Appendix H:
Transportation Analysis

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Draft Traffic Impact Analysis Report

215 Skelly Residential Development

City of Hercules, California

February 28, 2022

TJKM

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EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed residential development located at 215 Skelly in the City of Hercules. The project would replace a former horse ranch with 40 single family homes.

The purpose of this report is to provide summaries of changes in vehicle miles traveled (VMT) and traffic impacts on the surrounding transportation system with the proposed project. The VMT analysis is based on the methodology adopted by the Contra Costa Transportation Authority (CCTA). To evaluate the effects on the transportation infrastructure due to the addition of traffic from the proposed project, an LOS analysis was conducted to determine consistency with City of Hercules and CCTA plans and standards.

Vehicle Miles Traveled

In the project vicinity, the CCTA Travel Demand Model generates daily residential VMT per resident of 14.7 for 2020, well below the countywide average of 19.78. Based on the CCTA VMT screening threshold of 16.81 this is considered a low-VMT area, and there is no substantial evidence that the project would generate high VMTs for this location. The project is expected to cause a **less-than-significant impact** under CEQA and is exempt from further VMT analysis.

Project Trip Generation

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the ITE publication *Trip Generation (11th Edition)*. TJKM used published trip rates for the ITE land use Single Family Detached Housing (ITE Code 210) for this project. The proposed project is expected to generate 377 total daily trips, including 28 net new a.m. peak hour trips (7 in, 21 out) and 38 net new p.m. peak hour trips (24 in, 14 out).

Existing Conditions

Under this scenario, both of the study intersections operate within applicable jurisdictional standards during the a.m. peak hour, and both intersections operate acceptably in the p.m. peak hour. The two-way stop-controlled intersection of Hercules Avenue and Skelly operates at LOS B during the a.m. peak hour and LOS B during the p.m. peak hour. The signalized intersection of Hercules Avenue and San Pablo Avenue operates at LOS C during the a.m. peak hour and LOS C during the p.m. peak hour.

Existing plus Project Conditions

Under this scenario, both of the study intersections would continue to operate within applicable jurisdictional standards during a.m. peak hour, and both study intersections operate acceptably in the p.m. peak hour. The two-way stop-controlled intersection of Hercules Avenue and Skelly operates at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour. The signalized intersection of Hercules Avenue and San Pablo Avenue operates at LOS C during the a.m. peak hour and LOS C during the p.m. peak hour. The project **would be consistent** with level of service standards set forth under the Hercules General Plan and CCTA Congestion Management Program.

Cumulative Conditions

The Cumulative No-Project Conditions analysis forecasts how the study area's transportation system would operate with the full build-out of the project in combination with the growth and changes of the surrounding community by the year 2040.

Under this scenario, both of the study intersections operate within applicable jurisdictional standards during both peak hours. The two-way stop-controlled intersection of Hercules Avenue and Skelly would continue to operate at LOS B during the a.m. peak hour and LOS B during the p.m. peak hour. The signalized intersection of Hercules Avenue and San Pablo Avenue would continue to operate at LOS C during the a.m. peak hour and LOS C during the p.m. peak hour.

Cumulative plus Project Conditions

Under this scenario, both of the study intersections would continue to operate within applicable jurisdictional standards during both peak hours. The two-way stop-controlled intersection of Hercules Avenue and Skelly would continue to operate at LOS B during the a.m. peak hour, and deteriorate to LOS C during the p.m. peak hour with an increase in delay of 2.2 seconds. The signalized intersection of Hercules Avenue and San Pablo Avenue would continue to operate at LOS C during the a.m. peak hour, and deteriorate to LOS D during the p.m. peak hour with an increased delay of 0.9 seconds. The project **would be consistent** with level of service standards set forth under the Hercules General Plan and CCTA Congestion Management Program.

Site Access and On-Site Circulation

TJKM concluded that the site plan will operate acceptably and provide adequate on-site vehicle circulation and access to parking spaces. The proposed project does not conflict with existing and planned pedestrian or bicycle facilities and will add trips to existing transit facilities, which can be accommodated by the existing transit capacity. Site access and circulation for vehicles are considered **adequate**, but on-site pedestrian circulation could be improved with additional curb ramps.

Parking

The project would require 80 off-street parking spaces for the 40 dwelling units. The proposed project would construct two-car garages with driveway aprons for each dwelling unit, providing 80 covered spaces satisfying City requirements, as well as 80 uncovered spaces. The proposed parking supply would therefore be more than **adequate** under City of Hercules requirements and would not produce any parking impacts on surrounding parcels or roadways.

Queuing Analysis

Queuing operations were analyzed at the one signalized intersection with dedicated left- and right-turn lanes, under Existing and Cumulative Conditions, with and without the proposed project. Under Existing Conditions, the signalized intersection of Hercules Avenue and San Pablo Avenue would experience queue overflows in the eastbound left turn lane during PM peak hours, and overflows in the southbound left turn lane during one or both peak hours. Under Existing plus Project Conditions, the same turn lanes would continue to experience overflows during the same peak hours, with mild increases in queue lengths in the southbound left turn lane during the AM peak hours and a 20ft increase in queue lengths in the

eastbound left turn lane during PM peak hours. The addition of project trips would not cause any new queue overflows.

Recommendations

TJKM recommends the following:

- The grading plans for the site should be carefully evaluated to ensure that the finished grade and landscaping do not create any visual obstructions for vehicles exiting the driveways.
- Add curb ramps to provide accessible throughout the development.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed residential development located at 215 Skelly in the City of Hercules. The proposed project would replace a former horse ranch with 40 single family homes. Primary access to the project site would be provided by a private street connecting to Skelly at the location of the existing driveway. This chapter discusses the TIS purpose, project study area, and analysis scenarios. **Figure 1** shows the study area and project site location. **Figure 2** shows the project site plan, dated November, 2021.

1.1 Study Purpose

The purpose of this report is to provide summaries of changes in vehicle miles traveled (VMT) and traffic impacts on the surrounding transportation system. The VMT analysis is based on the methodology adopted by the Contra Costa Transportation Authority (CCTA). To evaluate the effects on the transportation infrastructure due to the addition of traffic from the proposed project, an LOS analysis was conducted to determine consistency with City of Hercules and CCTA plans and standards.

1.2 Study Intersections

TJKM evaluated traffic conditions at two study through remote field review.

The study intersections were selected based on TJKM's working knowledge of the area with input and approval from the City of Hercules. San Pablo Avenue is identified as a Route of Regional Significance within the Contra Costa Transportation Authority (CCTA) West County Action Plan. Due to ongoing traffic irregularities associated with the COVID-19 pandemic, observed traffic volumes were increased by an adjustment factor to estimate typical traffic volumes. This is discussed further in section 3.5.

The peak periods observed were between 7:00-9:00 a.m. and 4:00-6:00 p.m. The study intersections and associated traffic controls are as follows:

1. Hercules Avenue and Skelly/Zeus (Two-Way Stop)
2. Hercules Avenue and San Pablo Avenue (Signalized)

1.3 Study Scenarios

The roadway operations analysis addresses the following four traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on adjusted 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 (2040)** – This scenario considers the development of the city and surrounding communities to the year 2040, projecting existing traffic volumes to the year 2040 using an annual growth factor of 0.27 percent per year. This growth factor was derived from 2016 and 2040 traffic volumes contained in *The Veranda Shopping Center TIS* (2016, Kittelson & Associates), and ultimately based on the 2040 CCTA traffic model.

- **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

Figure 2: Site Plan

2.0 STUDY METHODOLOGY

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). The CEQA analysis was conducted in accordance with the *Technical Advisory On Evaluating Transportation Impacts In CEQA* published by the Governor's Office of Planning and Research (OPR) and the July 1, 2020, Technical Memorandum prepared by Fehr & Peers describing the VMT methodology adopted by the Contra Costa Transportation Authority (CCTA). As of July 1, 2020, intersection level of service (LOS) can no longer be used to determine significant CEQA impacts. However, an LOS analysis was conducted to determine consistency with City of Hercules and CCTA plans and standards.

2.1 Vehicle Miles Traveled

This study evaluates project-related VMT as outlined in the adopted CCTA VMT methodology. The methodology and implementation guidelines were adopted by CCTA in July 2020. The City of Hercules has adopted CCTA VMT procedures and standards.

The Governor's Office of Planning and Research (OPR) *Technical Advisory* (December 2018) provides guidance to analysts and local jurisdictions for implementing VMT as a metric for determining the transportation impact for land use projects. The OPR guidelines state that for analysis purposes, "VMT" refers to automobile VMT, specifically passenger vehicles and light trucks. Heavy truck traffic is typically excluded.

The CCTA guidelines include a screening process that describes five scenarios in which a project would be with exempted from a VMT analysis requirement: 1) projects exempt from CEQA analysis, 2) small projects, 3) local serving projects, 4) projects in transit priority areas, and 5) projects in low VMT areas. Using the CCTA methodologies, it appears that the proposed residential project will meet the exemption requirements for a low-VMT area. It should be noted that even if a project satisfies one or more of the screening criteria, lead agencies may still require a VMT analysis if there is evidence that the project has characteristics that might lead to a significant amount of VMT.

The following language is from the Project Screening section of the CCTA VMT methodologies and was applied to the proposed project:

2.5: Projects Located in Low VMT Areas. Residential and employment-generating projects located within a low VMT-generating area can be presumed to have a less-than-significant impact absent substantial evidence to the contrary. A low VMT area is defined as follows:

- For housing projects: Cities and unincorporated portions within CCTA's five subregions that have existing home-based VMT per capita that is 85% or less of the existing County-wide average.

2.2 Level of Service Analysis Methodology

Although Level of Service (LOS) is no longer relevant to CEQA, LOS can be used to determine conformity with an adopted general plan or congestion management program. LOS is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and

passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets in urban areas.

Signalized Intersections

The study intersection under traffic signal control was analyzed using the Highway Capacity Manual 6th (HCM) Operations Methodology for signalized intersections described in Chapter 18. This methodology determines LOS based on average control delay per vehicle for the overall intersection during peak hour intersection operating conditions. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using Synchro 10 analysis software and was correlated to a LOS designation as shown in **Table 1**.

Table 1: Signalized Intersection Delay and LOS Definitions

Level of Service	Description	Average Control Delay
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major-contributing causes of such delay levels.	greater than 80.0

Source: Highway Capacity Manual 6th Ed., Chapter 18 (Transportation Research Board, 2010)
Average Control Delay per Vehicle in seconds

Unsignalized Intersections

The study intersection under stop control (unsignalized) was analyzed using the HCM Operations Methodology (HCM 6th Ed.) for unsignalized intersections described in Chapter 20. LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At the side street, one-way or two-way stop controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersections is presented for all-way stop controlled intersections. The average control delay for unsignalized intersections was calculated using Synchro 10 analysis software and was correlated to a LOS designation as shown in **Table 2**.

Table 2: Unsignalized Intersection Delay and LOS Definitions

Level of Service	Description	Average Control Delay
A	Little or no traffic delay	≤10
B	Short Traffic delays	>10 – 15
C	Average traffic delays	>15 – 25
D	Long traffic delays	>25 – 35
E	Very long traffic delays	>35 – 50
F	Extreme traffic delays	>50

Source: Highway Capacity Manual 6th Edition, Chapter 20 (Transportation Research Board, 2010)
Average Control Delay per Vehicle in seconds

2.3 Level of Service Standards

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

City of Hercules

The City of Hercules General Plan has established performance benchmarks for signalized intersections and roadway segments within its jurisdiction. The City's policy is to maintain LOS D as the desired level of service on intersections along all Basic Routes, which includes all arterials, collectors, and local roads that are not Regional Routes. One exception to this standard is the City's policy that Collector Roads operating worse than LOS D are not considered deficient if the intersection does not meet a Caltrans signal warrant. This avoids over-signalizing intersections with low side-street volumes.

There is no specified criteria for determining significant impacts to unsignalized intersections. For the purposes of this study, it was assumed that an unsignalized intersection experiences a significant inconsistency if the LOS falls below LOS D, **and** the intersection meets the MUTCD Peak Hour Signal Warrant during the same peak hour.

Contra Costa Transportation Authority CMP Intersections

In the project vicinity, San Pablo Avenue is designated as a Route of Regional Significance (RORS). The intersection of San Pablo Avenue and Hercules Avenue is part of the CCTA Congestion Management Program (CMP) and subject to regular monitoring and separate LOS standards. The Congestion Management Program specifies level of service standards for intersections and RORS, but it does not provide specific thresholds of significance.

The LOS Standard for the San Pablo Avenue and Hercules Avenue is LOS E. The project-generated increase in traffic is considered to have a significant inconsistency with the CMP if an intersection meets either of the following criteria:

- If intersection operations degrade from an acceptable level (LOS E or better) to an unacceptable level (LOS F).
- For transportation facilities that fail to meet LOS standards (as defined above) under no project conditions, an increase in the volume/capacity ratio by 0.03 or greater above no project conditions is considered to be significant.

3.0 EXISTING CONDITIONS

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

3.1 Existing Setting and Roadway System

Relevant roadways adjacent to the project site are discussed below:

Interstate 80 (I-80) From the Alameda County line to the Solano County line. I-80 is the primary interregional commute corridor through West County, and has major regional significance to the Bay Area. I-80 is an eight- to twelve-lane freeway with a posted speed limit of 65 miles per hour (mph). The north-south freeway connects Hercules with nearby cities, such as Richmond and Vallejo, and regional destinations, such as San Francisco and Sacramento. It also provides access to the greater freeway network with direct connections to Interstate 580, Interstate 680, Interstate 780, State Route 4, State Route 29, and State Route 37.

San Pablo Avenue. From the Alameda County line to I-80/Pomona Street in Crockett. San Pablo Avenue is the most important corridor for inter-city travel in West County: it is the primary transit spine of the region, it travels through all of the West County cities (in many cases, functioning as "Main Street"), and it is the primary reliever route to I-80 during periods of severe freeway congestion. San Pablo is a four-lane major arterial that runs generally east-west in the immediate project vicinity with a posted speed limit of 25-40 mph. On-street parking is prohibited, and intermittent sidewalks are provided along particular sections of the corridor. This roadway is also designated as a Route of Regional Significance by the Contra Costa County Transportation Authority (CCTA). Routes of Regional Significance are the most important streets in the County as designated by CCTA.

Skelly is a two-lane, east-west to north-south meandering street with a posted speed of 25 mph, which changes designation at Hercules Avenue. North of Hercules Avenue, Skelly becomes "Zeus," a local street that provides access to the Olympic Hills HOA. South of Hercules Avenue, Skelly is a local street. On-street parking is permitted south of Hercules Avenue.

Hercules Avenue is a four-lane, generally north-south collector with a posted speed of 25 mph. Hercules Avenue extends from O'Neill Circle in the north to Village Parkway in the south. Sidewalks are provided on both sides, and on-street parking is generally permitted north of San Pablo Avenue.

3.2 Existing Pedestrian Facilities

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

Pedestrian facilities consist of 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.

In the project vicinity, the study intersection which is signalized is equipped with pedestrian signal heads and cross walks. A crosswalk is present on the southeast leg of the unsignalized intersection along Hercules Avenue at the crossing of Skelly. There are continuous sidewalks present on Hercules Avenue and Skelly. Sidewalks are present in most sections, but not continuous, on portions of San Pablo Avenue. There is a gap in the sidewalk on the both sides San Pablo Avenue between the eastbound pedestrian pathway outlet south of the project site and the westbound pedestrian pathway outlet which terminates near Charles Avenue on San Pablo Avenue. The existing asphalt concrete pathways along the south side of the project site function as sidewalks along much of their length but may include sloping sections that reduce accessibility. Most nearby bus stops are accessible from the project site via existing sidewalks and crosswalks within the vicinity of the project site. The existing pedestrian facilities in the study area are shown in **Figure 3.**

Figure 3: Existing Pedestrian Facilities

3.3 Existing Bicycle Facilities

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

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

There are existing Class II bike lanes provided on San Pablo Avenue east of Hercules Avenue; an extension of the Class II bike lane is proposed in the Hercules 2018 General Plan Circulation Element. A multi-use trail is present along Pinole Creek to the west of the project site. The existing and proposed bicycle facilities in the study area are shown in **Figure 4.**

Figure 4: Existing Bicycle Facilities

3.4 Existing Transit Facilities

Existing transit service to the project is provided by the Western Contra Costa Transit Authority (WestCAT) and the Bay Area Rapid Transit system (BART). Such services are described below. It should be noted that the COVID-19 pandemic has resulted in substantially decreased transit demand throughout the region, leading to reduced service hours and frequency across multiple transit agencies. It is expected that service hours and frequency will be expanded when transit demand returns to more typical levels.

WestCAT – WestCAT provides bus service to various communities in West Contra Costa County including Hercules. It operates local, express, and regional bus lines as well as the Lynx transbay service. In the immediate vicinity of the proposed project, Bus Routes #J, #JPX, #C3, and #19, provide service to the project site and vicinity. **Table 3** summarizes existing bus service in the project vicinity.

BART - BART provides passenger service within the metropolitan Bay Area. BART currently has five main operating lines: Antioch-SFO/Millbrae, Dublin/Pleasanton-Daly City, Berryessa/North San Jose-Richmond, Berryessa/North San Jose-Daly City, and Richmond-Millbrae There are also connectors to Oakland International Airport (OAK) and San Francisco International Airport (SFO). BART operates between 5:00 a.m. and 9:00 on weekdays and between 8:00 a.m. and 9:00 p.m. on weekends. During the a.m. and p.m. peak commute periods, train service runs at 15-minute intervals to each destination. The closest BART station is located in El Cerrito del Norte on the east side of San Pablo Avenue near County Center.

The existing transit facilities in the study area are shown in **Figure 5**.

Table 3: Existing Bus Services

Route #	From	To	Weekdays		Weekend	
			Operating Hours	Headway (minutes)	Operating Hours	Headway (minutes)
J	Hercules Transit Center	El Cerrito BART	4:24 a.m. – 11:33 p.m.	36	7:10 a.m. – 9:15 p.m.	45
JPX	Hercules Transit Center	El Cerrito BART	5:14 am. – 8:46 p.m.	26	…	…
C3	Hercules Transit Center	Contra Costa College	7:06 a.m. – 8:01 p.m.	20	…	…
19	Hercules Transit Center	Hilltop Mall	…	…	8:59 a.m. – 9:00 p.m.	13

Source: WestCAT website https://www.westcat.org/home/SchedSysMap accessed February 8, 2022

Figure 5: Existing Transit Facilities

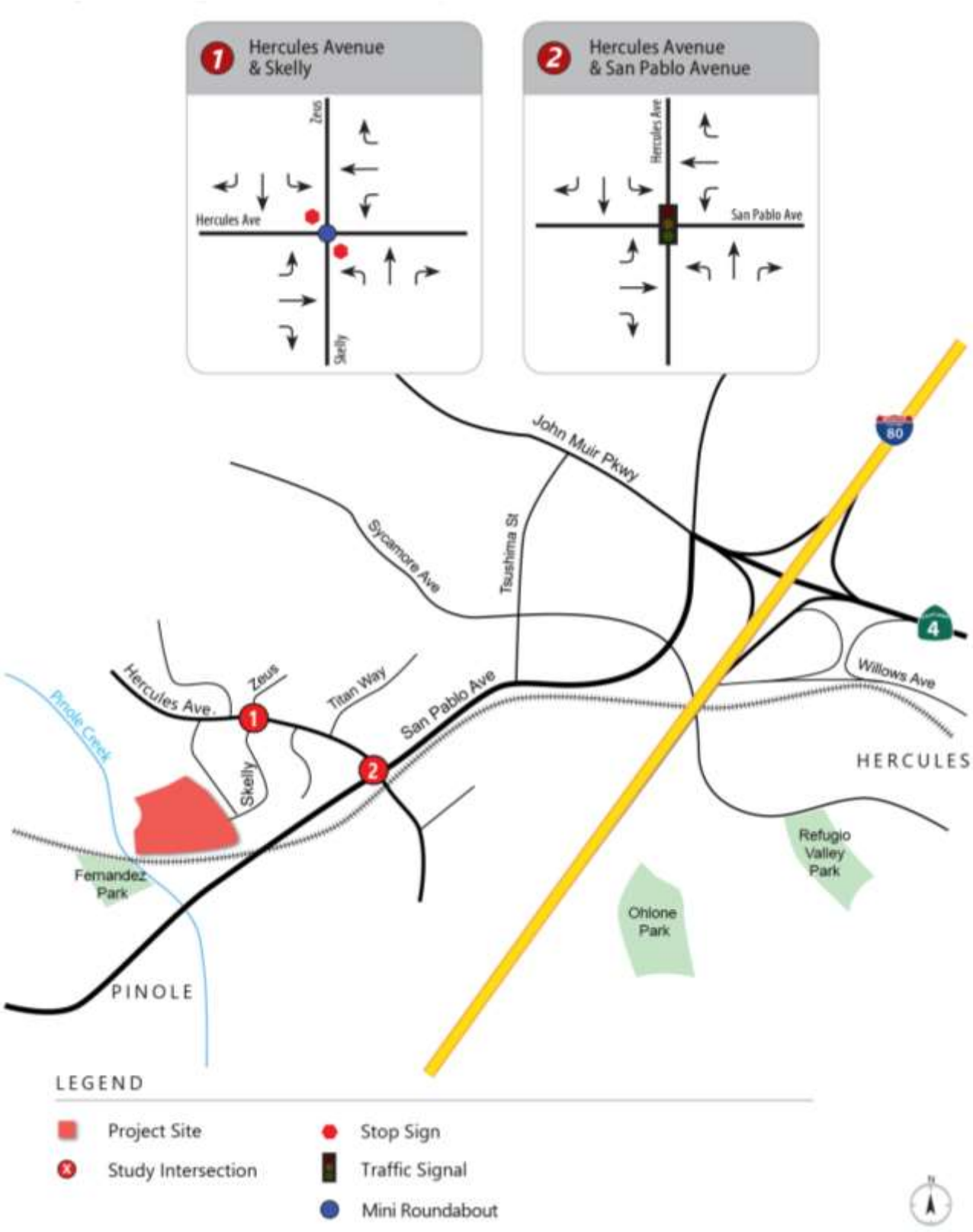
3.5 Existing Traffic Conditions

TJKM evaluated existing traffic conditions at two study intersections during the a.m. and p.m. peak hours on a typical weekday. Intersection turning movement counts of vehicles, bicycles, and pedestrians were collected during weekday a.m. peak period (7:00-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) on January 13, 2022.

Due to ongoing traffic irregularities associated with the COVID-19 pandemic, historical counts at one intersection were used as a basis of adjusting new turning movement volumes to estimated typical volumes. The adjusted volumes were then used as the basis for analyzing Existing Conditions. The most recent historical counts in the study area were collected in 2016 at Hercules & San Pablo Avenue, as part of the DEIR for the 2018 update to the Circulation Element of the Hercules General Plan. For the a.m. peak hour, 2022 volumes were increased by 24.8 percent to match total volumes in 2016. For the p.m. peak hour, 2020 volumes were increased by 42.7 percent.

The traffic count data are included in **Appendix A.** The existing lane geometries and traffic control at each study intersection are illustrated on **Figure 6** and intersection turning movement volumes at each study intersection are illustrated on **Figure 7**.

Figure 6: Existing Lane Geometry and Traffic Controls



3.6 Intersection Level of Service Analysis – Existing Conditions

This scenario evaluates the study intersections based on existing traffic volumes, lane geometry and traffic controls, as described above. The peak hour factors calculated from the existing turning movement counts were used for the study intersections for the Existing Conditions analysis. The results of the LOS analysis using the HCM 6th Edition methodology and Synchro 10 software program for Existing Conditions are summarized in **Table 4**. Field verification of existing intersections, lane configurations, and traffic controls were also conducted remotely and provided the basis for the LOS analysis for Existing Conditions.

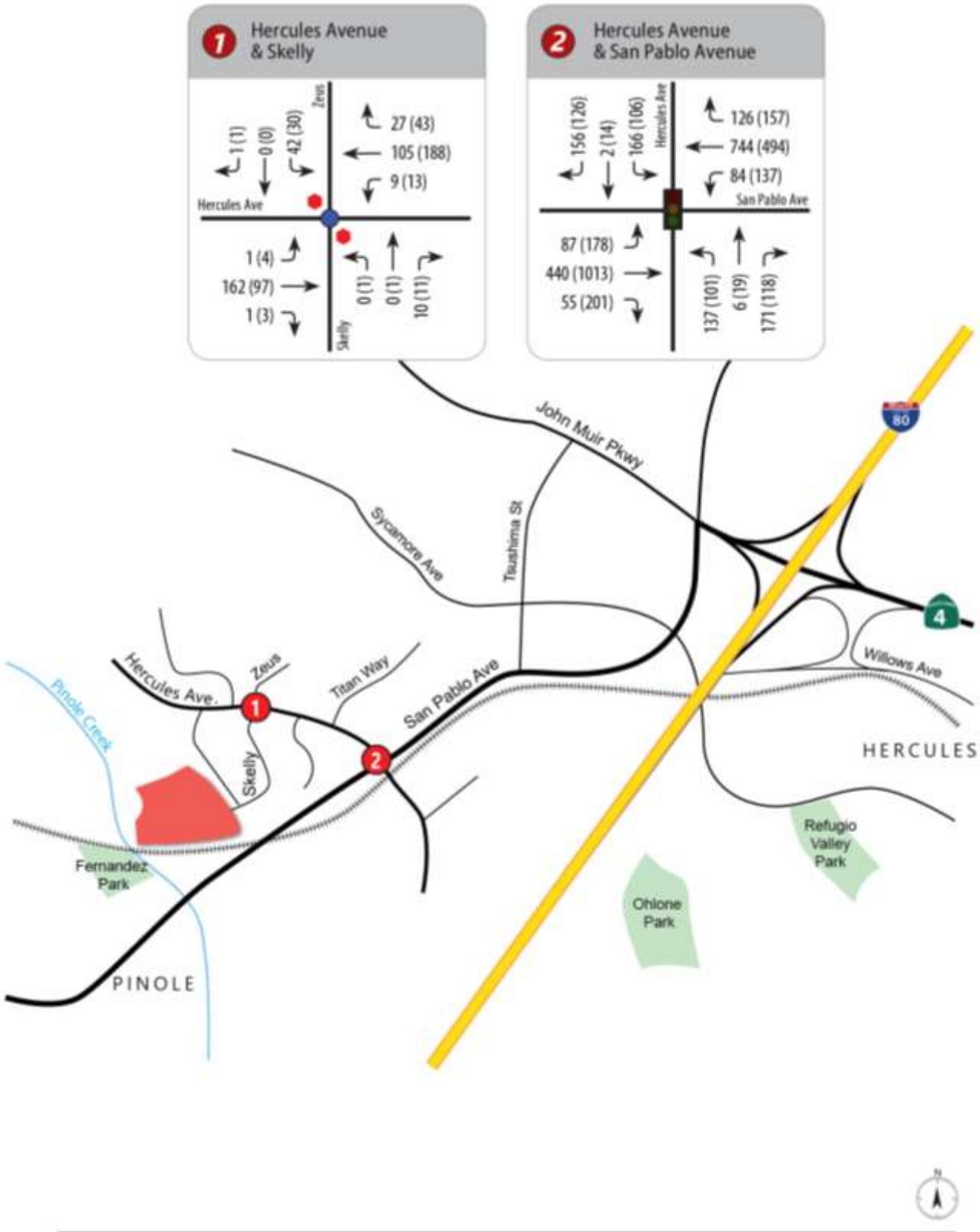
Under this scenario, both of the study intersections operate within applicable jurisdictional standards during the a.m. peak hour, and both study intersections operate acceptably in the p.m. peak hour. The signalized intersection of Hercules Avenue & San Pablo Avenue operates at LOS C during the a.m. peak hour and LOS C during the p.m. peak hour. The unsignalized intersection of Hercules Avenue and Skelly/Zeus operates at LOS B during the a.m. peak hour and LOS B during the p.m. peak hour. It should be noted that at this intersection, the southbound approach on Zeus experiences higher delay than the northbound approach on Skelly during both peak hours. The northbound approach experiences 9.6 seconds of delay in both peak hours. LOS worksheets are provided in **Appendix B**.

Table 4: Intersection Level of Service Analysis – Existing Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*	*Existing Conditions*	
				Average Delay[1]	*LOS*[2]
1	Hercules Ave & Skelly/Zeus	Two-Way Stop Control	AM	12.4	B (SB)
			PM	13.4	B (SB)
2	Hercules Ave & San Pablo Avenue	Signal	AM	24.1	C
			PM	25.0	C

Notes:
AM – morning peak hour, PM – evening peak hour
1. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
2. LOS = Level of Service
* CMP intersections with LOS E threshold
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

Figure 7: Existing Conditions Peak Hour Traffic Volumes



4.0 EXISTING PLUS PROJECT CONDITIONS

This analysis scenario presents the impacts of the proposed project at the study intersections and surrounding roadway system. This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project. The project would replace an existing horse ranch property with 40 single family homes.

4.1 Vehicle Miles Traveled

As noted in section 2.1, the proposed project was evaluated using screening criteria adopted by CCTA, based on existing vehicle miles traveled (VMT) generated in the project area. For projects in areas with a similar mix of existing uses, residential projects are screened out if the home-based VMT per resident is at least 15 percent below the countywide average.

It should be noted that the CCTA travel demand model year 2020 is a simulation, based on data collected prior to the most recent decennial model update in 2016. The 2020 simulated baseline traffic conditions are therefore unaffected by actual pandemic-related traffic disruptions that occurred in 2020.

VMT Generated Per resident

The proposed project would construct 40 new single family homes on a site surrounded by similar low-density single family residential developments. The CCTA travel demand model generates simulated daily weekday VMT per capita by traffic analysis zone (TAZ) within Contra Costa County and throughout the Bay Area, for commute VMT per employee and residential VMT per capita. The project site is within the boundaries of an existing TAZ (#10236) that contains similar single family residential subdivisions under existing conditions. As shown in **Table 5**, the residential VMT per capita generated in this TAZ is 14.45. A map showing TAZ boundaries is included in **Appendix C**.

For the year 2020, the countywide residential VMT per capita generated by the CCTA travel demand model is 19.78. The corresponding threshold to consider a location to have low VMT, 15 percent below the countywide average, is 16.81. There is no apparent evidence that the project would generate more VMT than the surrounding area. Based on the CCTA screening criteria, the proposed project is expected to cause a **less-than-significant impact** under CEQA and is exempt from further VMT analysis.

Table 5: Year 2020 VMT Generation

TAZ #	*Description*	*Population*	*Total Residential VMT*	*Residential VMT per Capita*
10236	North of San Pablo Ave., between Hercules Ave and Pinole Creek	1,036	8,288	14.45

Notes:
Source: CCTA travel demand model, baseline year 2020, Kittelson & Associates (2016)

4.2 Project Trip Generation

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the ITE publication *Trip Generation (11th Edition)*. TJKM used published trip rates for

the ITE land use Single Family Detached Housing (ITE Code 210) for this project. The proposed project is expected to generate 377 total daily trips, including 28 net new a.m. peak hour trips (7 in, 21 out) and 38 net new p.m. peak hour trips (24 in, 14 out).

Table 6 shows the trips expected to be generated by the proposed project.

Table 6: Project Trip Generation

Land Use[2]	*Size*[2]		*Daily*		*AM Peak*					*PM Peak*				
			Rate	*Trips*	*Rate*	*In:Out*	*In*	*Out*	*Total*	*Rate*	*In:Out*	*In*	*Out*	*Total*
Proposed Uses														
Single-Family Detached Housing (210)	40	DU	9.43	377	0.70	26:74	7	21	28	0.94	63:37	24	14	38
Total				**337**			**7**	**21**	**28**			**24**	**14**	**38**

Notes:
1. *Trip Generation, 11th Edition*, Institute of Transportation Engineers (ITE), 2017
2. DU: dwelling unit

4.3 Project Trip Distribution and Assignment

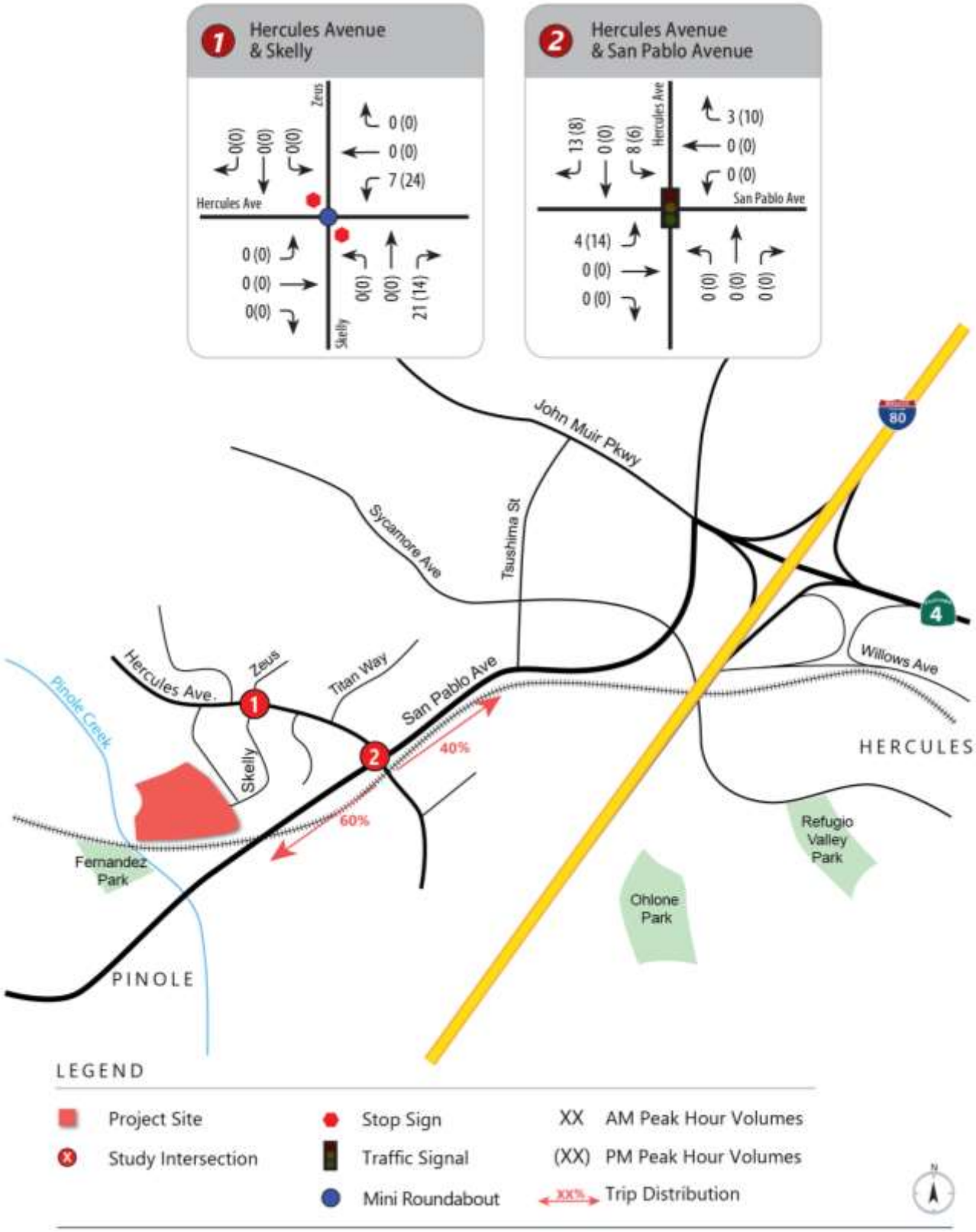
Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area. Assignment determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution. Trip distribution assumptions for the proposed development project were developed based on the existing travel patterns and TJKM's knowledge of the study area. The distribution assumptions for the proposed project are as follows:

It should be noted that, the distribution of those trips is approximate. The distribution assumptions applied to the existing use are as follows:

- 60 percent to/from San Pablo Avenue West, to Richmond Parkway
- 40 percent to/from San Pablo Avenue East, to I-80 and SR-4

Figure 8 illustrates the trip distribution and trip assignment at the study intersections. The project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Figure 8: Project Trip Distribution and Assignment



4.4 Intersection Level of Service Analysis – Existing plus Project Conditions

The intersection LOS analysis results for Existing plus Project Conditions are summarized in **Table 6**.

Under this scenario, both of the study intersections would continue to operate within applicable jurisdictional standards during the a.m. peak hour, and both study intersections operate acceptably in the p.m. peak hour. The two-way stop-controlled intersection of Hercules Avenue and Skelly/Zeus operates at LOS B during the a.m. peak hour with an increased delay of 0.8 seconds, and LOS C during the p.m. peak hour with an increased delay of 1.8 seconds. It should be noted that at this intersection, the southbound approach on Zeus would continue to experience higher delay than the northbound approach on Skelly during both peak hours. The northbound approach would experience 9.8 seconds of delay in the a.m. peak hour, an increase of 0.2 seconds, and 9.5 seconds of delay in the p.m. peak hour, a decrease of 0.1 seconds. The signalized intersection of Hercules Avenue and San Pablo Avenue would continue to operate at LOS C with an increased delay of 0.6 seconds during both peak hours. The project **would be consistent** with level of service standards set forth under the Hercules General Plan and CCTA Congestion Management Program.

Figure 9 shows projected turning movement volumes at both of the study intersections for Existing plus Project Conditions. LOS worksheets are provided in **Appendix D**.

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

ID	*Intersection*	*Intersection Control*	*Peak Hour*	*Existing Conditions*		*Existing plus Project Conditions*		
				Average Delay[1]	*LOS[2]*	*Average Delay[1]*	*LOS[2]*	*Change in Delay[3]*
1	Hercules Ave & Skelly/Zeus	Two-Way Stop Control	AM	12.4	B	13.2	B (SB)	0.8
			PM	13.4	B	15.2	C (SB)	1.8
2	Hercules Ave & San Pablo Avenue	Signal	AM	24.1	C	24.7	C	0.6
			PM	25.0	C	25.6	C	0.6

Notes: AM – morning peak hour, PM – evening peak hour, Weekend – Saturday noon peak hour,
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards. **Red** indicates significant impact.
1. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
2. LOS = Level of Service
3. Change in average delay between Existing and Existing plus Project Conditions. Average delay may be reduced with the addition of project traffic to non-critical movements.
4. Change in critical volume to capacity ratio between Existing and Existing plus Project Condition
* CMP intersections with LOS E threshold.

4.5 Intersection Queuing Analysis

The 95th percentile queue lengths were calculated at the signalized study intersection under Existing and Existing plus Project Conditions. The project would add trips to dedicated left- and right-turn lanes at the intersection with dedicated turn lanes, Hercules Avenue and San Pablo Avenue. **Table 8** details the existing traffic volumes, added project trips, and queue lengths at all dedicated turn lanes at the signalized study intersection. For locations with dual turn lanes providing varying amounts of storage, the average storage length is provided. The 95th percentile queue lengths are rounded to the nearest five feet

and assume an average vehicle length of 25 feet. Queue lengths are averaged among all lanes within a lane group.

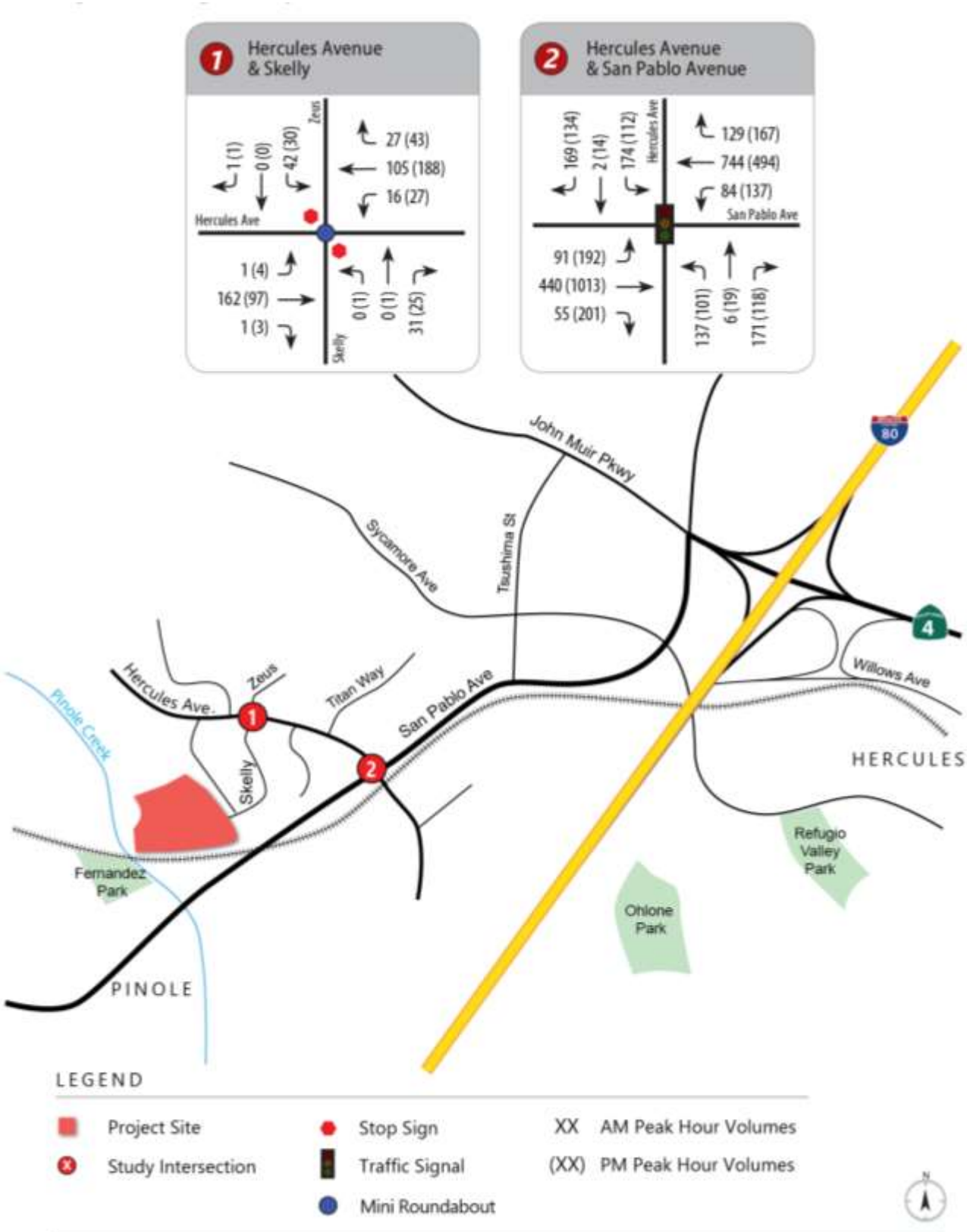
Under Existing Conditions, the intersection of Hercules Avenue and San Pablo Avenue would experience queue overflows in the eastbound left turn lane during PM peak hours, and in the southbound left turn lane during all peak hours, during one or both peak hours. Under Existing plus Project Conditions, the same turn lanes would continue to experience overflows during the same peak hours, with some increases in queue lengths. The addition of project trips would not cause any new queue overflows but would increase existing overflows in the Eastbound Left turn lane and the Southbound Left turn lane. Queuing worksheets for each scenario are provided in **Appendix B** and **Appendix D**.

Table 8. 95th Percentile Queue Lengths at Selected Turn Lanes: Existing and Existing plus Project Conditions

							Existing Conditions	Existing plus Project Conditions	
ID	**Study Intersection**	**Lane Group**	**Storage Length**	**Peak Hour**	**Existing Volume**	**Net Project Trips**	**Queue Length**	**Queue Length**	**Change in Queue**
2	Hercules Ave & San Pablo Avenue	Eastbound Left	155	AM	87	4	120	123	5
				PM	178	14	**175**	**195**	20
		Eastbound Right	160	AM	55	0	0	0	0
				PM	201	0	60	60	0
		Westbound Left	300	AM	84	0	100	100	0
				PM	137	0	180	185	5
		Westbound Right	165	AM	126	3	35	40	5
				PM	157	10	20	25	5
		Southbound Left	90	AM	166	8	**125**	**130**	5
				PM	106	6	**100**	**100**	0

Notes:
95th percentile queue lengths expressed in feet, rounded to the nearest five feet
* Average storage per lane, where dual turn lanes provide different storage lengths
Bold indicates queue length exceeds storage capacity
Red indicates queue length increases by more than one vehicle length

Figure 9: Existing plus Project Conditions Peak Hour Traffic Volumes



5.0 CUMULATIVE NO-PROJECT CONDITIONS (2040)

The Cumulative No-Project Conditions analysis forecasts how the study area's transportation system would operate with the growth and changes of the surrounding community by the year 2040. Corridor volumes on Hercules Avenue and San Pablo Avenue in the immediate project vicinity were obtained from baseline year 2018 and horizon year 2040 in the CCTA traffic model. Based on the growth in these corridor volumes, an annual compounding linear growth rate of 0.82% was applied to adjusted Existing Conditions to project future 2040 traffic volumes.

Figure 10 shows projected turning movement volumes at the study intersections for Cumulative Conditions for a.m. and p.m. peak hours.

5.1 Intersections Level of Service Analysis – Cumulative No-Project Conditions

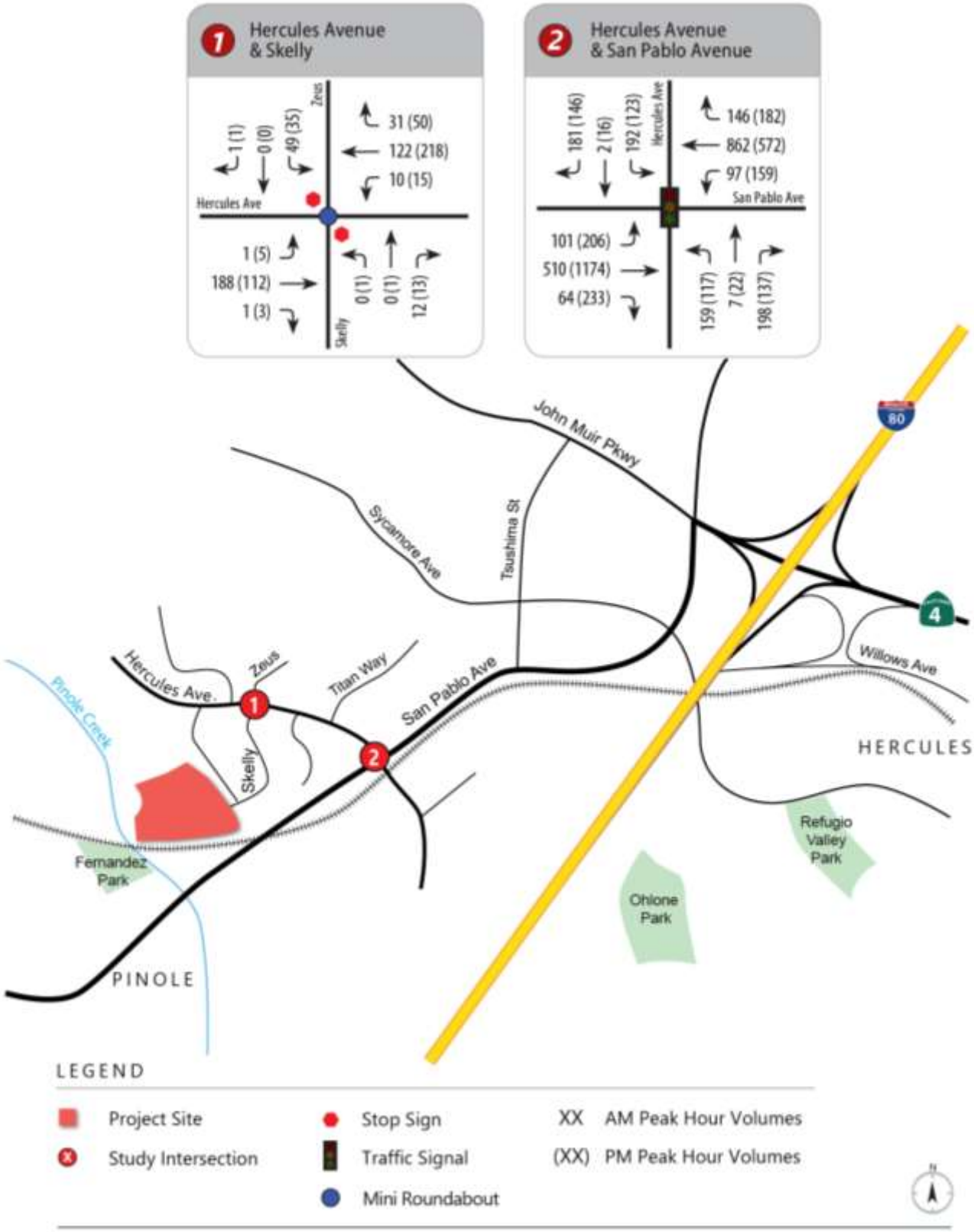
The intersection LOS analysis results for Cumulative No-Project Conditions are summarized in **Table 12**. Under this scenario, both of the study intersections operate within applicable jurisdictional standards during both peak hours. The signalized intersection of Hercules Avenue and San Pablo Avenue would continue to operate at LOS C during the a.m. peak hour and LOS C during the p.m. peak hour. The unsignalized intersection of Hercules Avenue and Skelly would continue to operate at LOS B during the a.m. peak hour and LOS B during the p.m. peak hour, with a greater average delay in the southbound direction. LOS worksheets are provided in **Appendix E**.

Table 12: Intersection Level of Service Analysis – Cumulative Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*	*Cumulative Conditions*	
				Average Delay[1]	*LOS*[2]
1	Hercules Ave and Skelly/Zeus	Two-Way Stop Control	AM	13.5	B (SB)
			PM	14.9	B (SB)
2	Hercules Ave and San Pablo Ave	Signal	AM	31.7	C
			PM	34.3	C

Notes:
AM – morning peak hour, PM – evening peak hour
1. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
2. LOS = Level of Service
* CMP intersections with LOS E threshold
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

Figure 10: Cumulative No-Project Conditions Peak Hour Traffic Volumes



6.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative No-Project Conditions, but with the addition of projected traffic from the proposed project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions.

6.1 Intersection Level of Service Analysis – Cumulative plus Project Conditions

The intersection LOS analysis results for Cumulative plus Project Conditions are summarized in **Table 13**.

Under this scenario, both of the study intersections would continue to operate within applicable jurisdictional standards during both peak hours. The signalized intersection of Hercules Avenue and San Pablo Avenue would continue to operate at LOS C during the a.m. peak hour, with an increase in average delay, and degrade to LOS D during the p.m. peak hour. The unsignalized intersection of Hercules Avenue and Skelly would continue to operate at LOS B during the a.m. peak hour with a 1-second increase in average delay, and LOS C during the p.m. peak hour with a 2.2-second delay increase, with worse conditions in the southbound direction. The project **would be consistent** with level of service standards set forth under the Hercules General Plan and CCTA Congestion Management Program.

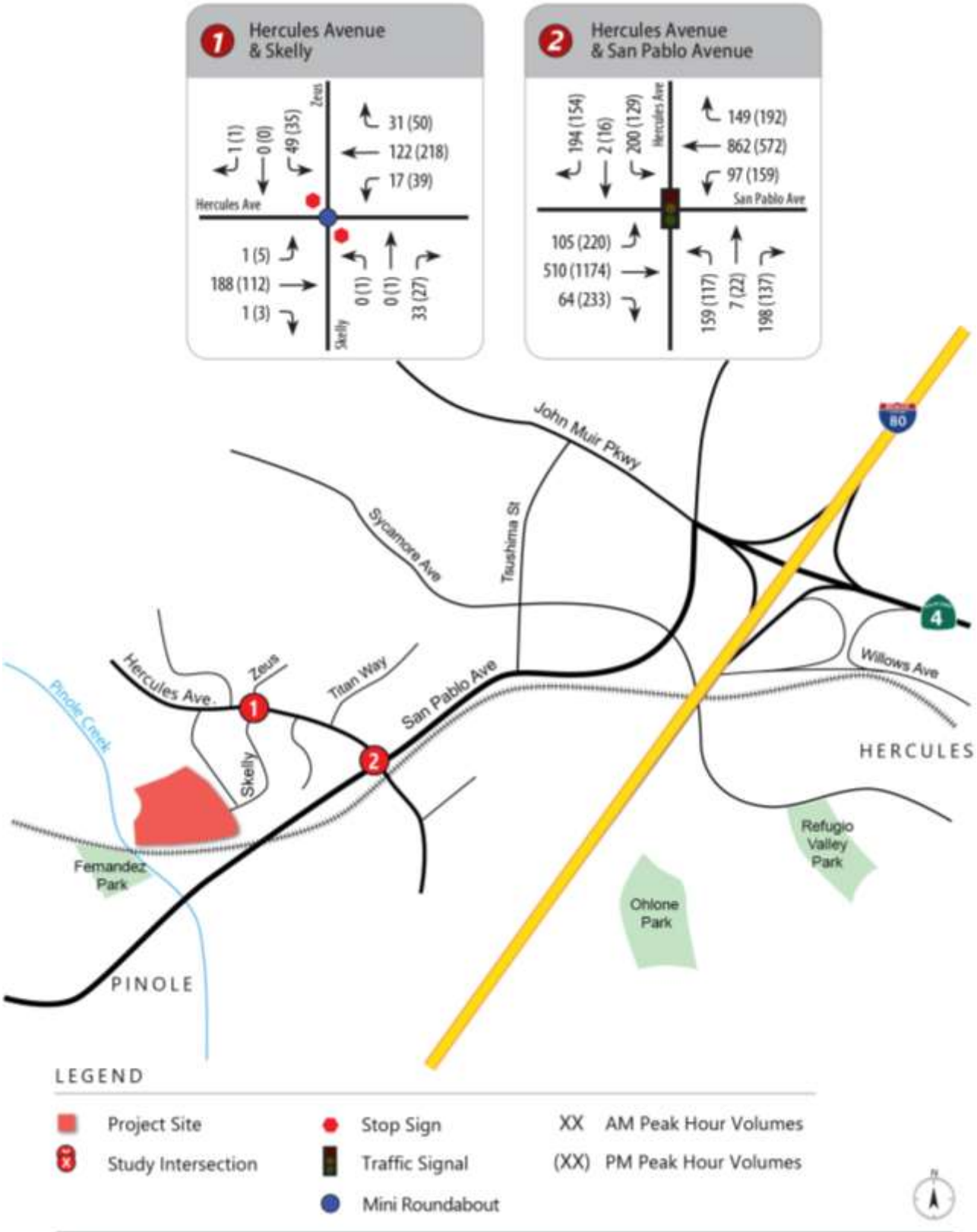
Figure 13 shows projected turning movement volumes at all the study intersections for Cumulative plus Project Conditions. LOS worksheets are provided in **Appendix F.**

Table 13: Intersection Level of Service Analysis – Cumulative plus Project Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*	*Cumulative Conditions*		*Cumulative plus Project Conditions*		
				Average Delay[1]	*LOS[2]*	*Average Delay[1]*	*LOS[2]*	*Change in Delay[3]*
1	Hercules Ave and Skelly/Zeus	Two-Way Stop Controlled	AM	13.5	B (SB)	14.5	B (SB)	1.0
			PM	14.9	B (SB)	17.1	C (SB)	2.2
2	Hercules Ave and San Pablo Ave	Signal	AM	31.7	C	32.7	C	1.0
			PM	34.3	C	35.2	D	0.9

Notes: AM – morning peak hour, PM – evening peak hour, Weekend – Saturday noon peak hour,
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards. **Red** indicates significant impact.
1. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
2. LOS = Level of Service
3. Change in average delay between Cumulative and Cumulative plus Project Conditions. Average delay may be reduced with the addition of project traffic to non-critical movements.
4. Change in critical volume to capacity ratio between Cumulative and Cumulative plus Project Conditions
* CMP intersections with LOS E threshold.

Figure 11: Cumulative plus Project Conditions Peak Hour Traffic Volumes



7.0 ADDITIONAL ANALYSIS

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

- Site access and impacts
- On-site circulation
- Parking analysis
- Recommendations

The analyses in these sections are 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 describing the project environment.

7.1 Site Access

This section analyzes site access for vehicles, pedestrians and bicycles based on the site plan presented in **Figure 2** (dated November, 2021).

Vehicle Access

Primary access to the project site would be provided by a direct connection to Skelly at the location of the existing driveway. TJKM recommends that the grading plans for the site be carefully evaluated to ensure that the finished grade and landscaping do not create any visual obstructions for vehicles exiting the driveway. Vehicle access to the project site is considered **adequate** and would not result in any significant impacts to the nearby roadways.

Pedestrian Access

Pedestrian access would be via internal sidewalks connecting to existing sidewalks on Skelly, and via a pedestrian trail to the south of the project site connecting Skelly to San Pablo Avenue. There is one crosswalk at the intersection of Hercules Avenue and Skelly, and there are 4-way signalized crosswalks at the intersection of Hercules Avenue and San Pablo Avenue. Existing pedestrian facilities provide continuous paths to nearby bus stops on San Pablo Avenue and to nearby shopping centers to the southwest of the project site, primarily via trail access. However, as shown in **Figure 3**, existing sidewalk facilities on San Pablo Avenue to the southwest of the project site terminate between the two pedestrian trail outlets to San Pablo Avenue. This disruption separates pedestrians from nearby shopping centers west of Pinole Creek when travelling along San Pablo Avenue, and may pose accessibility challenges due to the slope of the trail at some points.

A significant impact occurs if the proposed project conflicts with applicable or adopted policies, plans or programs related to pedestrians facilities or otherwise decreases the performance or safety of pedestrian facilities. The proposed project will not result in any such conflicts. Pedestrian access to the project site is considered **adequate** and would not result in any significant impacts to the nearby pedestrian facilities.

Bicycle Access

There are existing Class II bike lanes provided on San Pablo Avenue east of Hercules Avenue; an extension of the Class II bike lane is proposed in the Hercules 2018 General Plan Circulation Element. A multi-use trail is present along Pinole Creek to the west of the project site.

An impact to bicyclists occurs if the proposed project disrupt existing bicycle facilities; or conflict or create inconsistencies with adopted bicycle system plans, guidelines, and policies. A significant impact occurs if the proposed project conflicts with applicable or adopted policies, plans or programs related to bicycle facilities or otherwise decrease the performance or safety of bicycle facilities. The proposed project will not result in any such conflicts. Bicycle access to the project site is considered **adequate** and would not result in any significant impacts to the nearby bicycle facilities.

Transit

A proposed project is considered to have a significant impact on transit if it conflicts with existing or planned transit facilities, or is expected to generate additional transit trips and does not provide adequate facilities for pedestrians and bicyclists to access transit routes and stops. The project site is adequately served by the transit service, as shown in **Figure 5**. Transit stops on San Pablo Avenue are within a one-half mile walk from the project site. Spread among multiple bus routes, the existing transit service can accommodate the proposed demand. Therefore, transit access to the project site is considered **adequate** and would not result in any significant impacts to the nearby transit network.

9.2 On-Site Circulation

This section analyzes internal circulation based on the site plan presented in **Figure 2** (dated November, 2021).

As shown in **Figure 2**, the street connecting all homes forms a loop, with westward extension in line with the access point from Skelly providing garage access to four homes. The street is 34-45 feet wide throughout, including sidewalks and on-street parking spaces. There is adequate space for vehicles to maneuver into and out of parking spaces and garages. The project would also provide adequate space for trucks and emergency vehicles to access the site and maneuver as needed, with adequate turning radii for truck access. There are no curb ramps or interior pedestrian crossings within the access loop. In order to ensure accessible pedestrian circulation between all homes and the nearest roadways, at least two curb ramps should be included on the inner side of the loop opposite new ramps on the outer edge of the loop, and a pair of ramps should be added near the connection point to Skelly. On-site circulation for vehicles is considered **adequate**, but pedestrian circulation could be improved with additional curb ramps.

9.3 Parking

Under the City of Hercules zoning regulations, the proposed project, consisting of single family residential homes, would be classified as single family residential. The City of Hercules requires 2 parking spaces per dwelling unit (per Article 84-4.12); the proposed project provides 2 covered parking spaces and 2 uncovered parking spaces per unit, with additional overflow parking within the access loop.

As shown in the site plan dated November, 2021 (**Figure 2**), the proposed project will construct 40 new dwelling units. The project would require 80 parking spaces for the main dwelling units. The proposed project would construct two-car garages with driveway aprons for each dwelling unit, providing 80 covered spaces, exceeding City requirements, as well as 40 uncovered spaces. The development would also provide 4 parallel on-street parking spaces. All on-street spaces would be marked and contained within the project site, on the private street shared by the planned development and within close proximity to the homes. The proposed parking supply would therefore be more than **adequate** under City of Hercules requirements and would not produce any parking impacts on surrounding parcels or roadways.

9.4 RECOMMENDATIONS

TJKM recommends the following:

- The grading plans for the site should be carefully evaluated to ensure that the finished grade and landscaping do not create any visual obstructions for vehicles exiting driveways.
- Add curb ramps to provide accessible crossings of loop road near Skelly and the pedestrian path to San Pablo Avenue.

Appendix A – Existing Turning Movement Counts

Prepared by National Data & Surveying Services

Skelly/Zeus & Hercules Ave

Peak Hour Turning Movement Count

ID: 22-080016-001
City: Hercules

Day: Thursday
Date: 1/13/2022

PEAK HOURS	COUNT PERIODS
07:45 am - 08:45 am	7:00 AM - 09:00 AM
NONE	NONE
04:00 pm - 05:00 pm	4:00 PM - 06:00 PM

SOUTHBOUND (Skelly/Zeus)

AM	1	0	33	1	24	AM
NOON	0	0	0	0	0	NOON
PM	1	0	21	0	34	PM

EASTBOUND (Hercules Ave)

AM	NOON	PM	
85	0	134	
0	0	0	0
1	0	3	0
130	0	68	1
1	0	2	0

WESTBOUND (Hercules Ave)

	PM	NOON	AM
0	30	0	22
1	132	0	84
0	8	0	7
0	1	0	0
	98	0	171

NORTHBOUND (Skelly/Zeus)

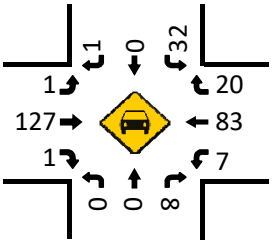
PM	10	0	1	1	8	PM
NOON	0	0	0	0	0	NOON
AM	8	0	0	0	8	AM

CONTROL

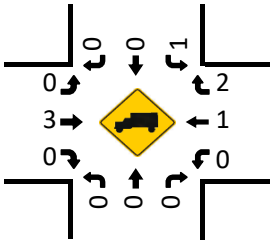
2-Way Stop(NB/SB)

TEV	288 AM	0 NOON	276 PM
PHF	0.92		0.79

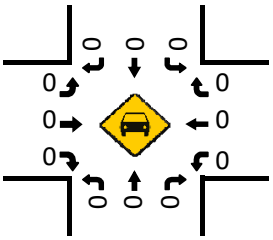
Cars (AM)



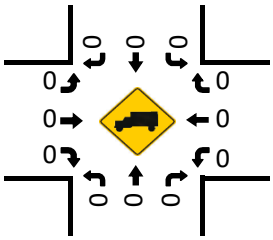
HT (AM)



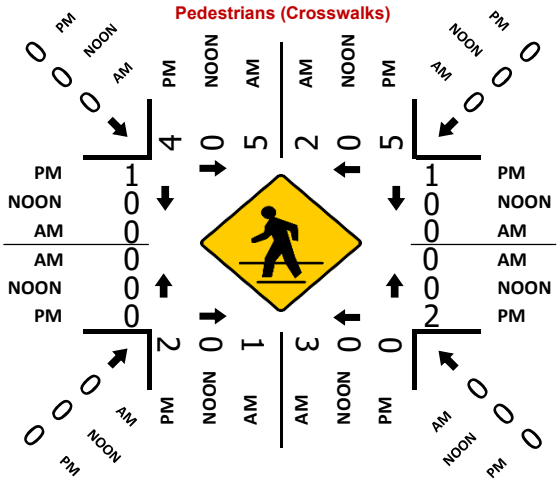
Cars (NOON)



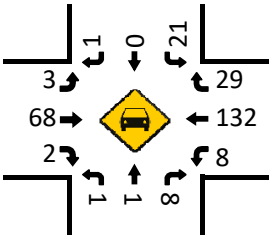
HT (NOON)



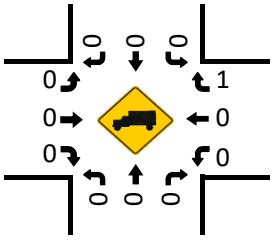
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Skelly/Zeus & Hercules Ave
City: Hercules
Control: 2-Way Stop(NB/SB)

Project ID: 22-080016-001
Date: 1/13/2022

Data - Total

NS/EW Streets:	Skelly/Zeus				Skelly/Zeus				Hercules Ave				Hercules Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	2	1	3	0	0	0	0	15	0	0	2	6	0	0	29
7:15 AM	0	0	3	0	5	0	0	0	0	31	0	0	1	10	4	0	54
7:30 AM	0	0	4	0	11	0	2	0	1	27	0	0	0	9	6	0	60
7:45 AM	0	0	1	0	8	0	1	0	0	47	0	0	1	13	7	0	78
8:00 AM	0	0	2	0	12	0	0	0	0	26	0	0	0	20	11	0	71
8:15 AM	0	0	2	0	9	0	0	0	1	33	0	0	4	28	0	0	77
8:30 AM	0	0	3	0	4	0	0	1	0	24	1	0	2	23	4	0	62
8:45 AM	0	0	3	0	6	0	0	0	0	22	0	0	2	21	1	0	55
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	20	1	58	0	3	1	2	225	1	0	12	130	33	0	486
APPROACH %'s :	0.00%	0.00%	95.24%	4.76%	93.55%	0.00%	4.84%	1.61%	0.88%	98.68%	0.44%	0.00%	6.86%	74.29%	18.86%	0.00%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	0	0	8	0	33	0	1	1	1	130	1	0	7	84	22	0	288
PEAK HR FACTOR :	0.000	0.000	0.667	0.000	0.688	0.000	0.250	0.250	0.250	0.691	0.250	0.000	0.438	0.750	0.500	0.000	0.923
	0.667				0.729				0.702				0.883				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	5	0	0	0	0	21	1	0	2	48	9	0	87
4:15 PM	1	1	3	0	6	0	0	0	0	12	1	0	2	22	6	0	54
4:30 PM	0	0	2	0	8	0	1	0	1	17	0	0	1	25	9	0	64
4:45 PM	0	0	2	0	2	0	0	0	2	18	0	0	3	37	6	1	71
5:00 PM	0	0	3	0	4	0	0	0	0	16	0	0	2	31	6	0	62
5:15 PM	0	0	3	0	6	0	2	1	0	19	0	0	1	29	9	1	71
5:30 PM	0	0	3	0	2	0	1	0	1	26	1	0	2	24	7	0	67
5:45 PM	0	0	1	0	3	0	0	0	1	17	0	0	2	25	3	0	52
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	18	0	36	0	4	1	5	146	3	0	15	241	55	2	528
APPROACH %'s :	5.00%	5.00%	90.00%	0.00%	87.80%	0.00%	9.76%	2.44%	3.25%	94.81%	1.95%	0.00%	4.79%	77.00%	17.57%	0.64%	
PEAK HR :	04:00 pm - 05:00 pm																TOTAL
PEAK HR VOL :	1	1	8	0	21	0	1	0	3	68	2	0	8	132	30	1	276
PEAK HR FACTOR :	0.250	0.250	0.667	0.000	0.656	0.000	0.250	0.000	0.375	0.810	0.500	0.000	0.667	0.688	0.833	0.250	0.793
	0.500				0.611				0.830				0.725				

National Data & Surveying Services Intersection Turning Movement Count

Location: Skelly/Zeus & Hercules Ave
City: Hercules
Control: 2-Way Stop(NB/SB)

Project ID: 22-080016-001
Date: 1/13/2022

Data - Cars

NS/EW Streets:	Skelly/Zeus				Skelly/Zeus				Hercules Ave				Hercules Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	2	0	3	0	0	0	0	14	0	0	2	5	0	0	26
7:15 AM	0	0	3	0	5	0	0	0	0	31	0	0	1	9	4	0	53
7:30 AM	0	0	4	0	11	0	2	0	1	26	0	0	0	9	4	0	57
7:45 AM	0	0	1	0	8	0	1	0	0	45	0	0	1	12	6	0	74
8:00 AM	0	0	2	0	12	0	0	0	0	26	0	0	0	20	10	0	70
8:15 AM	0	0	2	0	8	0	0	0	1	32	0	0	4	28	0	0	75
8:30 AM	0	0	3	0	4	0	0	1	0	24	1	0	2	23	4	0	62
8:45 AM	0	0	3	0	6	0	0	0	0	22	0	0	2	21	1	0	55
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	20	0	57	0	3	1	2	220	1	0	12	127	29	0	472
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	93.44%	0.00%	4.92%	1.64%	0.90%	98.65%	0.45%	0.00%	7.14%	75.60%	17.26%	0.00%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	0	0	8	0	32	0	1	1	1	127	1	0	7	83	20	0	281
PEAK HR FACTOR :	0.000	0.000	0.667	0.000	0.667	0.000	0.250	0.250	0.250	0.706	0.250	0.000	0.438	0.741	0.500	0.000	0.937
	0.667				0.708				0.717				0.859				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	5	0	0	0	0	21	1	0	2	48	9	0	87
4:15 PM	1	1	3	0	6	0	0	0	0	12	1	0	2	22	5	0	53
4:30 PM	0	0	2	0	8	0	1	0	1	17	0	0	1	25	9	0	64
4:45 PM	0	0	2	0	2	0	0	0	2	18	0	0	3	37	6	1	71
5:00 PM	0	0	3	0	3	0	0	0	0	16	0	0	2	31	6	0	61
5:15 PM	0	0	3	0	6	0	2	1	0	19	0	0	1	29	9	1	71
5:30 PM	0	0	3	0	2	0	1	0	1	26	1	0	2	24	7	0	67
5:45 PM	0	0	1	0	3	0	0	0	1	17	0	0	2	25	3	0	52
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	18	0	35	0	4	1	5	146	3	0	15	241	54	2	526
APPROACH %'s :	5.00%	5.00%	90.00%	0.00%	87.50%	0.00%	10.00%	2.50%	3.25%	94.81%	1.95%	0.00%	4.81%	77.24%	17.31%	0.64%	
PEAK HR :	04:00 pm - 05:00 pm																TOTAL
PEAK HR VOL :	1	1	8	0	21	0	1	0	3	68	2	0	8	132	29	1	275
PEAK HR FACTOR :	0.250	0.250	0.667	0.000	0.656	0.000	0.250	0.000	0.375	0.810	0.500	0.000	0.667	0.688	0.806	0.250	0.790
	0.500				0.611				0.830				0.720				

National Data & Surveying Services Intersection Turning Movement Count

Location: Skelly/Zeus & Hercules Ave
City: Hercules
Control: 2-Way Stop(NB/SB)

Project ID: 22-080016-001
Date: 1/13/2022

Data - HT

NS/EW Streets:	Skelly/Zeus				Skelly/Zeus				Hercules Ave				Hercules Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8:15 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	1	1	0	0	0	0	5	0	0	0	3	4	0	14
APPROACH %'s :	0.00%	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	42.86%	57.14%	0.00%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	3	0	0	0	1	2	0	7
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.250	0.500	0.000	0.438
					0.250				0.375				0.375				

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

National Data & Surveying Services Intersection Turning Movement Count

Location: Skelly/Zeus & Hercules Ave
City: Hercules
Control: 2-Way Stop(NB/SB)

Project ID: 22-080016-001
Date: 1/13/2022

Data - Bikes

NS/EW Streets:	Skelly/Zeus				Skelly/Zeus				Hercules Ave				Hercules Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

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

National Data & Surveying Services Intersection Turning Movement Count

Location: Skelly/Zeus & Hercules Ave
City: Hercules
Project ID: 22-080016-001
Date: 1/13/2022

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Skelly/Zeus		Skelly/Zeus		Hercules Ave		Hercules Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	2	0	0	0	0	3
7:30 AM	1	0	2	0	0	0	0	0	3
7:45 AM	2	1	1	2	0	0	0	0	6
8:00 AM	1	0	0	1	0	0	0	0	2
8:15 AM	1	1	0	0	0	0	0	0	2
8:30 AM	1	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	2	4	5	0	0	1	0	18
APPROACH %'s :	75.00%	25.00%	44.44%	55.56%			100.00%	0.00%	
PEAK HR :	07:45 am - 08:45 am								TOTAL
PEAK HR VOL :	5	2	1	3	0	0	0	0	11
PEAK HR FACTOR :	0.625	0.500	0.250	0.375					0.458
	0.583		0.333						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	1	2	0	0	1	0	0	0	4
4:15 PM	1	1	2	0	1	1	0	0	6
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	1	2	0	0	0	0	0	1	4
5:00 PM	1	2	0	0	0	0	0	0	3
5:15 PM	0	0	1	0	0	0	0	0	1
5:30 PM	2	1	0	0	0	0	0	0	3
5:45 PM	1	0	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	8	8	3	0	2	1	0	1	23
APPROACH %'s :	50.00%	50.00%	100.00%	0.00%	66.67%	33.33%	0.00%	100.00%	
PEAK HR :	04:00 pm - 05:00 pm								TOTAL
PEAK HR VOL :	4	5	2	0	2	1	0	1	15
PEAK HR FACTOR :	1.000	0.625	0.250		0.500	0.250		0.250	0.625
	0.750		0.250		0.375		0.250		

Prepared by National Data & Surveying Services

Hercules Ave & San Pablo Ave

Peak Hour Turning Movement Count

ID: 22-080016-002
City: Hercules

Day: Thursday
Date: 1/13/2022

PEAK HOURS

AM	07:45 am - 08:45 am
NOON	NONE
PM	04:45 pm - 05:45 pm

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

SOUTHBOUND (Hercules Ave)

AM	125	2	133	0	176
NOON	0	0	0	0	0
PM	88	10	71	3	248

EASTBOUND (San Pablo Ave)

AM	NOON	PM	
831	0	507	
0	0	3	0
70	0	122	1
353	0	710	2
44	0	141	1

WESTBOUND (San Pablo Ave)

	PM	NOON	AM
1	110	0	101
2	346	0	596
1	95	0	65
0	1	0	2
	865	0	625

NORTHBOUND (Hercules Ave)

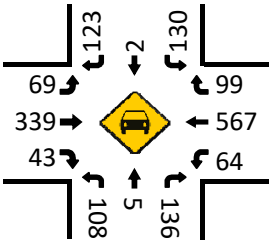
PM	247	1	70	13	83
NOON	0	0	0	0	0
AM	111	0	110	5	137

CONTROL

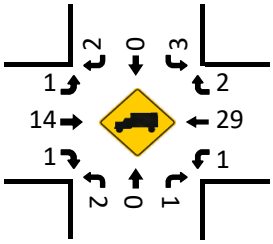
Signalized

TEV	1743 AM	0 NOON	1867 PM
PHF	0.93		0.92

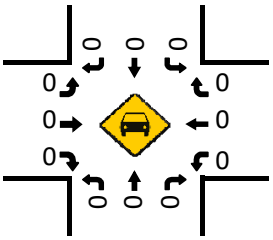
Cars (AM)



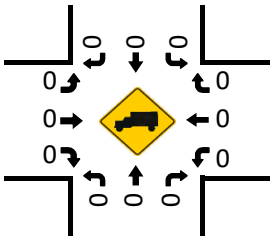
HT (AM)



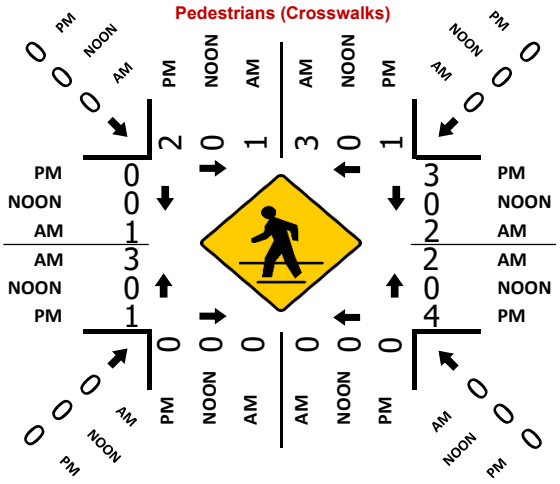
Cars (NOON)



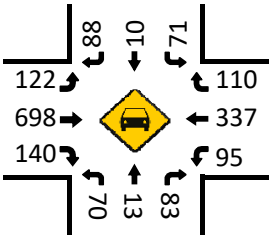
HT (NOON)



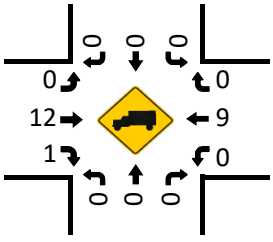
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Hercules Ave & San Pablo Ave
City: Hercules
Control: Signalized

Project ID: 22-080016-002
Date: 1/13/2022

Data - Total

NS/EW Streets:	Hercules Ave				Hercules Ave				San Pablo Ave				San Pablo Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	18	0	22	0	16	0	23	0	5	34	0	0	4	69	6	0	197
7:15 AM	24	1	16	0	16	1	36	0	12	46	11	0	6	132	10	0	311
7:30 AM	28	1	18	0	31	0	32	0	10	53	4	0	13	124	6	1	321
7:45 AM	34	1	31	0	37	2	43	0	15	109	9	0	12	157	17	1	468
8:00 AM	25	2	48	0	41	0	25	0	19	81	5	0	7	144	24	0	421
8:15 AM	28	2	33	0	38	0	32	0	18	98	15	0	13	147	30	0	454
8:30 AM	23	0	25	0	17	0	25	0	18	65	15	0	33	148	30	1	400
8:45 AM	21	1	15	0	21	0	35	0	14	70	12	1	12	88	21	0	311
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	201	8	208	0	217	3	251	0	111	556	71	1	100	1009	144	3	2883
APPROACH %'s :	48.20%	1.92%	49.88%	0.00%	46.07%	0.64%	53.29%	0.00%	15.02%	75.24%	9.61%	0.14%	7.96%	80.33%	11.46%	0.24%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	110	5	137	0	133	2	125	0	70	353	44	0	65	596	101	2	1743
PEAK HR FACTOR :	0.809	0.625	0.714	0.000	0.811	0.250	0.727	0.000	0.921	0.810	0.733	0.000	0.492	0.949	0.842	0.500	0.931
	0.840				0.793				0.878				0.901				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	1	11	0	17	1	19	0	45	177	19	0	26	97	25	0	448
4:15 PM	14	0	12	0	18	1	14	0	26	151	27	0	29	90	24	0	406
4:30 PM	20	2	11	0	12	2	23	0	31	196	28	1	18	79	22	0	445
4:45 PM	10	7	19	0	14	1	20	2	34	164	35	2	19	94	27	0	448
5:00 PM	17	2	20	0	20	3	16	1	29	177	26	1	28	73	25	0	438
5:15 PM	22	3	23	0	17	5	21	0	30	204	34	0	33	81	36	1	510
5:30 PM	21	1	21	1	20	1	31	0	29	165	46	0	15	98	22	0	471
5:45 PM	8	0	19	0	20	1	12	0	32	166	41	0	23	84	17	0	423
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	122	16	136	1	138	15	156	3	256	1400	256	4	191	696	198	1	3589
APPROACH %'s :	44.36%	5.82%	49.45%	0.36%	44.23%	4.81%	50.00%	0.96%	13.36%	73.07%	13.36%	0.21%	17.59%	64.09%	18.23%	0.09%	
PEAK HR :	04:45 pm - 05:45 pm																TOTAL
PEAK HR VOL :	70	13	83	1	71	10	88	3	122	710	141	3	95	346	110	1	1867
PEAK HR FACTOR :	0.795	0.464	0.902	0.250	0.888	0.500	0.710	0.375	0.897	0.870	0.766	0.375	0.720	0.883	0.764	0.250	0.915
	0.870				0.827				0.910				0.914				

National Data & Surveying Services Intersection Turning Movement Count

Location: Hercules Ave & San Pablo Ave
City: Hercules
Control: Signalized

Project ID: 22-080016-002
Date: 1/13/2022

Data - Cars

NS/EW Streets:	Hercules Ave				Hercules Ave				San Pablo Ave				San Pablo Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	17	0	22	0	16	0	23	0	4	30	0	0	4	65	6	0	187
7:15 AM	24	1	16	0	16	1	35	0	12	41	11	0	6	129	9	0	301
7:30 AM	28	1	18	0	31	0	32	0	9	47	4	0	13	119	5	1	308
7:45 AM	34	1	30	0	35	2	42	0	14	104	9	0	11	153	16	1	452
8:00 AM	25	2	48	0	41	0	25	0	19	76	5	0	7	131	23	0	402
8:15 AM	27	2	33	0	38	0	31	0	18	95	14	0	13	141	30	0	442
8:30 AM	22	0	25	0	16	0	25	0	18	64	15	0	33	142	30	1	391
8:45 AM	21	1	15	0	21	0	34	0	14	64	12	1	12	78	20	0	293
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	198	8	207	0	214	3	247	0	108	521	70	1	99	958	139	3	2776
APPROACH %'s :	47.94%	1.94%	50.12%	0.00%	46.12%	0.65%	53.23%	0.00%	15.43%	74.43%	10.00%	0.14%	8.26%	79.90%	11.59%	0.25%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	108	5	136	0	130	2	123	0	69	339	43	0	64	567	99	2	1687
PEAK HR FACTOR :	0.794	0.625	0.708	0.000	0.793	0.250	0.732	0.000	0.908	0.815	0.717	0.000	0.485	0.926	0.825	0.500	0.933
	0.830				0.807				0.888				0.888				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	1	11	0	17	1	19	0	45	173	19	0	26	94	25	0	441
4:15 PM	14	0	12	0	18	1	14	0	26	145	27	0	29	85	23	0	394
4:30 PM	20	2	11	0	12	2	23	0	31	193	28	1	18	75	22	0	438
4:45 PM	10	7	19	0	14	1	20	2	34	159	34	2	19	90	27	0	438
5:00 PM	17	2	20	0	20	3	16	1	29	175	26	1	28	71	25	0	434
5:15 PM	22	3	23	0	17	5	21	0	30	201	34	0	33	79	36	1	505
5:30 PM	21	1	21	1	20	1	31	0	29	163	46	0	15	97	22	0	468
5:45 PM	8	0	19	0	19	1	12	0	32	163	41	0	21	82	17	0	415
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	122	16	136	1	137	15	156	3	256	1372	255	4	189	673	197	1	3533
APPROACH %'s :	44.36%	5.82%	49.45%	0.36%	44.05%	4.82%	50.16%	0.96%	13.57%	72.71%	13.51%	0.21%	17.83%	63.49%	18.58%	0.09%	
PEAK HR :	04:45 pm - 05:45 pm																TOTAL
PEAK HR VOL :	70	13	83	1	71	10	88	3	122	698	140	3	95	337	110	1	1845
PEAK HR FACTOR :	0.795	0.464	0.902	0.250	0.888	0.500	0.710	0.375	0.897	0.868	0.761	0.375	0.720	0.869	0.764	0.250	0.913
	0.870				0.827				0.908				0.911				

National Data & Surveying Services Intersection Turning Movement Count

Location: Hercules Ave & San Pablo Ave
City: Hercules
Control: Signalized

Project ID: 22-080016-002
Date: 1/13/2022

Data - HT

NS/EW Streets:	Hercules Ave				Hercules Ave				San Pablo Ave				San Pablo Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	1	4	0	0	0	4	0	0	10
7:15 AM	0	0	0	0	0	0	1	0	0	5	0	0	0	3	1	0	10
7:30 AM	0	0	0	0	0	0	0	0	1	6	0	0	0	5	1	0	13
7:45 AM	0	0	1	0	2	0	1	0	1	5	0	0	1	4	1	0	16
8:00 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	13	1	0	19
8:15 AM	1	0	0	0	0	0	1	0	0	3	1	0	0	6	0	0	12
8:30 AM	1	0	0	0	1	0	0	0	0	1	0	0	0	6	0	0	9
8:45 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	10	1	0	18
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	0	1	0	3	0	4	0	3	35	1	0	1	51	5	0	107
APPROACH %'s :	75.00%	0.00%	25.00%	0.00%	42.86%	0.00%	57.14%	0.00%	7.69%	89.74%	2.56%	0.00%	1.75%	89.47%	8.77%	0.00%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	2	0	1	0	3	0	2	0	1	14	1	0	1	29	2	0	56
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.375	0.000	0.500	0.000	0.250	0.700	0.250	0.000	0.250	0.558	0.500	0.000	0.737
	0.750				0.417				0.667				0.571				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	7
4:15 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	5	1	0	12
4:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0	7
4:45 PM	0	0	0	0	0	0	0	0	0	5	1	0	0	4	0	0	10
5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:45 PM	0	0	0	0	1	0	0	0	0	3	0	0	2	2	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	28	1	0	2	23	1	0	56
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	96.55%	3.45%	0.00%	7.69%	88.46%	3.85%	0.00%	
PEAK HR :	04:45 pm - 05:45 pm																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	12	1	0	0	9	0	0	22
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600	0.250	0.000	0.000	0.563	0.000	0.000	0.550
									0.542				0.563				

National Data & Surveying Services Intersection Turning Movement Count

Location: Hercules Ave & San Pablo Ave
City: Hercules
Control: Signalized

Project ID: 22-080016-002
Date: 1/13/2022

Data - Bikes

NS/EW Streets:	Hercules Ave				Hercules Ave				San Pablo Ave				San Pablo Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	1	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	1	0	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	1	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	1	0	0	0	0	0	0	0	4	0	0	0	1	0	0	7
APPROACH %'s :	50.00%	50.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:45 am - 08:45 am																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.750
	0.250								0.250				0.250				

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

National Data & Surveying Services Intersection Turning Movement Count

Location: Hercules Ave & San Pablo Ave
City: Hercules
Project ID: 22-080016-002
Date: 1/13/2022

Data - Pedestrians (Crosswalks)

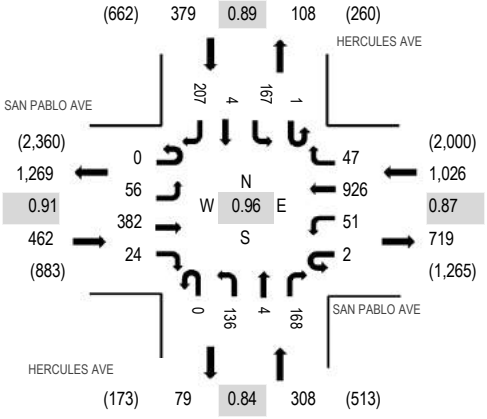
NS/EW Streets:	Hercules Ave		Hercules Ave		San Pablo Ave		San Pablo Ave		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	1	0	0	0	0	1	0	2
7:15 AM	0	0	0	3	0	0	2	0	5
7:30 AM	1	0	0	0	0	0	2	0	3
7:45 AM	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	1	1
8:15 AM	1	1	0	0	2	1	1	0	6
8:30 AM	0	1	0	0	0	1	2	0	4
8:45 AM	0	1	0	0	0	0	0	1	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	5	0	3	2	2	8	2	24
APPROACH %'s :	28.57%	71.43%	0.00%	100.00%	50.00%	50.00%	80.00%	20.00%	
PEAK HR :	07:45 am - 08:45 am								TOTAL
PEAK HR VOL :	1	3	0	0	2	2	3	1	12
PEAK HR FACTOR :	0.250	0.750			0.250	0.500	0.375	0.250	0.500
	0.500				0.333		0.500		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	1	0	0	0	3	1	1	0	6
4:15 PM	0	1	0	0	1	0	0	0	2
4:30 PM	0	0	0	1	2	0	0	0	3
4:45 PM	1	0	0	0	0	1	0	0	2
5:00 PM	0	0	0	0	3	1	1	0	5
5:15 PM	0	0	0	0	1	1	0	0	2
5:30 PM	1	1	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	2	0	1	10	4	2	0	22
APPROACH %'s :	60.00%	40.00%	0.00%	100.00%	71.43%	28.57%	100.00%	0.00%	
PEAK HR :	04:45 pm - 05:45 pm								TOTAL
PEAK HR VOL :	2	1	0	0	4	3	1	0	11
PEAK HR FACTOR :	0.500	0.250			0.333	0.750	0.250		0.550
	0.375				0.438		0.250		

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

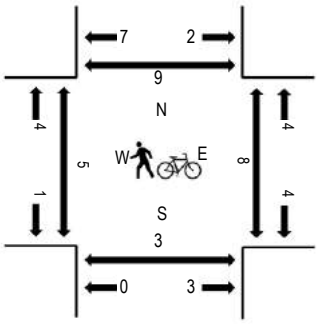
Location: 13 HERCULES AVE & SAN PABLO AVE AM
Date and Start Time: Tuesday, December 6, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	SAN PABLO AVE Eastbound				SAN PABLO AVE Westbound				HERCULES AVE Northbound				HERCULES AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	12	63	5	0	7	243	11	0	38	1	24	0	37	1	38	480	2,131	2	1	0	2
7:15 AM	0	11	57	5	2	5	288	12	0	34	1	32	1	26	2	60	536	2,175	1	3	0	5
7:30 AM	0	15	97	8	0	9	252	4	0	34	0	33	0	37	1	59	549	2,133	2	1	1	0
7:45 AM	0	12	117	6	0	12	203	17	0	39	0	53	0	60	0	47	566	2,065	2	3	1	2
8:00 AM	0	18	111	5	0	25	183	14	0	29	3	50	0	44	1	41	524	1,927	0	1	0	2
8:15 AM	0	12	83	10	0	24	201	29	0	28	0	24	1	44	0	38	494		3	2	1	1
8:30 AM	1	22	87	8	1	23	223	21	0	19	0	21	0	23	0	32	481		2	0	0	0
8:45 AM	0	21	91	6	1	10	159	21	0	27	1	22	0	25	0	44	428		5	1	0	0

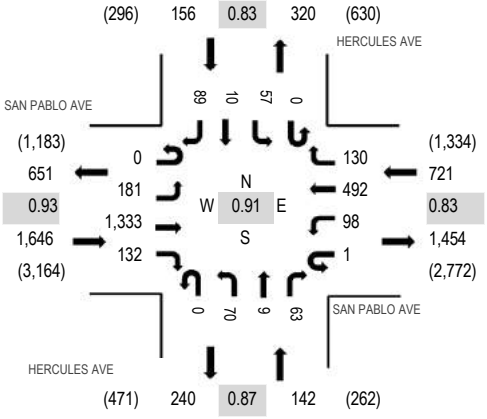
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
Lights	0	53	363	24	2	49	898	46	0	136	4	168	1	166	4	203	2,117
Mediums	0	3	17	0	0	2	26	1	0	0	0	0	0	1	0	4	54
Total	0	56	382	24	2	51	926	47	0	136	4	168	1	167	4	207	2,175

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

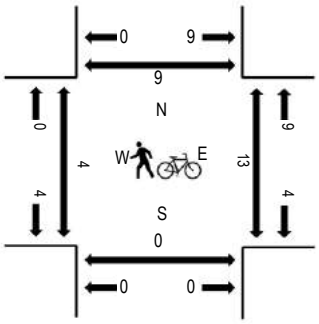
Location: 13 HERCULES AVE & SAN PABLO AVE PM
Date and Start Time: Tuesday, December 6, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	SAN PABLO AVE Eastbound				SAN PABLO AVE Westbound				HERCULES AVE Northbound				HERCULES AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	49	258	28	0	16	91	19	0	7	2	23	0	8	1	19	521	2,475	2	5	1	1
4:15 PM	0	53	365	31	0	31	65	22	0	17	2	11	0	21	1	16	635	2,571	0	2	1	0
4:30 PM	0	47	357	31	0	25	115	25	0	16	2	11	0	20	4	25	678	2,665	1	0	0	0
4:45 PM	0	46	324	25	0	23	99	39	0	23	1	17	0	16	4	24	641	2,637	1	6	0	0
5:00 PM	0	35	311	39	1	23	113	28	0	15	2	18	0	13	1	18	617	2,581	2	3	0	9
5:15 PM	0	53	341	37	0	27	165	38	0	16	4	17	0	8	1	22	729		0	3	0	0
5:30 PM	0	50	305	25	0	31	148	26	0	15	2	13	0	13	2	20	650		0	3	0	0
5:45 PM	3	59	267	25	1	39	98	26	0	13	0	15	0	18	1	20	585		1	4	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lights	0	178	1,316	132	1	98	473	129	0	69	9	63	0	56	10	88	2,622
Mediums	0	3	16	0	0	0	19	1	0	1	0	0	0	1	0	1	42
Total	0	181	1,333	132	1	98	492	130	0	70	9	63	0	57	10	89	2,665

Appendix B – Existing Conditions Intersections Level of Service Worksheets

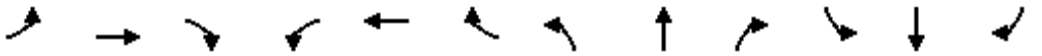
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	162	1	9	105	27	0	0	10	42	0	1
Future Vol, veh/h	1	162	1	9	105	27	0	0	10	42	0	1
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	88	88	88	67	67	67	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	231	1	10	119	31	0	0	15	58	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	157	0	0	236	0	0	393	415	236	403	400	142
Stage 1	-	-	-	-	-	-	238	238	-	162	162	-
Stage 2	-	-	-	-	-	-	155	177	-	241	238	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1423	-	-	1331	-	-	566	528	803	558	538	906
Stage 1	-	-	-	-	-	-	765	708	-	840	764	-
Stage 2	-	-	-	-	-	-	847	753	-	762	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1414	-	-	1326	-	-	559	517	800	540	527	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	559	517	-	540	527	-
Stage 1	-	-	-	-	-	-	761	704	-	833	753	-
Stage 2	-	-	-	-	-	-	839	742	-	747	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	9.6	12.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	800	1414	-	-	1326	-	-	545
HCM Lane V/C Ratio	0.019	0.001	-	-	0.008	-	-	0.108
HCM Control Delay (s)	9.6	7.5	0	-	7.7	0	-	12.4
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	440	55	84	744	126	137	6	171	166	2	156
Future Volume (veh/h)	87	440	55	84	744	126	137	6	171	166	2	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	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	99	500	62	93	827	140	163	7	204	210	3	197
Peak Hour Factor	0.88	0.88	0.88	0.90	0.90	0.90	0.84	0.84	0.84	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	1047	459	120	1032	448	210	10	277	273	409	345
Arrive On Green	0.07	0.29	0.29	0.07	0.29	0.29	0.12	0.18	0.18	0.15	0.22	0.22
Sat Flow, veh/h	1781	3554	1559	1781	3554	1541	1781	52	1511	1781	1870	1576
Grp Volume(v), veh/h	99	500	62	93	827	140	163	0	211	210	3	197
Grp Sat Flow(s),veh/h/ln	1781	1777	1559	1781	1777	1541	1781	0	1563	1781	1870	1576
Q Serve(g_s), s	3.3	6.9	1.7	3.1	12.8	4.2	5.3	0.0	7.6	6.8	0.1	6.7
Cycle Q Clear(g_c), s	3.3	6.9	1.7	3.1	12.8	4.2	5.3	0.0	7.6	6.8	0.1	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	127	1047	459	120	1032	448	210	0	287	273	409	345
V/C Ratio(X)	0.78	0.48	0.14	0.78	0.80	0.31	0.78	0.00	0.74	0.77	0.01	0.57
Avail Cap(c_a), veh/h	164	1089	478	206	1173	508	445	0	492	537	686	578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	17.3	15.5	27.4	19.6	16.5	25.6	0.0	23.0	24.3	18.2	20.8
Incr Delay (d2), s/veh	16.4	0.3	0.1	10.3	3.6	0.4	6.0	0.0	3.7	4.5	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.5	0.6	1.5	5.1	1.3	2.5	0.0	2.9	3.1	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.7	17.6	15.6	37.7	23.2	16.9	31.6	0.0	26.7	28.8	18.3	22.3
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	B	C
Approach Vol, veh/h		661			1060			374			410	
Approach Delay, s/veh		21.3			23.7			28.8			25.6	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	15.5	8.5	22.1	11.5	17.6	8.7	21.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.8	6.9	18.3	14.9	21.9	5.5	19.7
Max Q Clear Time (g_c+I1), s	8.8	9.6	5.1	8.9	7.3	8.7	5.3	14.8
Green Ext Time (p_c), s	0.4	0.9	0.0	2.3	0.2	0.5	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

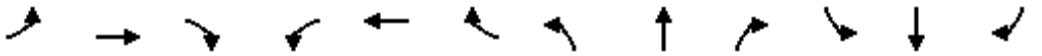
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	4	97	3	13	188	43	1	1	11	30	0	1
Future Vol, veh/h	4	97	3	13	188	43	1	1	11	30	0	1
Conflicting Peds, #/hr	9	0	2	2	0	9	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	73	73	73	50	50	50	61	61	61
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	117	4	18	258	59	2	2	22	49	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	123	0	0	457	493	124	477	466	298
Stage 1	-	-	-	-	-	-	131	131	-	333	333	-
Stage 2	-	-	-	-	-	-	326	362	-	144	133	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1464	-	-	514	477	927	498	494	741
Stage 1	-	-	-	-	-	-	873	788	-	681	644	-
Stage 2	-	-	-	-	-	-	687	625	-	859	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1223	-	-	1461	-	-	504	463	923	472	479	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	463	-	472	479	-
Stage 1	-	-	-	-	-	-	868	783	-	672	629	-
Stage 2	-	-	-	-	-	-	675	610	-	831	781	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	9.6	13.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	809	1223	-	-	1461	-	-	477
HCM Lane V/C Ratio	0.032	0.004	-	-	0.012	-	-	0.107
HCM Control Delay (s)	9.6	8	0	-	7.5	0	-	13.4
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	1013	201	137	494	157	101	19	118	106	14	126
Future Volume (veh/h)	178	1013	201	137	494	157	101	19	118	106	14	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	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	196	1113	221	151	543	173	116	22	136	128	17	152
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	1329	584	189	1222	531	150	33	204	183	315	263
Arrive On Green	0.14	0.37	0.37	0.11	0.34	0.34	0.08	0.15	0.15	0.10	0.17	0.17
Sat Flow, veh/h	1781	3554	1561	1781	3554	1545	1781	220	1361	1781	1870	1565
Grp Volume(v), veh/h	196	1113	221	151	543	173	116	0	158	128	17	152
Grp Sat Flow(s),veh/h/ln	1781	1777	1561	1781	1777	1545	1781	0	1581	1781	1870	1565
Q Serve(g_s), s	7.2	19.2	6.9	5.6	8.0	5.6	4.3	0.0	6.4	4.7	0.5	6.0
Cycle Q Clear(g_c), s	7.2	19.2	6.9	5.6	8.0	5.6	4.3	0.0	6.4	4.7	0.5	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		1.00
Lane Grp Cap(c), veh/h	242	1329	584	189	1222	531	150	0	237	183	315	263
V/C Ratio(X)	0.81	0.84	0.38	0.80	0.44	0.33	0.77	0.00	0.67	0.70	0.05	0.58
Avail Cap(c_a), veh/h	363	1452	638	209	1222	531	328	0	437	476	673	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	19.2	15.4	29.4	17.1	16.3	30.2	0.0	27.0	29.2	23.5	25.8
Incr Delay (d2), s/veh	8.0	4.2	0.4	17.9	0.3	0.4	8.1	0.0	3.2	4.8	0.1	2.0
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	3.4	7.6	2.2	3.1	2.9	1.8	2.1	0.0	2.5	2.2	0.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	23.4	15.8	47.3	17.4	16.7	38.2	0.0	30.2	34.0	23.6	27.8
LnGrp LOS	D	C	B	D	B	B	D	A	C	C	C	C
Approach Vol, veh/h		1530			867			274			297	
Approach Delay, s/veh		23.9			22.4			33.6			30.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	14.6	11.6	29.7	10.2	15.8	13.7	27.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.6	7.9	27.5	12.4	24.2	13.7	21.7
Max Q Clear Time (g_c+I1), s	6.7	8.4	7.6	21.2	6.3	8.0	9.2	10.0
Green Ext Time (p_c), s	0.2	0.6	0.0	3.9	0.1	0.5	0.2	3.1

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	99	500	63	93	827	140	163	211	210	3	197
v/c Ratio	0.63	0.43	0.10	0.49	0.76	0.25	0.54	0.58	0.60	0.01	0.50
Control Delay	51.5	20.5	0.3	38.9	26.9	5.3	31.4	12.3	30.9	23.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	20.5	0.3	38.9	26.9	5.3	31.4	12.3	30.9	23.5	9.3
Queue Length 50th (ft)	36	78	0	33	141	0	56	2	71	1	0
Queue Length 95th (ft)	#118	147	0	#98	#288	37	111	47	123	7	33
Internal Link Dist (ft)		335			442			438		310	
Turn Bay Length (ft)	155		160	300		165			90		
Base Capacity (vph)	156	1156	607	196	1120	583	423	615	511	655	675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.43	0.10	0.47	0.74	0.24	0.39	0.34	0.41	0.00	0.29

Intersection Summary

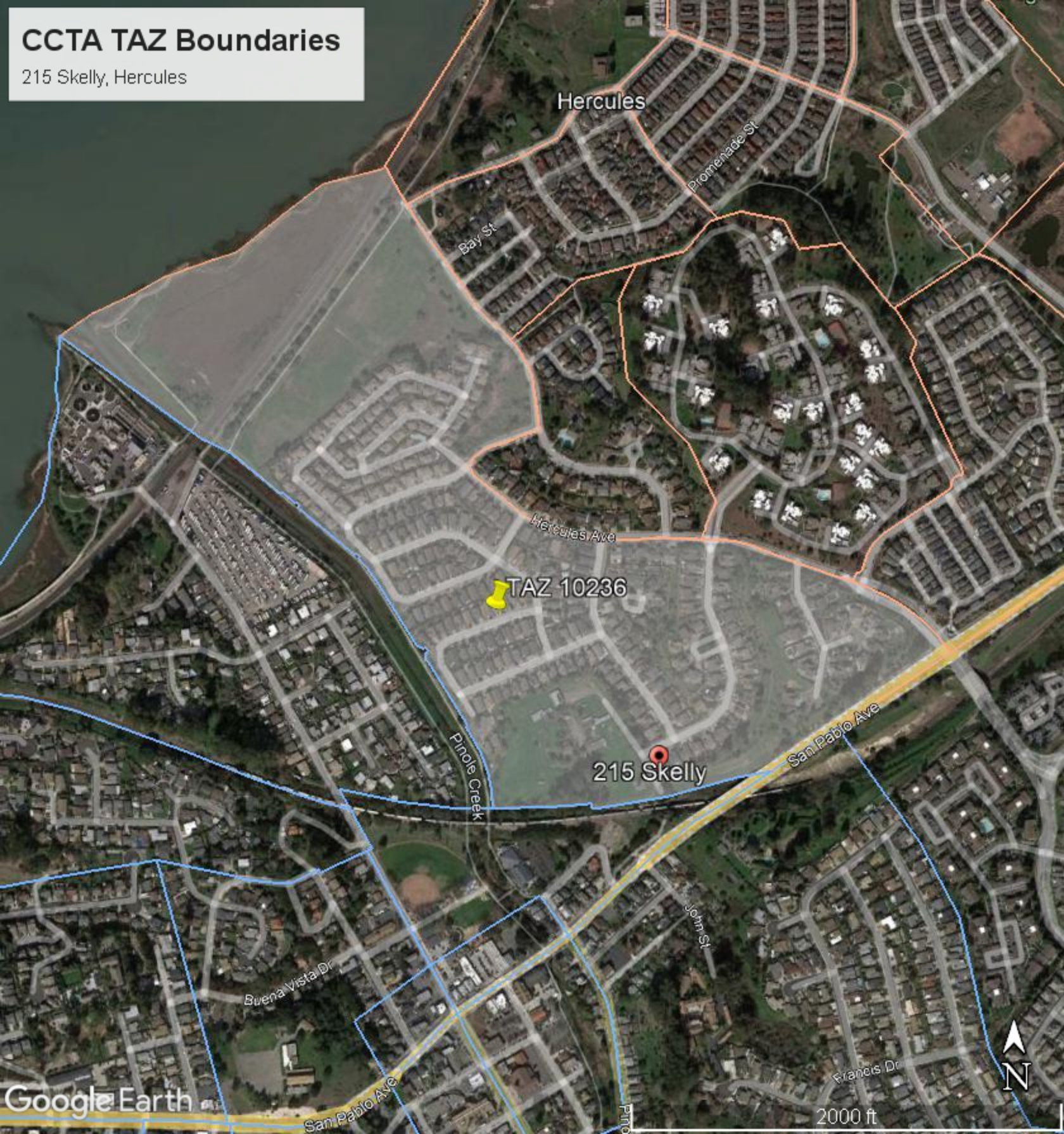
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	196	1113	221	151	543	173	116	158	128	17	152
v/c Ratio	0.65	0.82	0.31	0.77	0.47	0.26	0.49	0.55	0.50	0.06	0.39
Control Delay	40.0	27.2	6.0	60.5	22.4	2.3	36.8	16.2	35.5	28.6	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	27.2	6.0	60.5	22.4	2.3	36.8	16.2	35.5	28.6	6.4
Queue Length 50th (ft)	78	217	10	65	98	0	47	9	52	7	0
Queue Length 95th (ft)	#176	#408	60	#182	174	19	100	57	98	22	24
Internal Link Dist (ft)		335			442			438		310	
Turn Bay Length (ft)	155		160	300		165			90		
Base Capacity (vph)	340	1365	714	196	1157	661	307	515	446	632	650
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.82	0.31	0.77	0.47	0.26	0.38	0.31	0.29	0.03	0.23

Intersection Summary

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

Appendix C – CCTA TAZ Boundaries


CCTA TAZ Boundaries
215 Skelly, Hercules
Hercules
Promenade St
Bay St
Hercules Ave
TAZ 10236
Pinole Creek
215 Skelly
San Pablo Ave
John St
Buena Vista Dr
San Pablo Ave
Francis Dr
N
2000 ft
Google Earth

Appendix D – Existing plus Project Conditions Intersections Level of Service Worksheets

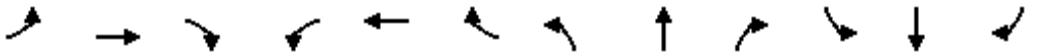
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	162	1	16	105	27	0	0	31	42	0	1
Future Vol, veh/h	1	162	1	16	105	27	0	0	31	42	0	1
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	88	88	88	67	67	67	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	231	1	18	119	31	0	0	46	58	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	157	0	0	236	0	0	409	431	236	435	416	142
Stage 1	-	-	-	-	-	-	238	238	-	178	178	-
Stage 2	-	-	-	-	-	-	171	193	-	257	238	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1423	-	-	1331	-	-	553	517	803	531	527	906
Stage 1	-	-	-	-	-	-	765	708	-	824	752	-
Stage 2	-	-	-	-	-	-	831	741	-	748	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1414	-	-	1326	-	-	544	503	800	491	513	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	544	503	-	491	513	-
Stage 1	-	-	-	-	-	-	761	704	-	817	735	-
Stage 2	-	-	-	-	-	-	817	725	-	704	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	9.8	13.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	800	1414	-	-	1326	-	-	496
HCM Lane V/C Ratio	0.058	0.001	-	-	0.014	-	-	0.119
HCM Control Delay (s)	9.8	7.5	0	-	7.8	0	-	13.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	440	55	84	744	129	137	6	171	174	2	169
Future Volume (veh/h)	91	440	55	84	744	129	137	6	171	174	2	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	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	103	500	62	93	827	143	163	7	204	220	3	214
Peak Hour Factor	0.88	0.88	0.88	0.90	0.90	0.90	0.84	0.84	0.84	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	1049	460	120	1024	444	210	9	276	282	417	352
Arrive On Green	0.07	0.30	0.30	0.07	0.29	0.29	0.12	0.18	0.18	0.16	0.22	0.22
Sat Flow, veh/h	1781	3554	1559	1781	3554	1541	1781	52	1511	1781	1870	1577
Grp Volume(v), veh/h	103	500	62	93	827	143	163	0	211	220	3	214
Grp Sat Flow(s),veh/h/ln	1781	1777	1559	1781	1777	1541	1781	0	1563	1781	1870	1577
Q Serve(g_s), s	3.4	7.0	1.8	3.1	13.1	4.4	5.4	0.0	7.7	7.2	0.1	7.4
Cycle Q Clear(g_c), s	3.4	7.0	1.8	3.1	13.1	4.4	5.4	0.0	7.7	7.2	0.1	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	132	1049	460	120	1024	444	210	0	285	282	417	352
V/C Ratio(X)	0.78	0.48	0.13	0.78	0.81	0.32	0.78	0.00	0.74	0.78	0.01	0.61
Avail Cap(c_a), veh/h	162	1072	470	203	1154	500	438	0	484	529	675	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	17.5	15.7	27.8	20.0	16.9	26.0	0.0	23.4	24.5	18.3	21.2
Incr Delay (d2), s/veh	17.9	0.3	0.1	10.3	3.9	0.4	6.1	0.0	3.7	4.7	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.5	0.6	1.6	5.2	1.4	2.5	0.0	3.0	3.3	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	17.9	15.8	38.2	23.9	17.3	32.1	0.0	27.2	29.2	18.3	22.9
LnGrp LOS	D	B	B	D	C	B	C	A	C	C	B	C
Approach Vol, veh/h		665			1063			374			437	
Approach Delay, s/veh		22.0			24.3			29.3			26.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	15.6	8.6	22.4	11.6	18.0	9.0	22.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.8	6.9	18.3	14.9	21.9	5.5	19.7
Max Q Clear Time (g_c+I1), s	9.2	9.7	5.1	9.0	7.4	9.4	5.4	15.1
Green Ext Time (p_c), s	0.4	0.8	0.0	2.3	0.2	0.6	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

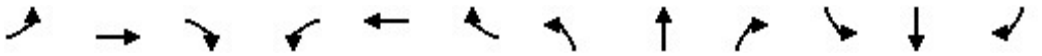
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	4	97	3	37	188	43	1	1	25	30	0	1
Future Vol, veh/h	4	97	3	37	188	43	1	1	25	30	0	1
Conflicting Peds, #/hr	9	0	2	2	0	9	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	73	73	73	50	50	50	61	61	61
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	117	4	51	258	59	2	2	50	49	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	123	0	0	523	559	124	557	532	298
Stage 1	-	-	-	-	-	-	131	131	-	399	399	-
Stage 2	-	-	-	-	-	-	392	428	-	158	133	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1464	-	-	465	438	927	441	453	741
Stage 1	-	-	-	-	-	-	873	788	-	627	602	-
Stage 2	-	-	-	-	-	-	633	585	-	844	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1223	-	-	1461	-	-	446	413	923	396	427	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	413	-	396	427	-
Stage 1	-	-	-	-	-	-	868	783	-	619	571	-
Stage 2	-	-	-	-	-	-	604	555	-	791	781	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	9.5	15.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	850	1223	-	-	1461	-	-	402
HCM Lane V/C Ratio	0.064	0.004	-	-	0.035	-	-	0.126
HCM Control Delay (s)	9.5	8	0	-	7.6	0	-	15.2
HCM Lane LOS	A	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	1013	201	137	494	167	101	19	118	112	14	134
Future Volume (veh/h)	192	1013	201	137	494	167	101	19	118	112	14	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	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	211	1113	221	151	543	184	116	22	136	135	17	161
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	258	1324	582	189	1186	515	150	33	204	189	321	269
Arrive On Green	0.14	0.37	0.37	0.11	0.33	0.33	0.08	0.15	0.15	0.11	0.17	0.17
Sat Flow, veh/h	1781	3554	1561	1781	3554	1545	1781	220	1361	1781	1870	1566
Grp Volume(v), veh/h	211	1113	221	151	543	184	116	0	158	135	17	161
Grp Sat Flow(s),veh/h/ln	1781	1777	1561	1781	1777	1545	1781	0	1581	1781	1870	1566
Q Serve(g_s), s	7.8	19.4	7.0	5.6	8.1	6.1	4.3	0.0	6.4	5.0	0.5	6.4
Cycle Q Clear(g_c), s	7.8	19.4	7.0	5.6	8.1	6.1	4.3	0.0	6.4	5.0	0.5	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		1.00
Lane Grp Cap(c), veh/h	258	1324	582	189	1186	515	150	0	237	189	321	269
V/C Ratio(X)	0.82	0.84	0.38	0.80	0.46	0.36	0.77	0.00	0.67	0.71	0.05	0.60
Avail Cap(c_a), veh/h	360	1442	633	208	1186	515	326	0	434	473	668	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	19.4	15.5	29.6	17.8	17.1	30.4	0.0	27.2	29.3	23.5	25.9
Incr Delay (d2), s/veh	9.9	4.4	0.4	18.2	0.3	0.4	8.1	0.0	3.2	4.9	0.1	2.1
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	3.8	7.7	2.2	3.2	3.0	2.0	2.1	0.0	2.6	2.3	0.2	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	23.8	16.0	47.8	18.0	17.5	38.5	0.0	30.5	34.2	23.5	28.1
LnGrp LOS	D	C	B	D	B	B	D	A	C	C	C	C
Approach Vol, veh/h		1545			878			274			313	
Approach Delay, s/veh		24.6			23.0			33.8			30.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	14.6	11.7	29.7	10.2	16.1	14.3	27.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.6	7.9	27.5	12.4	24.2	13.7	21.7
Max Q Clear Time (g_c+I1), s	7.0	8.4	7.6	21.4	6.3	8.4	9.8	10.1
Green Ext Time (p_c), s	0.2	0.6	0.0	3.8	0.1	0.5	0.2	3.1

Intersection Summary	
HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	103	500	63	93	827	143	163	211	220	3	214
v/c Ratio	0.66	0.43	0.10	0.49	0.76	0.25	0.54	0.58	0.61	0.01	0.52
Control Delay	54.0	20.6	0.3	39.1	27.1	5.5	31.6	12.4	31.3	23.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	20.6	0.3	39.1	27.1	5.5	31.6	12.4	31.3	23.5	9.2
Queue Length 50th (ft)	38	80	0	33	142	0	56	2	75	1	0
Queue Length 95th (ft)	#123	147	0	#98	#288	39	111	47	129	7	34
Internal Link Dist (ft)		335			442			438		310	
Turn Bay Length (ft)	155		160	300		165			90		
Base Capacity (vph)	155	1151	605	195	1114	581	421	613	509	652	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.43	0.10	0.48	0.74	0.25	0.39	0.34	0.43	0.00	0.31

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	211	1113	221	151	543	184	116	158	135	17	161
v/c Ratio	0.69	0.82	0.31	0.77	0.48	0.28	0.49	0.55	0.51	0.06	0.41
Control Delay	41.7	27.6	6.1	61.2	22.9	2.7	37.0	16.2	35.7	28.5	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	27.6	6.1	61.2	22.9	2.7	37.0	16.2	35.7	28.5	7.2
Queue Length 50th (ft)	84	220	10	65	100	0	47	9	55	7	0
Queue Length 95th (ft)	#197	#412	61	#183	176	25	101	58	102	22	29
Internal Link Dist (ft)		335			442			438		310	
Turn Bay Length (ft)	155		160	300		165			90		
Base Capacity (vph)	338	1359	712	195	1132	652	306	513	445	629	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.82	0.31	0.77	0.48	0.28	0.38	0.31	0.30	0.03	0.25

Intersection Summary

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

Appendix E – Cumulative Conditions Intersections Level of Service Worksheets

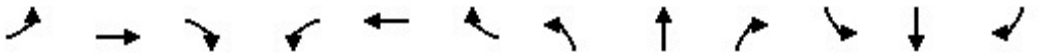
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	188	1	10	122	31	0	0	12	49	0	1
Future Vol, veh/h	1	188	1	10	122	31	0	0	12	49	0	1
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	88	88	88	67	67	67	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	269	1	11	139	35	0	0	18	67	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	181	0	0	274	0	0	455	479	274	467	462	164
Stage 1	-	-	-	-	-	-	276	276	-	186	186	-
Stage 2	-	-	-	-	-	-	179	203	-	281	276	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1394	-	-	1289	-	-	515	486	765	506	497	881
Stage 1	-	-	-	-	-	-	730	682	-	816	746	-
Stage 2	-	-	-	-	-	-	823	733	-	726	682	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1284	-	-	508	475	762	487	486	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	508	475	-	487	486	-
Stage 1	-	-	-	-	-	-	726	679	-	809	733	-
Stage 2	-	-	-	-	-	-	813	721	-	708	679	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	9.8	13.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1385	-	-	1284	-	-	491
HCM Lane V/C Ratio	0.024	0.001	-	-	0.009	-	-	0.139
HCM Control Delay (s)	9.8	7.6	0	-	7.8	0	-	13.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	510	64	97	862	146	159	7	198	192	2	181
Future Volume (veh/h)	101	510	64	97	862	146	159	7	198	192	2	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	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	115	580	73	108	958	162	189	8	236	243	3	229
Peak Hour Factor	0.88	0.88	0.88	0.90	0.90	0.90	0.84	0.84	0.84	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	1045	458	138	1032	448	236	10	296	298	431	364
Arrive On Green	0.08	0.29	0.29	0.08	0.29	0.29	0.13	0.20	0.20	0.17	0.23	0.23
Sat Flow, veh/h	1781	3554	1558	1781	3554	1541	1781	51	1512	1781	1870	1577
Grp Volume(v), veh/h	115	580	73	108	958	162	189	0	244	243	3	229
Grp Sat Flow(s),veh/h/ln	1781	1777	1558	1781	1777	1541	1781	0	1563	1781	1870	1577
Q Serve(g_s), s	4.3	9.3	2.4	4.0	17.8	5.7	7.0	0.0	10.1	8.9	0.1	8.9
Cycle Q Clear(g_c), s	4.3	9.3	2.4	4.0	17.8	5.7	7.0	0.0	10.1	8.9	0.1	8.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	144	1045	458	138	1032	448	236	0	306	298	431	364
V/C Ratio(X)	0.80	0.56	0.16	0.78	0.93	0.36	0.80	0.00	0.80	0.82	0.01	0.63
Avail Cap(c_a), veh/h	144	1045	458	181	1032	448	391	0	433	473	604	509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	20.2	17.7	30.7	23.4	19.1	28.6	0.0	26.0	27.2	20.1	23.5
Incr Delay (d2), s/veh	25.8	0.6	0.2	14.8	13.9	0.5	6.2	0.0	6.8	6.0	0.0	1.8
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	2.8	3.5	0.8	2.2	8.6	1.9	3.3	0.0	4.2	4.2	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.4	20.8	17.9	45.5	37.3	19.6	34.8	0.0	32.7	33.2	20.1	25.3
LnGrp LOS	E	C	B	D	D	B	C	A	C	C	C	C
Approach Vol, veh/h		768			1228			433			475	
Approach Delay, s/veh		25.9			35.7			33.6			29.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	17.8	9.8	24.4	13.5	20.1	10.0	24.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.8	6.9	18.3	14.9	21.9	5.5	19.7
Max Q Clear Time (g_c+I1), s	10.9	12.1	6.0	11.3	9.0	10.9	6.3	19.8
Green Ext Time (p_c), s	0.4	0.8	0.0	2.2	0.3	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

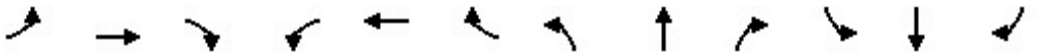
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	112	3	15	218	50	1	1	13	35	0	1
Future Vol, veh/h	5	112	3	15	218	50	1	1	13	35	0	1
Conflicting Peds, #/hr	9	0	2	2	0	9	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	73	73	73	50	50	50	61	61	61
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	135	4	21	299	68	2	2	26	57	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	141	0	0	528	569	142	550	537	343
Stage 1	-	-	-	-	-	-	151	151	-	384	384	-
Stage 2	-	-	-	-	-	-	377	418	-	166	153	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1182	-	-	1442	-	-	461	432	906	446	450	700
Stage 1	-	-	-	-	-	-	851	772	-	639	611	-
Stage 2	-	-	-	-	-	-	644	591	-	836	771	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1172	-	-	1439	-	-	450	416	902	418	434	693
Mov Cap-2 Maneuver	-	-	-	-	-	-	450	416	-	418	434	-
Stage 1	-	-	-	-	-	-	844	766	-	629	594	-
Stage 2	-	-	-	-	-	-	630	574	-	803	765	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	9.7	14.9
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	788	1172	-	-	1439	-	-	423
HCM Lane V/C Ratio	0.038	0.005	-	-	0.014	-	-	0.14
HCM Control Delay (s)	9.7	8.1	0	-	7.5	0	-	14.9
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	1174	233	159	572	182	117	22	137	123	16	146
Future Volume (veh/h)	206	1174	233	159	572	182	117	22	137	123	16	146
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	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	226	1290	256	175	629	200	134	25	157	148	19	176
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	1335	586	192	1181	513	171	35	217	198	327	274
Arrive On Green	0.15	0.38	0.38	0.11	0.33	0.33	0.10	0.16	0.16	0.11	0.17	0.17
Sat Flow, veh/h	1781	3554	1561	1781	3554	1545	1781	217	1364	1781	1870	1566
Grp Volume(v), veh/h	226	1290	256	175	629	200	134	0	182	148	19	176
Grp Sat Flow(s),veh/h/ln	1781	1777	1561	1781	1777	1545	1781	0	1581	1781	1870	1566
Q Serve(g_s), s	9.0	26.1	9.0	7.1	10.5	7.3	5.4	0.0	8.0	5.9	0.6	7.7
Cycle Q Clear(g_c), s	9.0	26.1	9.0	7.1	10.5	7.3	5.4	0.0	8.0	5.9	0.6	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		1.00
Lane Grp Cap(c), veh/h	270	1335	586	192	1181	513	171	0	252	198	327	274
V/C Ratio(X)	0.84	0.97	0.44	0.91	0.53	0.39	0.78	0.00	0.72	0.75	0.06	0.64
Avail Cap(c_a), veh/h	333	1335	586	192	1181	513	302	0	402	438	618	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	22.4	17.1	32.3	19.8	18.8	32.4	0.0	29.2	31.5	25.2	28.1
Incr Delay (d2), s/veh	14.3	17.2	0.5	40.7	0.5	0.5	7.6	0.0	3.9	5.5	0.1	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	12.7	2.9	5.0	4.0	2.4	2.6	0.0	3.2	2.8	0.3	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	39.6	17.6	73.0	20.3	19.2	40.0	0.0	33.1	37.0	25.3	30.6
LnGrp LOS	D	D	B	E	C	B	D	A	C	D	C	C
Approach Vol, veh/h		1772			1004			316			343	
Approach Delay, s/veh		37.1			29.3			36.1			33.1	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	16.2	12.4	32.0	11.5	17.3	15.6	28.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.6	7.9	27.5	12.4	24.2	13.7	21.7
Max Q Clear Time (g_c+I1), s	7.9	10.0	9.1	28.1	7.4	9.7	11.0	12.5
Green Ext Time (p_c), s	0.3	0.7	0.0	0.0	0.1	0.6	0.2	3.2

Intersection Summary	
HCM 6th Ctrl Delay	34.3
HCM 6th LOS	C

Appendix F – Cumulative plus Project Conditions Intersections Level of Service Worksheets

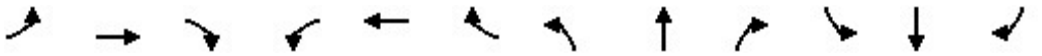
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	188	1	17	122	31	0	0	33	49	0	1
Future Vol, veh/h	1	188	1	17	122	31	0	0	33	49	0	1
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	88	88	88	67	67	67	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	269	1	19	139	35	0	0	49	67	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	181	0	0	274	0	0	471	495	274	498	478	164
Stage 1	-	-	-	-	-	-	276	276	-	202	202	-
Stage 2	-	-	-	-	-	-	195	219	-	296	276	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1394	-	-	1289	-	-	503	476	765	483	486	881
Stage 1	-	-	-	-	-	-	730	682	-	800	734	-
Stage 2	-	-	-	-	-	-	807	722	-	712	682	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1284	-	-	494	463	762	443	472	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	494	463	-	443	472	-
Stage 1	-	-	-	-	-	-	726	679	-	794	717	-
Stage 2	-	-	-	-	-	-	793	705	-	665	679	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	10.1	14.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	762	1385	-	-	1284	-	-	447
HCM Lane V/C Ratio	0.065	0.001	-	-	0.015	-	-	0.153
HCM Control Delay (s)	10.1	7.6	0	-	7.8	0	-	14.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	510	64	97	862	149	159	7	198	200	2	194
Future Volume (veh/h)	105	510	64	97	862	149	159	7	198	200	2	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	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	119	580	73	108	958	166	189	8	236	253	3	246
Peak Hour Factor	0.88	0.88	0.88	0.90	0.90	0.90	0.84	0.84	0.84	0.79	0.79	0.79
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	1035	454	138	1025	444	235	10	296	307	441	372
Arrive On Green	0.08	0.29	0.29	0.08	0.29	0.29	0.13	0.20	0.20	0.17	0.24	0.24
Sat Flow, veh/h	1781	3554	1558	1781	3554	1541	1781	51	1512	1781	1870	1577
Grp Volume(v), veh/h	119	580	73	108	958	166	189	0	244	253	3	246
Grp Sat Flow(s),veh/h/ln	1781	1777	1558	1781	1777	1541	1781	0	1563	1781	1870	1577
Q Serve(g_s), s	4.5	9.4	2.4	4.1	17.9	5.9	7.0	0.0	10.2	9.4	0.1	9.7
Cycle Q Clear(g_c), s	4.5	9.4	2.4	4.1	17.9	5.9	7.0	0.0	10.2	9.4	0.1	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	143	1035	454	138	1025	444	235	0	306	307	441	372
V/C Ratio(X)	0.83	0.56	0.16	0.78	0.94	0.37	0.80	0.00	0.80	0.82	0.01	0.66
Avail Cap(c_a), veh/h	143	1035	454	180	1025	444	388	0	430	469	599	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	20.5	18.0	30.9	23.7	19.4	28.8	0.0	26.2	27.3	20.0	23.7
Incr Delay (d2), s/veh	31.8	0.7	0.2	15.1	15.0	0.5	6.3	0.0	7.0	7.0	0.0	2.0
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	3.1	3.6	0.8	2.2	8.8	2.0	3.3	0.0	4.2	4.4	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.7	21.2	18.2	46.0	38.7	19.9	35.1	0.0	33.2	34.3	20.0	25.7
LnGrp LOS	E	C	B	D	D	B	D	A	C	C	C	C
Approach Vol, veh/h		772			1232			433			502	
Approach Delay, s/veh		27.3			36.8			34.0			30.0	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.3	17.9	9.8	24.4	13.5	20.6	10.0	24.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.8	6.9	18.3	14.9	21.9	5.5	19.7
Max Q Clear Time (g_c+I1), s	11.4	12.2	6.1	11.4	9.0	11.7	6.5	19.9
Green Ext Time (p_c), s	0.4	0.8	0.0	2.2	0.3	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

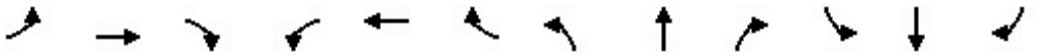
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	112	3	39	218	50	1	1	27	35	0	1
Future Vol, veh/h	5	112	3	39	218	50	1	1	27	35	0	1
Conflicting Peds, #/hr	9	0	2	2	0	9	1	0	3	3	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	73	73	73	50	50	50	61	61	61
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	135	4	53	299	68	2	2	54	57	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	141	0	0	592	633	142	628	601	343
Stage 1	-	-	-	-	-	-	151	151	-	448	448	-
Stage 2	-	-	-	-	-	-	441	482	-	180	153	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1182	-	-	1442	-	-	418	397	906	395	414	700
Stage 1	-	-	-	-	-	-	851	772	-	590	573	-
Stage 2	-	-	-	-	-	-	595	553	-	822	771	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1172	-	-	1439	-	-	399	372	902	351	388	693
Mov Cap-2 Maneuver	-	-	-	-	-	-	399	372	-	351	388	-
Stage 1	-	-	-	-	-	-	844	766	-	581	541	-
Stage 2	-	-	-	-	-	-	565	522	-	764	765	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	9.7	17.1
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	826	1172	-	-	1439	-	-	356
HCM Lane V/C Ratio	0.07	0.005	-	-	0.037	-	-	0.166
HCM Control Delay (s)	9.7	8.1	0	-	7.6	0	-	17.1
HCM Lane LOS	A	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	1174	233	159	572	192	117	22	137	129	16	154
Future Volume (veh/h)	220	1174	233	159	572	192	117	22	137	129	16	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	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	242	1290	256	175	629	211	134	25	157	155	19	186
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.87	0.87	0.87	0.83	0.83	0.83
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	1328	584	191	1141	496	171	35	217	205	333	279
Arrive On Green	0.16	0.37	0.37	0.11	0.32	0.32	0.10	0.16	0.16	0.12	0.18	0.18
Sat Flow, veh/h	1781	3554	1561	1781	3554	1544	1781	217	1364	1781	1870	1566
Grp Volume(v), veh/h	242	1290	256	175	629	211	134	0	182	155	19	186
Grp Sat Flow(s),veh/h/ln	1781	1777	1561	1781	1777	1544	1781	0	1581	1781	1870	1566
Q Serve(g_s), s	9.7	26.3	9.0	7.2	10.7	7.9	5.4	0.0	8.0	6.2	0.6	8.1
Cycle Q Clear(g_c), s	9.7	26.3	9.0	7.2	10.7	7.9	5.4	0.0	8.0	6.2	0.6	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		1.00
Lane Grp Cap(c), veh/h	285	1328	584	191	1141	496	171	0	251	205	333	279
V/C Ratio(X)	0.85	0.97	0.44	0.91	0.55	0.43	0.78	0.00	0.72	0.76	0.06	0.67
Avail Cap(c_a), veh/h	332	1328	584	191	1141	496	300	0	400	436	615	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	22.6	17.3	32.5	20.6	19.6	32.5	0.0	29.4	31.5	25.1	28.2
Incr Delay (d2), s/veh	16.5	18.2	0.5	41.9	0.6	0.6	7.7	0.0	3.9	5.6	0.1	2.7
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	5.2	12.9	3.0	5.1	4.1	0.1	2.7	0.0	3.3	2.9	0.3	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	40.8	17.8	74.4	21.2	20.2	40.2	0.0	33.3	37.1	25.2	30.9
LnGrp LOS	D	D	B	E	C	C	D	A	C	D	C	C
Approach Vol, veh/h		1788			1015			316			360	
Approach Delay, s/veh		38.3			30.1			36.2			33.3	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	16.2	12.4	32.0	11.6	17.6	16.3	28.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.6	7.9	27.5	12.4	24.2	13.7	21.7
Max Q Clear Time (g_c+I1), s	8.2	10.0	9.2	28.3	7.4	10.1	11.7	12.7
Green Ext Time (p_c), s	0.3	0.7	0.0	0.0	0.1	0.6	0.1	3.2

Intersection Summary	
HCM 6th Ctrl Delay	35.2
HCM 6th LOS	D