.1	58.5	0.0	24.6	46.0	30.0	44.9	30.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	57.6	46.9	0.0	1.6	22.7	0.0	30.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	33.2	13.4	0.0	9.1	20.4	0.1	22.3	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	100.7	105.5	0.0	26.3	68.8	30.0	75.2	30.0	0.0	0.0
LnGrp LOS	E	A	F	F	A	C	E	C	E	C	A	A
Approach Vol, veh/h		723			672			1031			6	
Approach Delay, s/veh		100.5			58.8			71.9			30.0	
Approach LOS		F			E			E			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		53.6	27.4	59.0		53.6	15.0	71.4				
Change Period (Y+Rc), s		5.1	5.1	5.1		5.1	4.5	5.1				
Max Green Setting (Gmax), s		48.5	22.3	53.9		48.5	10.5	66.3				
Max Q Clear Time (g_c+I1), s		50.5	23.6	55.9		2.3	2.3	21.9				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	2.6				
Intersection Summary												
HCM 6th Ctrl Delay			76.7									
HCM 6th LOS			E									

HCM 6th Signalized Intersection Summary

2: Sunset Ave & E. Travis Blvd

Sunset Avenue Apartments

Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖		↗	↖		↗	↖	↗
Traffic Volume (veh/h)	418	0	836	0	0	0	473	557	0	0	371	179
Future Volume (veh/h)	418	0	836	0	0	0	473	557	0	0	371	179
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	454	0	909	0	0	0	478	563	0	0	403	195
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.99	0.99	0.99	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	460	0	1294	0	362	0	711	1186	0	166	516	246
Arrive On Green	0.26	0.00	0.26	0.00	0.00	0.00	0.21	0.33	0.00	0.00	0.22	0.22
Sat Flow, veh/h	1781	0	2790	0	1870	0	3456	3647	0	1781	2331	1114
Grp Volume(v), veh/h	454	0	909	0	0	0	478	563	0	0	306	292
Grp Sat Flow(s),veh/h/ln	1781	0	1395	0	1870	0	1728	1777	0	1781	1777	1668
Q Serve(g_s), s	40.6	0.0	41.3	0.0	0.0	0.0	20.4	20.1	0.0	0.0	25.9	26.4
Cycle Q Clear(g_c), s	40.6	0.0	41.3	0.0	0.0	0.0	20.4	20.1	0.0	0.0	25.9	26.4
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.67
Lane Grp Cap(c), veh/h	460	0	1294	0	362	0	711	1186	0	166	393	369
V/C Ratio(X)	0.99	0.00	0.70	0.00	0.00	0.00	0.67	0.47	0.00	0.00	0.78	0.79
Avail Cap(c_a), veh/h	460	0	1294	0	362	0	711	1186	0	166	393	369
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	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	0.0	34.1	0.0	0.0	0.0	58.6	42.2	0.0	0.0	58.6	58.8
Incr Delay (d2), s/veh	39.0	0.0	3.2	0.0	0.0	0.0	5.0	1.4	0.0	0.0	14.1	15.8
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	23.3	0.0	14.8	0.0	0.0	0.0	9.4	9.1	0.0	0.0	13.2	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	98.1	0.0	37.3	0.0	0.0	0.0	63.6	43.6	0.0	0.0	72.7	74.6
LnGrp LOS	F	A	D	A	A	A	E	D	A	A	E	E
Approach Vol, veh/h	1363				0				1041			
Approach Delay, s/veh	57.6				0.0				52.8			
Approach LOS	E								D			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	20.0	58.5		46.0	38.0	40.5		35.5				
Change Period (Y+Rc), s	5.1	5.1		* 4.7	5.1	5.1		4.5				
Max Green Setting (Gmax), s	14.9	53.4		* 41	32.9	35.4		31.0				
Max Q Clear Time (g_c+I1), s	0.0	22.1		43.3	22.4	28.4		0.0				
Green Ext Time (p_c), s	0.0	4.0		0.0	1.3	2.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 59.1

HCM 6th LOS E

Notes

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

Appendix I – CA MUTCD Peak Hour Signal Warrant Work Sheets

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	2 or More Lanes

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
---	----

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?

No

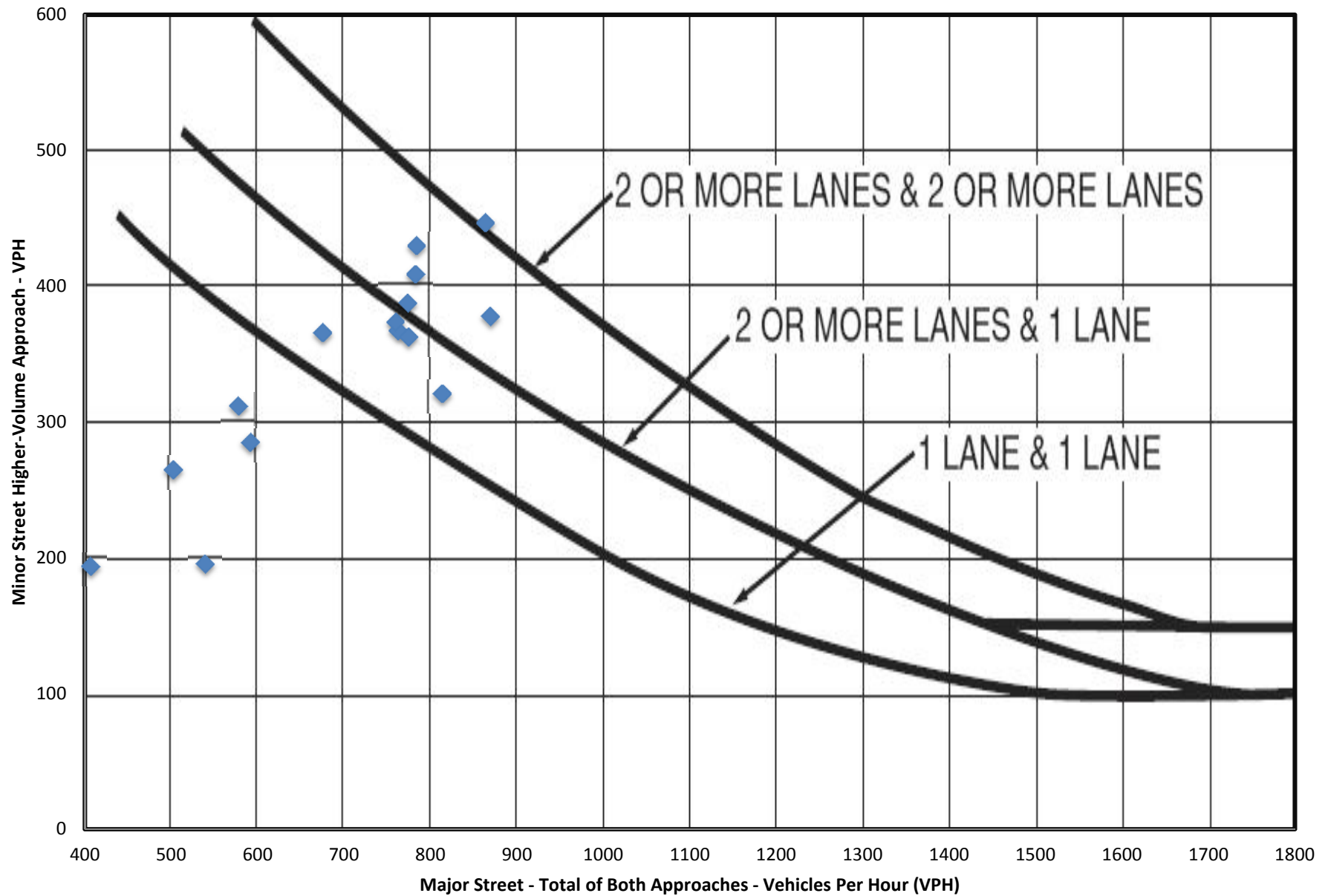
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-3
2

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	117	44	
6:30 AM	279	95	
6:45 AM	539	196	
7:00 AM	813	321	
7:15 AM	869	378	Met
7:30 AM	863	447	Met
7:45 AM	783	430	Met
8:00 AM	675	366	
8:15 AM	502	265	
8:30 AM	346	145	
8:45 AM	166	61	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	193	102	
3:30 PM	406	194	
3:45 PM	591	285	
4:00 PM	762	368	
4:15 PM	774	363	
4:30 PM	759	374	
4:45 PM	773	388	Met
5:00 PM	782	409	Met
5:15 PM	577	312	
5:30 PM	379	209	
5:45 PM	180	104	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour



MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	2 or More Lanes

Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street?	No
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Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	No
---	----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes
*If applicable, attach all supporting calculations and documentation.	

Total Number of Unique Hours Met On Figure 4C-3
4

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	0	0	
5:30 AM	0	0	
5:45 AM	0	0	
6:00 AM	0	0	
6:15 AM	143	54	
6:30 AM	340	116	
6:45 AM	657	239	
7:00 AM	991	392	Met
7:15 AM	1060	461	Met
7:30 AM	1053	545	Met
7:45 AM	956	524	Met
8:00 AM	825	445	Met
8:15 AM	613	322	
8:30 AM	423	176	
8:45 AM	203	74	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	0	0	
2:30 PM	0	0	
2:45 PM	0	0	
3:00 PM	0	0	
3:15 PM	274	145	
3:30 PM	577	276	
3:45 PM	840	405	Met
4:00 PM	1083	523	Met
4:15 PM	1100	516	Met
4:30 PM	1079	531	Met
4:45 PM	1099	551	Met
5:00 PM	1111	581	Met
5:15 PM	820	443	Met
5:30 PM	538	297	
5:45 PM	255	148	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-3. Warrant 3, Peak Hour

