APPENDIX TRA

Draft Traffic Impact Analysis Report

Lincoln Landing Mixed-Use Development

City of Hayward, California

August 9, 2016

TJKM

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EXECUTIVE SUMMARY

This report summarizes the results of the traffic impact analysis (TIA) conducted for the proposed mixed-use (residential and retail) development located in the southwest quadrant of the Foothill Boulevard/Hazel Avenue intersection. The proposed project would remove the existing retail building and construct an approximately 11.3 acre compact mixed-use development with 476 residential apartments and approximately 80,500 square feet of retail and commercial space.

As per the information provided by the project applicant, the Lincoln Landing Mixed-Use Development would constructed in two phases.

Phase 1: 267 residential apartments, 35,000 square feet of supermarket land use and 45,500 square feet of shopping center land use, a net total gross floor area of 80,500 square feet of retail.

Phase 2: Addition of 209 residential apartments.

Proposed access to the site will be via two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive. To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, 15 study intersections were evaluated during the weekday morning (a.m.) peak hour and evening (p.m.) peak hour under seven study scenarios. The study intersections were evaluated under No Project and Plus Project scenarios for Existing, Background, and Cumulative Conditions. For the purposes of this analysis, potential traffic operational effects from the proposed project are identified based on established traffic operational thresholds for the City of Hayward.

Roadway system operations were evaluated under the following study scenarios:

- Existing Conditions
- Existing plus Project Phase 1 Conditions
- Background Conditions
- Background plus Project Phase 1 Conditions
- Background plus Project Phase 1 and 2 Conditions
- Cumulative Conditions
- Cumulative plus Project Phase 1 and 2 Conditions

The report also includes evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians; evaluation of on-site vehicle parking supply, passenger and commercial loading spaces and garbage/trash facilities, neighborhood traffic calming, transportation demand management strategies and queuing analysis at the driveways and at selected study intersections.

Project Trip Generation

Based on data published in Institute of Transportation Engineer's (ITE) *Trip Generation 9th Edition* (2012) the proposed Lincoln Landing Mixed-Use Development Project is expected to generate in **Phase 1** a total of 247 net trips during the a.m. peak hour and 395 net trips during the p.m. peak hour and in **Phase 1 and 2** a total of 322 net trips during the a.m. peak hour and 488 net trips during the p.m. peak hour. These trip

totals include application of a trip discount that accounts for internal trips, Transportation Demand Management and retail peak hour pass by trip reductions as per ITE.

Existing Conditions

The TIA analysis found that all the study intersections currently operate within standards of the City of Hayward (LOS E) or better during the a.m. and p.m. peak hours.

Existing plus Project Phase 1 Conditions

Under this scenario, all the intersections operate within the City of Hayward standards (LOS E) or better during the a.m. and p.m. peak hours.

Based on the City of Hayward impact criteria the project is expected to have a *less-than-significant* impact at all the study intersections under Existing plus Project Phase 1 Conditions.

Background (Existing plus Approved Projects) Conditions

Under this scenario, all the intersections operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for following intersection:

- Foothill Boulevard / City Center Drive (#4) during the p.m. peak hour (LOS F)
- Mission Boulevard / Simon Street (#15) during a.m. and p.m. peak hours (LOS F/F, respectively)

Background plus Project Phase 1 and Phase 1 & 2 Conditions

Significantly impacted intersection locations under Background plus Project Phase 1 and Background plus Phase 1 and 2 Conditions during the a.m. or p.m. peak hour include:

- Foothill Boulevard / Hazel Avenue (#3) - A mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lane would improve operations at the Foothill Boulevard/Hazel Avenue intersection to LOS D (p.m. peak hour). This mitigation measure would consist of restriping the right-most northbound approach right lane to a shared through right turn lane and accommodate one receiving lane for the proposed shared through right lane on the north side of the intersection for approximately 500 feet and merging back to three lanes. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Project Phase 1 and Background plus Phase 1 & 2 Conditions.
- Foothill Boulevard / City Center Drive (#4) - A mitigation of restriping the southbound approach with an additional left turn lane would improve approach operations at the intersection to LOS D (p.m. peak hour). This mitigation measure would consist of restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane. This requires some downstream parking removal. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to *a less-than-significant level* under Background plus Project Phase 1 and Background plus Phase 1 & 2 Conditions.

Cumulative Conditions

Under this scenario, all study intersections operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for the following intersections:

- Foothill Boulevard / Hazel Avenue (#3) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Hotel Avenue (#5) during the AM and PM peak hours (LOS F/F, respectively)
- Foothill Boulevard / Grove Way (#10) during the a.m. peak hour (LOS F)
- Mission Boulevard / Grove Way (#11) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Sunset Boulevard (#12) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Simon Street (#15) during the a.m. and p.m. peak hours (LOS F/F, respectively)

Cumulative plus Project Phase 1 and 2 Conditions

Significantly impacted intersection locations under Cumulative plus Phase 1 and 2 Conditions during the a.m. or p.m. peak hour include:

- Foothill Boulevard / Hazel Avenue (#3) - A mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lanes and adding a second left turn lane to the eastbound approach would improve approach operations at the Foothill Boulevard/Hazel Avenue (#3) intersection to LOS D in both a.m. and p.m. peak hours. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.
- Foothill Boulevard / City Center Drive (#4) - A mitigation of restriping the southbound approach with an additional left turn lane would improve approach operations at the intersection to LOS D (p.m. peak hour). This results in a less than significant impact due to reduction in average delay. This is the same mitigation as described in both phases of background plus project conditions. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.
- Mission Boulevard / Sunset Boulevard (#12) - A mitigation of restriping both eastbound and westbound approaches to one shared through left lane and one shared through right lane would improve approach operations at the Mission Boulevard/Sunset Boulevard intersection to LOS D in both a.m. and p.m. peak hours. The results in a less than significant impact due to reduction in average delay. This mitigation would also require acquisition of right-of-way and removing on-street parking on the north side and south side of the both eastbound and westbound approaches (Sunset Boulevard). The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.

Queuing and Driveway Analysis

The proposed project *is* expected to add fewer vehicles in the peak hours on the expected left-turn or right-turn queues at the study intersections. The project driveways are expected to operate at an acceptable LOS and the 95th percentile queueing at the outbound approaches of project driveways is expected to be minimal.

Site Access

The proposed access to the site will be by two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive. All the project driveways are well-spaced, properly aligned with opposing driveways and provide adequate distance away from public intersections except the limited access (right in/right out) eastern driveway on City Center Drive is very close to Foothill Boulevard. Because of its close proximity to the public intersection and improper sight distance there would be operational issues at this project driveway. Hence it is recommended to not to have a driveway at this location. TJKM recommends that the north curb line be recessed 10 to 12 feet to accommodate a right turn deceleration lane for the full access driveway on the City Center Drive, primarily serving the garage, to provide an auxiliary lane for right turns. This should improve the safety and capacity of the westbound lanes.

It is also recommended that dead-end aisles be extended at least eight feet beyond the last parking space to allow cars to maneuver in and out of the last parking space of each side.

Service and emergency vehicles have access to the proposed mixed-use development via all the proposed driveways. Service vehicles will circulate through the parking structure to the trash enclosures and service entrance. To confirm the trucks can circulate on-site, a truck turning analysis and stopping sight distance analysis for the proposed driveways should be completed for the final site plan.

TJKM reviewed and proposed solutions to the cut through traffic concerns of the adjacent neighborhood and residents. The recommendations to the proposed site access and neighboring streets are discussed in detail in the potential neighborhood traffic calming issues section of the report.

Sight Distance

The distance between the intersection of Foothill Boulevard / City Center Drive and the proposed full access driveway on City Center Drive is approximately 170 feet and from the intersection of City Center Drive/McKeever Avenue is 150 feet. This driveway can be modified to also provide access that would be reduced due to the elimination of the City Center driveway described in the previous paragraph. Due to the restricted sight distance caused by the bend in the road near the parking garage access, design of this area needs to be carefully reviewed. TJKM recommends that a roundabout be considered for this intersection to maintain sight distance.

Parking

Based on the City's parking requirements the project requires 970 parking spaces. As per the preliminary site plan project proposes approximately 1080 parking stalls (9 feet by 19 feet) , so the number of proposed parking spaces is adequate.

Pedestrian, Bicycle and Transit Impacts

The project is expected to generate demand for sidewalks to allow pedestrians to access nearby bus stops, and adjacent land uses. To accommodate all users of the street system and provide a complete and connected pedestrian facility between the project site and transit service, it is recommended to provide sidewalks along the project frontage as per the City of Hayward standards and the design should meet ADA requirements for a comfortable walking environment.

The proposed project does not conflict with existing or planned bicycle facilities. The project would increase bicycle demand and the project should ensure appropriate bicycle accommodations are provided for the employees and visitors. These accommodations should be positioned in areas that are easily accessible and in locations that provide direct access to retail and residential uses on-site such as near building entrances for guest and employees. Bicycle parking should be monitored to ensure that provided bicycle parking is not over capacity.

The proposed project would be generating approximately 37 transit trips in the AM peak hour and 72 transit trips in the PM peak hour. The transit service within the immediate project site operates well below capacity, and additional trips generated by the proposed project could be accommodated by existing bus services. Therefore, impacts to transit service are expected to be less than significant.

However, TJKM recommends that the project applicant provide bus stop related amenities near the project site for AC Transit Line 48 and participate in Transportation Demand Management strategies.

Transportation Demand Management Issues

The project sponsors should make every effort to minimize the use of single occupant vehicles by residents, employees and shoppers of the proposed development. TJKM specifically recommends application by project sponsors of the following measures: shuttle services, transit passes, car sharing, bike sharing, unbundled parking, on site bike and ped lockers and amenities, shared parking, and on-site TDM coordinators.

Potential Neighborhood Traffic Calming Issues

TJKM reviewed and proposed solutions to the cut through traffic concerns of the adjacent neighborhood and residents.

The vast majority of traffic will reach the site via Foothill Boulevard from either the north or south; a relatively small amount of traffic may find it desirable to filter through the neighborhood to the west. To minimize this issue, the two driveways on Hazel Avenue should be designed to only allow left turn entrances from Foothill Boulevard (via Hazel) or right turn exits toward Foothill Boulevard. Left turn exits toward the neighborhood via Hazel Avenue or right turn entrances on Hazel Avenue from the

neighborhood will not be allowed. These prohibitions will need to be accomplished by a combination of signing and driveway design details.

The City Center Drive driveways also provide potential connections with the adjoining residential district. Traffic from the west trying to reach the project site cannot use A Street because it is one way westbound, so there would be the potential for some of the site-bound traffic to use McKeever Avenue and Maple Court east of Main Street. These motorists, like current cut-through traffic, might try to use Hotel Avenue or Simon Street to reach the site via Main Street.

To preclude this movement, prohibiting left turns from eastbound McKeever Avenue to northwest bound Maple Court is recommended. This would preclude travel through the residential district by site-bound traffic. This left turn prohibition could be limited to specific hours, say commute peaks, to reduce the use of this corridor by site residents and site employees. It should be noted that turn restrictions such as this would need periodic police enforcement to be effective. This measure also negatively impacts existing residents, particularly those who live on McKeever Avenue.

To limit the amount of cut through traffic in the other direction, a No Right Turn prohibition could be installed on southbound Maple Court at McKeever Avenue to limit the use of McKeever Avenue by site-related traffic.

The various issues would need to be resolved with the neighborhood. These measures have the potential both to reduce existing cut through traffic while also addressing cut through traffic from the new project.

INTRODUCTION

This report summarizes the results of the traffic impact analysis (TIA) conducted for the proposed mixed-use (residential and retail) development located in the southwest quadrant of the Foothill Boulevard/Hazel Avenue intersection and bounded by Hazel Avenue on the north, City Center Drive/Maple Court on the south, Foothill Boulevard on the east and Main Street on the west. The development is known as Lincoln Landing and is located at 22301 Foothill Boulevard, Hayward, CA. An existing gas station at the northeast corner of the project site at the intersection of Foothill Boulevard and Hazel Avenue is not a part of the project and will remain. Currently the existing Lincoln Landing site is occupied by a retail building and a parking structure. The proposed project would remove the existing retail building and construct 476 residential apartments and 80,500 square feet of retail and commercial space. The residential apartments would be located on the top of parking garages with pool, sundeck, clubhouse, and fitness center.

The Lincoln Landing project would be constructed in 2 phases:

Phase 1: 267 residential apartments, 35,000 square feet of supermarket land use and 45,500 square feet of shopping center land use, a net-total gross floor area of 80,500 square feet of retail.

Phase 2: An additional 209 residential apartments bring the total residential component to 476 residential apartments.

Proposed access to the site will be via two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive.

This chapter discusses the TIA purpose, project study area, analysis scenarios and methods, and criteria used to identify significant impacts.

The study addresses the project's impacts on the roadway system and evaluation of the project's influence on the adjacent bicycle, pedestrian, and transit network. Project impacts were evaluated following the guidelines of the City of Hayward.

STUDY INTERSECTIONS AND SCENARIOS

TJKM evaluated traffic conditions at 15 study intersections during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with the City of Hayward staff. The peak periods observed were between 7-9 a.m. and 4-6 p.m. The study intersections and associated traffic controls are as follows:

1. Mission Boulevard / "A" Street (Signalized)
2. Foothill Boulevard / "A" Street (Signalized)
3. Foothill Boulevard / Hazel Road (Signalized)
4. Foothill Boulevard / City Center Drive (Signalized)
5. Mission Boulevard / Hotel Avenue (Two-Way Stop)
6. Main Street / Hotel Avenue (One-Way Stop)

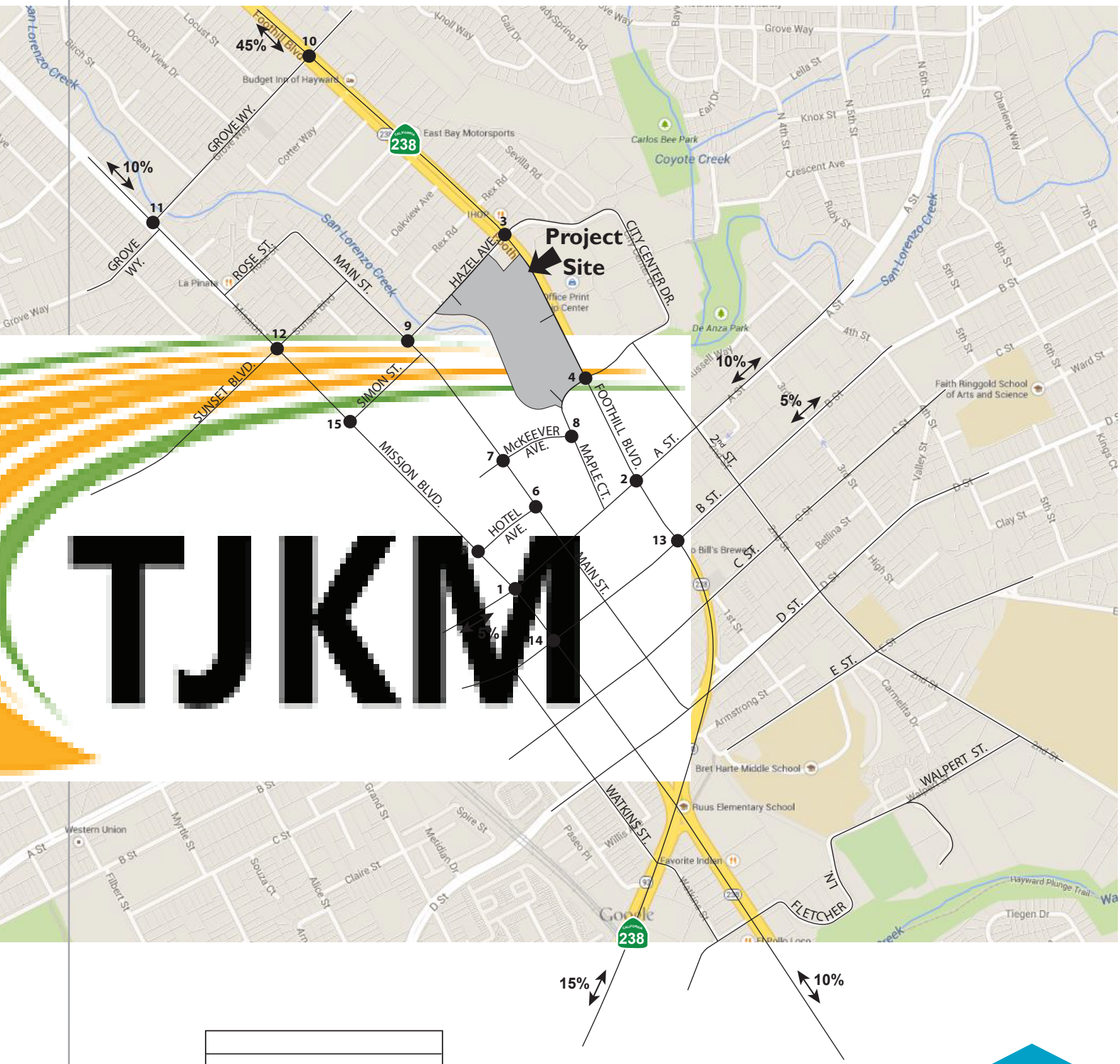
7. Main Street / Warren Street / McKeever Avenue (All-Way Stop)
8. City Center Drive / McKeever Avenue / Maple Court (All-Way Stop)
9. Main Street / Hazel Avenue (All-Way Stop)
10. Foothill Boulevard / Grove Way (Signalized)
11. Mission Boulevard / Grove Way (Signalized)
12. Mission Boulevard / Sunset Boulevard (Signalized)
13. Mission Boulevard / "B" Street (Signalized)
14. Foothill Boulevard / "B" Street (Signalized)
15. Mission Boulevard / Simon Street (Two-Way Stop)

Figure 1 shows the location of the project site, the surrounding transportation network, and study intersections. **Figure 2** presents the proposed retail portion site plan and **Figure 3** presents the proposed residential portion site plan.

The study evaluated traffic operational conditions under the following seven scenarios:

1. Existing Conditions – This scenario evaluates the study intersections based on existing conditions traffic controls, lane geometry and traffic counts and field surveys conducted in April 2015.
2. Existing plus Project Phase 1 Conditions – This scenario is identical to Existing Conditions, but with the addition of traffic generated by the proposed Phase 1 development of the project to Existing Conditions.
3. Background Conditions - This scenario evaluates operational conditions at the study intersections based on a projection of existing traffic volumes 5 years into the future. The volumes were interpolated by using the latest available version of the City of Hayward/ACTC Travel Demand Model.
4. Background plus Project Phase 1 Conditions - This scenario is identical to Background Conditions, but with the addition of traffic generated by the proposed Phase 1 development of the Project to Background Conditions.
5. Background plus Project Phase 1 and 2 Conditions - This scenario is identical to Background Conditions, but with the addition of traffic generated by the proposed Phase 1 and 2 (full build) development of the Project to Background Conditions.
6. Cumulative Conditions – This scenario evaluates operational conditions at the study intersections based on a projection of existing traffic volumes 25 years into the future. Projections were derived from a growth factor developed from the latest City of Hayward/ACTC Travel Demand Model. The growth factor includes both regional traffic growth and traffic generated by development buildout within the City of Hayward.
7. Cumulative plus Project (Phase 1 and 2) Conditions – This scenario is identical to Cumulative Conditions, but with the addition of traffic generated by the proposed Phase 1 and 2 (full build) development of the Project to Cumulative Conditions.

Vicinity Map



LEGEND

XX% Study Intersection

NORTH
Not to Scale

064-120

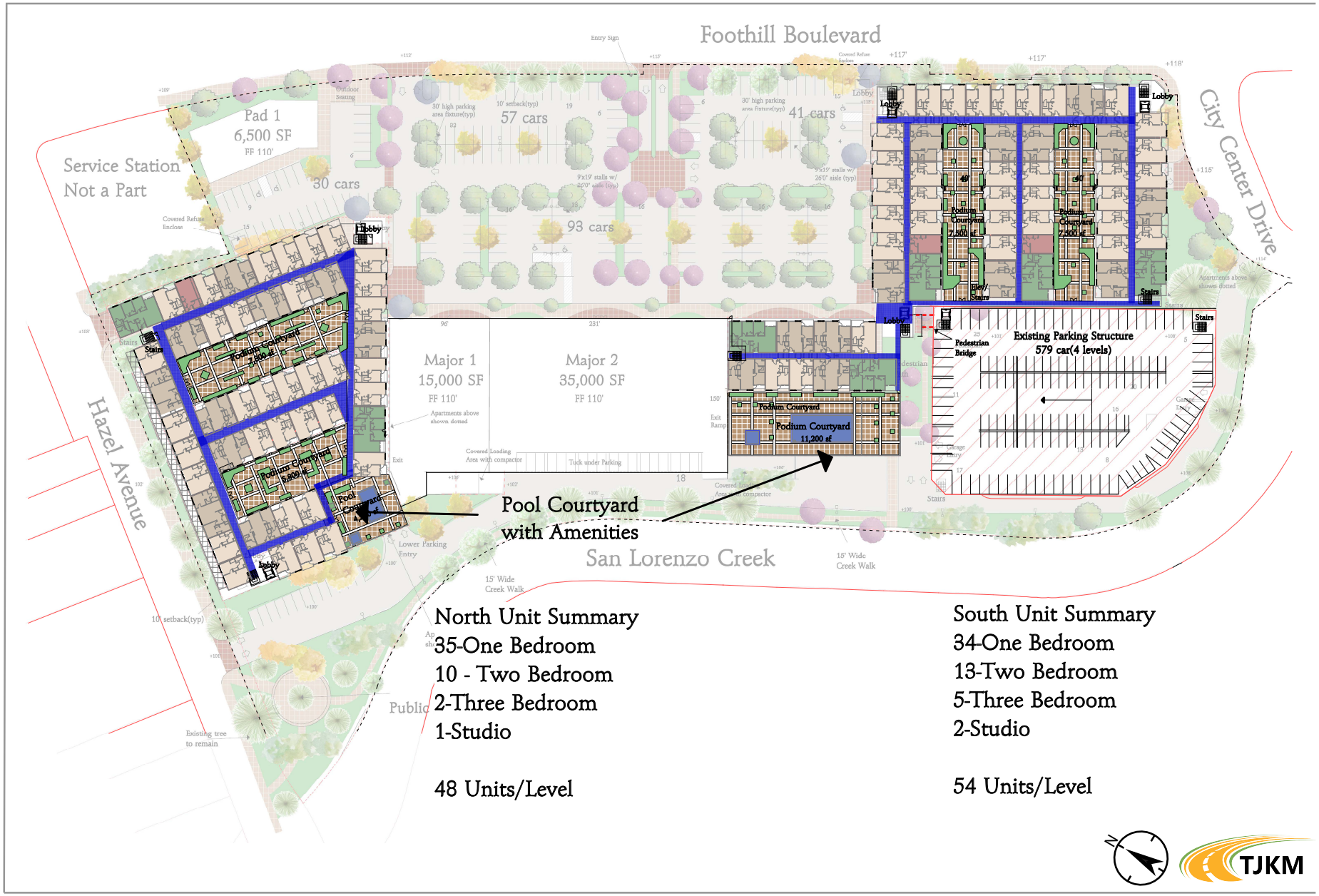
Figure 1

Proposed Site Plan for Retail Land Use

064-120

Figure 2

Proposed Site Plan for Residential Land Use



North Unit Summary
35-One Bedroom
10 - Two Bedroom
2-Three Bedroom
1-Studio

48 Units/Level

South Unit Summary
34-One Bedroom
13-Two Bedroom
5-Three Bedroom
2-Studio

54 Units/Level

064-120

Figure 3

STUDY METHODOLOGY

LEVEL OF SERVICE ANALYSIS METHODOLOGY

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, 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 intersections under traffic signal control were analyzed using the 2000 Highway Capacity Manual (HCM) Operations Methodology for signalized intersections described in Chapter 16 (HCM 2000). 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 8.0 analysis software and was correlated to a LOS designation as shown in **Appendix A**. The LOS methodology is described for signalized intersections in detail in **Appendix A**. **Table 1** summarizes the relationship between the control delay and LOS for signalized intersections.

Unsignalized Intersections

The study intersections under stop control (unsignalized) were analyzed using the 2000 HCM Operations Methodology for signalized intersections described in Chapter 17 (HCM 2000). LOS ratings for all-way stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At the side street, controlled intersections or two-way stop sign 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 8.0 analysis software and was correlated to a LOS designation as shown in **Appendix A**. The LOS methodology is described for unsignalized intersections in detail in **Appendix A**. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

Traffic Signal Warrant Evaluation Methods

In order to determine whether traffic signals should be installed at currently unsignalized intersections, a supplemental traffic signal warrant analysis was also completed. The California Manual on Uniform Traffic Control Devices, dated November 2014 (CA-MUTCD) was used for this analysis. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection location. The CA-MUTCD signal warrant criteria are based upon several factors including volume of vehicular and

pedestrian traffic, location of school areas, frequency and type of collisions, etc. CA-MUTCD indicates that "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." This TIS evaluated CA-MUTCD based Peak-Hour-Volume-based Warrant 3 (Urban Areas) as a representative type of warrant analysis.

Table 1: Level of Service for Signalized Intersections

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

Source: Highway Capacity Manual 2000

Table 2: Level of Service for Stop-Controlled Intersections

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

Source: Highway Capacity Manual 2000

Significant Impact Criteria/Level of Service Standards

The City of Hayward currently utilizes LOS "E" as the minimum acceptable LOS threshold for signalized intersections during the a.m. and p.m. peak periods. Therefore, this study uses LOS "E" as the minimum acceptable threshold at all signalized study intersections for traffic impact purposes. Regarding acceptable Levels of Service during a.m. and p.m. peak periods, the Hayward 2040 General Plan Mobility Element (July 2014) states the following implementing policies:

> M-4.3 Level of Service - The City shall maintain a minimum vehicle Level of Service E at signalized intersections during the peak commute periods except when a LOS F may be acceptable due to costs of mitigation or when there would be other unacceptable impacts, such as right-of-way acquisition or degradation of the pedestrian environment due to increased crossing distances or unacceptable crossing delays.

For the purposes of this study, Project impacts at signalized intersections are considered significant if the addition of Project-generated traffic:

- Causes the AM or PM peak hour LOS to degrade from an acceptable LOS "E" or better to an unacceptable LOS "F".

In addition for both signalized and unsignalized intersections, the Project would result in a potentially significant impact if:

- The intersection operates at Level of Service F without the project under Existing, Background, or Cumulative conditions and the addition of the project under Existing plus Project, Background plus Project, or Cumulative plus Project conditions results in an increase in the average control delay of 5.0 seconds or greater when compared to the associated no project condition.

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 study intersections, including the results of level of service calculations.

EXISTING SETTING AND ROADWAY SYSTEM

Regional roadway facilities providing access to the proposed Lincoln Landing Mixed-Use development are Interstates 238, 880 and 580, State route 185 as well as Foothill Boulevard, A Street and Grove Way. Local roadways providing local access to the project site include City Center Drive, McKeever Avenue, Maple Court, 2nd Street, Hazel Avenue, Simon Street, Hotel Avenue, Main Street and Sunset Boulevard.

Interstate 880 (I-880) is a ten –to- eight-lane freeway running in the north-south direction in the project vicinity. In the immediate vicinity of the project, I-880 provides four mixed-flow lanes in the both northbound and southbound direction, with one HOV lane in each direction with a posted speed limit of 65 mph. As one of the major freeways in the San Francisco Bay Area, it provides access to Oakland and San Francisco to the north and San Jose to the south.

Interstate 580 (I-580) is a ten-lane freeway running in the east-west direction in the project vicinity. In the immediate vicinity of the project, I-580 provides five mixed-flow lanes in the both eastbound and westbound direction, with a posted speed limit of 65 mph. As one of the major freeways in the San Francisco Bay Area, it provides access to Oakland and San Francisco to the west and Hayward to the east.

Foothill Boulevard is a six-lane, north-south roadway with occasional raised medians. Posted speed limits vary from 25 mph to 35 mph in the project vicinity. This roadway provides local access to residential and commercial developments and the I-580 and I-238 freeways. This corridor is part of the Hayward Loop and operates one-way northbound from Mission Boulevard/Jackson Street to "A" Street.

Mission Boulevard is a four-to-six-lane, north-south roadway with a raised median south of Jackson Street. The posted speed limit is 25 mph in the project vicinity. This roadway provides local access to residential and commercial developments, but also serves as a regional facility from Oakland (as International Boulevard/State Route 185) to Fremont. This corridor is part of the Hayward Loop and operates one-way southbound from "A" Street to Foothill Boulevard.

City Center Drive is a two-to four-lane, north-south roadway from Hazel Avenue and terminating at Maple Court. The posted speed limit is 25 mph in the project vicinity. This roadway provides local access to residential and commercial developments.

'A' Street is a four to five-lane, east-west roadway. The posted speed limit is 35 mph in the project vicinity. This roadway is part of the Hayward Loop and operates one-way westbound between Foothill Boulevard and Mission Boulevard. This corridor provides local access to residential areas, and also the Downtown Hayward commercial developments and access to the I-580 and I-880 freeways.

'B' Street is a two to four-lane, east-west roadway. The posted speed limit is 35 mph in the project vicinity. It operates one-way westbound from Foothill Boulevard to Watkins Street. This roadway provides local

access to residential areas, Downtown Hayward commercial developments, and the Hayward Amtrak station.

Hazel Avenue is a two, east-west roadway between Main Street and Foothill Boulevard. The posted speed limit is 25 mph in the project vicinity. This roadway provides local access to residential and commercial developments.

Grove Way is a two-to four-lane, east-west roadway from Meekland Avenue to I-580 in Castro Valley. The posted speed limit is 25 mph in the project vicinity. This roadway collector provides local access to residential neighborhoods.

Main Street is a *two*-to four-lane, north-south roadway from D Street to Rose Street. The posted speed limit is 25 mph in the project vicinity. This roadway collector provides local access to residential neighborhoods.

Maple Court is a two-lane, north-south roadway from A Street to McKeever Avenue. The posted speed limit is 25 mph in the project vicinity. The roadway provides local access to residential and commercial developments.

McKeever Avenue is a two-lane, east-west roadway from Maple Court to Main Street. The posted speed limit is 25 mph in the project vicinity. This roadway collector provides local access to residential neighborhoods.

Hotel Avenue is a one-lane, east-west roadway from Mission Boulevard to Main Street. The posted speed limit is 25 mph in the project vicinity. This roadway collector provides local access to residential neighborhoods.

Simon Street is a one-lane, east-west roadway from Western Boulevard to Main Street. The posted speed limit is 25 mph in the project vicinity. This roadway collector provides local access to residential neighborhoods.

Sunset Boulevard is a two-lane, east-west roadway from Meekland to Main Street. The posted speed limit is 25 mph in the project vicinity. The roadway provides local access to residential and commercial developments.

Existing Bicycle and Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely on foot 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.

The City of Hayward Bicycle Master Plan (October 2007), defines bikeway classifications as follows:

- Class I Bikeway – Typically called a "bike path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway.
- Class II Bikeway – Often referred to as a "bike lane," a Class II bikeway provides a striped and stenciled lane for one-way travel on a street or highway.
- Class III Bikeway – Generally referred to as a "bike route," a Class III bikeway provides for shared use with motor vehicle traffic and is identified only by signing.

Mission Boulevard – Within the Project vicinity, Mission Boulevard has sidewalks on both sides of the road. There are marked crosswalks on all four legs of the signalized study intersections and at least one east-west crossing at the unsignalized study intersections with Mission Boulevard. At each signalized study intersection, pedestrians on all four legs are controlled by pedestrian pushbuttons and WALK/ DON'T WALK pedestrian heads. There are currently no bicycle facilities on Mission Boulevard within the Project vicinity.

Foothill Boulevard – Within the Project vicinity, Foothill Boulevard has sidewalks on both sides of the road. There are marked crosswalks on all four legs of the signalized study intersections with Foothill Boulevard. At the signalized study intersections, pedestrian pushbuttons and WALK/DON'T WALK pedestrian heads control pedestrians on all four legs. Foothill Boulevard has Class II Bike Lane striping between D Street and A Street.

A Street is a Class III Bike Route between Montgomery Street and 4th Street *(City of Hayward Bicycle Master Plan, Figure 6-1: Proposed Bikeways, October 2007)*. There are sidewalks on each side of the roadway and marked crosswalks on all four legs of each signalized study intersection with A Street. At each signalized study intersection, pedestrians on all four legs are controlled by pedestrian pushbuttons and WALK/ DON'T WALK pedestrian heads. There are no marked crosswalks at the two-way stop-controlled Maple Court / A Street intersection.

Main Street is a Class III Bike Route between Sunset Boulevard and D Street. Within the Project vicinity, Main Street has with sidewalks on both sides of the road. There are marked crosswalks on all four legs of the signalized study intersection and some east-west crossings at the unsignalized study intersections with Main Street. The south and east legs of the all-way stop-controlled Main Street / Hazel Avenue intersection have pedestrian crossings. At signalized study intersections, all four legs are controlled by WALK/ DON'T WALK pedestrian heads and pedestrian pushbuttons

City Center Drive is a two-lane roadway with sidewalks on both sides of the road, except with in the immediate vicinity of the project site. There are marked crosswalks on all four legs of the signalized study intersections with City Center Drive and Foothill Boulevard. At signalized study intersections, all four legs are controlled by WALK/ DON'T WALK pedestrian heads and pedestrian pushbuttons

Hazel Avenue has sidewalks on both sides of the road, except with in the immediate vicinity of the project site. There are marked crosswalks on all four legs of the signalized study intersections with Hazel Avenue and Foothill Boulevard. At signalized study intersections, all four legs are controlled by WALK/ DON'T WALK pedestrian heads and pedestrian pushbuttons

There are no bicycle facilities on Hazel Avenue.

Maple Court and Mckeever Avenue are two-lane roadways with sidewalks on both sides of the road.

In terms of existing pedestrian facilities in the project vicinity, ADA compliant crosswalks and actuated pedestrian signals are provided at all signalized study intersections. The project site has adequate accessibility from the surrounding roadway system. However, there are discontinuous sidewalks on Hazel Avenue along the north side of the roadway and on City Center Drive in the project vicinity. The proposed project is expected to improve the overall pedestrian access and facilities by providing sidewalks within the project vicinity with adequate accessible design (American Disability Act – ADA) that meets city of Hayward design standards.

Figure 4 presents the existing bicycle and pedestrian facilities within the immediate vicinity of the project site.

Existing Transit Facilities

The City of Hayward is served by Alameda-Contra Costa Transit District (AC Transit) bus service, Bay Area Rapid Transit (BART) rail service, and Amtrak commuter rail service. Local and Transbay bus service is provided seven days a week at roughly 30- to 60-minute headways. The Hayward BART station is located less than one mile west of the Project site. Numerous local bus routes traverse the roadways in the immediate Project vicinity and serve the Hayward BART station, the Greyhound bus station, and the Amtrak train station located at A Street and Meekland Avenue.

There are three bus stops in the immediate vicinity of the project site. Two of them are located on Foothill Boulevard between City Center Drive and A Street, both on the west side of the street for southbound travel. The third stop is on City Center Drive, near the Foothill Boulevard and City Center Drive/Hazel Avenue intersection, on the north side of the street for westbound travel. The pedestrian access from the two stops on Foothill Boulevard and one stop on City Center Drive to the project site is via existing sidewalks. The three transit stops serves Line 48, providing access to the Hayward BART, Bayfair BART, and Castro Valley BART stations. Paratransit services are provided throughout the City and surrounding region by East Bay Paratransit, operated by AC Transit and BART. **Figure 5** shows the existing transit service near the project site.

Currently, AC Transit offers local bus transit service on the following routes in the vicinity of the project site:

- AC Transit Route Line 48 provides weekday service at one-hour headways between 5:13 AM and 10:30 PM The route runs a loop from the Hayward BART station and stops along Hazel Avenue/City Center Drive in the project vicinity.
- AC Transit Route Line 93 provides weekday service at one-hour headways between 4:58 AM and 8:25 PM and one-hour headways between 5:25 AM and 8:52 PM on weekends. The route runs a loop from the Hayward BART station and stops along Mission Boulevard in the project vicinity.
- AC Transit Route Line 99 provides weekday service at one-hour headways between 4:58 AM and 8:25 PM and one-hour headways between 5:25 AM and 8:52 PM on weekends. The route runs a loop from the Hayward BART station and stops along Mission Boulevard in the project vicinity.

- AC Transit Route Line 801 provides weekday service at one-hour headways between 4:58 AM and 8:25 PM and one-hour headways between 5:25 AM and 8:52 PM on weekends. The route runs a loop from the Hayward BART station and stops along Mission Boulevard in the project vicinity.
- AC Transit Routes Line 95, Line 94, Line 60 and Line 32 provide weekday and weekend service. The routes runs a loop from the Hayward BART station and stops along B Street and C Street in the project vicinity.

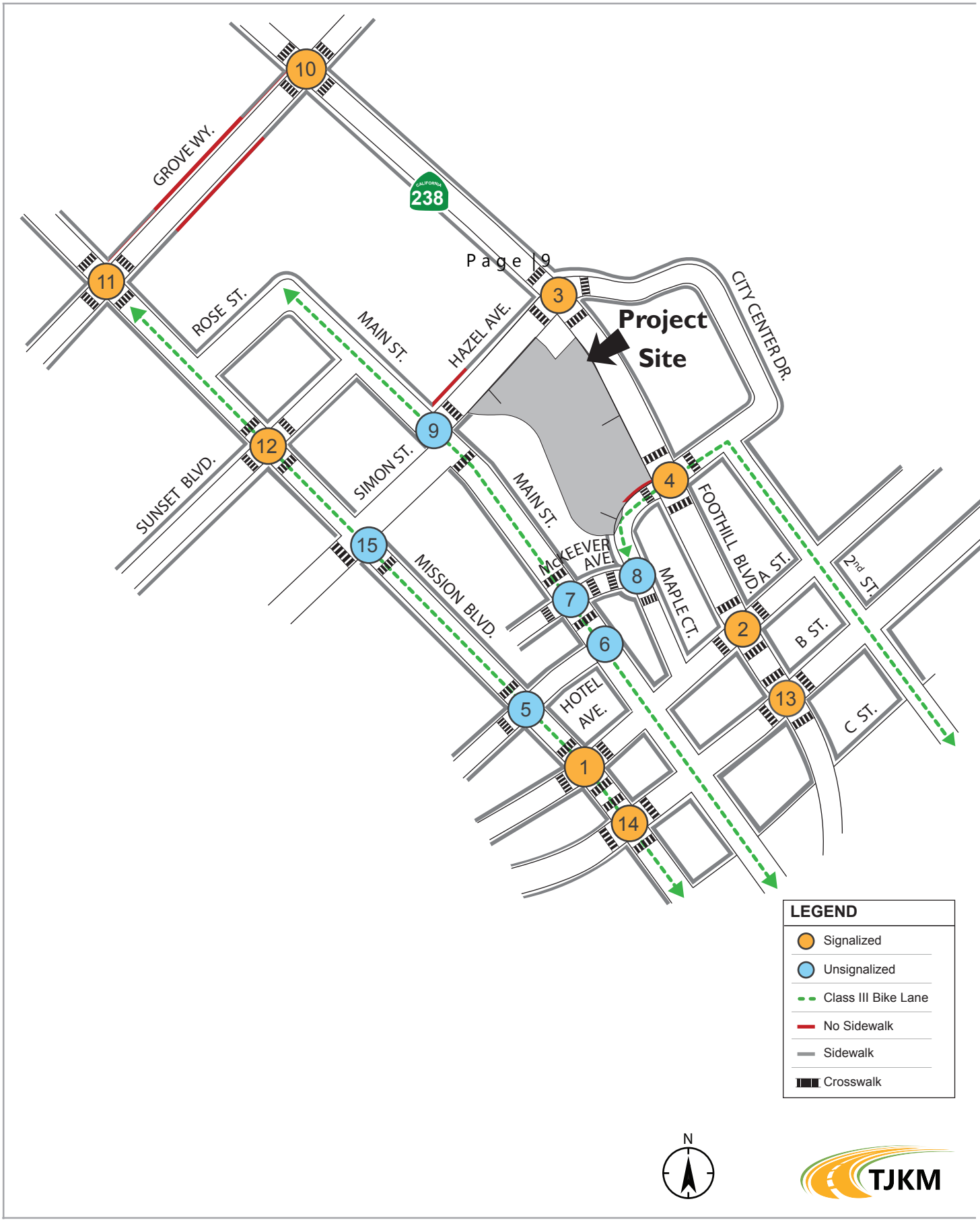
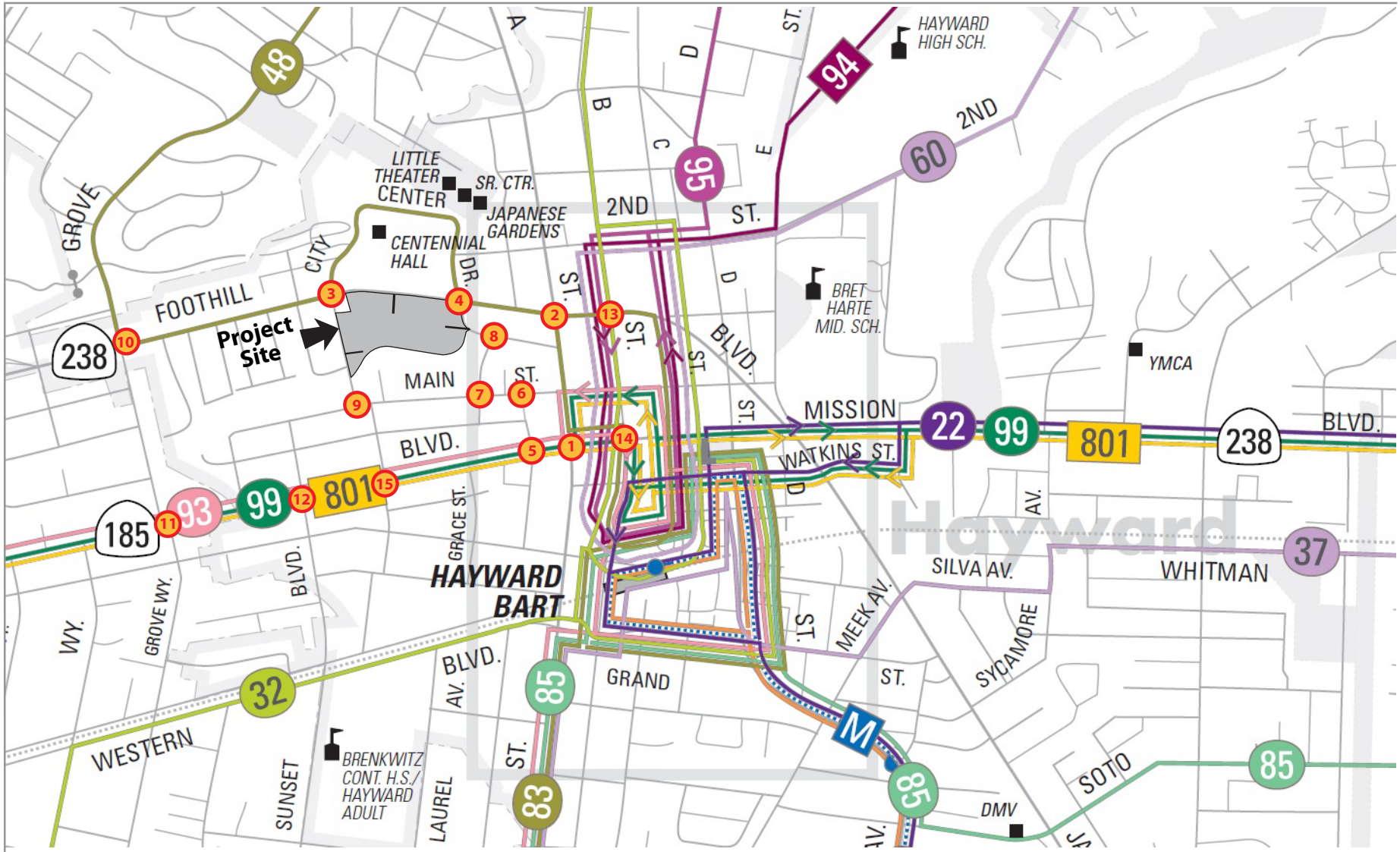

GROVE WY.
238
ROSE ST.
MAIN ST.
HAZEL AVE.
Project Site
CITY CENTER DR.
SUNSET BLVD.
SIMON ST.
MAIN ST.
FOOTHILL BLVD.
A ST.
2nd ST.
McKEEVER AVE.
MISSION BLVD.
MAPLE CT.
B ST.
HOTEL AVE.
C ST.
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
LEGEND
Signalized
Unsignalized
Class III Bike Lane
No Sidewalk
Sidewalk
Crosswalk
N
TJKM

Figure 4

Existing Transit Facilities



LEGEND

(XX) Study Intersection

All Routes are AC Transit

N

TJKM

064-120

Figure 5

Existing Truck Routes

The 2040 Hayward General Plan Mobility Element (dated July 2014) states that "The City shall require trucks to use designated routes and shall prohibit trucks on local streets to address traffic operations and safety concerns in residential neighborhoods." Within the Project vicinity, Mission Boulevard is a 65' California Legal Truck Route and Foothill Boulevard and Mission Boulevard south of Jackson Street are STAA (Surface Transportation Act of 1982) Terminal Access truck routes.

Existing Traffic Volumes and Lane Configurations

The existing operations of the study intersections were evaluated for the highest one-hour volume during the weekday morning and evening peak periods. Turning movement counts for vehicles, bicycles, and pedestrians were conducted during typical weekday a.m. and p.m. peak periods (7 to 9 a.m. and 4 to 6 p.m., respectively) at the study intersections in March 2015. Field verification of existing intersection lane configurations and traffic controls were also conducted and provided the basis for the level of service analysis for Existing Conditions. **Appendix B** includes all data sheets for the collected vehicle, bicycle, and pedestrian counts. **Figure 6** illustrates the existing vehicle turning movement volumes, lane geometry, and traffic controls at the study intersections.

Existing Conditions Traffic Volumes, Lane Geometry, and Traffic Controls

TJKM
Transportation
Consultants

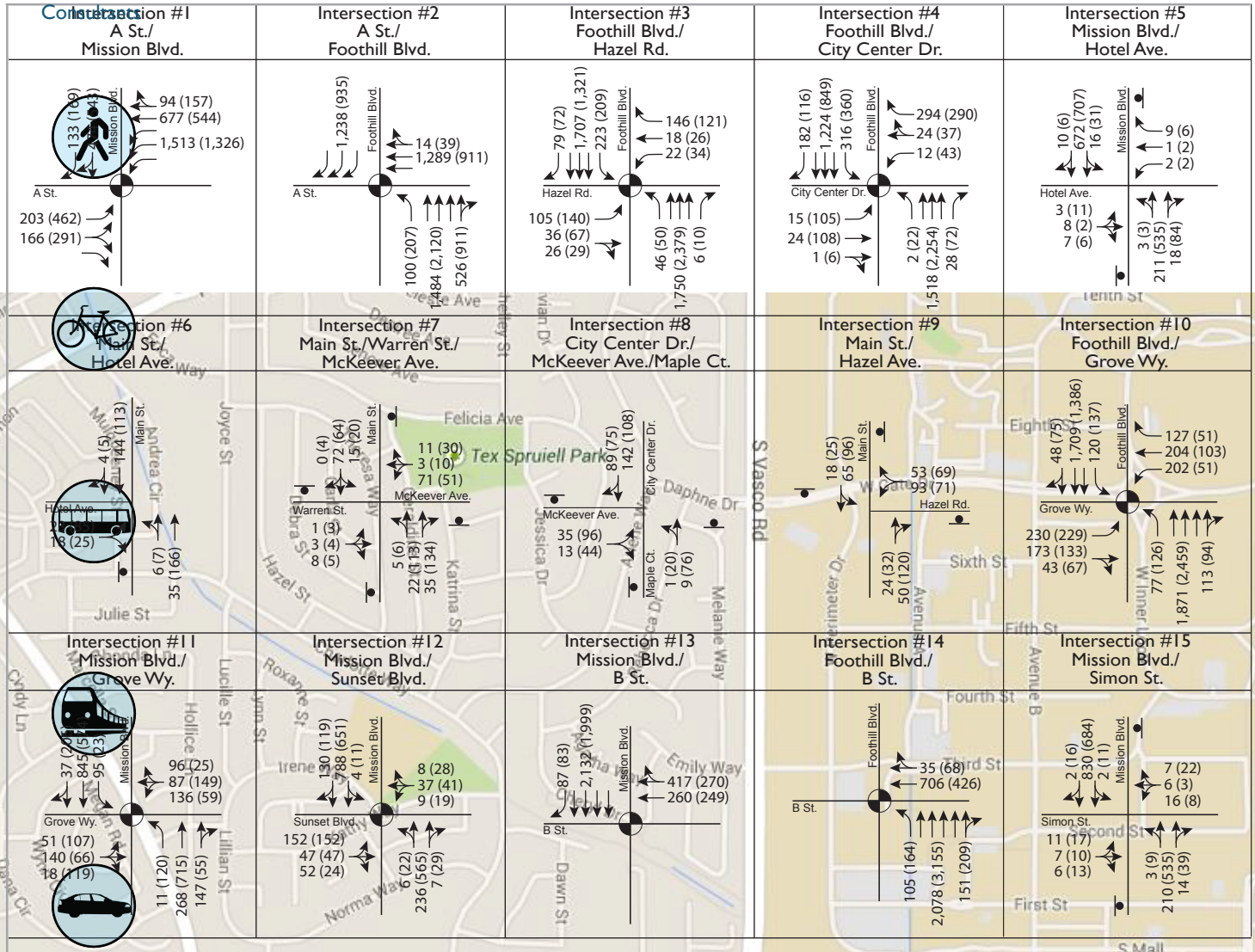


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Figure 6

Intersection Level of Service Analysis – Existing Conditions

Existing intersection lane configurations, signal timings, and peak hour turning movement volumes were used to calculate the levels of service for the study intersections during each peak hour. The peak hour factor based on the counts was used to all study intersections for the existing analysis and a two percent heavy vehicle composition have been specified for each intersection movement under existing and future conditions peak hour analysis. Synchro 8 operations analysis software was used to complete the HCM 2000 LOS analysis procedures for intersections.

Table 3 below summarizes peak hour levels of service at the study intersections under Existing Conditions. Under this scenario, all the intersections operate within City of Hayward LOS E or better standards during the a.m. and p.m. peak hours. LOS worksheets are provided in **Appendix C**.

Table 3: Peak Hour Intersection Levels of Service – Existing Conditions

ID	Study intersection	Control	Peak Hour[1]	Delay[2]	LOS[3]
1	Mission Boulevard / "A" Street	Signalized	AM	37.4	D
			PM	46.2	D
2	Foothill Boulevard / "A" Street	Signalized	AM	39.9	D
			PM	39.2	D
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	32.0	C
			PM	45.5	D
4	Foothill Boulevard / City Center Drive	Signalized	AM	27.5	C
			PM	57.3	E
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	22.5	C
			PM	30.1	D
6	Main Street / Hotel Avenue	One-Way Stop	AM	9.8	A
			PM	11.2	B
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	7.7	A
			PM	8.2	A
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.2	A
			PM	9.0	A
9	Main Street / Hazel Avenue	All-Way Stop	AM	8.3	A
			PM	8.6	A
10	Foothill Boulevard / Grove Way	Signalized	AM	42.6	D
			PM	34.0	C
11	Mission Boulevard / Grove Way	Signalized	AM	34.1	C
			PM	37.3	D
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	9.2	A
			PM	7.6	A
13	Mission Boulevard / "B" Street	Signalized	AM	18.2	B
			PM	16.9	B
14	Foothill Boulevard / "B" Street	Signalized	AM	26.0	C
			PM	16.1	B
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	27.9	D
			PM	33.3	D

Notes:
[1]. AM = morning peak hour, PM = evening peak hour
[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

EXISTING PLUS PROJECT PHASE 1 CONDITIONS

This section evaluates the impacts of the proposed Lincoln Landing Mixed-Use Phase 1 Development on the surrounding roadway system under Existing with Project Phase 1 Conditions. First, the method used to estimate the amount of traffic generated by the proposed development is described. Then, the results of the level of service calculations for Existing with Project plus Phase 1 Conditions are presented. Impacts under this scenario are then identified by comparing the level of service results under Existing with Project plus Phase 1 Conditions to those under Existing Conditions.

To determine if there any additional impacts by the project, TJKM used a three-step process:

1. Trip Generation- the amount of vehicle traffic entering/existing the Project site is estimated.
2. Trip Distribution- The directions trips would use to approach and depart the site projected.
3. Trip Assignment- Trips are then assigned to specific roadways segments and intersection turning movements.

PROPOSED PROJECT DESCRIPTION

The proposed Lincoln Landing Mixed-Use Development project consists of 476 residential apartments and approximately 80,500 square feet of retail and commercial. The residential apartments are on the top of parking garage. The 80,500 square feet of retail land use is divided into 45,500 square feet of shopping center land use and 35,000 square feet of Supermarket land use

The applicant indicates the Project would be constructed in two phases with the following schedule:,

- Entitlement estimated in September 2016,
- Begin construction phase 1 (80,500 sf retail and 267 apartments) Q2 2017,
- Occupancy 2018,
- Phase 2 (209 apartments) follow anytime up to 5 years.

Phase 1: 267 residential apartments, 35,000 square feet of supermarket land use and 45,500 square feet of shopping center land use, a net-total gross floor area of 80,500 square feet of retail.

Phase 2: 209 residential units bringing the total to 476 residential apartments and 80,500 square feet of retail.

PROJECT TRIP GENERATION

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the *Institute of Transportation Engineers' (ITE) publication Trip Generation (9th Edition)*. TJKM applied trip discounts to the proposed project trip generation that are consistent with industry standards used in Bay Area cities with similar development patterns as Hayward in terms of development densities, residential-retail mixed-use internal trip capture, retail pass by, and proximity to rail transit and in consultation with city of Hayward Staff.

TJKM used published trip rates for the ITE land use Apartment (Code 220), Supermarket (Code 850) and Shopping Center (Code 820) for this project. **Table 4** shows the trip generation under Phase 1 conditions.

The phase 1 project is expected to generate approximately net 247 weekday a.m. peak hour trips (103 inbound, 143 outbound) and 395 weekday p.m. peak hour trips (220 inbound, 175 outbound).

Table 5 shows the trip generation for the combined Phases 1 and 2. The combined project is expected to generate approximately 322 weekday AM peak hour trips (113 inbound, 209 outbound) an 488 weekday PM peak hour trips (284 inbound, 204 outbound).

TJKM applied a 10 percent internal trip discount from residential to commercial and commercial to residential, as the project is a mixed-use development. *In addition, Transportation Demand Management (TDM) trips discounts of nine percent and pass by trip reductions of 34 percent were applied per Land Use 820 – Shopping Center from* ITE's *Trip Generation, 9th Edition Volume 1: User's Guide and Handbook.*

Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass by trips account for trips that are already on the roadway but will stop/divert to the new development on their way to their final destinations. Pass by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator. Pass by trips are not diverted from another roadway.

Mixed-use trip reductions of 10 percent and Transportation Demand Management (TDM) measure reductions of nine percent are consistent with industry standards used in Bay Area cities with similar development patterns as the City of Hayward and were applied in consultation with City of Hayward Staff. For Mixed- use trip reduction, a 10 percent trip reduction was first applied to the smaller trip generator (residential) and the same number of trips was then subtracted from the larger trip generator (retail) to account for both trip ends. It should be noted that the above trip reductions are also based on TDM strategies proposed in the report.

Table 4: Trip Generation for Proposed Project Phase 1 Conditions

Phase 1																
Proposed Land Use (ITE Code)	***Size***		**Daily**		***A.M. Peak***						***P.M. Peak***					
			Rate	***Trips***	***Rate***	***In %***	***Out %***	***In***	***Out***	***Total***	***Rate***	***In %***	***Out %***	***In***	***Out***	***Total***
Apartment (220)	267.0	d.u.	6.65	1,776	0.51	20	80	27	109	136	0.62	65	35	108	58	166
Supermarket (850)	35.0	k.s.f	102.24	3,578	3.40	62	38	74	45	119	9.48	51	49	169	163	332
Retail (820)	45.5	k.s.f	42.70	1,943	0.96	62	38	27	17	44	3.71	48	52	81	88	169
Total Before Discounts				**7,297**				**128**	**171**	**300**				**357**	**309**	**666**
10% Internal discount (residential to commercial)[1]				-178				-3	-11	-14				-11	-6	-17
10% Internal discount (commercial to residential)[1]				-178				-11	-3	-14				-6	-11	-17
TDM Measure Discount, 9%[2]				-657				-12	-15	-27				-32	-28	-60
Supermarket Peak Hour Pass By Trip Reduction (ITE), 36%[3]													-36%	-61	-59	-120
Retail Peak Hour Pass By Trip Reduction (ITE), 34%[3]													-34%	-28	-30	-57
Total After Discounts				**6,284**				**103**	**143**	**247**				**220**	**175**	**395**

Notes:

Source - ITE Trip Generation Manual, 9th Edition (2012)

k.s.f = One Thousand Square Feet, du = Dwelling Unit

[1]Mixed Use Trip Reduction,10% consistent with industry standards used in Bay Area cities with similar development patterns as City of Hayward and in consultation with City of Hayward Staff

The 10% trip reduction was first applied to the smaller trip generator (residential)/.The same number of trips was then subtracted from the larger trip generator (retail) to account for both trip ends.

[2]TDM Measure Reduction, 9% consistent with industry standards used in Bay Area cities with similar development patterns as City of Hayward. Used after consultation with City of Hayward Staff

[3]TJKM applied a pass-by reduction rate of 34% for Retail land use and 36% for supermarket land use consistent with ITE recommended average rates for a conservative estimate of net-total trips.

Table 5: Trip Generation for Proposed Project Phase 1 and 2 Conditions

Phase 1 and 2																
Proposed Land Use (ITE Code)	***Size***		**Daily**		***A.M. Peak***						***P.M. Peak***					
			Rate	***Trips***	***Rate***	***In %***	***Out %***	***In***	***Out***	***Total***	***Rate***	***In %***	***Out %***	***In***	***Out***	***Total***
Apartment (220)	476.0	d.u.	6.65	3,165	0.51	20	80	49	194	243	0.62	65	35	192	103	295
Supermarket (850)	35.0	k.s.f	102.24	3,578	3.40	62	38	74	45	119	9.48	51	49	169	163	332
Retail (820)	45.5	k.s.f	42.70	1,943	0.96	62	38	28	17	45	3.71	48	52	81	88	169
Total Before Discounts				**8,686**				**151**	**256**	**407**				**442**	**354**	**796**
10% Internal discount (residential to commercial)[1]				-317				-5	-19	-24				-19	-10	-30
10% Internal discount (commercial to residential)[1]				-317				-19	-5	-24				-10	-19	-30
TDM Measure Discount, 9%[2]				-782				-14	-23	-37				-40	-32	-72
Supermarket Peak Hour Pass By Trip Reduction (ITE), 36%[3]													-36%	-61	-59	-120
Retail Peak Hour Pass By Trip Reduction (ITE), 34%[3]													-34%	-28	-30	-57
Total After Discounts				**7,270**				**113**	**209**	**322**				**284**	**204**	**488**

Notes:

Source - ITE Trip Generation Manual, 9th Edition (2012)

k.s.f = One Thousand Square Feet, du = Dwelling Unit

[1]Mixed Use Trip Reduction,10% consistent with industry standards used in Bay Area cities with similar development patterns as City of Hayward and in consultation with City of Hayward Staff

The 10% trip reduction was first applied to the smaller trip generator (residential)/ The same number of trips were then subtracted from the larger trip generator (retail) to account for both trip ends.

[2]TDM Measure Reduction, 9% consistent with industry standards used in Bay Area cities with similar development patterns as City of Hayward and in consultation with City of Hayward Staff

[3]TJKM applied a pass-by reduction rate of 34% for retail land use and 36% for supermarket land use consistent with ITE recommended average rates for conservative estimate of net-total trips.

Project Trip Distribution and Assignment

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

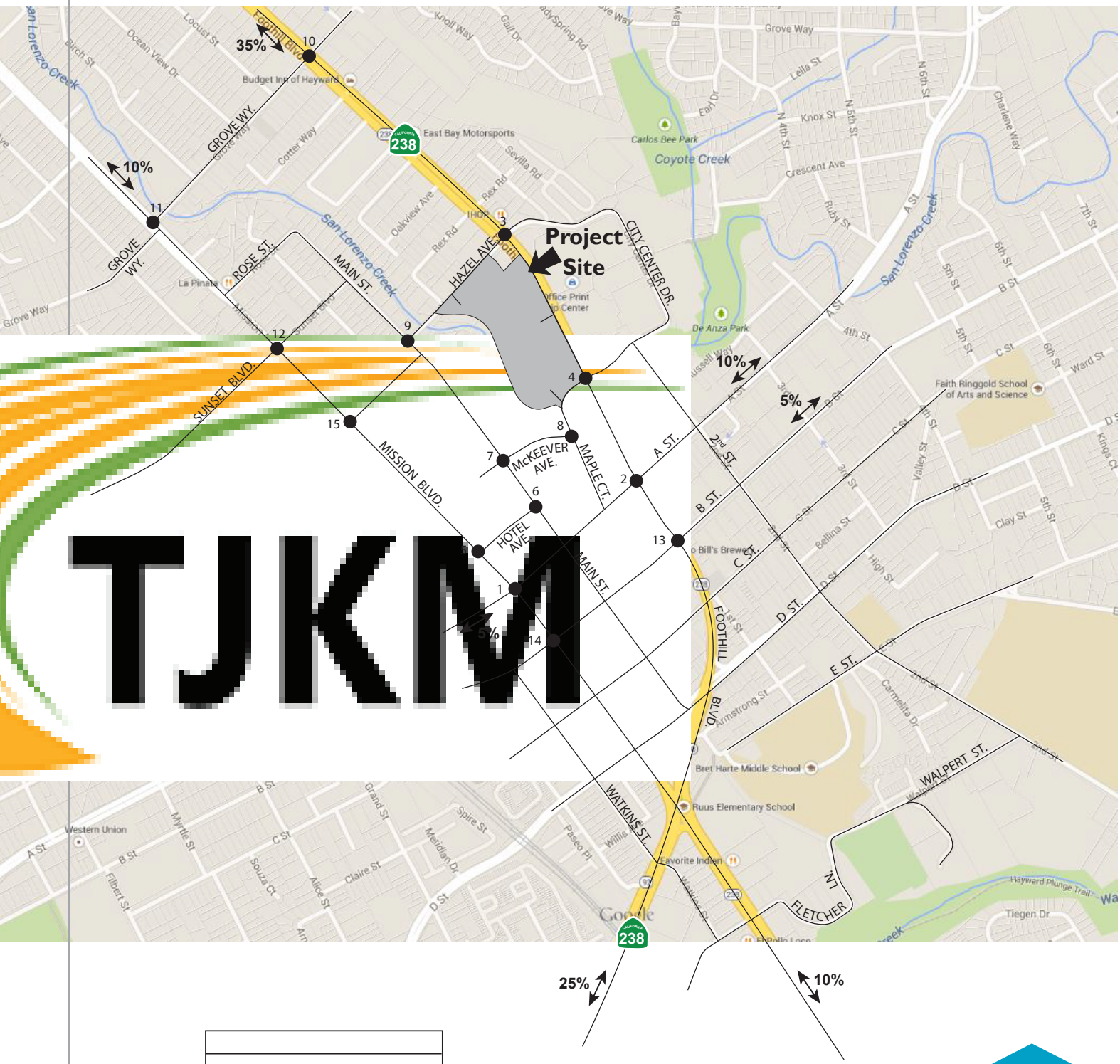
Trip distribution assumptions for the proposed project were developed based on the city of Hayward General Plan updated travel demand model existing travel patterns, TJKM's knowledge of the study area, and consultation with the City of Hayward staff.

The distribution assumptions are as follows**:**

- 35 percent to/from Foothill Boulevard North
- 10 percent to/from Mission Boulevard North (via Grove Way)
- 5 percent to/from "A" Street West
- 10 percent to/from "A" Street East
- 5 percent to /from "B" Street
- 25 percent to/from Foothill Boulevard/Jackson Street
- 10 percent to/from Mission Boulevard South

Figure 7 illustrates the trip distribution percentage developed for the proposed Lincoln Landing Mixed-Use Development project. **Figure 8** shows the net new project trips assigned to each turning movement by intersection by the proposed project under Phase 1. **Figure 9** shows the net new project trips assigned to each turning movement by intersection by the proposed under Phase 1 and 2. The assigned project trips estimated for the Phase 1 conditions were added to existing traffic volumes to generate Existing plus Project Phase 1 traffic volumes to represent Existing plus Project Phase 1 Conditions as shown on **Figure 10**.

Proposed Project Trip Distribution



LEGEND

● Study Intersection Regional

XX% Trip Distribution

NORTH
Not to Scale

N

064-120

Figure 7

Proposed Project Trips under Phase 1 Conditions

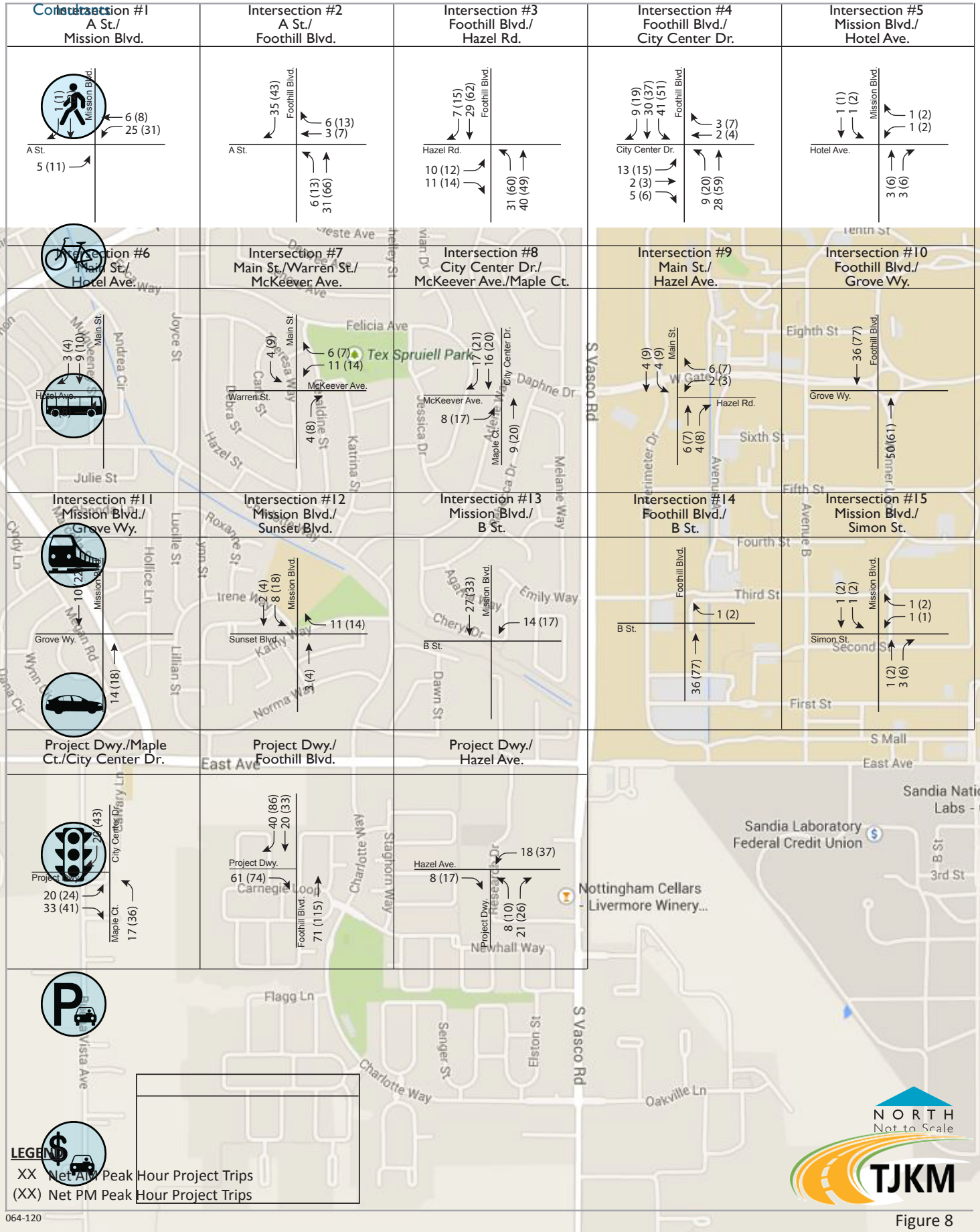


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Figure 8

Proposed Project Trips under Phase 1 and 2 Conditions

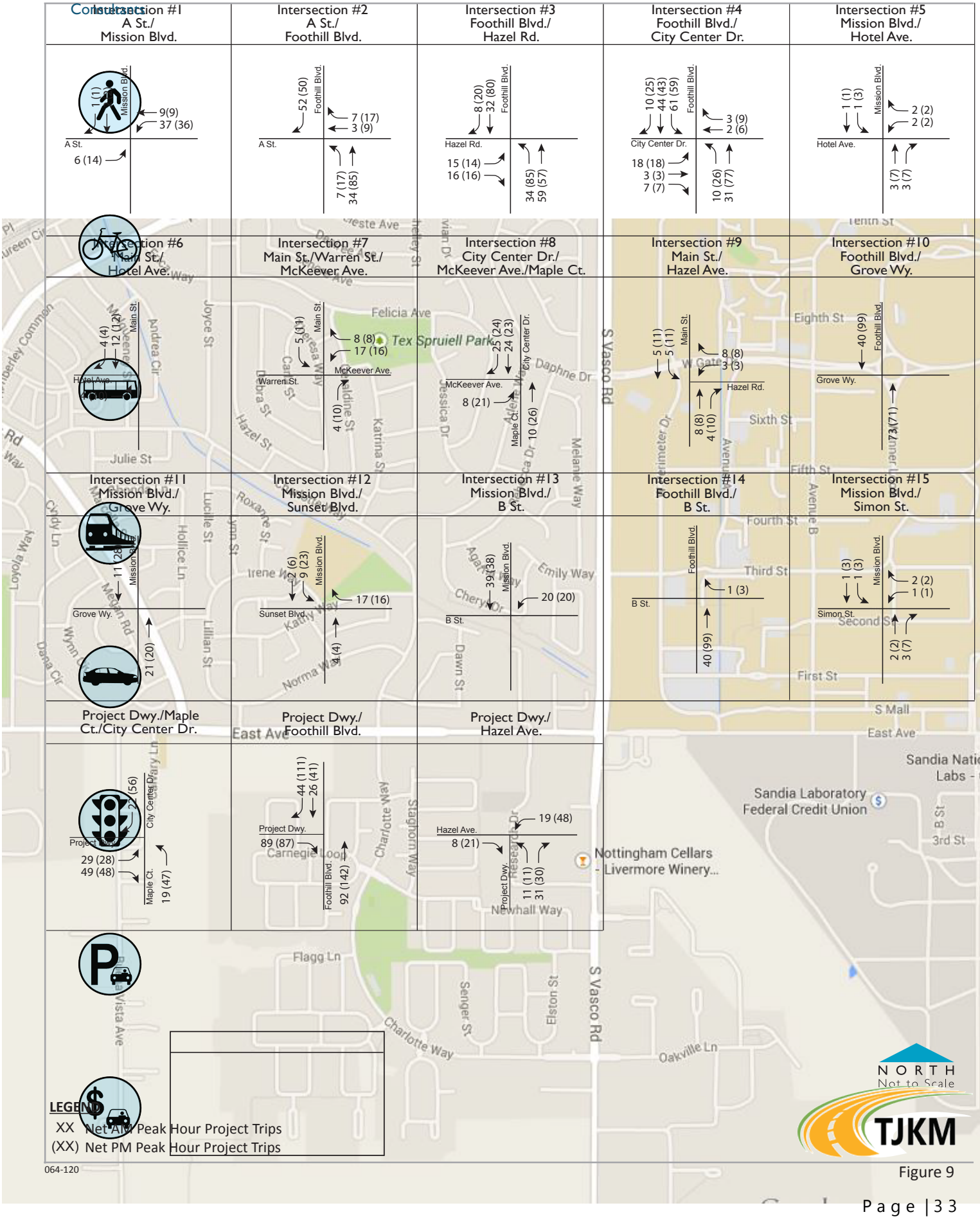

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Figure 9

Existing plus Project Phase 1 Conditions Traffic Volumes, Lane Geometry and Traffic Controls

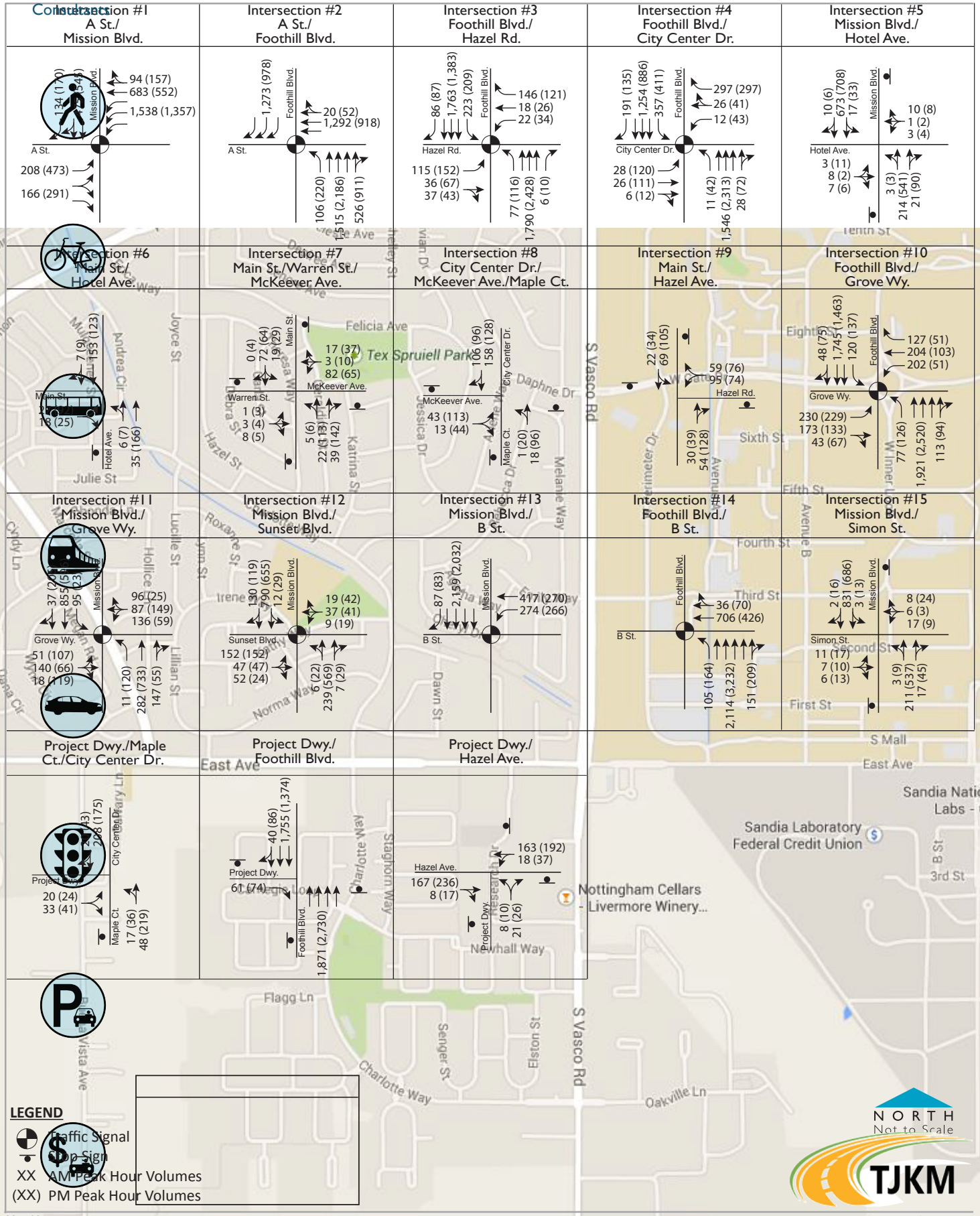

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Figure 10

Intersection Level of Service Analysis – Existing plus Project Phase 1 Conditions

The intersection LOS analysis results for Existing plus Project Phase 1 Conditions are summarized in **Table 6**. Detailed calculation sheets for Existing plus Project Conditions are contained in **Appendix D**. Under this scenario, all the intersection operate within standards of the City of Hayward (LOS E) or better during the a.m. and p.m. peak hours.

Based on the City of Hayward impact criteria the project is expected to have a **less-than-significant** impact at all the study intersections.

Figure 10 shows projected turning movement volumes at all of the study intersections for Existing plus Project Phase 1 Conditions.

The results for Existing Conditions are included for comparison purposes, along with the projected increases in control delay.

It should be noted that the project has a minimal impact on I-880 and I-580. For example, it is estimated that the full project will add 80 trips, less than 0.2 percent, to the approximately 277,000 vehicles per day on I-880 and 318 trips, less than 0.8 percent, to the 201,000 vehicles per day on I-580.[1]

[1] Source: Caltrans 2014 Traffic Volumes on State Highways

Table 6: Intersection Level of Service Analysis – Existing plus Project Phase 1 Conditions

ID	Study Intersections	Control	Peak Hour[1]	Existing Conditions		Existing Plus Phase 1 Conditions		*Δ in Control Delay (sec)[4]*
				Delay[1]	LOS[2]	Delay[2]	LOS[3]	
1	Mission Boulevard / "A" Street	Signalized	AM	37.4	D	37.5	D	0.1
			PM	46.2	D	46.5	D	0.3
2	Foothill Boulevard / "A" Street	Signalized	AM	39.9	D	41.3	D	1.4
			PM	39.2	D	39.9	D	0.7
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	32.0	C	30.6	C	-1.4
			PM	45.5	D	52.5	D	7.0
4	Foothill Boulevard / City Center Drive	Signalized	AM	27.5	C	32.2	C	4.7
			PM	57.3	E	74.1	E	16.8
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	22.5	C	22.7	C	0.2
			PM	30.1	D	30.9	D	0.8
6	Main Street / Hotel Avenue	One-Way Stop	AM	9.8	A	9.9	A	0.1
			PM	11.2	B	11.5	B	0.3
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	7.7	A	7.9	A	0.2
			PM	8.2	A	8.4	A	0.2
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.2	A	8.6	A	0.4
			PM	9.0	A	9.7	A	0.7
9	Main Street / Hazel Avenue	All-Way Stop	AM	8.3	A	8.4	A	0.1
			PM	8.6	A	8.9	A	0.3
10	Foothill Boulevard / Grove Way	Signalized	AM	42.6	D	48.3	D	5.7
			PM	34.0	C	34.3	C	0.3
11	Mission Boulevard / Grove Way	Signalized	AM	34.1	C	34.2	C	0.1
			PM	37.3	D	37.6	D	0.3
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	9.2	A	9.3	A	0.1
			PM	7.6	A	7.6	A	0.0
13	Mission Boulevard / "B" Street	Signalized	AM	18.2	B	18.4	B	0.2
			PM	16.9	B	17.3	B	0.4
14	Foothill Boulevard / "B" Street	Signalized	AM	26.0	C	26.0	C	0.0
			PM	16.1	B	16.3	B	0.2
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	27.9	D	28.3	D	0.4
			PM	33.3	D	34.2	D	0.9

Notes:
[1]. AM = morning peak hour, PM = evening peak hour
[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.
[4]. Change in average control delay between Existing and Existing plus Project Phase 1 Conditions

Queuing Analysis At Study Intersections

TJKM conducted a vehicle queuing and storage analysis for all exclusive left and right turn pockets at selected study intersections and driveways where project traffic is added under Existing plus Phase 1 Project Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the exclusive left turn/right turn pockets at the study intersections where project traffic is added. Detailed calculations are included in the LOS appendices corresponding to the Existing and Existing plus Phase 1 analysis scenarios. **Table 7** summarizes the 95th percentile queue lengths at these intersections under the two scenarios.

Table 7: 95th% Queues at Turn Pockets Affected by Project Traffic – Existing Plus Phase 1 Conditions

ID	Study Intersections	Lane Group	Storage Length per lane (feet)	Existing Conditions		Existing plus Phase 1 Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Mission Boulevard / "A" Street	EBL	360	200	**380**	200	**400**	0	20
		SBR	100	**120**	**160**	**120**	**160**	0	0
2	Foothill Boulevard / "A" Street	NBL	400	120	240	120	260	0	20
		SBR	730	420	460	500	500	80	40
3	Foothill Boulevard / Hazel Avenue	SBR	100	40	40	60	40	20	0
		EBL	100	**160**	**320**	**180**	**360**	20	40
		NBL	550	100	100	120	280	20	180
4	Foothill Boulevard / City Center Drive	SBR	170	60	40	80	40	20	0
		SBL	420	**440**	**640**	**580**	**780**	120	140
		EBL	80	40	**260**	60	**300**	20	40
		NBL	220	20	40	20	80	0	40
10	Foothill Boulevard / Grove Way	NBL	180	120	**200**	120	**200**	0	0
11	Mission Boulevard / Grove Way	SBL	220	120	40	120	60	0	20

Notes:
Bold indicates 95th Percentile Queue exceeds storage length expressed in feet per lane.
EBL = Eastbound Left Turn; SBR = Southbound Right Turn; NBL = Northbound Left; SBL = Southbound Left Turn.

Mission Boulevard / "A" Street (#1) – For this intersection both eastbound left turn and southbound right turn available queuing capacity is exceeded for the p.m. peak hour under both Existing and Existing plus Project Phase 1 scenarios. However, the project increases the queue by maximum of one vehicle per cycle in the peak 15 minutes during the p.m. peak hour for eastbound left turn, a minor change.

Foothill Boulevard / "A" Street (#2) – For this intersection both northbound left turn and southbound right turn available queuing capacity is not exceeded for both a.m. and p.m. peak hours under both Existing and Existing plus Project Phase 1 scenarios. The project increases the queue by maximum of four vehicles per cycle in the peak 15 minutes during the peak hours, which is accommodated by the existing storage.

Foothill Boulevard / Hazel Avenue (#3) – For this intersection eastbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Existing and Existing plus Project Phase 1 scenarios. The City of Hayward has no standards of significance that apply to queuing; the project the project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. In the worst case, the proposed project is expected to add around 180 feet of queuing in the p.m. peak hour (a maximum of 9 vehicles per cycle in the peak 15 minutes) to the existing northbound left turn queues but the storage length of 550 feet can accommodate projected queues.

Foothill Boulevard / City Center Drive (#4) – For this intersection southbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Existing and Existing plus Project Phase 1 scenarios. The project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. For southbound left turns, in the worst case, the proposed project is expected to add 120 feet (a maximum of 6 vehicles per cycle in the peak 15 minutes) in the a.m. peak hour and 140 feet (a maximum of 7 vehicles per cycle in the peak 15 minutes) in the p.m. peak hour queuing to the existing. In addition, the project does not create additional queuing issues at any locations other than those currently exceeding storage capacities.

Foothill Boulevard / Grove Way (#10) – For this intersection northbound left turn available queuing capacity is exceeded for the p.m. peak hour under both Existing and Existing plus Project Phase 1 scenarios. However, the project increases the queue by maximum of one vehicle per cycle during the peak 15 minutes during the peak hours, a minor change.

Mission Boulevard / Grove Way (#11) – For this intersection southbound left turn available queuing capacity is not exceeded for both a.m. and p.m. peak hours under both Existing and Existing plus Project Phase 1 scenarios.

Queuing and Level Of Service Analysis at project driveway

TJKM conducted a vehicle queuing and LOS analysis at the proposed project driveways on Hazel Avenue, Foothill Boulevard, and City Center Drive. For a conservative approach TJKM analyzed this TIA with one full access project driveway on Hazel Avenue and City Center Drive and one partial access driveway (right in/right out) on Foothill Boulevard. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the project driveways. Detailed calculations are included in the LOS appendices corresponding to the Existing and Existing plus Project analysis scenarios in **Appendix D. Table 8** summarizes the 95th percentile queue lengths and LOS at the project driveways under Existing plus Project Phase 1 scenario. As shown in **Table 8**, under Existing plus Project Phase 1 Conditions, all project driveways are expected to operate at an acceptable level of service. In addition, the 95th percentile queueing at the outbound approach of project driveways is expected to be minimal.

Table 8: 95th% Queues and LOS at Project Driveways – Existing plus Project Phase 1 Conditions

ID	Intersection	Control	Existing Plus Project Phase 1 Conditions					
			AM			PM		
			Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]	Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]
1	City Center Drive / Project Driveway	One-Way Stop	10.3	B	20	11.1	B	20
2	Foothill Boulevard / Project Driveway	One-Way Stop	9.7	A	20	9.4	A	20
3	Hazel Avenue/Project Driveway	One-Way Stop	9.9	A	20	10.8	B	20

Notes:

[1]. Delay = Average control delay in seconds per vehicle.

[2]. LOS = Level of Service.

[3]. Reported values of 95th percentile Queues are for the outbound movements at the project driveways.

BACKGROUND CONDITIONS

This section details expected traffic conditions under Background Conditions. TJKM developed year 2020 turning movement volumes for all study intersections based on the latest version of the Alameda County travel demand model. TJKM determined the difference in 2005 base year and 2035 buildout year volumes for study area model links and factored the difference to account for 5 years of traffic growth. This result was then applied proportionately to Existing Conditions turning movement volumes to generate Year 2020 turning movement volumes. These volumes represent the Background Conditions.

It should be noted that for approaches where the model predicted a decrease or no change in traffic between the base year and the future year, TJKM assumed the existing turning movements for that approach would be constant through the year 2020. Lane geometries and traffic controls are assumed to be identical to those under Existing Conditions.

INTERSECTIONS LEVEL OF SERVICE ANALYSIS – BACKGROUND CONDITIONS

The intersection LOS analysis results for Background Conditions are summarized in **Table 9**. Detailed calculation sheets for Background Conditions are contained in **Appendix E**. Under this scenario, all the intersections operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for the following intersections.

- Foothill Boulevard / City Center Drive (#4) during the PM peak hour (LOS F)
- Mission Boulevard / Simon Street (#15) during AM and PM peak hours (LOS F/F, respectively)

Figure 11 shows the resulting turning movement volumes under Background Conditions for all study intersections, along with lane geometries and traffic controls.

Table 9: Intersection Level of Service Analysis – Background Conditions

ID	Study intersection	Control	Peak Hour[1]	Delay[2]	LOS[3]
1	Mission Boulevard / "A" Street	Signalized	AM	39.9	D
			PM	50.2	D
2	Foothill Boulevard / "A" Street	Signalized	AM	40.1	D
			PM	40.8	D
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	38.4	D
			PM	72.1	E
4	Foothill Boulevard / City Center Drive	Signalized	AM	29.6	C
			PM	**80.1**	**F**
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	41.4	E
			PM	48.7	E
6	Main Street / Hotel Avenue	One-Way Stop	AM	10.6	B
			PM	12.6	B
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	8.6	A
			PM	9.1	A
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.3	A
			PM	9.2	A
9	Main Street / Hazel Avenue	All-Way Stop	AM	9.8	A
			PM	10.0	A
10	Foothill Boulevard / Grove Way	Signalized	AM	45.6	D
			PM	39.3	D
11	Mission Boulevard / Grove Way	Signalized	AM	59.3	E
			PM	57.5	E
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	12.4	B
			PM	10.3	B
13	Mission Boulevard / "B" Street	Signalized	AM	18.9	B
			PM	18.9	B
14	Foothill Boulevard / "B" Street	Signalized	AM	27.5	C
			PM	21.1	C
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	**50.8**	**F**
			PM	**50.8**	**F**

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

Bold text indicates intersection operates at a deficient Level of Service.

Background Conditions Traffic Volumes, Lane Geometry, and Traffic Controls

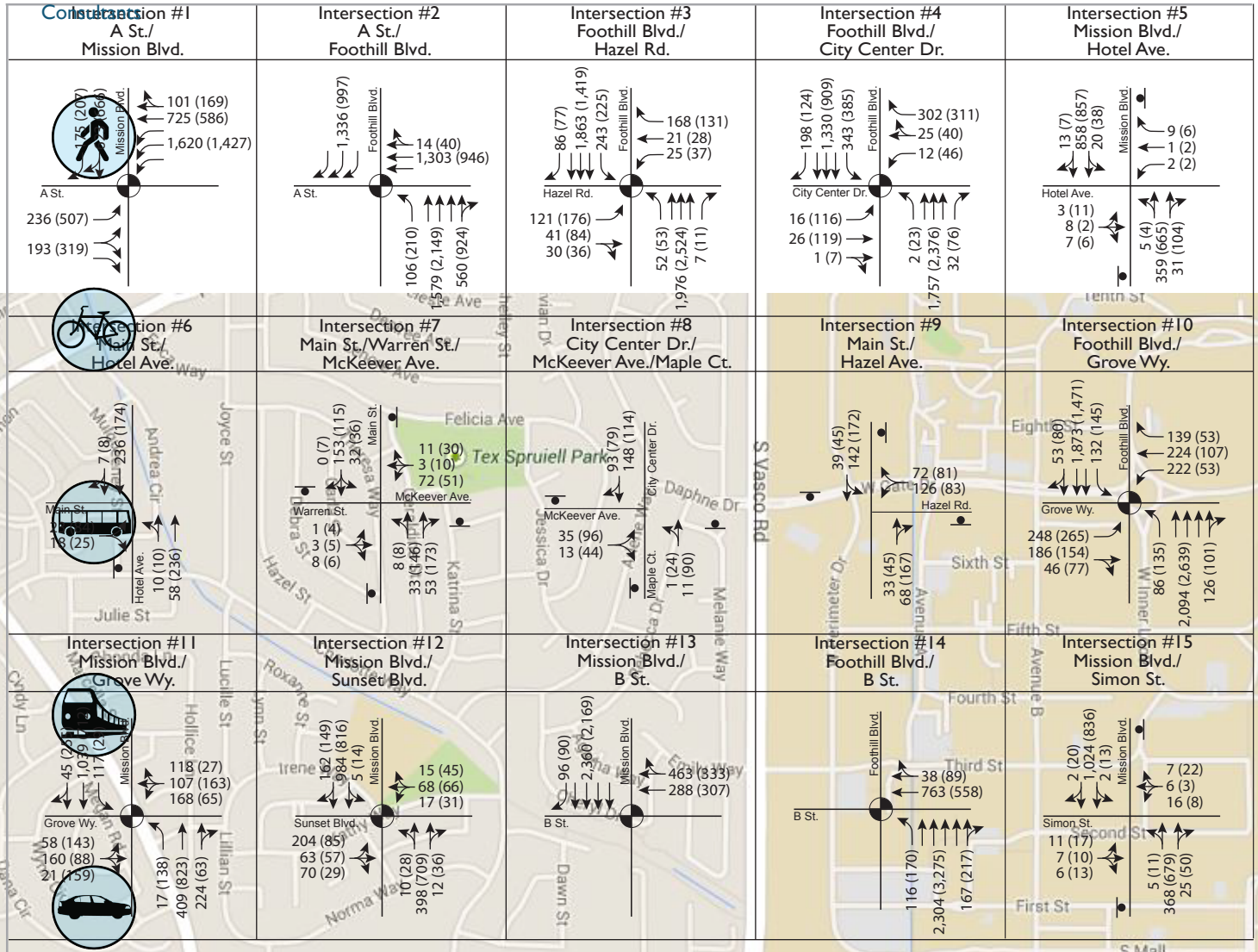

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Figure 11

BACKGROUND PLUS PROJECT PHASE 1 CONDITIONS

This scenario is identical to Background Conditions, but with the addition of projected traffic from the proposed Lincoln Landing Development Phase 1. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Phase 1 Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS – BACKGROUND PLUS PROJECT PHASE 1 CONDITIONS

The intersection LOS analysis results for Background plus Project Phase 1 Conditions are summarized in **Table 10**. Detailed calculation sheets for Background plus Project Phase 1 Conditions are contained in **Appendix F**. Under this scenario, all the study intersections are expected to continue operating within the City of Hayward (LOS E) standards except for the following intersections.

- Foothill Boulevard / Hazel Avenue (#3) during the PM peak hour (LOS F)
- Foothill Boulevard / City Center Drive (#4) during the PM peak hour (LOS F)
- Mission Boulevard / Hotel Avenue (#5) during PM peak hour (LOS F)
- Mission Boulevard / Simon Street (#15) during AM and PM peak hours (LOS F/F, respectively)

Figure 12 shows projected turning movement volumes at all of the study intersections for Background plus Project Phase 1 Conditions.

The results for Background Conditions are included for comparison purposes, along with the projected increases in control delay.

The peak-hour signal warrant from the Manual of Uniform Traffic Control Devices (CA MUTCD) was evaluated for the unsignalized intersections that operate unacceptably under Background plus Project Phase 1 conditions to determine if a traffic signal is warranted. Both the unsignalized intersections -- Mission Boulevard / Hotel Avenue (#5) and Mission Boulevard / Simon Street (#15) do not meet MUTCD peak hour signal warrants in either the a.m. or p.m. peak hours. MUTCD peak hour signal warrants sheets Conditions are contained in **Appendix F.**

Based on the impact criteria listed in section Significant Impact Criteria/Level of Service Standards, the proposed Project phase 1 will have significant impact at two study intersections during the following peak hours:

- Intersection #3 - Foothill Boulevard / Hazel Avenue during the PM peak hour (LOS F)
- Intersection #4 - Foothill Boulevard / City Center Drive during the PM peak hour (LOS F)

Table 10: Intersection Level of Service Analysis – Background plus Project Phase 1 Conditions

ID	Study Intersections	Control	Peak Hour[1]	Background Conditions		Background Plus Phase 1 Conditions		*Δ in Control Delay (sec)[4]*
				Delay[1]	LOS[2]	Delay[2]	LOS[3]	
1	Mission Boulevard / "A" Street	Signalized	AM	39.9	D	40.0	D	0.1
			PM	50.2	D	50.7	D	0.5
2	Foothill Boulevard / "A" Street	Signalized	AM	40.1	D	42.5	D	2.4
			PM	40.8	D	41.4	D	0.6
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	38.4	D	37.7	D	-0.7
			PM	72.1	E	**80.8**	**F**	**<u>8.7</u>**
4	Foothill Boulevard / City Center Drive	Signalized	AM	29.6	C	34.5	C	4.9
			PM	**80.1**	**F**	**90.4**	**F**	**<u>10.3</u>**
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	41.4	E	42.2	E	0.8
			PM	48.7	E	**50.4**	**F**	1.7
6	Main Street / Hotel Avenue	One-Way Stop	AM	10.6	B	10.9	B	0.3
			PM	12.6	B	13.0	B	0.4
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	8.6	A	8.7	A	0.1
			PM	9.1	A	9.4	A	0.3
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.3	A	8.7	A	0.4
			PM	9.2	A	9.9	A	0.7
9	Main Street / Hazel Avenue	All-Way Stop	AM	9.8	A	10.0	B	0.2
			PM	10.0	A	10.5	B	0.5
10	Foothill Boulevard / Grove Way	Signalized	AM	45.6	D	50.9	D	5.3
			PM	39.3	D	39.9	D	0.6
11	Mission Boulevard / Grove Way	Signalized	AM	59.3	E	60.9	E	1.6
			PM	57.5	E	59.9	E	2.4
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	12.4	B	12.7	B	0.3
			PM	10.3	B	10.8	B	0.5
13	Mission Boulevard / "B" Street	Signalized	AM	18.9	B	19.3	B	0.4
			PM	18.9	B	19.2	B	0.3
14	Foothill Boulevard / "B" Street	Signalized	AM	27.5	C	27.6	C	0.1
			PM	21.1	C	21.4	C	0.3
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	**50.8**	**F**	**51.6**	**F**	0.8
			PM	**50.8**	**F**	**52.8**	**F**	2.0

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

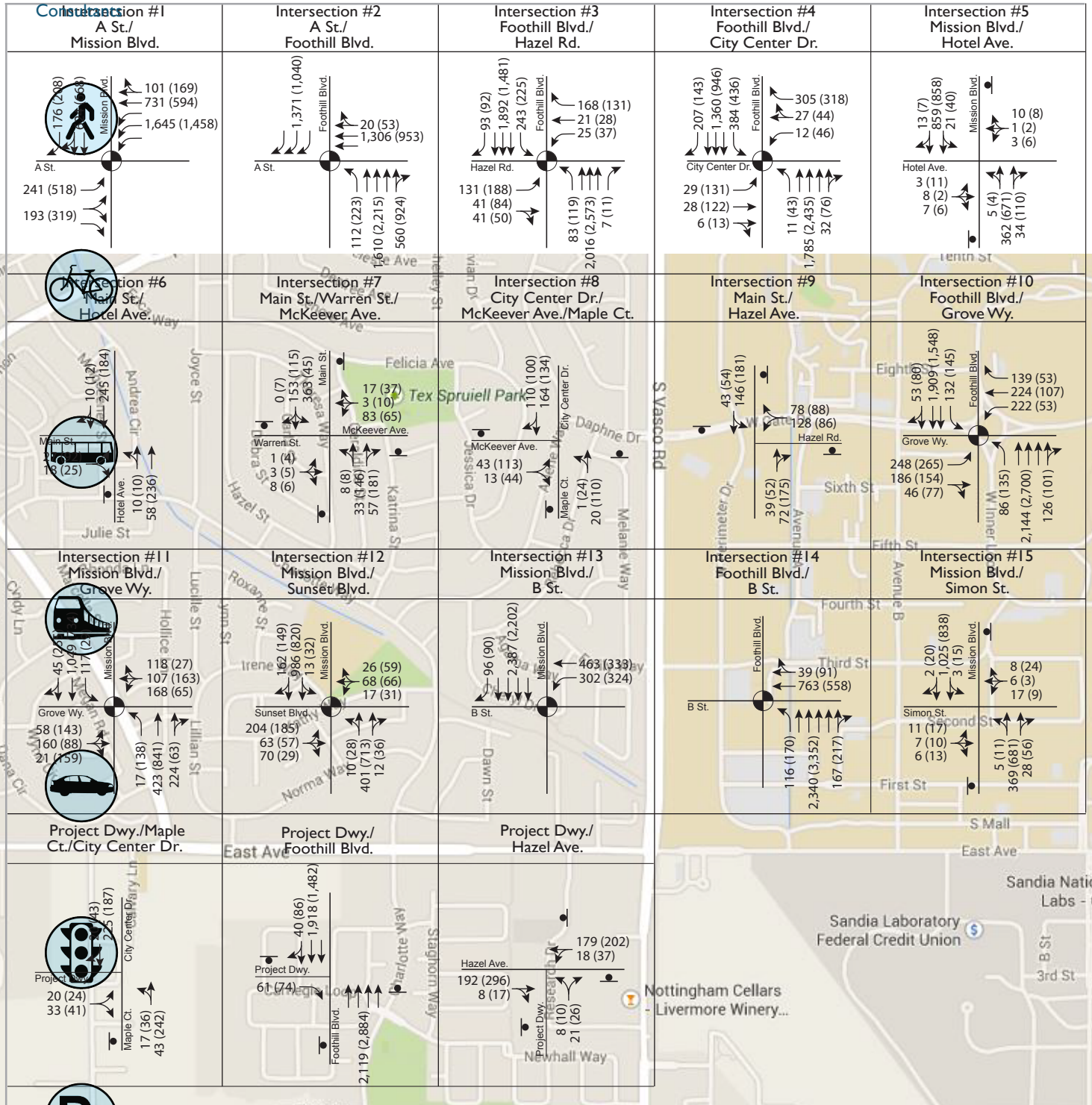
[4]. Change in average control delay between Background and Background plus Project Phase 1 Conditions

Bold text indicates intersection operates at a deficient Level of Service.

<u>Bold and underlined</u> indicates a potentially significant impact.

Background plus Project Phase 1 Conditions Traffic Volumes, Lane Geometry, and Traffic Controls

TJKM Transportation Consultants



064-120

Figure 12

Mitigation Measures - Background plus Project Phase 1 Conditions

Foothill Boulevard/Hazel Avenue (#3) – With the addition of project traffic, the increase in average delay at Foothill Boulevard / Hazel Avenue is expected to be 8.7 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Background plus Project Phase 1 Conditions.

A mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lane would improve approach operations at the Foothill Boulevard/Hazel Avenue intersection to LOS D in the p.m. peak hour). This mitigation measure would consist of restriping the right-most northbound approach right lane to a shared through right turn lane and accommodate one receiving lane for the proposed shared through right lane on the north side of the intersection of approximately 500 feet and then merge back to three lanes.

This would require removal of parking along the site frontage on the east side of Foothill Boulevard north of Hazel Avenue/City Center Drive to accommodate the receiving lane. On the north side of Foothill Boulevard, about 250 feet of existing parking would need to be removed because the right most northbound through lane would need to use the parking area. This parking is located along the Foothill Boulevard frontage for retail businesses and residences.

As a result of this mitigation measure, intersection conditions would improve to LOS D with 46.5 seconds of delay in the p.m. peak hour. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Project Phase 1 Conditions.

Figure 13 illustrates the proposed mitigations for the intersection of Foothill Boulevard/Hazel Avenue for Background plus project Phase 1 Conditions.

Foothill Boulevard / City Center Drive (#4) - With the addition of project traffic, the increase in average delay at Foothill Boulevard / City Center Drive is expected to be 10.3 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Background plus Project Phase 1 Conditions.

A mitigation of restriping the southbound approach with an additional left turn lane would improve approach operations at the intersection to LOS D in the p.m. peak hour. This mitigation measure would consist of restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane.

This would require removal of parking adjacent to the southbound lanes along the site frontage on the west side of Foothill Boulevard north of City Center Drive to accommodate the shifting and combining of lanes. On the south side of Foothill Boulevard, about 300 feet of existing parking would need to be moved because the right most southbound through lane would need to use the parking area. This

parking is located along the Foothill Boulevard frontage for retail businesses. In addition, an existing AC Transit stop just south of City Center Drive would need to be relocated.

As a result of this mitigation measure, intersection conditions would improve to LOS D with 45.8 seconds of delay in the p.m. peak hour. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Project Phase 1 Conditions.

Figure 14 illustrates the proposed mitigations for the intersection of Foothill Boulevard/City Center Drive for Background plus project Phase 1 Conditions.

Table 11 provides the LOS/Delay comparison between "with no Project", "with project" and "Mitigated" and indicates the proposed mitigation for Background plus Phase 1 Conditions.

Detailed calculation sheets for Background plus Project Phase 1 Conditions mitigations are contained in **Appendix F**.

Table 11: Delay and LOS for Background plus Project Phase 1 mitigations

ID	Study Intersections	Control	Peak Hour	Background Conditions		Background plus Phase 1 Conditions		Δ in Delay (sec)[4]
				Delay	LOS	Delay	LOS	
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	38.4	D	37.7	D	-0.7
			PM	72.1	E	**80.8**	**F**	**8.7**
	Mitigation-Restriping the northbound approach to one left only lane, three through lanes and one shared through right lane		AM	38.4	D	36.4	D	-2.0
			PM	72.1	E	46.5	D	-25.6
4	Foothill Boulevard / City Center Drive	Signalized	AM	29.6	C	34.5	C	4.9
			PM	80.1	F	90.4	F	10.3
	Mitigation - Restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane		AM	29.6	C	31.0	C	1.4
			PM	80.1	F	45.8	D	-34.3

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in second per vehicle for signalized intersections and all way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

[4]. Change in average control delay between Background and Background plus Project Phase 1 Conditions

PROPOSED MITIGATION FOR FOOTHILL BOULEVARD / HAZEL AVENUE

PROPOSED MITIGATION FOR BACKGROUND PLUS PROJECT 1 AND BACKGROUND PLUS PHASE 1 AND 2

N

TJKM 4305 Hacienda Drive, Suite 550 Pleasanton, CA 94588 tjkm@tjkm.com	INTERSECTION EXHIBIT	SCALE 1" = 60'
		DATE: MARCH 24, 2016
	FOOTHILL BOULEVARD AND HAZEL AVENUE	BY: VQ
	CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA	FIGURE 13

PROPOSED MITIGATION FOR FOOTHILL BOULEVARD / CITY CENTER DRIVE

PROPOSED MITIGATIONS FOR BACKGROUND PLUS PROJECT PHASE 1, BACKGROUND PLUS PROJECT, PHASE 1 AND 2, AND CUMULATIVE PLUS PROJECT PHASE 1 AND 2

N

TJKM
4305 Hacienda Drive, Suite 550
Pleasanton, CA 94588
tjkm@tjkm.com

INTERSECTION EXHIBIT

FOOTHILL BOULEVARD AND CITY CENTER DRIVE

CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA

SCALE	1" = 80'
DATE:	MARCH 24, 2016
BY:	VQ
FIGURE	14

Queuing Analysis At Study Intersections

TJKM conducted a vehicle queuing and storage analysis for all exclusive left and right turn pockets at selected study intersections and driveways where project traffic is added under Background plus Phase 1 Project Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the exclusive left turn/right turn pockets at the study intersections where project traffic is added. Detailed calculations are included in the LOS appendices corresponding to the Background and Background plus Phase 1 analysis scenarios. **Table 12** summarizes the 95th percentile queue lengths at these intersections under the two scenarios.

Table 12: 95th% Queues at Turn Pockets Affected by Project Traffic – Background plus Phase 1 Conditions

ID	Study Intersections	Lane Group	Storage Length per lane (feet)	Background Conditions		Background plus Phase 1 Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Mission Boulevard / "A" Street	EBL	360	220	**420**	220	**440**	0	20
		SBR	100	**180**	**220**	**180**	**220**	0	0
2	Foothill Boulevard / "A" Street	NBL	400	120	240	120	280	0	40
		SBR	730	480	500	540	520	60	20
3	Foothill Boulevard / Hazel Avenue	SBR	100	40	40	40	40	0	0
		EBL	100	**180**	**420**	**200**	**440**	20	20
		NBL	550	60	100	120	280	60	180
4	Foothill Boulevard / City Center Drive	SBR	170	60	20	100	40	40	20
		SBL	420	**500**	**700**	**640**	**820**	140	120
		EBL	80	40	**280**	60	**340**	20	60
		NBL	220	20	40	20	80	0	40
10	Foothill Boulevard / Grove Way	NBL	180	120	**220**	120	**220**	0	0
11	Mission Boulevard / Grove Way	SBL	220	140	60	140	60	0	0

Notes:

Bold indicates 95th Percentile Queue exceeds storage length expressed in feet per lane.

EBL = Eastbound Left Turn; SBR = Southbound Right Turn; NBL = Northbound Left; SBL = Southbound Left Turn.

Mission Boulevard / "A" Street (#1) – For this intersection both eastbound left turn and southbound right turn available queuing capacity is exceeded for the p.m. peak hour under both Background and Background plus Project Phase 1 scenarios. However, the project increases the queue by maximum of one vehicle per cycle in the peak 15 minutes during the p.m. peak hour for eastbound left turn, a minor change.

Foothill Boulevard / "A" Street (#2) – For this intersection both northbound left turn and southbound right turn available queuing capacity does not exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 scenarios. The project increases the queue by maximum

of four vehicles per cycle in the peak 15 minutes during the peak hours, which is accommodated by the existing storage.

Foothill Boulevard / Hazel Avenue (#3) – For this intersection eastbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 scenarios. The City of Hayward has no standards of significance that apply to queuing; the project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. In the worst case, the proposed project is expected to add around 180 feet of queuing in the p.m. peak hour (a maximum of 9 vehicles per cycle in the peak 15 minutes) to the existing northbound left turn queues but the storage length of 550 feet can accommodate projected queues.

Foothill Boulevard / City Center Drive (#4) – For this intersection southbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 scenarios. The project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. For southbound left turns, in the worst case, the proposed project is expected to add 120 feet (a maximum of 6 vehicles per cycle in the peak 15 minutes) in the a.m. peak hour and 140 feet (a maximum of 7 vehicles per cycle in the peak 15 minutes) in the p.m. peak hour queuing to the existing. In addition, the project does not create additional queuing issues at any locations other than those currently exceeding storage capacities.

Foothill Boulevard / Grove Way (#10) – For this intersection northbound left turn available queuing capacity is exceeded for the p.m. peak hour under both Background and Background plus Project Phase 1 scenarios. However, the project increases the queue by maximum of one vehicle per cycle during the peak 15 minutes during the peak hours, a minor change.

Mission Boulevard / Grove Way (#11) – For this intersection southbound left turn available queuing capacity is not exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 scenarios.

Queuing and Level Of Service Analysis at project driveways

TJKM conducted a vehicle queuing and LOS analysis at the proposed project driveways on Hazel Avenue, Foothill Boulevard, and City Center Drive. For a conservative approach TJKM analyzed this TIA with one full access project driveway on Hazel Avenue and on City Center Drive and one partial access driveway (right in/right out) on Foothill Boulevard. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the project driveways. Detailed calculations are included in the LOS appendices corresponding to the Background plus Project Phase 1 analysis scenarios in **Appendix F. Table 13** summarizes the 95th percentile queue lengths and LOS at the project driveways under Background plus Project Phase 1 scenario. As shown in **Table 13**, under Background plus Project Phase 1 Conditions, all project driveways are expected to operate at an acceptable level of service. In addition, the 95th percentile queueing at the outbound approach of both project driveways is expected to be minimal.

Table 13: 95th% Queues and LOS at Project Driveways - Background plus Project Phase 1 Conditions

ID	Intersection	Control	Background plus Project Phase 1 Conditions					
			AM			PM		
			Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]	Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]
1	City Center Drive / Project Driveway	One-Way Stop	10.4	B	20	11.3	B	20
2	Foothill Boulevard / Project Driveway	One-Way Stop	10.0	B	20	9.6	A	20
3	Hazel Avenue / Project Driveway	One-Way Stop	10.1	B	20	11.4	B	20

Notes:

[1]. Delay = Average control delay in seconds per vehicle.

[2]. LOS = Level of Service.

[3]. Reported values of 95th percentile Queues are for the outbound movements at the project driveways.

BACKGROUND PLUS PROJECT PHASE 1 AND 2 CONDITIONS

This scenario is identical to Background Conditions, but with the addition of projected traffic from the proposed Lincoln Landing Development Phase 1 and 2. Trip distribution and assignment for the proposed project are identical to that assumed under Existing plus Phase 1 Project Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS – BACKGROUND PLUS PROJECT PHASE 1 AND 2 CONDITIONS

The intersection LOS analysis results for Background plus Project Phase 1 and 2 Conditions are summarized in **Table 14**. Detailed calculation sheets for Background plus Project Phase 1 and 2 Conditions are contained in **Appendix G**. Under this scenario, all the study intersections are expected to continue operating within the City of Hayward standards (LOS E) except for the following intersections.

- Foothill Boulevard / Hazel Avenue (#3) during the PM peak hour (LOS F)
- Foothill Boulevard / City Center Drive (#4) during the PM peak hour (LOS F)
- Mission Boulevard / Hotel Avenue (#5) during PM peak hour (LOS F)
- Mission Boulevard / Simon Street (#15) during AM and PM peak hours (LOS F/F, respectively)

Figure 15 shows projected turning movement volumes at all of the study intersections for Background plus Project Phase 1 and 2 Conditions.

The results for Background Conditions are included for comparison purposes, along with the projected increases in control delay.

The peak-hour signal warrant from the Manual of Uniform Traffic Control Devices (CA MUTCD) was evaluated for the unsignalized intersections that operate unacceptably under Background plus Project Phase 1 and 2 conditions to determine if a traffic signal is warranted. Both the unsignalized intersections Mission Boulevard / Hotel Avenue (#5) and Mission Boulevard / Simon Street (#15) do not met MUTCD peak hour signal warrant in a.m. and p.m. peak hours. MUTCD peak hour signal warrants sheets Conditions are contained in **Appendix G.**

Based on the impact criteria listed in section Significant Impact Criteria/Level of Service Standards, the proposed Lincoln Landing project phase 1 and 2 will have significant impact at two study intersections during the following peak hours:

- Intersection #3 - Foothill Boulevard / Hazel Avenue during the PM peak hour (LOS F)
- Intersection #4 - Foothill Boulevard / City Center Drive during the PM peak hour (LOS F)

Table 14: Intersection Level of Service Analysis – Background plus Project Phase 1 and 2 Conditions

ID	Study Intersections	Control	Peak Hour[1]	Background Conditions		Background plus Phase 1 and 2 Conditions		*Δ in Control Delay (sec)[4]*
				Delay[1]	LOS[2]	Delay[2]	LOS[3]	
1	Mission Boulevard / "A" Street	Signalized	AM	39.9	D	40.1	D	0.2
			PM	50.2	D	50.7	D	0.5
2	Foothill Boulevard / "A" Street	Signalized	AM	40.1	D	43.0	D	2.9
			PM	40.8	D	41.6	D	0.8
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	38.4	D	38.8	D	0.4
			PM	72.1	E	**82.1**	**F**	**<u>10.0</u>**
4	Foothill Boulevard / City Center Drive	Signalized	AM	29.6	C	34.8	C	5.2
			PM	**80.1**	**F**	**93.3**	**F**	**<u>13.2</u>**
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	41.4	E	42.3	E	0.9
			PM	48.7	E	**50.8**	**F**	2.1
6	Main Street / Hotel Avenue	One-Way Stop	AM	10.6	B	10.9	B	0.3
			PM	12.6	B	13.1	B	0.5
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	8.6	A	8.8	A	0.2
			PM	9.1	A	9.5	A	0.4
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.3	A	8.8	A	0.5
			PM	9.2	A	10.1	B	0.9
9	Main Street / Hazel Avenue	All-Way Stop	AM	9.8	A	10.1	B	0.3
			PM	10.0	A	10.5	B	0.5
10	Foothill Boulevard / Grove Way	Signalized	AM	45.6	D	50.9	D	5.3
			PM	39.3	D	40.1	D	0.8
11	Mission Boulevard / Grove Way	Signalized	AM	59.3	E	61.2	E	1.9
			PM	57.5	E	60.4	E	2.9
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	12.4	B	12.8	B	0.4
			PM	10.3	B	10.9	B	0.6
13	Mission Boulevard / "B" Street	Signalized	AM	18.9	B	19.5	B	0.6
			PM	18.9	B	19.3	B	0.4
14	Foothill Boulevard / "B" Street	Signalized	AM	27.5	C	27.6	C	0.1
			PM	21.1	C	21.5	C	0.4
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	**50.8**	**F**	**52.0**	**F**	1.2
			PM	**50.8**	**F**	**53.3**	**F**	2.5

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

4. Change in average control delay between Background and Background plus Project Phase 1 and 2 Conditions

Bold text indicates intersection operates at a deficient Level of Service.

<u>Bold and underlined</u> indicates a potentially significant impact.

Background plus Project Phase 1 and 2 Conditions Traffic Volumes, Lane Geometry and Traffic Controls

TJKM Transportation Consultants

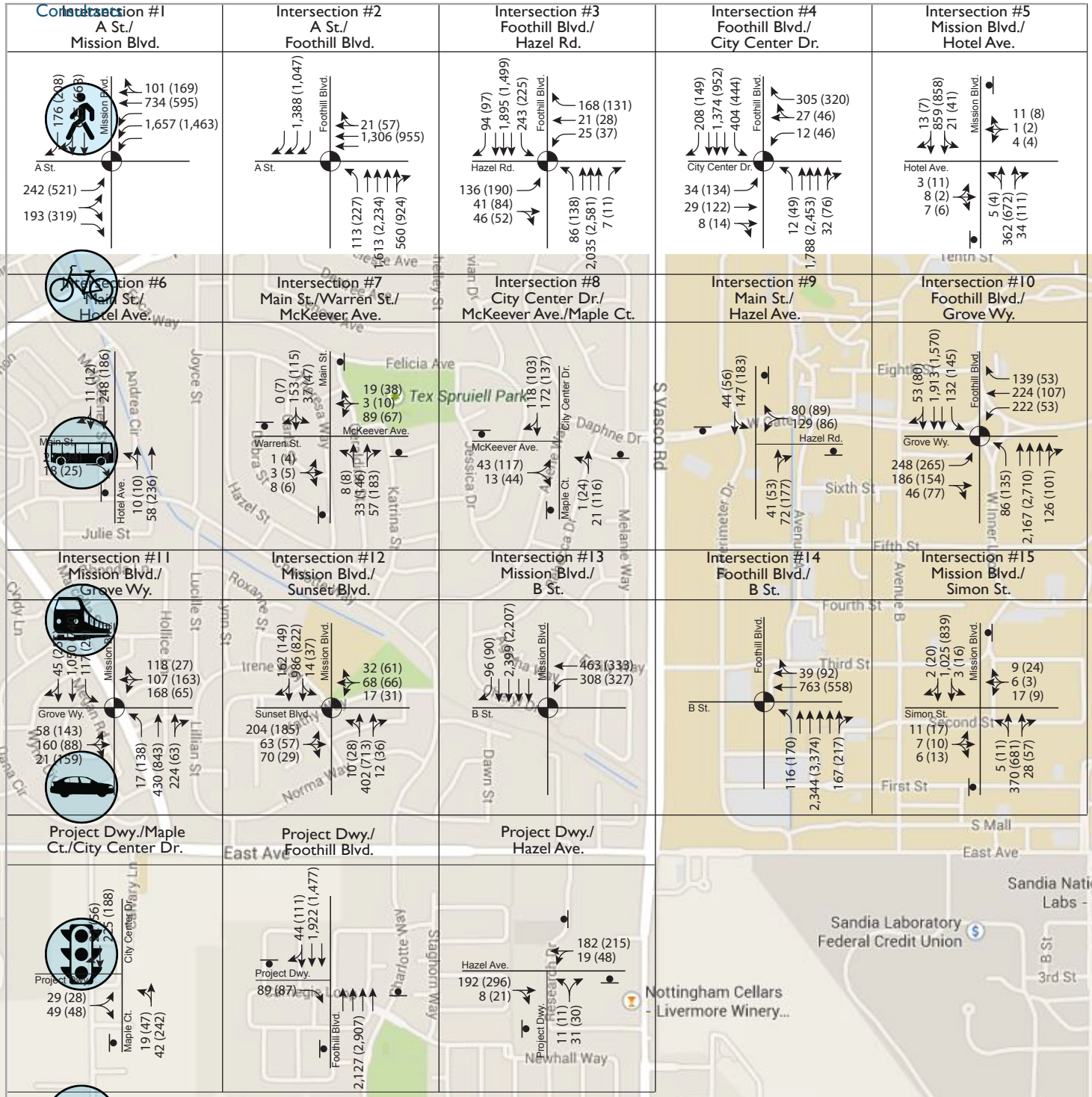


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Figure 15

Mitigation Measures - Background plus Project Phase 1 and 2 Conditions

Foothill Boulevard/Hazel Avenue (#3) – With the addition of project traffic, the increase in average delay at Foothill Boulevard / Hazel Avenue is expected to be 10.0 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Background plus Project Phase 1 and 2 Conditions. The proposed mitigation at this intersection is the same as Background plus Project Phase 1, as a result of this mitigation measure, intersection conditions would improve to LOS D with 47.3 seconds of delay in the p.m. peak hour. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Phase 1 & 2 Conditions.
Figure 13 illustrates the proposed mitigations for the intersection of Foothill Boulevard/Hazel Avenue for Background plus project Phase 1 Conditions

Foothill Boulevard / City Center Drive (#4) - With the addition of project traffic, the increase in average delay at Foothill Boulevard / City Center Drive is expected to be 13.2 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Background plus Project Phase 1 and 2 Conditions. The proposed mitigation at this intersection is the same as Background plus Project Phase 1 As a result of this mitigation measure, intersection conditions would improve to LOS D with 47.6 seconds of delay in the PM peak. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Phase 1 & 2 Conditions.

Figure 14 illustrates the proposed mitigations for the intersection of Foothill Boulevard/City Center Drive for Background plus project Phase 1 Conditions.

Table 15 provides the LOS/Delay comparison between "with no Project", "with project" and "Mitigated" and indicates the proposed mitigation for Background plus Phase 1 and 2 Conditions.

Detailed calculation sheets for Background plus Project Phase 1 and 2 Conditions mitigations are contained in **Appendix G**.

Table 15: Delay and LOS for Background plus Project Phase 1 and 2 mitigations

ID	Study Intersections	Control	Peak Hour[1]	Background Conditions		Background plus Phase 1 and 2 Conditions		Δ in Delay (sec)[4]
				Delay[2]	LOS[3]	Delay[2]	LOS[3]	
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	38.4	D	38.8	D	0.4
			PM	72.1	E	82.1	F	10.0
	Mitigation-Restriping the northbound approach to one left only lane, three through lanes and one shared through right lane		AM	38.4	D	36.9	D	**-1.5**
			PM	72.1	E	**47.3**	**D**	**-24.8**
4	Foothill Boulevard / City Center Drive	Signalized	AM	29.6	C	34.8	C	5.2
			PM	80.1	F	93.3	F	13.2
	Mitigation - Restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane		AM	29.6	C	31.2	C	1.6
			PM	80.1	F	47.6	D	-32.5

Notes:
[1]. AM = morning peak hour, PM = evening peak hour
[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.
[4]. Change in average control delay between Background and Background plus Project Phase 1 and 2 Conditions

Queuing Analysis At Study Intersections

TJKM conducted a vehicle queuing and storage analysis for all exclusive left and right turn pockets at selected study intersections and driveways where project traffic is added under Background plus Project Phase 1 and 2 Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the exclusive left turn/right turn pockets at the study intersections where project traffic is added. Detailed calculations are included in the LOS appendices corresponding to the Background and Background plus Project Phase 1 and 2 analysis scenarios. **Table 16** summarizes the 95th percentile queue lengths at these intersections under the two scenarios.

Table 16: 95th% Queues at Turn Pockets Affected by Project Traffic – Background plus Project Phase 1 and 2 Conditions

ID	Study Intersections	Lane Group	Storage Length per lane (feet)	Background Conditions		Background plus Phase 1 and 2 Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Mission Boulevard / "A" Street	EBL	360	220	**420**	220	**440**	0	20
		SBR	100	**180**	**220**	**180**	**220**	0	0
2	Foothill Boulevard / "A" Street	NBL	400	120	240	120	280	0	40
		SBR	730	480	500	560	520	80	20
3	Foothill Boulevard / Hazel Avenue	SBR	100	40	40	40	40	0	0
		EBL	100	**180**	**420**	**200**	**440**	20	20
		NBL	550	60	100	140	340	80	200
4	Foothill Boulevard / City Center Drive	SBR	170	60	20	80	20	20	0
		SBL	420	**500**	**700**	**680**	**860**	180	160
		EBL	80	40	**280**	80	**340**	40	60
		NBL	220	20	40	20	100	0	60
10	Foothill Boulevard / Grove Way	NBL	180	120	**220**	120	**220**	0	0
11	Mission Boulevard / Grove Way	SBL	220	140	60	140	60	0	0

Notes:

Bold indicates 95th Percentile Queue exceeds storage length expressed in feet per lane.

EBL = Eastbound Left Turn; SBR = Southbound Right Turn; NBL = Northbound Left; SBL = Southbound Left Turn.

Mission Boulevard / "A" Street (#1) – For this intersection both eastbound left turn and southbound right turn available queuing capacity is exceeded for p.m. peak hour under both Background and Background plus Project Phase 1 and 2 scenarios. However, the project increases the queue by maximum of one vehicle per cycle in the peak 15 minutes during the p.m. peak hour for eastbound left turn, a minor change.

Foothill Boulevard / "A" Street (#2) – For this intersection both northbound left turn and southbound right turn available queuing capacity does not exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 and 2 scenarios. The project increases the queue by

maximum of four vehicles per cycle in the peak 15 minutes during the peak hours, which is accommodated by the existing storage.

Foothill Boulevard / Hazel Avenue (#3) – For this intersection eastbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 and 2 scenarios. The City of Hayward has no standards of significance that apply to queuing; the project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. In the worst case, the proposed project is expected to add around 200 feet of queuing in the p.m. peak hour (a maximum of 10 vehicles per cycle in the peak 15 minutes) to the existing northbound left turn queues but the storage length of 550 feet can accommodate projected queues.

Foothill Boulevard / City Center Drive (#4) – For this intersection southbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 and 2 scenarios. The project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. For southbound left turns, in the worst case, the proposed project is expected to add 180 feet (a maximum of 9 vehicles per cycle in the peak 15 minutes) in the a.m. peak hour and 160 feet (a maximum of 8 vehicles per cycle in the peak 15 minutes) in the p.m. peak hour queuing to the existing. In addition, the project does not create additional queuing issues at any locations other than those currently exceeding storage capacities.

Foothill Boulevard / Grove Way (#10) – For this intersection northbound left turn available queuing capacity is exceeded for the p.m. peak hour under both Background and Background plus Project Phase 1 and 2 scenarios. However, the project increases the queue by maximum of one vehicle per cycle during the peak 15 minutes during the peak hours, a minor change.

Mission Boulevard / Grove Way (#11) – For this intersection southbound left turn available queuing capacity is not exceeded for both a.m. and p.m. peak hours under both Background and Background plus Project Phase 1 and 2 scenarios.

Queuing and Level Of Service Analysis at project driveways

TJKM conducted a vehicle queuing and LOS analysis at the proposed project driveways on Hazel Avenue, Foothill Boulevard, and City Center Drive. For a conservative approach TJKM analyzed this TIA with one full access project driveway on Hazel Avenue and City Center Drive and one partial access driveway (right in/right out) on Foothill Boulevard. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the project driveways. Detailed calculations are included in the LOS appendices corresponding to the Background plus Project Phase 1 and 2 analysis scenarios in **Appendix G. Table 17** summarizes the 95th percentile queue lengths and LOS at the project driveways under Background plus Project Phase 1 and 2 scenario. As shown in **Table 17**, under Background plus Project Phase 1 and 2 Conditions, all project driveways are expected to operate at an acceptable level of service. In addition, the 95th percentile queueing at the outbound approach of both project driveways is expected to be minimal.

Table 17: 95th% Queues and LOS at Project Driveways - Background plus Project Phase 1 and 2

ID	Intersection	Control	Background Plus Project Phase 1 and 2 Conditions					
			AM			PM		
			Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]	Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]
1	City Center Drive / Project Driveway	One-Way Stop	10.6	B	20	11.7	B	20
2	Foothill Boulevard / Project Driveway	One-Way Stop	10.3	B	20	9.7	A	20
3	Hazel Avenue / Project Driveway	One-Way Stop	10.2	B	20	11.6	B	20

Notes:

[1]. Delay = Average control delay in seconds per vehicle.

[2]. LOS = Level of Service.

[3]. Reported values of 95th percentile Queues are for the outbound movements at the project driveways.

CUMULATIVE CONDITIONS

This section details expected traffic conditions under Cumulative Conditions. TJKM developed 2040 turning movement volumes for all study intersections based on the latest version of the Alameda County travel demand model. TJKM determined the difference in 2005 base year and 2035 buildout year volumes for study area model links and factored the difference to account for 20 years of traffic growth. This result was then applied proportionately to Existing Conditions turning movement volumes to generate Year 2035 turning movement volumes. At the direction of City staff, an additional factor of one percent annual growth over five years was applied to develop 2040 traffic volumes.

It should be noted that for approaches where the model predicted a decrease or no change in traffic between the base year and the future year, TJKM assumed the existing turning movements for that approach would be constant through the year 2040. **Figure 12** shows the resulting turning movement volumes under Cumulative Conditions for all study intersections, along with lane geometries and traffic controls. Lane geometries and traffic controls are assumed to be identical to those under Existing Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS - CUMULATIVE CONDITIONS

The intersection LOS analysis results for Cumulative Conditions are summarized in **Table 18**. Detailed calculation sheets for Cumulative Conditions are contained in **Appendix H**. Under this scenario, all the intersection operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for the following intersections.

- Mission Boulevard / "A" Street (#1) during the PM peak hour (LOS F)
- Foothill Boulevard / Hazel Avenue (#3) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Hotel Avenue (#5) during the AM and PM peak hours (LOS F/F, respectively)
- Foothill Boulevard / Grove Way (#10) during the AM peak hour (LOS F)
- Mission Boulevard / Grove Way (#11) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Sunset Boulevard (#12) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Simon Street (#15) during the AM and PM peak hours (LOS F/F, respectively)

Figure 16 shows the resulting turning movement volumes under Cumulative Conditions for all study intersections, along with lane geometries and traffic controls.

It should be noted that for some the intersections LOS/Delay improves from Background to Cumulative conditions. Optimized signal timings were used for Cumulative Conditions analysis instead of existing signal timings. Additionally, a peak hour factor of 0.95 was used for Cumulative Conditions analysis instead of existing peak hour factors. This includes those intersections that are under Sydney Coordinated Adaptive Traffic System (SCATS) control.

Table 18: Intersection Level of Service Analysis – Cumulative Conditions

ID	Study intersection	Control	Peak Hour[1]	Delay[2]	LOS[3]
1	Mission Boulevard / "A" Street	Signalized	AM	70.7	E
			PM	**92.7**	**F**
2	Foothill Boulevard / "A" Street	Signalized	AM	47.2	D
			PM	29.5	C
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	**88.6**	**F**
			PM	**144.3**	**F**
4	Foothill Boulevard / City Center Drive	Signalized	AM	24.6	C
			PM	76.7	E
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	**359.4**	**F**
			PM	**536.8**	**F**
6	Main Street / Hotel Avenue	One-Way Stop	AM	14.7	B
			PM	19.3	C
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	17.7	C
			PM	15.1	C
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.5	A
			PM	9.1	A
9	Main Street / Hazel Avenue	All-Way Stop	AM	40.9	E
			PM	39.3	E
10	Foothill Boulevard / Grove Way	Signalized	AM	**99.7**	**F**
			PM	70.7	E
11	Mission Boulevard / Grove Way	Signalized	AM	**244.2**	**F**
			PM	**229.6**	**F**
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	**161.6**	**F**
			PM	**141.2**	**F**
13	Mission Boulevard / "B" Street	Signalized	AM	14.7	B
			PM	12.0	B
14	Foothill Boulevard / "B" Street	Signalized	AM	33.2	C
			PM	52.6	D
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	**OVFL (Err)**	**F**
			PM	**OVFL (Err)**	**F**

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

OVFL = Overflow conditions where delays are greater than 999.9 seconds per vehicle

ERR = Unstable operating conditions. Accurate LOS may not be calculated.

Bold text indicates intersection operates at a deficient Level of Service.

Cumulative Conditions Traffic Volumes, Lane Geometry, and Traffic Controls

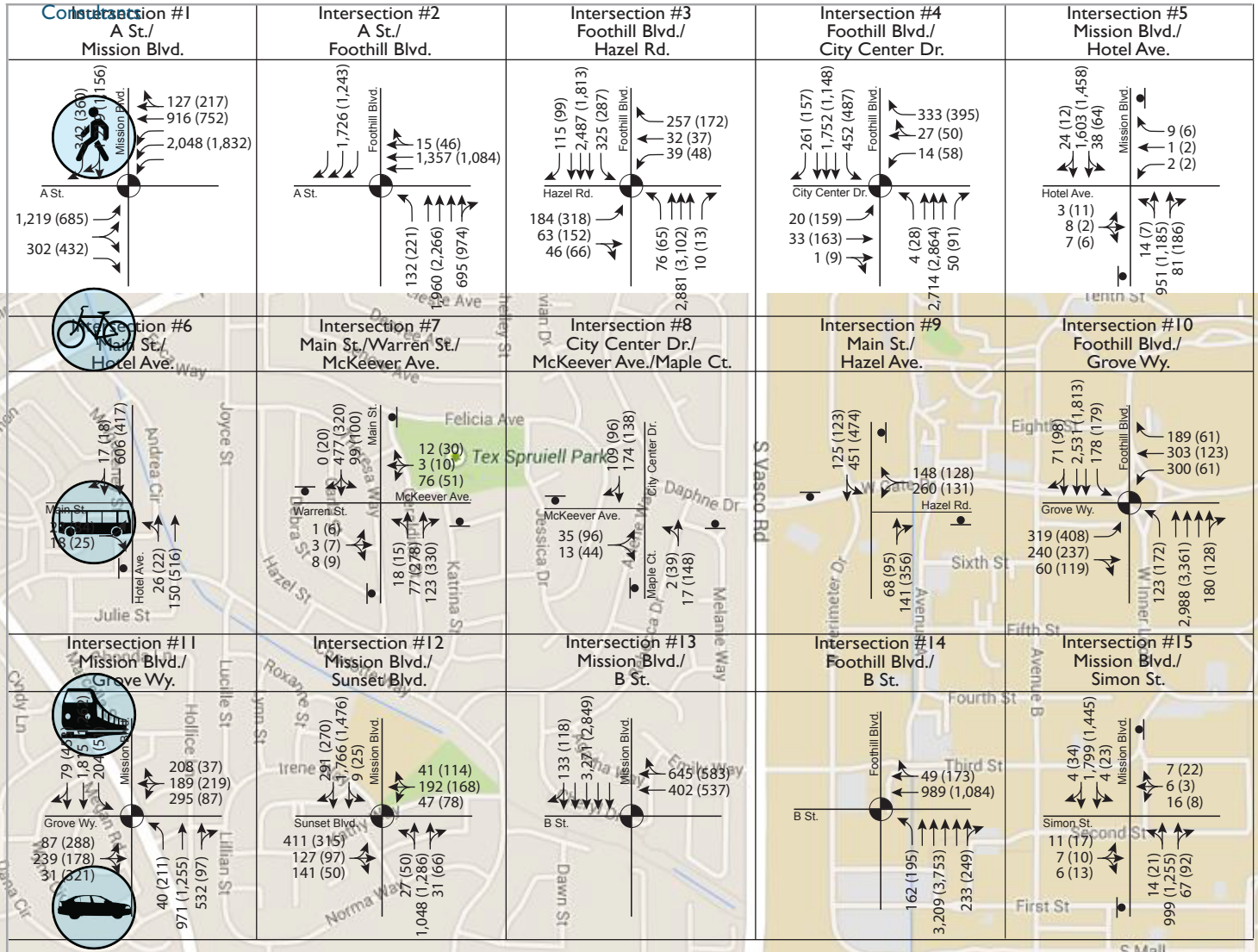

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Figure 16

CUMULATIVE PLUS PROJECT PHASE 1 AND 2 CONDITIONS

This scenario is similar to Cumulative Conditions, but with the addition of traffic expected to be generated by the proposed Lincoln Landing Mixed-Use Development Phase 1 and 2. **Figure 14** shows the turning movement volumes, lane geometry, and traffic controls under Cumulative plus Proposed Project Phase 1 and 2 Conditions for all study intersections.

INTERSECTION LEVEL OF SERVICE ANALYSIS - CUMULATIVE PLUS PROJECT PHASE 1 AND 2 CONDITIONS

The intersection LOS analysis results for Cumulative plus Project Phase 1 and 2 Conditions are summarized in **Table 19**. Detailed calculation sheets for Background plus Project Phase 1 and 2 Conditions are contained in **Appendix I**. Under this scenario, all the study intersections are expected to continue operating within the City of Hayward (LOS E) standards except for the following intersections.

- Mission Boulevard / "A" Street (#1) during the PM peak hour (LOS F)
- Foothill Boulevard / Hazel Avenue (#3) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Hotel Avenue (#5) during the AM and PM peak hours (LOS F/F, respectively)
- Foothill Boulevard / City Center Drive (#4) during the PM peak hour (LOS F)
- Foothill Boulevard / Grove Way (#10) during the AM peak hour (LOS F)
- Mission Boulevard / Grove Way (#11) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Sunset Boulevard (#12) during the AM and PM peak hours (LOS F/F, respectively)
- Mission Boulevard / Simon Street (#15) during the AM and PM peak hours (LOS F/F, respectively)

Figure 17 shows projected turning movement volumes at all of the study intersections for Cumulative plus Project Phase 1 and 2 Conditions. The results for Cumulative Conditions are included for comparison purposes, along with the projected increases in control delay.

The peak-hour signal warrant from the Manual of Uniform Traffic Control Devices (CA MUTCD) was evaluated for the unsignalized intersections that operate unacceptably under Cumulative plus Project Phase 1 and 2 conditions to determine if a traffic signal is warranted. Both the unsignalized intersections Mission Boulevard / Hotel Avenue (#5) and Mission Boulevard / Simon Street (#15) do not meet CA MUTCD peak hour signal warrant in a.m. and p.m. peak hours. MUTCD peak hour signal warrants sheets conditions are contained in **Appendix I.**

The intersection of Mission Boulevard / Simon Street (#15) operates at LOS F during the a.m. and p.m. peak hours under overflow conditions. Overflow conditions occurs when approach/approaches experience delays greater than 999.9 seconds per vehicle. For the unsignalized intersection of Mission Boulevard / Simon Street (#15), the major street (Mission Boulevard) volumes are very high on both approaches, so on the minor street (Simon Street) there are insufficient gaps. In particular, the left turns experience long wait times at this intersection. Hence, the minor street approaches experience higher delays. Thus, the LOS F operations only apply to the Simon Street approaches, which have very low volumes.

Based on the impact criteria listed in section Significant Impact Criteria/Level of Service Standards, the proposed Lincoln Landing project under Cumulative plus project Phase 1 and 2 Conditions will have significant impact at three study intersections during the following peak hours:

- Intersection #3 - Foothill Boulevard / Hazel Avenue during the AM and PM peak hours (LOS F/F, respectively)
- Intersection #4 - Foothill Boulevard / City Center Drive during the PM peak hour (LOS F)
- Intersection #12 - Mission Boulevard / Sunset Boulevard during the AM and PM peak hours (LOS F/F, respectively)

Table 19: Intersection Level of Service Analysis – Cumulative plus Project Phase 1 and 2 Conditions

ID	Study Intersections	Control	Peak Hour [1]	Cumulative Conditions		Cumulative plus Phase 1 Conditions		*Δ in Control Delay (sec)[4]*
				Delay[1]	LOS[2]	Delay[2]	LOS[3]	
1	Mission Boulevard / "A" Street	Signalized	AM	70.7	E	74.5	E	3.8
			PM	**92.7**	**F**	**96.6**	**F**	3.9
2	Foothill Boulevard / "A" Street	Signalized	AM	47.2	D	52.9	D	5.7
			PM	29.5	C	30.6	C	1.1
3	Foothill Boulevard / Hazel Avenue	Signalized	AM	**88.6**	**F**	**101.3**	**F**	**12.7**
			PM	**144.3**	**F**	**153.8**	**F**	**9.5**
4	Foothill Boulevard / City Center Drive	Signalized	AM	24.6	C	32.5	C	7.9
			PM	76.7	E	**91.9**	**F**	**15.2**
5	Mission Boulevard / Hotel Avenue	Two-Way Stop	AM	**359.4**	**F**	**368.6**	**F**	9.2
			PM	**536.8**	**F**	**571.3**	**F**	34.5
6	Main Street / Hotel Avenue	One-Way Stop	AM	14.7	B	15.4	C	0.7
			PM	19.3	C	20.7	C	1.4
7	Main Street / Warren Street / McKeever Avenue	All-Way Stop	AM	17.7	C	19.0	C	1.3
			PM	15.1	C	16.5	C	1.4
8	City Center Drive / McKeever Avenue / Maple Court	All-Way Stop	AM	8.5	A	8.9	A	0.4
			PM	9.1	A	9.8	A	0.7
9	Main Street / Hazel Avenue	All-Way Stop	AM	40.9	E	45.1	E	4.2
			PM	39.3	E	46.8	E	7.5
10	Foothill Boulevard / Grove Way	Signalized	AM	**99.7**	**F**	**102.8**	**F**	3.1
			PM	70.7	E	76.6	E	5.9
11	Mission Boulevard / Grove Way	Signalized	AM	**244.2**	**F**	248.4	F	4.2
			PM	**229.6**	**F**	231.9	F	2.3
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	**161.6**	**F**	**185.2**	**F**	**23.6**
			PM	**141.2**	**F**	**186.1**	**F**	**44.9**
13	Mission Boulevard / "B" Street	Signalized	AM	14.7	B	15.3	B	0.6
			PM	12.0	B	12.0	B	0.0
14	Foothill Boulevard / "B" Street	Signalized	AM	33.2	C	33.6	C	0.4
			PM	52.6	D	54.3	D	1.7
15	Mission Boulevard / Simon Street	Two-Way Stop	AM	**OVFL (Err)**	**F**	**OVFL (Err)**	**F**	-
			PM	**OVFL (Err)**	**F**	**OVFL (Err)**	**F**	-

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

[4]. Change in average control delay between Cumulative and Cumulative plus Project Phase 1 and 2 Conditions

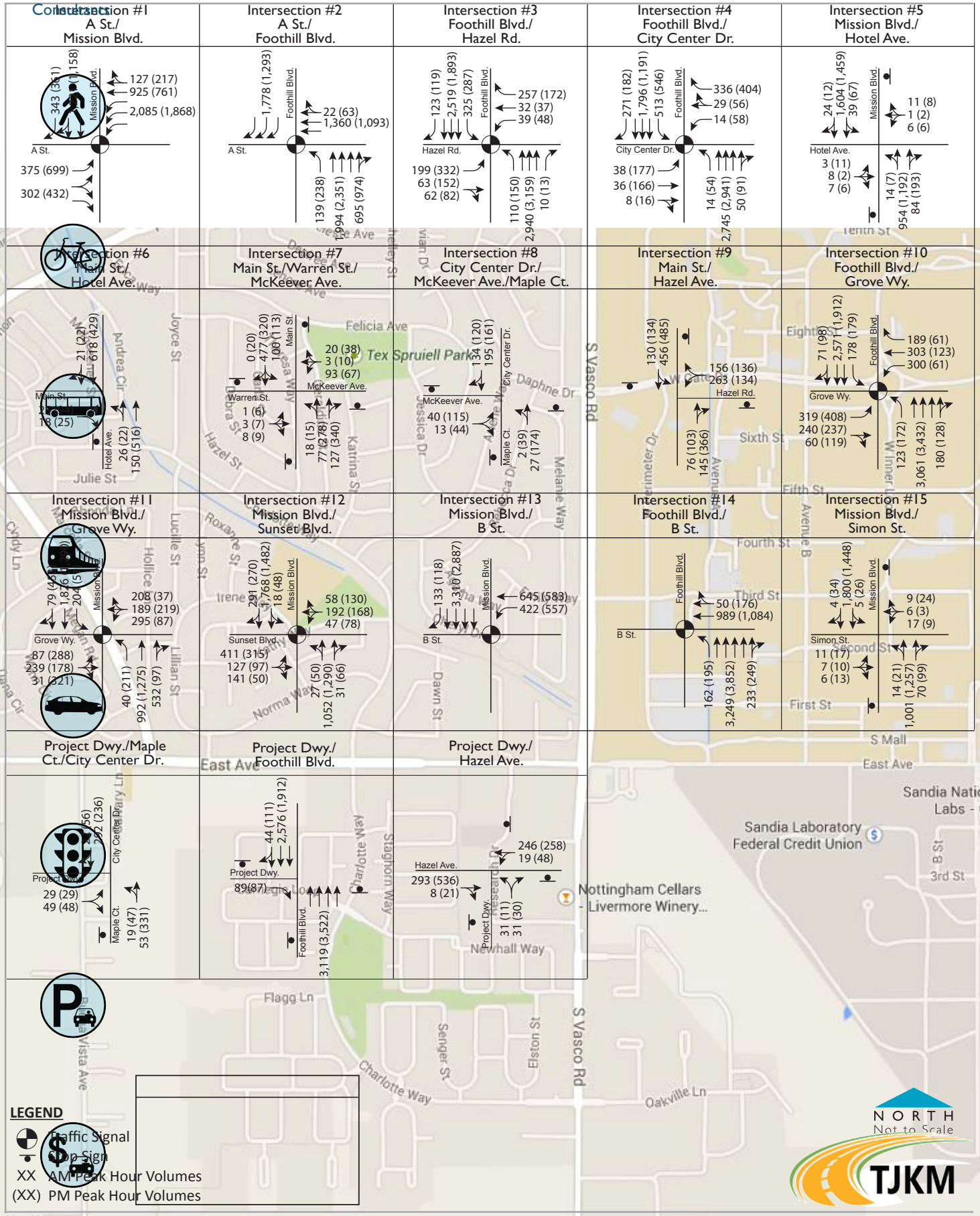
OVFL = Overflow conditions where delays are greater than 999.9 seconds per vehicle

ERR = Unstable operating conditions. Accurate LOS may not be calculated.

Bold text indicates intersection operates at a deficient Level of Service.

Bold and underlined indicates a potentially significant impact.

Cumulative plus Project Phase 1 and 2 Conditions Traffic Volumes, Lane Geometry and Traffic Controls



064-120

Figure 17

MITIGATION MEASURES - CUMULATIVE PLUS PROJECT PHASE 1 AND 2 CONDITIONS

Foothill Boulevard/Hazel Avenue (#3) – With the addition of project traffic, the increase in average delay at Foothill Boulevard / Hazel Avenue is expected to be 12.7 seconds during the a.m. peak hour and 9.5 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Cumulative plus Project Phase 1 and 2 Conditions.

A mitigation of restriping northbound approach to one left only lane, three through lanes and one shared through right lanes and adding a second left turn lane to the eastbound approach would improve approach operations at the Foothill Boulevard/Hazel Avenue (#3) intersection to LOS D in a.m. peak hour LOS E in p.m. peak hour. This mitigation measure would consist of restriping the right-most northbound approach right lane to a shared through right turn lane and accommodate one receiving lane for the proposed shared through right lane on the other side of the intersection of approximately 500 feet and merging back to three lanes.

This would require removal of parking along the site frontage on the east side of Foothill Boulevard north of Hazel Avenue/City Center Drive to accommodate the receiving lane. On the north side of Foothill Boulevard, about 250 feet of existing parking would need to be removed because the right most northbound through lane would need to use the parking area. This parking is located along the Foothill Boulevard frontage of retail businesses and residences. This mitigation would also require acquisition of right-of-way and removing on-street parking on the north side and south side of the eastbound approach (Hazel Avenue).

As a result of this mitigation measure, intersection conditions would improve to LOS D with 43.6 seconds of delay in the AM peak and LOS E with 75.8 seconds of delay in the PM peak. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.

Figure 18 illustrates the proposed mitigations for the intersection of Foothill Boulevard/Hazel Avenue for Cumulative plus project Phase 1 and 2 Conditions.

Foothill Boulevard / City Center Drive (#4) - With the addition of project traffic, the increase in average delay at Foothill Boulevard / City Center Drive is expected to be 15.2 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a *significant impact*, and mitigation is necessary at this intersection under Cumulative plus Project Phase 1 and 2 Conditions. The proposed mitigation at this intersection is the same as Background plus Project Phase 1. As a result of this mitigation measure, intersection conditions would improve to LOS E with 72.9 seconds of delay in the PM peak. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.

Figure 14 illustrates the proposed mitigations for the intersection of Foothill Boulevard/City Center Drive for Cumulative plus project Phase 1 and 2 Conditions.

Mission Boulevard/Sunset Boulevard (#12) - With the addition of project traffic, the increase in average delay at Foothill Boulevard / City Center Drive is expected to be 23.6 seconds during the a.m. peak hour and 44.9 seconds during the p.m. peak hour, which is above the five-second threshold for intersections already operating at a deficient LOS. Thus, the addition of project traffic is expected to result in a significant impact, and mitigation is necessary at this intersection under Cumulative plus Project phase 1 and 2 Conditions.

A mitigation of restriping both eastbound and westbound approaches to one shared through left lane and one shared through right lane would improve approach operations at the Mission Boulevard/Sunset Boulevard intersection to acceptable levels of service in both a.m. and p.m. peak hours. This mitigation would also require acquisition of right-of-way and removing on-street parking on the north side and south side of the both eastbound and westbound approaches (Sunset Boulevard).

As a result of this mitigation measure, intersection conditions would improve to LOS D with 52.0 seconds of delay in the AM peak and LOS C with 29.3 seconds of delay in the PM peak.

Figure 19 illustrates the proposed mitigations for the intersection of Mission Boulevard/Sunset Boulevard for Cumulative plus project Phase 1 and 2 Conditions.

Table 20 provides the LOS/Delay comparison between "with no Project", "with project" and "Mitigated" and indicates the proposed mitigation for Cumulative plus Phase 1 and 2 Conditions.

Detailed calculation sheets for Cumulative plus Project Phase 1 and Phase 2 Conditions mitigations are contained in **Appendix I**.

Table 20: Delay and LOS for Cumulative plus Project Phase 1 and 2 mitigations

Study Intersections		Control	Peak Hour[1]	Cumulative Conditions		Cumulative plus Phase 1 & 2 Conditions		*Δ in Delay (sec)* Delay[4]
				Delay[2]	LOS[3]	Delay[2]	LOS[3]	
3	Foothill Boulevard / Hazel Road	Signalized	AM	88.6	F	101.3	F	12.7
			PM	144.3	F	153.8	F	9.5
	Mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lanes and adding a second left turn lane to the eastbound approach		AM	88.6	F	43.6	D	-45.0
			PM	144.3	F	75.8	E	-68.5
4	Foothill Boulevard / City Center Drive	Signalized	AM	24.6	C	32.5	C	7.9
			PM	76.7	E	91.9	F	15.2
	Mitigation - Restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane		AM	24.6	C	26.2	C	1.6
			PM	76.7	E	72.9	E	-3.8
12	Mission Boulevard / Sunset Boulevard	Signalized	AM	161.6	F	185.2	F	23.6
			PM	141.2	F	186.1	F	44.9
	Mitigation - Restriping both eastbound and westbound approaches to one shared through left lane and one shared through right lane		AM	161.6	F	52.0	D	-109.6
			PM	141.2	F	29.3	C	-111.9

Notes:

[1]. AM = morning peak hour, PM = evening peak hour

[2]. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized intersections and all-way stop – controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.

[3]. LOS = Level of Service. LOS calculations conducted using the Synchro 8 level of service analysis software package, which applies the method described in the 2000 Highway Capacity Manual.

[4]. Change in average control delay between Cumulative and Cumulative plus Project Phase 1 and 2 Conditions

OVFL = Overflow conditions where delays are greater than 999.9 seconds per vehicle

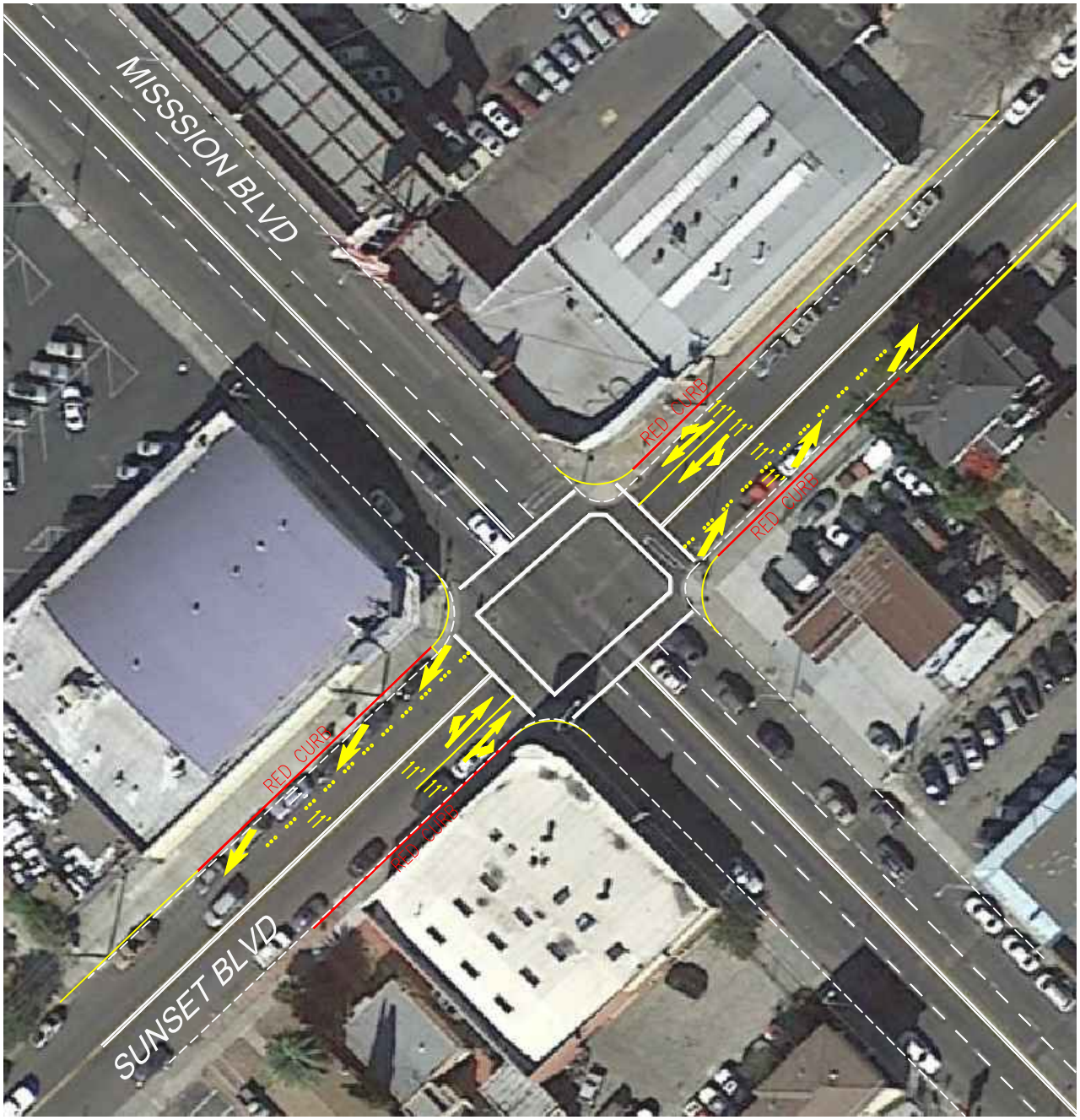
ERR = Unstable operating conditions. Accurate LOS may not be calculated.

PROPOSED MITIGATION FOR FOOTHILL BOULEVARD / HAZEL AVENUE

PROPOSED MITIGATIONS FOR CUMULATIVE PLUS PROJECT 1 AND 2

TJKM 4305 Hacienda Drive, Suite 550 Pleasanton, CA 94588 tjkm@tjkm.com	INTERSECTION EXHIBIT	SCALE 1" = 60'
		DATE: MAY 12, 2016
	FOOTHILL BOULEVARD AND HAZEL AVENUE	BY: VQ
	CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA	FIGURE 18

PROPOSED MITIGATION FOR MISSION BOULEVARD / SUNSET BOULEVARD



PROPOSED MITIGATION FOR CUMULATIVE PLUS PROJECT PHASE 1 AND 2

N

TJKM 4305 Hacienda Drive, Suite 550 Pleasanton, CA 94588 tjkm@tjkm.com	INTERSECTION EXHIBIT	SCALE 1" = 60'
		DATE: MARCH 24, 2016
	MISSION BOULEVARD & SUNSET BOULEVARD	BY: VQ
	CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA	FIGURE 19

Queuing Analysis At Study Intersections

TJKM conducted a vehicle queuing and storage analysis for all exclusive left and right turn pockets at selected study intersections and driveways where project traffic is added under Cumulative plus Project Phase 1 and 2 Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the exclusive left turn/right turn pockets at the study intersections where project traffic is added. Detailed calculations are included in the LOS appendices corresponding to the Cumulative and Cumulative plus Project Phase 1 and 2 analysis scenarios. **Table 21** summarizes the 95th percentile queue lengths at these intersections under the two scenarios.

Table 21: 95th% Queues at Turn Pockets Affected by Project Traffic – Cumulative plus Phase 1 and 2 Conditions

ID	Study Intersections	Lane Group	Storage Length per lane (feet)	Cumulative Conditions		Cumulative plus Phase 1 and 2 Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	Mission Boulevard / "A" Street	EBL	360	**380**	**620**	**400**	**640**	20	20
		SBR	100	40	**340**	40	**340**	0	0
2	Foothill Boulevard / "A" Street	NBL	400	140	100	140	100	0	0
		SBR	730	**820**	480	**860**	540	40	60
3	Foothill Boulevard / Hazel Avenue	SBR	100	20	20	20	40	0	20
		EBL	100	**400**	**620**	**440**	**640**	40	20
		NBL	550	180	120	180	320	0	200
4	Foothill Boulevard / City Center Drive	SBR	170	60	40	120	40	60	0
		SBL	420	**740**	**820**	**860**	**940**	120	120
		EBL	80	60	**340**	120	**380**	60	40
		NBL	220	20	40	20	80	0	40
10	Foothill Boulevard / Grove Way	NBL	180	140	120	140	120	0	0
11	Mission Boulevard / Grove Way	SBL	220	**380**	100	**460**	100	80	0

Notes:

Bold indicates 95th Percentile Queue exceeds storage length expressed in feet per lane.

EBL = Eastbound Left Turn; SBR = Southbound Right Turn; NBL = Northbound Left; SBL = Southbound Left Turn.

Mission Boulevard / "A" Street (#1) – For this intersection both eastbound left turn and southbound right turn available queuing capacity is exceeded for p.m. peak hour under both Cumulative and Cumulative plus Project Phase 1 and 2 scenarios. However, the project increases the queue by maximum of one vehicle per cycle in the peak 15 minutes during the p.m. peak hour for eastbound left turn, a minor change.

Foothill Boulevard / "A" Street (#2) – For this intersection northbound left turn available queuing capacity does not exceeded for both a.m. and p.m. peak hours and southbound right turn available queuing capacity exceed p.m. peak hour under both Cumulative and Cumulative plus Project Phase 1 and 2

scenarios. The project increases the queue by maximum of Three vehicles per cycle in the peak 15 minutes during the peak hours, which is accommodated by the existing storage.

Foothill Boulevard / Hazel Avenue (#3) – For this intersection eastbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Cumulative and Cumulative plus Project Phase 1 and 2 scenarios. The City of Hayward has no standards of significance that apply to queuing; the project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. In the worst case, the proposed project is expected to add around 200 feet of queuing in the p.m. peak hour (a maximum of 10 vehicles per cycle in the peak 15 minutes) to the existing northbound left turn queues but the storage length of 550 feet can accommodate projected queues.

Foothill Boulevard / City Center Drive (#4) – For this intersection southbound left turn available queuing capacity is exceeded for both a.m. and p.m. peak hours under both Cumulative and Cumulative plus Project Phase 1 and 2 scenarios. The project increases the queue by maximum of two vehicles per cycle in the peak 15 minutes during the peak hours, a minor change. For southbound left turns, in the worst case, the proposed project is expected to add 120 feet (a maximum of 6 vehicles per cycle in the peak 15 minutes) in the both a.m. and p.m. peak hours queuing to the existing. In addition, the project does not create additional queuing issues at any locations other than those currently exceeding storage capacities.

Foothill Boulevard / Grove Way (#10) – For this intersection northbound left turn available queuing capacity is exceeded for the p.m. peak hour under both Cumulative and Cumulative plus Project Phase 1 and 2 scenarios. However, the project increases the queue by maximum of one vehicle per cycle during the peak 15 minutes during the peak hours, a minor change.

Mission Boulevard / Grove Way (#11) – For this intersection southbound left turn available queuing capacity is not exceeded for both a.m. and p.m. peak hours under both Cumulative and Cumulative plus Project Phase 1 and 2 scenarios.

Queuing and Level Of Service Analysis at project driveway

TJKM conducted a vehicle queuing and LOS analysis at the proposed project driveways on Hazel Avenue, Foothill Boulevard, and City Center Drive. For a conservative approach TJKM analyzed this TIA with one full access project driveway on Hazel Avenue and City Center Drive and one partial access driveway (right in/right out) on Foothill Boulevard. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 8.0 software for the project driveways. Detailed calculations are included in the LOS appendices corresponding to the Cumulative plus Project Phase 1 and 2 analysis scenarios in **Appendix I. Table 22** summarizes the 95th percentile queue lengths and LOS at the project driveways under Background plus Project Phase 1 and 2 scenario. As shown in **Table 22**, under Cumulative plus Project Phase 1 and 2 Conditions, all project driveways are expected to operate at an acceptable level of service. In addition, the 95th percentile queueing at the outbound approach of project driveways is expected to be minimal.

Table 22: 95th% Queues and LOS at Project Driveways-Cumulative plus Project Phase 1 and 2 Conditions

ID	Intersection	Control	Cumulative Plus Project Phase 1 and 2 Conditions					
			AM			PM		
			Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]	Delay[1]	LOS[2]	95th percentile Queue (ft.)[3]
1	City Center Drive / Project Driveway	One-Way Stop	11.2	B	20	12.6	B	20
2	Foothill Boulevard / Project Driveway	One-Way Stop	11.7	B	20	10.3	B	20
3	Hazel Avenue / Project Driveway	One-Way Stop	11.2	B	20	14.6	B	20

Notes:

[1]. Delay = Average control delay in seconds per vehicle.

[2]. LOS = Level of Service.

[3]. Reported values of 95th percentile Queues are for the outbound movements at the project driveways.

SITE ACCESS AND ON-SITE CIRCULATION AND OTHER IMPACTS

SITE ACCESS

This section analyzes site access and internal circulation for vehicles, pedestrians and bicycles based on the site plan presented on **Figure 2** and **Figure 3**. TJKM reviewed internal and external access for the project site for vehicles, pedestrians, and bicycles.

The site access and on-site circulation is considered adequate with recommended changes described below. These recommendations address on-site vehicle circulation and reduce driver confusion. Active and transit mode recommendations include provision of on-site pedestrian and bicycle facilities, direct connections off-site facilities, and efficient linkages with existing and potential future transit stops external to the site.

TJKM reviewed the proposed project site plan to evaluate on-site access to the project. The proposed access to the site will be via two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive as shown in the project site plan **Figures 2 and 3** dated February 1, 2016. The dispersion of project traffic to numerous access points will avoid creating heavy turning movements into the project site.

TJKM analyzed this TIA with one full access project driveway on Hazel Avenue and on City Center Drive and one partial access driveway (right in/right out) on Foothill Boulevard. Based on a preliminary review of the project conceptual plans (**Figure 2 and Figure 3**), all project driveways are well-spaced, properly aligned with opposing driveways and provide adequate distance away from public intersections except for the eastern driveway on City Center Drive. This in turn will manage queuing associated with vehicles entering the project site and minimize queues spilling back into downstream public intersections. The project driveways are expected to operate at an acceptable LOS. In addition, the 95th percentile queueing at the outbound approach of project driveways is expected to be minimal.

It should be noted that the limited access driveway on City Center Drive is very close (approximately 70 feet) to the intersection of Foothill Boulevard and City Center Drive. Because of its close proximity to the public intersections and improper sight distance there would be operational issues at this project driveway. Hence it is recommended to not to have a driveway at this location. TJKM recommends that the north curb line be recessed 10 to 12 feet to accommodate a westbound right turn deceleration lane for the full access driveway on the City Center Drive, primarily serving the garage. This should improve the safety and capacity of the westbound lanes. The project driveways should be designed to City of Hayward access standards. TJKM finds that the proposed configurations would be adequate for the project with the above recommendations on driveways on City Center Drive. Some redesign of circulation may be required to achieve proper access due to the removal of the driveway.

The internal circulation for the proposed residential and retail parking areas was reviewed for issues related to queueing, dead end aisles, parking spaces that may be difficult to maneuver in and out of. All circulation aisles accommodate two-way travel and all of the proposed parking spaces are perpendicular to the drive aisle centerline. All the designated accessible parking spaces are provided near elevators in the parking garage for the residential portion of the site. Pedestrian walkways are provided for the retail area of the site. All the drive aisles have a minimum width of 24 feet for both the residential and retail areas. It is recommended that dead-end aisles be extended at least eight feet beyond the last parking space to allow cars to maneuver in and out of the last parking space of each side.

Service and emergency vehicles have access to the proposed mixed-use development via all the proposed driveways. These vehicles will circulate through the parking structure to the trash enclosures and service entrance. To confirm the trucks can circulate on-site, a truck turning analysis and stopping sight distance analysis for the proposed driveways should be completed for the final site plan.

PARKING

This section discusses vehicle parking for the proposed project and includes an assessment of whether the proposed parking supply is adequate. The amount of parking needed for a residential and retail development is based on a number of factors including the employee density, the availability of transit services near the site, the existence of TDM measures, and the location of the site relative to other uses and destinations.

The City of Hayward Zoning Ordinance Section 10-11.555 requires 1.5 parking spaces per residential unit and one space per 315 square feet of non-residential floor area. Based on the City's parking requirements the project requires 970 parking spaces. The preliminary project site plan proposes approximately 1,080 parking stalls (9 feet by 19 feet) which includes existing 579 stalls of four level existing parking structure, 451 surface parking stalls and 150 parking stalls on the lower levels. The project proses to provide 24 accessible parking spaces and 8 van accessible parking spaces. TJKM reviewed the off-street parking requirements for the Lincoln Landing mixed-use project as set forth by the City of Hayward Municipal Code. The project sponsor will provide a sufficient amount of off-street parking spaces for the entire project that meets City code.

It should be noted that this project has opportunities for on-site shared parking in which stalls primarily intended for employee and customer parking in the daytime and also serve residential needs on an overnight basis. This, coupled with a planned aggressive transportation demand management program, along with the potential for unbundling the residential parking, suggest that an overabundance of supplied parking could be counter-productive to reducing this project's contribution of single-occupant vehicular usage. See the section of this report dealing with transportation demand management for a full range of alternatives that should be considered.

On and Off-Street Parking Inventory

On street parking occupancy surveys were conducted in May 2015 on a typical weekday during the morning and the evening peak periods to determine peak parking demand for the following segments and parking lots in the project vicinity:

- Hazel Avenue between Main Street and Foothill Boulevard
- McKeever Avenue between City Center and Main Street
- Main Street between Hazel Avenue and McKeever Avenue
- Foothill Boulevard between City Center Drive and "A" Street
- Maple Court between McKeever Avenue and "A" Street
- Municipal Parking Lot 5 on Maple Court

Tables 23 and **24** summarize the findings for a.m. and p.m. peak periods respectively. According to on-street parking surveys conducted by TJKM staff, there are 143 spaces available on-street spaces within one block segment of the project and 142 spaces available within the municipal parking lot on Maple Court. During the a.m. peak period, the maximum on-street parking occupancy within the project vicinity is approximately 73 percent on Hazel Avenue during the 8:30 a.m. observation. During the p.m. peak period, there is 58 percent occupancy on Main Street during the 6:00 p.m. observation. During the a.m. peak period, the maximum parking occupancy within the municipal parking lot is approximately 10 percent during the 7:00, 8:00, and 8:30 a.m. observations. The maximum parking occupancy during the p.m. peak period is approximately 65 percent during the 6:00 p.m. observation. The patrons of the proposed development can utilize these available on-street parking spaces.

Table 23: On-Street Parking Demand - AM Peak Period

Street	Side of the Street	Inventory	AM Occupancy				AM Occupancy %			
			7:00	7:30	8:00	8:30	7:00	7:30	8:00	8:30
Hazel Avenue - Foothill Boulevard to Main Street	North	11	6	3	6	8	55%	27%	55%	73%
	South	15	4	4	4	4	27%	27%	27%	27%
McKeever Ave - Maple Court to Main Street	North	22	6	7	9	9	27%	32%	41%	41%
	South	12	4	4	5	6	33%	33%	42%	50%
Main Street - Hazel Avenue to McKeever Avenue	East	23	12	11	11	12	52%	48%	48%	52%
	West	26	9	8	9	14	35%	31%	35%	54%
Foothill Boulevard - City Center Drive to A Street	West	24	1	1	1	0	4%	9%	9%	0%
Maple Court - McKeever Avenue to A Street	West	10	1	1	0	0	9%	9%	0%	0%
Maple Court Parking Lot	N/A	143	14	12	14	15	10%	8%	10%	10%

Table 24: On-Street Parking Demand – PM Peak Period

Street	Side of the Street	Inventory	PM Occupancy				PM Occupancy %			
			6:00	6:30	7:00	7:30	6:00	6:30	7:00	7:30
Hazel Avenue - Foothill Boulevard to Main Street	North	11	2	2	2	2	18%	18%	18%	18%
	South	15	5	5	5	5	33%	33%	33%	33%
McKeever Ave - Maple Court to Main Street	North	22	5	5	5	6	23%	23%	23%	27%
	South	12	1	1	2	3	8%	8%	17%	25%
Main Street - Hazel Avenue to McKeever Avenue	East	23	10	9	12	12	43%	39%	52%	52%
	West	26	15	15	14	14	58%	58%	54%	54%
Foothill Boulevard - City Center Drive to A Street	West	24	9	13	8	9	38%	54%	33%	38%
Maple Court - McKeever Avenue to A Street	West	10	2	3	2	1	20%	30%	20%	10%
Maple Court Parking Lot	N/A	143	93	73	67	61	65%	51%	47%	43%

Pedestrian Access

Pedestrian access to the project site will be facilitated by existing sidewalks on Hazel Avenue, City Center Drive and Foothill Boulevard, as well as proposed internal pedestrian circulation facilities within the immediate vicinity of the project. In terms of pedestrian facilities, the sidewalk is continuous along both sides of Foothill Boulevard. On Hazel Avenue, sidewalks are discontinuous along the north side of the roadway. On City Center Drive, sidewalks are discontinuous along the west side of the roadway. The signalized study intersections provide crosswalks and pedestrian count down signals to provide for movements at the intersection. The project is expected to generate demand for sidewalks to allow pedestrians to access nearby bus stops, and adjacent land uses. To accommodate all users of the street system and provide a complete and connected pedestrian facility between the project site and transit service, it is recommended that sidewalks be provided along the project frontage as per the City of Hayward standards and the design should meet ADA requirements for a comfortable walking environment.

During the evening peak period, and to a lesser extent during the morning peak period, large pedestrian volumes are anticipated to cross the parking lot drive aisles. Therefore, to accommodate these high pedestrian volumes, it is recommended that the pedestrian crossings be enhanced with high-visibility treatments, corner bulbouts and signage. These improvements should meet ADA requirements and include direct travel paths from the parking areas to retail and apartment buildings.

Bicycle Access

Within the project vicinity, Main Street has Class III bicycle facilities (on street, with signage only) are currently provided along City Center Drive, 2nd Street, and "A" Street. There are no Class I (off-street, shared path) or Class II routes (on-street, striped lanes) currently in the vicinity of the project. As per the City of Hayward Bicycle Master Plan, Figure 6-1: Proposed Bikeways (October 2007), Main Street has planned Class II Bike lanes between A Street and D Street and also a Class III Bike Route is planned for Mission Boulevard between A Street and D Street. The proposed project does not conflict with existing or planned bicycle facilities. The project would increase bicycle demand and the project should ensure appropriate bicycle accommodations are provided for the employees and visitors. These accommodations should be positioned in areas that are easily accessible and in locations that provide direct access to retail and residential uses on-site such as near building entrances for guest and employees. Bicycle parking should be monitored to ensure that provided bicycle parking is not over capacity.

San Lorenzo Creek is one of western Alameda County's primary waterways. In 2005, the District undertook protective measures to stabilize creek banks and retaining walls along a stretch of the creek between Foothill Boulevard and 6th Street in Hayward. A coalition of agencies including the City of Hayward, the Hayward Area Recreation and Park District, the National Park Service, the Alameda County Resource Conservation District -- worked together to restore the creek side trail along San Lorenzo Creek and beautify the area near City Center Drive in downtown Hayward. The Project plans to improve the eastern bank of San Lorenzo Creek on the west side of the Project to provide a multi-use corridor, generally between Hazel Avenue and Maple Court. This corridor would be ideally suited for pedestrian and bicycle uses.

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 proposed project would be generating approximately 37 transit trips in the a.m. peak hour and 72 transit trips in the p.m. peak hour.

The project site is approximately 3,500 feet walking distances from the Hayward BART Station. AC Transit service, which operates bus service within Alameda County, runs multiple transit routes through the study area along Foothill Boulevard, "B" Street, Main Street and Mission Boulevard. These bus routes operate near the project site with stops located within walking distance of the proposed development. The existing pedestrian facilities in the project vicinity have ADA compliant crosswalks and actuated pedestrian signals at all signalized study intersections which provides adequate connectivity for pedestrians to transit stops. Spread among multiple bus routes, the existing transit service can accommodate the proposed demand. The transit service within the immediate project site operates well below capacity, and additional trips generated by the proposed project could be accommodated by existing bus services. Therefore, impacts to transit service are expected to be less than significant.

However, TJKM recommends that the project applicant coordinate with the staff to facility and provide bus stop related amenities near the project site for AC Transit Line 48 and participate in Transportation Demand Management Strategies.

Streetlights

An on-site observation was performed to check whether there are existing light standards on Hazel Avenue, Foothill Boulevard, and City Center Drive/Maple Court. All aforementioned streets have an adequate number of light standards. Per the site plan, TJKM recommends the project sponsor install the required amount of light standards in the parking lots on the project site.

Transportation Demand Management Issues

Transportation Demand Management (TDM) measure reduction of nine percent is considered for the proposed project to be consistent with industry standards used in Bay Area cities with similar development patterns as City of Hayward and in consultation with City of Hayward Staff. This TIA analysis takes a reduction in trips related to TDM thus assuming that people will drive less and walk, bike, and take transit. The proposed project would be generating 37 transit trips in a.m. peak hour and 72 transit trips in p.m. peak hour. The project applicant shall provide effective TDM program with a monitoring program to justify the trip reduction percentage. The project sponsors should make every effort to ensure that the use of single occupant vehicles by residents, employees and shoppers of the proposed development be minimized. The items below represent some options for the City and the project applicant to consider:

- **Shuttle Services:** Provide a shuttle service for residents and employees to connect with the Hayward BART station, like funding the future Amtrak - Downtown Cannery loop shuttle service. This project maybe large enough, perhaps by combining with adjacent downtown developments to have its own peak hour shuttle service to and from BART and/or Amtrak.

- **Transit Passes**: Universal transit passes such as Clipper cards, would allow residents and employees alike to have subsidized services for AC Transit and BART. Many cities are now requiring such a subsidy to be provided by developers, employers, or even homeowner associations.

- **Car Sharing Programs:** Car sharing is a program in which people can rent cars, for shorter distances. The Zipcar is one such program, and is in use at the Cal State University East Bay in the Hayward hills not far from the Lincoln Landing project. Car sharing such as Zipcar allows some residents to not own personal autos, or at least second family cars. Hayward received an MTC grant to expand car sharing services to the downtown area. Lincoln Landing, with its higher housing density and significant amount of employees, is an ideal candidate to utilize car sharing services. Zipcar is a member program that could benefit from employer or homeowner association subsidies.

- **Unbundled Parking Costs:** The cost of parking for residential and commercial units is often passed on to the occupants indirectly through the rent or purchase price ("bundled") rather than directly through a separate charge. For example, a three bedroom unit might come with two parking spaces included in the purchase price or rent. This means that tenants or owners are not able to purchase

only as much parking as they need, and are not given the opportunity to save money by using fewer parking spaces. The alternative is to unbundle parking - rent or sell parking spaces separately, rather than automatically including them with building space. This is not only more equitable, but can also reduce the total amount of parking required for the building.
Unbundling can be done in several ways:

- ✓ Parking can be bought or rented separately when the apartment, condo, or office space is bought or leased.
- ✓ Renters can be offered a discount on their rent for not using parking spaces.
- ✓ Parking costs can be listed as a separate line item in lease agreements to show tenants the cost and enable them to negotiate reductions.
- ✓ Unbundling can be encouraged informally by creating a market for available parking spaces -- building managers can keep a list of tenants or owners with excess spaces available for rent.

If parking is unbundled from housing costs, residents can also be given options about having an assigned space or an unassigned space, with assigned spaces costing more because they cannot be shared by other residents.

At a minimum, developers should deed just one space per unit and allow owners to buy others or purchase a pass for a lot or garage without reserved spaces. Offering discounts for parking not needed rather than appearing to charge extra for parking may also be a more palatable step.

Hayward may need to encourage developers to unbundle the price of parking through flexible parking requirements that allow reductions for developments with unbundled parking, because when people can save money by having fewer cars, they may make different choices about investing in vehicles. The inflated supply of parking spaces means that the landlord would not be able to charge enough for a parking space to recover the cost if it was to be paid for separately. By bundling the parking cost with the housing cost, the parking automatically gets paid for, even if it is not needed or wanted. Correcting this requires that minimum parking requirements are relaxed or removed for unbundled parking to allow developers to provide only the spaces that residents will pay for if given the option.

If developments do charge separately for parking, there may be an incentive for tenants or owners to find other places to park their cars to escape the parking charge, potentially causing spillover effects. If on-street parking or nearby off-street lots for other uses are free and unregulated, they may soon be overrun. Some communities address this concern by prohibiting street parking overnight. Another approach is implement residential permit parking but prohibit residents of developments that supply off-street parking from obtaining permits.

- **Parking Cash Out Programs:** Parking cash out programs, which are authorized by state law in California, would apply better to office projects of larger employers who provide their own subsidized parking for employees. In the case of Lincoln Landing which provides subsidized parking for retail employees in the same lots as customers, this situation may not apply under the law.

- **Bicycle racks and lockers** for residents, employees and shoppers. These will be particularly useful for Lincoln Landing employees to encourage walking and bicycling to work, including bike sharing. Provisions for bicycle racks and lockers should be part of the Lincoln Landing conditions of approval.

- **On-site bike/ped amenities:** The overall layout of the site should be geared first of pedestrian and bicycle promotion. Careful planning of walkways within the site to facilitate walking by pedestrians to access nearby downtown features and to promote recreational uses by residents. These issues are described in previous sections of this report dealing with Pedestrian and Bicycle Access.

- **Promote Shared Parking**: Preferential carpool/vanpool parking should be provided for carpooling employees. The concept of shared parking should be considered for this development. In this instance, shared parking between the residential and non-residential uses, combined with unbundling the residential uses, should result in a substantial reduction of on-site parking for the overall Lincoln Landing development.

- **Bike Share Program:** According to San Francisco's bike share program, this is how the system works:

  - ✓ Join: Purchase an annual membership online or get a 24-hour or 3-day membership from any station kiosk. Annual members will receive a membership key in the mail.
  - ✓ Ride: 24-hour and 3-day members will receive a ride code from the station kiosk. Enter this code on the keypad next to any available bike. Annual members can bypass the kiosk and insert their membership key at any available dock. Wait for the green light, and pull the bike out while lifting the seat.
  - ✓ Return: After your trip, return the bike to any station in your service area. Push the bike firmly into an available dock, and wait for the green light to confirm your trip has ended.
  - ✓ Repeat: Enjoy unlimited trips up to 30 minutes each at no additional cost! Remember, trips longer than 30 minutes will incur overtime fees. 24-hour and 3-day members must request a new ride code for each trip by swiping their credit or debit card at the kiosk.

  This system has the potential for success in downtown Hayward; the City should endeavor to include the Lincoln Landing development due to its higher residential densities and mixed use characteristics.

- **On-site TDM coordinators:** In this mixed use development, TJKM recommends separate arrangements for on-site coordinators for residential and non-residential uses. In both instances, the goal is to promote carpooling and alternative modes of transportation such as transit, bicycling or walking. On the residential side, the local TDM coordinator would provide ride share matching, information on shuttle services, car sharing, bike sharing and transit passes. On the non-residential side, the TDM coordinator would facilitate carpooling and ridesharing among residents and would care for on-site showers, lockers and bicycle lockers. In addition, bus and shuttle services and passes

would be coordinated along with information on car and bike sharing. These on-site TDM coordinators will provide important services to Lincoln Landing residents, employees, and customers.

Sight distance analysis

Sight distance is evaluated to determine if drivers will have adequate visibility to enter a roadway safely without resulting in a conflict with traffic already on the roadway. The proposed access to the site will be via two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive as shown in the project site plan **Figures 2** and **3**.

According to the Highway Design Manual (HDM), Chapter 200, 2014, the required minimum stopping sight distance for design speed of 15 mph (project driveway) should be 100 feet. The distance between the intersection of Foothill Boulevard / City Center Drive and the proposed Limited access driveway on City Center Drive is approximately 70 feet. Because of its close proximity to the public intersection, there would be sight distance problem for this driveway that would create operational issues at this project driveway. Hence it is recommended to not to have driveway at this location. This driveway should be eliminated.

The distance between the intersection of Foothill Boulevard / City Center Drive and the proposed full access driveway on City Center Drive is approximately 170 feet and from the intersection of City Center Drive/McKeever Avenue is 150 feet. This driveway can be modified to also provide access that would be reduced due to the elimination of the City Center driveway described in the previous paragraph. Due to the restricted sight distance caused by the bend in the road near the parking garage access, design of this area needs to be carefully reviewed. TJKM recommends that a roundabout be considered for this intersection to maintain sight distance.

The line of sight for vehicles exiting the project driveways and vehicles travelling southbound on Foothill Boulevard and eastbound/westbound on Hazel Avenue are clear and visible. Vehicles exiting the driveways will be visible to the vehicles travelling southbound on Foothill Boulevard Road and eastbound/westbound on Hazel Avenue.

Potential Neighborhood Traffic Calming Issues

The residential neighborhood west of the site, generally bounded by San Lorenzo Creek, A Street, Mission Boulevard and Rose Street, currently experiences cut-through traffic. This neighborhood, and its relationship to the site, are shown in **Figure 20**. San Lorenzo Creek has crossings only at Grove Way, Hazel Avenue and Civic Center Drive, which limits travel options. When the downtown loop of one-way streets was installed, A Street became one-way westbound between Foothill Boulevard and Mission Boulevard, limiting access options in and near the residential neighborhood west of the site. Consequently, some outside motorists are cutting through the neighborhood to travel between Mission Boulevard and Foothill Boulevard.

To deal with through traffic and neighborhood speeding, speed humps have been installed at 13 locations along Main Street, Prospect Street, and Rose Street in the neighborhood. The locations of the speed

humps are shown in **Figure 20**. There have been neighborhood complaints about speeding on Sunset Boulevard, Simon Street, Hotel Avenue and McKeever Avenue. Potential solutions to these issues could include the installation of bulb-outs/traffic circles at key intersections and the installation of radar speed feedback signs. Both of these potential solutions are discussed in the City's proposed Neighborhood Traffic Calming Program and have proved effective in other cities.

Figures 8 and **9** shows the anticipated distribution of traffic to and from the project site. Although the vast majority of traffic will reach the site via Foothill Boulevard from either the north or south, a relatively small amount of traffic may find it desirable to filter through the neighborhood to the west. To minimize this issue, the two driveways on Hazel Avenue should be designed to only allow left turn entrances from Foothill Boulevard (via Hazel) or right turn exits toward Foothill Boulevard. Left turn exits toward the neighborhood via Hazel Avenue or right turn entrances on Hazel Avenue from the neighborhood will not be allowed. These prohibitions will need to be accomplished by a combination of signing and driveway design details. On **Figure 20**, these two driveways are identified as locations A and B.

The City Center Drive driveways, locations E and F on **Figure 20**, also provide potential connections with the adjoining residential district. Traffic from the west trying to reach the project site cannot use A Street because it is one way westbound, so there would be the potential for some of the site-bound traffic to use McKeever Avenue and Maple Court east of Main Street. These motorists, like current cut-through traffic, might try to use Hotel Avenue or Simon Street to reach the site via Main Street.

To preclude this movement, various strategies could be applied. However, most of these strategies, while potentially precluding site-bound traffic from cutting through the residential areas, would also hamper the ability of residents themselves to travel and from their homes. For example, making Hotel Avenue between Mission Boulevard and Main Street one way westbound would reduce site traffic on Hotel Avenue and McKeever Avenue, but would also negatively impact circulation for residents of these two streets, as well as portions of Main Street.

An alternative, simpler strategy would be to prohibit left turns from eastbound McKeever Avenue to northwest bound Maple Court. This would preclude travel through the residential district by site-bound traffic. This left turn prohibition could be limited to specific hours, say commute peaks, to reduce the use of this corridor by site residents and site employees. It should be noted that turn restrictions such as this would need periodic police enforcement to be effective. This measure also negatively impacts existing residents, particularly those who live on McKeever Avenue.

To limit the amount of cut through traffic in the other direction, a No Right Turn prohibition could be installed on southbound Maple Court at McKeever Avenue to limit the use of McKeever Avenue by site-related traffic.

The various issues described in this section would need to be resolved with the neighborhood. These measures have the potential both to reduce existing cut through traffic while also addressing cut through traffic from the new project.

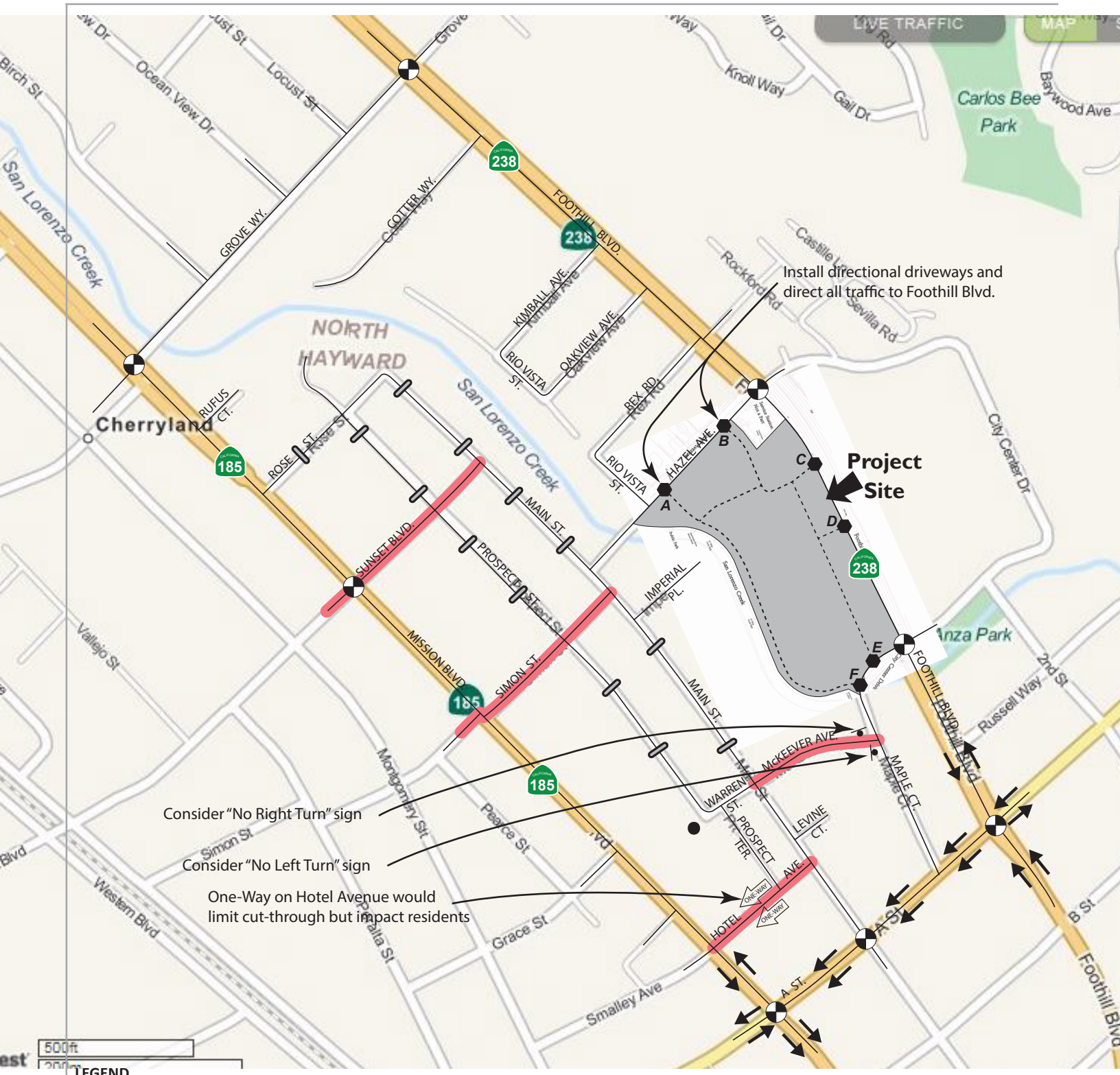


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Figure 20

CONCLUSIONS AND RECOMMENDATIONS

Project Trip Generation

Based on data published in Institute of Transportation Engineer's (ITE) *Trip Generation 9th Edition* (2012) the proposed Lincoln Landing Mixed-Use Development Project is expected to generate in **Phase 1** a total of 247 net trips during the a.m. peak hour and 395 net trips during the p.m. peak hour and in **Phase 1 and 2** a total of 322 net trips during the a.m. peak hour and 488 net trips during the p.m. peak hour. These trip totals include application of a trip discount that accounts for internal trips, Transportation Demand Management and retail peak hour pass by trip reductions as per ITE.

Existing Conditions

The TIA analysis found that all the study intersections currently operate within standards of the City of Hayward (LOS E) or better during the a.m. and p.m. peak hours.

Existing plus Project Phase 1 Conditions

Under this scenario, all the intersections operate within the City of Hayward standards (LOS E) or better during the a.m. and p.m. peak hours.

Based on the City of Hayward impact criteria the project is expected to have a *less-than-significant* impact at all the study intersections under Existing plus Project Phase 1 Conditions.

Background (Existing plus Approved Projects) Conditions

Under this scenario, all the intersections operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for following intersection:

- Foothill Boulevard / City Center Drive (#4) during the p.m. peak hour (LOS F)
- Mission Boulevard / Simon Street (#15) during a.m. and p.m. peak hours (LOS F/F, respectively)

Background plus Project Phase 1 and Phase 1 & 2 Conditions

Significantly impacted intersection locations under Background plus Project Phase 1 and Background plus Phase 1 and 2 Conditions during the a.m. or p.m. peak hour include:

- Foothill Boulevard / Hazel Avenue (#3) - A mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lane would improve operations at the Foothill Boulevard/Hazel Avenue intersection to LOS D (p.m. peak hour). This mitigation measure would consist of restriping the right-most northbound approach right lane to a shared through right turn lane and accommodate one receiving lane for the proposed shared through right lane on the north side of the intersection for approximately 500 feet and merging back to three lanes. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Background plus Project Phase 1 and Background plus Phase 1 & 2 Conditions.

- Foothill Boulevard / City Center Drive (#4) - A mitigation of restriping the southbound approach with an additional left turn lane would improve approach operations at the intersection to LOS D (p.m. peak hour). This mitigation measure would consist of restriping the left-most southbound approach through lane to a left turn lane and shifting the three southbound approach lanes on Foothill Boulevard one lane to the right and combining the right most through lane with the existing right turn lane. This requires some downstream parking removal. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to *a less-than-significant level* under Background plus Project Phase 1 and Background plus Phase 1 & 2 Conditions.

Cumulative Conditions

Under this scenario, all study intersections operate within the City of Hayward (LOS E) standards or better during the a.m. and p.m. peak hours except for the following intersections:

- Foothill Boulevard / Hazel Avenue (#3) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Hotel Avenue (#5) during the AM and PM peak hours (LOS F/F, respectively)
- Foothill Boulevard / Grove Way (#10) during the a.m. peak hour (LOS F)
- Mission Boulevard / Grove Way (#11) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Sunset Boulevard (#12) during the a.m. and p.m. peak hours (LOS F/F, respectively)
- Mission Boulevard / Simon Street (#15) during the a.m. and p.m. peak hours (LOS F/F, respectively)

Cumulative plus Project Phase 1 and 2 Conditions

Significantly impacted intersection locations under Cumulative plus Phase 1 and 2 Conditions during the a.m. or p.m. peak hour include:

- Foothill Boulevard / Hazel Avenue (#3) - A mitigation of restriping the northbound approach to one left only lane, three through lanes and one shared through right lanes and adding a second left turn lane to the eastbound approach would improve approach operations at the Foothill Boulevard/Hazel Avenue (#3) intersection to LOS D in both a.m. and p.m. peak hours. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.
- Foothill Boulevard / City Center Drive (#4) - A mitigation of restriping the southbound approach with an additional left turn lane would improve approach operations at the intersection to LOS D (p.m. peak hour). This results in a less than significant impact due to reduction in average delay. This is the same mitigation as described in both phases of background plus project conditions. The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.

- Mission Boulevard / Sunset Boulevard (#12) - A mitigation of restriping both eastbound and westbound approaches to one shared through left lane and one shared through right lane would improve approach operations at the Mission Boulevard/Sunset Boulevard intersection to LOS D in both a.m. and p.m. peak hours. The results in a less than significant impact due to reduction in average delay. This mitigation would also require acquisition of right-of-way and removing on-street parking on the north side and south side of the both eastbound and westbound approaches (Sunset Boulevard). The proposed mitigation would mitigate the project impact and will reduce levels of service impacts at this intersection to a *less-than-significant level* under Cumulative plus Project Phase 1 & 2 Conditions.

Queuing and Driveway Analysis

The proposed project is expected to add fewer vehicles in the peak hours on the expected left-turn or right-turn queues at the study intersections. The project driveways are expected to operate at an acceptable LOS and the 95th percentile queueing at the outbound approaches of project driveways is expected to be minimal.

Site Access

The proposed access to the site will be by two full access driveways along Hazel Avenue, three limited access driveways (right-in/right-out) along Foothill Boulevard and one limited access (right-in/right-out) and one full access driveway on City Center Drive. All the project driveways are well-spaced, properly aligned with opposing driveways and provide adequate distance away from public intersections except the limited access (right in/right out) eastern driveway on City Center Drive is very close to Foothill Boulevard. Because of its close proximity to the public intersection and improper sight distance there would be operational issues at this project driveway. Hence it is recommended to not to have a driveway at this location. TJKM recommends that the north curb line be recessed 10 to 12 feet to accommodate a right turn deceleration lane for the full access driveway on the City Center Drive, primarily serving the garage, to provide an auxiliary lane for right turns. This should improve the safety and capacity of the westbound lanes.

It is also recommended that dead-end aisles be extended at least eight feet beyond the last parking space to allow cars to maneuver in and out of the last parking space of each side.

Service and emergency vehicles have access to the proposed mixed-use development via all the proposed driveways. Service vehicles will circulate through the parking structure to the trash enclosures and service entrance. To confirm the trucks can circulate on-site, a truck turning analysis and stopping sight distance analysis for the proposed driveways should be completed for the final site plan.

TJKM reviewed and proposed solutions to the cut through traffic concerns of the adjacent neighborhood and residents. The recommendations to the proposed site access and neighboring streets are discussed in detail in Traffic Calming section of the report.

Sight Distance

The distance between the intersection of Foothill Boulevard / City Center Drive and the proposed full access driveway on City Center Drive is approximately 170 feet and from the intersection of City Center Drive/McKeever Avenue is 150 feet. This driveway can be modified to also provide access that would be reduced due to the elimination of the City Center driveway described in the previous paragraph. Due to the restricted sight distance caused by the bend in the road near the parking garage access, design of this area needs to be carefully reviewed. TJKM recommends that a roundabout be considered for this intersection to maintain sight distance.

Parking

Based on the City's parking requirements the project requires 970 parking spaces. As per the preliminary site plan project proposes approximately 1080 parking stalls (9 feet by 19 feet) , so the number of proposed parking spaces is adequate.

Pedestrian, Bicycle and Transit Impacts

The project is expected to generate demand for sidewalks to allow pedestrians to access nearby bus stops, and adjacent land uses. To accommodate all users of the street system and provide a complete and connected pedestrian facility between the project site and transit service, it is recommended to provide sidewalks along the project frontage as per the City of Hayward standards and the design should meet ADA requirements for a comfortable walking environment.

The proposed project does not conflict with existing or planned bicycle facilities. The project would increase bicycle demand and the project should ensure appropriate bicycle accommodations are provided for the employees and visitors. These accommodations should be positioned in areas that are easily accessible and in locations that provide direct access to retail and residential uses on-site such as near building entrances for guest and employees. Bicycle parking should be monitored to ensure that provided bicycle parking is not over capacity.

The proposed project would be generating approximately 37 transit trips in the AM peak hour and 72 transit trips in the PM peak hour. The transit service within the immediate project site operates well below capacity, and additional trips generated by the proposed project could be accommodated by existing bus services. Therefore, impacts to transit service are expected to be less than significant.

However, TJKM recommends that the project applicant provide bus stop related amenities near the project site for AC Transit Line 48 and participate in Transportation Demand Management strategies.

Transportation Demand Management Issues

The project sponsors should make every effort to minimize the use of single occupant vehicles by residents, employees and shoppers of the proposed development. TJKM specifically recommends application by project sponsors of the following measures: shuttle services, transit passes, car sharing, bike sharing, unbundled parking, on site bike and ped lockers and amenities, shared parking, and on-site TDM coordinators.

Potential Neighborhood Traffic Calming Issues

TJKM reviewed and proposed solutions to the cut through traffic concerns of the adjacent neighborhood and residents.

The vast majority of traffic will reach the site via Foothill Boulevard from either the north or south, a relatively small amount of traffic may find it desirable to filter through the neighborhood to the west. To minimize this issue, the two driveways on Hazel Avenue should be designed to only allow left turn entrances from Foothill Boulevard (via Hazel) or right turn exits toward Foothill Boulevard. Left turn exits toward the neighborhood via Hazel Avenue or right turn entrances on Hazel Avenue from the neighborhood will not be allowed. These prohibitions will need to be accomplished by a combination of signing and driveway design details.

The City Center Drive driveways also provide potential connections with the adjoining residential district. Traffic from the west trying to reach the project site cannot use A Street because it is one way westbound, so there would be the potential for some of the site-bound traffic to use McKeever Avenue and Maple Court east of Main Street. These motorists, like current cut-through traffic, might try to use Hotel Avenue or Simon Street to reach the site via Main Street.

To preclude this movement, prohibiting left turns from eastbound McKeever Avenue to northwest bound Maple Court. This would preclude travel through the residential district by site-bound traffic. This left turn prohibition could be limited to specific hours, say commute peaks, to reduce the use of this corridor by site residents and site employees. It should be noted that turn restrictions such as this would need periodic police enforcement to be effective. This measure also negatively impacts existing residents, particularly those who live on McKeever Avenue.

To limit the amount of cut through traffic in the other direction, a No Right Turn prohibition could be installed on southbound Maple Court at McKeever Avenue to limit the use of McKeever Avenue by site-related traffic.

The various issues would need to be resolved with the neighborhood. These measures have the potential both to reduce existing cut through traffic while also addressing cut through traffic from the new project.

Appendix A – Level of Service Methodology

LEVEL OF SERVICE

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

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

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

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

Table A-I: Level of Service Description

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

Source: Highway Capacity Manual 2000

Urban Streets

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

Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials.
Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals.
Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Criterion	Functional Category	
	Principal Arterial	**Minor Arterial**
Mobility function	Very important	Important
Access function	Very minor	Substantial
Points connected	Freeways, important activity centers, major traffic generators	Principal arterials
Predominant trips served	Relatively long trips between major points and through trips entering, leaving, and passing through city	Trips of moderate length within relatively small geographical areas

Criterion	Design Category			
	High-Speed	**Suburban**	**Intermediate**	**Urban**
Driveway access density	Very low density	Low density	Moderate density	High density
Arterial type	Multilane divided; undivided or two-lane with shoulders	Multilane divided: undivided or two-lane with shoulders	Multilane divided or undivided; one way, two lane	Undivided one way; two way, two or more lanes
Parking	No	No	Some	Usually
Separate left-turn lanes	Yes	Yes	Usually	Some
Signals per mile	0.5 to 2	1 to 5	4 to 10	6 to 12
Speed limits	45 to 55 mph	40 to 45 mph	30 to 40 mph	25 to 35 mph
Pedestrian activity	Very little	Little	Some	Usually
Roadside development	Low density	Low to medium density	Medium to moderate density	High density

Source: Highway Capacity Manual 2000

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

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

Source: Highway Capacity Manual 2000

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

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

Source: Highway Capacity Manual 2000

Interrupted Flow

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

Signalized Intersections

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

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

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

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

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

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

Source: Highway Capacity Manual 2000

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

Unsignalized Intersections

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

Two-Way Stop Controlled Intersections

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

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

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

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

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

Source: Highway Capacity Manual 2000

Appendix B – Turning Movement Volume Counts

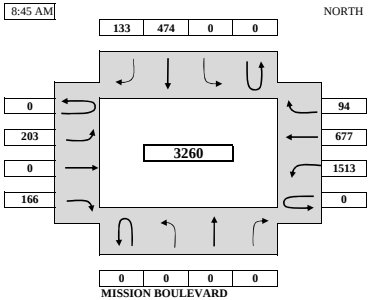
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

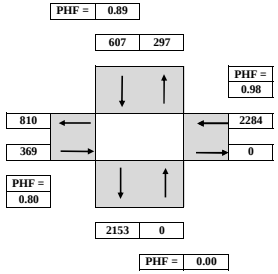
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-1AM

PEAK HOUR 7:45 AM to 8:45 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM						125	23			26		28		395	172	9	778
7:15 AM	7:30 AM						249	48			69		50		776	355	21	1568
7:30 AM	7:45 AM						371	97			113		89		1164	533	40	2407
7:45 AM	8:00 AM						507	132			158		127		1537	705	54	3220
8:00 AM	8:15 AM						620	159			195		159		1911	881	80	4005
8:15 AM	8:30 AM						723	191			257		212		2292	1045	104	4824
8:30 AM	8:45 AM						845	230			316		255		2677	1210	134	5667
8:45 AM	9:00 AM						936	263			378		288		3069	1362	156	6452
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	0	0	0	0	125	23	0	26	0	28	0	395	172	9	778
7:15 AM	7:30 AM	0	0	0	0	0	0	124	25	0	43	0	22	0	381	183	12	790
7:30 AM	7:45 AM	0	0	0	0	0	0	122	49	0	44	0	39	0	388	178	19	839
7:45 AM	8:00 AM	0	0	0	0	0	0	136	35	0	45	0	38	0	373	172	14	813
8:00 AM	8:15 AM	0	0	0	0	0	0	113	27	0	37	0	32	0	374	176	26	785
8:15 AM	8:30 AM	0	0	0	0	0	0	103	32	0	62	0	53	0	381	164	24	819
8:30 AM	8:45 AM	0	0	0	0	0	0	122	39	0	59	0	43	0	385	165	30	843
8:45 AM	9:00 AM	0	0	0	0	0	0	91	33	0	62	0	33	0	392	152	22	785
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	0	0	0	0	0	507	132	0	158	0	127	0	1537	705	54	3220
7:15 AM	8:15 AM	0	0	0	0	0	0	495	136	0	169	0	131	0	1516	709	71	3227
7:30 AM	8:30 AM	0	0	0	0	0	0	474	143	0	188	0	162	0	1516	690	83	3256
7:45 AM	8:45 AM	0	0	0	0	0	0	474	133	0	203	0	166	0	1513	677	94	3260
8:00 AM	9:00 AM	0	0	0	0	0	0	429	131	0	220	0	161	0	1532	657	102	3232

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	0	474	133	0	203	0	166	0	1513	677	94	3260
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.85	0.00	0.82	0.00	0.78	0.00	0.98	0.96	0.78	OVERALL
PHF BY APPROACH	0.00				0.89				0.80				0.98				0.97
PED (Inc JAY-WALK)	6				10				6				15				37
BICYCLE	0				0				0				0				0

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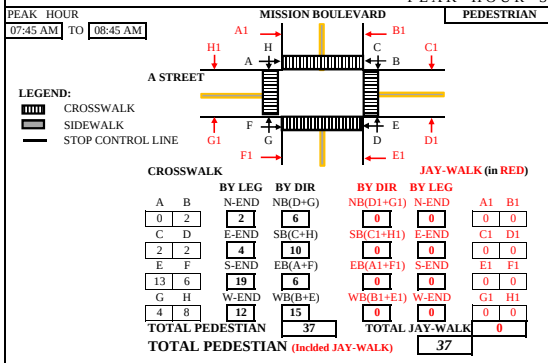
B.A.Y.M.E.T.R.I.C.S.

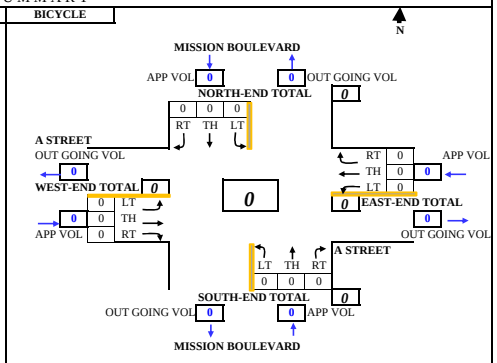
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-1AM

PEAK HOUR SUMMARY

PEAK HOUR 07:45 AM TO 08:45 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	0	0	1	0	0	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		3
07:15 AM	07:30 AM	1	4	2	1	1	3	2	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		19
07:30 AM	07:45 AM	1	6	2	2	1	5	2	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		24
07:45 AM	08:00 AM	1	7	3	3	2	5	3	6		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		31
08:00 AM	08:15 AM	1	7	4	3	10	6	4	7		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		43
08:15 AM	08:30 AM	1	8	4	3	11	8	4	9		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		49
08:30 AM	08:45 AM	1	8	4	4	14	11	6	12		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		61
08:45 AM	09:00 AM	1	8	11	5	19	20	7	13		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		85
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	0	0	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15 AM	07:30 AM	1	4	2	1	0	3	2	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	16
07:30 AM	07:45 AM	0	2	0	1	0	2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
07:45 AM	08:00 AM	0	1	1	1	1	0	1	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
08:00 AM	08:15 AM	0	0	1	0	8	1	1	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
08:15 AM	08:30 AM	1	0	0	0	1	2	0	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
08:30 AM	08:45 AM	0	0	0	1	3	3	2	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
08:45 AM	09:00 AM	0	0	7	1	5	9	1	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
HOURLY TOTALS																																	
07:00 AM	08:00 AM	1	7	3	3	2	5	3	6	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	31
07:15 AM	08:15 AM	1	7	4	3	9	6	4	5	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	40
07:30 AM	08:30 AM	0	4	2	2	10	5	2	5	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
07:45 AM	08:45 AM	0	2	2	2	13	6	4	8	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
08:00 AM	09:00 AM	0	1	8	2	17	15	4	7	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	6	9	6	9	30	6	9	6	9	30	0	0	0	1	1
07:15 AM	08:15 AM	7	9	7	16	39	7	9	7	16	39	0	0	0	1	1
07:30 AM	08:30 AM	4	7	5	14	30	4	7	5	14	30	0	0	0	0	0
07:45 AM	08:45 AM	6	10	6	15	37	6	10	6	15	37	0	0	0	0	0
08:00 AM	09:00 AM	6	15	15	18	54	6	15	15	18	54	0	0	0	0	0

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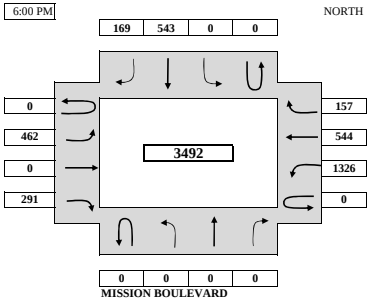
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

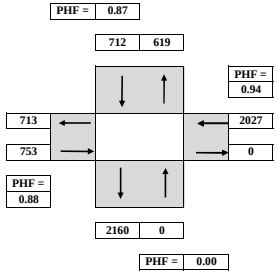
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-1PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM						138	19			102		66		301	124	34	**784**
4:15 PM	4:30 PM						280	51			233		117		559	237	63	**1540**
4:30 PM	4:45 PM						407	89			367		198		925	387	110	**2483**
4:45 PM	5:00 PM						525	120			467		240		1214	526	156	**3248**
5:00 PM	5:15 PM						686	158			560		304		1571	667	199	**4145**
5:15 PM	5:30 PM						778	200			681		388		1894	788	233	**4962**
5:30 PM	5:45 PM						915	237			795		450		2259	920	274	**5850**
5:45 PM	6:00 PM						1068	289			929		531		2540	1070	313	**6740**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	0	0	0	0	0	138	19	0	102	0	66	0	301	124	34	**784**
4:15 PM	4:30 PM	0	0	0	0	0	0	142	32	0	131	0	51	0	258	113	29	**756**
4:30 PM	4:45 PM	0	0	0	0	0	0	127	38	0	134	0	81	0	366	150	47	**943**
4:45 PM	5:00 PM	0	0	0	0	0	0	118	31	0	100	0	42	0	289	139	46	**765**
5:00 PM	5:15 PM	0	0	0	0	0	0	161	38	0	93	0	64	0	357	141	43	**897**
5:15 PM	5:30 PM	0	0	0	0	0	0	92	42	0	121	0	84	0	323	121	34	**817**
5:30 PM	5:45 PM	0	0	0	0	0	0	137	37	0	114	0	62	0	365	132	41	**888**
5:45 PM	6:00 PM	0	0	0	0	0	0	153	52	0	134	0	81	0	281	150	39	**890**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	0	0	0	0	0	525	120	0	467	0	240	0	1214	526	156	**3248**
4:15 PM	5:15 PM	0	0	0	0	0	0	548	139	0	458	0	238	0	1270	543	165	**3361**
4:30 PM	5:30 PM	0	0	0	0	0	0	498	149	0	448	0	271	0	1335	551	170	**3422**
4:45 PM	5:45 PM	0	0	0	0	0	0	508	148	0	428	0	252	0	1334	533	164	**3367**
5:00 PM	6:00 PM	0	0	0	0	0	0	543	169	0	462	0	291	0	1326	544	157	**3492**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	0	543	169	0	462	0	291	0	1326	544	157	**3492**
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.81	0.00	0.86	0.00	0.87	0.00	0.91	0.91	0.91	OVERALL
PHF BY APPROACH	0.00				0.87				0.88				0.94				**0.97**
PED (Inc JAY-WALK)	10				17				32				30				**89**
BICYCLE	0				2				1				3				**6**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

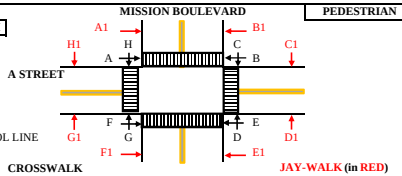
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	=S6

PEAK HOUR SUMMARY

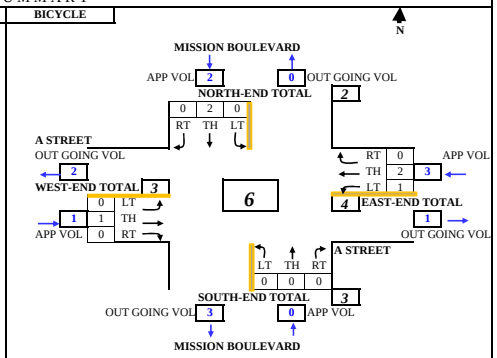
PEAK HOUR 05:00 PM TO 06:00 PM



CROSSWALK / JAY-WALK (in RED)

A	B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1	B1
10	10	20	10	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
1	4	5	17	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
20	22	42	32	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
6	16	22	30	0	0	0	0
TOTAL PEDESTIAN		89		TOTAL JAY-WALK		0	

TOTAL PEDESTIAN (Incldd JAY-WALK) 89



TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	2	2	0	2	4	7	1	5		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	1	0	0	1	0		*25*
04:15 PM	04:30 PM	5	4	2	3	11	12	4	10		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	1	1	0	2	0		*56*
04:30 PM	04:45 PM	7	5	2	3	15	20	7	15		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	1	2	0	2	0		*80*
04:45 PM	05:00 PM	11	5	2	3	16	27	9	17		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	1	2	0	2	1		*97*
05:00 PM	05:15 PM	13	8	2	3	22	31	10	22		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	2	2	0	2	1		*119*
05:15 PM	05:30 PM	14	11	2	4	24	34	11	25		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	2	2	1	3	1		*136*
05:30 PM	05:45 PM	19	14	3	5	33	43	14	27		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	2	2	1	4	1		*170*
05:45 PM	06:00 PM	21	15	3	7	36	49	15	33		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	2	2	1	4	1		*192*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	2	2	0	2	4	7	1	5	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	*25*
04:15 PM	04:30 PM	3	2	2	1	7	5	3	5	28	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	3	*31*
04:30 PM	04:45 PM	2	1	0	0	4	8	3	5	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	*24*
04:45 PM	05:00 PM	4	0	0	0	1	7	2	2	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	*17*
05:00 PM	05:15 PM	2	3	0	0	6	4	1	5	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	*22*
05:15 PM	05:30 PM	1	3	0	1	2	3	1	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	3	*17*
05:30 PM	05:45 PM	5	3	1	1	9	9	3	2	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	*34*
05:45 PM	06:00 PM	2	1	0	2	3	6	1	6	21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***22***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	11	5	2	3	16	27	9	17	90	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	2	1	7	***97***
04:15 PM	05:15 PM	11	6	2	1	18	24	9	17	88	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	1	1	6	***94***
04:30 PM	05:30 PM	9	7	0	1	13	22	7	15	74	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	6	***80***
04:45 PM	05:45 PM	12	9	1	2	18	23	7	12	84	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	2	1	6	***90***
05:00 PM	06:00 PM	10	10	1	4	20	22	6	16	89	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	2	0	6	***95***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	12	19	38	21	**90**	12	19	38	21	***90***	0	1	3	3	***7***
04:15 PM	05:15 PM	10	19	35	24	**88**	10	19	35	24	***88***	0	1	3	2	***6***
04:30 PM	05:30 PM	8	15	31	20	**74**	8	15	31	20	***74***	0	1	2	3	***6***
04:45 PM	05:45 PM	9	13	35	27	**84**	9	13	35	27	***84***	0	1	1	4	***6***
05:00 PM	06:00 PM	10	17	32	30	**89**	10	17	32	30	***89***	0	2	1	3	***6***

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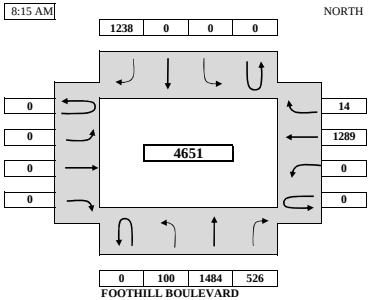
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

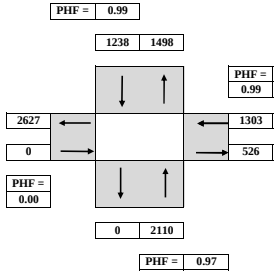
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-2AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		9	246	69			312							315	5		956
7:15 AM	7:30 AM		21	642	175			621							642	7		2108
7:30 AM	7:45 AM		40	1018	325			934							957	11		3285
7:45 AM	8:00 AM		62	1398	466			1238							1280	13		4457
8:00 AM	8:15 AM		109	1730	595			1550							1604	19		5607
8:15 AM	8:30 AM		139	2016	747			1846							1925	23		6696
8:30 AM	8:45 AM		173	2323	889			2135							2234	35		7789
8:45 AM	9:00 AM		217	2556	989			2394							2550	39		8745
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	9	246	69	0	0	0	312	0	0	0	0	0	0	315	5	956
7:15 AM	7:30 AM	0	12	396	106	0	0	0	309	0	0	0	0	0	0	327	2	1152
7:30 AM	7:45 AM	0	19	376	150	0	0	0	313	0	0	0	0	0	0	315	4	1177
7:45 AM	8:00 AM	0	22	380	141	0	0	0	304	0	0	0	0	0	0	323	2	1172
8:00 AM	8:15 AM	0	47	332	129	0	0	0	312	0	0	0	0	0	0	324	6	1150
8:15 AM	8:30 AM	0	30	286	152	0	0	0	296	0	0	0	0	0	0	321	4	1089
8:30 AM	8:45 AM	0	34	307	142	0	0	0	289	0	0	0	0	0	0	309	12	1093
8:45 AM	9:00 AM	0	44	233	100	0	0	0	259	0	0	0	0	0	0	316	4	956
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	62	1398	466	0	0	0	1238	0	0	0	0	0	0	1280	13	4457
7:15 AM	8:15 AM	0	100	1484	526	0	0	0	1238	0	0	0	0	0	0	1289	14	4651
7:30 AM	8:30 AM	0	118	1374	572	0	0	0	1225	0	0	0	0	0	0	1283	16	4588
7:45 AM	8:45 AM	0	133	1305	564	0	0	0	1201	0	0	0	0	0	0	1277	24	4504
8:00 AM	9:00 AM	0	155	1158	523	0	0	0	1156	0	0	0	0	0	0	1270	26	4288

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	100	1484	526	0	0	0	1238	0	0	0	0	0	0	1289	14	4651
PHF BY MOVEMENT	0.00	0.53	0.94	0.88	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.58	OVERALL
PHF BY APPROACH	0.97				0.99				0.00				0.99				0.99
PED (Inc JAY-WALK)	10				5				6				12				33
BICYCLE	0				1				0				3				4

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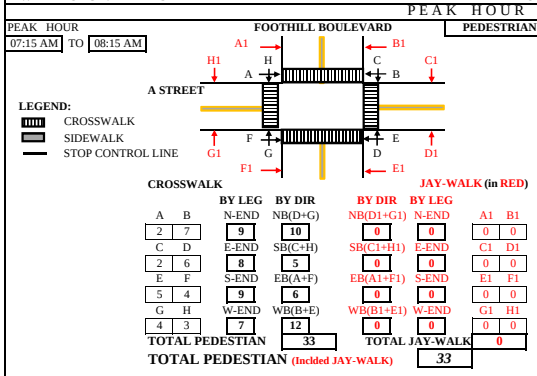
B.A.Y.M.E.T.R.I.C.S.

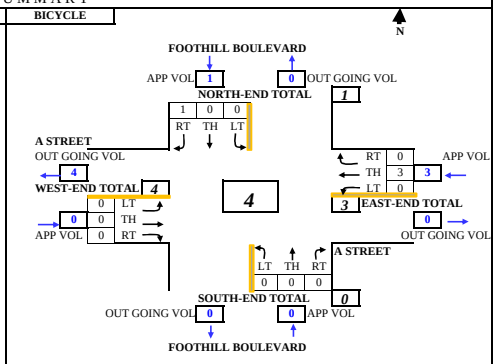
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-2AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	3	3	0	2	1	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		10
07:15 AM	07:30 AM	0	4	3	1	4	2	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		15
07:30 AM	07:45 AM	1	6	4	4	4	3	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	1	0		25
07:45 AM	08:00 AM	2	8	4	5	5	4	2	2		0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	3	0		36
08:00 AM	08:15 AM	2	10	5	6	7	5	4	3		0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	4	0		47
08:15 AM	08:30 AM	5	12	5	6	9	8	6	3		0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	4	0		59
08:30 AM	08:45 AM	6	14	5	6	9	8	9	6		0	0	0	0	0	0	0	0		0	2	0	0	0	2	0	0	0	0	5	0		72
08:45 AM	09:00 AM	8	14	5	6	11	8	10	6		0	0	0	0	0	0	0	0		0	2	0	0	0	2	0	0	0	0	5	0		77
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	3	3	0	2	1	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	10
07:15 AM	07:30 AM	0	1	0	1	2	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
07:30 AM	07:45 AM	1	2	1	3	0	1	0	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	10
07:45 AM	08:00 AM	1	2	0	1	1	1	2	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	11
08:00 AM	08:15 AM	0	2	1	1	2	1	2	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	11
08:15 AM	08:30 AM	3	2	0	0	2	3	2	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
08:30 AM	08:45 AM	1	2	0	0	0	0	3	3	9	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0	4	13
08:45 AM	09:00 AM	2	0	0	0	2	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
HOURLY TOTALS																																	
07:00 AM	08:00 AM	2	8	4	5	5	4	2	2	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	4	36
07:15 AM	08:15 AM	2	7	2	6	5	4	4	3	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	4	37
07:30 AM	08:30 AM	5	8	2	5	5	6	6	3	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	4	44
07:45 AM	08:45 AM	5	8	1	2	5	5	9	5	40	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	4	0	7	47
08:00 AM	09:00 AM	6	6	1	1	6	4	8	4	36	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	2	0	5	41

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	7	6	6	13	32	7	6	6	13	32	0	1	0	3	4
07:15 AM	08:15 AM	10	5	6	12	33	10	5	6	12	33	0	1	0	3	4
07:30 AM	08:30 AM	11	5	11	13	40	11	5	11	13	40	0	1	0	3	4
07:45 AM	08:45 AM	11	6	10	13	40	11	6	10	13	40	2	1	0	4	7
08:00 AM	09:00 AM	9	5	10	12	36	9	5	10	12	36	2	1	0	2	5

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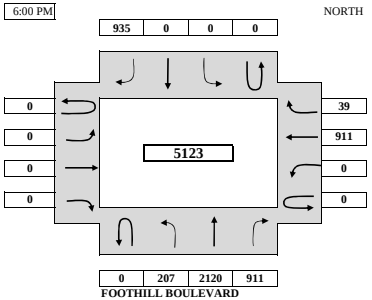
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

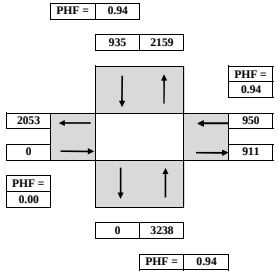
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-2PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		41	534	234				223							203	6	**1241**
4:15 PM	4:30 PM		86	1025	481				450							389	12	**2443**
4:30 PM	4:45 PM		155	1598	713				688							579	18	**3751**
4:45 PM	5:00 PM		203	2103	920				911							787	27	**4951**
5:00 PM	5:15 PM		265	2621	1130				1151							1010	37	**6214**
5:15 PM	5:30 PM		325	3146	1404				1376							1245	54	**7550**
5:30 PM	5:45 PM		360	3724	1584				1625							1486	64	**8843**
5:45 PM	6:00 PM		410	4223	1831				1846							1698	66	**10074**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	41	534	234	0	0	0	223	0	0	0	0	0	0	203	6	**1241**
4:15 PM	4:30 PM	0	45	491	247	0	0	0	227	0	0	0	0	0	0	186	6	**1202**
4:30 PM	4:45 PM	0	69	573	232	0	0	0	238	0	0	0	0	0	0	190	6	**1308**
4:45 PM	5:00 PM	0	48	505	207	0	0	0	223	0	0	0	0	0	0	208	9	**1200**
5:00 PM	5:15 PM	0	62	518	210	0	0	0	240	0	0	0	0	0	0	223	10	**1263**
5:15 PM	5:30 PM	0	60	525	274	0	0	0	225	0	0	0	0	0	0	235	17	**1336**
5:30 PM	5:45 PM	0	35	578	180	0	0	0	249	0	0	0	0	0	0	241	10	**1293**
5:45 PM	6:00 PM	0	50	499	247	0	0	0	221	0	0	0	0	0	0	212	2	**1231**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	203	2103	920	0	0	0	911	0	0	0	0	0	0	787	27	**4951**
4:15 PM	5:15 PM	0	224	2087	896	0	0	0	928	0	0	0	0	0	0	807	31	**4973**
4:30 PM	5:30 PM	0	239	2121	923	0	0	0	926	0	0	0	0	0	0	856	42	**5107**
4:45 PM	5:45 PM	0	205	2126	871	0	0	0	937	0	0	0	0	0	0	907	46	**5092**
5:00 PM	6:00 PM	0	207	2120	911	0	0	0	935	0	0	0	0	0	0	911	39	**5123**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	207	2120	911	0	0	0	935	0	0	0	0	0	0	911	39	**5123**
PHF BY MOVEMENT	0.00	0.83	0.92	0.83	0.00	0.00	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.95	0.57	OVERALL
PHF BY APPROACH	0.94				0.94				0.00				0.94				**0.96**
PED (Inc JAY-WALK)	#VALUE!				14				19				21				**#VALUE!**
BICYCLE	2				0				0				0				**2**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

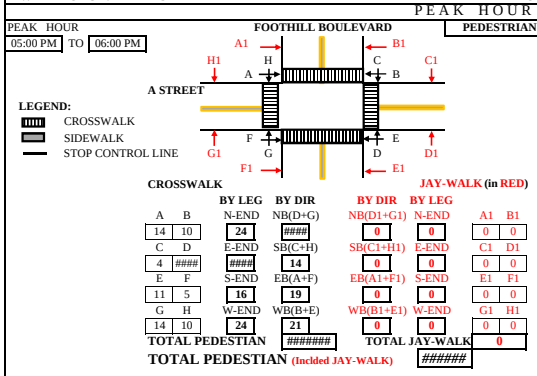
B.A.Y.M.E.T.R.I.C.S.

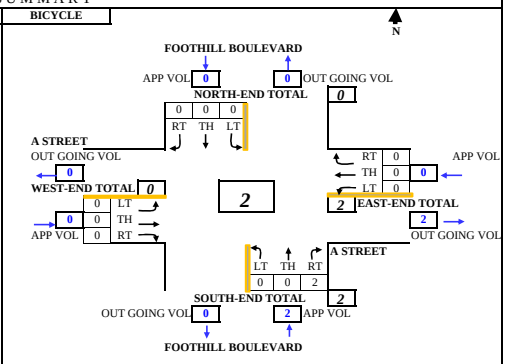
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	A STREET	JURISDICTION:	HAYWARD	FILE:	3503036-2PM

PEAK HOUR SUMMARY

PEAK HOUR 05:00 PM TO 06:00 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	3	2	0	0	2	0	2	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*11*
04:15 PM	04:30 PM	4	6	0	0	3	0	4	6		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*23*
04:30 PM	04:45 PM	5	9	2	0	9	3	5	9		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*42*
04:45 PM	05:00 PM	10	15	3	0	9	8	10	15		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*70*
05:00 PM	05:15 PM	14	16	4	2	15	11	14	16		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*92*
05:15 PM	05:30 PM	15	18	4		16	12	15	18		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*98*
05:30 PM	05:45 PM	19	21	5	####	17	13	19	21		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		*#VALUE!*
05:45 PM	06:00 PM	24	25	7	####	20	13	24	25		0	0	0	0	0	0	0	0		0	0	2	0	0	0	0	0	0	0	0	0		*#VALUE!*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	3	2	0	0	2	0	2	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
04:15 PM	04:30 PM	1	4	0	0	1	0	2	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*12*
04:30 PM	04:45 PM	1	3	2	0	6	3	1	3	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*19*
04:45 PM	05:00 PM	5	6	1	0	0	5	5	6	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*28*
05:00 PM	05:15 PM	4	1	1	2	6	3	4	1	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*22*
05:15 PM	05:30 PM	1	2	0	####	1	1	1	2	####	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*#VALUE!*
05:30 PM	05:45 PM	4	3	1	####	1	1	4	3	####	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	***#VALUE!***
05:45 PM	06:00 PM	5	4	2	####	3	0	5	4	####	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	***#VALUE!***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	10	15	3	0	9	8	10	15	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***70***
04:15 PM	05:15 PM	11	14	4	2	13	11	12	14	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***81***
04:30 PM	05:30 PM	11	12	4	####	13	12	11	12	####	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***#VALUE!***
04:45 PM	05:45 PM	14	12	3	####	8	10	14	12	####	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	***#VALUE!***
05:00 PM	06:00 PM	14	10	4	####	11	5	14	10	####	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	***#VALUE!***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	10	18	18	24	**70**	10	18	18	24	***70***	0	0	0	0	***0***
04:15 PM	05:15 PM	14	18	22	27	**81**	14	18	22	27	***81***	0	0	0	0	***0***
04:30 PM	05:30 PM	#VALUE!	16	23	25	**#VALUE!**	#VALUE!	16	23	25	*******	0	0	0	0	***0***
04:45 PM	05:45 PM	#VALUE!	15	24	20	**#VALUE!**	#VALUE!	15	24	20	*******	1	0	0	0	***1***
05:00 PM	06:00 PM	#VALUE!	14	19	21	**#VALUE!**	#VALUE!	14	19	21	*******	2	0	0	0	***2***

Tel : (510) 232-1271 ***Fax: (510) 232-1272***

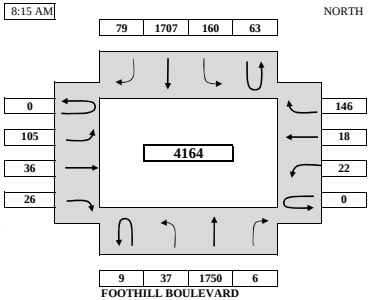
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

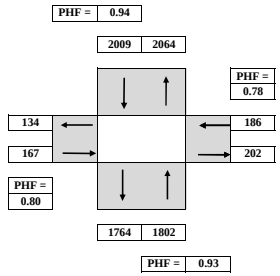
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	HAZEL ROAD	JURISDICTION:	HAYWARD	FILE:	3503036-3AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM	6	11	373	1	11	28	401	16		23	10	4		8	11	21	**924**
7:15 AM	7:30 AM	9	20	845	2	29	63	791	27		51	13	5		14	14	49	**1932**
7:30 AM	7:45 AM	9	26	1274	4	37	95	1246	51		75	23	13		19	20	98	**2990**
7:45 AM	8:00 AM	12	36	1726	5	57	147	1686	71		106	38	19		26	23	134	**4086**
8:00 AM	8:15 AM	15	48	2123	7	74	188	2108	95		128	46	30		30	29	167	**5088**
8:15 AM	8:30 AM	24	64	2503	8	93	234	2467	125		141	54	33		33	33	196	**6008**
8:30 AM	8:45 AM	26	77	2887	15	110	279	2883	151		160	60	37		43	41	220	**6989**
8:45 AM	9:00 AM	31	87	3162	19	132	326	3183	162		179	63	43		45	46	241	**7719**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	6	11	373	1	11	28	401	16	0	23	10	4	0	8	11	21	**924**
7:15 AM	7:30 AM	3	9	472	1	18	35	390	11	0	28	3	1	0	6	3	28	**1008**
7:30 AM	7:45 AM	0	6	429	2	8	32	455	24	0	24	10	8	0	5	6	49	**1058**
7:45 AM	8:00 AM	3	10	452	1	20	52	440	20	0	31	15	6	0	7	3	36	**1096**
8:00 AM	8:15 AM	3	12	397	2	17	41	422	24	0	22	8	11	0	4	6	33	**1002**
8:15 AM	8:30 AM	9	16	380	1	19	46	359	30	0	13	8	3	0	3	4	29	**920**
8:30 AM	8:45 AM	2	13	384	7	17	45	416	26	0	19	6	4	0	10	8	24	**981**
8:45 AM	9:00 AM	5	10	275	4	22	47	300	11	0	19	3	6	0	2	5	21	**730**
HOURLY TOTALS																		
7:00 AM	8:00 AM	12	36	1726	5	57	147	1686	71	0	106	38	19	0	26	23	134	**4086**
7:15 AM	8:15 AM	9	37	1750	6	63	160	1707	79	0	105	36	26	0	22	18	146	**4164**
7:30 AM	8:30 AM	15	44	1658	6	64	171	1676	98	0	90	41	28	0	19	19	147	**4076**
7:45 AM	8:45 AM	17	51	1613	11	73	184	1637	100	0	85	37	24	0	24	21	122	**3999**
8:00 AM	9:00 AM	19	51	1436	14	75	179	1497	91	0	73	25	24	0	19	23	107	**3633**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	9	37	1750	6	63	160	1707	79	0	105	36	26	0	22	18	146	**4164**
PHF BY MOVEMENT	0.75	0.77	0.93	0.75	0.79	0.77	0.94	0.82	0.00	0.85	0.60	0.59	0.00	0.79	0.75	0.74	OVERALL
PHF BY APPROACH	0.93				0.94				0.80				0.78				**0.95**
PED (Inc JAY-WALK)	3				14				7				5				**29**
BICYCLE	0				0				3				0				**3**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

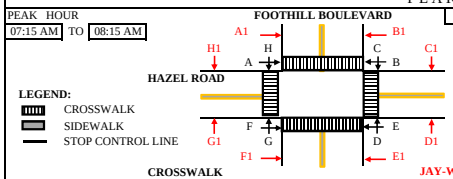
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	HAZEL ROAD	JURISDICTION:	HAYWARD	FILE:	3503036-3AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM



PEDESTRIAN | BICYCLE

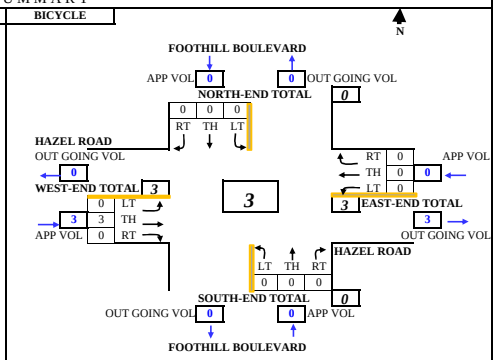
LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE

CROSSWALK

A	B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1	B1
2	1	3	3	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
2	2	4	14	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
4	5	9	7	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
1	12	13	5	0	0	0	0
TOTAL PEDESTIAN		29		TOTAL JAY-WALK		0	

JAY-WALK (in RED)

TOTAL PEDESTIAN (Incldd JAY-WALK) 29



TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	2	0	1	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*3*
07:15 AM	07:30 AM	1	0	2	1	1	1	0	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*8*
07:30 AM	07:45 AM	2	1	3	2	3	2	1	6		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	1	0	0	0	0		*21*
07:45 AM	08:00 AM	2	1	3	2	3	5	1	8		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	1	0	0	0	0		*26*
08:00 AM	08:15 AM	2	1	4	2	5	5	1	12		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	3	0	0	0	0		*35*
08:15 AM	08:30 AM	4	3	7	4	5	5	2	18		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	3	0	0	0	0		*51*
08:30 AM	08:45 AM	6	3	7	5	6	7	2	19		0	0	0	0	0	0	0	0		0	2	0	0	0	0	0	3	0	0	0	0		*60*
08:45 AM	09:00 AM	7	3	9	7	6	7	3	19		0	0	0	0	0	0	0	0		0	2	0	0	0	0	0	3	0	0	0	0		*66*
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	2	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
07:15 AM	07:30 AM	1	0	0	1	0	1	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*5*
07:30 AM	07:45 AM	1	1	1	1	2	1	1	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	*13*
07:45 AM	08:00 AM	0	0	0	0	0	3	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*5*
08:00 AM	08:15 AM	0	0	1	0	2	0	0	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	*9*
08:15 AM	08:30 AM	2	2	3	2	0	0	1	6	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*16*
08:30 AM	08:45 AM	2	0	0	1	1	2	0	1	7	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	*9*
08:45 AM	09:00 AM	1	0	2	2	0	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***6***
HOURLY TOTALS																																	
07:00 AM	08:00 AM	2	1	3	2	3	5	1	8	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	***26***
07:15 AM	08:15 AM	2	1	2	2	4	5	1	12	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	***32***
07:30 AM	08:30 AM	3	3	5	3	4	4	2	16	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	***43***
07:45 AM	08:45 AM	4	2	4	3	3	5	1	13	35	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	4	***39***
08:00 AM	09:00 AM	5	2	6	5	3	2	2	11	36	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	4	***40***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	3	11	7	4	**25**	3	11	7	4	***25***	0	0	1	0	***1***
07:15 AM	08:15 AM	3	14	7	5	**29**	3	14	7	5	***29***	0	0	3	0	***3***
07:30 AM	08:30 AM	5	21	7	7	**40**	5	21	7	7	***40***	0	0	3	0	***3***
07:45 AM	08:45 AM	4	17	9	5	**35**	4	17	9	5	***35***	2	0	2	0	***4***
08:00 AM	09:00 AM	7	17	7	5	**36**	7	17	7	5	***36***	2	0	2	0	***4***

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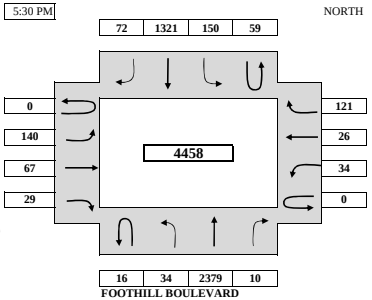
INTERSECTION TURNING MOVEMENT SUMMARY

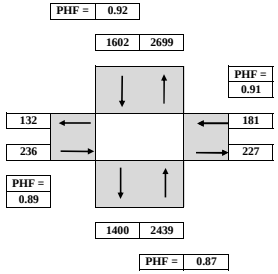
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	HAZEL ROAD	JURISDICTION:	HAYWARD	FILE:	3503036-3PM

PEAK HOUR 4:30 PM to 5:30 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	4	5	507	1	16	52	256	19		36	15	12		8	5	18	**954**
4:15 PM	4:30 PM	7	14	1106	3	34	80	566	26		71	29	20		20	13	47	**2036**
4:30 PM	4:45 PM	8	22	1705	6	44	135	916	45		94	41	29		25	19	86	**3175**
4:45 PM	5:00 PM	11	29	2280	7	61	162	1234	62		133	61	36		35	27	117	**4255**
5:00 PM	5:15 PM	19	41	2801	10	79	196	1557	80		176	77	43		43	34	152	**5308**
5:15 PM	5:30 PM	23	48	3485	13	93	230	1887	98		211	96	49		54	39	168	**6494**
5:30 PM	5:45 PM	27	57	4053	16	109	257	2191	116		256	128	57		59	50	201	**7577**
5:45 PM	6:00 PM	32	66	4615	19	125	297	2496	139		278	133	67		67	60	230	**8624**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	4	5	507	1	16	52	256	19	0	36	15	12	0	8	5	18	**954**
4:15 PM	4:30 PM	3	9	599	2	18	28	310	7	0	35	14	8	0	12	8	29	**1082**
4:30 PM	4:45 PM	1	8	599	3	10	55	350	19	0	23	12	9	0	5	6	39	**1139**
4:45 PM	5:00 PM	3	7	575	1	17	27	318	17	0	39	20	7	0	10	8	31	**1080**
5:00 PM	5:15 PM	8	12	521	3	18	34	323	18	0	43	16	7	0	8	7	35	**1053**
5:15 PM	5:30 PM	4	7	684	3	14	34	330	18	0	35	19	6	0	11	5	16	**1186**
5:30 PM	5:45 PM	4	9	568	3	16	27	304	18	0	45	32	8	0	5	11	33	**1083**
5:45 PM	6:00 PM	5	9	562	3	16	40	305	23	0	22	5	10	0	8	10	29	**1047**
HOURLY TOTALS																		
4:00 PM	5:00 PM	11	29	2280	7	61	162	1234	62	0	133	61	36	0	35	27	117	**4255**
4:15 PM	5:15 PM	15	36	2294	9	63	144	1301	61	0	140	62	31	0	35	29	134	**4354**
4:30 PM	5:30 PM	16	34	2379	10	59	150	1321	72	0	140	67	29	0	34	26	121	**4458**
4:45 PM	5:45 PM	19	35	2348	10	65	122	1275	71	0	162	87	28	0	34	31	115	**4402**
5:00 PM	6:00 PM	21	37	2335	12	64	135	1262	77	0	145	72	31	0	32	33	113	**4369**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	16	34	2379	10	59	150	1321	72	0	140	67	29	0	34	26	121	**4458**
PHF BY MOVEMENT	0.50	0.71	0.87	0.83	0.82	0.68	0.94	0.95	0.00	0.81	0.84	0.81	0.00	0.77	0.81	0.78	OVERALL
PHF BY APPROACH	0.87				0.92				0.89				0.91				**0.94**
PED (Inc JAY-WALK)	9				9				8				9				**35**
BICYCLE	4				6				2				0				**12**

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B.A.Y.M.E.T.R.I.C.S.

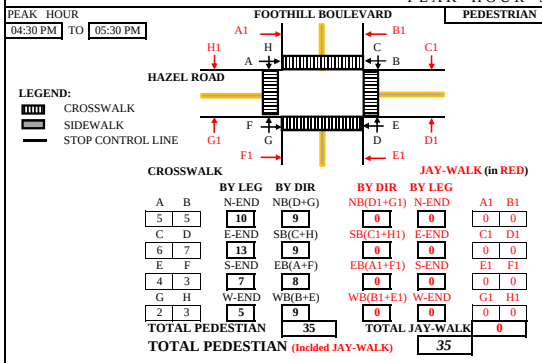
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

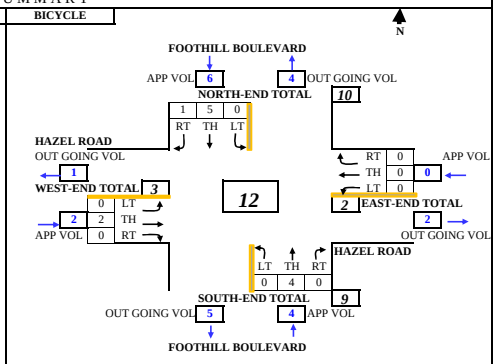
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	HAZEL ROAD	JURISDICTION:	HAYWARD	FILE:	3503036-3PM

PEAK HOUR SUMMARY

PEAK HOUR 04:30 PM TO 05:30 PM

PEDESTRIAN | BICYCLE





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	0	0	2	2	1	0	4	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			*9*
04:15 PM	04:30 PM	1	0	4	6	4	0	8	0		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		*24*
04:30 PM	04:45 PM	2	1	5	8	5	1	10	3		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0	0		*38*
04:45 PM	05:00 PM	2	1	6	9	6	1	10	3		0	0	0	0	0	0	0	0		0	4	0	0	3	0	0	1	0	0	0	0	0		*46*
05:00 PM	05:15 PM	3	3	9	13	7	2	10	3		0	0	0	0	0	0	0	0		0	5	0	0	5	0	0	2	0	0	0	0	0		*62*
05:15 PM	05:30 PM	6	5	10	13	8	3	10	3		0	0	0	0	0	0	0	0		0	5	0	0	5	1	0	2	0	0	0	0	0		*71*
05:30 PM	05:45 PM	6	7	11	13	8	3	13	8		0	0	0	0	0	0	0	0		0	9	0	0	5	1	0	3	0	0	3	0			*90*
05:45 PM	06:00 PM	9	11	13	17	9	5	13	8		0	0	0	0	0	0	0	0		0	9	0	0	5	2	0	3	0	0	3	0			*107*
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	0	0	2	2	1	0	4	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		*9*
04:15 PM	04:30 PM	1	0	2	4	3	0	4	0	14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1		*15*
04:30 PM	04:45 PM	1	1	1	2	1	1	2	3	12	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2		*14*
04:45 PM	05:00 PM	0	0	1	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	0	0	0	5		*8*
05:00 PM	05:15 PM	1	2	3	4	1	1	0	0	12	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	4		*16*
05:15 PM	05:30 PM	3	2	1	0	1	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1		*9*
05:30 PM	05:45 PM	0	2	1	0	0	0	3	5	11	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	3	0	8		*19*
05:45 PM	06:00 PM	3	4	2	4	1	2	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1		***17***
HOURLY TOTALS																																		
04:00 PM	05:00 PM	2	1	6	9	6	1	10	3	38	0	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	1	0	0	0	0	8		***46***
04:15 PM	05:15 PM	3	3	7	11	6	2	6	3	41	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	2	0	0	0	0	12		***53***
04:30 PM	05:30 PM	5	5	6	7	4	3	2	3	35	0	0	0	0	0	0	0	0	0	0	4	0	0	5	1	0	2	0	0	0	0	12		***47***
04:45 PM	05:45 PM	4	6	6	5	3	2	3	5	34	0	0	0	0	0	0	0	0	0	0	7	0	0	4	1	0	3	0	0	3	0	18		***52***
05:00 PM	06:00 PM	7	10	7	8	3	4	3	5	47	0	0	0	0	0	0	0	0	0	0	5	0	0	2	2	0	2	0	0	3	0	14		***61***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	19	9	3	7	**38**	19	9	3	7	***38***	4	3	1	0	***8***
04:15 PM	05:15 PM	17	10	5	9	**41**	17	10	5	9	***41***	5	5	2	0	***12***
04:30 PM	05:30 PM	9	9	8	9	**35**	9	9	8	9	***35***	4	6	2	0	***12***
04:45 PM	05:45 PM	8	11	6	9	**34**	8	11	6	9	***34***	7	5	3	3	***18***
05:00 PM	06:00 PM	11	12	11	13	**47**	11	12	11	13	***47***	5	4	2	3	***14***

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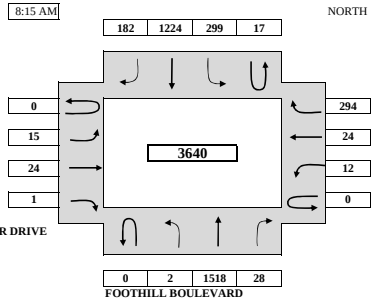
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

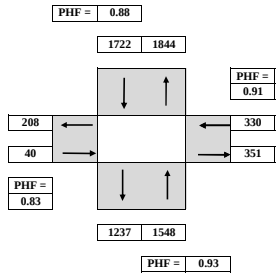
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	CITY CENTER DRIVE	JURISDICTION:	HAYWARD	FILE:	3503036-4AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM	0	0	304	2	1	28	291	51	3	4	0	4	7	66			**761**
7:15 AM	7:30 AM	0	0	716	6	3	76	578	94	7	9	0	9	10	149			**1657**
7:30 AM	7:45 AM	0	0	1100	12	6	152	938	147	9	13	1	10	15	217			**2620**
7:45 AM	8:00 AM	0	1	1483	21	8	231	1184	191	15	19	1	12	22	292			**3480**
8:00 AM	8:15 AM	0	2	1822	30	18	327	1515	233	18	28	1	16	31	360			**4401**
8:15 AM	8:30 AM	0	3	2155	33	23	388	1788	258	20	32	2	17	38	449			**5206**
8:30 AM	8:45 AM	0	3	2481	39	29	447	2028	294	23	36	2	21	46	507			**5956**
8:45 AM	9:00 AM	2	4	2759	41	38	505	2264	344	26	39	2	23	49	557			**6653**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	304	2	1	28	291	51	0	3	4	0	0	4	7	66	**761**
7:15 AM	7:30 AM	0	0	412	4	2	48	287	43	0	4	5	0	0	5	3	83	**896**
7:30 AM	7:45 AM	0	0	384	6	3	76	360	53	0	2	4	1	0	1	5	68	**963**
7:45 AM	8:00 AM	0	1	383	9	2	79	246	44	0	6	6	0	0	2	7	75	**860**
8:00 AM	8:15 AM	0	1	339	9	10	96	331	42	0	3	9	0	0	4	9	68	**921**
8:15 AM	8:30 AM	0	1	333	3	5	61	273	25	0	2	4	1	0	1	7	89	**805**
8:30 AM	8:45 AM	0	0	326	6	6	59	240	36	0	3	4	0	0	4	8	58	**750**
8:45 AM	9:00 AM	2	1	278	2	9	58	236	50	0	3	3	0	0	2	3	50	**697**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	1	1483	21	8	231	1184	191	0	15	19	1	0	12	22	292	**3480**
7:15 AM	8:15 AM	0	2	1518	28	17	299	1224	182	0	15	24	1	0	12	24	294	**3640**
7:30 AM	8:30 AM	0	3	1439	27	20	312	1210	164	0	13	23	2	0	8	28	300	**3549**
7:45 AM	8:45 AM	0	3	1381	27	23	295	1090	147	0	14	23	1	0	11	31	290	**3336**
8:00 AM	9:00 AM	2	3	1276	20	30	274	1080	153	0	11	20	1	0	11	27	265	**3173**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	2	1518	28	17	299	1224	182	0	15	24	1	0	12	24	294	**3640**
PHF BY MOVEMENT	0.00	0.50	0.92	0.78	0.43	0.78	0.85	0.86	0.00	0.63	0.67	0.25	0.00	0.60	0.67	0.89	OVERALL
PHF BY APPROACH	0.93				0.88				0.83				0.91				**0.94**
PED (Inc JAY-WALK)	8				6				7				2				**23**
BICYCLE	0				1				0				0				**1**

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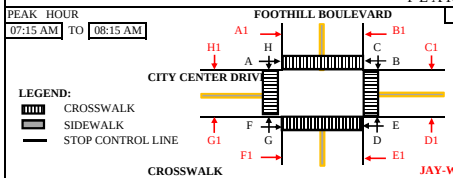
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	CITY CENTER DRIVE	JURISDICTION:	HAYWARD	FILE:	3503036-4AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM



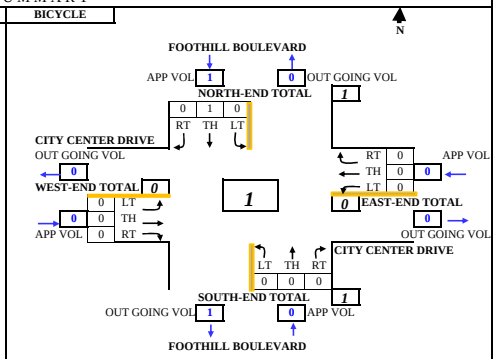
LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE

CROSSWALK — JAY-WALK (in RED)

A	B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1	B1
4	1	5	8	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
5	4	9	6	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
1	3	4	7	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
4	1	5	2	0	0	0	0

TOTAL PEDESTIAN 23 — TOTAL JAY-WALK 0

TOTAL PEDESTIAN (Incldd JAY-WALK) 23



TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	3	0	1	0	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*5*
07:15 AM	07:30 AM	0	0	4	0	1	0	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*6*
07:30 AM	07:45 AM	1	0	4	3	1	0	1	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*12*
07:45 AM	08:00 AM	2	1	5	3	2	2	2	2		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		*20*
08:00 AM	08:15 AM	4	1	8	4	2	3	4	2		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		*29*
08:15 AM	08:30 AM	4	1	10	4	2	4	6	6		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		*38*
08:30 AM	08:45 AM	6	1	10	5	2	4	7	8		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0		*46*
08:45 AM	09:00 AM	6	1	12	7	3	7	9	8		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0		*56*
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	3	0	1	0	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*5*
07:15 AM	07:30 AM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
07:30 AM	07:45 AM	1	0	0	3	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*6*
07:45 AM	08:00 AM	1	1	1	0	1	2	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	*8*
08:00 AM	08:15 AM	2	0	3	1	0	1	2	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
08:15 AM	08:30 AM	0	0	2	0	0	1	2	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
08:30 AM	08:45 AM	2	0	0	1	0	0	1	2	6	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	*8*
08:45 AM	09:00 AM	0	0	2	2	1	3	2	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***10***
HOURLY TOTALS																																	
07:00 AM	08:00 AM	2	1	5	3	2	2	2	2	19	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***20***
07:15 AM	08:15 AM	4	1	5	4	1	3	4	1	23	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***24***
07:30 AM	08:30 AM	4	1	6	4	1	4	6	5	31	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***32***
07:45 AM	08:45 AM	5	1	6	2	1	4	6	6	31	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3	***34***
08:00 AM	09:00 AM	4	0	7	4	1	5	7	6	34	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	***36***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	5	7	4	3	**19**	5	7	4	3	***19***	0	1	0	0	***1***
07:15 AM	08:15 AM	8	6	7	2	**23**	8	6	7	2	***23***	0	1	0	0	***1***
07:30 AM	08:30 AM	10	11	8	2	**31**	10	11	8	2	***31***	0	1	0	0	***1***
07:45 AM	08:45 AM	8	12	9	2	**31**	8	12	9	2	***31***	2	1	0	0	***3***
08:00 AM	09:00 AM	11	13	9	1	**34**	11	13	9	1	***34***	2	0	0	0	***2***

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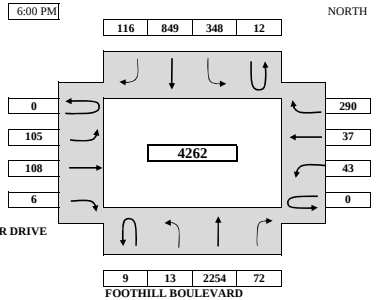
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

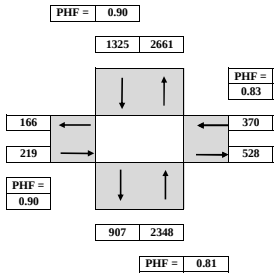
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	CITY CENTER DRIVE	JURISDICTION:	HAYWARD	FILE:	3503036-4PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	3	3	452	17	8	67	192	20	26	23	0		7	9	71		**898**
4:15 PM	4:30 PM	4	4	1009	25	17	163	427	33	39	49	1		9	21	184		**1985**
4:30 PM	4:45 PM	6	4	1429	36	22	257	654	57	62	78	3		18	28	250		**2904**
4:45 PM	5:00 PM	8	8	1912	49	28	344	855	84	76	92	4		24	35	304		**3823**
5:00 PM	5:15 PM	11	13	2500	60	30	439	991	121	101	117	5		35	47	366		**4836**
5:15 PM	5:30 PM	13	16	3039	74	35	517	1225	149	131	142	5		47	60	436		**5889**
5:30 PM	5:45 PM	16	17	3721	110	37	600	1457	173	155	168	7		59	66	496		**7082**
5:45 PM	6:00 PM	17	21	4166	121	40	692	1704	200	181	200	10		67	72	594		**8085**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	3	3	452	17	8	67	192	20	0	26	23	0	0	7	9	71	**898**
4:15 PM	4:30 PM	1	1	557	8	9	96	235	13	0	13	26	1	0	2	12	113	**1087**
4:30 PM	4:45 PM	2	0	420	11	5	94	227	24	0	23	29	2	0	9	7	66	**919**
4:45 PM	5:00 PM	2	4	483	13	6	87	201	27	0	14	14	1	0	6	7	54	**919**
5:00 PM	5:15 PM	3	5	588	11	2	95	136	37	0	25	25	1	0	11	12	62	**1013**
5:15 PM	5:30 PM	2	3	539	14	5	78	234	28	0	30	25	0	0	12	13	70	**1053**
5:30 PM	5:45 PM	3	1	682	36	2	83	232	24	0	24	26	2	0	12	6	60	**1193**
5:45 PM	6:00 PM	1	4	445	11	3	92	247	27	0	26	32	3	0	8	6	98	**1003**
HOURLY TOTALS																		
4:00 PM	5:00 PM	8	8	1912	49	28	344	855	84	0	76	92	4	0	24	35	304	**3823**
4:15 PM	5:15 PM	8	10	2048	43	22	372	799	101	0	75	94	5	0	28	38	295	**3938**
4:30 PM	5:30 PM	9	12	2030	49	18	354	798	116	0	92	93	4	0	38	39	252	**3904**
4:45 PM	5:45 PM	10	13	2292	74	15	343	803	116	0	93	90	4	0	41	38	246	**4178**
5:00 PM	6:00 PM	9	13	2254	72	12	348	849	116	0	105	108	6	0	43	37	290	**4262**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	9	13	2254	72	12	348	849	116	0	105	108	6	0	43	37	290	**4262**
PHF BY MOVEMENT	0.75	0.65	0.83	0.50	0.60	0.92	0.86	0.78	0.00	0.88	0.84	0.50	0.00	0.90	0.71	0.74	OVERALL
PHF BY APPROACH	0.81				0.90				0.90				0.83				**0.89**
PED (Inc JAY-WALK)	10				2				7				8				**27**
BICYCLE	5				3				0				3				**11**

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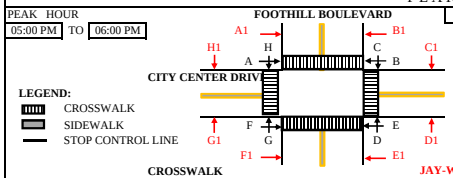
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	CITY CENTER DRIVE	JURISDICTION:	HAYWARD	FILE:	3503036-4PM

PEAK HOUR SUMMARY

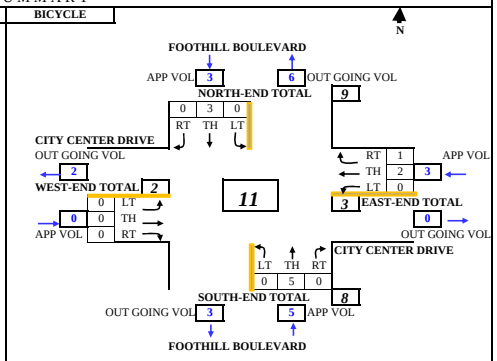
PEAK HOUR 05:00 PM TO 06:00 PM



CROSSWALK / JAY-WALK (in RED)

A	B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1	B1
2	3	5	10	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
2	5	7	2	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
5	5	10	7	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
5	0	5	8	0	0	0	0
TOTAL PEDESTIAN		27		TOTAL JAY-WALK		0	

TOTAL PEDESTIAN (Incldd JAY-WALK) 27



TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	0	1	1	1	0	0	1	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		*6*
04:15 PM	04:30 PM	0	1	6	3	0	0	5	1		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	3	0		*22*
04:30 PM	04:45 PM	1	2	6	4	0	2	7	2		0	0	0	0	0	0	0	0		0	2	0	0	1	1	0	0	0	0	3	0		*31*
04:45 PM	05:00 PM	2	2	11	5	1	2	8	3		0	0	0	0	0	0	0	0		0	4	0	0	2	1	0	0	0	0	3	1		*45*
05:00 PM	05:15 PM	2	2	11	5	1	5	9	3		0	0	0	0	0	0	0	0		0	5	0	0	2	1	0	0	0	0	3	1		*50*
05:15 PM	05:30 PM	2	4	11	5	1	7	9	3		0	0	0	0	0	0	0	0		0	6	0	0	3	1	0	0	0	0	3	2		*57*
05:30 PM	05:45 PM	4	5	13	7	1	7	13	3		0	0	0	0	0	0	0	0		0	9	0	0	3	1	0	0	0	0	5	2		*73*
05:45 PM	06:00 PM	4	5	13	10	6	7	13	3		0	0	0	0	0	0	0	0		0	9	0	0	5	1	0	0	0	0	5	2		*83*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	0	1	1	1	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	*6*
04:15 PM	04:30 PM	0	0	5	2	0	0	4	1	12	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	4	*16*
04:30 PM	04:45 PM	1	1	0	1	0	2	2	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	*9*
04:45 PM	05:00 PM	1	0	5	1	1	0	1	1	10	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	1	4	*14*
05:00 PM	05:15 PM	0	0	0	0	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	*5*
05:15 PM	05:30 PM	0	2	0	0	0	2	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	3	*7*
05:30 PM	05:45 PM	2	1	2	2	0	0	4	0	11	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	5	*16*
05:45 PM	06:00 PM	0	0	0	3	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	***10***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	2	2	11	5	1	2	8	3	34	0	0	0	0	0	0	0	0	0	0	4	0	0	2	1	0	0	0	0	3	1	11	***45***
04:15 PM	05:15 PM	2	1	10	4	1	5	8	3	34	0	0	0	0	0	0	0	0	0	0	5	0	0	2	1	0	0	0	0	1	1	10	***44***
04:30 PM	05:30 PM	2	3	5	2	1	7	4	2	26	0	0	0	0	0	0	0	0	0	0	4	0	0	2	1	0	0	0	0	0	2	9	***35***
04:45 PM	05:45 PM	3	3	7	3	1	5	6	1	29	0	0	0	0	0	0	0	0	0	0	7	0	0	2	0	0	0	0	0	2	2	13	***42***
05:00 PM	06:00 PM	2	3	2	5	5	5	5	0	27	0	0	0	0	0	0	0	0	0	0	5	0	0	3	0	0	0	0	0	2	1	11	***38***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	13	14	4	3	**34**	13	14	4	3	***34***	4	3	0	4	***11***
04:15 PM	05:15 PM	12	13	7	2	**34**	12	13	7	2	***34***	5	3	0	2	***10***
04:30 PM	05:30 PM	6	7	9	4	**26**	6	7	9	4	***26***	4	3	0	2	***9***
04:45 PM	05:45 PM	9	8	8	4	**29**	9	8	8	4	***29***	7	2	0	4	***13***
05:00 PM	06:00 PM	10	2	7	8	**27**	10	2	7	8	***27***	5	3	0	3	***11***

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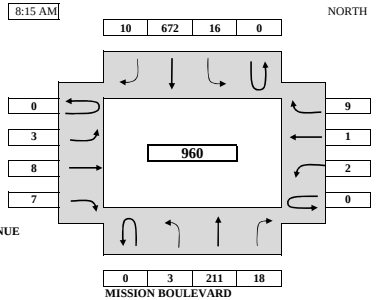
INTERSECTION TURNING MOVEMENT SUMMARY

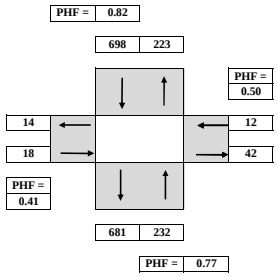
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-5AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		1	40	0		0	116	3		1	2	2		0	0	1	**166**
7:15 AM	7:30 AM		2	94	4		3	322	6		1	3	2		0	1	3	**441**
7:30 AM	7:45 AM		3	139	8		6	500	9		2	3	4		0	1	4	**679**
7:45 AM	8:00 AM		4	180	14		10	645	11		2	4	6		2	1	8	**887**
8:00 AM	8:15 AM		4	251	18		16	788	13		4	10	9		2	1	10	**1126**
8:15 AM	8:30 AM		7	319	26		16	908	16		4	10	10		2	3	10	**1331**
8:30 AM	8:45 AM		8	384	36		18	1046	16		5	10	12		9	3	11	**1558**
8:45 AM	9:00 AM		11	459	39		24	1189	18		6	10	13		9	8	13	**1799**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	1	40	0	0	0	116	3	0	1	2	2	0	0	0	1	**166**
7:15 AM	7:30 AM	0	1	54	4	0	3	206	3	0	0	1	0	0	0	1	2	**275**
7:30 AM	7:45 AM	0	1	45	4	0	3	178	3	0	1	0	2	0	0	0	1	**238**
7:45 AM	8:00 AM	0	1	41	6	0	4	145	2	0	0	1	2	0	2	0	4	**208**
8:00 AM	8:15 AM	0	0	71	4	0	6	143	2	0	2	6	3	0	0	0	2	**239**
8:15 AM	8:30 AM	0	3	68	8	0	0	120	3	0	0	0	1	0	0	2	0	**205**
8:30 AM	8:45 AM	0	1	65	10	0	2	138	0	0	1	0	2	0	7	0	1	**227**
8:45 AM	9:00 AM	0	3	75	3	0	6	143	2	0	1	0	1	0	0	5	2	**241**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	4	180	14	0	10	645	11	0	2	4	6	0	2	1	8	**887**
7:15 AM	8:15 AM	0	3	211	18	0	16	672	10	0	3	8	7	0	2	1	9	**960**
7:30 AM	8:30 AM	0	5	225	22	0	13	586	10	0	3	7	8	0	2	2	7	**890**
7:45 AM	8:45 AM	0	5	245	28	0	12	546	7	0	3	7	8	0	9	2	7	**879**
8:00 AM	9:00 AM	0	7	279	25	0	14	544	7	0	4	6	7	0	7	7	5	**912**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	3	211	18	0	16	672	10	0	3	8	7	0	2	1	9	**960**
PHF BY MOVEMENT	0.00	0.75	0.74	0.75	0.00	0.67	0.82	0.83	0.00	0.38	0.33	0.58	0.00	0.25	0.25	0.56	OVERALL
PHF BY APPROACH	0.77				0.82				0.41				0.50				**0.87**
PED (Inc JAY-WALK)	7				3				2				1				**13**
BICYCLE	3				4				6				2				**15**

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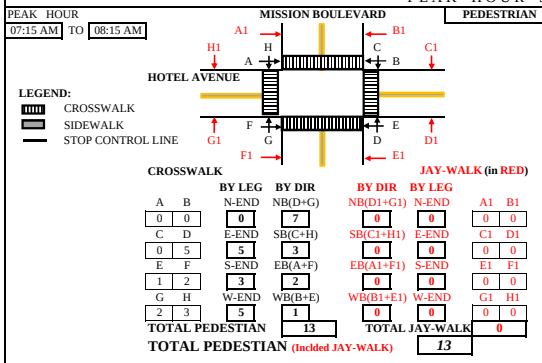
B.A.Y.M.E.T.R.I.C.S.

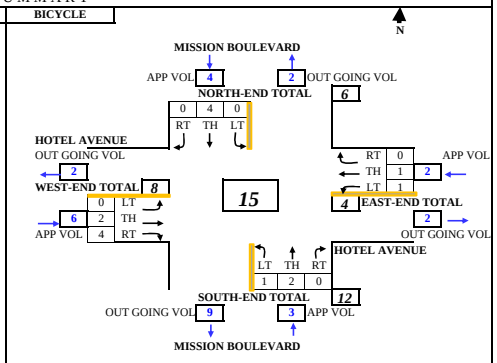
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-5AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
07:00 AM	07:15 AM	0	0	0	0	0	0	1	2		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	2	0	0	0			*6*
07:15 AM	07:30 AM	0	0	0	2	1	1	3	4		0	0	0	0	0	0	0	0		1	0	0	0	2	0	0	0	4	0	0	0			*18*
07:30 AM	07:45 AM	0	0	0	2	1	1	3	4		0	0	0	0	0	0	0	0		1	0	0	0	3	0	0	0	6	1	0	0			*22*
07:45 AM	08:00 AM	0	0	0	4	1	2	3	4		0	0	0	0	0	0	0	0		1	1	0	0	5	0	0	1	6	1	0	0			*29*
08:00 AM	08:15 AM	0	0	0	5	1	2	3	5		0	0	0	0	0	0	0	0		1	2	0	0	5	0	0	2	6	1	1	0			*34*
08:15 AM	08:30 AM	0	0	0	5	1	2	3	5		0	0	0	0	0	0	0	0		1	2	0	0	5	1	0	2	6	1	1	1			*36*
08:30 AM	08:45 AM	2	0	0	5	1	2	4	5		0	0	0	0	0	0	0	0		1	2	0	1	5	1	0	2	6	1	3	1			*42*
08:45 AM	09:00 AM	2	0	0	6	1	2	4	6		0	0	0	0	0	0	0	0		1	2	0	1	5	1	1	3	6	1	3	1			*46*
TOTAL BY PERIOD																																		
07:00 AM	07:15 AM	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	0	3	*6*
07:15 AM	07:30 AM	0	0	0	2	1	1	2	2	8	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0	4	*12*
07:30 AM	07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	4	*4*
07:45 AM	08:00 AM	0	0	0	2	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	4	*7*
08:00 AM	08:15 AM	0	0	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	3	*5*
08:15 AM	08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	*2*
08:30 AM	08:45 AM	2	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	3	*6*
08:45 AM	09:00 AM	0	0	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	*4*
HOURLY TOTALS																																		
07:00 AM	08:00 AM	0	0	0	4	1	2	3	4	14	0	0	0	0	0	0	0	0	0	1	1	0	0	5	0	0	1	6	1	0	0	15	***29***
07:15 AM	08:15 AM	0	0	0	5	1	2	2	3	13	0	0	0	0	0	0	0	0	0	1	2	0	0	4	0	0	2	4	1	1	0	15	***28***
07:30 AM	08:30 AM	0	0	0	3	0	1	0	1	5	0	0	0	0	0	0	0	0	0	0	2	0	0	3	1	0	2	2	1	1	1	13	***18***
07:45 AM	08:45 AM	2	0	0	3	0	1	1	1	8	0	0	0	0	0	0	0	0	0	0	2	0	1	2	1	0	2	0	0	3	1	12	***20***
08:00 AM	09:00 AM	2	0	0	2	0	0	1	2	7	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	2	0	0	3	1	10	***17***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	7	4	2	1	**14**	7	4	2	1	***14***	2	5	7	1	***15***
07:15 AM	08:15 AM	7	3	2	1	**13**	7	3	2	1	***13***	3	4	6	2	***15***
07:30 AM	08:30 AM	3	1	1	0	**5**	3	1	1	0	***5***	2	4	4	3	***13***
07:45 AM	08:45 AM	4	1	3	0	**8**	4	1	3	0	***8***	2	4	2	4	***12***
08:00 AM	09:00 AM	3	2	2	0	**7**	3	2	2	0	***7***	1	2	3	4	***10***

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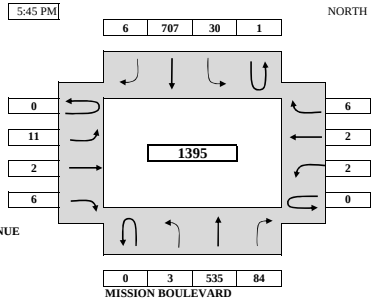
INTERSECTION TURNING MOVEMENT SUMMARY

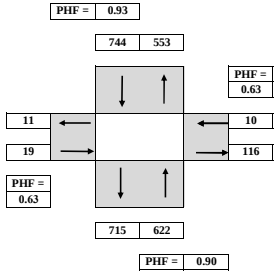
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-5PM

PEAK HOUR 4:45 PM to 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	0	1	117	24	0	12	193	3	4	2	4		1	0	2		363
4:15 PM	4:30 PM	0	1	227	39	0	19	340	8	5	5	4		2	0	2		652
4:30 PM	4:45 PM	0	1	351	52	0	25	516	11	5	9	7		2	1	4		984
4:45 PM	5:00 PM	0	1	496	71	1	33	682	12	9	10	7		3	2	6		1333
5:00 PM	5:15 PM	0	3	643	94	1	43	855	14	10	10	8		3	2	6		1692
5:15 PM	5:30 PM	0	4	765	112	1	49	1050	14	12	11	9		3	3	8		2041
5:30 PM	5:45 PM	0	4	886	136	1	55	1223	17	16	11	13		4	3	10		2379
5:45 PM	6:00 PM	1	5	1011	153	1	64	1363	21	18	19	15		4	3	13		2691
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	1	117	24	0	12	193	3	0	4	2	4	0	1	0	2	363
4:15 PM	4:30 PM	0	0	110	15	0	7	147	5	0	1	3	0	0	1	0	0	289
4:30 PM	4:45 PM	0	0	124	13	0	6	176	3	0	0	4	3	0	0	1	2	332
4:45 PM	5:00 PM	0	0	145	19	1	8	166	1	0	4	1	0	0	1	1	2	349
5:00 PM	5:15 PM	0	2	147	23	0	10	173	2	0	1	0	1	0	0	0	0	359
5:15 PM	5:30 PM	0	1	122	18	0	6	195	0	0	2	1	1	0	0	1	2	349
5:30 PM	5:45 PM	0	0	121	24	0	6	173	3	0	4	0	4	0	1	0	2	338
5:45 PM	6:00 PM	1	1	125	17	0	9	140	4	0	2	8	2	0	0	0	3	312
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	1	496	71	1	33	682	12	0	9	10	7	0	3	2	6	1333
4:15 PM	5:15 PM	0	2	526	70	1	31	662	11	0	6	8	4	0	2	2	4	1329
4:30 PM	5:30 PM	0	3	538	73	1	30	710	6	0	7	6	5	0	1	3	6	1389
4:45 PM	5:45 PM	0	3	535	84	1	30	707	6	0	11	2	6	0	2	2	6	1395
5:00 PM	6:00 PM	1	4	515	82	0	31	681	9	0	9	9	8	0	1	1	7	1358

PEAK HOUR SUMMARY

4:45 PM to 5:45 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	3	535	84	1	30	707	6	0	11	2	6	0	2	2	6	1395
PHF BY MOVEMENT	0.00	0.38	0.91	0.88	0.25	0.75	0.91	0.50	0.00	0.69	0.50	0.38	0.00	0.50	0.50	0.75	OVERALL
PHF BY APPROACH	0.90				0.93				0.63				0.63				0.97
PED (Inc JAY-WALK)	22				20				3				4				49
BICYCLE	0				0				0				0				0

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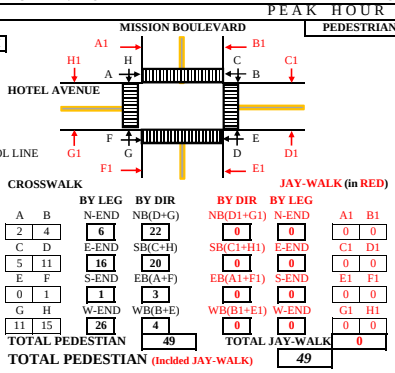
B.A.Y.M.E.T.R.I.C.S.

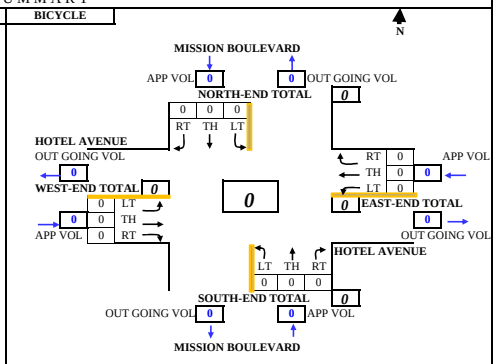
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-5PM

PEAK HOUR SUMMARY

PEAK HOUR 04:45 PM TO 05:05 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	1	0	2	1	0	0	9	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			15
04:15 PM	04:30 PM	1	0	4	4	0	0	15	5		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			29
04:30 PM	04:45 PM	1	1	4	9	0	0	23	11		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			49
04:45 PM	05:00 PM	2	1	6	12	0	0	25	16		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			62
05:00 PM	05:15 PM	2	1	7	18	0	0	26	17		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			71
05:15 PM	05:30 PM	2	5	8	19	0	0	32	20		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			86
05:30 PM	05:45 PM	3	5	9	20	0	1	34	26		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			98
05:45 PM	06:00 PM	4	5	13	24	0	1	37	31		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0			115
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	1	0	2	1	0	0	9	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		15
04:15 PM	04:30 PM	0	0	2	3	0	0	6	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		14
04:30 PM	04:45 PM	0	1	0	5	0	0	8	6	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		20
04:45 PM	05:00 PM	1	0	2	3	0	0	2	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		13
05:00 PM	05:15 PM	0	0	1	6	0	0	1	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9
05:15 PM	05:30 PM	0	4	1	1	0	0	6	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		15
05:30 PM	05:45 PM	1	0	1	1	0	1	2	6	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		12
05:45 PM	06:00 PM	1	0	4	4	0	0	3	5	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		17
HOURLY TOTALS																																		
04:00 PM	05:00 PM	2	1	6	12	0	0	25	16	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		62
04:15 PM	05:15 PM	1	1	5	17	0	0	17	15	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		56
04:30 PM	05:30 PM	1	5	4	15	0	0	17	15	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		57
04:45 PM	05:45 PM	2	4	5	11	0	1	11	15	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		49
05:00 PM	06:00 PM	2	4	7	12	0	1	12	15	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		53

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	37	22	2	1	62	37	22	2	1	62	0	0	0	0	0
04:15 PM	05:15 PM	34	20	1	1	56	34	20	1	1	56	0	0	0	0	0
04:30 PM	05:30 PM	32	19	1	5	57	32	19	1	5	57	0	0	0	0	0
04:45 PM	05:45 PM	22	20	3	4	49	22	20	3	4	49	0	0	0	0	0
05:00 PM	06:00 PM	24	22	3	4	53	24	22	3	4	53	0	0	0	0	0

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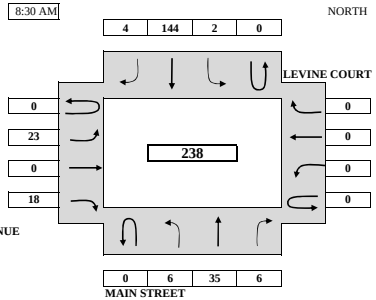
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

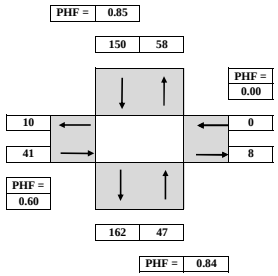
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-6AM

PEAK HOUR 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		0	8	1		0	21	0		2		0		0		0	32
7:15 AM	7:30 AM		1	13	1		1	62	0		8		0		0		0	86
7:30 AM	7:45 AM		4	20	2		1	106	0		11		4		0		0	148
7:45 AM	8:00 AM		5	28	4		1	148	1		15		7		0		0	209
8:00 AM	8:15 AM		6	39	6		2	172	4		22		17		0		0	268
8:15 AM	8:30 AM		7	48	7		3	206	4		31		18		0		0	324
8:30 AM	8:45 AM		9	59	8		3	236	4		39		19		1		1	379
8:45 AM	9:00 AM		10	68	8		6	261	4		45		20		1		1	424
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	8	1	0	0	21	0	0	2	0	0	0	0	0	0	32
7:15 AM	7:30 AM	0	1	5	0	0	1	41	0	0	6	0	0	0	0	0	0	54
7:30 AM	7:45 AM	0	3	7	1	0	0	44	0	0	3	0	4	0	0	0	0	62
7:45 AM	8:00 AM	0	1	8	2	0	0	42	1	0	4	0	3	0	0	0	0	61
8:00 AM	8:15 AM	0	1	11	2	0	1	24	3	0	7	0	10	0	0	0	0	59
8:15 AM	8:30 AM	0	1	9	1	0	1	34	0	0	9	0	1	0	0	0	0	56
8:30 AM	8:45 AM	0	2	11	1	0	0	30	0	0	8	0	1	0	1	0	1	55
8:45 AM	9:00 AM	0	1	9	0	0	3	25	0	0	6	0	1	0	0	0	0	45
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	5	28	4	0	1	148	1	0	15	0	7	0	0	0	0	209
7:15 AM	8:15 AM	0	6	31	5	0	2	151	4	0	20	0	17	0	0	0	0	236
7:30 AM	8:30 AM	0	6	35	6	0	2	144	4	0	23	0	18	0	0	0	0	238
7:45 AM	8:45 AM	0	5	39	6	0	2	130	4	0	28	0	15	0	1	0	1	231
8:00 AM	9:00 AM	0	5	40	4	0	5	113	3	0	30	0	13	0	1	0	1	215

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	6	35	6	0	2	144	4	0	23	0	18	0	0	0	0	238
PHF BY MOVEMENT	0.00	0.50	0.80	0.75	0.00	0.50	0.82	0.33	0.00	0.64	0.00	0.45	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.84				0.85				0.60				0.00				0.96
PED (Inc JAY-WALK)	1				7				2				2				12
BICYCLE	1				0				0				0				1

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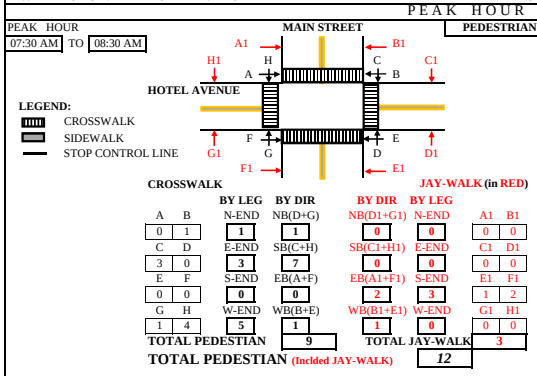
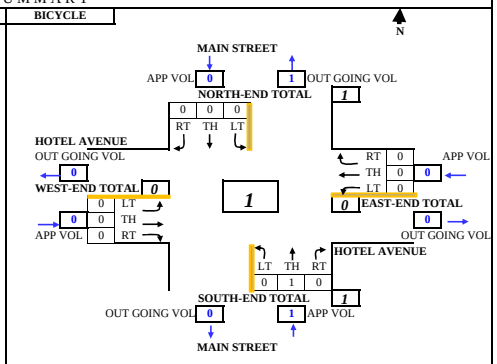
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-6AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	N-END B	E-END C	E-END D	S-END E	S-END F	W-END G	W-END H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	N-END B1	E-END C1	E-END D1	S-END E1	S-END F1	W-END G1	W-END H1	TOTAL	BICYCLE NB SOUTH-END LT	NB SOUTH-END TH	NB SOUTH-END RT	SB NORTH-END LT	SB NORTH-END TH	SB NORTH-END RT	EB WEST-END LT	EB WEST-END TH	EB WEST-END RT	WB EAST-END LT	WB EAST-END TH	WB EAST-END RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	1	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		1
07:15 AM	07:30 AM	0	0	2	2	0	0	2	2		0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		9
07:30 AM	07:45 AM	0	0	4	2	0	0	2	3		0	0	0	0	1	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0		13
07:45 AM	08:00 AM	0	0	5	2	0	0	2	4		0	0	0	0	1	2	0	0		0	0	0	0	0	0	0	0	0	0	0	0		16
08:00 AM	08:15 AM	0	1	5	2	0	0	2	5		0	0	0	0	2	2	0	0		0	1	0	0	0	0	0	0	0	0	0	0		20
08:15 AM	08:30 AM	0	1	5	2	0	0	3	6		0	0	0	0	2	2	0	0		0	1	0	0	0	0	0	0	0	0	0	0		22
08:30 AM	08:45 AM	0	3	5	2	0	0	3	8		0	0	0	0	2	2	0	0		0	1	0	0	0	0	0	0	0	0	0	0		26
08:45 AM	09:00 AM	0	3	5	4	0	0	3	9		0	0	0	0	3	3	0	0		0	1	0	0	0	0	0	0	0	0	0	0		31
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15 AM	07:30 AM	0	0	1	2	0	0	2	2	7	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
07:30 AM	07:45 AM	0	0	2	0	0	0	0	1	3	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
07:45 AM	08:00 AM	0	0	1	0	0	0	0	1	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00 AM	08:15 AM	0	1	0	0	0	0	0	1	2	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	4
08:15 AM	08:30 AM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	08:45 AM	0	2	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:45 AM	09:00 AM	0	0	0	2	0	0	0	1	3	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5
HOURLY TOTALS																																	
07:00 AM	08:00 AM	0	0	5	2	0	0	2	4	13	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	16
07:15 AM	08:15 AM	0	1	4	2	0	0	2	5	14	0	0	0	0	2	2	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	1	19
07:30 AM	08:30 AM	0	1	3	0	0	0	1	4	9	0	0	0	0	1	2	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	1	13
07:45 AM	08:45 AM	0	3	1	0	0	0	1	5	10	0	0	0	0	1	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	1	13
08:00 AM	09:00 AM	0	3	0	2	0	0	1	5	11	0	0	0	0	2	1	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	1	15

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	4	9	0	0	13	4	9	2	1	16	0	0	0	0	0
07:15 AM	08:15 AM	4	9	0	1	14	4	9	2	3	18	1	0	0	0	1
07:30 AM	08:30 AM	1	7	0	1	9	1	7	2	2	12	1	0	0	0	1
07:45 AM	08:45 AM	1	6	0	3	10	1	6	1	4	12	1	0	0	0	1
08:00 AM	09:00 AM	3	5	0	3	11	3	5	1	5	14	1	0	0	0	1

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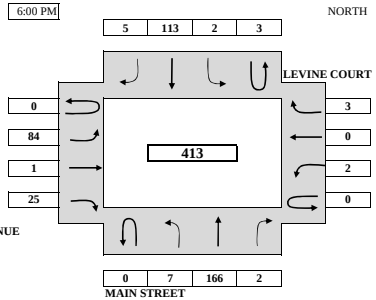
INTERSECTION TURNING MOVEMENT SUMMARY

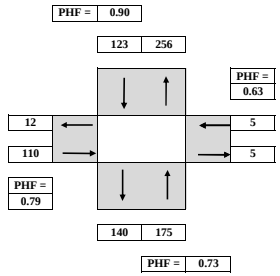
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-6PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		18	47	1	0	0	31	4		9	0	2		1		2	**115**
4:15 PM	4:30 PM		29	80	3	1	1	52	5		19	0	3		1		2	**196**
4:30 PM	4:45 PM		31	115	3	1	1	76	7		36	1	7		2		5	**285**
4:45 PM	5:00 PM		35	147	5	1	1	96	8		53	2	10		5		7	**370**
5:00 PM	5:15 PM		35	188	6	1	1	127	9		79	3	18		5		8	**480**
5:15 PM	5:30 PM		38	244	7	2	1	159	10		96	3	24		5		8	**597**
5:30 PM	5:45 PM		39	272	7	2	3	188	12		115	3	29		6		9	**685**
5:45 PM	6:00 PM		42	313	7	4	3	209	13		137	3	35		7		10	**783**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	18	47	1	0	0	31	4	0	9	0	2	0	1	0	2	**115**
4:15 PM	4:30 PM	0	11	33	2	1	1	21	1	0	10	0	1	0	0	0	0	**81**
4:30 PM	4:45 PM	0	2	35	0	0	0	24	2	0	17	1	4	0	1	0	3	**89**
4:45 PM	5:00 PM	0	4	32	2	0	0	20	1	0	17	1	3	0	3	0	2	**85**
5:00 PM	5:15 PM	0	0	41	1	0	0	31	1	0	26	1	8	0	0	0	1	**110**
5:15 PM	5:30 PM	0	3	56	1	1	0	32	1	0	17	0	6	0	0	0	0	**117**
5:30 PM	5:45 PM	0	1	28	0	0	2	29	2	0	19	0	5	0	1	0	1	**88**
5:45 PM	6:00 PM	0	3	41	0	2	0	21	1	0	22	0	6	0	1	0	1	**98**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	35	147	5	1	1	96	8	0	53	2	10	0	5	0	7	**370**
4:15 PM	5:15 PM	0	17	141	5	1	1	96	5	0	70	3	16	0	4	0	6	**365**
4:30 PM	5:30 PM	0	9	164	4	1	0	107	5	0	77	3	21	0	4	0	6	**401**
4:45 PM	5:45 PM	0	8	157	4	1	2	112	5	0	79	2	22	0	4	0	4	**400**
5:00 PM	6:00 PM	0	7	166	2	3	2	113	5	0	84	1	25	0	2	0	3	**413**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	7	166	2	3	2	113	5	0	84	1	25	0	2	0	3	**413**
PHF BY MOVEMENT	0.00	0.58	0.74	0.50	0.38	0.25	0.88	0.63	0.00	0.81	0.25	0.78	0.00	0.50	0.00	0.75	OVERALL
PHF BY APPROACH	0.73				0.90				0.79				0.63				**0.88**
PED (Inc JAY-WALK)	18				10				3				3				**34**
BICYCLE	0				0				0				0				**0**

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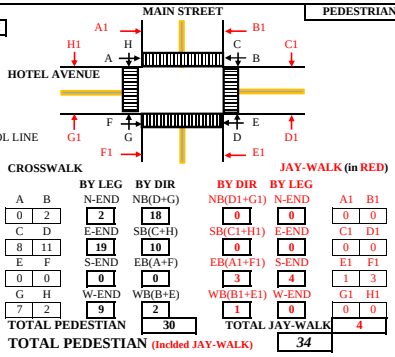
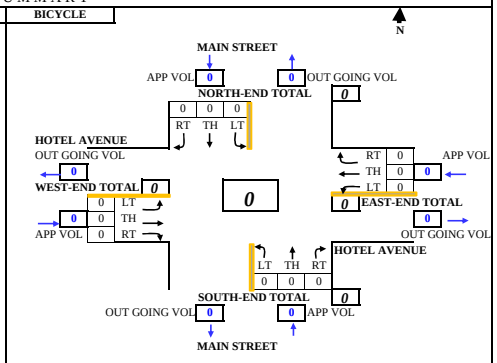
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	HOTEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-6PM

PEAK HOUR SUMMARY

PEAK HOUR 05:00 PM TO 06:00 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	1	0	1	2	0	0	7	1		0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*13*
04:15 PM	04:30 PM	1	0	1	5	0	0	9	3		0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*20*
04:30 PM	04:45 PM	1	1	4	5	0	0	9	3		0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*24*
04:45 PM	05:00 PM	1	1	7	6	0	0	13	3		0	0	0	0	2	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*33*
05:00 PM	05:15 PM	1	1	8	7	0	0	13	3		0	0	0	0	2	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*36*
05:15 PM	05:30 PM	1	3	10	11	0	0	16	3		0	0	0	0	2	1	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*47*
05:30 PM	05:45 PM	1	3	14	13	0	0	18	5		0	0	0	0	2	2	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*58*
05:45 PM	06:00 PM	1	3	15	17	0	0	20	5		0	0	0	0	3	3	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*67*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	1	0	1	2	0	0	7	1	12	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*13*
04:15 PM	04:30 PM	0	0	0	3	0	0	2	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*7*
04:30 PM	04:45 PM	0	1	3	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*4*
04:45 PM	05:00 PM	0	0	3	1	0	0	4	0	8	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
05:00 PM	05:15 PM	0	0	1	1	0	0	0	0	2	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
05:15 PM	05:30 PM	0	2	2	4	0	0	3	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
05:30 PM	05:45 PM	0	0	4	2	0	0	2	2	10	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
05:45 PM	06:00 PM	0	0	1	4	0	0	2	0	7	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	***9***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	1	1	7	6	0	0	13	3	31	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	***33***
04:15 PM	05:15 PM	0	1	7	5	0	0	6	2	21	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	***23***
04:30 PM	05:30 PM	0	3	9	6	0	0	7	0	25	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	***27***
04:45 PM	05:45 PM	0	2	10	8	0	0	9	2	31	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	***34***
05:00 PM	06:00 PM	0	2	8	11	0	0	7	2	30	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	***34***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	19	10	1	1	**31**	19	10	1	3	***33***	0	0	0	0	***0***
04:15 PM	05:15 PM	11	9	0	1	**21**	11	9	1	2	***23***	0	0	0	0	***0***
04:30 PM	05:30 PM	13	9	0	3	**25**	13	9	1	4	***27***	0	0	0	0	***0***
04:45 PM	05:45 PM	17	12	0	2	**31**	17	12	2	3	***34***	0	0	0	0	***0***
05:00 PM	06:00 PM	18	10	0	2	**30**	18	10	3	3	***34***	0	0	0	0	***0***

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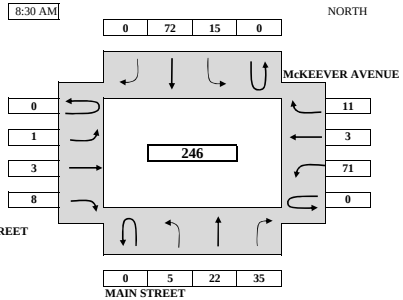
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

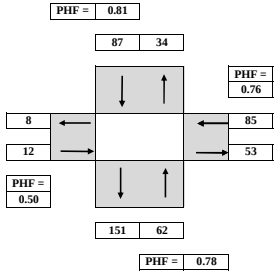
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	WARREN STREET McKEEVER AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-7AM

PEAK HOUR 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	PERIOD	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	7:15 AM		0	6	4		0	8	0		1	0	1		13	0	3		36
7:15 AM	7:30 AM		0	11	10		1	30	0		1	0	3		33	1	6		96
7:30 AM	7:45 AM		2	14	16		7	51	0		1	2	7		52	1	9		162
7:45 AM	8:00 AM		3	19	26		9	67	0		1	2	11		77	2	11		228
8:00 AM	8:15 AM		4	26	33		12	79	0		1	3	11		95	2	14		280
8:15 AM	8:30 AM		5	33	45		16	102	0		2	3	11		104	4	17		342
8:30 AM	8:45 AM		7	41	54		20	112	0		2	3	13		118	7	22		399
8:45 AM	9:00 AM		9	46	61		23	126	1		2	4	16		133	8	24		453
TOTAL BY PERIOD																			
7:00 AM	7:15 AM		0	0	6	4	0	0	8	0	0	1	0	1	0	13	0	3	36
7:15 AM	7:30 AM		0	0	5	6	0	1	22	0	0	0	0	2	0	20	1	3	60
7:30 AM	7:45 AM		0	2	3	6	0	6	21	0	0	0	2	4	0	19	0	3	66
7:45 AM	8:00 AM		0	1	5	10	0	2	16	0	0	0	0	4	0	25	1	2	66
8:00 AM	8:15 AM		0	1	7	7	0	3	12	0	0	0	1	0	0	18	0	3	52
8:15 AM	8:30 AM		0	1	7	12	0	4	23	0	0	1	0	0	0	9	2	3	62
8:30 AM	8:45 AM		0	2	8	9	0	4	10	0	0	0	0	2	0	14	3	5	57
8:45 AM	9:00 AM		0	2	5	7	0	3	14	1	0	0	1	3	0	15	1	2	54
HOURLY TOTALS																			
7:00 AM	8:00 AM		0	3	19	26	0	9	67	0	0	1	2	11	0	77	2	11	228
7:15 AM	8:15 AM		0	4	20	29	0	12	71	0	0	0	3	10	0	82	2	11	244
7:30 AM	8:30 AM		0	5	22	35	0	15	72	0	0	1	3	8	0	71	3	11	246
7:45 AM	8:45 AM		0	5	27	38	0	13	61	0	0	1	1	6	0	66	6	13	237
8:00 AM	9:00 AM		0	6	27	35	0	14	59	1	0	1	2	5	0	56	6	13	225

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	5	22	35	0	15	72	0	0	1	3	8	0	71	3	11	246
PHF BY MOVEMENT	0.00	0.63	0.79	0.73	0.00	0.63	0.78	0.00	0.00	0.25	0.38	0.50	0.00	0.71	0.38	0.92	OVERALL
PHF BY APPROACH	0.78				0.81				0.50				0.76				0.93
PED (Inc JAY-WALK)	1				4				2				0				7
BICYCLE	1				0				0				0				1

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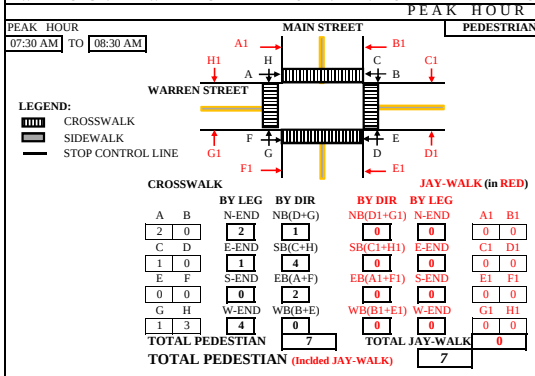
B.A.Y.M.E.T.R.I.C.S.

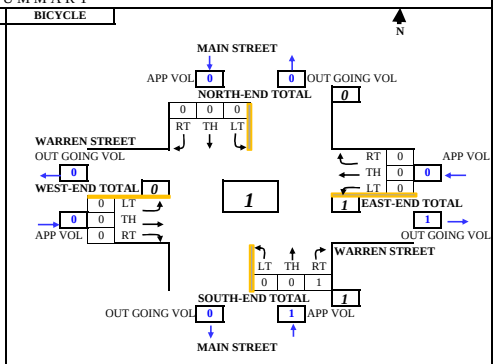
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	WARREN STREET McKEEVER AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-7AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	1	0	1	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		2
07:15 AM	07:30 AM	2	2	0	3	0	1	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		9
07:30 AM	07:45 AM	4	2	0	3	0	1	0	3		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		13
07:45 AM	08:00 AM	4	2	1	3	0	1	0	3		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		15
08:00 AM	08:15 AM	4	2	1	3	0	1	0	3		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		15
08:15 AM	08:30 AM	4	2	1	3	0	1	1	4		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		17
08:30 AM	08:45 AM	4	2	3	4	0	1	1	4		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		20
08:45 AM	09:00 AM	4	2	3	5	0	1	1	4		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0		21
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15 AM	07:30 AM	2	1	0	2	0	1	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
07:30 AM	07:45 AM	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
07:45 AM	08:00 AM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
08:00 AM	08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	08:30 AM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	08:45 AM	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
08:45 AM	09:00 AM	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HOURLY TOTALS																																	
07:00 AM	08:00 AM	4	2	1	3	0	1	0	3	14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	15
07:15 AM	08:15 AM	4	1	1	2	0	1	0	3	12	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	13
07:30 AM	08:30 AM	2	0	1	0	0	0	1	3	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	8
07:45 AM	08:45 AM	0	0	3	1	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
08:00 AM	09:00 AM	0	0	2	2	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	3	4	5	2	14	3	4	5	2	14	1	0	0	0	1
07:15 AM	08:15 AM	2	4	5	1	12	2	4	5	1	12	1	0	0	0	1
07:30 AM	08:30 AM	1	4	2	0	7	1	4	2	0	7	1	0	0	0	1
07:45 AM	08:45 AM	2	4	0	0	6	2	4	0	0	6	1	0	0	0	1
08:00 AM	09:00 AM	3	3	0	0	6	3	3	0	0	6	0	0	0	0	0

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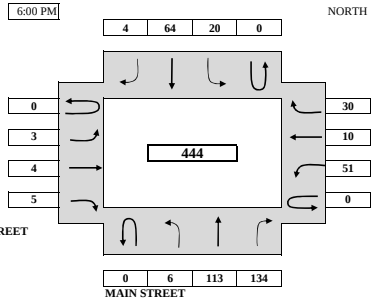
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

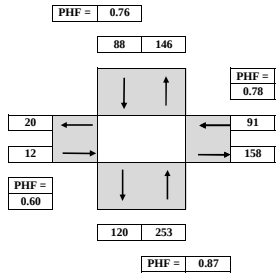
PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY:	TUESDAY	
N-S APPROACH:	MAIN STREET		SURVEY TIME:	4:00 PM	TO	6:00 PM	
E-W APPROACH:	WARREN STREET	McKEEVER AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-7PM	

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		2	26	44		5	18	1		1	1	1		16	1	6	**122**
4:15 PM	4:30 PM		2	53	76		8	31	2		1	1	1		28	1	8	**212**
4:30 PM	4:45 PM		3	78	103		13	49	2		1	4	2		38	3	13	**309**
4:45 PM	5:00 PM		4	99	132		13	60	3		2	5	3		47	4	19	**391**
5:00 PM	5:15 PM		5	130	170		17	77	3		2	6	4		60	7	25	**506**
5:15 PM	5:30 PM		7	161	210		22	93	5		5	7	5		76	9	36	**636**
5:30 PM	5:45 PM		10	185	233		29	115	5		5	9	7		86	13	44	**741**
5:45 PM	6:00 PM		10	212	266		33	124	7		5	9	8		98	14	49	**835**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	2	26	44	0	5	18	1	0	1	1	1	0	16	1	6	**122**
4:15 PM	4:30 PM	0	0	27	32	0	3	13	1	0	0	0	0	0	12	0	2	**90**
4:30 PM	4:45 PM	0	1	25	27	0	5	18	0	0	0	3	1	0	10	2	5	**97**
4:45 PM	5:00 PM	0	1	21	29	0	0	11	1	0	1	1	1	0	9	1	6	**82**
5:00 PM	5:15 PM	0	1	31	38	0	4	17	0	0	0	1	1	0	13	3	6	**115**
5:15 PM	5:30 PM	0	2	31	40	0	5	16	2	0	3	1	1	0	16	2	11	**130**
5:30 PM	5:45 PM	0	3	24	23	0	7	22	0	0	0	2	2	0	10	4	8	**105**
5:45 PM	6:00 PM	0	0	27	33	0	4	9	2	0	0	0	1	0	12	1	5	**94**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	4	99	132	0	13	60	3	0	2	5	3	0	47	4	19	**391**
4:15 PM	5:15 PM	0	3	104	126	0	12	59	2	0	1	5	3	0	44	6	19	**384**
4:30 PM	5:30 PM	0	5	108	134	0	14	62	3	0	4	6	4	0	48	8	28	**424**
4:45 PM	5:45 PM	0	7	107	130	0	16	66	3	0	4	5	5	0	48	10	31	**432**
5:00 PM	6:00 PM	0	6	113	134	0	20	64	4	0	3	4	5	0	51	10	30	**444**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	6	113	134	0	20	64	4	0	3	4	5	0	51	10	30	**444**
PHF BY MOVEMENT	0.00	0.50	0.91	0.84	0.00	0.71	0.73	0.50	0.00	0.25	0.50	0.63	0.00	0.80	0.63	0.68	OVERALL
PHF BY APPROACH	0.87				0.76				0.60				0.78				**0.85**
PED (Inc JAY-WALK)	6				7				4				4				**21**
BICYCLE	0				0				0				0				**0**

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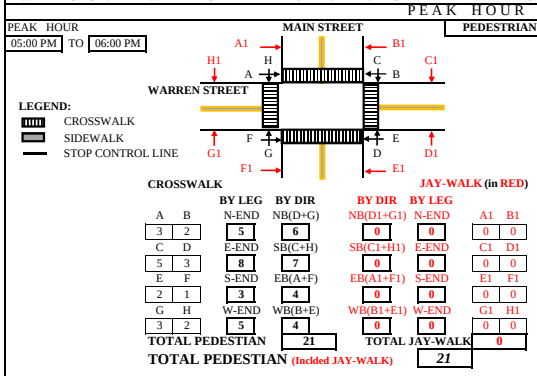
B.A.Y.M.E.T.R.I.C.S.

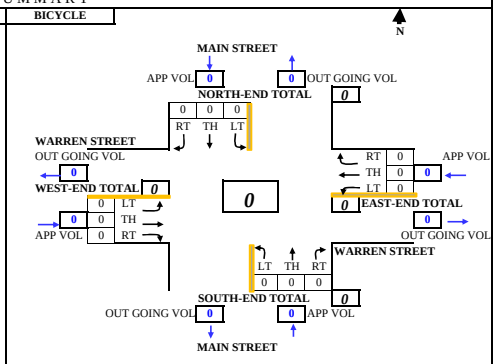
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY:	TUESDAY	
N-S APPROACH:	MAIN STREET		SURVEY PERIOD:	4:00 PM	to	6:00 PM	
E-W APPROACH:	WARREN STREET	McKEEVER AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-7PM	

PEAK HOUR SUMMARY

PEAK HOUR 05:00 PM TO 06:00 PM





TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	0	0	1	0	1	3	6	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
04:15 PM	04:30 PM	0	0	4	2	1	3	7	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*19*
04:30 PM	04:45 PM	3	1	4	5	1	3	7	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*26*
04:45 PM	05:00 PM	3	1	5	6	1	5	10	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*33*
05:00 PM	05:15 PM	6	1	6	7	1	5	10	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*38*
05:15 PM	05:30 PM	6	1	8	8	3	5	10	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*45*
05:30 PM	05:45 PM	6	3	10	8	3	5	12	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*51*
05:45 PM	06:00 PM	6	3	10	9	3	6	13	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*54*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	0	0	1	0	1	3	6	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
04:15 PM	04:30 PM	0	0	3	2	0	0	1	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*8*
04:30 PM	04:45 PM	3	1	0	3	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*7*
04:45 PM	05:00 PM	0	0	1	1	0	2	3	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*7*
05:00 PM	05:15 PM	3	0	1	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*5*
05:15 PM	05:30 PM	0	0	2	1	2	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*7*
05:30 PM	05:45 PM	0	2	2	0	0	0	2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*6*
05:45 PM	06:00 PM	0	0	0	1	0	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***3***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	3	1	5	6	1	5	10	2	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***33***
04:15 PM	05:15 PM	6	1	5	7	0	2	4	2	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***27***
04:30 PM	05:30 PM	6	1	4	6	2	2	3	2	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***26***
04:45 PM	05:45 PM	3	2	6	3	2	2	5	2	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***25***
05:00 PM	06:00 PM	3	2	5	3	2	1	3	2	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***21***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	16	7	8	2	**33**	16	7	8	2	***33***	0	0	0	0	***0***
04:15 PM	05:15 PM	11	7	8	1	**27**	11	7	8	1	***27***	0	0	0	0	***0***
04:30 PM	05:30 PM	9	6	8	3	**26**	9	6	8	3	***26***	0	0	0	0	***0***
04:45 PM	05:45 PM	8	8	5	4	**25**	8	8	5	4	***25***	0	0	0	0	***0***
05:00 PM	06:00 PM	6	7	4	4	**21**	6	7	4	4	***21***	0	0	0	0	***0***

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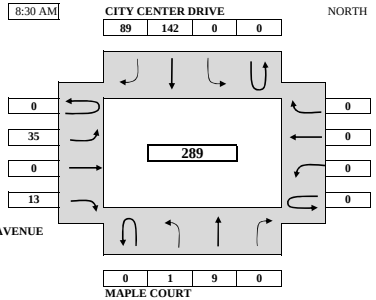
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

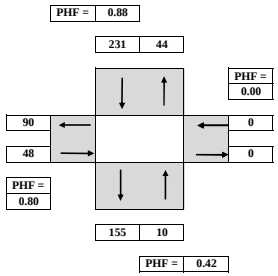
PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAPLE COURT	CITY CENTER DRIVE	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	McKEEVER AVENUE		JURISDICTION:	HAYWARD	FILE:	3503036-8AM

PEAK HOUR: 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	PERIOD	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	7:15 AM			0	2			27	15		5		1						50
7:15 AM	7:30 AM			2	3			59	35		11		2						112
7:30 AM	7:45 AM			2	5			99	61		19		5						191
7:45 AM	8:00 AM			2	5			128	87		27		7						256
8:00 AM	8:15 AM			3	10			169	107		38		11						338
8:15 AM	8:30 AM			3	12			201	124		46		15						401
8:30 AM	8:45 AM			5	16			219	142		55		17						454
8:45 AM	9:00 AM			6	19			245	165		60		21						516
TOTAL BY PERIOD																			
7:00 AM	7:15 AM		0	0	2	0	0	0	27	15	0	5	0	1	0	0	0	0	50
7:15 AM	7:30 AM		0	2	1	0	0	0	32	20	0	6	0	1	0	0	0	0	62
7:30 AM	7:45 AM		0	0	2	0	0	0	40	26	0	8	0	3	0	0	0	0	79
7:45 AM	8:00 AM		0	0	0	0	0	0	29	26	0	8	0	2	0	0	0	0	65
8:00 AM	8:15 AM		0	1	5	0	0	0	41	20	0	11	0	4	0	0	0	0	82
8:15 AM	8:30 AM		0	0	2	0	0	0	32	17	0	8	0	4	0	0	0	0	63
8:30 AM	8:45 AM		0	2	4	0	0	0	18	18	0	9	0	2	0	0	0	0	53
8:45 AM	9:00 AM		0	1	3	0	0	0	26	23	0	5	0	4	0	0	0	0	62
HOURLY TOTALS																			
7:00 AM	8:00 AM		0	2	5	0	0	0	128	87	0	27	0	7	0	0	0	0	256
7:15 AM	8:15 AM		0	3	8	0	0	0	142	92	0	33	0	10	0	0	0	0	288
7:30 AM	8:30 AM		0	1	9	0	0	0	142	89	0	35	0	13	0	0	0	0	289
7:45 AM	8:45 AM		0	3	11	0	0	0	120	81	0	36	0	12	0	0	0	0	263
8:00 AM	9:00 AM		0	4	14	0	0	0	117	78	0	33	0	14	0	0	0	0	260

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	1	9	0	0	0	142	89	0	35	0	13	0	0	0	0	289
PHF BY MOVEMENT	0.00	0.25	0.45	0.00	0.00	0.00	0.87	0.86	0.00	0.80	0.00	0.81	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.42				0.88				0.80				0.00				0.88
PED (Inc JAY-WALK)	4				3				2				1				10
BICYCLE	0				1				0				0				1

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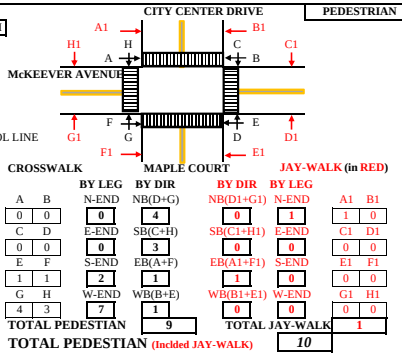
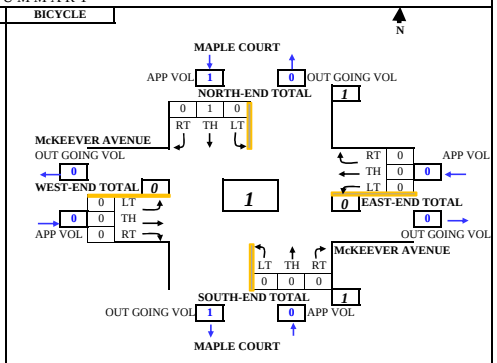
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAPLE COURT	CITY CENTER DRIVE	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	McKEEVER AVENUE		JURISDICTION:	HAYWARD	FILE:	3503036-8AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	0	0	0	0	0	3		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		3
07:15 AM	07:30 AM	0	0	0	0	1	0	0	3		0	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		5
07:30 AM	07:45 AM	0	0	0	0	1	0	2	4		0	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		8
07:45 AM	08:00 AM	0	0	0	0	1	0	3	4		0	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		9
08:00 AM	08:15 AM	0	0	0	0	1	1	3	6		1	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		13
08:15 AM	08:30 AM	0	0	0	0	2	1	4	6		1	1	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		16
08:30 AM	08:45 AM	0	0	0	0	2	1	4	7		1	1	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		17
08:45 AM	09:00 AM	0	0	0	0	2	1	4	7		1	1	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0		17
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15 AM	07:30 AM	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:30 AM	07:45 AM	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	08:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	08:15 AM	0	0	0	0	1	0	2	3	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15 AM	08:30 AM	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	3
08:30 AM	08:45 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS																																	
07:00 AM	08:00 AM	0	0	0	0	1	0	3	4	8	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9
07:15 AM	08:15 AM	0	0	0	0	1	1	3	3	8	1	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	10
07:30 AM	08:30 AM	0	0	0	0	1	1	4	3	9	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	11
07:45 AM	08:45 AM	0	0	0	0	1	1	2	3	7	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	9
08:00 AM	09:00 AM	0	0	0	0	1	1	1	3	6	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	8

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	3	4	0	1	8	3	4	0	2	9	0	0	0	0	0
07:15 AM	08:15 AM	3	3	1	1	8	3	3	2	2	10	0	0	0	0	0
07:30 AM	08:30 AM	4	3	1	1	9	4	3	2	1	10	0	1	0	0	1
07:45 AM	08:45 AM	2	3	1	1	7	2	3	2	1	8	0	1	0	0	1
08:00 AM	09:00 AM	1	3	1	1	6	1	3	2	1	7	0	1	0	0	1

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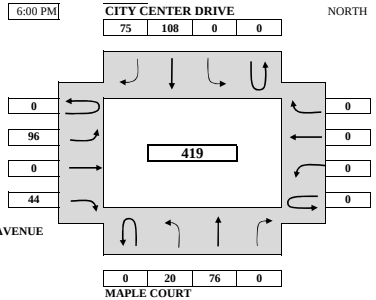
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

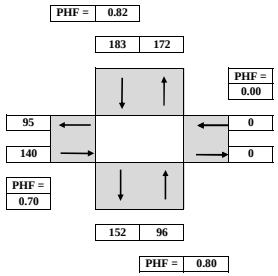
PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY: TUESDAY
N-S APPROACH:	MAPLE COURT	CITY CENTER DRIVE	SURVEY TIME:	4:00 PM	TO 6:00 PM
E-W APPROACH:	McKEEVER AVENUE		JURISDICTION:	HAYWARD	FILE: 3503036-8PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		2	9				33	16		33		17					**110**
4:15 PM	4:30 PM		3	27				57	27		60		24					**198**
4:30 PM	4:45 PM		5	36				75	38		81		30					**265**
4:45 PM	5:00 PM		9	48				89	47		96		39					**328**
5:00 PM	5:15 PM		14	69				117	63		127		58					**448**
5:15 PM	5:30 PM		19	87				149	78		159		70					**562**
5:30 PM	5:45 PM		22	101				171	92		177		78					**641**
5:45 PM	6:00 PM		29	124				197	122		192		83					**747**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	2	9	0	0	0	33	16	0	33	0	17	0	0	0	0	**110**
4:15 PM	4:30 PM	0	1	18	0	0	0	24	11	0	27	0	7	0	0	0	0	**88**
4:30 PM	4:45 PM	0	2	9	0	0	0	18	11	0	21	0	6	0	0	0	0	**67**
4:45 PM	5:00 PM	0	4	12	0	0	0	14	9	0	15	0	9	0	0	0	0	**63**
5:00 PM	5:15 PM	0	5	21	0	0	0	28	16	0	31	0	19	0	0	0	0	**120**
5:15 PM	5:30 PM	0	5	18	0	0	0	32	15	0	32	0	12	0	0	0	0	**114**
5:30 PM	5:45 PM	0	3	14	0	0	0	22	14	0	18	0	8	0	0	0	0	**79**
5:45 PM	6:00 PM	0	7	23	0	0	0	26	30	0	15	0	5	0	0	0	0	**106**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	9	48	0	0	0	89	47	0	96	0	39	0	0	0	0	**328**
4:15 PM	5:15 PM	0	12	60	0	0	0	84	47	0	94	0	41	0	0	0	0	**338**
4:30 PM	5:30 PM	0	16	60	0	0	0	92	51	0	99	0	46	0	0	0	0	**364**
4:45 PM	5:45 PM	0	17	65	0	0	0	96	54	0	96	0	48	0	0	0	0	**376**
5:00 PM	6:00 PM	0	20	76	0	0	0	108	75	0	96	0	44	0	0	0	0	**419**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	20	76	0	0	0	108	75	0	96	0	44	0	0	0	0	**419**
PHF BY MOVEMENT	0.00	0.71	0.83	0.00	0.00	0.00	0.84	0.63	0.00	0.75	0.00	0.58	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.80				0.82				0.70				0.00				**0.87**
PED (Inc JAY-WALK)	0				0				0				0				**0**
BICYCLE	0				0				0				0				**0**

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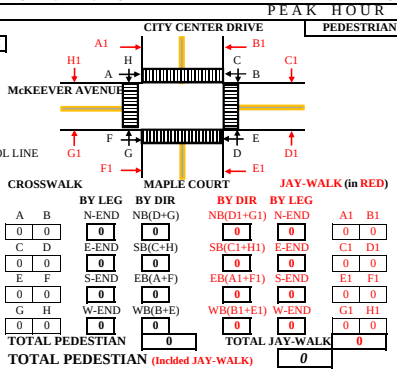
B.A.Y.M.E.T.R.I.C.S.

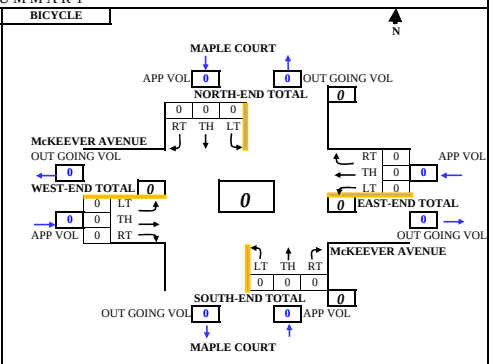
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD		SURVEY DATE:	3/17/2015	DAY: TUESDAY
N-S APPROACH:	MAPLE COURT	CITY CENTER DRIVE	SURVEY PERIOD:	4:00 PM	to 6:00 PM
E-W APPROACH:	McKEEVER AVENUE		JURISDICTION:	HAYWARD	FILE: 3503036-8PM

PEAK HOUR SUMMARY

PEAK HOUR 05:00 PM TO 06:00 PM





TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*3*
04:15 PM	04:30 PM	0	0	0	0	0	3	0	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*6*
04:30 PM	04:45 PM	0	0	0	0	0	3	2	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*8*
04:45 PM	05:00 PM	0	0	0	0	0	3	3	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*9*
05:00 PM	05:15 PM	0	0	0	0	0	3	3	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*9*
05:15 PM	05:30 PM	0	0	0	0	0	3	3	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*9*
05:30 PM	05:45 PM	0	0	0	0	0	3	3	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*9*
05:45 PM	06:00 PM	0	0	0	0	0	3	3	0		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	0	0	0	0	0	0	*9*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	*3*
04:15 PM	04:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
04:30 PM	04:45 PM	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*2*
04:45 PM	05:00 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
05:00 PM	05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
05:15 PM	05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
05:30 PM	05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
05:45 PM	06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	0	0	0	0	0	3	3	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	***9***
04:15 PM	05:15 PM	0	0	0	0	0	3	3	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***6***
04:30 PM	05:30 PM	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***3***
04:45 PM	05:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***1***
05:00 PM	06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***0***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	3	0	3	0	**6**	3	0	3	0	***6***	0	3	0	0	***3***
04:15 PM	05:15 PM	3	0	3	0	**6**	3	0	3	0	***6***	0	0	0	0	***0***
04:30 PM	05:30 PM	3	0	0	0	**3**	3	0	0	0	***3***	0	0	0	0	***0***
04:45 PM	05:45 PM	1	0	0	0	**1**	1	0	0	0	***1***	0	0	0	0	***0***
05:00 PM	06:00 PM	0	0	0	0	**0**	0	0	0	0	***0***	0	0	0	0	***0***

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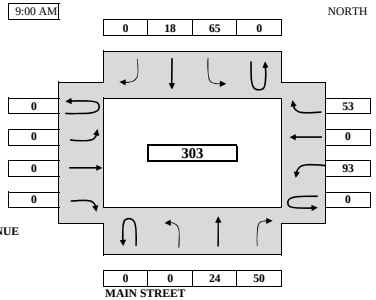
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

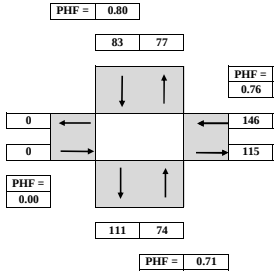
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	HAZEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-9AM

PEAK HOUR 8:00 AM to 9:00 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM			3	13		15	3							19		7	**60**
7:15 AM	7:30 AM			3	26		28	5							37		15	**114**
7:30 AM	7:45 AM			5	43		41	7							57		19	**172**
7:45 AM	8:00 AM			7	53		70	13							73		28	**244**
8:00 AM	8:15 AM			16	70		92	17							98		40	**333**
8:15 AM	8:30 AM			21	79		107	22							127		59	**415**
8:30 AM	8:45 AM			27	88		117	26							138		66	**462**
8:45 AM	9:00 AM			31	103		135	31							166		81	**547**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	3	13	0	15	3	0	0	0	0	0	0	19	0	7	**60**
7:15 AM	7:30 AM	0	0	0	13	0	13	2	0	0	0	0	0	0	18	0	8	**54**
7:30 AM	7:45 AM	0	0	2	17	0	13	2	0	0	0	0	0	0	20	0	4	**58**
7:45 AM	8:00 AM	0	0	2	10	0	29	6	0	0	0	0	0	0	16	0	9	**72**
8:00 AM	8:15 AM	0	0	9	17	0	22	4	0	0	0	0	0	0	25	0	12	**89**
8:15 AM	8:30 AM	0	0	5	9	0	15	5	0	0	0	0	0	0	29	0	19	**82**
8:30 AM	8:45 AM	0	0	6	9	0	10	4	0	0	0	0	0	0	11	0	7	**47**
8:45 AM	9:00 AM	0	0	4	15	0	18	5	0	0	0	0	0	0	28	0	15	**85**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	0	7	53	0	70	13	0	0	0	0	0	0	73	0	28	**244**
7:15 AM	8:15 AM	0	0	13	57	0	77	14	0	0	0	0	0	0	79	0	33	**273**
7:30 AM	8:30 AM	0	0	18	53	0	79	17	0	0	0	0	0	0	90	0	44	**301**
7:45 AM	8:45 AM	0	0	22	45	0	76	19	0	0	0	0	0	0	81	0	47	**290**
8:00 AM	9:00 AM	0	0	24	50	0	65	18	0	0	0	0	0	0	93	0	53	**303**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	24	50	0	65	18	0	0	0	0	0	0	93	0	53	**303**
PHF BY MOVEMENT	0.00	0.00	0.67	0.74	0.00	0.74	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.70	OVERALL
PHF BY APPROACH	0.71				0.80				0.00				0.76				**0.85**
PED (Inc JAY-WALK)	0				2				3				1				**6**
BICYCLE	1				1				0				0				**2**

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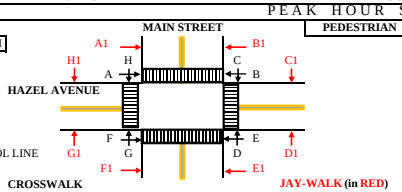
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	HAZEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-9AM

PEAK HOUR SUMMARY

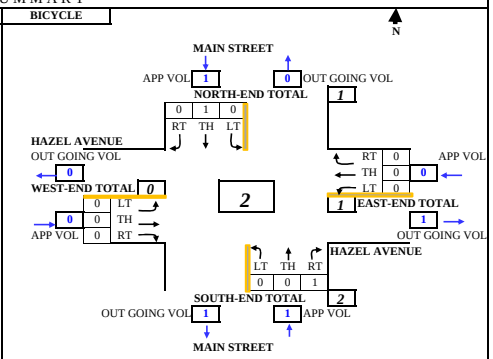
PEAK HOUR 08:00 AM TO 09:00 AM



CROSSWALK / JAY-WALK (in RED)

A B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1 B1
0 0	0	0	0	1	1 0
C D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1 D1
2 0	2	2	0	0	0 0
E F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1 F1
1 2	3	2	1	0	0 0
G H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1 H1
0 0	0	1	0	0	0 0
TOTAL PEDESTIAN		5	TOTAL JAY-WALK		1

TOTAL PEDESTIAN (Incldd JAY-WALK) 6



TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	0	0	1	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
07:15 AM	07:30 AM	0	0	0	0	2	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	*2*
07:30 AM	07:45 AM	0	0	1	1	3	3	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0		*9*
07:45 AM	08:00 AM	0	0	1	1	3	3	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0		*9*
08:00 AM	08:15 AM	0	0	2	1	3	3	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0		*10*
08:15 AM	08:30 AM	0	0	3	1	3	4	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0		*12*
08:30 AM	08:45 AM	0	0	3	1	3	4	0	0		1	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0		*13*
08:45 AM	09:00 AM	0	0	3	1	4	5	0	0		1	0	0	0	0	0	0	0		0	0	1	0	1	0	0	0	0	1	0	0		*17*
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
07:15 AM	07:30 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
07:30 AM	07:45 AM	0	0	1	1	1	3	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	*7*
07:45 AM	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*0*
08:00 AM	08:15 AM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
08:15 AM	08:30 AM	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*2*
08:30 AM	08:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	*1*
08:45 AM	09:00 AM	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	***4***
HOURLY TOTALS																																	
07:00 AM	08:00 AM	0	0	1	1	3	3	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	***9***
07:15 AM	08:15 AM	0	0	2	1	2	3	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	***9***
07:30 AM	08:30 AM	0	0	3	1	1	4	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	***10***
07:45 AM	08:45 AM	0	0	2	0	0	1	0	0	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	***4***
08:00 AM	09:00 AM	0	0	2	0	1	2	0	0	5	1	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	2	***8***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	1	1	3	3	**8**	1	1	3	3	***8***	0	0	0	1	***1***
07:15 AM	08:15 AM	1	2	3	2	**8**	1	2	3	2	***8***	0	0	0	1	***1***
07:30 AM	08:30 AM	1	3	4	1	**9**	1	3	4	1	***9***	0	0	0	1	***1***
07:45 AM	08:45 AM	0	2	1	0	**3**	0	2	2	0	***4***	0	0	0	0	***0***
08:00 AM	09:00 AM	0	2	2	1	**5**	0	2	3	1	***6***	1	1	0	0	***2***

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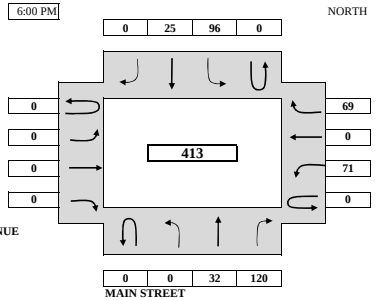
INTERSECTION TURNING MOVEMENT SUMMARY

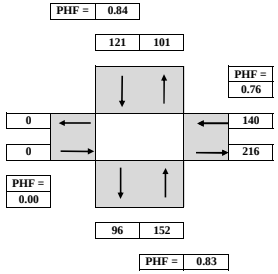
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	HAZEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-9PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM			21	33		20	6							20		14	114
4:15 PM	4:30 PM			29	58		37	11							31		24	190
4:30 PM	4:45 PM			37	76		55	13							48		31	260
4:45 PM	5:00 PM			44	103		79	18							59		54	357
5:00 PM	5:15 PM			54	133		96	24							76		71	454
5:15 PM	5:30 PM			65	162		122	31							92		90	562
5:30 PM	5:45 PM			72	201		145	37							106		101	662
5:45 PM	6:00 PM			76	223		175	43							130		123	770
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	0	21	33	0	20	6	0	0	0	0	0	0	20	0	14	114
4:15 PM	4:30 PM	0	0	8	25	0	17	5	0	0	0	0	0	0	11	0	10	76
4:30 PM	4:45 PM	0	0	8	18	0	18	2	0	0	0	0	0	0	17	0	7	70
4:45 PM	5:00 PM	0	0	7	27	0	24	5	0	0	0	0	0	0	11	0	23	97
5:00 PM	5:15 PM	0	0	10	30	0	17	6	0	0	0	0	0	0	17	0	17	97
5:15 PM	5:30 PM	0	0	11	29	0	26	7	0	0	0	0	0	0	16	0	19	108
5:30 PM	5:45 PM	0	0	7	39	0	23	6	0	0	0	0	0	0	14	0	11	100
5:45 PM	6:00 PM	0	0	4	22	0	30	6	0	0	0	0	0	0	24	0	22	108
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	0	44	103	0	79	18	0	0	0	0	0	0	59	0	54	357
4:15 PM	5:15 PM	0	0	33	100	0	76	18	0	0	0	0	0	0	56	0	57	340
4:30 PM	5:30 PM	0	0	36	104	0	85	20	0	0	0	0	0	0	61	0	66	372
4:45 PM	5:45 PM	0	0	35	125	0	90	24	0	0	0	0	0	0	58	0	70	402
5:00 PM	6:00 PM	0	0	32	120	0	96	25	0	0	0	0	0	0	71	0	69	413

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	32	120	0	96	25	0	0	0	0	0	0	71	0	69	413
PHF BY MOVEMENT	0.00	0.00	0.73	0.77	0.00	0.80	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.78	OVERALL
PHF BY APPROACH	0.83				0.84				0.00				0.76				0.96
PED (Inc JAY-WALK)	0				0				1				1				2
BICYCLE	0				1				0				1				2

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

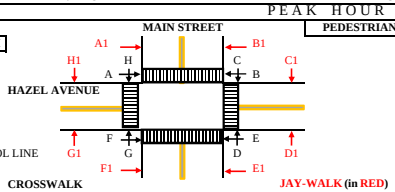
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/17/2015	DAY:	TUESDAY
N-S APPROACH:	MAIN STREET	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	HAZEL AVENUE	JURISDICTION:	HAYWARD	FILE:	3503036-9PM

PEAK HOUR SUMMARY

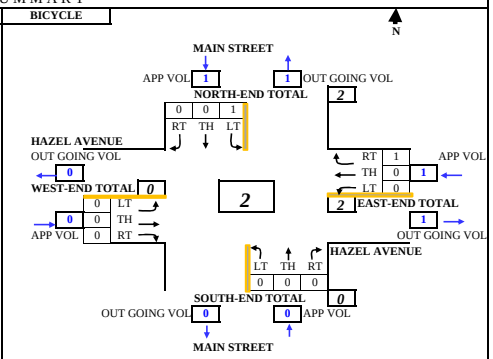
PEAK HOUR 05:00 PM TO 06:00 PM



CROSSWALK / JAY-WALK (in RED)

A	B	BY LEG N-END	BY DIR NB(D+G)	BY DIR NB(D1+G1)	BY LEG N-END	A1	B1
0	0	0	0	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
0	0	0	0	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
1	1	2	1	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
0	0	0	1	0	0	0	0
TOTAL PEDESTIAN		2		TOTAL JAY-WALK		0	

TOTAL PEDESTIAN (Incldd JAY-WALK) 2



TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	0	0	0	0	3	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	04:30 PM	0	0	0	0	3	0	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:30 PM	04:45 PM	2	0	0	1	6	0	0	0		2	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	11
04:45 PM	05:00 PM	2	0	1	1	6	0	0	0		2	0	0	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	1	14
05:00 PM	05:15 PM	2	0	1	1	6	1	0	0		2	0	0	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	1	15
05:15 PM	05:30 PM	2	0	1	1	6	1	0	0		2	0	0	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	1	15
05:30 PM	05:45 PM	2	0	1	1	6	1	0	0		2	0	0	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	2	16
05:45 PM	06:00 PM	2	0	1	1	7	1	0	0		2	0	0	0	0	0	0	0		0	0	0	2	0	0	0	0	0	0	0	0	2	18
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	04:45 PM	2	0	0	1	3	0	0	0	6	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8
04:45 PM	05:00 PM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	3
05:00 PM	05:15 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
05:45 PM	06:00 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
HOURLY TOTALS																																	
04:00 PM	05:00 PM	2	0	1	1	6	0	0	0	10	2	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	1	2	14
04:15 PM	05:15 PM	2	0	1	1	3	1	0	0	8	2	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	1	2	12
04:30 PM	05:30 PM	2	0	1	1	3	1	0	0	8	2	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	1	2	12
04:45 PM	05:45 PM	0	0	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	3	5
05:00 PM	06:00 PM	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	4

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	1	1	2	6	10	1	1	4	6	12	0	1	0	1	2
04:15 PM	05:15 PM	1	1	3	3	8	1	1	5	3	10	0	1	0	1	2
04:30 PM	05:30 PM	1	1	3	3	8	1	1	5	3	10	0	1	0	1	2
04:45 PM	05:45 PM	0	1	1	0	2	0	1	1	0	2	0	1	0	2	3
05:00 PM	06:00 PM	0	0	1	1	2	0	0	1	1	2	0	1	0	1	2

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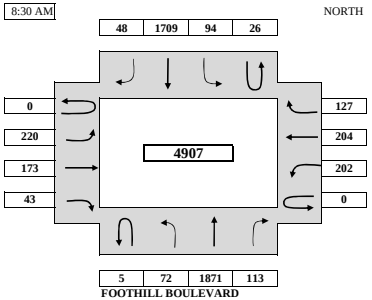
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

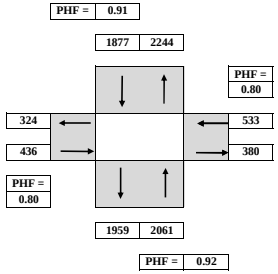
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-10AM

PEAK HOUR 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM	3	2	416	9	6	4	382	8	59	18	10	18	22	30			**987**
7:15 AM	7:30 AM	3	11	872	12	12	13	818	15	111	32	23	50	49	70			**2091**
7:30 AM	7:45 AM	3	26	1402	27	18	35	1287	35	172	64	33	87	82	109			**3380**
7:45 AM	8:00 AM	3	40	1878	76	23	75	1732	42	217	124	44	134	136	134			**4658**
8:00 AM	8:15 AM	5	54	2324	110	30	98	2148	54	278	186	57	187	183	166			**5880**
8:15 AM	8:30 AM	8	83	2743	125	38	107	2527	63	331	205	66	252	253	197			**6998**
8:30 AM	8:45 AM	9	105	3134	139	40	113	2924	76	379	222	79	276	282	218			**7996**
8:45 AM	9:00 AM	11	123	3484	150	45	124	3277	88	422	236	93	294	293	242			**8882**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	3	2	416	9	6	4	382	8	0	59	18	10	0	18	22	30	**987**
7:15 AM	7:30 AM	0	9	456	3	6	9	436	7	0	52	14	13	0	32	27	40	**1104**
7:30 AM	7:45 AM	0	15	530	15	6	22	469	20	0	61	32	10	0	37	33	39	**1289**
7:45 AM	8:00 AM	0	14	476	49	5	40	445	7	0	45	60	11	0	47	54	25	**1278**
8:00 AM	8:15 AM	2	14	446	34	7	23	416	12	0	61	62	13	0	53	47	32	**1222**
8:15 AM	8:30 AM	3	29	419	15	8	9	379	9	0	53	19	9	0	65	70	31	**1118**
8:30 AM	8:45 AM	1	22	391	14	2	6	397	13	0	48	17	13	0	24	29	21	**998**
8:45 AM	9:00 AM	2	18	350	11	5	11	353	12	0	43	14	14	0	18	11	24	**886**
HOURLY TOTALS																		
7:00 AM	8:00 AM	3	40	1878	76	23	75	1732	42	0	217	124	44	0	134	136	134	**4658**
7:15 AM	8:15 AM	2	52	1908	101	24	94	1766	46	0	219	168	47	0	169	161	136	**4893**
7:30 AM	8:30 AM	5	72	1871	113	26	94	1709	48	0	220	173	43	0	202	204	127	**4907**
7:45 AM	8:45 AM	6	79	1732	112	22	78	1637	41	0	207	158	46	0	189	200	109	**4616**
8:00 AM	9:00 AM	8	83	1606	74	22	49	1545	46	0	205	112	49	0	160	157	108	**4224**

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	5	72	1871	113	26	94	1709	48	0	220	173	43	0	202	204	127	**4907**
PHF BY MOVEMENT	0.42	0.62	0.88	0.58	0.81	0.59	0.91	0.60	0.00	0.90	0.70	0.83	0.00	0.78	0.73	0.81	OVERALL
PHF BY APPROACH	0.92				0.91				0.80				0.80				**0.95**
PED (Inc JAY-WALK)	8				3				38				10				**59**
BICYCLE	1				0				0				3				**4**

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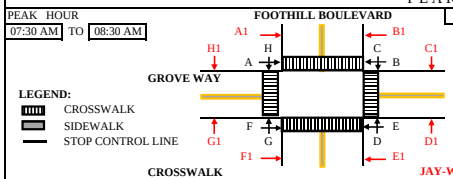
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-10AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM

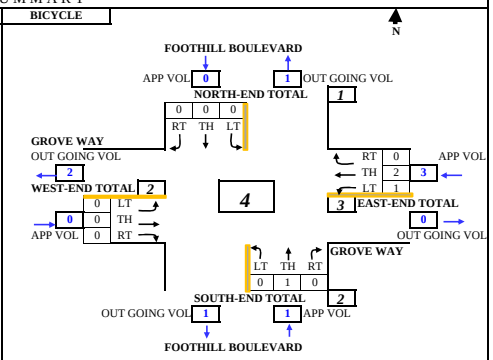


LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE

CROSSWALK / JAY-WALK (in RED)

A	B	N-END BY LEG	NB(D+G) BY DIR	NB(D1+G1) BY DIR	N-END BY LEG	A1	B1
37	10	47	8	0	0	0	0
C	D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1	D1
1	8	9	3	0	0	0	0
E	F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1	F1
0	1	1	38	0	0	0	0
G	H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1	H1
0	2	2	10	0	0	0	0
TOTAL PEDESTIAN		59		TOTAL JAY-WALK		0	

TOTAL PEDESTIAN (Incldd JAY-WALK) 59



TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	1	0	1	0	1	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		*4*
07:15 AM	07:30 AM	1	1	0	1	0	1	0	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	1		*8*
07:30 AM	07:45 AM	8	2	0	2	0	1	0	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	1		*17*
07:45 AM	08:00 AM	30	2	0	8	0	1	0	2		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	1		*46*
08:00 AM	08:15 AM	36	7	1	9	0	1	0	4		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	1	3	1		*64*
08:15 AM	08:30 AM	38	11	1	9	0	2	0	4		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	1	3	1		*71*
08:30 AM	08:45 AM	38	13	1	9	0	2	0	5		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	1	3	1		*74*
08:45 AM	09:00 AM	41	13	1	9	2	2	1	5		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	1	3	1		*81*
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	1	0	1	0	1	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*4*
07:15 AM	07:30 AM	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	*4*
07:30 AM	07:45 AM	7	1	0	1	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
07:45 AM	08:00 AM	22	0	0	6	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	*29*
08:00 AM	08:15 AM	6	5	1	1	0	0	0	2	15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	3	*18*
08:15 AM	08:30 AM	2	4	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*7*
08:30 AM	08:45 AM	0	2	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
08:45 AM	09:00 AM	3	0	0	0	2	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***7***
HOURLY TOTALS																																	
07:00 AM	08:00 AM	30	2	0	8	0	1	0	2	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	***46***
07:15 AM	08:15 AM	36	6	1	8	0	0	0	3	54	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	3	1	6	***60***
07:30 AM	08:30 AM	37	10	1	8	0	1	0	2	59	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	4	***63***
07:45 AM	08:45 AM	30	11	1	7	0	1	0	3	53	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	4	***57***
08:00 AM	09:00 AM	11	11	1	1	2	1	1	3	31	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	0	4	***35***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	8	2	31	2	**43**	8	2	31	2	***43***	0	0	0	3	***3***
07:15 AM	08:15 AM	8	4	36	6	**54**	8	4	36	6	***54***	1	0	0	5	***6***
07:30 AM	08:30 AM	8	3	38	10	**59**	8	3	38	10	***59***	1	0	0	3	***4***
07:45 AM	08:45 AM	7	4	31	11	**53**	7	4	31	11	***53***	1	0	0	3	***4***
08:00 AM	09:00 AM	2	4	12	13	**31**	2	4	12	13	***31***	1	1	0	2	***4***

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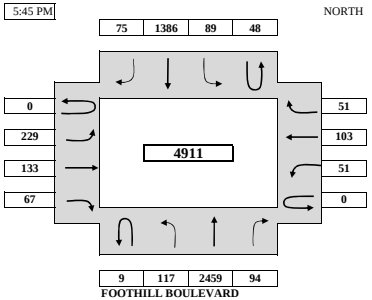
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

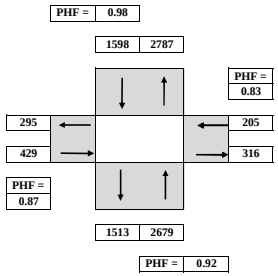
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-10PM

PEAK HOUR 4:45 PM to 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	4	33	524	17	6	11	363	18		43	27	20		11	23	16	**1116**
4:15 PM	4:30 PM	8	58	1179	38	20	30	669	32		94	70	40		28	40	34	**2340**
4:30 PM	4:45 PM	12	84	1664	66	29	60	987	48		160	94	53		39	64	48	**3408**
4:45 PM	5:00 PM	13	118	2335	91	44	73	1342	65		235	126	69		54	90	56	**4711**
5:00 PM	5:15 PM	16	145	2876	117	58	91	1682	88		292	163	89		65	109	70	**5861**
5:15 PM	5:30 PM	18	172	3507	136	69	113	2046	97		349	202	104		80	140	86	**7119**
5:30 PM	5:45 PM	21	201	4123	160	77	149	2373	123		389	227	120		90	167	99	**8319**
5:45 PM	6:00 PM	27	239	4712	182	84	175	2691	143		432	255	131		115	204	119	**9509**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	4	33	524	17	6	11	363	18	0	43	27	20	0	11	23	16	**1116**
4:15 PM	4:30 PM	4	25	655	21	14	19	306	14	0	51	43	20	0	17	17	18	**1224**
4:30 PM	4:45 PM	4	26	485	28	9	30	318	16	0	66	24	13	0	11	24	14	**1068**
4:45 PM	5:00 PM	1	34	671	25	15	13	355	17	0	75	32	16	0	15	26	8	**1303**
5:00 PM	5:15 PM	3	27	541	26	14	18	340	23	0	57	37	20	0	11	19	14	**1150**
5:15 PM	5:30 PM	2	27	631	19	11	22	364	9	0	57	39	15	0	15	31	16	**1258**
5:30 PM	5:45 PM	3	29	616	24	8	36	327	26	0	40	25	16	0	10	27	13	**1200**
5:45 PM	6:00 PM	6	38	589	22	7	26	318	20	0	43	28	11	0	25	37	20	**1190**
HOURLY TOTALS																		
4:00 PM	5:00 PM	13	118	2335	91	44	73	1342	65	0	235	126	69	0	54	90	56	**4711**
4:15 PM	5:15 PM	12	112	2352	100	52	80	1319	70	0	249	136	69	0	54	86	54	**4745**
4:30 PM	5:30 PM	10	114	2328	98	49	83	1377	65	0	255	132	64	0	52	100	52	**4779**
4:45 PM	5:45 PM	9	117	2459	94	48	89	1386	75	0	229	133	67	0	51	103	51	**4911**
5:00 PM	6:00 PM	14	121	2377	91	40	102	1349	78	0	197	129	62	0	61	114	63	**4798**

PEAK HOUR SUMMARY

4:45 PM to 5:45 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	9	117	2459	94	48	89	1386	75	0	229	133	67	0	51	103	51	**4911**
PHF BY MOVEMENT	0.75	0.86	0.92	0.90	0.80	0.62	0.95	0.72	0.00	0.76	0.85	0.84	0.00	0.85	0.83	0.80	OVERALL
PHF BY APPROACH	0.92				0.98				0.87				0.83				**0.94**
PED (Inc JAY-WALK)	5				6				2				5				**18**
BICYCLE	1				0				0				4				**5**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

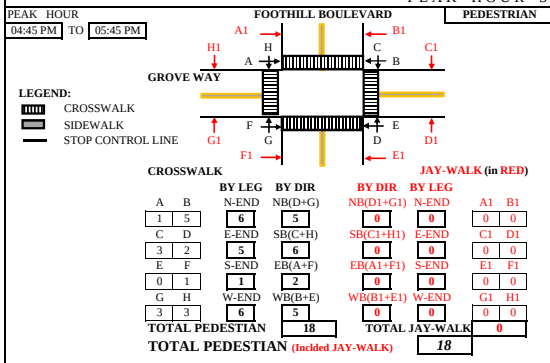
B.A.Y.M.E.T.R.I.C.S.

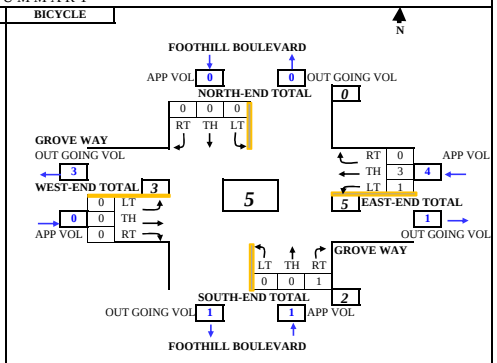
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-10PM

PEAK HOUR SUMMARY

PEAK HOUR 04:45 PM TO 05:45 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	1	2	1	2	1	0	1	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		*9*
04:15 PM	04:30 PM	2	2	1	2	1	1	3	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		*13*
04:30 PM	04:45 PM	2	7	1	5	1	2	3	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		*22*
04:45 PM	05:00 PM	3	8	1	7	1	2	3	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		*26*
05:00 PM	05:15 PM	3	9	3	7	1	3	3	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	1	0		*32*
05:15 PM	05:30 PM	3	12	4	7	1	3	5	2		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	1	4	0		*43*
05:30 PM	05:45 PM	3	12	4	7	1	3	6	3		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	1	4	0		*45*
05:45 PM	06:00 PM	4	12	4	7	6	3	10	3		0	0	0	0	0	0	0	0		0	0	1	0	0	0	0	0	0	1	4	0		*55*
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	1	2	1	2	1	0	1	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	*9*
04:15 PM	04:30 PM	1	0	0	0	0	1	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*4*
04:30 PM	04:45 PM	0	5	0	3	0	1	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
04:45 PM	05:00 PM	1	1	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*4*
05:00 PM	05:15 PM	0	1	2	0	0	1	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	*6*
05:15 PM	05:30 PM	0	3	1	0	0	0	2	1	7	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	4	*11*
05:30 PM	05:45 PM	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*2*
05:45 PM	06:00 PM	1	0	0	0	5	0	4	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***10***
HOURLY TOTALS																																		
04:00 PM	05:00 PM	3	8	1	7	1	2	3	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	***26***
04:15 PM	05:15 PM	2	7	2	5	0	3	2	1	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	***23***
04:30 PM	05:30 PM	1	10	3	5	0	2	2	2	25	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	5	***30***
04:45 PM	05:45 PM	1	5	3	2	0	1	3	3	18	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	5	***23***
05:00 PM	06:00 PM	1	4	3	0	5	1	7	3	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	5	***29***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	10	1	5	9	**25**	10	1	5	9	***25***	0	0	0	1	***1***
04:15 PM	05:15 PM	7	3	5	7	**22**	7	3	5	7	***22***	0	0	0	1	***1***
04:30 PM	05:30 PM	7	5	3	10	**25**	7	5	3	10	***25***	1	0	0	4	***5***
04:45 PM	05:45 PM	5	6	2	5	**18**	5	6	2	5	***18***	1	0	0	4	***5***
05:00 PM	06:00 PM	7	6	2	9	**24**	7	6	2	9	***24***	1	0	0	4	***5***

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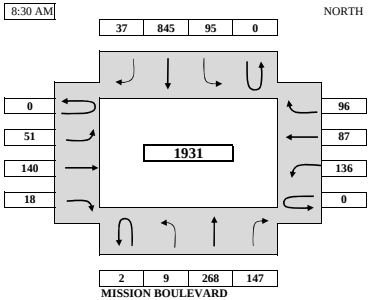
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

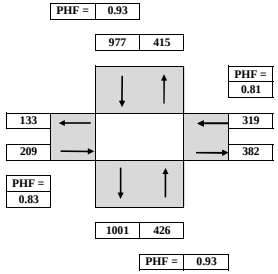
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-11AM

PEAK HOUR 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM	1	1	45	29	0	17	189	2	6	28	3		40	8	9		378
7:15 AM	7:30 AM	2	5	101	52	1	31	363	12	15	56	8		60	25	23		754
7:30 AM	7:45 AM	3	7	160	79	1	56	557	18	37	92	11		102	40	39		1202
7:45 AM	8:00 AM	3	9	230	115	1	80	783	29	49	136	18		124	67	61		1705
8:00 AM	8:15 AM	3	12	294	163	1	108	1004	42	54	164	23		157	92	80		2197
8:15 AM	8:30 AM	4	14	369	199	1	126	1208	49	66	196	26		196	112	119		2685
8:30 AM	8:45 AM	4	14	426	226	1	147	1350	60	71	214	30		216	127	136		3022
8:45 AM	9:00 AM	4	15	483	250	1	174	1528	65	75	236	32		244	143	148		3398
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	1	1	45	29	0	17	189	2	0	6	28	3	0	40	8	9	378
7:15 AM	7:30 AM	1	4	56	23	1	14	174	10	0	9	28	5	0	20	17	14	376
7:30 AM	7:45 AM	1	2	59	27	0	25	194	6	0	22	36	3	0	42	15	16	448
7:45 AM	8:00 AM	0	2	70	36	0	24	226	11	0	12	44	7	0	22	27	22	503
8:00 AM	8:15 AM	0	3	64	48	0	28	221	13	0	5	28	5	0	33	25	19	492
8:15 AM	8:30 AM	1	2	75	36	0	18	204	7	0	12	32	3	0	39	20	39	488
8:30 AM	8:45 AM	0	0	57	27	0	21	142	11	0	5	18	4	0	20	15	17	337
8:45 AM	9:00 AM	0	1	57	24	0	27	178	5	0	4	22	2	0	28	16	12	376
HOURLY TOTALS																		
7:00 AM	8:00 AM	3	9	230	115	1	80	783	29	0	49	136	18	0	124	67	61	1705
7:15 AM	8:15 AM	2	11	249	134	1	91	815	40	0	48	136	20	0	117	84	71	1819
7:30 AM	8:30 AM	2	9	268	147	0	95	845	37	0	51	140	18	0	136	87	96	1931
7:45 AM	8:45 AM	1	7	266	147	0	91	793	42	0	34	122	19	0	114	87	97	1820
8:00 AM	9:00 AM	1	6	253	135	0	94	745	36	0	26	100	14	0	120	76	87	1693

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	2	9	268	147	0	95	845	37	0	51	140	18	0	136	87	96	1931
PHF BY MOVEMENT	0.50	0.75	0.89	0.77	0.00	0.85	0.93	0.71	0.00	0.58	0.80	0.64	0.00	0.81	0.81	0.62	OVERALL
PHF BY APPROACH	0.93				0.93				0.83				0.81				0.96
PED (Inc JAY-WALK)	10				11				8				4				33
BICYCLE	2				2				0				2				6

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B.A.Y.M.E.T.R.I.C.S.

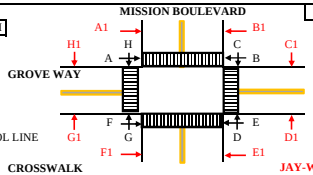
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-11AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM

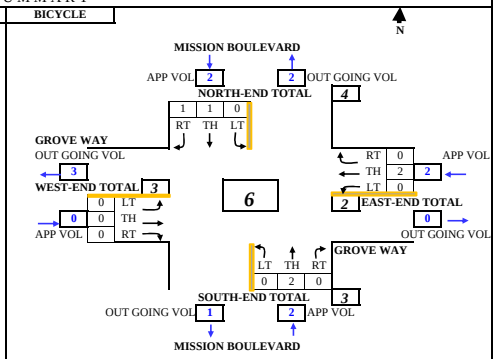
PEDESTRIAN | BICYCLE



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE

CROSSWALK — JAY-WALK (in RED)

		BY LEG	BY DIR	BY DIR	BY LEG		
A B	N-END	NB(D+G)	NB(D1+G1)	N-END	A1 B1		
7 3	10	10	0	0	0 0		
C D	E-END	SB(C+H)	SB(C1+H1)	E-END	C1 D1		
3 4	7	11	0	0	0 0		
E F	S-END	EB(A+F)	EB(A1+F1)	S-END	E1 F1		
1 1	2	8	0	0	0 0		
G H	W-END	WB(B+E)	WB(B1+E1)	W-END	G1 H1		
6 8	14	4	0	0	0 0		
TOTAL PEDESTIAN		33	TOTAL JAY-WALK		0		
TOTAL PEDESTIAN (Incldd JAY-WALK)					33		



TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
07:00 AM	07:15 AM	0	0	0	0	0	0	0	2		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		3
07:15 AM	07:30 AM	1	0	0	0	1	0	1	2		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	1	0	0		9
07:30 AM	07:45 AM	5	1	1	1	2	0	4	5		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	2	0	0		24
07:45 AM	08:00 AM	7	1	1	1	2	1	5	8		0	0	0	0	0	0	0	0		0	2	0	0	2	0	0	0	0	0	3	0	0		33
08:00 AM	08:15 AM	8	1	2	3	2	1	6	10		0	0	0	0	0	0	0	0		0	2	0	0	2	0	0	0	0	0	3	0	0		40
08:15 AM	08:30 AM	8	3	3	4	2	1	7	10		0	0	0	0	0	0	0	0		0	4	0	0	2	1	0	0	0	0	3	0	0		48
08:30 AM	08:45 AM	9	3	6	4	2	1	9	11		0	0	0	0	0	0	0	0		0	4	0	0	2	1	0	0	0	0	3	0	0		55
08:45 AM	09:00 AM	10	3	6	4	2	1	15	13		0	0	0	0	0	0	0	0		0	4	0	0	3	1	0	1	0	0	3	0	0		66
TOTAL BY PERIOD																																		
07:00 AM	07:15 AM	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1		3
07:15 AM	07:30 AM	1	0	0	0	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	3		6
07:30 AM	07:45 AM	4	1	1	1	1	0	3	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		15
07:45 AM	08:00 AM	2	0	0	0	0	1	1	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2		9
08:00 AM	08:15 AM	1	0	1	2	0	0	1	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7
08:15 AM	08:30 AM	0	2	1	1	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	3		8
08:30 AM	08:45 AM	1	0	3	0	0	0	2	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7
08:45 AM	09:00 AM	1	0	0	0	0	0	6	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2		11
HOURLY TOTALS																																		
07:00 AM	08:00 AM	7	1	1	1	2	1	5	8	26	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	0	7		33
07:15 AM	08:15 AM	8	1	2	3	2	1	6	8	31	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	3	0	6		37
07:30 AM	08:30 AM	7	3	3	4	1	1	6	8	33	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	2	0	6		39
07:45 AM	08:45 AM	4	2	5	3	0	1	5	6	26	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	0	0	1	0	5		31
08:00 AM	09:00 AM	3	2	5	3	0	0	10	5	28	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	1	0	0	0	0	5		33

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	6	9	8	3	26	6	9	8	3	26	2	2	0	3	7
07:15 AM	08:15 AM	9	10	9	3	31	9	10	9	3	31	1	2	0	3	6
07:30 AM	08:30 AM	10	11	8	4	33	10	11	8	4	33	2	2	0	2	6
07:45 AM	08:45 AM	8	11	5	2	26	8	11	5	2	26	2	2	0	1	5
08:00 AM	09:00 AM	13	10	3	2	28	13	10	3	2	28	2	2	1	0	5

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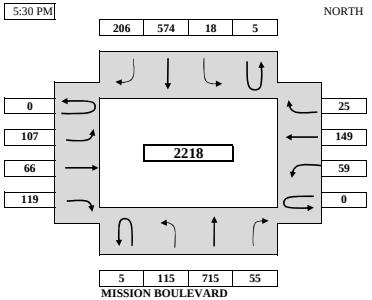
INTERSECTION TURNING MOVEMENT SUMMARY

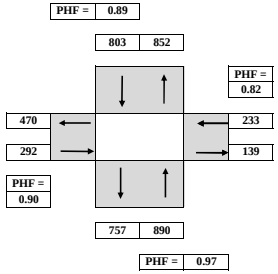
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-11PM

PEAK HOUR 4:30 PM to 5:30 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	0	30	193	8	4	7	147	47	14	26	32		20	39	4		571
4:15 PM	4:30 PM	2	59	347	16	6	12	277	90	38	43	54		28	74	9		1055
4:30 PM	4:45 PM	5	87	507	28	8	19	408	131	67	53	81		46	105	15		1560
4:45 PM	5:00 PM	5	117	692	41	8	21	559	203	99	71	111		55	143	21		2146
5:00 PM	5:15 PM	6	148	871	59	9	24	713	252	127	91	144		75	188	27		2734
5:15 PM	5:30 PM	7	174	1062	71	11	30	851	296	145	109	173		87	223	34		3273
5:30 PM	5:45 PM	9	203	1238	83	13	33	961	335	175	128	201		101	245	35		3760
5:45 PM	6:00 PM	10	232	1421	95	13	37	1100	383	212	156	227		114	280	39		4319
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	30	193	8	4	7	147	47	0	14	26	32	0	20	39	4	571
4:15 PM	4:30 PM	2	29	154	8	2	5	130	43	0	24	17	22	0	8	35	5	484
4:30 PM	4:45 PM	3	28	160	12	2	7	131	41	0	29	10	27	0	18	31	6	505
4:45 PM	5:00 PM	0	30	185	13	0	2	151	72	0	32	18	30	0	9	38	6	586
5:00 PM	5:15 PM	1	31	179	18	1	3	154	49	0	28	20	33	0	20	45	6	588
5:15 PM	5:30 PM	1	26	191	12	2	6	138	44	0	18	18	29	0	12	35	7	539
5:30 PM	5:45 PM	2	29	176	12	2	3	110	39	0	30	19	28	0	14	22	1	487
5:45 PM	6:00 PM	1	29	183	12	0	4	139	48	0	37	28	26	0	13	35	4	559
HOURLY TOTALS																		
4:00 PM	5:00 PM	5	117	692	41	8	21	559	203	0	99	71	111	0	55	143	21	2146
4:15 PM	5:15 PM	6	118	678	51	5	17	566	205	0	113	65	112	0	55	149	23	2163
4:30 PM	5:30 PM	5	115	715	55	5	18	574	206	0	107	66	119	0	59	149	25	2218
4:45 PM	5:45 PM	4	116	731	55	5	14	553	204	0	108	75	120	0	55	140	20	2200
5:00 PM	6:00 PM	5	115	729	54	5	16	541	180	0	113	85	116	0	59	137	18	2173

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	5	115	715	55	5	18	574	206	0	107	66	119	0	59	149	25	2218
PHF BY MOVEMENT	0.42	0.93	0.94	0.76	0.63	0.64	0.93	0.72	0.00	0.84	0.83	0.90	0.00	0.74	0.83	0.89	OVERALL
PHF BY APPROACH	0.97				0.89				0.90				0.82				0.94
PED (Inc JAY-WALK)	3				12				4				4				23
BICYCLE	0				0				0				0				0

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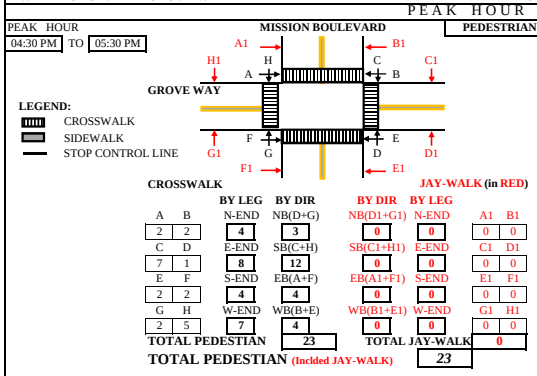
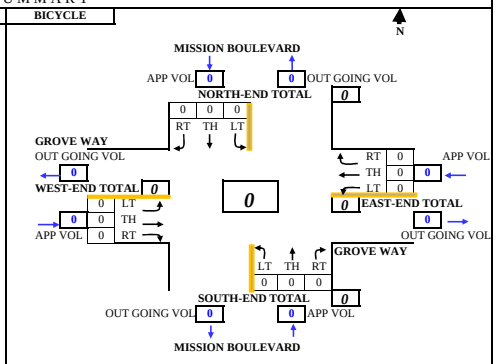
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	GROVE WAY	JURISDICTION:	HAYWARD	FILE:	3503036-11PM

PEAK HOUR SUMMARY

PEAK HOUR 04:30 PM TO 05:30 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	0	0	4	1	4	0	1	0		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		11
04:15 PM	04:30 PM	0	0	5	2	4	1	3	4		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		20
04:30 PM	04:45 PM	0	1	6	2	4	1	3	4		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		22
04:45 PM	05:00 PM	0	1	8	2	4	1	3	6		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		26
05:00 PM	05:15 PM	2	2	10	3	5	2	4	8		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		37
05:15 PM	05:30 PM	2	2	12	3	6	3	5	9		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		43
05:30 PM	05:45 PM	2	2	13	4	6	4	6	11		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0	0		50
05:45 PM	06:00 PM	4	2	14	6	7	4	9	12		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0	0		61
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	0	0	4	1	4	0	1	0	10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	11
04:15 PM	04:30 PM	0	0	1	1	0	1	2	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
04:30 PM	04:45 PM	0	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	05:00 PM	0	0	2	0	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00 PM	05:15 PM	2	1	2	1	1	1	1	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
05:15 PM	05:30 PM	0	0	2	0	1	1	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
05:30 PM	05:45 PM	0	0	1	1	0	1	1	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	7
05:45 PM	06:00 PM	2	0	1	2	1	0	3	1	10	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	11
HOURLY TOTALS																																		
04:00 PM	05:00 PM	0	1	8	2	4	1	3	6	25	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	26
04:15 PM	05:15 PM	2	2	6	2	1	2	3	8	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
04:30 PM	05:30 PM	2	2	7	1	2	2	2	5	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
04:45 PM	05:45 PM	2	1	7	2	2	3	3	7	27	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	28
05:00 PM	06:00 PM	4	1	6	4	3	3	6	6	33	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	35

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	5	14	1	5	25	5	14	1	5	25	1	0	0	0	1
04:15 PM	05:15 PM	5	14	4	3	26	5	14	4	3	26	0	0	0	0	0
04:30 PM	05:30 PM	3	12	4	4	23	3	12	4	4	23	0	0	0	0	0
04:45 PM	05:45 PM	5	14	5	3	27	5	14	5	3	27	0	1	0	0	1
05:00 PM	06:00 PM	10	12	7	4	33	10	12	7	4	33	1	1	0	0	2

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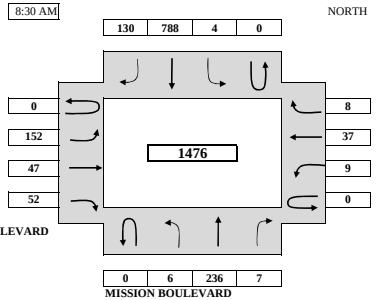
INTERSECTION TURNING MOVEMENT SUMMARY

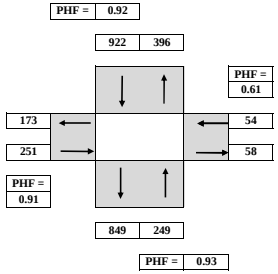
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	SUNSET BOULEVARD	JURISDICTION:	HAYWARD	FILE:	3503036-12AM

PEAK HOUR 7:30 AM to 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		4	41	2		0	194	26		32	9	8		1	5	2	**324**
7:15 AM	7:30 AM		4	75	2		0	350	40		61	14	15		3	8	3	**575**
7:30 AM	7:45 AM		7	129	5		0	566	74		99	28	26		6	10	4	**954**
7:45 AM	8:00 AM		7	183	6		0	743	105		134	42	46		8	15	7	**1296**
8:00 AM	8:15 AM		9	248	6		1	949	135		181	52	58		9	28	9	**1685**
8:15 AM	8:30 AM		10	311	9		4	1138	170		213	61	67		12	45	11	**2051**
8:30 AM	8:45 AM		12	365	11		5	1289	194		248	71	73		12	50	12	**2342**
8:45 AM	9:00 AM		18	419	13		6	1447	227		271	77	83		17	60	14	**2652**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	4	41	2	0	0	194	26	0	32	9	8	0	1	5	2	**324**
7:15 AM	7:30 AM	0	0	34	0	0	0	156	14	0	29	5	7	0	2	3	1	**251**
7:30 AM	7:45 AM	0	3	54	3	0	0	216	34	0	38	14	11	0	3	2	1	**379**
7:45 AM	8:00 AM	0	0	54	1	0	0	177	31	0	35	14	20	0	2	5	3	**342**
8:00 AM	8:15 AM	0	2	65	0	0	1	206	30	0	47	10	12	0	1	13	2	**389**
8:15 AM	8:30 AM	0	1	63	3	0	3	189	35	0	32	9	9	0	3	17	2	**366**
8:30 AM	8:45 AM	0	2	54	2	0	1	151	24	0	35	10	6	0	0	5	1	**291**
8:45 AM	9:00 AM	0	6	54	2	0	1	158	33	0	23	6	10	0	5	10	2	**310**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	7	183	6	0	0	743	105	0	134	42	46	0	8	15	7	**1296**
7:15 AM	8:15 AM	0	5	207	4	0	1	755	109	0	149	43	50	0	8	23	7	**1361**
7:30 AM	8:30 AM	0	6	236	7	0	4	788	130	0	152	47	52	0	9	37	8	**1476**
7:45 AM	8:45 AM	0	5	236	6	0	5	723	120	0	149	43	47	0	6	40	8	**1388**
8:00 AM	9:00 AM	0	11	236	7	0	6	704	122	0	137	35	37	0	9	45	7	**1356**

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	6	236	7	0	4	788	130	0	152	47	52	0	9	37	8	**1476**
PHF BY MOVEMENT	0.00	0.50	0.91	0.58	0.00	0.33	0.91	0.93	0.00	0.81	0.84	0.65	0.00	0.75	0.54	0.67	OVERALL
PHF BY APPROACH	0.93				0.92				0.91				0.61				**0.95**
PED (Inc JAY-WALK)	1				7				5				2				**15**
BICYCLE	5				4				1				1				**11**

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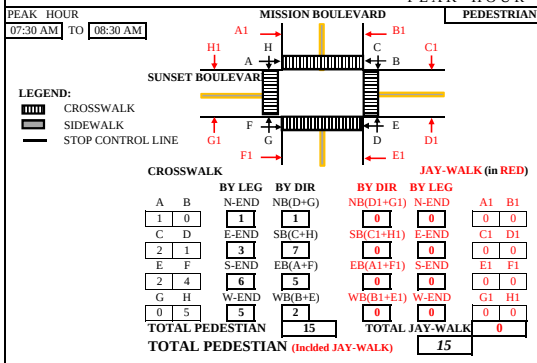
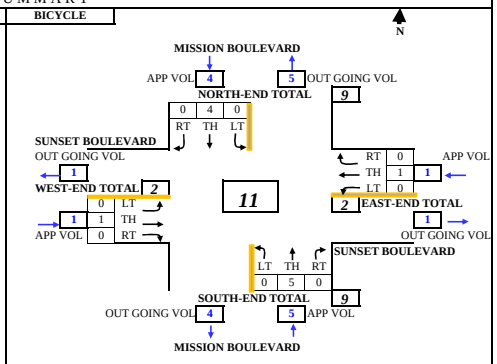
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	SUNSET BOULEVARD	JURISDICTION:	HAYWARD	FILE:	3503036-12AM

PEAK HOUR SUMMARY

PEAK HOUR 07:30 AM TO 08:30 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
07:00 AM	07:15 AM	1	0	1	0	2	0	1	1		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0		*7*
07:15 AM	07:30 AM	2	1	1	1	7	0	1	1		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	1	0	0	0	0	0		*17*
07:30 AM	07:45 AM	2	1	1	1	8	2	1	1		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	1	0	0	0	0	0		*21*
07:45 AM	08:00 AM	2	1	1	1	8	3	1	4		0	0	0	0	0	0	0	0		0	2	0	0	4	0	0	1	0	0	0	0	0		*28*
08:00 AM	08:15 AM	2	1	2	2	8	3	1	5		0	0	0	0	0	0	0	0		0	4	0	0	4	0	0	2	0	0	0	0	0		*34*
08:15 AM	08:30 AM	3	1	3	2	9	4	1	6		0	0	0	0	0	0	0	0		0	6	0	0	5	0	0	2	0	0	1	0	0		*43*
08:30 AM	08:45 AM	4	2	3	2	9	5	2	7		0	0	0	0	0	0	0	0		0	9	0	0	6	0	0	2	0	0	1	0	0		*52*
08:45 AM	09:00 AM	4	2	4	3	9	6	3	10		0	0	0	0	0	0	0	0		0	11	0	0	8	0	0	2	0	0	2	0	0		*64*
TOTAL BY PERIOD																																		
07:00 AM	07:15 AM	1	0	1	0	2	0	1	1	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	*7*
07:15 AM	07:30 AM	1	1	0	1	5	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	*10*
07:30 AM	07:45 AM	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	*4*
07:45 AM	08:00 AM	0	0	0	0	0	1	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	*7*
08:00 AM	08:15 AM	0	0	1	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	3	*6*
08:15 AM	08:30 AM	1	0	1	0	1	1	0	1	5	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0	4	*9*
08:30 AM	08:45 AM	1	1	0	0	0	1	1	1	5	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	4	*9*
08:45 AM	09:00 AM	0	0	1	1	0	1	1	3	7	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	0	5	***12***
HOURLY TOTALS																																		
07:00 AM	08:00 AM	2	1	1	1	8	3	1	4	21	0	0	0	0	0	0	0	0	0	0	2	0	0	4	0	0	1	0	0	0	0	0	7	***28***
07:15 AM	08:15 AM	1	1	1	2	6	3	0	4	18	0	0	0	0	0	0	0	0	0	0	3	0	0	4	0	0	2	0	0	0	0	0	9	***27***
07:30 AM	08:30 AM	1	0	2	1	2	4	0	5	15	0	0	0	0	0	0	0	0	0	0	5	0	0	4	0	0	1	0	0	1	0	0	11	***26***
07:45 AM	08:45 AM	2	1	2	1	1	3	1	6	17	0	0	0	0	0	0	0	0	0	0	7	0	0	5	0	0	1	0	0	1	0	0	14	***31***
08:00 AM	09:00 AM	2	1	3	2	1	3	2	6	20	0	0	0	0	0	0	0	0	0	0	9	0	0	4	0	0	1	0	0	2	0	0	16	***36***

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	2	5	5	9	**21**	2	5	5	9	***21***	2	4	1	0	***7***
07:15 AM	08:15 AM	2	5	4	7	**18**	2	5	4	7	***18***	3	4	2	0	***9***
07:30 AM	08:30 AM	1	7	5	2	**15**	1	7	5	2	***15***	5	4	1	1	***11***
07:45 AM	08:45 AM	2	8	5	2	**17**	2	8	5	2	***17***	7	5	1	1	***14***
08:00 AM	09:00 AM	4	9	5	2	**20**	4	9	5	2	***20***	9	4	1	2	***16***

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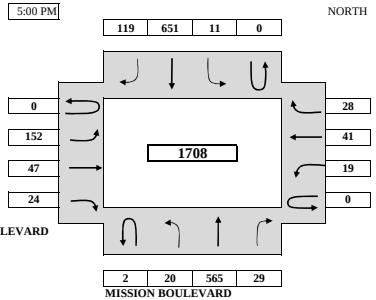
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

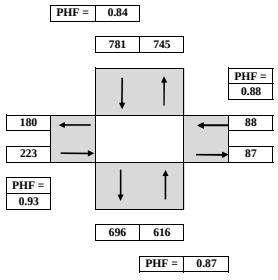
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	SUNSET BOULEVARD	JURISDICTION:	HAYWARD	FILE:	3503036-12PM

PEAK HOUR 4:00 PM to 5:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM	1	6	122	12	4	151	21		32	11	7		5	12	8		**392**
4:15 PM	4:30 PM	1	9	274	19	6	348	54		74	23	13		10	22	15		**868**
4:30 PM	4:45 PM	1	14	398	25	8	495	84		116	35	19		15	27	21		**1258**
4:45 PM	5:00 PM	2	20	565	29	11	651	119		152	47	24		19	41	28		**1708**
5:00 PM	5:15 PM	2	26	665	33	13	818	145		201	53	34		20	53	35		**2098**
5:15 PM	5:30 PM	2	29	789	35	16	967	170		228	71	38		22	62	40		**2469**
5:30 PM	5:45 PM	2	34	904	41	20	1166	213		272	82	44		25	67	47		**2917**
5:45 PM	6:00 PM	2	42	1051	47	26	1342	232		302	94	50		26	72	53		**3339**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	1	6	122	12	0	4	151	21	0	32	11	7	0	5	12	8	**392**
4:15 PM	4:30 PM	0	3	152	7	0	2	197	33	0	42	12	6	0	5	10	7	**476**
4:30 PM	4:45 PM	0	5	124	6	0	2	147	30	0	42	12	6	0	5	5	6	**390**
4:45 PM	5:00 PM	1	6	167	4	0	3	156	35	0	36	12	5	0	4	14	7	**450**
5:00 PM	5:15 PM	0	6	100	4	0	2	167	26	0	49	6	10	0	1	12	7	**390**
5:15 PM	5:30 PM	0	3	124	2	0	3	149	25	0	27	18	4	0	2	9	5	**371**
5:30 PM	5:45 PM	0	5	115	6	0	4	199	43	0	44	11	6	0	3	5	7	**448**
5:45 PM	6:00 PM	0	8	147	6	0	6	176	19	0	30	12	6	0	1	5	6	**422**
HOURLY TOTALS																		
4:00 PM	5:00 PM	2	20	565	29	0	11	651	119	0	152	47	24	0	19	41	28	**1708**
4:15 PM	5:15 PM	1	20	543	21	0	9	667	124	0	169	42	27	0	15	41	27	**1706**
4:30 PM	5:30 PM	1	20	515	16	0	10	619	116	0	154	48	25	0	12	40	25	**1601**
4:45 PM	5:45 PM	1	20	506	16	0	12	671	129	0	156	47	25	0	10	40	26	**1659**
5:00 PM	6:00 PM	0	22	486	18	0	15	691	113	0	150	47	26	0	7	31	25	**1631**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	2	20	565	29	0	11	651	119	0	152	47	24	0	19	41	28	**1708**
PHF BY MOVEMENT	0.50	0.83	0.85	0.60	0.00	0.69	0.83	0.85	0.00	0.90	0.98	0.86	0.00	0.95	0.73	0.88	OVERALL
PHF BY APPROACH	0.87				0.84				0.93				0.88				**0.90**
PED (Inc JAY-WALK)	14				17				11				10				**52**
BICYCLE	1				1				0				0				**2**

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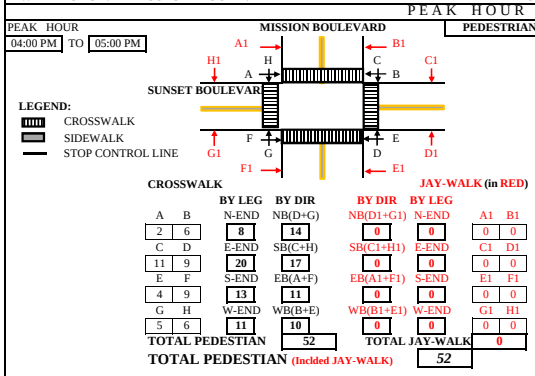
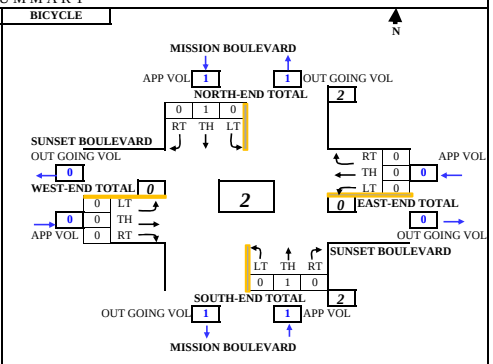
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	SUNSET BOULEVARD	JURISDICTION:	HAYWARD	FILE:	3503036-12PM

PEAK HOUR SUMMARY

PEAK HOUR 04:00 PM TO 05:00 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	1	0	2	1	0	1	0	0		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*7*
04:15 PM	04:30 PM	1	3	5	5	1	5	4	4		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*30*
04:30 PM	04:45 PM	1	4	6	7	4	8	5	6		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*43*
04:45 PM	05:00 PM	2	6	11	9	4	9	5	6		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*54*
05:00 PM	05:15 PM	2	6	11	9	6	12	8	8		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*64*
05:15 PM	05:30 PM	3	6	14	13	8	14	10	8		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*78*
05:30 PM	05:45 PM	6	13	14	14	8	15	14	11		0	0	0	0	0	0	0	0		0	1	0	0	1	0	0	0	0	0	0	0		*97*
05:45 PM	06:00 PM	7	15	17	15	9	16	16	16		0	0	0	0	0	0	0	0		0	1	0	0	2	0	0	0	0	0	0	0		*114*
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	1	0	2	1	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	*7*
04:15 PM	04:30 PM	0	3	3	4	1	4	4	4	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*23*
04:30 PM	04:45 PM	0	1	1	2	3	3	1	2	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*13*
04:45 PM	05:00 PM	1	2	5	2	0	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*11*
05:00 PM	05:15 PM	0	0	0	0	2	3	3	2	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*10*
05:15 PM	05:30 PM	1	0	3	4	2	2	2	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*14*
05:30 PM	05:45 PM	3	7	0	1	0	1	4	3	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*19*
05:45 PM	06:00 PM	1	2	3	1	1	1	2	5	16	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***17***
HOURLY TOTALS																																	
04:00 PM	05:00 PM	2	6	11	9	4	9	5	6	52	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	***54***
04:15 PM	05:15 PM	1	6	9	8	6	11	8	8	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***57***
04:30 PM	05:30 PM	2	3	9	8	7	9	6	4	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***48***
04:45 PM	05:45 PM	5	9	8	7	4	7	9	5	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***54***
05:00 PM	06:00 PM	5	9	6	6	5	7	11	10	59	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***60***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	14	17	11	10	**52**	14	17	11	10	***52***	1	1	0	0	***2***
04:15 PM	05:15 PM	16	17	12	12	**57**	16	17	12	12	***57***	0	0	0	0	***0***
04:30 PM	05:30 PM	14	13	11	10	**48**	14	13	11	10	***48***	0	0	0	0	***0***
04:45 PM	05:45 PM	16	13	12	13	**54**	16	13	12	13	***54***	0	0	0	0	***0***
05:00 PM	06:00 PM	17	16	12	14	**59**	17	16	12	14	***59***	0	1	0	0	***1***

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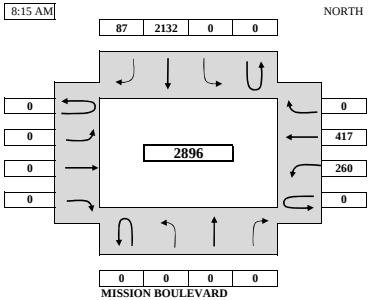
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

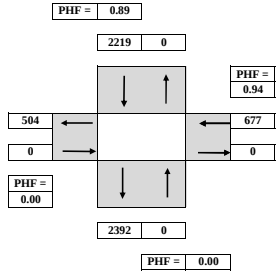
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-13AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM							476	11						76	87		**650**
7:15 AM	7:30 AM							991	28						146	186		**1351**
7:30 AM	7:45 AM							1522	44						214	290		**2070**
7:45 AM	8:00 AM							2115	74						268	392		**2849**
8:00 AM	8:15 AM							2608	98						336	504		**3546**
8:15 AM	8:30 AM							3070	120						411	629		**4230**
8:30 AM	8:45 AM							3568	130						501	705		**4904**
8:45 AM	9:00 AM							4057	148						584	789		**5578**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	0	0	0	0	476	11	0	0	0	0	0	76	87	0	**650**
7:15 AM	7:30 AM	0	0	0	0	0	0	515	17	0	0	0	0	0	70	99	0	**701**
7:30 AM	7:45 AM	0	0	0	0	0	0	531	16	0	0	0	0	0	68	104	0	**719**
7:45 AM	8:00 AM	0	0	0	0	0	0	593	30	0	0	0	0	0	54	102	0	**779**
8:00 AM	8:15 AM	0	0	0	0	0	0	493	24	0	0	0	0	0	68	112	0	**697**
8:15 AM	8:30 AM	0	0	0	0	0	0	462	22	0	0	0	0	0	75	125	0	**684**
8:30 AM	8:45 AM	0	0	0	0	0	0	498	10	0	0	0	0	0	90	76	0	**674**
8:45 AM	9:00 AM	0	0	0	0	0	0	489	18	0	0	0	0	0	83	84	0	**674**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	0	0	0	0	0	2115	74	0	0	0	0	0	268	392	0	**2849**
7:15 AM	8:15 AM	0	0	0	0	0	0	2132	87	0	0	0	0	0	260	417	0	**2896**
7:30 AM	8:30 AM	0	0	0	0	0	0	2079	92	0	0	0	0	0	265	443	0	**2879**
7:45 AM	8:45 AM	0	0	0	0	0	0	2046	86	0	0	0	0	0	287	415	0	**2834**
8:00 AM	9:00 AM	0	0	0	0	0	0	1942	74	0	0	0	0	0	316	397	0	**2729**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	0	2132	87	0	0	0	0	0	260	417	0	**2896**
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.73	0.00	0.00	0.00	0.00	0.00	0.93	0.93	0.00	OVERALL
PHF BY APPROACH	0.00				0.89				0.00				0.94				**0.93**
PED (Inc JAY-WALK)	16				14				28				33				**91**
BICYCLE	0				2				1				2				**5**

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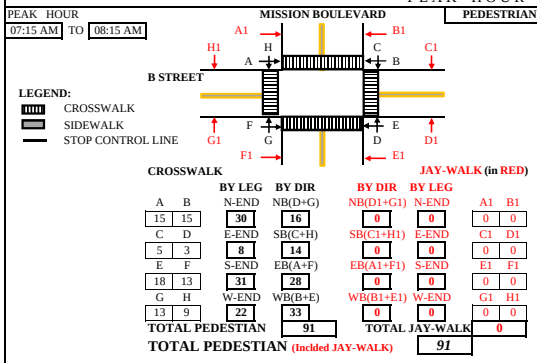
B.A.Y.M.E.T.R.I.C.S.

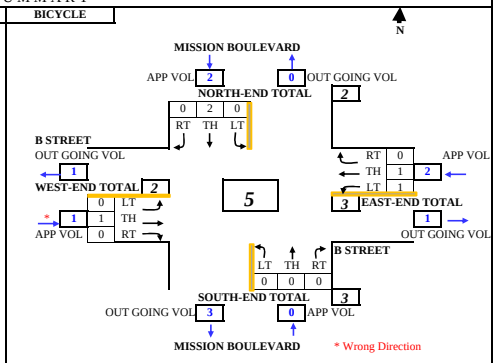
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-13AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	N-END B	E-END C	E-END D	S-END E	S-END F	W-END G	W-END H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	N-END B1	E-END C1	E-END D1	S-END E1	S-END F1	W-END G1	W-END H1	TOTAL	BICYCLE NB SOUTH-END LT	NB SOUTH-END TH	NB SOUTH-END RT	SB NORTH-END LT	SB NORTH-END TH	SB NORTH-END RT	EB WEST-END LT	EB WEST-END TH *	EB WEST-END RT	WB EAST-END LT	WB EAST-END TH	WB EAST-END RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	3	7	1	1	1	0	0	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		*16*
07:15 AM	07:30 AM	5	11	2	1	7	1	2	2		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	0	0	0	2	0		*35*
07:30 AM	07:45 AM	11	11	3	1	9	3	4	2		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	1	0	0	2	0		*49*
07:45 AM	08:00 AM	16	18	5	3	12	6	6	4		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	1	0	1	3	0		*77*
08:00 AM	08:15 AM	18	22	6	4	19	13	13	10		0	0	0	0	0	0	0	0		0	0	0	0	2	0	0	1	0	1	3	0		*112*
08:15 AM	08:30 AM	24	26	7	4	22	22	18	12		0	0	0	0	0	0	0	0		0	0	0	0	3	0	0	2	0	1	3	0		*144*
08:30 AM	08:45 AM	31	30	7	5	24	25	22	16		0	0	0	0	0	0	0	0		0	0	0	0	4	0	0	2	0	1	4	0		*171*
08:45 AM	09:00 AM	33	34	9	5	26	31	25	18		0	0	0	0	0	0	0	0		0	0	0	0	4	0	0	2	0	1	7	0		*195*
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	3	7	1	1	1	0	0	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	*16*
07:15 AM	07:30 AM	2	4	1	0	6	1	2	1	17	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	*19*
07:30 AM	07:45 AM	6	0	1	0	2	2	2	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	*14*
07:45 AM	08:00 AM	5	7	2	2	3	3	2	2	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	*28*
08:00 AM	08:15 AM	2	4	1	1	7	7	7	6	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*35*
08:15 AM	08:30 AM	6	4	1	0	3	9	5	2	30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	*32*
08:30 AM	08:45 AM	7	4	0	1	2	3	4	4	25	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	2	*27*
08:45 AM	09:00 AM	2	4	2	0	2	6	3	2	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	***24***
HOURLY TOTALS																																	
07:00 AM	08:00 AM	16	18	5	3	12	6	6	4	70	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	3	0	7	***77***
07:15 AM	08:15 AM	15	15	5	3	18	13	13	9	91	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	5	***96***
07:30 AM	08:30 AM	19	15	5	3	15	21	16	10	104	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	1	0	5	***109***
07:45 AM	08:45 AM	20	19	4	4	15	22	18	14	116	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	1	2	0	6	***122***
08:00 AM	09:00 AM	17	16	4	2	14	25	19	14	111	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	4	0	7	***118***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	9	9	22	30	**70**	9	9	22	30	***70***	0	2	1	4	***7***
07:15 AM	08:15 AM	16	14	28	33	**91**	16	14	28	33	***91***	0	2	1	2	***5***
07:30 AM	08:30 AM	19	15	40	30	**104**	19	15	40	30	***104***	0	1	2	2	***5***
07:45 AM	08:45 AM	22	18	42	34	**116**	22	18	42	34	***116***	0	2	1	3	***6***
08:00 AM	09:00 AM	21	18	42	30	**111**	21	18	42	30	***111***	0	2	1	4	***7***

Tel : (510) 232-1271 ***Fax: (510) 232-1272***

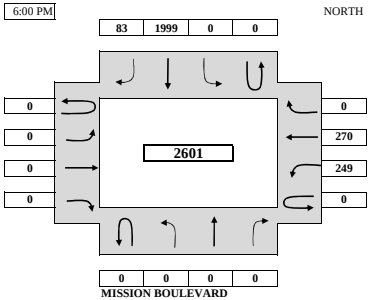
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

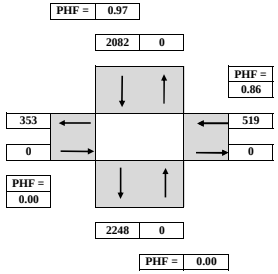
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-13PM

PEAK HOUR 5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM							439	15						56	64		574
4:15 PM	4:30 PM							911	28						118	118		1175
4:30 PM	4:45 PM							1410	47						194	183		1834
4:45 PM	5:00 PM							1883	71						260	246		2460
5:00 PM	5:15 PM							2378	103						318	306		3105
5:15 PM	5:30 PM							2880	119						391	373		3763
5:30 PM	5:45 PM							3403	134						442	432		4411
5:45 PM	6:00 PM							3882	154						509	516		5061
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	0	0	0	0	0	439	15	0	0	0	0	0	56	64	0	574
4:15 PM	4:30 PM	0	0	0	0	0	0	472	13	0	0	0	0	0	62	54	0	601
4:30 PM	4:45 PM	0	0	0	0	0	0	499	19	0	0	0	0	0	76	65	0	659
4:45 PM	5:00 PM	0	0	0	0	0	0	473	24	0	0	0	0	0	66	63	0	626
5:00 PM	5:15 PM	0	0	0	0	0	0	495	32	0	0	0	0	0	58	60	0	645
5:15 PM	5:30 PM	0	0	0	0	0	0	502	16	0	0	0	0	0	73	67	0	658
5:30 PM	5:45 PM	0	0	0	0	0	0	523	15	0	0	0	0	0	51	59	0	648
5:45 PM	6:00 PM	0	0	0	0	0	0	479	20	0	0	0	0	0	67	84	0	650
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	0	0	0	0	0	1883	71	0	0	0	0	0	260	246	0	2460
4:15 PM	5:15 PM	0	0	0	0	0	0	1939	88	0	0	0	0	0	262	242	0	2531
4:30 PM	5:30 PM	0	0	0	0	0	0	1969	91	0	0	0	0	0	273	255	0	2588
4:45 PM	5:45 PM	0	0	0	0	0	0	1993	87	0	0	0	0	0	248	249	0	2577
5:00 PM	6:00 PM	0	0	0	0	0	0	1999	83	0	0	0	0	0	249	270	0	2601

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	0	1999	83	0	0	0	0	0	249	270	0	2601
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.65	0.00	0.00	0.00	0.00	0.00	0.85	0.80	0.00	OVERALL
PHF BY APPROACH	0.00				0.97				0.00				0.86				0.99
PED (Inc JAY-WALK)	39				36				87				80				242
BICYCLE	0				2				0				1				3

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

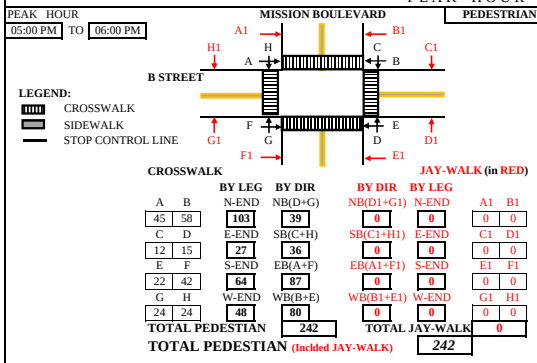
B.A.Y.M.E.T.R.I.C.S.

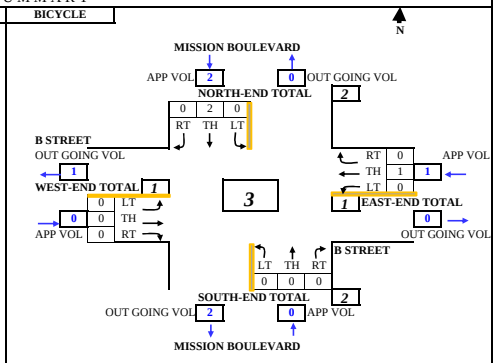
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-13PM

PEAK HOUR SUMMARY

PEAK HOUR 05:00 PM TO 06:00 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	6	5	3	2	13	1	3	8		0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	0	0			42
04:15 PM	04:30 PM	20	19	3	9	25	11	9	11		0	0	0	0	0	2	0	0		0	0	0	0	0	1	0	0	0	0	0	0			110
04:30 PM	04:45 PM	25	22	4	12	31	21	20	14		0	0	0	0	0	3	0	0		0	0	0	0	0	1	0	0	0	0	0	0			153
04:45 PM	05:00 PM	29	34	6	14	36	35	23	16		0	0	0	0	0	3	0	0		0	0	0	0	0	1	0	0	0	0	0	0			197
05:00 PM	05:15 PM	44	47	8	18	45	43	39	21		0	0	0	0	0	3	0	0		0	0	0	0	1	1	0	0	0	0	0	0			270
05:15 PM	05:30 PM	52	66	11	24	50	60	43	29		0	0	0	0	0	3	0	0		0	0	0	0	2	1	0	0	0	0	0	0			341
05:30 PM	05:45 PM	63	82	17	29	54	68	45	34		0	0	0	0	0	3	0	0		0	0	0	0	2	1	0	0	0	0	1	0			399
05:45 PM	06:00 PM	74	92	18	29	58	77	47	40		0	0	0	0	0	3	0	0		0	0	0	0	2	1	0	0	0	0	1	0			442
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	6	5	3	2	13	1	3	8	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1		42
04:15 PM	04:30 PM	14	14	0	7	12	10	6	3	66	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0		68
04:30 PM	04:45 PM	5	3	1	3	6	10	11	3	42	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		43
04:45 PM	05:00 PM	4	12	2	2	5	14	3	2	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		44
05:00 PM	05:15 PM	15	13	2	4	9	8	16	5	72	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1		73
05:15 PM	05:30 PM	8	19	3	6	5	17	4	8	70	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1		71
05:30 PM	05:45 PM	11	16	6	5	4	8	2	5	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		58
05:45 PM	06:00 PM	11	10	1	0	4	9	2	6	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		43
HOURLY TOTALS																																		
04:00 PM	05:00 PM	29	34	6	14	36	35	23	16	193	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	1		197
04:15 PM	05:15 PM	38	42	5	16	32	42	36	13	224	0	0	0	0	0	3	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	1		228
04:30 PM	05:30 PM	32	47	8	15	25	49	34	18	228	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	2		231
04:45 PM	05:45 PM	38	60	13	17	23	47	25	20	243	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3		246
05:00 PM	06:00 PM	45	58	12	15	22	42	24	24	242	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3		245

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	37	22	64	70	193	37	22	67	70	196	0	1	0	0	1
04:15 PM	05:15 PM	52	18	80	74	224	52	18	83	74	227	0	1	0	0	1
04:30 PM	05:30 PM	49	26	81	72	228	49	26	82	72	229	0	2	0	0	2
04:45 PM	05:45 PM	42	33	85	83	243	42	33	85	83	243	0	2	0	1	3
05:00 PM	06:00 PM	39	36	87	80	242	39	36	87	80	242	0	2	0	1	3

Tel : (510) 232-1271 *Fax: (510) 232-1272*

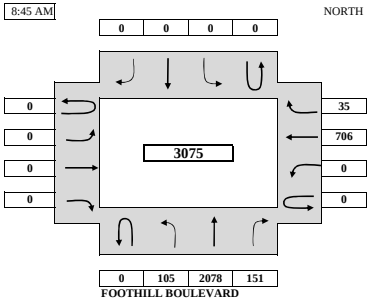
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

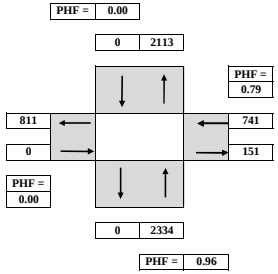
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-14AM

PEAK HOUR 7:45 AM to 8:45 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		21	408	26										170	5		630
7:15 AM	7:30 AM		38	881	42										312	11		1284
7:30 AM	7:45 AM		63	1449	66										459	22		2059
7:45 AM	8:00 AM		88	1999	101										586	29		2803
8:00 AM	8:15 AM		102	2518	131										813	36		3600
8:15 AM	8:30 AM		132	3007	164										998	43		4344
8:30 AM	8:45 AM		168	3527	217										1165	57		5134
8:45 AM	9:00 AM		193	3910	247										1315	66		5731
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	21	408	26	0	0	0	0	0	0	0	0	0	0	170	5	630
7:15 AM	7:30 AM	0	17	473	16	0	0	0	0	0	0	0	0	0	0	142	6	654
7:30 AM	7:45 AM	0	25	568	24	0	0	0	0	0	0	0	0	0	0	147	11	775
7:45 AM	8:00 AM	0	25	550	35	0	0	0	0	0	0	0	0	0	0	127	7	744
8:00 AM	8:15 AM	0	14	519	30	0	0	0	0	0	0	0	0	0	0	227	7	797
8:15 AM	8:30 AM	0	30	489	33	0	0	0	0	0	0	0	0	0	0	185	7	744
8:30 AM	8:45 AM	0	36	520	53	0	0	0	0	0	0	0	0	0	0	167	14	790
8:45 AM	9:00 AM	0	25	383	30	0	0	0	0	0	0	0	0	0	0	150	9	597
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	88	1999	101	0	0	0	0	0	0	0	0	0	0	586	29	2803
7:15 AM	8:15 AM	0	81	2110	105	0	0	0	0	0	0	0	0	0	0	643	31	2970
7:30 AM	8:30 AM	0	94	2126	122	0	0	0	0	0	0	0	0	0	0	686	32	3060
7:45 AM	8:45 AM	0	105	2078	151	0	0	0	0	0	0	0	0	0	0	706	35	3075
8:00 AM	9:00 AM	0	105	1911	146	0	0	0	0	0	0	0	0	0	0	729	37	2928

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	105	2078	151	0	0	0	0	0	0	0	0	0	0	706	35	3075
PHF BY MOVEMENT	0.00	0.73	0.94	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.63	OVERALL
PHF BY APPROACH	0.96				0.00				0.00				0.79				0.96
PED (Inc JAY-WALK)	22				17				22				27				88
BICYCLE	2				0				0				0				2

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

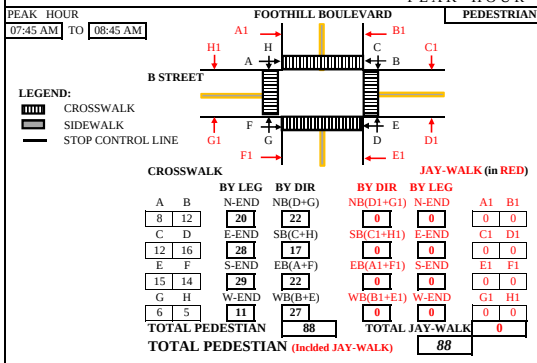
B.A.Y.M.E.T.R.I.C.S.

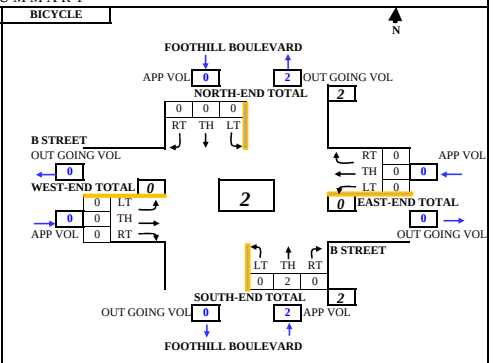
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-14AM

PEAK HOUR SUMMARY

PEAK HOUR 07:45 AM TO 08:45 AM





TIME From	To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
07:00 AM	07:15 AM	0	0	0	0	0	4	3	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		8
07:15 AM	07:30 AM	1	1	0	0	2	6	3	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	1	0		15
07:30 AM	07:45 AM	4	1	2	0	6	8	4	1		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		28
07:45 AM	08:00 AM	4	2	3	4	10	10	5	3		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		43
08:00 AM	08:15 AM	8	5	6	8	13	13	5	4		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		64
08:15 AM	08:30 AM	9	9	10	9	15	17	9	6		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	2	0		86
08:30 AM	08:45 AM	12	13	14	16	21	22	10	6		0	0	0	0	0	0	0	0		0	2	0	0	0	0	0	0	0	0	2	0		118
08:45 AM	09:00 AM	12	15	19	18	24	26	10	8		0	0	0	0	0	0	0	0		0	2	0	0	0	0	0	0	0	0	3	0		137
TOTAL BY PERIOD																																	
07:00 AM	07:15 AM	0	0	0	0	0	4	3	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	8
07:15 AM	07:30 AM	1	1	0	0	2	2	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
07:30 AM	07:45 AM	3	0	2	0	4	2	1	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	13
07:45 AM	08:00 AM	0	1	1	4	4	2	1	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
08:00 AM	08:15 AM	4	3	3	4	3	3	0	1	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
08:15 AM	08:30 AM	1	4	4	1	2	4	4	2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
08:30 AM	08:45 AM	3	4	4	7	6	5	1	0	30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	32
08:45 AM	09:00 AM	0	2	5	2	3	4	0	2	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	19
HOURLY TOTALS																																	
07:00 AM	08:00 AM	4	2	3	4	10	10	5	3	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	43
07:15 AM	08:15 AM	8	5	6	8	13	9	2	4	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	56
07:30 AM	08:30 AM	8	8	10	9	13	11	6	5	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	71
07:45 AM	08:45 AM	8	12	12	16	15	14	6	5	88	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	90
08:00 AM	09:00 AM	8	13	16	14	14	16	5	5	91	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3	94

SUMMARY (HOURLY COUNT)

TIME From	To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	9	6	14	12	41	9	6	14	12	41	0	0	0	2	2
07:15 AM	08:15 AM	10	10	17	18	55	10	10	17	18	55	0	0	0	1	1
07:30 AM	08:30 AM	15	15	19	21	70	15	15	19	21	70	0	0	0	1	1
07:45 AM	08:45 AM	22	17	22	27	88	22	17	22	27	88	2	0	0	0	2
08:00 AM	09:00 AM	19	21	24	27	91	19	21	24	27	91	2	0	0	1	3

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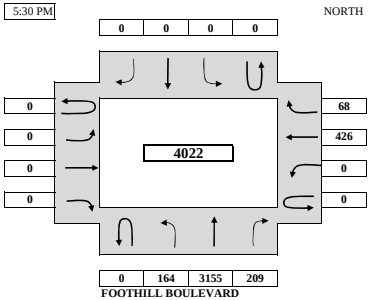
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

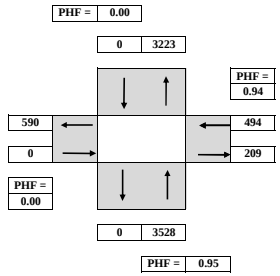
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-14PM

PEAK HOUR 4:30 PM to 5:30 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		28	735	47										92	15		917
4:15 PM	4:30 PM		46	1528	95										184	23		1876
4:30 PM	4:45 PM		83	2351	156										288	36		2914
4:45 PM	5:00 PM		132	3103	195										396	51		3877
5:00 PM	5:15 PM		165	3857	245										497	73		4837
5:15 PM	5:30 PM		210	4683	304										610	91		5898
5:30 PM	5:45 PM		245	5475	358										719	106		6903
5:45 PM	6:00 PM		291	6195	396										818	120		7820
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	28	735	47	0	0	0	0	0	0	0	0	0	0	92	15	917
4:15 PM	4:30 PM	0	18	793	48	0	0	0	0	0	0	0	0	0	0	92	8	959
4:30 PM	4:45 PM	0	37	823	61	0	0	0	0	0	0	0	0	0	0	104	13	1038
4:45 PM	5:00 PM	0	49	752	39	0	0	0	0	0	0	0	0	0	0	108	15	963
5:00 PM	5:15 PM	0	33	754	50	0	0	0	0	0	0	0	0	0	0	101	22	960
5:15 PM	5:30 PM	0	45	826	59	0	0	0	0	0	0	0	0	0	0	113	18	1061
5:30 PM	5:45 PM	0	35	792	54	0	0	0	0	0	0	0	0	0	0	109	15	1005
5:45 PM	6:00 PM	0	46	720	38	0	0	0	0	0	0	0	0	0	0	99	14	917
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	132	3103	195	0	0	0	0	0	0	0	0	0	0	396	51	3877
4:15 PM	5:15 PM	0	137	3122	198	0	0	0	0	0	0	0	0	0	0	405	58	3920
4:30 PM	5:30 PM	0	164	3155	209	0	0	0	0	0	0	0	0	0	0	426	68	4022
4:45 PM	5:45 PM	0	162	3124	202	0	0	0	0	0	0	0	0	0	0	431	70	3989
5:00 PM	6:00 PM	0	159	3092	201	0	0	0	0	0	0	0	0	0	0	422	69	3943

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	164	3155	209	0	0	0	0	0	0	0	0	0	0	426	68	4022
PHF BY MOVEMENT	0.00	0.84	0.95	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.77	OVERALL
PHF BY APPROACH	0.95				0.00				0.00				0.94				0.95
PED (Inc JAY-WALK)	19				14				38				27				98
BICYCLE	2				0				0				0				2

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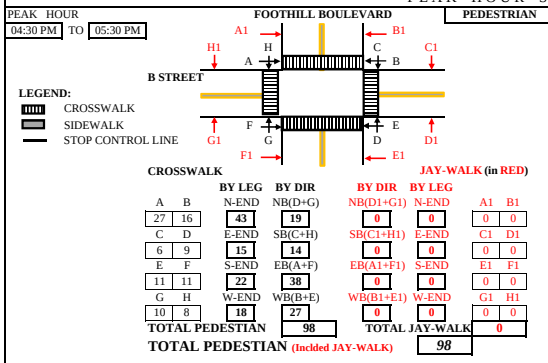
B.A.Y.M.E.T.R.I.C.S.

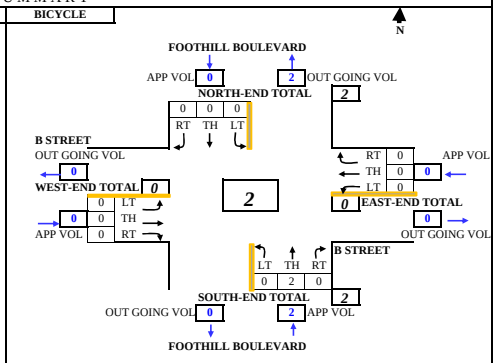
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	FOOTHILL BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	B STREET	JURISDICTION:	HAYWARD	FILE:	3503036-14PM

PEAK HOUR SUMMARY

PEAK HOUR 04:30 PM TO 05:30 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																	
04:00 PM	04:15 PM	3	4	4	1	9	3	0	0		0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		24
04:15 PM	04:30 PM	11	6	13	4	18	10	2	2		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0		67
04:30 PM	04:45 PM	18	10	14	5	22	14	6	5		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0		95
04:45 PM	05:00 PM	22	18	15	6	26	16	9	6		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0		119
05:00 PM	05:15 PM	33	21	17	12	27	20	11	6		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0		148
05:15 PM	05:30 PM	38	22	19	13	29	21	12	10		0	0	0	0	0	0	0	0		0	3	0	0	0	0	0	0	0	0	0	0		167
05:30 PM	05:45 PM	49	26	19	13	31	24	14	12		0	0	0	0	0	0	0	0		0	3	0	0	0	0	0	0	0	0	0	0		191
05:45 PM	06:00 PM	52	26	24	13	32	26	14	14		0	0	0	0	0	0	0	0		0	4	0	0	0	0	0	0	0	0	0	0		205
TOTAL BY PERIOD																																	
04:00 PM	04:15 PM	3	4	4	1	9	3	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
04:15 PM	04:30 PM	8	2	9	3	9	7	2	2	42	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	43
04:30 PM	04:45 PM	7	4	1	1	4	4	4	3	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
04:45 PM	05:00 PM	4	8	1	1	4	2	3	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
05:00 PM	05:15 PM	11	3	2	6	1	4	2	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
05:15 PM	05:30 PM	5	1	2	1	2	1	1	4	17	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	19
05:30 PM	05:45 PM	11	4	0	0	2	3	2	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
05:45 PM	06:00 PM	3	0	5	0	1	2	0	2	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	14
HOURLY TOTALS																																	
04:00 PM	05:00 PM	22	18	15	6	26	16	9	6	118	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	119
04:15 PM	05:15 PM	30	17	13	11	18	17	11	6	123	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	124
04:30 PM	05:30 PM	27	16	6	9	11	11	10	8	98	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	100
04:45 PM	05:45 PM	31	16	5	8	9	10	8	7	94	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	96
05:00 PM	06:00 PM	30	8	9	7	6	10	5	8	83	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	86

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	15	21	38	44	118	15	21	38	44	118	1	0	0	0	1
04:15 PM	05:15 PM	22	19	47	35	123	22	19	47	35	123	1	0	0	0	1
04:30 PM	05:30 PM	19	14	38	27	98	19	14	38	27	98	2	0	0	0	2
04:45 PM	05:45 PM	16	12	41	25	94	16	12	41	25	94	2	0	0	0	2
05:00 PM	06:00 PM	12	17	40	14	83	12	17	40	14	83	3	0	0	0	3

Tel : (510) 232-1271 *Fax: (510) 232-1272*

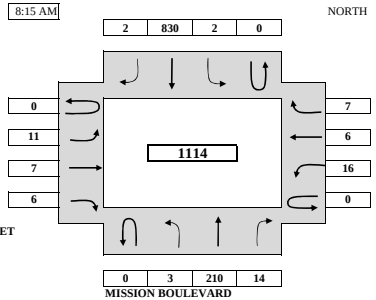
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

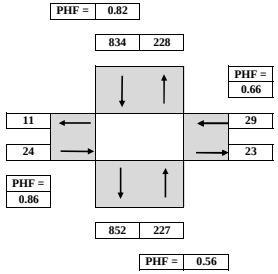
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	SIMON STREET	JURISDICTION:	HAYWARD	FILE:	3503036-15AM

PEAK HOUR 7:15 AM to 8:15 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		1	41	6		0	195	1		2	1	1		2	4	2	**256**
7:15 AM	7:30 AM		1	75	10		2	372	1		3	4	3		9	6	4	**490**
7:30 AM	7:45 AM		1	173	13		2	572	2		7	5	5		13	6	6	**805**
7:45 AM	8:00 AM		1	193	14		2	825	3		11	6	6		16	8	7	**1092**
8:00 AM	8:15 AM		4	251	20		2	1025	3		13	8	7		18	10	9	**1370**
8:15 AM	8:30 AM		5	326	23		4	1127	8		14	8	7		23	12	13	**1570**
8:30 AM	8:45 AM		6	381	28		6	1387	10		14	8	9		27	13	14	**1903**
8:45 AM	9:00 AM		7	443	34		8	1550	15		15	11	14		38	14	16	**2165**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	1	41	6	0	0	195	1	0	2	1	1	0	2	4	2	**256**
7:15 AM	7:30 AM	0	0	34	4	0	2	177	0	0	1	3	2	0	7	2	2	**234**
7:30 AM	7:45 AM	0	0	98	3	0	0	200	1	0	4	1	2	0	4	0	2	**315**
7:45 AM	8:00 AM	0	0	20	1	0	0	253	1	0	4	1	1	0	3	2	1	**287**
8:00 AM	8:15 AM	0	3	58	6	0	0	200	0	0	2	2	1	0	2	2	2	**278**
8:15 AM	8:30 AM	0	1	75	3	0	2	102	5	0	1	0	0	0	5	2	4	**200**
8:30 AM	8:45 AM	0	1	55	5	0	2	260	2	0	0	0	2	0	4	1	1	**333**
8:45 AM	9:00 AM	0	1	62	6	0	2	163	5	0	1	3	5	0	11	1	2	**262**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	1	193	14	0	2	825	3	0	11	6	6	0	16	8	7	**1092**
7:15 AM	8:15 AM	0	3	210	14	0	2	830	2	0	11	7	6	0	16	6	7	**1114**
7:30 AM	8:30 AM	0	4	251	13	0	2	755	7	0	11	4	4	0	14	6	9	**1080**
7:45 AM	8:45 AM	0	5	208	15	0	4	815	8	0	7	3	4	0	14	7	8	**1098**
8:00 AM	9:00 AM	0	6	250	20	0	6	725	12	0	4	5	8	0	22	6	9	**1073**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	3	210	14	0	2	830	2	0	11	7	6	0	16	6	7	**1114**
PHF BY MOVEMENT	0.00	0.25	0.54	0.58	0.00	0.25	0.82	0.50	0.00	0.69	0.58	0.75	0.00	0.57	0.75	0.88	OVERALL
PHF BY APPROACH	0.56				0.82				0.86				0.66				**0.88**
PED (Inc JAY-WALK)	4				9				2				1				**16**
BICYCLE	2				3				0				0				**5**

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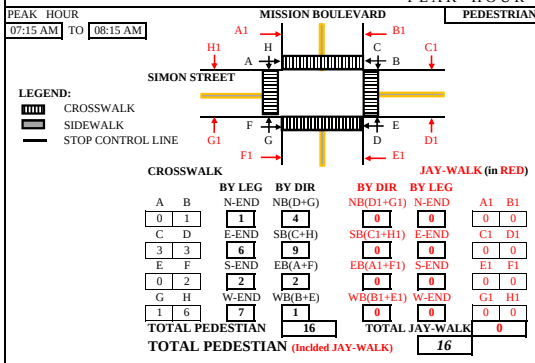
B.A.Y.M.E.T.R.I.C.S.

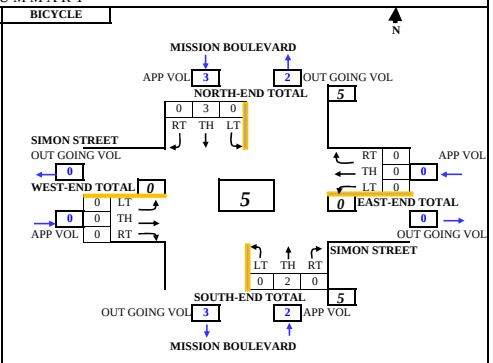
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	7:00 AM	to	9:00 AM
E-W APPROACH:	SIMON STREET	JURISDICTION:	HAYWARD	FILE:	3503036-15AM

PEAK HOUR SUMMARY

PEAK HOUR 07:15 AM TO 08:15 AM





SURVEY DATA

TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
07:00 AM	07:15 AM	0	0	0	1	0	0	1	1		0	0	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0			*4*
07:15 AM	07:30 AM	0	1	0	2	0	1	1	2		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*10*
07:30 AM	07:45 AM	0	1	0	3	0	1	2	3		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*13*
07:45 AM	08:00 AM	0	1	2	3	0	1	2	7		0	0	0	0	0	0	0	0		0	2	0	0	2	0	0	0	0	0	0	0			*20*
08:00 AM	08:15 AM	0	1	3	4	0	2	2	7		0	0	0	0	0	0	0	0		0	3	0	0	3	0	0	0	0	0	0	0			*25*
08:15 AM	08:30 AM	0	1	3	4	0	2	2	8		0	0	0	0	0	0	0	0		0	5	0	0	5	0	0	0	0	0	0	0			*30*
08:30 AM	08:45 AM	0	2	3	4	0	3	4	11		0	0	0	0	0	0	0	0		1	6	0	0	7	0	0	0	0	0	0	0			*41*
08:45 AM	09:00 AM	0	3	4	7	0	4	6	14		0	0	0	0	0	0	0	0		1	6	0	0	7	0	0	0	0	0	0	0			*52*
TOTAL BY PERIOD																																		
07:00 AM	07:15 AM	0	0	0	1	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	*4*
07:15 AM	07:30 AM	0	1	0	1	0	1	0	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	*6*
07:30 AM	07:45 AM	0	0	0	1	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
07:45 AM	08:00 AM	0	0	2	0	0	0	0	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	*7*
08:00 AM	08:15 AM	0	0	1	1	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	*5*
08:15 AM	08:30 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	4	*5*
08:30 AM	08:45 AM	0	1	0	0	0	1	2	3	7	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	4	*11*
08:45 AM	09:00 AM	0	1	1	3	0	1	2	3	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	***11***
HOURLY TOTALS																																		
07:00 AM	08:00 AM	0	1	2	3	0	1	2	7	16	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	4	***20***
07:15 AM	08:15 AM	0	1	3	3	0	2	1	6	16	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	5	***21***
07:30 AM	08:30 AM	0	0	3	2	0	1	1	6	13	0	0	0	0	0	0	0	0	0	0	3	0	0	4	0	0	0	0	0	0	0	7	***20***
07:45 AM	08:45 AM	0	1	3	1	0	2	2	8	17	0	0	0	0	0	0	0	0	0	1	4	0	0	6	0	0	0	0	0	0	0	11	***28***
08:00 AM	09:00 AM	0	2	2	4	0	3	4	7	22	0	0	0	0	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	0	0	10	***32***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
07:00 AM	08:00 AM	5	9	1	1	**16**	5	9	1	1	***16***	2	2	0	0	***4***
07:15 AM	08:15 AM	4	9	2	1	**16**	4	9	2	1	***16***	2	3	0	0	***5***
07:30 AM	08:30 AM	3	9	1	0	**13**	3	9	1	0	***13***	3	4	0	0	***7***
07:45 AM	08:45 AM	3	11	2	1	**17**	3	11	2	1	***17***	5	6	0	0	***11***
08:00 AM	09:00 AM	8	9	3	2	**22**	8	9	3	2	***22***	5	5	0	0	***10***

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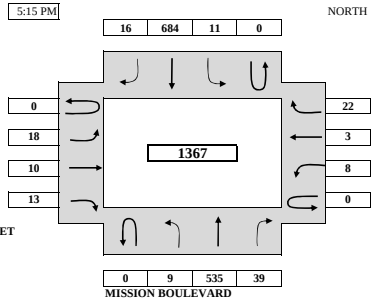
INTERSECTION TURNING MOVEMENT SUMMARY

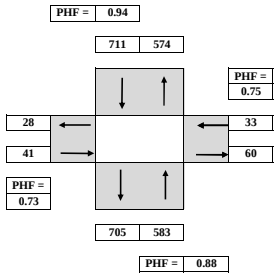
PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	SIMON STREET	JURISDICTION:	HAYWARD	FILE:	3503036-15PM

PEAK HOUR 4:15 PM to 5:15 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From	TIME To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		4	116	13		4	140	4		3	2	6		0	0	6	**298**
4:15 PM	4:30 PM		8	248	21		5	297	8		4	5	9		2	1	11	**619**
4:30 PM	4:45 PM		9	397	36		8	477	14		10	7	12		6	1	18	**995**
4:45 PM	5:00 PM		9	540	39		13	642	16		14	9	14		7	2	23	**1328**
5:00 PM	5:15 PM		13	651	52		15	824	20		20	12	19		8	3	28	**1665**
5:15 PM	5:30 PM		17	764	61		17	992	22		27	12	20		10	7	32	**1981**
5:30 PM	5:45 PM		19	868	74		20	1100	29		32	15	22		11	7	37	**2234**
5:45 PM	6:00 PM		22	997	79		23	1347	32		35	15	29		17	11	40	**2647**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	4	116	13	0	4	140	4	0	3	2	6	0	0	0	6	**298**
4:15 PM	4:30 PM	0	4	132	8	0	1	157	4	0	2	3	3	0	2	1	5	**322**
4:30 PM	4:45 PM	0	1	149	15	0	3	180	6	0	6	2	3	0	4	0	7	**376**
4:45 PM	5:00 PM	0	0	143	3	0	5	165	2	0	4	2	2	0	1	1	5	**333**
5:00 PM	5:15 PM	0	4	111	13	0	2	182	4	0	6	3	5	0	1	1	5	**337**
5:15 PM	5:30 PM	0	4	113	9	0	2	168	2	0	7	0	1	0	2	4	4	**316**
5:30 PM	5:45 PM	0	2	104	13	0	3	108	7	0	5	3	2	0	1	0	5	**253**
5:45 PM	6:00 PM	0	3	129	5	0	3	247	3	0	3	0	7	0	6	4	3	**413**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	9	540	39	0	13	642	16	0	14	9	14	0	7	2	23	**1328**
4:15 PM	5:15 PM	0	9	535	39	0	11	684	16	0	18	10	13	0	8	3	22	**1368**
4:30 PM	5:30 PM	0	9	516	40	0	12	695	14	0	23	7	11	0	8	6	21	**1362**
4:45 PM	5:45 PM	0	10	471	38	0	12	623	15	0	22	8	10	0	5	6	19	**1239**
5:00 PM	6:00 PM	0	13	457	40	0	10	705	16	0	21	6	15	0	10	9	17	**1319**

PEAK HOUR SUMMARY

4:15 PM to 5:15 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	9	535	39	0	11	684	16	0	18	10	13	0	8	3	22	**1368**
PHF BY MOVEMENT	0.00	0.56	0.90	0.65	0.00	0.55	0.94	0.67	0.00	0.73	0.83	0.65	0.00	0.50	0.75	0.79	OVERALL
PHF BY APPROACH	0.88				0.94				0.73				0.75				**0.91**
PED (Inc JAY-WALK)	9				7				6				6				**28**
BICYCLE	2				0				0				0				**2**

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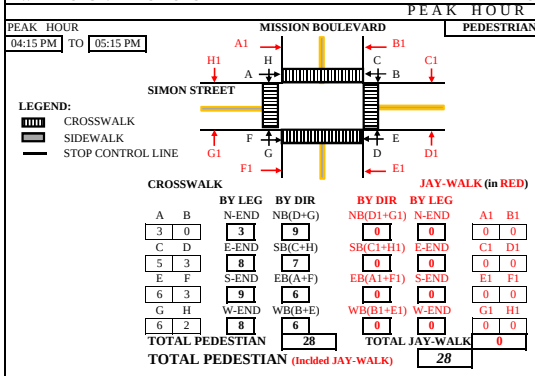
B.A.Y.M.E.T.R.I.C.S.

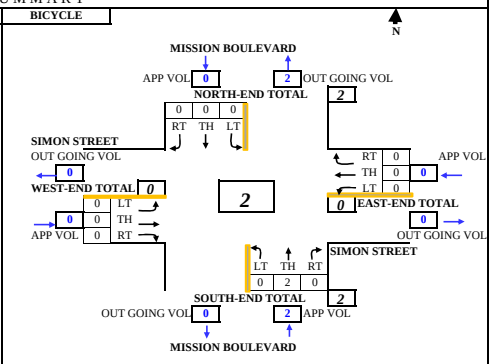
PEDESTRIAN & BICYCLE MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN HAYWARD	SURVEY DATE:	3/18/2015	DAY:	WEDNESDAY
N-S APPROACH:	MISSION BOULEVARD	SURVEY PERIOD:	4:00 PM	to	6:00 PM
E-W APPROACH:	SIMON STREET	JURISDICTION:	HAYWARD	FILE:	3503036-15PM

PEAK HOUR SUMMARY

PEAK HOUR 04:15 PM TO 05:15 PM





TIME From	TIME To	PEDESTRIAN @ CROSSWALK / STOP LINE N-END A	B	E-END C	D	S-END E	F	W-END G	H	TOTAL	JAY-WALK (From Intersection to Midblock) N-END A1	B1	E-END C1	D1	S-END E1	F1	W-END G1	H1	TOTAL	BICYCLE NB SOUTH-END LT	TH	RT	SB NORTH-END LT	TH	RT	EB WEST-END LT	TH	RT	WB EAST-END LT	TH	RT	TOTAL	OVER ALL TOTAL
SURVEY DATA																																		
04:00 PM	04:15 PM	0	1	1	3	0	1	0	2		0	0	0	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0			*9*
04:15 PM	04:30 PM	0	1	4	5	0	1	4	3		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*21*
04:30 PM	04:45 PM	0	1	6	5	1	1	6	3		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*26*
04:45 PM	05:00 PM	3	1	6	6	6	1	6	3		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*35*
05:00 PM	05:15 PM	3	1	6	6	6	4	6	4		0	0	0	0	0	0	0	0		0	2	0	0	1	0	0	0	0	0	0	0			*39*
05:15 PM	05:30 PM	3	1	7	7	6	4	8	4		0	0	0	0	0	0	0	0		0	2	0	0	2	0	0	0	0	0	0	0			*44*
05:30 PM	05:45 PM	4	1	7	7	6	4	9	5		0	0	0	0	0	0	0	0		0	2	0	0	2	0	0	0	0	0	0	0			*47*
05:45 PM	06:00 PM	4	1	7	7	6	5	10	6		0	0	0	0	0	0	0	0		0	2	0	0	4	0	0	0	0	0	0	0			*52*
TOTAL BY PERIOD																																		
04:00 PM	04:15 PM	0	1	1	3	0	1	0	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	*9*
04:15 PM	04:30 PM	0	0	3	2	0	0	4	1	10	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	*12*
04:30 PM	04:45 PM	0	0	2	0	1	0	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*5*
04:45 PM	05:00 PM	3	0	0	1	5	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*9*
05:00 PM	05:15 PM	0	0	0	0	0	3	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*4*
05:15 PM	05:30 PM	0	0	1	1	0	0	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	*5*
05:30 PM	05:45 PM	1	0	0	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*3*
05:45 PM	06:00 PM	0	0	0	0	0	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	*5*
HOURLY TOTALS																																		
04:00 PM	05:00 PM	3	1	6	6	6	1	6	3	32	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3	***35***
04:15 PM	05:15 PM	3	0	5	3	6	3	6	2	28	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	***30***
04:30 PM	05:30 PM	3	0	3	2	6	3	4	1	22	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***23***
04:45 PM	05:45 PM	4	0	1	2	5	3	3	2	20	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	***21***
05:00 PM	06:00 PM	1	0	1	1	0	4	4	3	14	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	***17***

SUMMARY (HOURLY COUNT)

TIME From	TIME To	PEDESTRIAN COUNTS BY DIRECTION NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	PEDESTRIAN COUNTS (INCLUDED JAY-WALK) NB(D+G)	SB(C+H)	EB(A+F)	WB(B+E)	TOTAL	BICYCLE COUNTS NB	SB	EB	WB	TOTAL
04:00 PM	05:00 PM	12	9	4	7	**32**	12	9	4	7	***32***	2	1	0	0	***3***
04:15 PM	05:15 PM	9	7	6	6	**28**	9	7	6	6	***28***	2	0	0	0	***2***
04:30 PM	05:30 PM	6	4	6	6	**22**	6	4	6	6	***22***	0	1	0	0	***1***
04:45 PM	05:45 PM	5	3	7	5	**20**	5	3	7	5	***20***	0	1	0	0	***1***
05:00 PM	06:00 PM	5	4	5	0	**14**	5	4	5	0	***14***	0	3	0	0	***3***

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Appendix C – Existing Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	0	166	1513	677	94	0	0	0	0	474	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.95	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1516	1427	4990	3468						3373	1396
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1516	1427	4990	3468						3373	1396
Peak-hour factor, PHF	0.80	0.80	0.80	0.98	0.98	0.98	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	254	0	208	1544	691	96	0	0	0	0	533	149
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	51
Lane Group Flow (vph)	160	156	146	1544	780	0	0	0	0	0	547	83
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	21.1	21.1	21.1	69.6	69.6						46.8	46.8
Effective Green, g (s)	21.1	21.1	21.1	69.6	69.6						46.8	46.8
Actuated g/C Ratio	0.14	0.14	0.14	0.47	0.47						0.32	0.32
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	239	216	203	2346	1630						1066	441
v/s Ratio Prot	0.10	c0.10		c0.31	0.22						c0.16	
v/s Ratio Perm			0.10									0.06
v/c Ratio	0.67	0.72	0.72	0.66	0.48						0.51	0.19
Uniform Delay, d1	60.1	60.6	60.6	30.1	26.8						41.3	36.8
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	6.9	11.3	11.5	0.7	0.2						1.8	0.9
Delay (s)	67.1	71.9	72.2	30.7	27.0						43.1	37.7
Level of Service	E	E	E	C	C						D	D
Approach Delay (s)		70.3			29.5			0.0			42.0	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1289	14	100	1484	526	0	0	1238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5076		1770	6084				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5076		1770	6084				3528
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.97	0.97	0.97	0.99	0.99	0.99
Adj. Flow (vph)	0	0	0	0	1302	14	103	1530	542	0	0	1251
RTOR Reduction (vph)	0	0	0	0	1	0	31	44	0	0	0	269
Lane Group Flow (vph)	0	0	0	0	1315	0	72	2028	0	0	0	982
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					49.2		37.7	85.3				47.6
Effective Green, g (s)					49.2		37.7	85.3				47.6
Actuated g/C Ratio					0.33		0.25	0.58				0.32
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1687		450	3712				1134
v/s Ratio Prot					c0.26		0.04	c0.14				
v/s Ratio Perm								0.19				c0.28
v/c Ratio					0.78		0.16	0.55				0.87
Uniform Delay, d1					44.5		42.9	19.4				47.2
Progression Factor					1.00		1.00	1.00				1.26
Incremental Delay, d2					2.4		0.8	0.2				6.8
Delay (s)					46.9		43.6	19.5				66.1
Level of Service					D		D	B				E
Approach Delay (s)		0.0			46.9			20.7			66.1	
Approach LOS		A			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	36	26	22	18	146	46	1750	6	223	1707	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1719		1770	1863	1553	1770	5085	1491	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1719		1770	1863	1553	1770	5085	1491	1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	131	45	32	28	23	187	49	1882	6	237	1816	84
RTOR Reduction (vph)	0	0	0	0	0	172	0	0	3	0	0	24
Lane Group Flow (vph)	131	77	0	28	23	15	49	1882	3	237	1816	60
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	16.3	23.1		5.4	12.2	12.2	8.3	73.5	73.5	29.0	94.2	94.2
Effective Green, g (s)	16.3	23.1		5.4	12.2	12.2	8.3	73.5	73.5	29.0	94.2	94.2
Actuated g/C Ratio	0.11	0.16		0.04	0.08	0.08	0.06	0.50	0.50	0.20	0.64	0.64
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194	268		64	153	128	99	2525	740	346	3236	974
v/s Ratio Prot	c0.07	c0.04		0.02	0.01		0.03	c0.37		c0.13	0.36	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	0.68	0.29		0.44	0.15	0.12	0.49	0.75	0.00	0.68	0.56	0.06
Uniform Delay, d1	63.3	55.2		69.8	63.1	62.9	67.8	29.8	18.8	55.3	15.2	10.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.92	1.32	2.26
Incremental Delay, d2	8.9	0.6		4.7	0.5	0.4	3.9	2.0	0.0	3.5	0.4	0.1
Delay (s)	72.3	55.8		74.5	63.5	63.4	71.7	31.8	18.8	54.1	20.5	23.1
Level of Service	E	E		E	E	E	E	C	B	D	C	C
Approach Delay (s)		66.2			64.7			32.8			24.3	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	24	1	12	24	294	2	1518	28	316	1224	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3519		1770	1508	1464	1770	6388		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3519		1770	1508	1464	1770	6388		1770	5085	1522
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	18	29	1	13	26	323	2	1632	30	359	1391	207
RTOR Reduction (vph)	0	1	0	0	136	153	0	2	0	0	0	41
Lane Group Flow (vph)	18	29	0	13	42	18	2	1660	0	359	1391	166
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	4.8	17.3		3.1	15.6	15.6	1.3	53.6		57.0	109.3	109.3
Effective Green, g (s)	4.8	17.3		3.1	15.6	15.6	1.3	53.6		57.0	109.3	109.3
Actuated g/C Ratio	0.03	0.12		0.02	0.11	0.11	0.01	0.36		0.39	0.74	0.74
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	57	411		37	158	154	15	2313		681	3755	1124
v/s Ratio Prot	c0.01	0.01		0.01	c0.03		0.00	c0.26		c0.20	0.27	
v/s Ratio Perm						0.01						0.11
v/c Ratio	0.32	0.07		0.35	0.27	0.12	0.13	0.72		0.53	0.37	0.15
Uniform Delay, d1	70.0	58.2		71.5	60.9	60.0	72.8	40.7		35.1	7.0	5.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.62	0.85		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1		5.7	0.9	0.3	3.5	1.7		2.9	0.3	0.3
Delay (s)	73.2	58.3		77.1	61.8	60.3	121.5	36.2		38.0	7.2	6.0
Level of Service	E	E		E	E	E	F	D		D	A	A
Approach Delay (s)		63.9			61.7			36.3			12.8	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	2	1	9	3	211	18	16	672	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.41	0.41	0.41	0.50	0.50	0.50	0.77	0.77	0.77	0.82	0.82	0.82
Hourly flow rate (vph)	7	20	17	4	2	18	4	274	23	20	820	12
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1033	1173	421	777	1167	157	832			300		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1033	1173	421	777	1167	157	832			300		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	90	97	98	99	98	100			98		
cM capacity (veh/h)	177	186	579	250	188	855	796			1254		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	44	24	141	160	429	422
Volume Left	7	4	4	0	20	0
Volume Right	17	18	0	23	0	12
cSH	250	503	796	1700	1254	1700
Volume to Capacity	0.18	0.05	0.00	0.09	0.02	0.25
Queue Length 95th (ft)	16	4	0	0	1	0
Control Delay (s)	22.4	12.5	0.3	0.0	0.5	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	22.4	12.5	0.1		0.3	
Approach LOS	C	B				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	23	18	6	35	144	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.84	0.84	0.85	0.85
Hourly flow rate (vph)	38	30	7	42	169	5
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	211	93	175			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	211	93	175			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	97	99			
cM capacity (veh/h)	752	941	1398			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	68	21	28	113	61
Volume Left	38	7	0	0	0
Volume Right	30	0	0	0	5
cSH	825	1398	1700	1700	1700
Volume to Capacity	0.08	0.01	0.02	0.07	0.04
Queue Length 95th (ft)	7	0	0	0	0
Control Delay (s)	9.8	2.6	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.8	1.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	71	3	11	5	22	35	15	72	0
Peak Hour Factor	0.50	0.50	0.50	0.76	0.76	0.76	0.78	0.78	0.78	0.81	0.81	0.81
Hourly flow rate (vph)	2	6	16	93	4	14	6	28	45	19	89	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	24	112	21	59	107
Volume Left (vph)	2	93	6	0	19
Volume Right (vph)	16	14	0	45	0
Hadj (s)	-0.35	0.12	0.19	-0.50	0.07
Departure Headway (s)	4.1	4.5	5.1	4.4	4.5
Degree Utilization, x	0.03	0.14	0.03	0.07	0.13
Capacity (veh/h)	828	762	678	781	767
Control Delay (s)	7.2	8.2	7.1	6.6	8.2
Approach Delay (s)	7.2	8.2	6.7		8.2
Approach LOS	A	A	A		A

Intersection Summary			
Delay	7.7		
Level of Service	A		
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	35	13	1	9	142	89
Peak Hour Factor	0.80	0.80	0.42	0.42	0.88	0.88
Hourly flow rate (vph)	44	16	2	21	161	101

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	60	24	263
Volume Left (vph)	44	2	0
Volume Right (vph)	16	0	101
Hadj (s)	0.02	0.05	-0.20
Departure Headway (s)	4.5	4.3	3.9
Degree Utilization, x	0.08	0.03	0.28
Capacity (veh/h)	742	798	914
Control Delay (s)	7.9	7.5	8.4
Approach Delay (s)	7.9	7.5	8.4
Approach LOS	A	A	A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	93	53	24	50	65	18
Peak Hour Factor	0.76	0.76	0.71	0.71	0.80	0.80
Hourly flow rate (vph)	122	70	34	70	81	22

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	192	104	104
Volume Left (vph)	122	0	81
Volume Right (vph)	70	70	0
Hadj (s)	-0.06	-0.37	0.19
Departure Headway (s)	4.3	4.1	4.7
Degree Utilization, x	0.23	0.12	0.13
Capacity (veh/h)	800	829	731
Control Delay (s)	8.6	7.7	8.4
Approach Delay (s)	8.6	7.7	8.4
Approach LOS	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	173	43	202	204	127	77	1871	113	120	1709	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1538	1770	6344		1770	5037	
Flt Permitted	0.43	1.00		0.40	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	792	1801		751	1863	1538	1770	6344		1770	5037	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	288	216	54	252	255	159	84	2034	123	132	1878	53
RTOR Reduction (vph)	0	6	0	0	0	52	0	6	0	0	0	0
Lane Group Flow (vph)	288	264	0	252	255	107	84	2151	0	132	1931	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	43.5	43.5		43.5	43.5	43.5	12.4	75.7		15.3	78.6	
Effective Green, g (s)	43.5	43.5		43.5	43.5	43.5	12.4	75.7		15.3	78.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.08	0.51		0.10	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	529		220	547	452	148	3244		182	2675	
v/s Ratio Prot		0.15			0.14		0.05	0.34		c0.07	c0.38	
v/s Ratio Perm	c0.36			0.34		0.07						
v/c Ratio	1.24	0.50		1.15	0.47	0.24	0.57	0.66		0.73	0.72	
Uniform Delay, d1	52.2	43.2		52.2	42.8	39.7	65.2	26.7		64.3	26.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.07	0.68		1.00	1.00	
Incremental Delay, d2	139.7	0.7		105.4	0.6	0.3	3.6	0.8		13.4	1.7	
Delay (s)	191.9	44.0		157.7	43.4	39.9	73.2	18.9		77.7	28.1	
Level of Service	F	D		F	D	D	E	B		E	C	
Approach Delay (s)		120.3			85.8			20.9			31.3	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	140	18	136	87	96	11	268	147	95	845	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1815			1738		1770	3319		1770	3510	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1815			1738		1770	3319		1770	3510	
Peak-hour factor, PHF	0.83	0.83	0.83	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	61	169	22	168	107	119	12	288	158	102	909	40
RTOR Reduction (vph)	0	4	0	0	16	0	0	67	0	0	3	0
Lane Group Flow (vph)	0	248	0	0	378	0	12	379	0	102	946	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		17.0			22.3		1.3	22.9		8.2	29.8	
Effective Green, g (s)		17.0			22.3		1.3	22.9		8.2	29.8	
Actuated g/C Ratio		0.20			0.26		0.02	0.27		0.09	0.34	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		357			448		26	879		167	1210	
v/s Ratio Prot		c0.14			c0.22		0.01	0.11		c0.06	c0.27	
v/s Ratio Perm												
v/c Ratio		0.69			0.84		0.46	0.43		0.61	0.78	
Uniform Delay, d1		32.3			30.4		42.2	26.3		37.6	25.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.8			13.6		12.4	1.5		6.5	5.1	
Delay (s)		38.1			44.0		54.6	27.9		44.0	30.5	
Level of Service		D			D		D	C		D	C	
Approach Delay (s)		38.1			44.0			28.6			31.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	47	52	9	37	8	6	236	7	4	788	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1750			1806			3516			3452	
Flt Permitted		0.76			0.92			0.94			0.95	
Satd. Flow (perm)		1376			1677			3296			3294	
Peak-hour factor, PHF	0.91	0.91	0.91	0.61	0.61	0.61	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	167	52	57	15	61	13	6	254	8	4	857	141
RTOR Reduction (vph)	0	20	0	0	9	0	0	4	0	0	25	0
Lane Group Flow (vph)	0	256	0	0	80	0	0	264	0	0	977	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.8			12.8			20.9			20.9	
Effective Green, g (s)		13.8			12.8			20.9			20.9	
Actuated g/C Ratio		0.32			0.30			0.49			0.49	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		444			502			1613			1612	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.05			0.08			c0.30	
v/c Ratio		0.58			0.16			0.16			0.61	
Uniform Delay, d1		12.0			11.0			6.0			7.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.8			0.1			0.0			0.7	
Delay (s)		13.8			11.1			6.1			8.6	
Level of Service		B			B			A			A	
Approach Delay (s)		13.8			11.1			6.1			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	42.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	260	417	0	0	0	0	0	2132	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3473						6408	1469
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3473						6408	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	277	444	0	0	0	0	0	2396	98
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	0	716	0	0	0	0	0	2396	68
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					38.0						102.0	102.0
Effective Green, g (s)					38.0						102.0	102.0
Actuated g/C Ratio					0.26						0.69	0.69
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					891						4416	1012
v/s Ratio Prot											c0.37	
v/s Ratio Perm					0.21							0.05
v/c Ratio					0.80						0.54	0.07
Uniform Delay, d1					51.5						11.4	7.5
Progression Factor					1.00						0.59	0.38
Incremental Delay, d2					5.3						0.4	0.1
Delay (s)					56.8						7.2	3.0
Level of Service					E						A	A
Approach Delay (s)		0.0			56.8			0.0			7.0	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	706	35	105	2078	151	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3506		1770	7416				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3506		1770	7416				
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	894	44	109	2165	157	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	16	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	935	0	93	2314	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					48.3		91.7	91.7				
Effective Green, g (s)					48.3		91.7	91.7				
Actuated g/C Ratio					0.32		0.62	0.62				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1136		1089	4564				
v/s Ratio Prot					c0.27		0.05	c0.31				
v/s Ratio Perm												
v/c Ratio					0.82		0.09	0.51				
Uniform Delay, d1					46.4		11.6	16.0				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					4.9		0.2	0.4				
Delay (s)					51.4		11.8	16.4				
Level of Service					D		B	B				
Approach Delay (s)		0.0			51.4			16.2			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	16	6	7	3	210	14	2	830	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.66	0.66	0.66	0.56	0.56	0.56	0.82	0.82	0.82
Hourly flow rate (vph)	13	8	7	24	9	11	5	375	25	2	1012	2
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1239	1432	515	929	1421	208	1016			402		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1066	1278	271	726	1266	208	821			402		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	95	99	91	94	99	99			100		
cM capacity (veh/h)	149	148	657	265	151	793	732			1151		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	28	44	193	212	509	509
Volume Left	13	24	5	0	2	0
Volume Right	7	11	0	25	0	2
cSH	185	266	732	1700	1151	1700
Volume to Capacity	0.15	0.17	0.01	0.13	0.00	0.30
Queue Length 95th (ft)	13	15	1	0	0	0
Control Delay (s)	27.9	21.2	0.4	0.0	0.1	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	27.9	21.2	0.2		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	462	0	291	1326	544	157	0	0	0	0	543	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.93	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1556	1402	4990	3385						3370	1369
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1556	1402	4990	3385						3370	1369
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	525	0	331	1411	579	167	0	0	0	0	624	194
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	1	59
Lane Group Flow (vph)	294	294	268	1411	728	0	0	0	0	0	642	116
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	34.3	34.3	34.3	64.2	64.2						43.0	43.0
Effective Green, g (s)	34.3	34.3	34.3	64.2	64.2						43.0	43.0
Actuated g/C Ratio	0.23	0.23	0.23	0.42	0.42						0.28	0.28
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	379	351	316	2107	1429						953	387
v/s Ratio Prot	0.17	0.19		c0.28	0.22						c0.19	
v/s Ratio Perm			c0.19									0.08
v/c Ratio	0.78	0.84	0.85	0.67	0.51						0.67	0.30
Uniform Delay, d1	55.2	56.2	56.4	35.4	32.3						48.3	42.7
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	9.6	15.8	18.6	0.8	0.3						3.8	2.0
Delay (s)	64.8	72.0	75.0	36.2	32.6						52.1	44.7
Level of Service	E	E	E	D	C						D	D
Approach Delay (s)		70.5			34.9			0.0			50.5	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	911	39	207	2120	911	0	0	935
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.95				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5051		1770	5998				3462
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5051		1770	5998				3462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	969	41	220	2255	969	0	0	995
RTOR Reduction (vph)	0	0	0	0	3	0	25	51	0	0	0	148
Lane Group Flow (vph)	0	0	0	0	1007	0	195	3173	0	0	0	847
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					39.5		55.4	100.5				45.1
Effective Green, g (s)					39.5		55.4	100.5				45.1
Actuated g/C Ratio					0.26		0.36	0.66				0.30
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1312		645	3965				1027
v/s Ratio Prot					c0.20		0.11	c0.29				
v/s Ratio Perm								0.24				c0.24
v/c Ratio					0.77		0.30	0.86dr				0.83
Uniform Delay, d1					52.0		34.5	18.5				49.8
Progression Factor					1.00		1.00	1.00				1.65
Incremental Delay, d2					2.8		1.2	1.2				5.4
Delay (s)					54.8		35.7	19.7				87.3
Level of Service					D		D	B				F
Approach Delay (s)		0.0			54.8			20.8			87.3	
Approach LOS		A			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	67	29	34	26	121	50	2379	10	209	1321	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.92	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1761		1770	1863	1520	1770	5085	1464	1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1761		1770	1863	1520	1770	5085	1464	1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	157	75	33	37	29	133	57	2734	11	227	1436	78
RTOR Reduction (vph)	0	0	0	0	0	119	0	0	5	0	0	23
Lane Group Flow (vph)	157	108	0	37	29	14	57	2734	6	227	1436	55
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	12.0	21.2		6.2	15.4	15.4	7.7	79.6	79.6	24.0	95.9	95.9
Effective Green, g (s)	12.0	21.2		6.2	15.4	15.4	7.7	79.6	79.6	24.0	95.9	95.9
Actuated g/C Ratio	0.08	0.14		0.04	0.10	0.10	0.05	0.54	0.54	0.16	0.65	0.65
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	252		74	193	158	92	2734	787	287	3294	982
v/s Ratio Prot	c0.09	c0.06		0.02	0.02		0.03	c0.54		c0.13	0.28	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	1.10	0.43		0.50	0.15	0.09	0.62	1.00	0.01	0.79	0.44	0.06
Uniform Delay, d1	68.0	57.9		69.4	60.3	59.9	68.7	34.2	15.9	59.6	12.8	9.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	103.9	1.2		5.2	0.4	0.2	11.8	17.2	0.0	13.8	0.4	0.1
Delay (s)	171.9	59.0		74.6	60.7	60.2	80.5	51.4	15.9	73.4	13.2	9.6
Level of Service	F	E		E	E	E	F	D	B	E	B	A
Approach Delay (s)		125.9			62.9			51.9			20.9	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	108	6	43	37	290	22	2254	72	360	849	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.88	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3506		1770	1530	1463	1770	6371		1770	5085	1520
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3506		1770	1530	1463	1770	6371		1770	5085	1520
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	117	120	7	52	45	349	27	2783	89	400	943	129
RTOR Reduction (vph)	0	3	0	0	89	170	0	3	0	0	0	42
Lane Group Flow (vph)	117	124	0	52	113	22	27	2869	0	400	943	87
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	19.8		7.6	17.4	17.4	4.5	66.7		40.9	103.1	103.1
Effective Green, g (s)	10.0	19.8		7.6	17.4	17.4	4.5	66.7		40.9	103.1	103.1
Actuated g/C Ratio	0.07	0.13		0.05	0.11	0.11	0.03	0.44		0.27	0.68	0.68
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	116	456		88	175	167	52	2795		476	3449	1031
v/s Ratio Prot	c0.07	0.04		0.03	c0.07		0.02	c0.45		c0.23	0.19	
v/s Ratio Perm						0.02						0.06
v/c Ratio	1.01	0.27		0.59	0.65	0.13	0.52	1.03		0.84	0.27	0.08
Uniform Delay, d1	71.0	59.6		70.7	64.4	60.5	72.7	42.6		52.5	9.7	8.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.16	1.06		1.00	1.00	1.00
Incremental Delay, d2	85.9	0.3		10.2	8.0	0.4	6.8	22.5		12.6	0.2	0.2
Delay (s)	156.9	59.9		80.9	72.4	60.9	90.9	67.8		65.1	9.9	8.5
Level of Service	F	E		F	E	E	F	E		E	A	A
Approach Delay (s)		106.4			68.4			68.0			24.7	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	57.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	2	2	6	3	535	84	31	707	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	17	3	10	3	3	10	3	594	93	33	760	6
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1167	1532	413	1131	1488	361	773			689		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1167	1532	413	1131	1488	361	773			689		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	97	98	98	97	98	100			96		
cM capacity (veh/h)	136	110	573	144	117	627	834			901		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	16	301	391	413	387
Volume Left	17	3	3	0	33	0
Volume Right	10	10	0	93	0	6
cSH	173	247	834	1700	901	1700
Volume to Capacity	0.17	0.06	0.00	0.23	0.04	0.23
Queue Length 95th (ft)	15	5	0	0	3	0
Control Delay (s)	30.1	20.6	0.1	0.0	1.1	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	30.1	20.6	0.1		0.6	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	84	25	7	166	113	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.73	0.73	0.90	0.90
Hourly flow rate (vph)	106	32	10	227	126	6
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	282	77	133			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282	77	133			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	97	99			
cM capacity (veh/h)	668	960	1447			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	138	85	152	84	47
Volume Left	106	10	0	0	0
Volume Right	32	0	0	0	6
cSH	718	1447	1700	1700	1700
Volume to Capacity	0.19	0.01	0.09	0.05	0.03
Queue Length 95th (ft)	18	1	0	0	0
Control Delay (s)	11.2	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.2	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	4	5	51	10	30	6	113	134	20	64	4
Peak Hour Factor	0.60	0.60	0.60	0.78	0.78	0.78	0.87	0.87	0.87	0.76	0.76	0.76
Hourly flow rate (vph)	5	7	8	65	13	38	7	130	154	26	84	5

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	20	117	72	219	116
Volume Left (vph)	5	65	7	0	26
Volume Right (vph)	8	38	0	154	5
Hadj (s)	-0.17	-0.05	0.08	-0.46	0.05
Departure Headway (s)	4.8	4.8	5.0	4.5	4.7
Degree Utilization, x	0.03	0.15	0.10	0.27	0.15
Capacity (veh/h)	679	697	693	776	728
Control Delay (s)	7.9	8.6	7.4	8.0	8.5
Approach Delay (s)	7.9	8.6	7.8		8.5
Approach LOS	A	A	A		A

Intersection Summary			
Delay	8.2		
Level of Service	A		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	96	44	20	76	108	75
Peak Hour Factor	0.70	0.70	0.80	0.80	0.82	0.82
Hourly flow rate (vph)	137	63	25	95	132	91

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	200	120	223
Volume Left (vph)	137	25	0
Volume Right (vph)	63	0	91
Hadj (s)	-0.02	0.08	-0.21
Departure Headway (s)	4.7	4.7	4.3
Degree Utilization, x	0.26	0.16	0.27
Capacity (veh/h)	721	719	786
Control Delay (s)	9.3	8.6	8.9
Approach Delay (s)	9.3	8.6	8.9
Approach LOS	A	A	A

Intersection Summary			
Delay	9.0		
Level of Service	A		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	71	69	32	120	96	25
Peak Hour Factor	0.76	0.76	0.83	0.83	0.84	0.84
Hourly flow rate (vph)	93	91	39	145	114	30

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	184	183	144
Volume Left (vph)	93	0	114
Volume Right (vph)	91	145	0
Hadj (s)	-0.16	-0.44	0.19
Departure Headway (s)	4.5	4.1	4.7
Degree Utilization, x	0.23	0.21	0.19
Capacity (veh/h)	751	838	720
Control Delay (s)	8.8	8.1	8.8
Approach Delay (s)	8.8	8.1	8.8
Approach LOS	A	A	A

Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	133	67	51	103	51	126	2459	94	137	1386	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1756		1770	1863	1547	1770	6367		1770	5035	
Flt Permitted	0.61	1.00		0.42	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1132	1756		777	1863	1547	1770	6367		1770	5035	
Peak-hour factor, PHF	0.87	0.87	0.87	0.83	0.83	0.83	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	263	153	77	61	124	61	137	2673	102	140	1414	77
RTOR Reduction (vph)	0	13	0	0	0	41	0	3	0	0	0	0
Lane Group Flow (vph)	263	217	0	61	124	20	137	2772	0	140	1491	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	37.3	37.3		37.3	37.3	37.3	16.5	83.1		16.1	82.7	
Effective Green, g (s)	37.3	37.3		37.3	37.3	37.3	16.5	83.1		16.1	82.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.11	0.55		0.11	0.55	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	281	436		193	463	384	194	3527		189	2775	
v/s Ratio Prot		0.12			0.07		0.08	c0.44		c0.08	0.30	
v/s Ratio Perm	c0.23			0.08		0.01						
v/c Ratio	0.94	0.50		0.32	0.27	0.05	0.71	0.79		0.74	0.54	
Uniform Delay, d1	55.2	48.3		45.9	45.4	42.9	64.4	26.4		64.9	21.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.6	0.9		0.9	0.3	0.1	11.1	1.8		14.4	0.8	
Delay (s)	91.8	49.2		46.9	45.7	42.9	75.5	28.3		79.4	22.2	
Level of Service	F	D		D	D	D	E	C		E	C	
Approach Delay (s)		71.9			45.3			30.5			27.1	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	66	119	59	149	25	120	715	55	23	574	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1809		1770	3493		1770	3371	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1714			1809		1770	3493		1770	3371	
Peak-hour factor, PHF	0.90	0.90	0.90	0.82	0.82	0.82	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	119	73	132	72	182	30	124	737	57	26	645	231
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	30	0
Lane Group Flow (vph)	0	301	0	0	280	0	124	790	0	26	846	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		21.4			20.0		9.7	39.4		4.5	34.2	
Effective Green, g (s)		21.4			20.0		9.7	39.4		4.5	34.2	
Actuated g/C Ratio		0.21			0.20		0.10	0.39		0.04	0.34	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		362			357		169	1358		78	1138	
v/s Ratio Prot		c0.18			c0.15		c0.07	0.23		0.01	c0.25	
v/s Ratio Perm												
v/c Ratio		0.83			0.78		0.73	0.58		0.33	0.74	
Uniform Delay, d1		38.2			38.6		44.5	24.4		46.9	29.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.0			10.8		15.2	1.8		2.5	4.4	
Delay (s)		53.2			49.4		59.7	26.3		49.5	34.1	
Level of Service		D			D		E	C		D	C	
Approach Delay (s)		53.2			49.4			30.8			34.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	47	24	19	41	28	22	565	29	11	651	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1758			1748			3502			3440	
Flt Permitted		0.73			0.91			0.91			0.94	
Satd. Flow (perm)		1335			1612			3207			3253	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	163	51	26	22	47	32	25	649	33	13	775	142
RTOR Reduction (vph)	0	10	0	0	24	0	0	6	0	0	25	0
Lane Group Flow (vph)	0	230	0	0	77	0	0	701	0	0	905	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.4			10.4			21.7			21.7	
Effective Green, g (s)		10.4			10.4			21.7			21.7	
Actuated g/C Ratio		0.26			0.26			0.54			0.54	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		346			418			1735			1760	
v/s Ratio Prot												
v/s Ratio Perm		c0.17			0.05			0.22			c0.28	
v/c Ratio		0.66			0.18			0.40			0.51	
Uniform Delay, d1		13.3			11.6			5.4			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.7			0.2			0.2			0.3	
Delay (s)		18.0			11.8			5.6			6.1	
Level of Service		B			B			A			A	
Approach Delay (s)		18.0			11.8			5.6			6.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	249	270	0	0	0	0	0	1999	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.78
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3456						6408	1232
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3456						6408	1232
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	290	314	0	0	0	0	0	2061	86
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	0	0	0	595	0	0	0	0	0	2061	63
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					33.3						110.7	110.7
Effective Green, g (s)					33.3						110.7	110.7
Actuated g/C Ratio					0.22						0.73	0.73
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					757						4666	897
v/s Ratio Prot											c0.32	
v/s Ratio Perm					0.17							0.05
v/c Ratio					0.79						0.44	0.07
Uniform Delay, d1					56.0						8.3	5.9
Progression Factor					1.00						0.52	0.22
Incremental Delay, d2					5.4						0.2	0.1
Delay (s)					61.4						4.6	1.4
Level of Service					E						A	A
Approach Delay (s)		0.0			61.4			0.0			4.4	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	426	68	164	3155	209	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3451		1770	7436				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3451		1770	7436				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	453	72	173	3321	220	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	16	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	525	0	157	3536	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					28.8		110.2	110.2				
Effective Green, g (s)					28.8		110.2	110.2				
Actuated g/C Ratio					0.19		0.74	0.74				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					671		1317	5536				
v/s Ratio Prot					c0.15		0.09	c0.48				
v/s Ratio Perm												
v/c Ratio					0.78		0.12	0.64				
Uniform Delay, d1					56.6		5.3	9.2				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.9		0.2	0.6				
Delay (s)					62.6		5.5	9.8				
Level of Service					E		A	A				
Approach Delay (s)		0.0			62.6			9.6			0.0	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	8	3	22	9	535	39	11	684	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.75	0.75	0.75	0.88	0.88	0.88	0.94	0.94	0.94
Hourly flow rate (vph)	24	14	18	11	4	29	10	608	44	12	728	17
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked												
vC, conflicting volume	1126	1444	383	1080	1431	343	748			661		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1126	1444	383	1080	1431	343	748			661		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	89	97	93	97	95	99			99		
cM capacity (veh/h)	143	126	609	147	129	644	855			916		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	56	44	314	348	376	381
Volume Left	24	11	10	0	12	0
Volume Right	18	29	0	44	0	17
cSH	183	295	855	1700	916	1700
Volume to Capacity	0.31	0.15	0.01	0.20	0.01	0.22
Queue Length 95th (ft)	31	13	1	0	1	0
Control Delay (s)	33.3	19.3	0.4	0.0	0.4	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	33.3	19.3	0.2		0.2	
Approach LOS	D	C				

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	40.2%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Mission Blvd & A St

7/28/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	160	156	146	1544	787	548	134
v/c Ratio	0.67	0.72	0.71	0.66	0.48	0.51	0.27
Control Delay	72.9	78.1	78.0	31.6	27.3	44.7	20.5
Queue Delay	0.0	0.0	0.0	9.9	1.7	0.0	0.0
Total Delay	72.9	78.1	78.0	41.5	29.0	44.7	20.5
Queue Length 50th (ft)	155	160	143	393	261	239	45
Queue Length 95th (ft)	197	204	185	445	318	324	115
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	357	324	307	2376	1659	1068	492
Starvation Cap Reductn	0	0	0	816	661	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.48	0.48	0.99	0.79	0.51	0.27

Intersection Summary

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1316	103	2072	1251
v/c Ratio	0.78	0.21	0.55	0.89
Control Delay	47.9	30.8	17.0	48.3
Queue Delay	0.0	0.0	0.9	0.0
Total Delay	47.9	30.8	17.9	48.3
Queue Length 50th (ft)	412	48	318	232
Queue Length 95th (ft)	461	110	361	428
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1800	481	3752	1581
Starvation Cap Reductn	0	0	1271	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.73	0.21	0.84	0.79

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	131	77	28	23	187	49	1882	6	237	1816	84
v/c Ratio	0.68	0.29	0.30	0.17	0.66	0.43	0.73	0.01	0.68	0.55	0.08
Control Delay	79.8	56.8	74.9	63.6	18.8	77.5	31.8	0.0	58.3	22.4	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	56.8	74.9	63.6	18.8	77.5	31.8	0.0	58.3	22.4	12.1
Queue Length 50th (ft)	124	71	27	22	0	46	487	0	233	322	13
Queue Length 95th (ft)	166	93	52	40	38	90	685	0	m#357	m484	m39
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	322	317	322	314	417	203	2581	789	346	3318	1021
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	0.41	0.24	0.09	0.07	0.45	0.24	0.73	0.01	0.68	0.55	0.08

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	18	30	13	178	171	2	1662	359	1391	207
v/c Ratio	0.21	0.07	0.16	0.62	0.57	0.03	0.69	0.53	0.35	0.17
Control Delay	73.1	51.9	71.9	21.8	14.8	111.5	34.2	42.6	7.8	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	51.9	71.9	21.8	14.8	111.5	34.2	42.6	7.8	3.0
Queue Length 50th (ft)	17	13	12	26	0	2	436	257	107	8
Queue Length 95th (ft)	41	25	36	98	69	m3	484	434	287	53
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	191	666	179	399	406	203	2418	681	3947	1216
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.05	0.07	0.45	0.42	0.01	0.69	0.53	0.35	0.17

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	270	252	255	159	84	2157	132	1931
v/c Ratio	1.24	0.50	1.15	0.47	0.32	0.57	0.66	0.73	0.72
Control Delay	182.7	45.7	151.5	46.1	23.4	79.9	19.1	86.0	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	182.7	45.7	151.5	46.1	23.4	79.9	19.1	86.0	28.8
Queue Length 50th (ft)	~343	210	~283	202	62	86	164	125	504
Queue Length 95th (ft)	#449	260	#389	252	104	m120	328	197	602
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	232	535	220	547	503	203	3250	215	2675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.24	0.50	1.15	0.47	0.32	0.41	0.66	0.61	0.72

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	252	394	12	446	102	949
v/c Ratio	0.68	0.82	0.08	0.50	0.47	0.76
Control Delay	41.2	44.5	42.5	26.8	45.5	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	44.5	42.5	26.8	45.5	30.9
Queue Length 50th (ft)	129	189	6	92	54	230
Queue Length 95th (ft)	194	#301	25	162	113	#486
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	589	575	219	885	285	1256
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.05	0.50	0.36	0.76

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	276	89	268	1002
v/c Ratio	0.60	0.18	0.17	0.61
Control Delay	16.9	10.7	6.8	10.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.9	10.7	6.8	10.0
Queue Length 50th (ft)	46	13	15	72
Queue Length 95th (ft)	110	24	38	156
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	635	722	1798	1815
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.43	0.12	0.15	0.55

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	721	2396	98
v/c Ratio	0.81	0.54	0.09
Control Delay	58.2	7.5	0.8
Queue Delay	0.0	0.2	0.0
Total Delay	58.2	7.7	0.8
Queue Length 50th (ft)	341	174	0
Queue Length 95th (ft)	390	206	m6
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1130	4417	1043
Starvation Cap Reductn	0	960	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.64	0.69	0.09

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	938	109	2322
v/c Ratio	0.82	0.10	0.51
Control Delay	52.6	8.3	16.9
Queue Delay	0.0	0.0	0.0
Total Delay	52.6	8.3	16.9
Queue Length 50th (ft)	437	25	298
Queue Length 95th (ft)	409	57	358
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1296	1104	4570
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.10	0.51

Intersection Summary

Queues
1: Mission Blvd & A St

7/28/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	294	294	268	1411	746	643	175
v/c Ratio	0.78	0.84	0.84	0.67	0.52	0.67	0.39
Control Delay	69.3	76.4	78.8	37.1	32.2	53.7	27.5
Queue Delay	0.0	0.0	0.0	8.8	1.8	0.0	0.0
Total Delay	69.3	76.4	78.8	46.0	34.0	53.7	27.5
Queue Length 50th (ft)	283	300	263	390	268	324	83
Queue Length 95th (ft)	385	410	367	442	331	388	158
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	425	394	357	2150	1475	956	446
Starvation Cap Reductn	0	0	0	712	534	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.75	0.75	0.98	0.79	0.67	0.39

Intersection Summary

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1010	220	3224	995
v/c Ratio	0.77	0.33	0.86dr	0.85
Control Delay	55.8	32.9	16.4	71.0
Queue Delay	0.5	0.0	19.5	0.0
Total Delay	56.3	32.9	36.0	71.0
Queue Length 50th (ft)	338	130	550	401
Queue Length 95th (ft)	378	233	644	464
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1481	670	4208	1664
Starvation Cap Reductn	0	0	1094	0
Spillback Cap Reductn	155	0	444	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.33	1.04	0.60

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	157	108	37	29	133	57	2734	11	227	1436	78
v/c Ratio	1.10	0.43	0.43	0.16	0.49	0.53	0.99	0.01	0.79	0.43	0.08
Control Delay	164.0	62.2	82.8	58.3	14.5	85.4	48.6	0.0	78.8	14.2	4.2
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	164.0	62.2	82.8	58.3	14.5	85.4	48.6	0.0	78.8	14.2	4.2
Queue Length 50th (ft)	~171	102	35	27	0	54	927	0	206	221	4
Queue Length 95th (ft)	#319	149	75	56	61	100	#1056	0	#413	335	29
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	143	345	95	314	368	119	2759	838	287	3347	1020
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	1.10	0.31	0.39	0.09	0.36	0.48	0.99	0.01	0.79	0.43	0.08

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	117	127	52	202	192	27	2872	400	943	129
v/c Ratio	1.01	0.28	0.51	0.79	0.58	0.34	1.01	0.84	0.27	0.12
Control Delay	154.0	59.1	86.4	53.1	14.3	90.7	62.5	69.1	10.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0
Total Delay	154.0	59.1	86.4	53.1	14.3	90.7	70.3	69.1	10.2	2.1
Queue Length 50th (ft)	~119	61	51	106	0	25	~918	367	132	0
Queue Length 95th (ft)	#259	88	91	165	53	m38	806	#641	186	27
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	116	625	116	354	418	81	2831	476	3528	1093
Starvation Cap Reductn	0	0	0	0	0	0	61	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.20	0.45	0.57	0.46	0.33	1.04	0.84	0.27	0.12

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	263	230	61	124	61	137	2775	140	1491
v/c Ratio	0.94	0.51	0.32	0.27	0.14	0.71	0.79	0.74	0.54
Control Delay	94.2	48.5	49.7	46.0	12.5	83.5	29.5	87.0	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.2	48.5	49.7	46.0	12.5	83.5	29.5	87.0	23.3
Queue Length 50th (ft)	246	175	48	96	4	131	645	134	349
Queue Length 95th (ft)	#386	251	85	142	36	201	709	209	420
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	305	486	209	503	457	247	3529	224	2777
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.47	0.29	0.25	0.13	0.55	0.79	0.63	0.54

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	284	124	794	26	876
v/c Ratio	0.83	0.77	0.72	0.57	0.19	0.78
Control Delay	53.2	52.6	70.2	28.8	50.0	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	52.6	70.2	28.8	50.0	36.2
Queue Length 50th (ft)	183	173	80	228	16	262
Queue Length 95th (ft)	#323	242	#185	339	45	#379
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	473	481	179	1384	179	1125
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.59	0.69	0.57	0.15	0.78

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	240	101	707	930
v/c Ratio	0.53	0.18	0.38	0.49
Control Delay	15.9	8.7	7.6	8.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.9	8.7	7.6	8.2
Queue Length 50th (ft)	40	11	45	61
Queue Length 95th (ft)	99	35	100	126
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	677	826	2090	2135
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.12	0.34	0.44

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	604	2061	86
v/c Ratio	0.79	0.44	0.09
Control Delay	62.6	4.8	0.5
Queue Delay	0.0	0.2	0.0
Total Delay	62.6	5.0	0.5
Queue Length 50th (ft)	295	108	0
Queue Length 95th (ft)	325	147	m0
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1144	4668	921
Starvation Cap Reductn	0	1338	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.53	0.62	0.09

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	525	173	3541
v/c Ratio	0.78	0.13	0.64
Control Delay	64.9	4.1	10.3
Queue Delay	0.0	0.0	0.0
Total Delay	64.9	4.1	10.3
Queue Length 50th (ft)	255	26	368
Queue Length 95th (ft)	304	57	469
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1118	1333	5541
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.13	0.64

Intersection Summary

Appendix D – Existing plus Project Phase 1 Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	208	0	166	1538	683	94	0	0	0	0	475	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.95	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1521	1428	4990	3469						3373	1396
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1521	1428	4990	3469						3373	1396
Peak-hour factor, PHF	0.80	0.80	0.80	0.98	0.98	0.98	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	260	0	208	1569	697	96	0	0	0	0	534	151
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	52
Lane Group Flow (vph)	161	159	148	1569	786	0	0	0	0	0	548	84
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	21.3	21.3	21.3	69.9	69.9						46.3	46.3
Effective Green, g (s)	21.3	21.3	21.3	69.9	69.9						46.3	46.3
Actuated g/C Ratio	0.14	0.14	0.14	0.47	0.47						0.31	0.31
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	241	218	205	2356	1638						1055	436
v/s Ratio Prot	0.10	c0.10		c0.31	0.23						c0.16	
v/s Ratio Perm			0.10									0.06
v/c Ratio	0.67	0.73	0.72	0.67	0.48						0.52	0.19
Uniform Delay, d1	60.0	60.6	60.5	30.1	26.6						41.7	37.2
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	6.8	11.5	11.8	0.7	0.2						1.8	1.0
Delay (s)	66.8	72.1	72.4	30.8	26.9						43.5	38.2
Level of Service	E	E	E	C	C						D	D
Approach Delay (s)		70.4			29.5			0.0			42.5	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1292	20	106	1515	526	0	0	1273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5072		1770	6089				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5072		1770	6089				3528
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.97	0.97	0.97	0.99	0.99	0.99
Adj. Flow (vph)	0	0	0	0	1305	20	109	1562	542	0	0	1286
RTOR Reduction (vph)	0	0	0	0	1	0	31	44	0	0	0	254
Lane Group Flow (vph)	0	0	0	0	1324	0	78	2060	0	0	0	1032
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					49.5		35.8	85.0				49.2
Effective Green, g (s)					49.5		35.8	85.0				49.2
Actuated g/C Ratio					0.33		0.24	0.57				0.33
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1696		428	3702				1172
v/s Ratio Prot					c0.26		0.04	c0.13				
v/s Ratio Perm								0.20				c0.29
v/c Ratio					0.78		0.18	0.56				0.88
Uniform Delay, d1					44.4		44.5	19.7				46.6
Progression Factor					1.00		1.00	1.00				1.35
Incremental Delay, d2					2.4		0.9	0.2				7.6
Delay (s)					46.8		45.4	19.9				70.5
Level of Service					D		D	B				E
Approach Delay (s)		0.0			46.8			21.1			70.5	
Approach LOS		A			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	36	37	22	18	146	77	1790	6	223	1736	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1688		1770	1863	1553	1770	5085	1491	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1688		1770	1863	1553	1770	5085	1491	1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	144	45	46	28	23	187	83	1925	6	237	1847	91
RTOR Reduction (vph)	0	0	0	0	0	172	0	0	3	0	0	26
Lane Group Flow (vph)	144	91	0	28	23	15	83	1925	3	237	1847	65
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	17.3	24.1		5.4	12.2	12.2	12.3	72.8	72.8	28.7	89.2	89.2
Effective Green, g (s)	17.3	24.1		5.4	12.2	12.2	12.3	72.8	72.8	28.7	89.2	89.2
Actuated g/C Ratio	0.12	0.16		0.04	0.08	0.08	0.08	0.49	0.49	0.19	0.60	0.60
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	206	274		64	153	128	147	2501	733	343	3064	922
v/s Ratio Prot	c0.08	c0.05		0.02	0.01		0.05	c0.38		c0.13	0.36	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	0.70	0.33		0.44	0.15	0.12	0.56	0.77	0.00	0.69	0.60	0.07
Uniform Delay, d1	62.8	54.8		69.8	63.1	62.9	65.3	30.7	19.1	55.5	18.3	12.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.74	1.00	0.91	1.26	2.12
Incremental Delay, d2	9.9	0.7		4.7	0.5	0.4	3.7	1.8	0.0	3.6	0.5	0.1
Delay (s)	72.8	55.5		74.5	63.5	63.4	69.2	24.5	19.2	54.4	23.6	26.0
Level of Service	E	E		E	E	E	E	C	B	D	C	C
Approach Delay (s)		66.1			64.7			26.4			27.0	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	26	6	12	26	297	11	1546	28	357	1254	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3429		1770	1513	1464	1770	6388		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3429		1770	1513	1464	1770	6388		1770	5085	1522
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	34	31	7	13	29	326	12	1662	30	406	1425	217
RTOR Reduction (vph)	0	6	0	0	133	156	0	2	0	0	0	47
Lane Group Flow (vph)	34	32	0	13	46	20	12	1690	0	406	1425	170
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	7.2	20.6		3.1	16.5	16.5	3.1	53.6		53.7	104.2	104.2
Effective Green, g (s)	7.2	20.6		3.1	16.5	16.5	3.1	53.6		53.7	104.2	104.2
Actuated g/C Ratio	0.05	0.14		0.02	0.11	0.11	0.02	0.36		0.36	0.70	0.70
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	86	477		37	168	163	37	2313		642	3580	1071
v/s Ratio Prot	c0.02	0.01		0.01	c0.03		0.01	c0.26		c0.23	0.28	
v/s Ratio Perm						0.01						0.11
v/c Ratio	0.40	0.07		0.35	0.27	0.12	0.32	0.73		0.63	0.40	0.16
Uniform Delay, d1	68.3	55.4		71.5	60.2	59.2	71.4	40.9		39.0	9.0	7.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.37	0.85		1.33	1.40	2.16
Incremental Delay, d2	3.0	0.1		5.7	0.9	0.3	4.4	1.8		4.0	0.3	0.3
Delay (s)	71.3	55.4		77.1	61.1	59.5	102.5	36.8		55.8	12.9	16.0
Level of Service	E	E		E	E	E	F	D		E	B	B
Approach Delay (s)		62.9			60.9			37.2			21.7	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	3	1	10	3	214	21	17	673	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.41	0.41	0.41	0.50	0.50	0.50	0.77	0.77	0.77	0.82	0.82	0.82
Hourly flow rate (vph)	7	20	17	6	2	20	4	278	27	21	821	12
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1041	1184	421	786	1177	161	833			308		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1041	1184	421	786	1177	161	833			308		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	89	97	98	99	98	100			98		
cM capacity (veh/h)	174	183	578	246	185	850	796			1246		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	44	28	143	166	431	423
Volume Left	7	6	4	0	21	0
Volume Right	17	20	0	27	0	12
cSH	247	477	796	1700	1246	1700
Volume to Capacity	0.18	0.06	0.00	0.10	0.02	0.25
Queue Length 95th (ft)	16	5	0	0	1	0
Control Delay (s)	22.7	13.0	0.3	0.0	0.5	0.0
Lane LOS	C	B	A		A	
Approach Delay (s)	22.7	13.0	0.1		0.3	
Approach LOS	C	B				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	27	18	6	35	153	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.84	0.84	0.85	0.85
Hourly flow rate (vph)	45	30	7	42	180	8
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	223	100	189			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	223	100	189			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	99			
cM capacity (veh/h)	739	931	1381			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	21	28	120	68
Volume Left	45	7	0	0	0
Volume Right	30	0	0	0	8
cSH	805	1381	1700	1700	1700
Volume to Capacity	0.09	0.01	0.02	0.07	0.04
Queue Length 95th (ft)	8	0	0	0	0
Control Delay (s)	9.9	2.6	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.9	1.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	82	3	17	5	22	39	19	72	0
Peak Hour Factor	0.50	0.50	0.50	0.76	0.76	0.76	0.78	0.78	0.78	0.81	0.81	0.81
Hourly flow rate (vph)	2	6	16	108	4	22	6	28	50	23	89	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	24	134	21	64	112
Volume Left (vph)	2	108	6	0	23
Volume Right (vph)	16	22	0	50	0
Hadj (s)	-0.35	0.09	0.19	-0.51	0.08
Departure Headway (s)	4.2	4.5	5.2	4.5	4.5
Degree Utilization, x	0.03	0.17	0.03	0.08	0.14
Capacity (veh/h)	814	762	668	770	753
Control Delay (s)	7.3	8.4	7.1	6.6	8.3
Approach Delay (s)	7.3	8.4	6.8		8.3
Approach LOS	A	A	A		A

Intersection Summary			
Delay	7.9		
Level of Service	A		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	43	13	1	18	158	106
Peak Hour Factor	0.80	0.80	0.42	0.42	0.88	0.88
Hourly flow rate (vph)	54	16	2	43	180	120

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	70	45	300
Volume Left (vph)	54	2	0
Volume Right (vph)	16	0	120
Hadj (s)	0.05	0.04	-0.21
Departure Headway (s)	4.7	4.4	3.9
Degree Utilization, x	0.09	0.06	0.33
Capacity (veh/h)	712	785	903
Control Delay (s)	8.1	7.7	8.8
Approach Delay (s)	8.1	7.7	8.8
Approach LOS	A	A	A

Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	95	59	30	54	69	22
Peak Hour Factor	0.76	0.76	0.71	0.71	0.80	0.80
Hourly flow rate (vph)	125	78	42	76	86	28

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	203	118	114
Volume Left (vph)	125	0	86
Volume Right (vph)	78	76	0
Hadj (s)	-0.07	-0.35	0.19
Departure Headway (s)	4.4	4.2	4.7
Degree Utilization, x	0.25	0.14	0.15
Capacity (veh/h)	780	816	724
Control Delay (s)	8.8	7.8	8.5
Approach Delay (s)	8.8	7.8	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	173	43	202	204	127	77	1921	113	120	1745	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1538	1770	6346		1770	5038	
Flt Permitted	0.43	1.00		0.40	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	792	1801		751	1863	1538	1770	6346		1770	5038	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	288	216	54	252	255	159	84	2088	123	132	1918	53
RTOR Reduction (vph)	0	6	0	0	0	52	0	5	0	0	0	0
Lane Group Flow (vph)	288	264	0	252	255	107	84	2206	0	132	1971	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	43.5	43.5		43.5	43.5	43.5	12.4	75.7		15.3	78.6	
Effective Green, g (s)	43.5	43.5		43.5	43.5	43.5	12.4	75.7		15.3	78.6	
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.08	0.51		0.10	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	232	529		220	547	452	148	3245		182	2675	
v/s Ratio Prot		0.15			0.14		0.05	0.35		c0.07	c0.39	
v/s Ratio Perm	c0.36			0.34		0.07						
v/c Ratio	1.24	0.50		1.15	0.47	0.24	0.57	0.68		0.73	0.74	
Uniform Delay, d1	52.2	43.2		52.2	42.8	39.7	65.2	27.1		64.3	26.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.95	1.23		1.00	1.00	
Incremental Delay, d2	139.7	0.7		105.4	0.6	0.3	3.5	0.8		13.4	1.9	
Delay (s)	191.9	44.0		157.7	43.4	39.9	65.7	34.1		77.7	28.6	
Level of Service	F	D		F	D	D	E	C		E	C	
Approach Delay (s)		120.3			85.8			35.2			31.7	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM 2000 Control Delay	48.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	140	18	136	87	96	11	282	147	95	855	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1815			1738		1770	3326		1770	3511	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1815			1738		1770	3326		1770	3511	
Peak-hour factor, PHF	0.83	0.83	0.83	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	61	169	22	168	107	119	12	303	158	102	919	40
RTOR Reduction (vph)	0	4	0	0	16	0	0	61	0	0	3	0
Lane Group Flow (vph)	0	248	0	0	378	0	12	400	0	102	956	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		17.0			22.3		1.3	22.9		8.2	29.8	
Effective Green, g (s)		17.0			22.3		1.3	22.9		8.2	29.8	
Actuated g/C Ratio		0.20			0.26		0.02	0.27		0.09	0.34	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		357			448		26	881		167	1210	
v/s Ratio Prot		c0.14			c0.22		0.01	0.12		c0.06	c0.27	
v/s Ratio Perm												
v/c Ratio		0.69			0.84		0.46	0.45		0.61	0.79	
Uniform Delay, d1		32.3			30.4		42.2	26.5		37.6	25.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.8			13.6		12.4	1.7		6.5	5.3	
Delay (s)		38.1			44.0		54.6	28.2		44.0	30.8	
Level of Service		D			D		D	C		D	C	
Approach Delay (s)		38.1			44.0			28.9			32.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	47	52	9	37	19	6	239	7	12	790	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1750			1769			3516			3451	
Flt Permitted		0.75			0.93			0.94			0.95	
Satd. Flow (perm)		1358			1662			3297			3284	
Peak-hour factor, PHF	0.91	0.91	0.91	0.61	0.61	0.61	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	167	52	57	15	61	31	6	257	8	13	859	141
RTOR Reduction (vph)	0	20	0	0	22	0	0	4	0	0	24	0
Lane Group Flow (vph)	0	256	0	0	85	0	0	267	0	0	989	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.9			12.9			21.3			21.3	
Effective Green, g (s)		13.9			12.9			21.3			21.3	
Actuated g/C Ratio		0.32			0.30			0.49			0.49	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		436			496			1625			1619	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.05			0.08			c0.30	
v/c Ratio		0.59			0.17			0.16			0.61	
Uniform Delay, d1		12.2			11.2			6.0			7.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			0.2			0.0			0.7	
Delay (s)		14.3			11.4			6.1			8.6	
Level of Service		B			B			A			A	
Approach Delay (s)		14.3			11.4			6.1			8.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	43.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	274	417	0	0	0	0	0	2159	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3471						6408	1469
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3471						6408	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	291	444	0	0	0	0	0	2426	98
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	0	0	0	730	0	0	0	0	0	2426	67
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					38.5						101.5	101.5
Effective Green, g (s)					38.5						101.5	101.5
Actuated g/C Ratio					0.26						0.69	0.69
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					902						4394	1007
v/s Ratio Prot											c0.38	
v/s Ratio Perm					0.21							0.05
v/c Ratio					0.81						0.55	0.07
Uniform Delay, d1					51.3						11.8	7.7
Progression Factor					1.00						0.60	0.45
Incremental Delay, d2					5.4						0.4	0.1
Delay (s)					56.7						7.4	3.6
Level of Service					E						A	A
Approach Delay (s)		0.0			56.7			0.0			7.3	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	706	36	105	2114	151	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3504		1770	7418				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3504		1770	7418				
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	894	46	109	2202	157	0	0	0
RTOR Reduction (vph)	0	0	0	0	3	0	16	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	937	0	93	2351	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					48.4		91.6	91.6				
Effective Green, g (s)					48.4		91.6	91.6				
Actuated g/C Ratio					0.32		0.61	0.61				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1138		1088	4560				
v/s Ratio Prot					c0.27		0.05	c0.32				
v/s Ratio Perm												
v/c Ratio					0.82		0.09	0.52				
Uniform Delay, d1					46.4		11.7	16.2				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.0		0.2	0.4				
Delay (s)					51.3		11.8	16.6				
Level of Service					D		B	B				
Approach Delay (s)		0.0			51.3			16.4			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	17	6	8	3	211	17	3	831	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.66	0.66	0.66	0.56	0.56	0.56	0.82	0.82	0.82
Hourly flow rate (vph)	13	8	7	26	9	12	5	377	30	4	1013	2
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1245	1443	516	937	1429	212	1017			409		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1071	1289	270	733	1274	212	821			409		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	94	99	90	94	98	99			100		
cM capacity (veh/h)	147	146	658	262	149	789	731			1144		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	28	47	194	219	510	509
Volume Left	13	26	5	0	4	0
Volume Right	7	12	0	30	0	2
cSH	182	269	731	1700	1144	1700
Volume to Capacity	0.15	0.17	0.01	0.13	0.00	0.30
Queue Length 95th (ft)	13	16	1	0	0	0
Control Delay (s)	28.3	21.2	0.4	0.0	0.1	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	28.3	21.2	0.2		0.0	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	33	17	48	208	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	36	18	52	226	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	326	237	248			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	237	248			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	96	99			
cM capacity (veh/h)	659	802	1318			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	58	71	248
Volume Left	22	18	0
Volume Right	36	0	22
cSH	741	1318	1700
Volume to Capacity	0.08	0.01	0.15
Queue Length 95th (ft)	6	1	0
Control Delay (s)	10.3	2.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.3	2.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	61	0	1871	1755	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	66	0	2034	1908	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.88	0.77	0.77			
vC, conflicting volume	2438	658	1951			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	74	0	1188			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	812	835	449			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	66	508	508	508	508	763	763	425
Volume Left	0	0	0	0	0	0	0	0
Volume Right	66	0	0	0	0	0	0	43
cSH	835	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.30	0.30	0.30	0.30	0.45	0.45	0.25
Queue Length 95th (ft)	6	0	0	0	0	0	0	0
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.7	0.0				0.0		
Approach LOS	A							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	167	8	18	163	8	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	182	9	20	177	9	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked						
vC, conflicting volume			190		402	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			190		402	186
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	97
cM capacity (veh/h)			1384		596	856

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	190	197	32
Volume Left	0	20	9
Volume Right	9	0	23
cSH	1700	1384	764
Volume to Capacity	0.11	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.9	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.9	9.9
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	473	0	291	1357	552	157	0	0	0	0	545	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.93	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1559	1403	4990	3387						3369	1369
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1559	1403	4990	3387						3369	1369
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	538	0	331	1444	587	167	0	0	0	0	626	195
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	1	59
Lane Group Flow (vph)	301	297	271	1444	737	0	0	0	0	0	645	116
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	34.5	34.5	34.5	64.6	64.6						42.4	42.4
Effective Green, g (s)	34.5	34.5	34.5	64.6	64.6						42.4	42.4
Actuated g/C Ratio	0.23	0.23	0.23	0.42	0.42						0.28	0.28
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	381	353	318	2120	1439						939	381
v/s Ratio Prot	0.18	0.19		c0.29	0.22						c0.19	
v/s Ratio Perm			c0.19									0.08
v/c Ratio	0.79	0.84	0.85	0.68	0.51						0.69	0.30
Uniform Delay, d1	55.3	56.1	56.3	35.4	32.1						48.9	43.2
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	10.6	16.4	19.2	0.9	0.3						4.1	2.1
Delay (s)	66.0	72.5	75.5	36.3	32.4						52.9	45.2
Level of Service	E	E	E	D	C						D	D
Approach Delay (s)		71.2			35.0			0.0			51.3	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	918	52	220	2186	911	0	0	978
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5040		1770	6007				3462
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5040		1770	6007				3462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	977	55	234	2326	969	0	0	1040
RTOR Reduction (vph)	0	0	0	0	4	0	26	50	0	0	0	130
Lane Group Flow (vph)	0	0	0	0	1028	0	208	3245	0	0	0	910
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					40.1		51.8	99.9				48.1
Effective Green, g (s)					40.1		51.8	99.9				48.1
Actuated g/C Ratio					0.26		0.34	0.66				0.32
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1329		603	3948				1095
v/s Ratio Prot					c0.20		0.12	c0.28				
v/s Ratio Perm								0.26				c0.26
v/c Ratio					0.77		0.35	0.87dr				0.83
Uniform Delay, d1					51.7		37.4	19.4				48.2
Progression Factor					1.00		1.00	1.00				1.67
Incremental Delay, d2					2.9		1.6	1.5				5.3
Delay (s)					54.6		39.0	20.9				85.8
Level of Service					D		D	C				F
Approach Delay (s)		0.0			54.6			22.1			85.8	
Approach LOS		A			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	67	43	34	26	121	116	2428	10	209	1383	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.92	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1733		1770	1863	1521	1770	5085	1464	1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1733		1770	1863	1521	1770	5085	1464	1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	171	75	48	37	29	133	133	2791	11	227	1503	95
RTOR Reduction (vph)	0	0	0	0	0	119	0	0	5	0	0	27
Lane Group Flow (vph)	171	123	0	37	29	14	133	2791	6	227	1503	68
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	12.0	21.7		6.2	15.9	15.9	16.2	79.1	79.1	24.0	86.9	86.9
Effective Green, g (s)	12.0	21.7		6.2	15.9	15.9	16.2	79.1	79.1	24.0	86.9	86.9
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.11	0.53	0.53	0.16	0.59	0.59
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	254		74	200	163	193	2717	782	287	2985	890
v/s Ratio Prot	c0.10	c0.07		0.02	0.02		0.08	c0.55		c0.13	0.30	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	1.20	0.48		0.50	0.14	0.09	0.69	1.03	0.01	0.79	0.50	0.08
Uniform Delay, d1	68.0	58.0		69.4	59.9	59.5	63.5	34.5	16.1	59.6	17.9	13.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	137.4	1.5		5.2	0.3	0.2	9.8	24.7	0.0	13.8	0.6	0.2
Delay (s)	205.4	59.5		74.6	60.2	59.7	73.3	59.1	16.1	73.4	18.5	13.4
Level of Service	F	E		E	E	E	E	E	B	E	B	B
Approach Delay (s)		144.3			62.6			59.6			25.1	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	111	12	43	41	297	42	2313	72	411	886	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.89	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3482		1770	1534	1463	1770	6372		1770	5085	1520
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3482		1770	1534	1463	1770	6372		1770	5085	1520
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	133	123	13	52	49	358	52	2856	89	457	984	150
RTOR Reduction (vph)	0	5	0	0	82	176	0	3	0	0	0	53
Lane Group Flow (vph)	133	131	0	52	125	24	52	2942	0	457	984	97
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	20.7		7.6	18.3	18.3	8.7	64.2		42.5	98.0	98.0
Effective Green, g (s)	10.0	20.7		7.6	18.3	18.3	8.7	64.2		42.5	98.0	98.0
Actuated g/C Ratio	0.07	0.14		0.05	0.12	0.12	0.06	0.42		0.28	0.64	0.64
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	116	474		88	184	176	101	2691		494	3278	980
v/s Ratio Prot	c0.08	0.04		0.03	c0.08		0.03	c0.46		c0.26	0.19	
v/s Ratio Perm						0.02						0.06
v/c Ratio	1.15	0.28		0.59	0.68	0.14	0.51	1.09		0.93	0.30	0.10
Uniform Delay, d1	71.0	58.9		70.7	64.0	59.8	69.6	43.9		53.2	11.9	10.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.14	1.05		1.00	1.00	1.00
Incremental Delay, d2	128.3	0.3		10.2	9.9	0.4	3.4	47.4		23.2	0.2	0.2
Delay (s)	199.3	59.2		80.9	73.9	60.1	82.8	93.5		76.4	12.1	10.4
Level of Service	F	E		F	E	E	F	F		E	B	B
Approach Delay (s)		128.5			68.7			93.3			30.4	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	74.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	4	2	8	3	541	90	33	708	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	17	3	10	6	3	13	3	601	100	35	761	6
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1179	1550	414	1146	1503	368	774			702		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1179	1550	414	1146	1503	368	774			702		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	87	97	98	95	97	98	100			96		
cM capacity (veh/h)	132	107	573	140	114	621	833			890		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	22	304	401	416	387
Volume Left	17	6	3	0	35	0
Volume Right	10	13	0	100	0	6
cSH	169	237	833	1700	890	1700
Volume to Capacity	0.18	0.09	0.00	0.24	0.04	0.23
Queue Length 95th (ft)	16	8	0	0	3	0
Control Delay (s)	30.9	21.7	0.1	0.0	1.2	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	30.9	21.7	0.1		0.6	
Approach LOS	D	C				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	92	25	7	166	123	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.73	0.73	0.90	0.90
Hourly flow rate (vph)	116	32	10	227	137	10
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	296	84	149			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	84	149			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	97	99			
cM capacity (veh/h)	655	949	1428			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	148	85	152	91	56
Volume Left	116	10	0	0	0
Volume Right	32	0	0	0	10
cSH	702	1428	1700	1700	1700
Volume to Capacity	0.21	0.01	0.09	0.05	0.03
Queue Length 95th (ft)	20	1	0	0	0
Control Delay (s)	11.5	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.5	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	4	5	65	10	37	6	113	142	29	64	4
Peak Hour Factor	0.60	0.60	0.60	0.78	0.78	0.78	0.87	0.87	0.87	0.76	0.76	0.76
Hourly flow rate (vph)	5	7	8	83	13	47	7	130	163	38	84	5

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	20	144	72	228	128
Volume Left (vph)	5	83	7	0	38
Volume Right (vph)	8	47	0	163	5
Hadj (s)	-0.17	-0.05	0.08	-0.47	0.07
Departure Headway (s)	4.9	4.8	5.1	4.6	4.8
Degree Utilization, x	0.03	0.19	0.10	0.29	0.17
Capacity (veh/h)	658	688	678	759	709
Control Delay (s)	8.0	9.0	7.5	8.2	8.8
Approach Delay (s)	8.0	9.0	8.1		8.8
Approach LOS	A	A	A		A

Intersection Summary			
Delay	8.4		
Level of Service	A		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	113	44	20	96	128	96
Peak Hour Factor	0.70	0.70	0.80	0.80	0.82	0.82
Hourly flow rate (vph)	161	63	25	120	156	117

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	224	145	273
Volume Left (vph)	161	25	0
Volume Right (vph)	63	0	117
Hadj (s)	0.01	0.07	-0.22
Departure Headway (s)	4.9	4.9	4.5
Degree Utilization, x	0.30	0.20	0.34
Capacity (veh/h)	687	695	766
Control Delay (s)	10.0	9.1	9.7
Approach Delay (s)	10.0	9.1	9.7
Approach LOS	B	A	A

Intersection Summary			
Delay	9.7		
Level of Service	A		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	74	76	39	128	105	34
Peak Hour Factor	0.76	0.76	0.83	0.83	0.84	0.84
Hourly flow rate (vph)	97	100	47	154	125	40

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	197	201	165
Volume Left (vph)	97	0	125
Volume Right (vph)	100	154	0
Hadj (s)	-0.17	-0.43	0.19
Departure Headway (s)	4.6	4.2	4.8
Degree Utilization, x	0.25	0.23	0.22
Capacity (veh/h)	734	820	711
Control Delay (s)	9.1	8.4	9.1
Approach Delay (s)	9.1	8.4	9.1
Approach LOS	A	A	A

Intersection Summary			
Delay	8.9		
Level of Service	A		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	133	67	51	103	51	126	2520	94	137	1463	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1756		1770	1863	1547	1770	6368		1770	5037	
Flt Permitted	0.61	1.00		0.42	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1132	1756		777	1863	1547	1770	6368		1770	5037	
Peak-hour factor, PHF	0.87	0.87	0.87	0.83	0.83	0.83	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	263	153	77	61	124	61	137	2739	102	140	1493	77
RTOR Reduction (vph)	0	13	0	0	0	41	0	3	0	0	0	0
Lane Group Flow (vph)	263	217	0	61	124	20	137	2838	0	140	1570	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	37.3	37.3		37.3	37.3	37.3	16.5	83.1		16.1	82.7	
Effective Green, g (s)	37.3	37.3		37.3	37.3	37.3	16.5	83.1		16.1	82.7	
Actuated g/C Ratio	0.25	0.25		0.25	0.25	0.25	0.11	0.55		0.11	0.55	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	281	436		193	463	384	194	3527		189	2777	
v/s Ratio Prot		0.12			0.07		0.08	c0.45		c0.08	0.31	
v/s Ratio Perm	c0.23			0.08		0.01						
v/c Ratio	0.94	0.50		0.32	0.27	0.05	0.71	0.80		0.74	0.57	
Uniform Delay, d1	55.2	48.3		45.9	45.4	42.9	64.4	26.9		64.9	21.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.6	0.9		0.9	0.3	0.1	11.1	2.1		14.4	0.8	
Delay (s)	91.8	49.2		46.9	45.7	42.9	75.5	29.0		79.4	22.8	
Level of Service	F	D		D	D	D	E	C		E	C	
Approach Delay (s)		71.9			45.3			31.1			27.4	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	66	119	59	149	25	120	733	55	23	596	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1809		1770	3494		1770	3376	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1714			1809		1770	3494		1770	3376	
Peak-hour factor, PHF	0.90	0.90	0.90	0.82	0.82	0.82	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	119	73	132	72	182	30	124	756	57	26	670	231
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	29	0
Lane Group Flow (vph)	0	301	0	0	280	0	124	809	0	26	872	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		21.4			20.0		9.7	39.4		4.5	34.2	
Effective Green, g (s)		21.4			20.0		9.7	39.4		4.5	34.2	
Actuated g/C Ratio		0.21			0.20		0.10	0.39		0.04	0.34	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		362			357		169	1358		78	1139	
v/s Ratio Prot		c0.18			c0.15		c0.07	0.23		0.01	c0.26	
v/s Ratio Perm												
v/c Ratio		0.83			0.78		0.73	0.60		0.33	0.77	
Uniform Delay, d1		38.2			38.6		44.5	24.6		46.9	30.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.0			10.8		15.2	1.9		2.5	4.9	
Delay (s)		53.2			49.4		59.7	26.5		49.5	34.9	
Level of Service		D			D		E	C		D	C	
Approach Delay (s)		53.2			49.4			30.9			35.3	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	47	24	19	41	42	22	569	29	29	655	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.94			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1758			1724			3502			3438	
Flt Permitted		0.78			0.92			0.91			0.92	
Satd. Flow (perm)		1421			1607			3203			3163	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	163	51	26	22	47	48	25	654	33	35	780	142
RTOR Reduction (vph)	0	10	0	0	36	0	0	6	0	0	24	0
Lane Group Flow (vph)	0	230	0	0	81	0	0	706	0	0	933	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.4			10.4			22.0			22.0	
Effective Green, g (s)		10.4			10.4			22.0			22.0	
Actuated g/C Ratio		0.26			0.26			0.54			0.54	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		365			413			1744			1722	
v/s Ratio Prot												
v/s Ratio Perm		c0.16			0.05			0.22			c0.30	
v/c Ratio		0.63			0.20			0.40			0.54	
Uniform Delay, d1		13.3			11.7			5.4			5.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.4			0.2			0.2			0.4	
Delay (s)		16.7			12.0			5.5			6.3	
Level of Service		B			B			A			A	
Approach Delay (s)		16.7			12.0			5.5			6.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	40.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	266	270	0	0	0	0	0	2032	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.78
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3454						6408	1232
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3454						6408	1232
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	309	314	0	0	0	0	0	2095	86
RTOR Reduction (vph)	0	0	0	0	8	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	0	0	0	615	0	0	0	0	0	2095	62
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					34.2						109.8	109.8
Effective Green, g (s)					34.2						109.8	109.8
Actuated g/C Ratio					0.23						0.72	0.72
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					777						4628	889
v/s Ratio Prot											c0.33	
v/s Ratio Perm					0.18							0.05
v/c Ratio					0.79						0.45	0.07
Uniform Delay, d1					55.5						8.7	6.2
Progression Factor					1.00						0.54	0.32
Incremental Delay, d2					5.5						0.2	0.1
Delay (s)					61.1						4.9	2.1
Level of Service					E						A	A
Approach Delay (s)		0.0			61.1			0.0			4.8	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	426	70	164	3232	209	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3449		1770	7438				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3449		1770	7438				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	453	74	173	3402	220	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	16	5	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	527	0	157	3617	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					28.9		110.1	110.1				
Effective Green, g (s)					28.9		110.1	110.1				
Actuated g/C Ratio					0.20		0.74	0.74				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					673		1316	5533				
v/s Ratio Prot					c0.15		0.09	c0.49				
v/s Ratio Perm												
v/c Ratio					0.78		0.12	0.65				
Uniform Delay, d1					56.6		5.3	9.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.9		0.2	0.6				
Delay (s)					62.5		5.5	10.1				
Level of Service					E		A	B				
Approach Delay (s)		0.0			62.5			9.9			0.0	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	9	3	24	9	537	45	13	686	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.75	0.75	0.75	0.88	0.88	0.88	0.94	0.94	0.94
Hourly flow rate (vph)	24	14	18	12	4	32	10	610	51	14	730	17
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked												
vC, conflicting volume	1137	1460	384	1091	1443	348	750			670		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1137	1460	384	1091	1443	348	750			670		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	89	97	92	97	95	99			98		
cM capacity (veh/h)	140	123	608	144	126	639	853			909		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	56	48	315	356	379	382
Volume Left	24	12	10	0	14	0
Volume Right	18	32	0	51	0	17
cSH	179	290	853	1700	909	1700
Volume to Capacity	0.32	0.17	0.01	0.21	0.02	0.22
Queue Length 95th (ft)	32	15	1	0	1	0
Control Delay (s)	34.2	19.8	0.4	0.0	0.5	0.0
Lane LOS	D	C	A		A	
Approach Delay (s)	34.2	19.8	0.2		0.2	
Approach LOS	D	C				

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	24	41	36	219	175	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	45	39	238	190	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	530	214	237			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	530	214	237			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	95	97			
cM capacity (veh/h)	495	826	1330			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	71	277	237
Volume Left	26	39	0
Volume Right	45	0	47
cSH	662	1330	1700
Volume to Capacity	0.11	0.03	0.14
Queue Length 95th (ft)	9	2	0
Control Delay (s)	11.1	1.3	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	1.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	74	0	2730	1374	86
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	80	0	2967	1493	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.68	0.83	0.83			
vC, conflicting volume	2282	545	1587			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	979			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	694	897	580			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	80	742	742	742	742	597	597	392
Volume Left	0	0	0	0	0	0	0	0
Volume Right	80	0	0	0	0	0	0	93
cSH	897	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.09	0.44	0.44	0.44	0.44	0.35	0.35	0.23
Queue Length 95th (ft)	7	0	0	0	0	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.4	0.0				0.0		
Approach LOS	A							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	236	17	37	192	10	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	257	18	40	209	11	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					1.00	
vC, conflicting volume			275		555	266
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			275		555	266
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	96
cM capacity (veh/h)			1288		477	773

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	275	249	39
Volume Left	0	40	11
Volume Right	18	0	28
cSH	1700	1288	660
Volume to Capacity	0.16	0.03	0.06
Queue Length 95th (ft)	0	2	5
Control Delay (s)	0.0	1.5	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	10.8
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	161	159	148	1569	793	549	136
v/c Ratio	0.67	0.72	0.71	0.67	0.48	0.52	0.28
Control Delay	72.4	78.0	77.8	31.7	27.2	45.1	20.7
Queue Delay	0.0	0.0	0.0	12.3	1.7	0.0	0.0
Total Delay	72.4	78.0	77.8	44.0	29.0	45.1	20.7
Queue Length 50th (ft)	156	162	145	403	263	240	46
Queue Length 95th (ft)	197	207	188	454	321	326	117
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	357	325	307	2376	1659	1055	488
Starvation Cap Reductn	0	0	0	809	659	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.49	0.48	1.00	0.79	0.52	0.28

Intersection Summary

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1325	109	2104	1286
v/c Ratio	0.78	0.24	0.56	0.90
Control Delay	47.8	32.6	17.3	52.7
Queue Delay	0.0	0.0	1.0	0.0
Total Delay	47.8	32.6	18.3	52.7
Queue Length 50th (ft)	411	54	332	257
Queue Length 95th (ft)	465	118	370	490
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1800	459	3741	1571
Starvation Cap Reductn	0	0	1245	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.24	0.84	0.82

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	144	91	28	23	187	83	1925	6	237	1847	91
v/c Ratio	0.70	0.33	0.30	0.17	0.66	0.57	0.75	0.01	0.69	0.59	0.09
Control Delay	79.8	57.0	74.9	63.6	18.8	76.3	24.6	0.0	58.5	25.6	13.9
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	79.8	57.0	74.9	63.6	18.8	76.3	24.6	0.0	58.5	25.6	13.9
Queue Length 50th (ft)	136	84	27	22	0	83	218	0	232	347	17
Queue Length 95th (ft)	178	105	52	40	38	m124	284	m0	m#369	m495	m44
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	322	315	322	314	417	203	2554	782	343	3119	964
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	0.45	0.29	0.09	0.07	0.45	0.41	0.75	0.01	0.69	0.59	0.09

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	34	38	13	179	176	12	1692	406	1425	217
v/c Ratio	0.34	0.08	0.16	0.62	0.58	0.15	0.70	0.63	0.38	0.19
Control Delay	75.8	43.4	71.9	22.6	14.8	96.5	34.8	59.8	14.4	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.8	43.4	71.9	22.6	14.8	96.5	34.8	59.8	14.4	7.9
Queue Length 50th (ft)	32	13	12	28	0	13	446	371	220	54
Queue Length 95th (ft)	63	27	36	103	72	m20	495	#577	246	82
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	191	668	179	398	410	203	2418	642	3745	1162
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.07	0.45	0.43	0.06	0.70	0.63	0.38	0.19

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	270	252	255	159	84	2211	132	1971
v/c Ratio	1.24	0.50	1.15	0.47	0.32	0.57	0.68	0.73	0.74
Control Delay	182.7	45.7	151.5	46.1	23.4	72.2	34.5	86.0	29.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	182.7	45.7	151.5	46.1	23.4	72.2	34.5	86.0	29.3
Queue Length 50th (ft)	~343	210	~283	202	62	85	333	125	521
Queue Length 95th (ft)	#449	260	#389	252	104	m117	337	197	622
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	232	535	220	547	503	203	3253	215	2675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.24	0.50	1.15	0.47	0.32	0.41	0.68	0.61	0.74

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	252	394	12	461	102	959
v/c Ratio	0.68	0.82	0.08	0.52	0.47	0.76
Control Delay	41.2	44.5	42.5	27.8	45.5	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	44.5	42.5	27.8	45.5	31.2
Queue Length 50th (ft)	129	189	6	98	54	233
Queue Length 95th (ft)	194	#301	25	171	113	#493
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	589	575	219	881	285	1256
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.69	0.05	0.52	0.36	0.76

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	276	107	271	1013
v/c Ratio	0.61	0.21	0.17	0.62
Control Delay	17.4	9.7	6.8	10.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.4	9.7	6.8	10.1
Queue Length 50th (ft)	49	14	15	75
Queue Length 95th (ft)	110	24	39	160
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	621	719	1781	1793
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.15	0.15	0.56

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	735	2426	98
v/c Ratio	0.81	0.55	0.09
Control Delay	58.0	7.8	1.0
Queue Delay	0.0	0.2	0.0
Total Delay	58.0	8.1	1.0
Queue Length 50th (ft)	347	176	0
Queue Length 95th (ft)	396	214	m7
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1130	4392	1037
Starvation Cap Reductn	0	944	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	0.70	0.09

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	940	109	2359
v/c Ratio	0.82	0.10	0.52
Control Delay	52.6	8.3	17.0
Queue Delay	0.0	0.0	0.0
Total Delay	52.6	8.3	17.0
Queue Length 50th (ft)	438	25	305
Queue Length 95th (ft)	410	57	366
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1296	1104	4569
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.10	0.52

Intersection Summary

Queues
1: Mission Blvd & A St

7/28/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	301	297	271	1444	754	646	175
v/c Ratio	0.79	0.84	0.85	0.68	0.52	0.69	0.40
Control Delay	70.3	76.3	79.0	37.2	32.2	54.4	27.6
Queue Delay	0.0	0.0	0.0	12.3	1.8	0.0	0.0
Total Delay	70.3	76.3	79.0	49.5	34.0	54.4	27.6
Queue Length 50th (ft)	290	303	265	403	273	328	83
Queue Length 95th (ft)	394	416	372	455	335	390	158
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	425	395	357	2150	1476	940	440
Starvation Cap Reductn	0	0	0	705	533	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.75	0.76	1.00	0.80	0.69	0.40

Intersection Summary

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1032	234	3295	1040
v/c Ratio	0.77	0.37	0.87dr	0.85
Control Delay	55.6	36.1	17.4	72.0
Queue Delay	0.6	0.0	26.4	0.0
Total Delay	56.1	36.1	43.8	72.0
Queue Length 50th (ft)	345	147	586	430
Queue Length 95th (ft)	386	257	675	489
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1479	628	4189	1653
Starvation Cap Reductn	0	0	1060	0
Spillback Cap Reductn	154	0	569	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.37	1.05	0.63

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	123	37	29	133	133	2791	11	227	1503	95
v/c Ratio	1.20	0.48	0.43	0.15	0.48	0.69	1.02	0.01	0.79	0.50	0.10
Control Delay	192.4	63.7	82.8	57.8	14.2	81.0	55.7	0.0	78.8	18.5	5.6
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	192.4	63.7	82.8	57.8	14.2	81.0	55.7	0.0	78.8	18.5	5.6
Queue Length 50th (ft)	~199	116	35	27	0	122	~1050	0	206	296	11
Queue Length 95th (ft)	#351	168	75	56	61	#275	#1095	0	#413	356	39
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	143	339	95	314	368	193	2741	833	287	3011	924
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	1.20	0.36	0.39	0.09	0.36	0.69	1.02	0.01	0.79	0.50	0.10

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	133	136	52	207	200	52	2945	457	984	150
v/c Ratio	1.15	0.28	0.51	0.80	0.58	0.51	1.08	0.93	0.30	0.14
Control Delay	187.8	57.4	86.4	56.7	13.8	91.0	85.1	78.4	12.5	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0
Total Delay	187.8	57.4	86.4	56.7	13.8	91.0	93.6	78.4	12.5	2.1
Queue Length 50th (ft)	~154	63	51	118	0	48	~961	442	152	0
Queue Length 95th (ft)	#298	92	91	178	54	m68	#830	#767	195	29
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	116	623	116	349	424	101	2726	494	3303	1039
Starvation Cap Reductn	0	0	0	0	0	0	60	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.22	0.45	0.59	0.47	0.51	1.10	0.93	0.30	0.14

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	263	230	61	124	61	137	2841	140	1570
v/c Ratio	0.94	0.51	0.32	0.27	0.14	0.71	0.80	0.74	0.56
Control Delay	94.2	48.5	49.7	46.0	12.5	83.5	30.2	87.0	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.2	48.5	49.7	46.0	12.5	83.5	30.2	87.0	23.9
Queue Length 50th (ft)	246	175	48	96	4	131	672	134	376
Queue Length 95th (ft)	#386	251	85	142	36	201	738	209	450
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	305	486	209	503	457	247	3532	224	2780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.47	0.29	0.25	0.13	0.55	0.80	0.63	0.56

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	324	284	124	813	26	901
v/c Ratio	0.83	0.77	0.72	0.59	0.19	0.80
Control Delay	53.2	52.6	70.2	29.1	50.0	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	52.6	70.2	29.1	50.0	37.3
Queue Length 50th (ft)	183	173	80	235	16	273
Queue Length 95th (ft)	#323	242	#185	348	45	#411
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	473	481	179	1384	179	1126
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.59	0.69	0.59	0.15	0.80

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	240	117	712	957
v/c Ratio	0.50	0.21	0.38	0.51
Control Delay	15.1	8.0	7.6	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.1	8.0	7.6	8.5
Queue Length 50th (ft)	41	11	46	66
Queue Length 95th (ft)	96	37	101	133
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	713	824	2069	2057
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.14	0.34	0.47

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	623	2095	86
v/c Ratio	0.79	0.45	0.09
Control Delay	62.3	5.1	0.7
Queue Delay	0.0	0.2	0.0
Total Delay	62.3	5.3	0.7
Queue Length 50th (ft)	304	114	0
Queue Length 95th (ft)	334	161	m0
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1142	4629	914
Starvation Cap Reductn	0	1314	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	0.63	0.09

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	527	173	3622
v/c Ratio	0.78	0.13	0.65
Control Delay	64.9	4.1	10.6
Queue Delay	0.0	0.0	0.0
Total Delay	64.9	4.1	10.6
Queue Length 50th (ft)	256	27	386
Queue Length 95th (ft)	305	58	490
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1118	1332	5538
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.13	0.65

Intersection Summary

Appendix E – Background Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	236	0	193	1620	725	101	0	0	0	0	623	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.95	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1518	1433	4990	3468						3373	1396
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1518	1433	4990	3468						3373	1396
Peak-hour factor, PHF	0.80	0.80	0.80	0.98	0.98	0.98	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	295	0	241	1653	740	103	0	0	0	0	700	197
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	53
Lane Group Flow (vph)	186	181	169	1653	836	0	0	0	0	0	719	124
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	23.4	23.4	23.4	70.5	70.5						43.6	43.6
Effective Green, g (s)	23.4	23.4	23.4	70.5	70.5						43.6	43.6
Actuated g/C Ratio	0.16	0.16	0.16	0.48	0.48						0.29	0.29
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	265	240	226	2376	1651						993	411
v/s Ratio Prot	0.11	c0.12		c0.33	0.24						c0.21	
v/s Ratio Perm			0.12									0.09
v/c Ratio	0.70	0.75	0.75	0.70	0.51						0.72	0.30
Uniform Delay, d1	59.0	59.6	59.5	30.3	26.7						46.8	40.4
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	8.1	12.6	12.7	0.9	0.2						4.6	1.9
Delay (s)	67.1	72.2	72.1	31.3	27.0						51.4	42.3
Level of Service	E	E	E	C	C						D	D
Approach Delay (s)		70.4			29.8			0.0			49.6	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1303	14	106	1579	560	0	0	1336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5076		1770	6084				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5076		1770	6084				3528
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.97	0.97	0.97	0.99	0.99	0.99
Adj. Flow (vph)	0	0	0	0	1316	14	109	1628	577	0	0	1349
RTOR Reduction (vph)	0	0	0	0	1	0	32	45	0	0	0	247
Lane Group Flow (vph)	0	0	0	0	1329	0	77	2160	0	0	0	1102
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					49.6		33.5	84.9				51.4
Effective Green, g (s)					49.6		33.5	84.9				51.4
Actuated g/C Ratio					0.34		0.23	0.57				0.35
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1701		400	3695				1225
v/s Ratio Prot					c0.26		0.04	c0.13				
v/s Ratio Perm								0.22				c0.31
v/c Ratio					0.78		0.19	0.58				0.90
Uniform Delay, d1					44.3		46.3	20.2				45.8
Progression Factor					1.00		1.00	1.00				1.23
Incremental Delay, d2					2.4		1.1	0.2				8.6
Delay (s)					46.7		47.4	20.5				65.0
Level of Service					D		D	C				E
Approach Delay (s)		0.0			46.7			21.7			65.0	
Approach LOS		A			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	41	30	25	21	168	52	1976	7	243	1863	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1715		1770	1863	1553	1770	5085	1491	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1715		1770	1863	1553	1770	5085	1491	1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	151	51	38	32	27	215	56	2125	8	259	1982	91
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	4	0	0	25
Lane Group Flow (vph)	151	89	0	32	27	18	56	2125	4	259	1982	66
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	17.9	24.7		5.7	12.5	12.5	8.8	68.3	68.3	32.3	91.8	91.8
Effective Green, g (s)	17.9	24.7		5.7	12.5	12.5	8.8	68.3	68.3	32.3	91.8	91.8
Actuated g/C Ratio	0.12	0.17		0.04	0.08	0.08	0.06	0.46	0.46	0.22	0.62	0.62
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	214	286		68	157	131	105	2346	688	386	3154	949
v/s Ratio Prot	c0.09	c0.05		0.02	0.01		0.03	c0.42		c0.15	0.39	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	0.71	0.31		0.47	0.17	0.14	0.53	0.91	0.01	0.67	0.63	0.07
Uniform Delay, d1	62.5	54.2		69.7	62.9	62.8	67.6	36.9	21.5	53.0	17.5	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.36	2.32
Incremental Delay, d2	10.1	0.6		5.1	0.5	0.5	5.1	6.4	0.0	2.1	0.4	0.1
Delay (s)	72.6	54.8		74.7	63.5	63.2	72.7	43.3	21.5	51.4	24.3	25.9
Level of Service	E	D		E	E	E	E	D	C	D	C	C
Approach Delay (s)		66.0			64.6			44.0			27.3	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	26	1	12	25	302	2	1757	32	343	1330	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3520		1770	1508	1464	1770	6389		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3520		1770	1508	1464	1770	6389		1770	5085	1522
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	19	31	1	13	27	332	2	1889	34	390	1511	225
RTOR Reduction (vph)	0	1	0	0	139	157	0	2	0	0	0	41
Lane Group Flow (vph)	19	31	0	13	44	19	2	1921	0	390	1511	184
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	4.8	17.4		3.1	15.7	15.7	1.3	53.6		56.9	109.2	109.2
Effective Green, g (s)	4.8	17.4		3.1	15.7	15.7	1.3	53.6		56.9	109.2	109.2
Actuated g/C Ratio	0.03	0.12		0.02	0.11	0.11	0.01	0.36		0.38	0.74	0.74
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	57	413		37	159	155	15	2313		680	3751	1122
v/s Ratio Prot	c0.01	0.01		0.01	c0.03		0.00	c0.30		c0.22	0.30	
v/s Ratio Perm						0.01						0.12
v/c Ratio	0.33	0.08		0.35	0.27	0.12	0.13	0.83		0.57	0.40	0.16
Uniform Delay, d1	70.0	58.1		71.5	60.9	59.9	72.8	43.1		36.0	7.2	5.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.54	0.86		1.00	1.00	1.00
Incremental Delay, d2	3.4	0.1		5.7	0.9	0.3	3.5	3.2		3.5	0.3	0.3
Delay (s)	73.5	58.2		77.1	61.8	60.2	115.3	40.4		39.5	7.6	6.1
Level of Service	E	E		E	E	E	F	D		D	A	A
Approach Delay (s)		63.9			61.6			40.4			13.3	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	2	1	9	5	359	31	20	858	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.41	0.41	0.41	0.50	0.50	0.50	0.77	0.77	0.77	0.82	0.82	0.82
Hourly flow rate (vph)	7	20	17	4	2	18	6	466	40	24	1046	16
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1373	1626	536	1106	1613	261	1062			509		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1373	1626	536	1106	1613	261	1062			509		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	80	96	97	98	98	99			98		
cM capacity (veh/h)	97	98	487	130	99	733	652			1049		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	44	24	240	273	548	539
Volume Left	7	4	6	0	24	0
Volume Right	17	18	0	40	0	16
cSH	142	318	652	1700	1049	1700
Volume to Capacity	0.31	0.08	0.01	0.16	0.02	0.32
Queue Length 95th (ft)	31	6	1	0	2	0
Control Delay (s)	41.4	17.2	0.4	0.0	0.7	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	41.4	17.2	0.2		0.3	
Approach LOS	E	C				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	23	18	10	58	236	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.84	0.84	0.85	0.85
Hourly flow rate (vph)	38	30	12	69	278	8
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	344	149	287			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	344	149	287			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	99			
cM capacity (veh/h)	618	867	1271			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	68	35	46	185	101
Volume Left	38	12	0	0	0
Volume Right	30	0	0	0	8
cSH	707	1271	1700	1700	1700
Volume to Capacity	0.10	0.01	0.03	0.11	0.06
Queue Length 95th (ft)	8	1	0	0	0
Control Delay (s)	10.6	2.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.6	1.2		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	72	3	11	8	33	53	32	153	0
Peak Hour Factor	0.50	0.50	0.50	0.76	0.76	0.76	0.78	0.78	0.78	0.81	0.81	0.81
Hourly flow rate (vph)	2	6	16	95	4	14	10	42	68	40	189	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	24	113	31	89	228
Volume Left (vph)	2	95	10	0	40
Volume Right (vph)	16	14	0	68	0
Hadj (s)	-0.35	0.12	0.20	-0.50	0.07
Departure Headway (s)	4.5	4.9	5.2	4.5	4.6
Degree Utilization, x	0.03	0.15	0.05	0.11	0.29
Capacity (veh/h)	723	687	658	757	759
Control Delay (s)	7.7	8.7	7.3	6.9	9.4
Approach Delay (s)	7.7	8.7	7.0		9.4
Approach LOS	A	A	A		A

Intersection Summary			
Delay	8.6		
Level of Service	A		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	35	13	1	11	148	93
Peak Hour Factor	0.80	0.80	0.42	0.42	0.88	0.88
Hourly flow rate (vph)	44	16	2	26	168	106

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	60	29	274
Volume Left (vph)	44	2	0
Volume Right (vph)	16	0	106
Hadj (s)	0.02	0.05	-0.20
Departure Headway (s)	4.5	4.4	3.9
Degree Utilization, x	0.08	0.03	0.30
Capacity (veh/h)	735	797	913
Control Delay (s)	7.9	7.5	8.5
Approach Delay (s)	7.9	7.5	8.5
Approach LOS	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	126	72	33	68	142	39
Peak Hour Factor	0.76	0.76	0.71	0.71	0.80	0.80
Hourly flow rate (vph)	166	95	46	96	178	49

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	261	142	226
Volume Left (vph)	166	0	178
Volume Right (vph)	95	96	0
Hadj (s)	-0.06	-0.37	0.19
Departure Headway (s)	4.7	4.5	4.9
Degree Utilization, x	0.34	0.18	0.31
Capacity (veh/h)	714	748	690
Control Delay (s)	10.2	8.5	10.1
Approach Delay (s)	10.2	8.5	10.1
Approach LOS	B	A	B

Intersection Summary			
Delay	9.8		
Level of Service	A		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	186	46	222	224	139	86	2094	126	132	1873	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1539	1770	6344		1770	5037	
Flt Permitted	0.45	1.00		0.44	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	846	1801		824	1863	1539	1770	6344		1770	5037	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	310	232	58	278	280	174	93	2276	137	145	2058	58
RTOR Reduction (vph)	0	6	0	0	0	53	0	6	0	0	0	0
Lane Group Flow (vph)	310	284	0	278	280	121	93	2407	0	145	2116	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Effective Green, g (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Actuated g/C Ratio	0.37	0.37		0.37	0.37	0.37	0.07	0.44		0.10	0.47	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	316	672		307	696	575	116	2781		171	2365	
v/s Ratio Prot		0.16			0.15		0.05	0.38		c0.08	c0.42	
v/s Ratio Perm	c0.37			0.34		0.08						
v/c Ratio	0.98	0.42		0.91	0.40	0.21	0.80	0.87		0.85	0.89	
Uniform Delay, d1	45.8	34.5		43.9	34.2	31.5	68.2	37.6		65.8	35.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.98		1.00	1.00	
Incremental Delay, d2	45.2	0.4		28.3	0.4	0.2	19.1	2.2		30.3	5.8	
Delay (s)	91.1	34.9		72.2	34.5	31.7	87.4	39.1		96.1	41.7	
Level of Service	F	C		E	C	C	F	D		F	D	
Approach Delay (s)		63.9			48.2			40.9			45.2	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	160	21	168	107	118	17	409	224	117	1039	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814			1738		1770	3318		1770	3511	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1814			1738		1770	3318		1770	3511	
Peak-hour factor, PHF	0.83	0.83	0.83	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	193	25	207	132	146	18	440	241	126	1117	48
RTOR Reduction (vph)	0	4	0	0	15	0	0	71	0	0	3	0
Lane Group Flow (vph)	0	284	0	0	470	0	18	610	0	126	1162	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Effective Green, g (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Actuated g/C Ratio		0.20			0.28		0.03	0.23		0.12	0.32	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		367			485		52	764		205	1112	
v/s Ratio Prot		c0.16			c0.27		0.01	0.18		c0.07	c0.33	
v/s Ratio Perm												
v/c Ratio		0.77			0.97		0.35	0.80		0.61	1.05	
Uniform Delay, d1		35.3			33.3		44.6	34.0		39.4	32.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.8			32.5		4.0	8.5		5.4	39.6	
Delay (s)		45.1			65.9		48.5	42.5		44.8	71.6	
Level of Service		D			E		D	D		D	E	
Approach Delay (s)		45.1			65.9			42.7			69.0	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	63	70	17	68	15	10	398	12	5	984	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1749			1804			3516			3452	
Flt Permitted		0.76			0.92			0.92			0.95	
Satd. Flow (perm)		1372			1666			3248			3292	
Peak-hour factor, PHF	0.91	0.91	0.91	0.61	0.61	0.61	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	224	69	77	28	111	25	11	428	13	5	1070	176
RTOR Reduction (vph)	0	20	0	0	13	0	0	4	0	0	26	0
Lane Group Flow (vph)	0	350	0	0	151	0	0	448	0	0	1225	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.9			14.9			21.9			21.9	
Effective Green, g (s)		15.9			14.9			21.9			21.9	
Actuated g/C Ratio		0.35			0.33			0.48			0.48	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		476			541			1553			1574	
v/s Ratio Prot												
v/s Ratio Perm		c0.25			0.09			0.14			c0.37	
v/c Ratio		0.73			0.28			0.29			0.78	
Uniform Delay, d1		13.1			11.5			7.2			9.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.8			0.3			0.1			2.5	
Delay (s)		18.9			11.7			7.3			12.4	
Level of Service		B			B			A			B	
Approach Delay (s)		18.9			11.7			7.3			12.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	45.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	288	463	0	0	0	0	0	2360	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3473						6408	1469
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3473						6408	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	306	493	0	0	0	0	0	2652	108
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	0	0	0	794	0	0	0	0	0	2652	75
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					41.3						98.7	98.7
Effective Green, g (s)					41.3						98.7	98.7
Actuated g/C Ratio					0.28						0.67	0.67
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					969						4273	979
v/s Ratio Prot											c0.41	
v/s Ratio Perm					0.23							0.05
v/c Ratio					0.82						0.62	0.08
Uniform Delay, d1					49.9						14.0	8.7
Progression Factor					1.00						0.57	0.50
Incremental Delay, d2					5.5						0.5	0.1
Delay (s)					55.4						8.5	4.4
Level of Service					E						A	A
Approach Delay (s)		0.0			55.4			0.0			8.3	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	763	38	116	2304	167	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3506		1770	7416				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3506		1770	7416				
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	966	48	121	2400	174	0	0	0
RTOR Reduction (vph)	0	0	0	0	2	0	13	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1012	0	108	2566	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					50.8		89.2	89.2				
Effective Green, g (s)					50.8		89.2	89.2				
Actuated g/C Ratio					0.34		0.60	0.60				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1195		1059	4439				
v/s Ratio Prot					c0.29		0.06	c0.35				
v/s Ratio Perm												
v/c Ratio					0.85		0.10	0.58				
Uniform Delay, d1					45.5		12.8	18.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.7		0.2	0.6				
Delay (s)					51.2		13.0	18.9				
Level of Service					D		B	B				
Approach Delay (s)		0.0			51.2			18.6			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	16	6	7	5	368	25	2	1024	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.66	0.66	0.66	0.56	0.56	0.56	0.82	0.82	0.82
Hourly flow rate (vph)	13	8	7	24	9	11	9	657	45	2	1249	2
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78		0.78					
vC, conflicting volume	1623	1978	634	1347	1956	359	1252			704		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1230	1685	0	874	1658	359	752			704		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	89	99	86	88	98	99			100		
cM capacity (veh/h)	91	71	838	168	74	633	663			888		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	28	44	338	373	627	627
Volume Left	13	24	9	0	2	0
Volume Right	7	11	0	45	0	2
cSH	106	155	663	1700	888	1700
Volume to Capacity	0.26	0.28	0.01	0.22	0.00	0.37
Queue Length 95th (ft)	24	28	1	0	0	0
Control Delay (s)	50.8	37.3	0.4	0.0	0.1	0.0
Lane LOS	F	E	A		A	
Approach Delay (s)	50.8	37.3	0.2		0.0	
Approach LOS	F	E				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	507	0	319	1427	586	169	0	0	0	0	666	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.93	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1557	1406	4990	3385						3370	1369
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1557	1406	4990	3385						3370	1369
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	576	0	362	1518	623	180	0	0	0	0	766	238
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	1	60
Lane Group Flow (vph)	323	322	293	1518	785	0	0	0	0	0	789	154
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	35.9	35.9	35.9	65.5	65.5						40.1	40.1
Effective Green, g (s)	35.9	35.9	35.9	65.5	65.5						40.1	40.1
Actuated g/C Ratio	0.24	0.24	0.24	0.43	0.43						0.26	0.26
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	397	367	332	2150	1458						889	361
v/s Ratio Prot	0.19	0.21		c0.30	0.23						c0.23	
v/s Ratio Perm			c0.21									0.11
v/c Ratio	0.81	0.88	0.88	0.71	0.54						0.89	0.43
Uniform Delay, d1	54.9	55.9	56.0	35.4	32.1						53.8	46.4
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	12.0	20.3	22.9	1.1	0.4						12.7	3.6
Delay (s)	66.9	76.2	79.0	36.5	32.4						66.5	50.0
Level of Service	E	E	E	D	C						E	D
Approach Delay (s)		73.9			35.1			0.0			63.0	
Approach LOS		E			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	50.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	946	40	210	2149	924	0	0	997
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.95				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5051		1770	5998				3462
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5051		1770	5998				3462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1006	43	223	2286	983	0	0	1061
RTOR Reduction (vph)	0	0	0	0	3	0	26	52	0	0	0	138
Lane Group Flow (vph)	0	0	0	0	1046	0	197	3217	0	0	0	923
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					40.5		50.9	99.5				48.6
Effective Green, g (s)					40.5		50.9	99.5				48.6
Actuated g/C Ratio					0.27		0.33	0.65				0.32
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1345		592	3926				1106
v/s Ratio Prot					c0.21		0.11	c0.27				
v/s Ratio Perm								0.26				c0.27
v/c Ratio					0.78		0.33	0.88dr				0.83
Uniform Delay, d1					51.6		37.8	19.6				48.0
Progression Factor					1.00		1.00	1.00				1.73
Incremental Delay, d2					2.9		1.5	1.4				5.4
Delay (s)					54.5		39.3	21.0				88.6
Level of Service					D		D	C				F
Approach Delay (s)		0.0			54.5			22.2			88.6	
Approach LOS		A			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	176	84	36	37	28	131	53	2524	11	225	1419	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.92	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1763		1770	1863	1521	1770	5085	1464	1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1763		1770	1863	1521	1770	5085	1464	1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	198	94	40	41	31	144	61	2901	13	245	1542	84
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	6	0	0	24
Lane Group Flow (vph)	198	134	0	41	31	16	61	2901	7	245	1542	60
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	12.0	22.0		6.3	16.3	16.3	7.8	76.0	76.0	26.7	94.9	94.9
Effective Green, g (s)	12.0	22.0		6.3	16.3	16.3	7.8	76.0	76.0	26.7	94.9	94.9
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.05	0.51	0.51	0.18	0.64	0.64
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	262		75	205	167	93	2611	751	319	3260	972
v/s Ratio Prot	c0.11	c0.08		0.02	0.02		0.03	c0.57		c0.14	0.30	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	1.38	0.51		0.55	0.15	0.09	0.66	1.11	0.01	0.77	0.47	0.06
Uniform Delay, d1	68.0	58.0		69.5	59.6	59.2	68.8	36.0	17.6	57.7	13.7	9.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	210.4	1.7		7.9	0.3	0.2	15.4	56.1	0.0	10.6	0.5	0.1
Delay (s)	278.4	59.7		77.4	59.9	59.5	84.2	92.1	17.6	68.3	14.2	10.0
Level of Service	F	E		E	E	E	F	F	B	E	B	B
Approach Delay (s)		190.1			62.9			91.6			21.1	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	72.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	116	119	7	46	40	311	23	2376	76	385	909	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.88	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3505		1770	1530	1463	1770	6371		1770	5085	1520
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3505		1770	1530	1463	1770	6371		1770	5085	1520
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	129	132	8	55	48	375	28	2933	94	428	1010	138
RTOR Reduction (vph)	0	3	0	0	89	181	0	3	0	0	0	45
Lane Group Flow (vph)	129	137	0	55	128	25	28	3024	0	428	1010	93
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	20.8		7.7	18.5	18.5	4.6	64.2		42.3	101.9	101.9
Effective Green, g (s)	10.0	20.8		7.7	18.5	18.5	4.6	64.2		42.3	101.9	101.9
Actuated g/C Ratio	0.07	0.14		0.05	0.12	0.12	0.03	0.42		0.28	0.67	0.67
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	116	479		89	186	178	53	2690		492	3408	1019
v/s Ratio Prot	c0.07	0.04		0.03	c0.08		0.02	c0.47		c0.24	0.20	
v/s Ratio Perm						0.02						0.06
v/c Ratio	1.11	0.29		0.62	0.69	0.14	0.53	1.12		0.87	0.30	0.09
Uniform Delay, d1	71.0	58.9		70.7	64.0	59.6	72.6	43.9		52.2	10.3	8.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.16	1.05		1.00	1.00	1.00
Incremental Delay, d2	116.9	0.3		12.1	10.2	0.4	7.5	60.4		15.1	0.2	0.2
Delay (s)	187.9	59.3		82.8	74.2	60.0	91.5	106.4		67.3	10.5	9.0
Level of Service	F	E		F	E	E	F	F		E	B	A
Approach Delay (s)		120.9			69.1			106.2			25.8	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	80.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	2	2	6	4	665	104	38	857	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	17	3	10	3	3	10	4	739	116	41	922	8
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1418	1877	495	1384	1823	444	935			855		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1418	1877	495	1384	1823	444	935			855		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	95	98	96	96	98	99			95		
cM capacity (veh/h)	86	66	508	91	72	553	724			780		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	16	374	485	502	468
Volume Left	17	3	4	0	41	0
Volume Right	10	10	0	116	0	8
cSH	112	164	724	1700	780	1700
Volume to Capacity	0.27	0.10	0.01	0.29	0.05	0.28
Queue Length 95th (ft)	25	8	0	0	4	0
Control Delay (s)	48.7	29.3	0.2	0.0	1.5	0.0
Lane LOS	E	D	A		A	
Approach Delay (s)	48.7	29.3	0.1		0.8	
Approach LOS	E	D				

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	84	25	10	236	174	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.73	0.73	0.90	0.90
Hourly flow rate (vph)	106	32	14	323	193	9
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	408	112	204			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408	112	204			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	97	99			
cM capacity (veh/h)	556	911	1362			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	138	121	216	129	73
Volume Left	106	14	0	0	0
Volume Right	32	0	0	0	9
cSH	610	1362	1700	1700	1700
Volume to Capacity	0.23	0.01	0.13	0.08	0.04
Queue Length 95th (ft)	22	1	0	0	0
Control Delay (s)	12.6	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	12.6	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	5	6	51	10	30	8	146	173	36	115	7
Peak Hour Factor	0.60	0.60	0.60	0.78	0.78	0.78	0.87	0.87	0.87	0.76	0.76	0.76
Hourly flow rate (vph)	7	8	10	65	13	38	9	168	199	47	151	9

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	25	117	93	283	208
Volume Left (vph)	7	65	9	0	47
Volume Right (vph)	10	38	0	199	9
Hadj (s)	-0.15	-0.05	0.08	-0.46	0.05
Departure Headway (s)	5.2	5.2	5.2	4.6	4.8
Degree Utilization, x	0.04	0.17	0.13	0.36	0.28
Capacity (veh/h)	605	630	675	755	712
Control Delay (s)	8.4	9.2	7.8	9.0	9.7
Approach Delay (s)	8.4	9.2	8.7		9.7
Approach LOS	A	A	A		A

Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	96	44	24	90	114	79
Peak Hour Factor	0.70	0.70	0.80	0.80	0.82	0.82
Hourly flow rate (vph)	137	63	30	112	139	96

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	200	143	235
Volume Left (vph)	137	30	0
Volume Right (vph)	63	0	96
Hadj (s)	-0.02	0.08	-0.21
Departure Headway (s)	4.8	4.8	4.4
Degree Utilization, x	0.26	0.19	0.29
Capacity (veh/h)	706	716	780
Control Delay (s)	9.5	8.9	9.1
Approach Delay (s)	9.5	8.9	9.1
Approach LOS	A	A	A

Intersection Summary			
Delay	9.2		
Level of Service	A		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	83	81	45	167	172	45
Peak Hour Factor	0.76	0.76	0.83	0.83	0.84	0.84
Hourly flow rate (vph)	109	107	54	201	205	54

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	216	255	258
Volume Left (vph)	109	0	205
Volume Right (vph)	107	201	0
Hadj (s)	-0.16	-0.44	0.19
Departure Headway (s)	4.9	4.4	5.0
Degree Utilization, x	0.30	0.31	0.36
Capacity (veh/h)	672	781	690
Control Delay (s)	10.0	9.3	10.7
Approach Delay (s)	10.0	9.3	10.7
Approach LOS	A	A	B

Intersection Summary			
Delay	10.0		
Level of Service	A		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	154	77	53	107	53	135	2639	101	145	1471	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1756		1770	1863	1547	1770	6367		1770	5034	
Flt Permitted	0.61	1.00		0.38	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1134	1756		712	1863	1547	1770	6367		1770	5034	
Peak-hour factor, PHF	0.87	0.87	0.87	0.83	0.83	0.83	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	305	177	89	64	129	64	147	2868	110	148	1501	82
RTOR Reduction (vph)	0	12	0	0	0	40	0	3	0	0	0	0
Lane Group Flow (vph)	305	254	0	64	129	24	147	2975	0	148	1583	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Effective Green, g (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.11	0.53		0.11	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	474		192	503	417	201	3374		194	2647	
v/s Ratio Prot		0.14			0.07		0.08	c0.47		c0.08	0.31	
v/s Ratio Perm	c0.27			0.09		0.02						
v/c Ratio	1.00	0.54		0.33	0.26	0.06	0.73	0.88		0.76	0.60	
Uniform Delay, d1	54.7	46.7		43.9	42.9	40.6	64.2	31.1		64.8	24.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.2	1.2		1.0	0.3	0.1	12.8	3.7		16.2	1.0	
Delay (s)	104.9	47.9		44.9	43.2	40.7	77.1	34.8		81.0	25.6	
Level of Service	F	D		D	D	D	E	C		F	C	
Approach Delay (s)		78.3			43.0			36.8			30.3	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	88	159	65	163	27	138	823	63	29	712	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1809		1770	3494		1770	3371	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1714			1809		1770	3494		1770	3371	
Peak-hour factor, PHF	0.90	0.90	0.90	0.82	0.82	0.82	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	159	98	177	79	199	33	142	848	65	33	800	287
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	32	0
Lane Group Flow (vph)	0	411	0	0	307	0	142	909	0	33	1055	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Effective Green, g (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Actuated g/C Ratio		0.24			0.20		0.09	0.36		0.05	0.31	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414			368		164	1256		82	1055	
v/s Ratio Prot		c0.24			c0.17		c0.08	0.26		0.02	c0.31	
v/s Ratio Perm												
v/c Ratio		0.99			0.83		0.87	0.72		0.40	1.00	
Uniform Delay, d1		40.7			41.1		48.1	29.8		49.8	36.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		42.3			14.9		34.9	3.6		3.2	27.8	
Delay (s)		83.0			56.0		83.0	33.5		53.1	64.8	
Level of Service		F			E		F	C		D	E	
Approach Delay (s)		83.0			56.0			40.1			64.4	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	57.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	57	29	31	66	45	28	709	36	14	816	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1758			1747			3502			3440	
Flt Permitted		0.75			0.89			0.89			0.94	
Satd. Flow (perm)		1364			1578			3129			3234	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	199	61	31	35	75	51	32	815	41	17	971	177
RTOR Reduction (vph)	0	9	0	0	34	0	0	7	0	0	27	0
Lane Group Flow (vph)	0	282	0	0	127	0	0	881	0	0	1138	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.3			14.3			21.6			21.6	
Effective Green, g (s)		14.3			14.3			21.6			21.6	
Actuated g/C Ratio		0.33			0.33			0.49			0.49	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		444			514			1539			1591	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.08			0.28			c0.35	
v/c Ratio		0.63			0.25			0.57			0.72	
Uniform Delay, d1		12.6			10.8			7.9			8.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.0			0.3			0.5			1.6	
Delay (s)		15.5			11.1			8.4			10.3	
Level of Service		B			B			A			B	
Approach Delay (s)		15.5			11.1			8.4			10.3	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	43.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	307	333	0	0	0	0	0	2169	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.78
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3456						6408	1232
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3456						6408	1232
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	357	387	0	0	0	0	0	2236	93
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	29
Lane Group Flow (vph)	0	0	0	0	739	0	0	0	0	0	2236	64
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					40.0						104.0	104.0
Effective Green, g (s)					40.0						104.0	104.0
Actuated g/C Ratio					0.26						0.68	0.68
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					909						4384	842
v/s Ratio Prot											c0.35	
v/s Ratio Perm					0.21							0.05
v/c Ratio					0.81						0.51	0.08
Uniform Delay, d1					52.5						11.6	8.0
Progression Factor					1.00						0.54	0.39
Incremental Delay, d2					5.6						0.3	0.1
Delay (s)					58.1						6.5	3.2
Level of Service					E						A	A
Approach Delay (s)		0.0			58.1			0.0			6.4	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	558	89	170	3275	217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3450		1770	7436				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3450		1770	7436				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	594	95	179	3447	228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	19	7	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	689	0	160	3668	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					36.9		102.1	102.1				
Effective Green, g (s)					36.9		102.1	102.1				
Actuated g/C Ratio					0.25		0.69	0.69				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					860		1221	5129				
v/s Ratio Prot					c0.20		0.09	c0.49				
v/s Ratio Perm												
v/c Ratio					0.80		0.13	0.72				
Uniform Delay, d1					52.1		7.8	14.1				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.4		0.2	0.9				
Delay (s)					57.5		8.0	14.9				
Level of Service					E		A	B				
Approach Delay (s)		0.0			57.5			14.6			0.0	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	8	3	22	11	679	50	13	836	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.75	0.75	0.75	0.88	0.88	0.88	0.94	0.94	0.94
Hourly flow rate (vph)	24	14	18	11	4	29	12	772	57	14	889	21
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1381	1793	466	1340	1775	431	914			837		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1239	1687	244	1194	1668	431	731			837		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	83	97	90	95	95	98			98		
cM capacity (veh/h)	106	82	689	105	84	564	797			787		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	56	44	398	443	459	466
Volume Left	24	11	12	0	14	0
Volume Right	18	29	0	57	0	21
cSH	133	219	797	1700	787	1700
Volume to Capacity	0.42	0.20	0.02	0.26	0.02	0.27
Queue Length 95th (ft)	46	18	1	0	1	0
Control Delay (s)	50.8	25.5	0.5	0.0	0.5	0.0
Lane LOS	F	D	A		A	
Approach Delay (s)	50.8	25.5	0.2		0.3	
Approach LOS	F	D				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	186	181	169	1653	843	720	177
v/c Ratio	0.70	0.75	0.74	0.70	0.51	0.72	0.38
Control Delay	72.2	77.7	77.6	32.3	27.6	52.6	27.7
Queue Delay	0.0	0.0	0.0	24.6	2.2	0.0	0.0
Total Delay	72.2	77.7	77.6	56.9	29.8	52.6	27.7
Queue Length 50th (ft)	181	185	165	435	285	343	83
Queue Length 95th (ft)	224	230	208	489	346	#471	173
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	357	324	307	2376	1659	994	463
Starvation Cap Reductn	0	0	0	789	646	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.56	0.55	1.04	0.83	0.72	0.38

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1330	109	2205	1349
v/c Ratio	0.78	0.25	0.59	0.92
Control Delay	47.8	33.5	17.9	50.2
Queue Delay	0.0	0.0	1.2	0.0
Total Delay	47.8	33.5	19.1	50.2
Queue Length 50th (ft)	413	55	358	245
Queue Length 95th (ft)	467	118	397	479
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1800	432	3738	1570
Starvation Cap Reductn	0	0	1209	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.25	0.87	0.86

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	151	89	32	27	215	56	2125	8	259	1982	91
v/c Ratio	0.71	0.31	0.33	0.20	0.69	0.47	0.88	0.01	0.67	0.61	0.09
Control Delay	79.6	56.0	75.6	64.2	18.8	78.2	41.1	0.0	54.8	26.6	14.3
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	79.6	56.0	75.6	64.2	18.8	78.2	41.1	0.0	54.8	26.6	14.3
Queue Length 50th (ft)	142	81	30	26	0	53	642	0	252	424	26
Queue Length 95th (ft)	185	104	57	45	39	99	#880	0	m#343	503	m32
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	322	322	322	314	441	203	2402	739	386	3238	999
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	0.47	0.28	0.10	0.09	0.49	0.28	0.88	0.01	0.67	0.61	0.09

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	19	32	13	183	176	2	1923	390	1511	225
v/c Ratio	0.22	0.08	0.16	0.63	0.58	0.03	0.80	0.57	0.38	0.19
Control Delay	73.2	51.9	71.9	22.0	14.7	105.5	37.9	43.8	8.1	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.2	51.9	71.9	22.0	14.7	105.5	37.9	43.8	8.1	3.3
Queue Length 50th (ft)	18	14	12	27	0	2	529	286	122	11
Queue Length 95th (ft)	43	27	36	102	72	m5	581	#505	321	62
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	191	666	179	402	410	203	2418	679	3943	1215
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.05	0.07	0.46	0.43	0.01	0.80	0.57	0.38	0.19

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	310	290	278	280	174	93	2413	145	2116
v/c Ratio	0.98	0.43	0.91	0.40	0.28	0.81	0.87	0.85	0.89
Control Delay	91.5	34.8	75.8	35.5	16.4	94.3	39.8	103.5	42.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	34.8	75.8	35.5	16.4	94.3	39.8	103.5	42.5
Queue Length 50th (ft)	284	193	244	191	55	96	341	140	696
Queue Length 95th (ft)	#390	237	#327	235	91	m#120	486	#271	769
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	334	717	325	736	659	115	2787	173	2365
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.40	0.86	0.38	0.26	0.81	0.87	0.84	0.89

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	485	18	681	126	1165
v/c Ratio	0.75	0.95	0.13	0.89	0.60	1.02
Control Delay	46.5	61.9	44.1	46.7	51.7	64.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	61.9	44.1	46.7	51.7	64.6
Queue Length 50th (ft)	156	268	10	180	70	326
Queue Length 95th (ft)	222	#440	33	#320	136	#661
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	523	512	195	767	253	1144
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.95	0.09	0.89	0.50	1.02

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	370	164	452	1251
v/c Ratio	0.75	0.30	0.29	0.78
Control Delay	23.6	12.0	8.3	15.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.6	12.0	8.3	15.0
Queue Length 50th (ft)	79	28	36	136
Queue Length 95th (ft)	#189	39	64	#232
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	594	675	1657	1699
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.24	0.27	0.74

Intersection Summary

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	799	2652	108
v/c Ratio	0.82	0.62	0.11
Control Delay	56.7	8.9	1.3
Queue Delay	0.0	0.4	0.0
Total Delay	56.7	9.3	1.3
Queue Length 50th (ft)	377	187	0
Queue Length 95th (ft)	430	242	m9
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1130	4272	1012
Starvation Cap Reductn	0	916	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.71	0.79	0.11

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1014	121	2574
v/c Ratio	0.85	0.11	0.58
Control Delay	52.7	10.4	19.3
Queue Delay	0.0	0.0	0.0
Total Delay	52.7	10.4	19.3
Queue Length 50th (ft)	471	36	371
Queue Length 95th (ft)	451	69	415
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1296	1072	4449
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.11	0.58

Intersection Summary

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	323	322	293	1518	803	790	214
v/c Ratio	0.82	0.88	0.88	0.71	0.54	0.89	0.51
Control Delay	71.5	79.8	82.3	37.6	32.5	66.8	34.3
Queue Delay	0.0	0.0	0.0	24.0	2.5	0.0	0.0
Total Delay	71.5	79.8	82.3	61.6	34.9	66.8	34.3
Queue Length 50th (ft)	313	332	290	432	296	426	125
Queue Length 95th (ft)	427	#480	#431	487	362	#527	210
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	425	394	357	2150	1475	889	421
Starvation Cap Reductn	0	0	0	689	522	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.82	0.82	1.04	0.84	0.89	0.51

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1049	223	3269	1061
v/c Ratio	0.78	0.36	0.88dr	0.85
Control Delay	55.7	36.1	17.4	73.4
Queue Delay	0.6	0.0	26.0	0.0
Total Delay	56.3	36.1	43.4	73.4
Queue Length 50th (ft)	351	139	582	434
Queue Length 95th (ft)	394	247	664	496
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1481	618	4171	1660
Starvation Cap Reductn	0	0	1063	0
Spillback Cap Reductn	155	0	691	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.79	0.36	1.05	0.64

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	198	134	41	31	144	61	2901	13	245	1542	84
v/c Ratio	1.38	0.51	0.47	0.16	0.50	0.56	1.10	0.02	0.77	0.47	0.08
Control Delay	257.5	64.3	85.5	57.8	14.0	86.9	85.8	0.0	73.8	15.1	4.6
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	257.5	64.3	85.5	57.8	14.0	86.9	85.8	0.0	73.8	15.1	4.6
Queue Length 50th (ft)	~253	126	39	28	0	58	~1169	0	220	258	6
Queue Length 95th (ft)	#413	180	82	57	62	105	#1171	0	#455	368	32
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	143	345	95	314	377	120	2638	805	319	3313	1010
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	1.38	0.39	0.43	0.10	0.38	0.51	1.10	0.02	0.77	0.47	0.08

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	129	140	55	217	206	28	3027	428	1010	138
v/c Ratio	1.11	0.29	0.53	0.81	0.59	0.35	1.11	0.87	0.29	0.13
Control Delay	178.3	58.7	87.6	56.4	13.8	91.0	96.7	71.2	10.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	178.3	58.7	87.6	56.4	13.8	91.0	96.8	71.2	10.9	2.1
Queue Length 50th (ft)	~146	66	54	122	0	26	~1012	406	148	0
Queue Length 95th (ft)	#287	96	95	183	54	m40	#878	#705	201	28
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	116	624	116	355	429	82	2726	492	3489	1085
Starvation Cap Reductn	0	0	0	0	0	0	59	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.22	0.47	0.61	0.48	0.34	1.13	0.87	0.29	0.13

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	305	266	64	129	64	147	2978	148	1583
v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.73	0.88	0.76	0.60
Control Delay	104.5	48.7	49.9	44.6	13.3	84.6	35.4	88.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	48.7	49.9	44.6	13.3	84.6	35.4	88.9	26.2
Queue Length 50th (ft)	300	210	51	100	7	141	741	142	386
Queue Length 95th (ft)	#477	293	90	146	38	216	803	219	456
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	306	486	192	503	457	247	3377	224	2648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.60	0.88	0.66	0.60

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	311	142	913	33	1087
v/c Ratio	0.98	0.82	0.86	0.71	0.25	1.04
Control Delay	76.3	58.1	88.8	34.7	51.9	73.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	58.1	88.8	34.7	51.9	73.0
Queue Length 50th (ft)	281	200	98	298	22	~417
Queue Length 95th (ft)	#506	267	#219	#437	53	#561
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	444	448	166	1279	166	1050
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.69	0.86	0.71	0.20	1.04

Intersection Summary

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	291	161	888	1165
v/c Ratio	0.65	0.30	0.58	0.72
Control Delay	19.7	9.6	10.3	12.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.7	9.6	10.3	12.3
Queue Length 50th (ft)	61	21	72	102
Queue Length 95th (ft)	122	51	134	175
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	605	720	1669	1743
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.22	0.53	0.67

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	744	2236	93
v/c Ratio	0.81	0.51	0.11
Control Delay	59.4	6.8	0.9
Queue Delay	0.0	0.3	0.0
Total Delay	59.4	7.1	0.9
Queue Length 50th (ft)	362	137	0
Queue Length 95th (ft)	386	205	m2
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1142	4386	872
Starvation Cap Reductn	0	1214	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.65	0.70	0.11

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	689	179	3675
v/c Ratio	0.80	0.14	0.72
Control Delay	59.3	6.0	15.6
Queue Delay	0.0	0.0	0.0
Total Delay	59.3	6.0	15.6
Queue Length 50th (ft)	331	35	492
Queue Length 95th (ft)	377	74	616
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1118	1239	5135
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.14	0.72

Intersection Summary

Appendix F – Background plus Project Phase 1 Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	241	0	193	1645	731	101	0	0	0	0	624	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.95	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1523	1434	4990	3468						3373	1396
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1523	1434	4990	3468						3373	1396
Peak-hour factor, PHF	0.80	0.80	0.80	0.98	0.98	0.98	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	301	0	241	1679	746	103	0	0	0	0	701	198
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	54
Lane Group Flow (vph)	187	184	171	1679	842	0	0	0	0	0	720	124
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	23.8	23.8	23.8	70.5	70.5						43.2	43.2
Effective Green, g (s)	23.8	23.8	23.8	70.5	70.5						43.2	43.2
Actuated g/C Ratio	0.16	0.16	0.16	0.48	0.48						0.29	0.29
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	270	244	230	2376	1651						984	407
v/s Ratio Prot	0.11	c0.12		c0.34	0.24						c0.21	
v/s Ratio Perm			0.12									0.09
v/c Ratio	0.69	0.75	0.74	0.71	0.51						0.73	0.31
Uniform Delay, d1	58.6	59.3	59.2	30.6	26.8						47.2	40.7
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	7.5	12.4	12.2	1.0	0.2						4.8	1.9
Delay (s)	66.1	71.7	71.4	31.6	27.0						52.0	42.7
Level of Service	E	E	E	C	C						D	D
Approach Delay (s)		69.7			30.0			0.0			50.1	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1306	20	112	1610	560	0	0	1371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5072		1770	6088				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5072		1770	6088				3528
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.97	0.97	0.97	0.99	0.99	0.99
Adj. Flow (vph)	0	0	0	0	1319	20	115	1660	577	0	0	1385
RTOR Reduction (vph)	0	0	0	0	1	0	32	44	0	0	0	233
Lane Group Flow (vph)	0	0	0	0	1338	0	83	2193	0	0	0	1152
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					49.7		32.0	84.8				52.8
Effective Green, g (s)					49.7		32.0	84.8				52.8
Actuated g/C Ratio					0.34		0.22	0.57				0.36
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1703		382	3693				1258
v/s Ratio Prot					c0.26		0.05	c0.13				
v/s Ratio Perm								0.23				c0.33
v/c Ratio					0.79		0.22	0.59				0.92
Uniform Delay, d1					44.3		47.7	20.5				45.5
Progression Factor					1.00		1.00	1.00				1.39
Incremental Delay, d2					2.5		1.3	0.3				9.8
Delay (s)					46.8		49.0	20.7				73.1
Level of Service					D		D	C				E
Approach Delay (s)		0.0			46.8			22.1			73.1	
Approach LOS		A			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	41	41	25	21	168	83	2016	7	243	1892	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1690		1770	1863	1553	1770	5085	1491	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1690		1770	1863	1553	1770	5085	1491	1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	164	51	51	32	27	215	89	2168	8	259	2013	99
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	4	0	0	27
Lane Group Flow (vph)	164	102	0	32	27	18	89	2168	4	259	2013	72
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	19.0	25.7		5.7	12.4	12.4	12.8	67.5	67.5	32.1	86.8	86.8
Effective Green, g (s)	19.0	25.7		5.7	12.4	12.4	12.8	67.5	67.5	32.1	86.8	86.8
Actuated g/C Ratio	0.13	0.17		0.04	0.08	0.08	0.09	0.46	0.46	0.22	0.59	0.59
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	293		68	156	130	153	2319	680	383	2982	897
v/s Ratio Prot	c0.09	c0.06		0.02	0.01		0.05	c0.43		c0.15	0.40	
v/s Ratio Perm						0.01			0.00			0.05
v/c Ratio	0.72	0.35		0.47	0.17	0.14	0.58	0.93	0.01	0.68	0.68	0.08
Uniform Delay, d1	62.0	53.8		69.7	63.0	62.8	65.0	38.2	21.9	53.2	20.9	13.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.82	1.00	0.93	1.31	2.11
Incremental Delay, d2	10.8	0.7		5.1	0.5	0.5	3.6	6.0	0.0	2.0	0.5	0.1
Delay (s)	72.8	54.5		74.7	63.6	63.3	68.6	37.4	22.0	51.8	28.0	28.1
Level of Service	E	D		E	E	E	E	D	C	D	C	C
Approach Delay (s)		65.8			64.7			38.6			30.6	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	28	6	12	27	305	11	1785	32	384	1360	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3437		1770	1513	1464	1770	6389		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3437		1770	1513	1464	1770	6389		1770	5085	1522
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	35	34	7	13	30	335	12	1919	34	436	1545	235
RTOR Reduction (vph)	0	6	0	0	136	161	0	1	0	0	0	47
Lane Group Flow (vph)	35	35	0	13	48	20	12	1952	0	436	1545	188
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	7.3	20.7		3.1	16.5	16.5	3.1	53.6		53.6	104.1	104.1
Effective Green, g (s)	7.3	20.7		3.1	16.5	16.5	3.1	53.6		53.6	104.1	104.1
Actuated g/C Ratio	0.05	0.14		0.02	0.11	0.11	0.02	0.36		0.36	0.70	0.70
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	87	480		37	168	163	37	2313		641	3576	1070
v/s Ratio Prot	c0.02	0.01		0.01	c0.03		0.01	c0.31		c0.25	0.30	
v/s Ratio Perm						0.01						0.12
v/c Ratio	0.40	0.07		0.35	0.29	0.12	0.32	0.84		0.68	0.43	0.18
Uniform Delay, d1	68.2	55.3		71.5	60.3	59.2	71.4	43.4		39.9	9.4	7.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.36	0.87		1.37	1.39	2.12
Incremental Delay, d2	3.0	0.1		5.7	0.9	0.3	4.4	3.5		4.7	0.3	0.3
Delay (s)	71.3	55.4		77.1	61.3	59.6	101.3	41.2		59.4	13.3	16.1
Level of Service	E	E		E	E	E	F	D		E	B	B
Approach Delay (s)		62.7			61.0			41.6			22.7	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	3	1	10	5	362	34	21	859	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.41	0.41	0.41	0.50	0.50	0.50	0.77	0.77	0.77	0.82	0.82	0.82
Hourly flow rate (vph)	7	20	17	6	2	20	6	470	44	26	1048	16
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1381	1637	537	1115	1623	265	1063			517		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1381	1637	537	1115	1623	265	1063			517		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	80	96	95	98	97	99			98		
cM capacity (veh/h)	96	96	486	128	98	728	651			1042		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	44	28	242	279	549	540
Volume Left	7	6	6	0	26	0
Volume Right	17	20	0	44	0	16
cSH	140	295	651	1700	1042	1700
Volume to Capacity	0.31	0.09	0.01	0.16	0.02	0.32
Queue Length 95th (ft)	31	8	1	0	2	0
Control Delay (s)	42.2	18.5	0.4	0.0	0.7	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	42.2	18.5	0.2		0.3	
Approach LOS	E	C				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	27	18	10	58	245	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.84	0.84	0.85	0.85
Hourly flow rate (vph)	45	30	12	69	288	12
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	356	156	301			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	356	156	301			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	97	99			
cM capacity (veh/h)	607	858	1256			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	35	46	192	108
Volume Left	45	12	0	0	0
Volume Right	30	0	0	0	12
cSH	688	1256	1700	1700	1700
Volume to Capacity	0.11	0.01	0.03	0.11	0.06
Queue Length 95th (ft)	9	1	0	0	0
Control Delay (s)	10.9	2.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.9	1.2		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	83	3	17	8	33	57	36	153	0
Peak Hour Factor	0.50	0.50	0.50	0.76	0.76	0.76	0.78	0.78	0.78	0.81	0.81	0.81
Hourly flow rate (vph)	2	6	16	109	4	22	10	42	73	44	189	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	24	136	31	94	233
Volume Left (vph)	2	109	10	0	44
Volume Right (vph)	16	22	0	73	0
Hadj (s)	-0.35	0.10	0.20	-0.51	0.07
Departure Headway (s)	4.6	4.9	5.3	4.6	4.6
Degree Utilization, x	0.03	0.18	0.05	0.12	0.30
Capacity (veh/h)	707	687	647	743	745
Control Delay (s)	7.7	8.9	7.4	7.0	9.6
Approach Delay (s)	7.7	8.9	7.1		9.6
Approach LOS	A	A	A		A

Intersection Summary			
Delay	8.7		
Level of Service	A		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	43	13	1	20	164	110
Peak Hour Factor	0.80	0.80	0.42	0.42	0.88	0.88
Hourly flow rate (vph)	54	16	2	48	186	125

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	70	50	311
Volume Left (vph)	54	2	0
Volume Right (vph)	16	0	125
Hadj (s)	0.05	0.04	-0.21
Departure Headway (s)	4.7	4.4	3.9
Degree Utilization, x	0.09	0.06	0.34
Capacity (veh/h)	705	782	901
Control Delay (s)	8.2	7.7	8.9
Approach Delay (s)	8.2	7.7	8.9
Approach LOS	A	A	A

Intersection Summary			
Delay	8.7		
Level of Service	A		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	128	78	39	72	146	43
Peak Hour Factor	0.76	0.76	0.71	0.71	0.80	0.80
Hourly flow rate (vph)	168	103	55	101	182	54

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	271	156	236
Volume Left (vph)	168	0	183
Volume Right (vph)	103	101	0
Hadj (s)	-0.07	-0.36	0.19
Departure Headway (s)	4.8	4.6	5.0
Degree Utilization, x	0.36	0.20	0.33
Capacity (veh/h)	705	737	683
Control Delay (s)	10.5	8.7	10.4
Approach Delay (s)	10.5	8.7	10.4
Approach LOS	B	A	B

Intersection Summary			
Delay	10.0		
Level of Service	B		
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	186	46	222	224	139	86	2144	126	132	1909	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1539	1770	6346		1770	5038	
Flt Permitted	0.45	1.00		0.44	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	846	1801		824	1863	1539	1770	6346		1770	5038	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	310	232	58	278	280	174	93	2330	137	145	2098	58
RTOR Reduction (vph)	0	6	0	0	0	53	0	6	0	0	0	0
Lane Group Flow (vph)	310	284	0	278	280	121	93	2461	0	145	2156	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Effective Green, g (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Actuated g/C Ratio	0.37	0.37		0.37	0.37	0.37	0.07	0.44		0.10	0.47	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	316	672		307	696	575	116	2782		171	2365	
v/s Ratio Prot		0.16			0.15		0.05	0.39		c0.08	c0.43	
v/s Ratio Perm	c0.37			0.34		0.08						
v/c Ratio	0.98	0.42		0.91	0.40	0.21	0.80	0.88		0.85	0.91	
Uniform Delay, d1	45.8	34.5		43.9	34.2	31.5	68.2	38.1		65.8	36.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.94	1.29		1.00	1.00	
Incremental Delay, d2	45.2	0.4		28.3	0.4	0.2	17.9	2.4		30.3	6.7	
Delay (s)	91.1	34.9		72.2	34.5	31.7	82.0	51.6		96.1	43.1	
Level of Service	F	C		E	C	C	F	D		F	D	
Approach Delay (s)		63.9			48.2			52.7			46.5	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	160	21	168	107	118	17	423	224	117	1049	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814			1738		1770	3323		1770	3511	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1814			1738		1770	3323		1770	3511	
Peak-hour factor, PHF	0.83	0.83	0.83	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	193	25	207	132	146	18	455	241	126	1128	48
RTOR Reduction (vph)	0	4	0	0	15	0	0	66	0	0	3	0
Lane Group Flow (vph)	0	284	0	0	470	0	18	630	0	126	1173	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Effective Green, g (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Actuated g/C Ratio		0.20			0.28		0.03	0.23		0.12	0.32	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		367			485		52	766		205	1112	
v/s Ratio Prot		c0.16			c0.27		0.01	0.19		c0.07	c0.33	
v/s Ratio Perm												
v/c Ratio		0.77			0.97		0.35	0.82		0.61	1.06	
Uniform Delay, d1		35.3			33.3		44.6	34.2		39.4	32.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.8			32.5		4.0	9.7		5.4	42.8	
Delay (s)		45.1			65.9		48.5	43.9		44.8	74.8	
Level of Service		D			E		D	D		D	E	
Approach Delay (s)		45.1			65.9			44.0			71.9	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	60.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	63	70	17	68	26	10	401	12	13	986	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.97			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1749			1783			3517			3451	
Flt Permitted		0.76			0.92			0.92			0.95	
Satd. Flow (perm)		1363			1657			3247			3278	
Peak-hour factor, PHF	0.91	0.91	0.91	0.61	0.61	0.61	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	224	69	77	28	111	43	11	431	13	14	1072	176
RTOR Reduction (vph)	0	20	0	0	24	0	0	4	0	0	25	0
Lane Group Flow (vph)	0	350	0	0	158	0	0	451	0	0	1237	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			15.0			21.9			21.9	
Effective Green, g (s)		16.0			15.0			21.9			21.9	
Actuated g/C Ratio		0.35			0.33			0.48			0.48	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		475			541			1549			1564	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.10			0.14			c0.38	
v/c Ratio		0.74			0.29			0.29			0.79	
Uniform Delay, d1		13.1			11.5			7.3			10.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.9			0.3			0.1			2.8	
Delay (s)		19.0			11.8			7.4			12.9	
Level of Service		B			B			A			B	
Approach Delay (s)		19.0			11.8			7.4			12.9	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	302	463	0	0	0	0	0	2387	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3471						6408	1469
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3471						6408	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	321	493	0	0	0	0	0	2682	108
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	0	0	0	809	0	0	0	0	0	2682	75
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					41.8						98.2	98.2
Effective Green, g (s)					41.8						98.2	98.2
Actuated g/C Ratio					0.28						0.66	0.66
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					980						4251	974
v/s Ratio Prot											c0.42	
v/s Ratio Perm					0.23							0.05
v/c Ratio					0.83						0.63	0.08
Uniform Delay, d1					49.7						14.4	8.8
Progression Factor					1.00						0.58	0.57
Incremental Delay, d2					5.8						0.5	0.1
Delay (s)					55.5						8.9	5.1
Level of Service					E						A	A
Approach Delay (s)		0.0			55.5			0.0			8.8	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	763	39	116	2340	167	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3505		1770	7418				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3505		1770	7418				
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	966	49	121	2438	174	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	13	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1014	0	108	2604	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					50.8		89.2	89.2				
Effective Green, g (s)					50.8		89.2	89.2				
Actuated g/C Ratio					0.34		0.60	0.60				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1194		1059	4440				
v/s Ratio Prot					c0.29		0.06	c0.35				
v/s Ratio Perm												
v/c Ratio					0.85		0.10	0.59				
Uniform Delay, d1					45.5		12.8	18.5				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.8		0.2	0.6				
Delay (s)					51.4		13.0	19.1				
Level of Service					D		B	B				
Approach Delay (s)		0.0			51.4			18.8			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	17	6	8	5	369	28	3	1025	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.66	0.66	0.66	0.56	0.56	0.56	0.82	0.82	0.82
Hourly flow rate (vph)	13	8	7	26	9	12	9	659	50	4	1250	2
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.77	0.77	0.77	0.77	0.77		0.77					
vC, conflicting volume	1630	1988	634	1354	1965	362	1253			711		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1231	1694	0	876	1664	362	746			711		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	88	99	85	88	98	99			100		
cM capacity (veh/h)	90	70	835	166	73	630	664			883		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	28	47	338	379	629	627
Volume Left	13	26	9	0	4	0
Volume Right	7	12	0	50	0	2
cSH	104	157	664	1700	883	1700
Volume to Capacity	0.27	0.30	0.01	0.22	0.00	0.37
Queue Length 95th (ft)	25	29	1	0	0	0
Control Delay (s)	51.6	37.4	0.4	0.0	0.1	0.0
Lane LOS	F	E	A		A	
Approach Delay (s)	51.6	37.4	0.2		0.1	
Approach LOS	F	E				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	33	17	43	225	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	36	18	47	245	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	339	255	266			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	339	255	266			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	95	99			
cM capacity (veh/h)	647	783	1298			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	58	65	266
Volume Left	22	18	0
Volume Right	36	0	22
cSH	726	1298	1700
Volume to Capacity	0.08	0.01	0.16
Queue Length 95th (ft)	6	1	0
Control Delay (s)	10.4	2.3	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	2.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	61	0	2119	1918	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	66	0	2303	2085	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.86	0.72	0.72			
vC, conflicting volume	2682	717	2128			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1218			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	880	784	411			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	66	576	576	576	576	834	834	460
Volume Left	0	0	0	0	0	0	0	0
Volume Right	66	0	0	0	0	0	0	43
cSH	784	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.08	0.34	0.34	0.34	0.34	0.49	0.49	0.27
Queue Length 95th (ft)	7	0	0	0	0	0	0	0
Control Delay (s)	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.0	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	192	8	18	179	8	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	9	20	195	9	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					1.00	
vC, conflicting volume			217		447	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			217		446	213
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			1352		561	827

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	217	214	32
Volume Left	0	20	9
Volume Right	9	0	23
cSH	1700	1352	731
Volume to Capacity	0.13	0.01	0.04
Queue Length 95th (ft)	0	1	3
Control Delay (s)	0.0	0.8	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.1
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	518	0	319	1458	594	169	0	0	0	0	668	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.94	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1560	1406	4990	3387						3370	1369
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1560	1406	4990	3387						3370	1369
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	589	0	362	1551	632	180	0	0	0	0	768	239
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	1	60
Lane Group Flow (vph)	330	324	297	1551	795	0	0	0	0	0	791	155
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	36.0	36.0	36.0	65.5	65.5						40.0	40.0
Effective Green, g (s)	36.0	36.0	36.0	65.5	65.5						40.0	40.0
Actuated g/C Ratio	0.24	0.24	0.24	0.43	0.43						0.26	0.26
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	398	369	333	2150	1459						886	360
v/s Ratio Prot	0.20	0.21		c0.31	0.23						c0.23	
v/s Ratio Perm			c0.21									0.11
v/c Ratio	0.83	0.88	0.89	0.72	0.54						0.89	0.43
Uniform Delay, d1	55.1	55.9	56.1	35.7	32.2						53.9	46.5
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	13.3	20.3	24.5	1.2	0.4						13.2	3.7
Delay (s)	68.4	76.2	80.6	36.9	32.6						67.1	50.2
Level of Service	E	E	F	D	C						E	D
Approach Delay (s)		74.9			35.4			0.0			63.5	
Approach LOS		E			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	953	53	223	2215	924	0	0	1040
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5041		1770	6006				3462
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5041		1770	6006				3462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1014	56	237	2356	983	0	0	1106
RTOR Reduction (vph)	0	0	0	0	4	0	27	51	0	0	0	121
Lane Group Flow (vph)	0	0	0	0	1066	0	210	3288	0	0	0	985
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					40.9		47.6	99.1				51.5
Effective Green, g (s)					40.9		47.6	99.1				51.5
Actuated g/C Ratio					0.27		0.31	0.65				0.34
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1356		554	3915				1172
v/s Ratio Prot					c0.21		0.12	c0.26				
v/s Ratio Perm								0.28				c0.28
v/c Ratio					0.79		0.38	0.89dr				0.84
Uniform Delay, d1					51.5		40.7	20.3				46.5
Progression Factor					1.00		1.00	1.00				1.76
Incremental Delay, d2					3.1		2.0	1.7				5.4
Delay (s)					54.6		42.7	22.1				87.0
Level of Service					D		D	C				F
Approach Delay (s)		0.0			54.6			23.4			87.0	
Approach LOS		A			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	84	50	37	28	131	119	2573	11	225	1481	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.92	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1739		1770	1863	1522	1770	5085	1464	1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1739		1770	1863	1522	1770	5085	1464	1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	211	94	56	41	31	144	137	2957	13	245	1610	100
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	6	0	0	28
Lane Group Flow (vph)	211	150	0	41	31	16	137	2957	7	245	1610	72
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	12.0	22.6		6.3	16.9	16.9	16.8	75.7	75.7	26.4	85.3	85.3
Effective Green, g (s)	12.0	22.6		6.3	16.9	16.9	16.8	75.7	75.7	26.4	85.3	85.3
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.11	0.51	0.51	0.18	0.58	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	265		75	212	173	200	2600	748	315	2930	873
v/s Ratio Prot	c0.12	c0.09		0.02	0.02		0.08	c0.58		c0.14	0.32	
v/s Ratio Perm						0.01			0.00			0.05
v/c Ratio	1.48	0.57		0.55	0.15	0.10	0.69	1.14	0.01	0.78	0.55	0.08
Uniform Delay, d1	68.0	58.2		69.5	59.1	58.7	63.1	36.1	17.7	58.0	19.4	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	247.7	2.8		7.9	0.3	0.2	9.3	67.1	0.0	11.4	0.7	0.2
Delay (s)	315.7	60.9		77.4	59.4	58.9	72.4	103.2	17.8	69.5	20.2	14.1
Level of Service	F	E		E	E	E	E	F	B	E	C	B
Approach Delay (s)		209.8			62.5			101.5			26.0	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	80.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	122	13	46	44	318	43	2435	76	436	946	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.89	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3483		1770	1535	1464	1770	6372		1770	5085	1519
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3483		1770	1535	1464	1770	6372		1770	5085	1519
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	146	136	14	55	53	383	53	3006	94	484	1051	159
RTOR Reduction (vph)	0	5	0	0	80	186	0	3	0	0	0	58
Lane Group Flow (vph)	146	145	0	55	142	28	53	3097	0	484	1051	101
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	22.1		7.7	19.8	19.8	8.5	64.2		41.0	96.7	96.7
Effective Green, g (s)	10.0	22.1		7.7	19.8	19.8	8.5	64.2		41.0	96.7	96.7
Actuated g/C Ratio	0.07	0.15		0.05	0.13	0.13	0.06	0.42		0.27	0.64	0.64
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	116	506		89	199	190	98	2691		477	3234	966
v/s Ratio Prot	c0.08	0.04		0.03	c0.09		0.03	c0.49		c0.27	0.21	
v/s Ratio Perm						0.02						0.07
v/c Ratio	1.26	0.29		0.62	0.71	0.15	0.54	1.15		1.01	0.32	0.10
Uniform Delay, d1	71.0	57.9		70.7	63.4	58.6	69.9	43.9		55.5	12.7	10.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.14	1.04		1.00	1.00	1.00
Incremental Delay, d2	168.5	0.3		12.1	11.5	0.4	4.8	71.7		44.9	0.3	0.2
Delay (s)	239.5	58.2		82.8	74.8	59.0	84.1	117.2		100.4	12.9	11.0
Level of Service	F	E		F	E	E	F	F		F	B	B
Approach Delay (s)		147.7			68.8			116.6			37.8	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	90.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	4	2	8	4	671	110	40	858	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	17	3	10	6	3	13	4	746	122	43	923	8
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1430	1896	495	1399	1839	451	936			869		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1430	1896	495	1399	1839	451	936			869		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	95	98	93	95	98	99			94		
cM capacity (veh/h)	83	64	507	88	70	548	724			771		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	22	377	495	504	469
Volume Left	17	6	4	0	43	0
Volume Right	10	13	0	122	0	8
cSH	109	158	724	1700	771	1700
Volume to Capacity	0.28	0.14	0.01	0.29	0.06	0.28
Queue Length 95th (ft)	26	12	0	0	4	0
Control Delay (s)	50.4	31.5	0.2	0.0	1.5	0.0
Lane LOS	F	D	A		A	
Approach Delay (s)	50.4	31.5	0.1		0.8	
Approach LOS	F	D				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	92	25	10	236	184	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.73	0.73	0.90	0.90
Hourly flow rate (vph)	116	32	14	323	204	13
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	421	120	220			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421	120	220			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	79	96	99			
cM capacity (veh/h)	545	901	1344			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	148	121	216	136	81
Volume Left	116	14	0	0	0
Volume Right	32	0	0	0	13
cSH	595	1344	1700	1700	1700
Volume to Capacity	0.25	0.01	0.13	0.08	0.05
Queue Length 95th (ft)	24	1	0	0	0
Control Delay (s)	13.0	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.0	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	5	6	65	10	37	8	146	181	45	115	7
Peak Hour Factor	0.60	0.60	0.60	0.78	0.78	0.78	0.87	0.87	0.87	0.76	0.76	0.76
Hourly flow rate (vph)	7	8	10	83	13	47	9	168	208	59	151	9

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	25	144	93	292	220
Volume Left (vph)	7	83	9	0	59
Volume Right (vph)	10	47	0	208	9
Hadj (s)	-0.15	-0.05	0.08	-0.46	0.06
Departure Headway (s)	5.4	5.2	5.3	4.7	5.0
Degree Utilization, x	0.04	0.21	0.14	0.38	0.30
Capacity (veh/h)	586	623	660	737	693
Control Delay (s)	8.6	9.6	7.9	9.4	10.1
Approach Delay (s)	8.6	9.6	9.0		10.1
Approach LOS	A	A	A		B

Intersection Summary			
Delay	9.4		
Level of Service	A		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	113	44	24	110	134	100
Peak Hour Factor	0.70	0.70	0.80	0.80	0.82	0.82
Hourly flow rate (vph)	161	63	30	138	163	122

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	224	168	285
Volume Left (vph)	161	30	0
Volume Right (vph)	63	0	122
Hadj (s)	0.01	0.07	-0.22
Departure Headway (s)	5.0	4.9	4.5
Degree Utilization, x	0.31	0.23	0.36
Capacity (veh/h)	673	692	760
Control Delay (s)	10.2	9.4	10.0
Approach Delay (s)	10.2	9.4	10.0
Approach LOS	B	A	A

Intersection Summary			
Delay	9.9		
Level of Service	A		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	86	88	52	175	181	54
Peak Hour Factor	0.76	0.76	0.83	0.83	0.84	0.84
Hourly flow rate (vph)	113	116	63	211	215	64

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	229	273	280
Volume Left (vph)	113	0	215
Volume Right (vph)	116	211	0
Hadj (s)	-0.17	-0.43	0.19
Departure Headway (s)	5.0	4.5	5.0
Degree Utilization, x	0.32	0.34	0.39
Capacity (veh/h)	659	764	680
Control Delay (s)	10.4	9.7	11.2
Approach Delay (s)	10.4	9.7	11.2
Approach LOS	B	A	B

Intersection Summary			
Delay	10.5		
Level of Service	B		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	154	77	53	107	53	135	2700	101	145	1548	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1756		1770	1863	1547	1770	6368		1770	5037	
Flt Permitted	0.61	1.00		0.38	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1134	1756		712	1863	1547	1770	6368		1770	5037	
Peak-hour factor, PHF	0.87	0.87	0.87	0.83	0.83	0.83	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	305	177	89	64	129	64	147	2935	110	148	1580	82
RTOR Reduction (vph)	0	12	0	0	0	40	0	3	0	0	0	0
Lane Group Flow (vph)	305	254	0	64	129	24	147	3042	0	148	1662	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Effective Green, g (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.11	0.53		0.11	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	474		192	503	417	201	3375		194	2649	
v/s Ratio Prot		0.14			0.07		0.08	c0.48		c0.08	0.33	
v/s Ratio Perm	c0.27			0.09		0.02						
v/c Ratio	1.00	0.54		0.33	0.26	0.06	0.73	0.90		0.76	0.63	
Uniform Delay, d1	54.7	46.7		43.9	42.9	40.6	64.2	31.7		64.8	25.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.2	1.2		1.0	0.3	0.1	12.8	4.4		16.2	1.1	
Delay (s)	104.9	47.9		44.9	43.2	40.7	77.1	36.1		81.0	26.3	
Level of Service	F	D		D	D	D	E	D		F	C	
Approach Delay (s)		78.3			43.0			38.0			30.8	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	88	159	65	163	27	138	841	63	29	734	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1809		1770	3494		1770	3374	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1714			1809		1770	3494		1770	3374	
Peak-hour factor, PHF	0.90	0.90	0.90	0.82	0.82	0.82	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	159	98	177	79	199	33	142	867	65	33	825	287
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	30	0
Lane Group Flow (vph)	0	411	0	0	307	0	142	928	0	33	1082	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Effective Green, g (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Actuated g/C Ratio		0.24			0.20		0.09	0.36		0.05	0.31	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414			368		164	1256		82	1056	
v/s Ratio Prot		c0.24			c0.17		c0.08	0.27		0.02	c0.32	
v/s Ratio Perm												
v/c Ratio		0.99			0.83		0.87	0.74		0.40	1.02	
Uniform Delay, d1		40.7			41.1		48.1	30.0		49.8	36.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		42.3			14.9		34.9	3.9		3.2	34.1	
Delay (s)		83.0			56.0		83.0	34.0		53.1	71.0	
Level of Service		F			E		F	C		D	E	
Approach Delay (s)		83.0			56.0			40.4			70.5	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	59.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	57	29	31	66	59	28	713	36	32	820	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.95			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1758			1731			3503			3439	
Flt Permitted		0.74			0.90			0.89			0.91	
Satd. Flow (perm)		1337			1576			3124			3133	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	199	61	31	35	75	67	32	820	41	38	976	177
RTOR Reduction (vph)	0	9	0	0	45	0	0	7	0	0	26	0
Lane Group Flow (vph)	0	282	0	0	132	0	0	886	0	0	1165	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.4			14.4			21.8			21.8	
Effective Green, g (s)		14.4			14.4			21.8			21.8	
Actuated g/C Ratio		0.33			0.33			0.49			0.49	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		435			513			1540			1545	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.08			0.28			c0.37	
v/c Ratio		0.65			0.26			0.58			0.75	
Uniform Delay, d1		12.7			11.0			7.9			9.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.3			0.3			0.5			2.1	
Delay (s)		16.0			11.2			8.5			11.2	
Level of Service		B			B			A			B	
Approach Delay (s)		16.0			11.2			8.5			11.2	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	44.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	324	333	0	0	0	0	0	2202	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.78
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3454						6408	1232
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3454						6408	1232
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	377	387	0	0	0	0	0	2270	93
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	0	759	0	0	0	0	0	2270	63
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					41.2						102.8	102.8
Effective Green, g (s)					41.2						102.8	102.8
Actuated g/C Ratio					0.27						0.68	0.68
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					936						4333	833
v/s Ratio Prot											c0.35	
v/s Ratio Perm					0.22							0.05
v/c Ratio					0.81						0.52	0.08
Uniform Delay, d1					51.8						12.3	8.4
Progression Factor					1.00						0.55	0.47
Incremental Delay, d2					5.4						0.3	0.1
Delay (s)					57.2						7.1	4.1
Level of Service					E						A	A
Approach Delay (s)		0.0			57.2			0.0			7.0	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	558	91	170	3352	217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3449		1770	7438				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3449		1770	7438				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	594	97	179	3528	228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	19	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	691	0	160	3750	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					37.0		102.0	102.0				
Effective Green, g (s)					37.0		102.0	102.0				
Actuated g/C Ratio					0.25		0.69	0.69				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					862		1219	5126				
v/s Ratio Prot					c0.20		0.09	c0.50				
v/s Ratio Perm												
v/c Ratio					0.80		0.13	0.73				
Uniform Delay, d1					52.1		7.9	14.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.4		0.2	0.9				
Delay (s)					57.5		8.1	15.4				
Level of Service					E		A	B				
Approach Delay (s)		0.0			57.5			15.0			0.0	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	9	3	24	11	681	56	15	838	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.75	0.75	0.75	0.88	0.88	0.88	0.94	0.94	0.94
Hourly flow rate (vph)	24	14	18	12	4	32	12	774	64	16	891	21
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1391	1809	467	1351	1787	436	916			846		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1250	1704	246	1207	1681	436	734			846		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	82	97	88	95	94	98			98		
cM capacity (veh/h)	103	79	687	103	82	560	795			780		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	56	48	399	451	462	467
Volume Left	24	12	12	0	16	0
Volume Right	18	32	0	64	0	21
cSH	129	215	795	1700	780	1700
Volume to Capacity	0.44	0.22	0.02	0.27	0.02	0.27
Queue Length 95th (ft)	48	21	1	0	2	0
Control Delay (s)	52.8	26.4	0.5	0.0	0.6	0.0
Lane LOS	F	D	A		A	
Approach Delay (s)	52.8	26.4	0.2		0.3	
Approach LOS	F	D				

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	24	41	36	242	187	43
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	45	39	263	203	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	568	227	250			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	227	250			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	95	97			
cM capacity (veh/h)	470	813	1316			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	71	302	250
Volume Left	26	39	0
Volume Right	45	0	47
cSH	640	1316	1700
Volume to Capacity	0.11	0.03	0.15
Queue Length 95th (ft)	9	2	0
Control Delay (s)	11.3	1.3	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	1.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	74	0	2884	1482	86
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	80	0	3135	1611	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.69	0.80	0.80			
vC, conflicting volume	2441	584	1704			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1020			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	703	871	543			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	80	784	784	784	784	644	644	416
Volume Left	0	0	0	0	0	0	0	0
Volume Right	80	0	0	0	0	0	0	93
cSH	871	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.09	0.46	0.46	0.46	0.46	0.38	0.38	0.24
Queue Length 95th (ft)	8	0	0	0	0	0	0	0
Control Delay (s)	9.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.6	0.0				0.0		
Approach LOS	A							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	296	17	37	202	10	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	322	18	40	220	11	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					1.00	
vC, conflicting volume			340		631	331
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			340		629	331
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	96
cM capacity (veh/h)			1219		430	711

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	340	260	39
Volume Left	0	40	11
Volume Right	18	0	28
cSH	1700	1219	602
Volume to Capacity	0.20	0.03	0.07
Queue Length 95th (ft)	0	3	5
Control Delay (s)	0.0	1.5	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	11.4
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	41	41	25	21	168	83	2016	7	243	1892	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1690		1770	1863	1553	1770	6403		1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1690		1770	1863	1553	1770	6403		1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	164	51	51	32	27	215	89	2168	8	259	2013	99
RTOR Reduction (vph)	0	0	0	0	0	197	0	1	0	0	0	27
Lane Group Flow (vph)	164	102	0	32	27	18	89	2175	0	259	2013	72
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	19.0	25.7		5.7	12.4	12.4	12.8	67.5		32.1	86.8	86.8
Effective Green, g (s)	19.0	25.7		5.7	12.4	12.4	12.8	67.5		32.1	86.8	86.8
Actuated g/C Ratio	0.13	0.17		0.04	0.08	0.08	0.09	0.46		0.22	0.59	0.59
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	227	293		68	156	130	153	2920		383	2982	897
v/s Ratio Prot	c0.09	c0.06		0.02	0.01		0.05	c0.34		c0.15	0.40	
v/s Ratio Perm						0.01						0.05
v/c Ratio	0.72	0.35		0.47	0.17	0.14	0.58	0.75		0.68	0.68	0.08
Uniform Delay, d1	62.0	53.8		69.7	63.0	62.8	65.0	33.2		53.2	20.9	13.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.98		0.93	1.31	2.11
Incremental Delay, d2	10.8	0.7		5.1	0.5	0.5	5.5	1.8		2.0	0.5	0.1
Delay (s)	72.8	54.5		74.7	63.6	63.3	71.0	34.2		51.8	28.0	28.1
Level of Service	E	D		E	E	E	E	C		D	C	C
Approach Delay (s)		65.8			64.7			35.6			30.6	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	28	6	12	27	305	11	1785	32	384	1360	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3437		1770	1513	1464	1770	6389		3433	4959	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3437		1770	1513	1464	1770	6389		3433	4959	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	35	34	7	13	30	335	12	1919	34	436	1545	235
RTOR Reduction (vph)	0	6	0	0	136	161	0	1	0	0	8	0
Lane Group Flow (vph)	35	35	0	13	48	20	12	1952	0	436	1772	0
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	7.3	20.7		3.1	16.5	16.5	3.1	53.6		53.6	104.1	
Effective Green, g (s)	7.3	20.7		3.1	16.5	16.5	3.1	53.6		53.6	104.1	
Actuated g/C Ratio	0.05	0.14		0.02	0.11	0.11	0.02	0.36		0.36	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	87	480		37	168	163	37	2313		1243	3488	
v/s Ratio Prot	c0.02	0.01		0.01	c0.03		0.01	c0.31		c0.13	c0.36	
v/s Ratio Perm						0.01						
v/c Ratio	0.40	0.07		0.35	0.29	0.12	0.32	0.84		0.35	0.51	
Uniform Delay, d1	68.2	55.3		71.5	60.3	59.2	71.4	43.4		34.5	10.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.36	0.87		1.00	1.00	
Incremental Delay, d2	3.0	0.1		5.7	0.9	0.3	4.4	3.5		0.8	0.5	
Delay (s)	71.3	55.4		77.1	61.3	59.6	101.3	41.2		35.3	10.7	
Level of Service	E	E		E	E	E	F	D		D	B	
Approach Delay (s)		62.7			61.0			41.6			15.5	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: Foothill Blvd & Hazel Ave

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	84	50	37	28	131	119	2573	11	225	1481	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1739		1770	1863	1522	1770	6402		1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1739		1770	1863	1522	1770	6402		1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	211	94	56	41	31	144	137	2957	13	245	1610	100
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	0	0	0	28
Lane Group Flow (vph)	211	150	0	41	31	16	137	2970	0	245	1610	72
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	12.0	22.6		6.3	16.9	16.9	16.8	75.7		26.4	85.3	85.3
Effective Green, g (s)	12.0	22.6		6.3	16.9	16.9	16.8	75.7		26.4	85.3	85.3
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.11	0.51		0.18	0.58	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	143	265		75	212	173	200	3274		315	2930	873
v/s Ratio Prot	c0.12	c0.09		0.02	0.02		0.08	c0.46		c0.14	0.32	
v/s Ratio Perm						0.01						0.05
v/c Ratio	1.48	0.57		0.55	0.15	0.10	0.69	0.91		0.78	0.55	0.08
Uniform Delay, d1	68.0	58.2		69.5	59.1	58.7	63.1	32.9		58.0	19.4	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	247.7	2.8		7.9	0.3	0.2	9.3	4.8		11.4	0.7	0.2
Delay (s)	315.7	60.9		77.4	59.4	58.9	72.4	37.8		69.5	20.2	14.1
Level of Service	F	E		E	E	E	E	D		E	C	B
Approach Delay (s)		209.8			62.5			39.3			26.0	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	122	13	46	44	318	43	2435	76	436	946	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.89	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	1535	1464	1770	6372		3433	4959	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3483		1770	1535	1464	1770	6372		3433	4959	
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	146	136	14	55	53	383	53	3006	94	484	1051	159
RTOR Reduction (vph)	0	5	0	0	80	186	0	2	0	0	12	0
Lane Group Flow (vph)	146	145	0	55	142	28	53	3098	0	484	1198	0
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	10.0	22.1		7.7	19.8	19.8	8.5	78.6		26.6	96.7	
Effective Green, g (s)	10.0	22.1		7.7	19.8	19.8	8.5	78.6		26.6	96.7	
Actuated g/C Ratio	0.07	0.15		0.05	0.13	0.13	0.06	0.52		0.18	0.64	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116	506		89	199	190	98	3294		600	3154	
v/s Ratio Prot	c0.08	0.04		0.03	c0.09		0.03	c0.49		c0.14	0.24	
v/s Ratio Perm						0.02						
v/c Ratio	1.26	0.29		0.62	0.71	0.15	0.54	0.94		0.81	0.38	
Uniform Delay, d1	71.0	57.9		70.7	63.4	58.6	69.9	34.5		60.2	13.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.14	1.02		1.00	1.00	
Incremental Delay, d2	168.5	0.3		12.1	11.5	0.4	4.8	5.6		7.8	0.3	
Delay (s)	239.5	58.2		82.8	74.8	59.0	84.1	40.9		68.0	13.6	
Level of Service	F	E		F	E	E	F	D		E	B	
Approach Delay (s)		147.7			68.8			41.6			29.2	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	187	184	171	1679	849	721	178
v/c Ratio	0.70	0.75	0.74	0.71	0.51	0.73	0.39
Control Delay	71.4	77.4	77.1	32.6	27.7	53.0	27.7
Queue Delay	0.0	0.0	0.0	28.9	2.3	0.0	0.0
Total Delay	71.4	77.4	77.1	61.5	30.0	53.0	27.7
Queue Length 50th (ft)	182	189	167	445	288	345	84
Queue Length 95th (ft)	224	234	211	500	350	#473	173
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	357	325	307	2376	1659	987	461
Starvation Cap Reductn	0	0	0	782	644	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.57	0.56	1.05	0.84	0.73	0.39

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1339	115	2237	1385
v/c Ratio	0.79	0.28	0.60	0.93
Control Delay	47.9	35.2	18.1	57.1
Queue Delay	0.0	0.0	1.3	0.0
Total Delay	47.9	35.2	19.5	57.1
Queue Length 50th (ft)	416	61	368	317
Queue Length 95th (ft)	471	125	407	540
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1800	415	3733	1560
Starvation Cap Reductn	0	0	1196	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.28	0.88	0.89

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	164	102	32	27	215	89	2168	8	259	2013	99
v/c Ratio	0.72	0.35	0.33	0.20	0.69	0.59	0.91	0.01	0.68	0.66	0.11
Control Delay	79.4	56.0	75.6	64.2	18.8	74.5	35.4	0.0	55.0	29.8	16.2
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	79.4	56.0	75.6	64.2	18.8	74.5	35.4	0.0	55.0	29.8	16.2
Queue Length 50th (ft)	154	93	30	26	0	91	319	0	253	446	30
Queue Length 95th (ft)	197	114	57	45	39	m119	#880	m0	m#352	510	m36
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	322	323	322	314	441	205	2374	731	383	3038	941
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	0.51	0.32	0.10	0.09	0.49	0.43	0.91	0.01	0.68	0.66	0.11

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	35	41	13	184	181	12	1953	436	1545	235
v/c Ratio	0.35	0.08	0.16	0.63	0.58	0.15	0.81	0.68	0.41	0.20
Control Delay	76.0	43.6	71.9	23.0	14.7	95.4	38.6	62.2	14.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.0	43.6	71.9	23.0	14.7	95.4	38.6	62.2	14.9	8.7
Queue Length 50th (ft)	33	15	12	30	0	12	541	420	221	54
Queue Length 95th (ft)	65	29	36	106	72	m19	594	#645	296	105
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	191	670	179	400	415	203	2417	640	3740	1161
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.06	0.07	0.46	0.44	0.06	0.81	0.68	0.41	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	310	290	278	280	174	93	2467	145	2156
v/c Ratio	0.98	0.43	0.91	0.40	0.28	0.81	0.88	0.85	0.91
Control Delay	91.5	34.8	75.8	35.5	16.4	89.0	52.2	103.5	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	34.8	75.8	35.5	16.4	89.0	52.2	103.5	43.9
Queue Length 50th (ft)	284	193	244	191	55	95	613	140	719
Queue Length 95th (ft)	#390	237	#327	235	91	m#114	498	#271	794
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	334	717	325	736	659	115	2790	173	2365
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.40	0.86	0.38	0.26	0.81	0.88	0.84	0.91

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	485	18	696	126	1176
v/c Ratio	0.75	0.95	0.13	0.91	0.60	1.03
Control Delay	46.5	61.9	44.1	50.0	51.7	67.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	61.9	44.1	50.0	51.7	67.1
Queue Length 50th (ft)	156	268	10	187	70	331
Queue Length 95th (ft)	222	#440	33	#334	136	#668
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	523	512	195	763	253	1144
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.95	0.09	0.91	0.50	1.03

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	370	182	455	1262
v/c Ratio	0.75	0.32	0.29	0.80
Control Delay	23.9	11.4	8.3	15.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.9	11.4	8.3	15.5
Queue Length 50th (ft)	79	29	37	140
Queue Length 95th (ft)	#190	39	65	#243
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	588	679	1649	1684
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.27	0.28	0.75

Intersection Summary

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	814	2682	108
v/c Ratio	0.83	0.63	0.11
Control Delay	56.8	9.3	1.5
Queue Delay	0.0	0.4	0.0
Total Delay	56.8	9.7	1.5
Queue Length 50th (ft)	384	190	0
Queue Length 95th (ft)	440	250	m10
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1130	4251	1007
Starvation Cap Reductn	0	905	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.80	0.11

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1015	121	2612
v/c Ratio	0.85	0.11	0.59
Control Delay	52.8	10.4	19.4
Queue Delay	0.0	0.0	0.0
Total Delay	52.8	10.4	19.4
Queue Length 50th (ft)	472	36	380
Queue Length 95th (ft)	452	69	424
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1295	1072	4449
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.11	0.59

Intersection Summary

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	330	324	297	1551	812	792	215
v/c Ratio	0.83	0.88	0.89	0.72	0.55	0.89	0.51
Control Delay	72.8	79.7	83.4	38.1	32.7	67.4	34.5
Queue Delay	0.0	0.0	0.0	30.4	2.6	0.0	0.0
Total Delay	72.8	79.7	83.4	68.5	35.3	67.4	34.5
Queue Length 50th (ft)	323	335	295	446	301	428	126
Queue Length 95th (ft)	436	#483	#442	501	367	#529	212
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	425	395	357	2150	1476	886	420
Starvation Cap Reductn	0	0	0	682	520	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.82	0.83	1.06	0.85	0.89	0.51

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1070	237	3339	1106
v/c Ratio	0.79	0.41	0.89dr	0.85
Control Delay	55.6	39.3	18.3	74.0
Queue Delay	0.7	0.0	32.2	0.0
Total Delay	56.4	39.3	50.5	74.0
Queue Length 50th (ft)	357	156	619	463
Queue Length 95th (ft)	404	269	695	522
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1479	580	4160	1649
Starvation Cap Reductn	0	0	1031	0
Spillback Cap Reductn	154	0	779	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.41	1.07	0.67

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	211	150	41	31	144	137	2957	13	245	1610	100
v/c Ratio	1.48	0.57	0.47	0.15	0.49	0.68	1.13	0.02	0.78	0.54	0.11
Control Delay	291.8	66.1	85.5	57.3	13.7	79.5	96.0	0.0	74.9	20.1	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	291.8	66.1	85.5	57.3	13.7	79.5	96.0	0.0	74.9	20.1	6.0
Queue Length 50th (ft)	~279	141	39	28	0	125	~1210	0	223	345	14
Queue Length 95th (ft)	#443	200	82	57	62	#285	#1209	0	#455	391	42
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	143	340	95	314	377	201	2628	803	315	2958	909
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	1.48	0.44	0.43	0.10	0.38	0.68	1.13	0.02	0.78	0.54	0.11

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	146	150	55	222	214	53	3100	484	1051	159
v/c Ratio	1.26	0.29	0.53	0.82	0.58	0.54	1.14	1.01	0.32	0.15
Control Delay	222.4	56.8	87.6	59.7	13.1	93.3	106.9	98.2	13.2	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	222.4	56.8	87.6	59.7	13.1	93.3	107.0	98.2	13.2	2.1
Queue Length 50th (ft)	~181	69	54	135	0	48	~1056	~514	174	0
Queue Length 95th (ft)	#331	100	95	198	55	m#72	#917	#826	211	30
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	116	623	116	348	436	98	2726	478	3264	1032
Starvation Cap Reductn	0	0	0	0	0	0	59	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	0.24	0.47	0.64	0.49	0.54	1.16	1.01	0.32	0.15

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	305	266	64	129	64	147	3045	148	1662
v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.73	0.90	0.76	0.63
Control Delay	104.5	48.7	49.9	44.6	13.3	84.6	36.6	88.9	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	48.7	49.9	44.6	13.3	84.6	36.6	88.9	26.9
Queue Length 50th (ft)	300	210	51	100	7	141	773	142	414
Queue Length 95th (ft)	#477	293	90	146	38	216	836	219	488
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	306	486	192	503	457	247	3380	224	2651
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.60	0.90	0.66	0.63

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	311	142	932	33	1112
v/c Ratio	0.98	0.82	0.86	0.73	0.25	1.06
Control Delay	76.3	58.1	88.8	35.2	51.9	80.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	58.1	88.8	35.2	51.9	80.2
Queue Length 50th (ft)	281	200	98	307	22	~437
Queue Length 95th (ft)	#506	267	#219	#453	53	#582
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	444	448	166	1281	166	1050
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.69	0.86	0.73	0.20	1.06

Intersection Summary

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	291	177	893	1191
v/c Ratio	0.66	0.32	0.58	0.76
Control Delay	20.4	9.1	10.3	13.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.4	9.1	10.3	13.8
Queue Length 50th (ft)	61	21	73	108
Queue Length 95th (ft)	124	52	135	186
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	589	724	1651	1677
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.24	0.54	0.71

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	764	2270	93
v/c Ratio	0.81	0.52	0.11
Control Delay	58.3	7.5	1.1
Queue Delay	0.0	0.3	0.0
Total Delay	58.3	7.8	1.1
Queue Length 50th (ft)	371	142	0
Queue Length 95th (ft)	392	220	m3
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1140	4332	863
Starvation Cap Reductn	0	1185	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.72	0.11

Intersection Summary

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

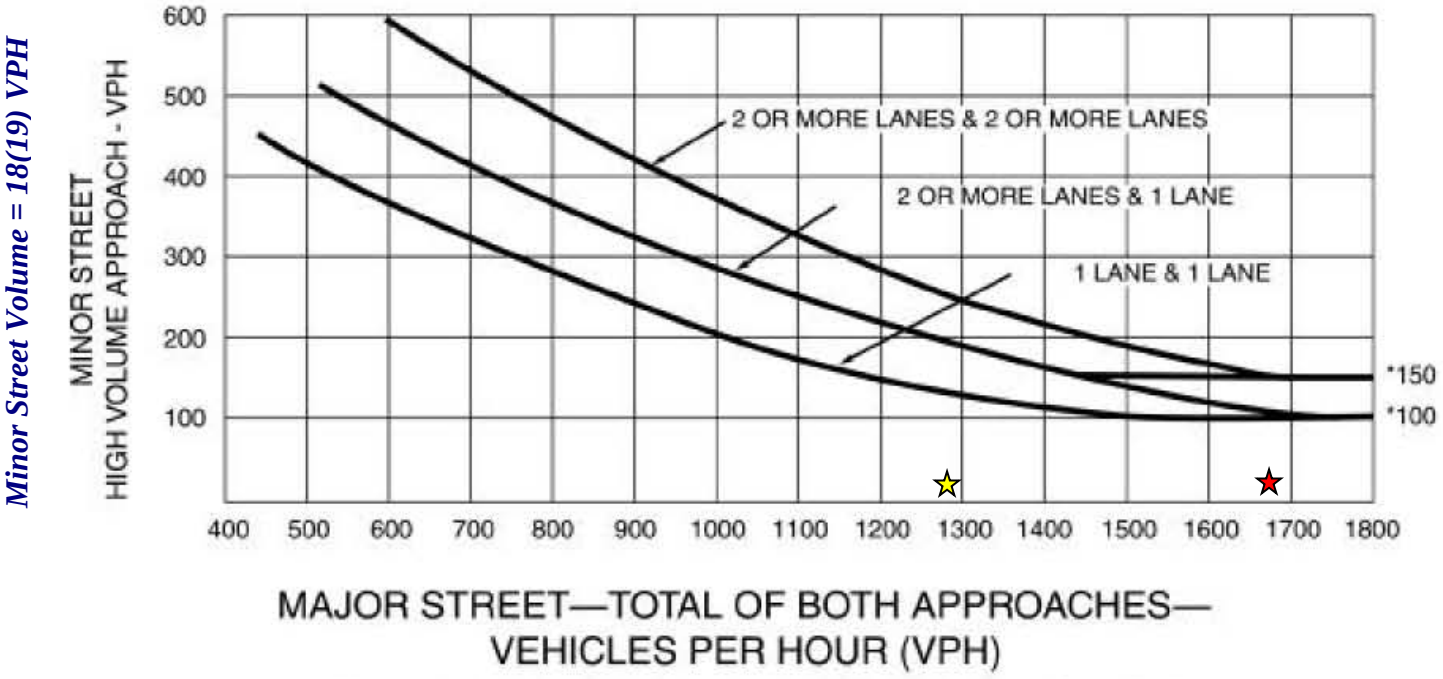
Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	691	179	3756
v/c Ratio	0.80	0.14	0.73
Control Delay	59.3	6.1	16.1
Queue Delay	0.0	0.0	0.0
Total Delay	59.3	6.1	16.1
Queue Length 50th (ft)	332	35	516
Queue Length 95th (ft)	378	74	644
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1118	1238	5131
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.14	0.73

Intersection Summary

Peak Hour Warrant (Urban Areas)

Intersection: Mission Boulevard and Hotel Avenue, Hayward, CA
Scenario: Background plus Project Phase 1 Conditions AM (PM) Peak Hours

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 1,294(1,690) VPH

☆ ***AM Peak Hour***
★ ***PM Peak Hour***

A signal is not warranted in the both A.M. and P.M. Peak Hours

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Appendix G – Background plus Project Phase 1 and Phase 2 Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	242	0	193	1657	734	101	0	0	0	0	625	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.95	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1523	1434	4990	3469						3373	1396
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1523	1434	4990	3469						3373	1396
Peak-hour factor, PHF	0.80	0.80	0.80	0.98	0.98	0.98	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	302	0	241	1691	749	103	0	0	0	0	702	198
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	54
Lane Group Flow (vph)	187	185	171	1691	845	0	0	0	0	0	721	124
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	23.8	23.8	23.8	70.5	70.5						43.2	43.2
Effective Green, g (s)	23.8	23.8	23.8	70.5	70.5						43.2	43.2
Actuated g/C Ratio	0.16	0.16	0.16	0.48	0.48						0.29	0.29
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	270	244	230	2376	1652						984	407
v/s Ratio Prot	0.11	c0.12		c0.34	0.24						c0.21	
v/s Ratio Perm			0.12									0.09
v/c Ratio	0.69	0.76	0.74	0.71	0.51						0.73	0.31
Uniform Delay, d1	58.6	59.3	59.2	30.7	26.8						47.2	40.7
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	7.5	12.6	12.2	1.0	0.3						4.8	1.9
Delay (s)	66.1	72.0	71.4	31.7	27.1						52.0	42.7
Level of Service	E	E	E	C	C						D	D
Approach Delay (s)		69.8			30.2			0.0			50.2	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1306	21	113	1613	560	0	0	1388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5071		1770	6089				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5071		1770	6089				3528
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.97	0.97	0.97	0.99	0.99	0.99
Adj. Flow (vph)	0	0	0	0	1319	21	116	1663	577	0	0	1402
RTOR Reduction (vph)	0	0	0	0	1	0	32	44	0	0	0	230
Lane Group Flow (vph)	0	0	0	0	1339	0	84	2196	0	0	0	1172
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					49.7		31.5	84.8				53.3
Effective Green, g (s)					49.7		31.5	84.8				53.3
Actuated g/C Ratio					0.34		0.21	0.57				0.36
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1702		376	3694				1270
v/s Ratio Prot					c0.26		0.05	c0.13				
v/s Ratio Perm								0.23				c0.33
v/c Ratio					0.79		0.22	0.59				0.92
Uniform Delay, d1					44.4		48.1	20.5				45.4
Progression Factor					1.00		1.00	1.00				1.40
Incremental Delay, d2					2.5		1.4	0.3				10.5
Delay (s)					46.8		49.5	20.7				74.2
Level of Service					D		D	C				E
Approach Delay (s)		0.0			46.8			22.1			74.2	
Approach LOS		A			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	41	46	25	21	168	86	2035	7	243	1895	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1679		1770	1863	1553	1770	5085	1491	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1679		1770	1863	1553	1770	5085	1491	1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	170	51	58	32	27	215	92	2188	8	259	2016	100
RTOR Reduction (vph)	0	0	0	0	0	197	0	0	4	0	0	28
Lane Group Flow (vph)	170	109	0	32	27	18	92	2188	4	259	2016	72
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	19.5	26.2		5.7	12.4	12.4	13.0	67.1	67.1	32.0	86.1	86.1
Effective Green, g (s)	19.5	26.2		5.7	12.4	12.4	13.0	67.1	67.1	32.0	86.1	86.1
Actuated g/C Ratio	0.13	0.18		0.04	0.08	0.08	0.09	0.45	0.45	0.22	0.58	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	233	297		68	156	130	155	2305	675	382	2958	890
v/s Ratio Prot	c0.10	c0.06		0.02	0.01		0.05	c0.43		c0.15	0.40	
v/s Ratio Perm						0.01			0.00			0.05
v/c Ratio	0.73	0.37		0.47	0.17	0.14	0.59	0.95	0.01	0.68	0.68	0.08
Uniform Delay, d1	61.7	53.6		69.7	63.0	62.8	65.0	38.8	22.2	53.3	21.4	13.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.82	1.00	0.94	1.30	2.10
Incremental Delay, d2	10.9	0.8		5.1	0.5	0.5	3.9	7.2	0.0	2.0	0.6	0.1
Delay (s)	72.6	54.4		74.7	63.6	63.3	69.3	39.2	22.2	52.1	28.5	28.6
Level of Service	E	D		E	E	E	E	D	C	D	C	C
Approach Delay (s)		65.5			64.7			40.4			31.1	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	29	8	12	27	305	12	1788	32	404	1374	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3406		1770	1513	1464	1770	6389		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3406		1770	1513	1464	1770	6389		1770	5085	1522
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	41	35	10	13	30	335	13	1923	34	459	1561	236
RTOR Reduction (vph)	0	9	0	0	136	161	0	1	0	0	0	47
Lane Group Flow (vph)	41	36	0	13	48	20	13	1956	0	459	1561	189
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	7.7	21.1		3.1	16.5	16.5	3.1	53.7		53.1	103.7	103.7
Effective Green, g (s)	7.7	21.1		3.1	16.5	16.5	3.1	53.7		53.1	103.7	103.7
Actuated g/C Ratio	0.05	0.14		0.02	0.11	0.11	0.02	0.36		0.36	0.70	0.70
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	92	485		37	168	163	37	2318		635	3562	1066
v/s Ratio Prot	c0.02	0.01		0.01	c0.03		0.01	c0.31		c0.26	0.31	
v/s Ratio Perm						0.01						0.12
v/c Ratio	0.45	0.08		0.35	0.29	0.12	0.35	0.84		0.72	0.44	0.18
Uniform Delay, d1	68.1	55.0		71.5	60.3	59.2	71.5	43.3		41.1	9.6	7.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.33	0.87		1.36	1.37	2.07
Incremental Delay, d2	3.4	0.1		5.7	0.9	0.3	5.0	3.5		5.7	0.3	0.3
Delay (s)	71.5	55.1		77.1	61.3	59.6	99.8	41.1		61.7	13.5	16.0
Level of Service	E	E		E	E	E	F	D		E	B	B
Approach Delay (s)		62.9			61.0			41.5			23.5	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	4	1	11	5	362	34	21	859	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.41	0.41	0.41	0.50	0.50	0.50	0.77	0.77	0.77	0.82	0.82	0.82
Hourly flow rate (vph)	7	20	17	8	2	22	6	470	44	26	1048	16
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1383	1637	537	1115	1623	265	1063			517		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1383	1637	537	1115	1623	265	1063			517		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	80	96	94	98	97	99			98		
cM capacity (veh/h)	95	96	486	128	98	728	651			1042		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	44	32	242	279	549	540
Volume Left	7	8	6	0	26	0
Volume Right	17	22	0	44	0	16
cSH	139	283	651	1700	1042	1700
Volume to Capacity	0.32	0.11	0.01	0.16	0.02	0.32
Queue Length 95th (ft)	31	9	1	0	2	0
Control Delay (s)	42.3	19.4	0.4	0.0	0.7	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	42.3	19.4	0.2		0.3	
Approach LOS	E	C				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	27	18	10	58	248	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.60	0.60	0.84	0.84	0.85	0.85
Hourly flow rate (vph)	45	30	12	69	292	13
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	361	158	306			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	158	306			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	99			
cM capacity (veh/h)	604	855	1251			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	75	35	46	195	110
Volume Left	45	12	0	0	0
Volume Right	30	0	0	0	13
cSH	684	1251	1700	1700	1700
Volume to Capacity	0.11	0.01	0.03	0.11	0.06
Queue Length 95th (ft)	9	1	0	0	0
Control Delay (s)	10.9	2.7	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	10.9	1.2		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	89	3	19	8	33	57	37	153	0
Peak Hour Factor	0.50	0.50	0.50	0.76	0.76	0.76	0.78	0.78	0.78	0.81	0.81	0.81
Hourly flow rate (vph)	2	6	16	117	4	25	10	42	73	46	189	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	24	146	31	94	235
Volume Left (vph)	2	117	10	0	46
Volume Right (vph)	16	25	0	73	0
Hadj (s)	-0.35	0.09	0.20	-0.51	0.07
Departure Headway (s)	4.6	4.9	5.3	4.6	4.7
Degree Utilization, x	0.03	0.20	0.05	0.12	0.30
Capacity (veh/h)	703	687	642	737	739
Control Delay (s)	7.7	9.1	7.4	7.1	9.7
Approach Delay (s)	7.7	9.1	7.2		9.7
Approach LOS	A	A	A		A

Intersection Summary			
Delay	8.8		
Level of Service	A		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	43	13	1	21	172	118
Peak Hour Factor	0.80	0.80	0.42	0.42	0.88	0.88
Hourly flow rate (vph)	54	16	2	50	195	134

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	70	52	330
Volume Left (vph)	54	2	0
Volume Right (vph)	16	0	134
Hadj (s)	0.05	0.04	-0.21
Departure Headway (s)	4.7	4.4	3.9
Degree Utilization, x	0.09	0.06	0.36
Capacity (veh/h)	697	779	902
Control Delay (s)	8.2	7.7	9.1
Approach Delay (s)	8.2	7.7	9.1
Approach LOS	A	A	A

Intersection Summary			
Delay	8.8		
Level of Service	A		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	129	80	41	72	147	44
Peak Hour Factor	0.76	0.76	0.71	0.71	0.80	0.80
Hourly flow rate (vph)	170	105	58	101	184	55

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	275	159	239
Volume Left (vph)	170	0	184
Volume Right (vph)	105	101	0
Hadj (s)	-0.07	-0.35	0.19
Departure Headway (s)	4.8	4.6	5.0
Degree Utilization, x	0.37	0.20	0.33
Capacity (veh/h)	704	733	680
Control Delay (s)	10.6	8.7	10.5
Approach Delay (s)	10.6	8.7	10.5
Approach LOS	B	A	B

Intersection Summary			
Delay	10.1		
Level of Service	B		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	248	186	46	222	224	139	86	2167	126	132	1913	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1539	1770	6346		1770	5038	
Flt Permitted	0.45	1.00		0.44	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	846	1801		824	1863	1539	1770	6346		1770	5038	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	310	232	58	278	280	174	93	2355	137	145	2102	58
RTOR Reduction (vph)	0	6	0	0	0	53	0	6	0	0	0	0
Lane Group Flow (vph)	310	284	0	278	280	121	93	2486	0	145	2160	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Effective Green, g (s)	55.3	55.3		55.3	55.3	55.3	9.7	64.9		14.3	69.5	
Actuated g/C Ratio	0.37	0.37		0.37	0.37	0.37	0.07	0.44		0.10	0.47	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	316	672		307	696	575	116	2782		171	2365	
v/s Ratio Prot		0.16			0.15		0.05	0.39		c0.08	c0.43	
v/s Ratio Perm	c0.37			0.34		0.08						
v/c Ratio	0.98	0.42		0.91	0.40	0.21	0.80	0.89		0.85	0.91	
Uniform Delay, d1	45.8	34.5		43.9	34.2	31.5	68.2	38.4		65.8	36.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.94	1.28		1.00	1.00	
Incremental Delay, d2	45.2	0.4		28.3	0.4	0.2	17.3	2.5		30.3	6.8	
Delay (s)	91.1	34.9		72.2	34.5	31.7	81.2	51.5		96.1	43.3	
Level of Service	F	C		E	C	C	F	D		F	D	
Approach Delay (s)		63.9			48.2			52.6			46.6	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	160	21	168	107	118	17	430	224	117	1050	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814			1738		1770	3325		1770	3511	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1814			1738		1770	3325		1770	3511	
Peak-hour factor, PHF	0.83	0.83	0.83	0.81	0.81	0.81	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	193	25	207	132	146	18	462	241	126	1129	48
RTOR Reduction (vph)	0	4	0	0	15	0	0	64	0	0	3	0
Lane Group Flow (vph)	0	284	0	0	470	0	18	639	0	126	1174	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Effective Green, g (s)		19.0			26.2		2.8	21.6		10.9	29.7	
Actuated g/C Ratio		0.20			0.28		0.03	0.23		0.12	0.32	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		367			485		52	766		205	1112	
v/s Ratio Prot		c0.16			c0.27		0.01	0.19		c0.07	c0.33	
v/s Ratio Perm												
v/c Ratio		0.77			0.97		0.35	0.83		0.61	1.06	
Uniform Delay, d1		35.3			33.3		44.6	34.3		39.4	32.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.8			32.5		4.0	10.4		5.4	43.1	
Delay (s)		45.1			65.9		48.5	44.7		44.8	75.1	
Level of Service		D			E		D	D		D	E	
Approach Delay (s)		45.1			65.9			44.8			72.1	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	61.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	93.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	63	70	17	68	32	10	402	12	14	986	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.96			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1749			1773			3517			3451	
Flt Permitted		0.75			0.93			0.92			0.95	
Satd. Flow (perm)		1354			1654			3247			3277	
Peak-hour factor, PHF	0.91	0.91	0.91	0.61	0.61	0.61	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	224	69	77	28	111	52	11	432	13	15	1072	176
RTOR Reduction (vph)	0	20	0	0	28	0	0	4	0	0	25	0
Lane Group Flow (vph)	0	350	0	0	163	0	0	452	0	0	1238	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			15.0			21.9			21.9	
Effective Green, g (s)		16.0			15.0			21.9			21.9	
Actuated g/C Ratio		0.35			0.33			0.48			0.48	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		471			540			1549			1563	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.10			0.14			c0.38	
v/c Ratio		0.74			0.30			0.29			0.79	
Uniform Delay, d1		13.1			11.5			7.3			10.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.2			0.3			0.1			2.8	
Delay (s)		19.4			11.9			7.4			12.9	
Level of Service		B			B			A			B	
Approach Delay (s)		19.4			11.9			7.4			12.9	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	45.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	308	463	0	0	0	0	0	2399	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3470						6408	1469
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3470						6408	1469
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	0	0	328	493	0	0	0	0	0	2696	108
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	0	0	0	816	0	0	0	0	0	2696	75
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					42.0						98.0	98.0
Effective Green, g (s)					42.0						98.0	98.0
Actuated g/C Ratio					0.28						0.66	0.66
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					984						4243	972
v/s Ratio Prot											c0.42	
v/s Ratio Perm					0.24							0.05
v/c Ratio					0.83						0.64	0.08
Uniform Delay, d1					49.6						14.6	8.9
Progression Factor					1.00						0.59	0.59
Incremental Delay, d2					5.9						0.5	0.1
Delay (s)					55.5						9.1	5.4
Level of Service					E						A	A
Approach Delay (s)		0.0			55.5			0.0			9.0	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	763	39	116	2344	167	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3505		1770	7418				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3505		1770	7418				
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	966	49	121	2442	174	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	13	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1014	0	108	2608	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					50.8		89.2	89.2				
Effective Green, g (s)					50.8		89.2	89.2				
Actuated g/C Ratio					0.34		0.60	0.60				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1194		1059	4440				
v/s Ratio Prot					c0.29		0.06	c0.35				
v/s Ratio Perm												
v/c Ratio					0.85		0.10	0.59				
Uniform Delay, d1					45.5		12.8	18.5				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.8		0.2	0.6				
Delay (s)					51.4		13.0	19.1				
Level of Service					D		B	B				
Approach Delay (s)		0.0			51.4			18.8			0.0	
Approach LOS		A			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	149.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	17	6	9	5	370	28	3	1025	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.66	0.66	0.66	0.56	0.56	0.56	0.82	0.82	0.82
Hourly flow rate (vph)	13	8	7	26	9	14	9	661	50	4	1250	2
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.77	0.77	0.77	0.77	0.77		0.77					
vC, conflicting volume	1632	1990	634	1356	1966	363	1253			713		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1234	1697	0	878	1666	363	746			713		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	88	99	84	87	98	99			100		
cM capacity (veh/h)	89	70	835	166	73	629	664			881		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	28	48	339	380	629	627
Volume Left	13	26	9	0	4	0
Volume Right	7	14	0	50	0	2
cSH	104	160	664	1700	881	1700
Volume to Capacity	0.27	0.30	0.01	0.22	0.00	0.37
Queue Length 95th (ft)	25	30	1	0	0	0
Control Delay (s)	52.0	36.9	0.4	0.0	0.1	0.0
Lane LOS	F	E	A		A	
Approach Delay (s)	52.0	36.9	0.2		0.1	
Approach LOS	F	E				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	29	49	19	42	225	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	53	21	46	245	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	343	257	268			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	343	257	268			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	98			
cM capacity (veh/h)	642	782	1295			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	85	66	268
Volume Left	32	21	0
Volume Right	53	0	24
cSH	724	1295	1700
Volume to Capacity	0.12	0.02	0.16
Queue Length 95th (ft)	10	1	0
Control Delay (s)	10.6	2.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.6	2.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	89	0	2127	1922	44
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	97	0	2312	2089	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.86	0.72	0.72			
vC, conflicting volume	2691	720	2137			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1213			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	876	779	410			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	97	578	578	578	578	836	836	466
Volume Left	0	0	0	0	0	0	0	0
Volume Right	97	0	0	0	0	0	0	48
cSH	779	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.34	0.34	0.34	0.34	0.49	0.49	0.27
Queue Length 95th (ft)	11	0	0	0	0	0	0	0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.3	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	192	8	19	182	11	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	209	9	21	198	12	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					1.00	
vC, conflicting volume			217		452	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			217		452	213
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		98	96
cM capacity (veh/h)			1352		557	827

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	217	218	46
Volume Left	0	21	12
Volume Right	9	0	34
cSH	1700	1352	734
Volume to Capacity	0.13	0.02	0.06
Queue Length 95th (ft)	0	1	5
Control Delay (s)	0.0	0.8	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	10.2
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	521	0	319	1463	595	169	0	0	0	0	668	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.94	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1561	1407	4990	3387						3370	1369
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1561	1407	4990	3387						3370	1369
Peak-hour factor, PHF	0.88	0.88	0.88	0.94	0.94	0.94	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	592	0	362	1556	633	180	0	0	0	0	768	239
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	1	60
Lane Group Flow (vph)	332	325	297	1556	796	0	0	0	0	0	791	155
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	36.1	36.1	36.1	65.5	65.5						39.9	39.9
Effective Green, g (s)	36.1	36.1	36.1	65.5	65.5						39.9	39.9
Actuated g/C Ratio	0.24	0.24	0.24	0.43	0.43						0.26	0.26
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	399	370	334	2150	1459						884	359
v/s Ratio Prot	0.20	0.21		c0.31	0.24						c0.23	
v/s Ratio Perm			c0.21									0.11
v/c Ratio	0.83	0.88	0.89	0.72	0.55						0.89	0.43
Uniform Delay, d1	55.1	55.8	56.0	35.8	32.2						54.0	46.6
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	13.8	20.3	23.7	1.2	0.4						13.4	3.7
Delay (s)	68.8	76.1	79.7	37.0	32.6						67.4	50.3
Level of Service	E	E	E	D	C						E	D
Approach Delay (s)		74.7			35.5			0.0			63.8	
Approach LOS		E			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	955	57	227	2234	924	0	0	1047
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5037		1770	6009				3462
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5037		1770	6009				3462
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1016	61	241	2377	983	0	0	1114
RTOR Reduction (vph)	0	0	0	0	4	0	27	51	0	0	0	117
Lane Group Flow (vph)	0	0	0	0	1073	0	214	3309	0	0	0	997
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					41.0		47.0	99.0				52.0
Effective Green, g (s)					41.0		47.0	99.0				52.0
Actuated g/C Ratio					0.27		0.31	0.65				0.34
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1358		547	3913				1184
v/s Ratio Prot					c0.21		0.12	c0.26				
v/s Ratio Perm								0.29				0.29
v/c Ratio					0.79		0.39	0.89dr				0.84
Uniform Delay, d1					51.5		41.3	20.6				46.2
Progression Factor					1.00		1.00	1.00				1.76
Incremental Delay, d2					3.1		2.1	1.8				5.4
Delay (s)					54.6		43.4	22.4				86.5
Level of Service					D		D	C				F
Approach Delay (s)		0.0			54.6			23.8			86.5	
Approach LOS		A			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	84	52	37	28	131	138	2581	11	225	1499	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.92	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1736		1770	1863	1522	1770	5085	1464	1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1736		1770	1863	1522	1770	5085	1464	1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	213	94	58	41	31	144	159	2967	13	245	1629	105
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	6	0	0	29
Lane Group Flow (vph)	213	152	0	41	31	16	159	2967	7	245	1629	76
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	12.0	22.6		6.3	16.9	16.9	18.9	75.7	75.7	26.4	83.2	83.2
Effective Green, g (s)	12.0	22.6		6.3	16.9	16.9	18.9	75.7	75.7	26.4	83.2	83.2
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.13	0.51	0.51	0.18	0.56	0.56
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	265		75	212	173	226	2600	748	315	2858	852
v/s Ratio Prot	c0.12	c0.09		0.02	0.02		0.09	c0.58		c0.14	0.32	
v/s Ratio Perm						0.01			0.00			0.05
v/c Ratio	1.49	0.57		0.55	0.15	0.10	0.70	1.14	0.01	0.78	0.57	0.09
Uniform Delay, d1	68.0	58.2		69.5	59.1	58.7	61.9	36.1	17.7	58.0	20.9	14.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	253.6	3.0		7.9	0.3	0.2	9.5	68.7	0.0	11.4	0.8	0.2
Delay (s)	321.6	61.2		77.4	59.4	58.9	71.4	104.8	17.8	69.5	21.7	15.1
Level of Service	F	E		E	E	E	E	F	B	E	C	B
Approach Delay (s)		213.1			62.5			102.8			27.3	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	82.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	122	14	46	46	320	49	2453	76	444	952	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.89	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3476		1770	1537	1464	1770	6372		1770	5085	1519
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3476		1770	1537	1464	1770	6372		1770	5085	1519
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	149	136	16	55	55	386	60	3028	94	493	1058	166
RTOR Reduction (vph)	0	6	0	0	77	187	0	3	0	0	0	61
Lane Group Flow (vph)	149	146	0	55	148	29	60	3119	0	493	1058	105
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	10.0	22.5		7.7	20.2	20.2	9.1	64.2		40.6	95.7	95.7
Effective Green, g (s)	10.0	22.5		7.7	20.2	20.2	9.1	64.2		40.6	95.7	95.7
Actuated g/C Ratio	0.07	0.15		0.05	0.13	0.13	0.06	0.42		0.27	0.63	0.63
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	116	514		89	204	194	105	2691		472	3201	956
v/s Ratio Prot	c0.08	0.04		0.03	c0.10		0.03	c0.49		c0.28	0.21	
v/s Ratio Perm						0.02						0.07
v/c Ratio	1.28	0.28		0.62	0.72	0.15	0.57	1.16		1.04	0.33	0.11
Uniform Delay, d1	71.0	57.6		70.7	63.2	58.3	69.6	43.9		55.7	13.2	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.13	1.03		1.00	1.00	1.00
Incremental Delay, d2	178.3	0.3		12.1	12.0	0.4	5.8	75.2		53.5	0.3	0.2
Delay (s)	249.3	57.9		82.8	75.3	58.6	84.5	120.6		109.2	13.4	11.4
Level of Service	F	E		F	E	E	F	F		F	B	B
Approach Delay (s)		152.7			68.9			119.9			40.7	
Approach LOS		F			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	93.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	4	2	8	4	672	111	41	858	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.90	0.90	0.90	0.93	0.93	0.93
Hourly flow rate (vph)	17	3	10	6	3	13	4	747	123	44	923	8
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	1433	1900	495	1403	1843	452	936			871		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1433	1900	495	1403	1843	452	936			871		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	95	98	93	95	98	99			94		
cM capacity (veh/h)	83	64	507	87	69	547	724			769		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	22	378	497	505	469
Volume Left	17	6	4	0	44	0
Volume Right	10	13	0	123	0	8
cSH	108	157	724	1700	769	1700
Volume to Capacity	0.28	0.14	0.01	0.29	0.06	0.28
Queue Length 95th (ft)	26	12	0	0	5	0
Control Delay (s)	50.8	31.7	0.2	0.0	1.6	0.0
Lane LOS	F	D	A		A	
Approach Delay (s)	50.8	31.7	0.1		0.8	
Approach LOS	F	D				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	94	25	10	236	186	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.73	0.73	0.90	0.90
Hourly flow rate (vph)	119	32	14	323	207	13
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	423	121	222			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	423	121	222			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	96	99			
cM capacity (veh/h)	543	899	1342			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	151	121	216	138	82
Volume Left	119	14	0	0	0
Volume Right	32	0	0	0	13
cSH	593	1342	1700	1700	1700
Volume to Capacity	0.25	0.01	0.13	0.08	0.05
Queue Length 95th (ft)	25	1	0	0	0
Control Delay (s)	13.1	0.9	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	13.1	0.3		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	4	5	6	67	10	38	8	146	183	47	115	7
Peak Hour Factor	0.60	0.60	0.60	0.78	0.78	0.78	0.87	0.87	0.87	0.76	0.76	0.76
Hourly flow rate (vph)	7	8	10	86	13	49	9	168	210	62	151	9

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	25	147	93	294	222
Volume Left (vph)	7	86	9	0	62
Volume Right (vph)	10	49	0	210	9
Hadj (s)	-0.15	-0.05	0.08	-0.47	0.06
Departure Headway (s)	5.4	5.3	5.3	4.7	5.0
Degree Utilization, x	0.04	0.22	0.14	0.39	0.31
Capacity (veh/h)	583	621	657	735	690
Control Delay (s)	8.6	9.7	7.9	9.5	10.2
Approach Delay (s)	8.6	9.7	9.1		10.2
Approach LOS	A	A	A		B

Intersection Summary			
Delay	9.5		
Level of Service	A		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	117	44	24	116	137	103
Peak Hour Factor	0.70	0.70	0.80	0.80	0.82	0.82
Hourly flow rate (vph)	167	63	30	145	167	126

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	230	175	293
Volume Left (vph)	167	30	0
Volume Right (vph)	63	0	126
Hadj (s)	0.02	0.07	-0.22
Departure Headway (s)	5.0	4.9	4.5
Degree Utilization, x	0.32	0.24	0.37
Capacity (veh/h)	667	687	755
Control Delay (s)	10.4	9.5	10.1
Approach Delay (s)	10.4	9.5	10.1
Approach LOS	B	A	B

Intersection Summary			
Delay	10.1		
Level of Service	B		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	86	89	53	177	183	56
Peak Hour Factor	0.76	0.76	0.83	0.83	0.84	0.84
Hourly flow rate (vph)	113	117	64	213	218	67

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	230	277	285
Volume Left (vph)	113	0	218
Volume Right (vph)	117	213	0
Hadj (s)	-0.17	-0.43	0.19
Departure Headway (s)	5.0	4.5	5.0
Degree Utilization, x	0.32	0.34	0.40
Capacity (veh/h)	656	762	679
Control Delay (s)	10.4	9.8	11.3
Approach Delay (s)	10.4	9.8	11.3
Approach LOS	B	A	B

Intersection Summary			
Delay	10.5		
Level of Service	B		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	154	77	53	107	53	135	2710	101	145	1570	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1756		1770	1863	1547	1770	6368		1770	5038	
Flt Permitted	0.61	1.00		0.38	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1134	1756		712	1863	1547	1770	6368		1770	5038	
Peak-hour factor, PHF	0.87	0.87	0.87	0.83	0.83	0.83	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	305	177	89	64	129	64	147	2946	110	148	1602	82
RTOR Reduction (vph)	0	12	0	0	0	40	0	3	0	0	0	0
Lane Group Flow (vph)	305	254	0	64	129	24	147	3053	0	148	1684	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Effective Green, g (s)	40.5	40.5		40.5	40.5	40.5	17.1	79.5		16.5	78.9	
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.11	0.53		0.11	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	306	474		192	503	417	201	3375		194	2649	
v/s Ratio Prot		0.14			0.07		0.08	c0.48		c0.08	0.33	
v/s Ratio Perm	c0.27			0.09		0.02						
v/c Ratio	1.00	0.54		0.33	0.26	0.06	0.73	0.90		0.76	0.64	
Uniform Delay, d1	54.7	46.7		43.9	42.9	40.6	64.2	31.8		64.8	25.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.2	1.2		1.0	0.3	0.1	12.8	4.6		16.2	1.2	
Delay (s)	104.9	47.9		44.9	43.2	40.7	77.1	36.4		81.0	26.5	
Level of Service	F	D		D	D	D	E	D		F	C	
Approach Delay (s)		78.3			43.0			38.3			30.9	
Approach LOS		E			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	143	88	159	65	163	27	138	843	63	29	740	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1714			1809		1770	3495		1770	3375	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1714			1809		1770	3495		1770	3375	
Peak-hour factor, PHF	0.90	0.90	0.90	0.82	0.82	0.82	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	159	98	177	79	199	33	142	869	65	33	831	287
RTOR Reduction (vph)	0	23	0	0	4	0	0	4	0	0	30	0
Lane Group Flow (vph)	0	411	0	0	307	0	142	930	0	33	1088	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Effective Green, g (s)		26.0			21.9		10.0	38.7		5.0	33.7	
Actuated g/C Ratio		0.24			0.20		0.09	0.36		0.05	0.31	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		414			368		164	1257		82	1057	
v/s Ratio Prot		c0.24			c0.17		c0.08	0.27		0.02	c0.32	
v/s Ratio Perm												
v/c Ratio		0.99			0.83		0.87	0.74		0.40	1.03	
Uniform Delay, d1		40.7			41.1		48.1	30.1		49.8	36.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		42.3			14.9		34.9	3.9		3.2	35.4	
Delay (s)		83.0			56.0		83.0	34.0		53.1	72.3	
Level of Service		F			E		F	C		D	E	
Approach Delay (s)		83.0			56.0			40.5			71.8	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	60.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	57	29	31	66	61	28	713	36	37	822	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.95			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1758			1729			3503			3439	
Flt Permitted		0.73			0.90			0.89			0.90	
Satd. Flow (perm)		1332			1576			3122			3102	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.84	0.84	0.84
Adj. Flow (vph)	199	61	31	35	75	69	32	820	41	44	979	177
RTOR Reduction (vph)	0	9	0	0	47	0	0	7	0	0	26	0
Lane Group Flow (vph)	0	282	0	0	132	0	0	886	0	0	1174	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.4			14.4			22.0			22.0	
Effective Green, g (s)		14.4			14.4			22.0			22.0	
Actuated g/C Ratio		0.32			0.32			0.50			0.50	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		432			511			1546			1537	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.08			0.28			c0.38	
v/c Ratio		0.65			0.26			0.57			0.76	
Uniform Delay, d1		12.9			11.1			7.9			9.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.5			0.3			0.5			2.3	
Delay (s)		16.4			11.3			8.4			11.4	
Level of Service		B			B			A			B	
Approach Delay (s)		16.4			11.3			8.4			11.4	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	327	333	0	0	0	0	0	2207	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.78
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3454						6408	1232
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3454						6408	1232
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	380	387	0	0	0	0	0	2275	93
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	0	0	762	0	0	0	0	0	2275	63
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					41.4						102.6	102.6
Effective Green, g (s)					41.4						102.6	102.6
Actuated g/C Ratio					0.27						0.67	0.67
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					940						4325	831
v/s Ratio Prot											c0.36	
v/s Ratio Perm					0.22							0.05
v/c Ratio					0.81						0.53	0.08
Uniform Delay, d1					51.6						12.4	8.5
Progression Factor					1.00						0.56	0.49
Incremental Delay, d2					5.4						0.3	0.1
Delay (s)					57.0						7.2	4.2
Level of Service					E						A	A
Approach Delay (s)		0.0			57.0			0.0			7.1	
Approach LOS		A			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	558	92	170	3374	217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3448		1770	7439				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3448		1770	7439				
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	594	98	179	3552	228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	19	6	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	692	0	160	3774	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					37.1		101.9	101.9				
Effective Green, g (s)					37.1		101.9	101.9				
Actuated g/C Ratio					0.25		0.69	0.69				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					864		1218	5121				
v/s Ratio Prot					c0.20		0.09	c0.51				
v/s Ratio Perm												
v/c Ratio					0.80		0.13	0.74				
Uniform Delay, d1					52.0		7.9	14.6				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.4		0.2	1.0				
Delay (s)					57.4		8.1	15.6				
Level of Service					E		A	B				
Approach Delay (s)		0.0			57.4			15.2			0.0	
Approach LOS		A			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	9	3	24	11	681	57	16	839	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.71	0.71	0.71	0.75	0.75	0.75	0.88	0.88	0.88	0.94	0.94	0.94
Hourly flow rate (vph)	24	14	18	12	4	32	12	774	65	17	893	21
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1394	1813	468	1354	1791	436	917			848		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1253	1708	245	1209	1685	436	734			848		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	82	97	88	95	94	98			98		
cM capacity (veh/h)	103	79	688	102	82	560	795			780		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	56	48	399	452	463	468
Volume Left	24	12	12	0	17	0
Volume Right	18	32	0	65	0	21
cSH	128	214	795	1700	780	1700
Volume to Capacity	0.44	0.22	0.02	0.27	0.02	0.28
Queue Length 95th (ft)	48	21	1	0	2	0
Control Delay (s)	53.3	26.6	0.5	0.0	0.6	0.0
Lane LOS	F	D	A		A	
Approach Delay (s)	53.3	26.6	0.2		0.3	
Approach LOS	F	D				

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	48	47	242	188	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	52	51	263	204	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	600	235	265			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	600	235	265			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	94	96			
cM capacity (veh/h)	446	804	1299			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	83	314	265
Volume Left	30	51	0
Volume Right	52	0	61
cSH	620	1299	1700
Volume to Capacity	0.13	0.04	0.16
Queue Length 95th (ft)	11	3	0
Control Delay (s)	11.7	1.6	0.0
Lane LOS	B	A	
Approach Delay (s)	11.7	1.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	87	0	2907	1477	111
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	95	0	3160	1605	121
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.69	0.79	0.79			
vC, conflicting volume	2456	595	1726			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1001			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	100			
cM capacity (veh/h)	708	860	545			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	95	790	790	790	790	642	642	442
Volume Left	0	0	0	0	0	0	0	0
Volume Right	95	0	0	0	0	0	0	121
cSH	860	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.11	0.46	0.46	0.46	0.46	0.38	0.38	0.26
Queue Length 95th (ft)	9	0	0	0	0	0	0	0
Control Delay (s)	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A							
Approach Delay (s)	9.7	0.0				0.0		
Approach LOS	A							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	296	21	48	215	11	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	322	23	52	234	12	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					1.00	
vC, conflicting volume			345		671	333
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			345		670	333
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	95
cM capacity (veh/h)			1214		404	709

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	345	286	45
Volume Left	0	52	12
Volume Right	23	0	33
cSH	1700	1214	589
Volume to Capacity	0.20	0.04	0.08
Queue Length 95th (ft)	0	3	6
Control Delay (s)	0.0	1.8	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	11.6
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: Foothill Blvd & Hazel Ave

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	41	46	25	21	168	86	2035	7	243	1895	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1679		1770	1863	1553	1770	6403		1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1679		1770	1863	1553	1770	6403		1770	5085	1531
Peak-hour factor, PHF	0.80	0.80	0.80	0.78	0.78	0.78	0.93	0.93	0.93	0.94	0.94	0.94
Adj. Flow (vph)	170	51	58	32	27	215	92	2188	8	259	2016	100
RTOR Reduction (vph)	0	0	0	0	0	197	0	1	0	0	0	28
Lane Group Flow (vph)	170	109	0	32	27	18	92	2195	0	259	2016	72
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	19.5	26.2		5.7	12.4	12.4	13.0	67.1		32.0	86.1	86.1
Effective Green, g (s)	19.5	26.2		5.7	12.4	12.4	13.0	67.1		32.0	86.1	86.1
Actuated g/C Ratio	0.13	0.18		0.04	0.08	0.08	0.09	0.45		0.22	0.58	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	233	297		68	156	130	155	2902		382	2958	890
v/s Ratio Prot	c0.10	c0.06		0.02	0.01		0.05	c0.34		c0.15	0.40	
v/s Ratio Perm						0.01						0.05
v/c Ratio	0.73	0.37		0.47	0.17	0.14	0.59	0.76		0.68	0.68	0.08
Uniform Delay, d1	61.7	53.6		69.7	63.0	62.8	65.0	33.7		53.3	21.4	13.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	0.97		0.94	1.30	2.10
Incremental Delay, d2	10.9	0.8		5.1	0.5	0.5	6.0	1.9		2.0	0.6	0.1
Delay (s)	72.6	54.4		74.7	63.6	63.3	71.3	34.6		52.1	28.5	28.6
Level of Service	E	D		E	E	E	E	C		D	C	C
Approach Delay (s)		65.5			64.7			36.1			31.1	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: Foothill Blvd & Hazel Ave

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	84	52	37	28	131	138	2581	11	225	1499	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1736		1770	1863	1522	1770	6402		1770	5085	1516
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1736		1770	1863	1522	1770	6402		1770	5085	1516
Peak-hour factor, PHF	0.89	0.89	0.89	0.91	0.91	0.91	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	213	94	58	41	31	144	159	2967	13	245	1629	105
RTOR Reduction (vph)	0	0	0	0	0	128	0	0	0	0	0	29
Lane Group Flow (vph)	213	152	0	41	31	16	159	2980	0	245	1629	76
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	12.0	22.6		6.3	16.9	16.9	18.9	75.7		26.4	83.2	83.2
Effective Green, g (s)	12.0	22.6		6.3	16.9	16.9	18.9	75.7		26.4	83.2	83.2
Actuated g/C Ratio	0.08	0.15		0.04	0.11	0.11	0.13	0.51		0.18	0.56	0.56
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	143	265		75	212	173	226	3274		315	2858	852
v/s Ratio Prot	c0.12	c0.09		0.02	0.02		0.09	c0.47		c0.14	0.32	
v/s Ratio Perm						0.01						0.05
v/c Ratio	1.49	0.57		0.55	0.15	0.10	0.70	0.91		0.78	0.57	0.09
Uniform Delay, d1	68.0	58.2		69.5	59.1	58.7	61.9	33.0		58.0	20.9	14.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	253.6	3.0		7.9	0.3	0.2	9.5	5.0		11.4	0.8	0.2
Delay (s)	321.6	61.2		77.4	59.4	58.9	71.4	38.0		69.5	21.7	15.1
Level of Service	F	E		E	E	E	E	D		E	C	B
Approach Delay (s)		213.1			62.5			39.7			27.3	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	122	14	46	46	320	49	2453	76	444	952	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.89	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3476		1770	1537	1464	1770	6372		3433	4955	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3476		1770	1537	1464	1770	6372		3433	4955	
Peak-hour factor, PHF	0.90	0.90	0.90	0.83	0.83	0.83	0.81	0.81	0.81	0.90	0.90	0.90
Adj. Flow (vph)	149	136	16	55	55	386	60	3028	94	493	1058	166
RTOR Reduction (vph)	0	6	0	0	77	187	0	2	0	0	13	0
Lane Group Flow (vph)	149	146	0	55	148	29	60	3120	0	493	1211	0
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	10.0	22.5		7.7	20.2	20.2	9.1	77.8		27.0	95.7	
Effective Green, g (s)	10.0	22.5		7.7	20.2	20.2	9.1	77.8		27.0	95.7	
Actuated g/C Ratio	0.07	0.15		0.05	0.13	0.13	0.06	0.51		0.18	0.63	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116	514		89	204	194	105	3261		609	3119	
v/s Ratio Prot	c0.08	0.04		0.03	c0.10		0.03	c0.49		c0.14	0.24	
v/s Ratio Perm						0.02						
v/c Ratio	1.28	0.28		0.62	0.72	0.15	0.57	0.96		0.81	0.39	
Uniform Delay, d1	71.0	57.6		70.7	63.2	58.3	69.6	35.5		60.0	13.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.13	1.02		1.00	1.00	
Incremental Delay, d2	178.3	0.3		12.1	12.0	0.4	5.8	7.0		7.8	0.4	
Delay (s)	249.3	57.9		82.8	75.3	58.6	84.5	43.3		67.9	14.2	
Level of Service	F	E		F	E	E	F	D		E	B	
Approach Delay (s)		152.7			68.9			44.0			29.6	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	29	8	12	27	305	12	1788	32	404	1374	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3406		1770	1513	1464	1770	6389		3433	4960	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3406		1770	1513	1464	1770	6389		3433	4960	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.88	0.88	0.88
Adj. Flow (vph)	41	35	10	13	30	335	13	1923	34	459	1561	236
RTOR Reduction (vph)	0	9	0	0	136	161	0	1	0	0	8	0
Lane Group Flow (vph)	41	36	0	13	48	20	13	1956	0	459	1789	0
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	7.7	21.1		3.1	16.5	16.5	3.1	53.7		53.1	103.7	
Effective Green, g (s)	7.7	21.1		3.1	16.5	16.5	3.1	53.7		53.1	103.7	
Actuated g/C Ratio	0.05	0.14		0.02	0.11	0.11	0.02	0.36		0.36	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	92	485		37	168	163	37	2318		1231	3475	
v/s Ratio Prot	c0.02	0.01		0.01	c0.03		0.01	c0.31		c0.13	c0.36	
v/s Ratio Perm						0.01						
v/c Ratio	0.45	0.08		0.35	0.29	0.12	0.35	0.84		0.37	0.51	
Uniform Delay, d1	68.1	55.0		71.5	60.3	59.2	71.5	43.3		35.1	10.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.33	0.87		1.01	1.00	
Incremental Delay, d2	3.4	0.1		5.7	0.9	0.3	5.0	3.5		0.9	0.5	
Delay (s)	71.5	55.1		77.1	61.3	59.6	99.8	41.1		36.2	10.9	
Level of Service	E	E		E	E	E	F	D		D	B	
Approach Delay (s)		62.9			61.0			41.5			16.1	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	148.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	187	185	171	1691	852	722	178
v/c Ratio	0.69	0.75	0.74	0.71	0.51	0.73	0.39
Control Delay	71.2	77.4	76.8	32.8	27.7	53.1	27.8
Queue Delay	0.0	0.0	0.0	31.0	2.3	0.0	0.0
Total Delay	71.2	77.4	76.8	63.8	30.0	53.1	27.8
Queue Length 50th (ft)	182	190	167	450	290	346	84
Queue Length 95th (ft)	224	235	211	506	351	#474	173
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	357	325	307	2376	1659	985	460
Starvation Cap Reductn	0	0	0	779	643	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.57	0.56	1.06	0.84	0.73	0.39

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1340	116	2240	1402
v/c Ratio	0.79	0.28	0.60	0.93
Control Delay	47.9	35.6	18.2	58.3
Queue Delay	0.0	0.0	1.3	0.0
Total Delay	47.9	35.6	19.5	58.3
Queue Length 50th (ft)	416	63	369	254
Queue Length 95th (ft)	472	126	408	558
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1800	408	3732	1558
Starvation Cap Reductn	0	0	1195	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.28	0.88	0.90

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	170	109	32	27	215	92	2188	8	259	2016	100
v/c Ratio	0.73	0.37	0.33	0.20	0.69	0.59	0.93	0.01	0.68	0.67	0.11
Control Delay	79.4	56.1	75.6	64.2	18.8	79.9	45.3	0.0	55.3	30.3	16.5
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	79.4	56.1	75.6	64.2	18.8	79.9	45.3	0.0	55.3	30.3	16.5
Queue Length 50th (ft)	160	100	30	26	0	87	691	0	253	449	31
Queue Length 95th (ft)	203	121	57	45	39	144	#924	0	m#356	#539	m36
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	322	322	322	314	441	205	2361	727	382	3013	934
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	0.53	0.34	0.10	0.09	0.49	0.45	0.93	0.01	0.68	0.67	0.11

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	41	45	13	184	181	13	1957	459	1561	236
v/c Ratio	0.39	0.09	0.16	0.63	0.58	0.16	0.81	0.72	0.42	0.20
Control Delay	76.9	40.8	71.9	23.0	14.7	93.4	38.7	50.8	11.2	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	40.8	71.9	23.0	14.7	93.4	38.7	50.8	11.2	4.5
Queue Length 50th (ft)	39	15	12	30	0	14	542	364	141	14
Queue Length 95th (ft)	73	30	36	106	72	m20	595	#685	365	74
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	191	673	179	400	415	203	2417	635	3724	1156
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.07	0.07	0.46	0.44	0.06	0.81	0.72	0.42	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	310	290	278	280	174	93	2492	145	2160
v/c Ratio	0.98	0.43	0.91	0.40	0.28	0.81	0.89	0.85	0.91
Control Delay	91.5	34.8	75.8	35.5	16.4	90.2	42.8	103.5	44.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	34.8	75.8	35.5	16.4	90.2	42.8	103.5	44.0
Queue Length 50th (ft)	284	193	244	191	55	95	382	140	721
Queue Length 95th (ft)	#390	237	#327	235	91	m#113	503	#271	#798
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	334	717	325	736	659	115	2790	173	2365
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.40	0.86	0.38	0.26	0.81	0.89	0.84	0.91

Intersection Summary

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	485	18	703	126	1177
v/c Ratio	0.75	0.95	0.13	0.92	0.60	1.03
Control Delay	46.5	61.9	44.1	51.7	51.7	67.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	61.9	44.1	51.7	51.7	67.3
Queue Length 50th (ft)	156	268	10	191	70	332
Queue Length 95th (ft)	222	#440	33	#342	136	#670
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	523	512	195	762	253	1144
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.95	0.09	0.92	0.50	1.03

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	370	191	456	1263
v/c Ratio	0.76	0.34	0.29	0.80
Control Delay	24.2	11.2	8.3	15.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.2	11.2	8.3	15.6
Queue Length 50th (ft)	79	30	37	141
Queue Length 95th (ft)	#191	39	64	#244
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	584	680	1647	1682
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.28	0.28	0.75

Intersection Summary

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	821	2696	108
v/c Ratio	0.83	0.64	0.11
Control Delay	56.9	9.5	1.6
Queue Delay	0.0	0.4	0.0
Total Delay	56.9	9.9	1.6
Queue Length 50th (ft)	387	192	0
Queue Length 95th (ft)	444	256	m11
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1129	4242	1005
Starvation Cap Reductn	0	900	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.73	0.81	0.11

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1015	121	2616
v/c Ratio	0.85	0.11	0.59
Control Delay	52.8	10.4	19.5
Queue Delay	0.0	0.0	0.0
Total Delay	52.8	10.4	19.5
Queue Length 50th (ft)	472	36	380
Queue Length 95th (ft)	452	69	425
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1295	1072	4449
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.11	0.59

Intersection Summary

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	332	325	297	1556	813	792	215
v/c Ratio	0.83	0.88	0.89	0.72	0.55	0.89	0.51
Control Delay	73.2	79.9	83.3	38.2	32.7	67.5	34.5
Queue Delay	0.0	0.0	0.0	31.5	2.6	0.0	0.0
Total Delay	73.2	79.9	83.3	69.6	35.3	67.5	34.5
Queue Length 50th (ft)	325	336	295	448	302	428	126
Queue Length 95th (ft)	441	#486	#442	504	367	#529	212
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	425	395	357	2150	1477	886	420
Starvation Cap Reductn	0	0	0	681	521	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.82	0.83	1.06	0.85	0.89	0.51

Intersection Summary

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1077	241	3360	1114
v/c Ratio	0.79	0.42	0.89dr	0.86
Control Delay	55.8	40.1	18.6	74.1
Queue Delay	0.8	0.0	34.1	0.0
Total Delay	56.5	40.1	52.7	74.1
Queue Length 50th (ft)	360	161	631	469
Queue Length 95th (ft)	407	276	705	528
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1479	574	4157	1647
Starvation Cap Reductn	0	0	1022	0
Spillback Cap Reductn	155	0	805	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.42	1.07	0.68

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	213	152	41	31	144	159	2967	13	245	1629	105
v/c Ratio	1.49	0.57	0.47	0.15	0.49	0.71	1.13	0.02	0.78	0.56	0.12
Control Delay	297.2	66.4	85.5	57.2	13.7	78.0	97.7	0.0	74.9	21.3	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	297.2	66.4	85.5	57.2	13.7	78.0	97.7	0.0	74.9	21.3	6.4
Queue Length 50th (ft)	~283	143	39	28	0	147	~1217	0	223	353	16
Queue Length 95th (ft)	#447	202	82	57	62	#335	#1216	0	#455	397	45
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	143	340	95	314	377	225	2627	803	315	2886	888
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	1.49	0.45	0.43	0.10	0.38	0.71	1.13	0.02	0.78	0.56	0.12

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	149	152	55	225	216	60	3122	493	1058	166
v/c Ratio	1.28	0.29	0.53	0.82	0.58	0.57	1.15	1.04	0.33	0.16
Control Delay	231.0	56.1	87.6	61.3	13.0	93.0	110.1	105.8	13.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	231.0	56.1	87.6	61.3	13.0	93.0	110.1	105.8	13.6	2.0
Queue Length 50th (ft)	~187	69	54	142	0	54	~1069	~540	181	0
Queue Length 95th (ft)	#337	101	95	205	55	m#93	#929	#847	212	30
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	116	623	116	346	437	105	2726	472	3228	1024
Starvation Cap Reductn	0	0	0	0	0	0	58	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.28	0.24	0.47	0.65	0.49	0.57	1.17	1.04	0.33	0.16

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	305	266	64	129	64	147	3056	148	1684
v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.73	0.90	0.76	0.64
Control Delay	104.5	48.7	49.9	44.6	13.3	84.6	36.8	88.9	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	48.7	49.9	44.6	13.3	84.6	36.8	88.9	27.1
Queue Length 50th (ft)	300	210	51	100	7	141	778	142	422
Queue Length 95th (ft)	#477	293	90	146	38	216	842	219	497
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	306	486	192	503	457	247	3380	224	2651
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.55	0.33	0.26	0.14	0.60	0.90	0.66	0.64

Intersection Summary

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	311	142	934	33	1118
v/c Ratio	0.98	0.82	0.86	0.73	0.25	1.06
Control Delay	76.3	58.1	88.8	35.2	51.9	82.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.3	58.1	88.8	35.2	51.9	82.0
Queue Length 50th (ft)	281	200	98	308	22	~442
Queue Length 95th (ft)	#506	267	#219	#455	53	#587
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	444	448	166	1281	166	1050
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.69	0.86	0.73	0.20	1.06

Intersection Summary

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	291	179	893	1200
v/c Ratio	0.66	0.32	0.58	0.77
Control Delay	20.5	9.1	10.3	14.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.5	9.1	10.3	14.4
Queue Length 50th (ft)	61	21	73	111
Queue Length 95th (ft)	124	52	135	190
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	585	721	1644	1651
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.50	0.25	0.54	0.73

Intersection Summary

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	767	2275	93
v/c Ratio	0.81	0.53	0.11
Control Delay	58.3	7.5	1.1
Queue Delay	0.0	0.3	0.0
Total Delay	58.3	7.8	1.1
Queue Length 50th (ft)	373	143	0
Queue Length 95th (ft)	395	222	m3
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1140	4327	862
Starvation Cap Reductn	0	1181	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.67	0.72	0.11

Intersection Summary

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

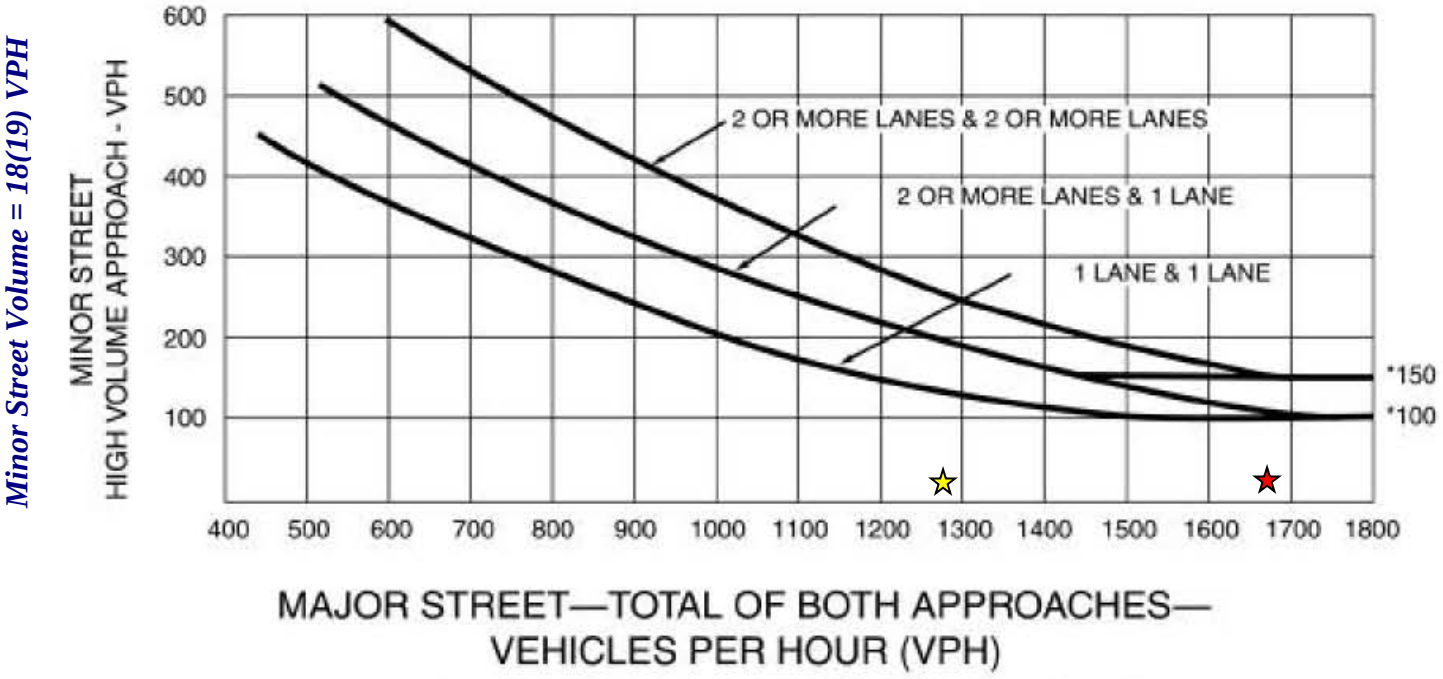
Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	692	179	3780
v/c Ratio	0.80	0.14	0.74
Control Delay	59.3	6.1	16.3
Queue Delay	0.0	0.0	0.0
Total Delay	59.3	6.1	16.3
Queue Length 50th (ft)	332	35	523
Queue Length 95th (ft)	378	74	652
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1118	1238	5130
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.14	0.74

Intersection Summary

Peak Hour Warrant (Urban Areas)

Intersection: Mission Boulevard and Hotel Avenue, Hayward, CA
Scenario: Background plus Project Phase 1 and 2 Conditions AM (PM) Peak Hours

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 1,294(1,693) VPH

☆ ***AM Peak Hour***
★ ***PM Peak Hour***

A signal is not warranted in the both A.M. and P.M. Peak Hours

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Appendix H – Cumulative Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	369	0	302	2048	916	127	0	0	0	0	1219	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.96	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1520	1437	4990	3468						3373	1395
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1520	1437	4990	3468						3373	1395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	388	0	318	2156	964	134	0	0	0	0	1283	360
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	56
Lane Group Flow (vph)	244	239	223	2156	1091	0	0	0	0	0	1318	268
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	25.9	25.9	25.9	58.5	58.5						55.1	55.1
Effective Green, g (s)	25.9	25.9	25.9	58.5	58.5						55.1	55.1
Actuated g/C Ratio	0.17	0.17	0.17	0.39	0.39						0.37	0.37
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	290	262	248	1946	1352						1239	512
v/s Ratio Prot	0.15	c0.16		c0.43	0.31						c0.39	
v/s Ratio Perm			0.16									0.19
v/c Ratio	0.84	0.91	0.90	1.11	0.81						1.06	0.52
Uniform Delay, d1	60.1	60.9	60.8	45.8	40.7						47.5	37.2
Progression Factor	1.00	1.00	1.00	1.00	1.00						0.35	0.12
Incremental Delay, d2	19.3	33.2	31.5	56.7	3.6						30.6	0.3
Delay (s)	79.3	94.1	92.3	102.4	44.3						47.5	4.9
Level of Service	E	F	F	F	D						D	A
Approach Delay (s)		88.4			82.8			0.0			39.1	
Approach LOS		F			F			A			D	

Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1357	15	132	1960	695	0	0	1726
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5076		1770	6083				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5076		1770	6083				3528
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1428	16	139	2063	732	0	0	1817
RTOR Reduction (vph)	0	0	0	0	1	0	32	47	0	0	0	241
Lane Group Flow (vph)	0	0	0	0	1443	0	107	2748	0	0	0	1576
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					43.5		30.0	93.0				63.0
Effective Green, g (s)					43.5		30.0	93.0				63.0
Actuated g/C Ratio					0.29		0.20	0.62				0.42
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1472		354	3974				1481
v/s Ratio Prot					c0.28		0.06	c0.14				
v/s Ratio Perm								0.31				c0.45
v/c Ratio					0.98		0.30	0.69				1.06
Uniform Delay, d1					52.8		51.1	19.0				43.5
Progression Factor					1.00		0.86	0.13				1.27
Incremental Delay, d2					18.9		1.1	0.3				41.5
Delay (s)					71.7		44.9	2.7				96.6
Level of Service					E		D	A				F
Approach Delay (s)		0.0			71.7			4.7			96.6	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	47.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	63	46	39	32	257	76	2881	10	325	2487	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1716		1770	1863	1553	1770	5085	1490	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1716		1770	1863	1553	1770	5085	1490	1770	5085	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	194	66	48	41	34	271	80	3033	11	342	2618	121
RTOR Reduction (vph)	0	0	0	0	0	235	0	0	6	0	0	26
Lane Group Flow (vph)	194	114	0	41	34	36	80	3033	5	342	2618	95
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	13.0	19.5		6.9	13.4	13.4	9.0	71.1	71.1	35.5	97.6	97.6
Effective Green, g (s)	13.0	19.5		6.9	13.4	13.4	9.0	71.1	71.1	35.5	97.6	97.6
Actuated g/C Ratio	0.09	0.13		0.05	0.09	0.09	0.06	0.47	0.47	0.24	0.65	0.65
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	153	223		81	166	138	106	2410	706	418	3308	996
v/s Ratio Prot	c0.11	c0.07		0.02	0.02		0.05	c0.60		0.19	c0.51	
v/s Ratio Perm						0.02			0.00			0.06
v/c Ratio	1.27	0.51		0.51	0.20	0.26	0.75	1.26	0.01	0.82	0.79	0.10
Uniform Delay, d1	68.5	60.8		69.9	63.4	63.7	69.4	39.5	20.8	54.2	18.9	9.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.02	0.45	0.07
Incremental Delay, d2	162.0	2.0		4.9	0.6	1.0	25.8	119.9	0.0	1.2	0.2	0.0
Delay (s)	230.5	62.8		74.8	64.0	64.7	95.2	159.3	20.8	56.7	8.7	0.7
Level of Service	F	E		E	E	E	F	F	C	E	A	A
Approach Delay (s)		168.4			65.8			157.2			13.7	
Approach LOS		F			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	88.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	33	1	14	27	333	4	2714	50	452	1752	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3522		1770	1507	1464	1770	6388		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3522		1770	1507	1464	1770	6388		1770	5085	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	35	1	15	28	351	4	2857	53	476	1844	275
RTOR Reduction (vph)	0	1	0	0	148	166	0	2	0	0	0	55
Lane Group Flow (vph)	21	35	0	15	45	20	4	2908	0	476	1844	220
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	2.4	16.6		1.6	15.8	15.8	0.8	73.6		41.2	114.0	114.0
Effective Green, g (s)	2.4	16.6		1.6	15.8	15.8	0.8	73.6		41.2	114.0	114.0
Actuated g/C Ratio	0.02	0.11		0.01	0.11	0.11	0.01	0.49		0.27	0.76	0.76
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	28	389		18	158	154	9	3134		486	3864	1156
v/s Ratio Prot	c0.01	0.01		c0.01	c0.03		0.00	c0.46		c0.27	0.36	
v/s Ratio Perm						0.01						0.14
v/c Ratio	0.75	0.09		0.83	0.29	0.13	0.44	0.93		0.98	0.48	0.19
Uniform Delay, d1	73.5	59.9		74.1	61.9	60.8	74.4	35.7		54.0	6.8	5.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.15	0.39		1.00	1.00	1.00
Incremental Delay, d2	71.8	0.1		131.9	1.0	0.4	28.0	5.6		36.0	0.4	0.4
Delay (s)	145.3	60.0		206.0	62.9	61.2	113.4	19.5		90.0	7.2	5.4
Level of Service	F	E		F	E	E	F	B		F	A	A
Approach Delay (s)		91.4			67.6			19.6			22.2	
Approach LOS		F			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	2	1	9	14	951	81	38	1603	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	8	7	2	1	9	15	1001	85	40	1687	25
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	2325	2899	861	2016	2869	551	1713			1089		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2325	2899	861	2016	2869	551	1713			1089		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	40	98	87	93	98	96			94		
cM capacity (veh/h)	17	14	297	16	15	475	366			635		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	19	13	515	586	884	869
Volume Left	3	2	15	0	40	0
Volume Right	7	9	0	85	0	25
cSH	23	57	366	1700	635	1700
Volume to Capacity	0.81	0.22	0.04	0.34	0.06	0.51
Queue Length 95th (ft)	60	19	3	0	5	0
Control Delay (s)	359.4	85.8	1.3	0.0	1.8	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	359.4	85.8	0.6		0.9	
Approach LOS	F	F				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	23	18	26	150	606	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	24	19	27	158	638	18
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	785	334	657			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	785	334	657			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	97	97			
cM capacity (veh/h)	319	659	926			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	43	80	105	425	231
Volume Left	24	27	0	0	0
Volume Right	19	0	0	0	18
cSH	412	926	1700	1700	1700
Volume to Capacity	0.10	0.03	0.06	0.25	0.14
Queue Length 95th (ft)	9	2	0	0	0
Control Delay (s)	14.7	3.3	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	14.7	1.4		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	76	3	12	18	77	123	99	477	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	3	8	80	3	13	19	81	129	104	502	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	13	96	59	170	606
Volume Left (vph)	1	80	19	0	104
Volume Right (vph)	8	13	0	129	0
Hadj (s)	-0.35	0.12	0.19	-0.50	0.07
Departure Headway (s)	5.7	6.0	5.6	4.9	4.7
Degree Utilization, x	0.02	0.16	0.09	0.23	0.79
Capacity (veh/h)	563	548	622	710	759
Control Delay (s)	8.8	10.1	7.9	8.1	22.7
Approach Delay (s)	8.8	10.1	8.1		22.7
Approach LOS	A	B	A		C

Intersection Summary			
Delay	17.7		
Level of Service	C		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	35	13	2	17	174	109
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	37	14	2	18	183	115

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	51	20	298
Volume Left (vph)	37	2	0
Volume Right (vph)	14	0	115
Hadj (s)	0.02	0.06	-0.20
Departure Headway (s)	4.6	4.4	3.8
Degree Utilization, x	0.06	0.02	0.32
Capacity (veh/h)	728	797	922
Control Delay (s)	7.9	7.5	8.6
Approach Delay (s)	7.9	7.5	8.6
Approach LOS	A	A	A

Intersection Summary			
Delay	8.5		
Level of Service	A		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	260	148	68	141	451	125
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	274	156	72	148	475	132

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	429	220	606
Volume Left (vph)	274	0	475
Volume Right (vph)	156	148	0
Hadj (s)	-0.06	-0.37	0.19
Departure Headway (s)	6.2	6.0	6.0
Degree Utilization, x	0.74	0.37	1.0
Capacity (veh/h)	571	574	594
Control Delay (s)	24.4	12.5	62.9
Approach Delay (s)	24.4	12.5	62.9
Approach LOS	C	B	F

Intersection Summary			
Delay	40.9		
Level of Service	E		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	319	240	60	300	303	189	123	2988	180	178	2531	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1538	1770	6344		1770	5036	
Flt Permitted	0.41	1.00		0.41	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	764	1801		770	1863	1538	1770	6344		1770	5036	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	336	253	63	316	319	199	129	3145	189	187	2664	75
RTOR Reduction (vph)	0	6	0	0	0	51	0	6	0	0	0	0
Lane Group Flow (vph)	336	310	0	316	319	148	129	3328	0	187	2739	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	56.5	56.5		56.5	56.5	56.5	8.0	67.0		13.0	72.0	
Effective Green, g (s)	56.5	56.5		56.5	56.5	56.5	8.0	67.0		13.0	72.0	
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.38	0.05	0.45		0.09	0.48	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	287	678		290	701	579	94	2833		153	2417	
v/s Ratio Prot		0.17			0.17		0.07	c0.52		0.11	c0.54	
v/s Ratio Perm	c0.44			0.41		0.10						
v/c Ratio	1.17	0.46		1.09	0.46	0.26	1.37	1.17		1.22	1.13	
Uniform Delay, d1	46.8	35.2		46.8	35.2	32.2	71.0	41.5		68.5	39.0	
Progression Factor	0.49	0.39		1.00	1.00	1.00	1.10	0.48		1.00	1.00	
Incremental Delay, d2	80.5	0.0		78.9	0.5	0.2	173.7	79.0		144.7	65.7	
Delay (s)	103.6	13.8		125.7	35.6	32.5	251.5	98.7		213.2	104.7	
Level of Service	F	B		F	D	C	F	F		F	F	
Approach Delay (s)		60.1			69.0			104.4			111.7	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	99.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	239	31	295	189	208	40	971	532	204	1815	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1813			1736		1770	3315		1770	3508	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1813			1736		1770	3315		1770	3508	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	252	33	311	199	219	42	1022	560	215	1911	83
RTOR Reduction (vph)	0	2	0	0	10	0	0	49	0	0	2	0
Lane Group Flow (vph)	0	375	0	0	719	0	42	1533	0	215	1992	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		26.0			43.0		8.0	51.2		13.8	57.0	
Effective Green, g (s)		26.0			43.0		8.0	51.2		13.8	57.0	
Actuated g/C Ratio		0.17			0.29		0.05	0.34		0.09	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		314			497		94	1131		162	1333	
v/s Ratio Prot		c0.21			c0.41		0.02	0.46		c0.12	c0.57	
v/s Ratio Perm												
v/c Ratio		1.19			1.45		0.45	1.36		1.33	1.49	
Uniform Delay, d1		62.0			53.5		68.9	49.4		68.1	46.5	
Progression Factor		1.00			0.91		1.21	1.22		1.00	1.00	
Incremental Delay, d2		113.8			210.4		0.3	160.3		183.4	226.5	
Delay (s)		175.8			259.0		83.7	220.6		251.5	273.0	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		175.8			259.0			217.1			270.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	244.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	411	127	141	47	192	41	27	1048	31	9	1766	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1745			1806			3515			3451	
Flt Permitted		0.60			0.84			0.61			0.95	
Satd. Flow (perm)		1081			1534			2161			3272	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	433	134	148	49	202	43	28	1103	33	9	1859	306
RTOR Reduction (vph)	0	3	0	0	4	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	712	0	0	290	0	0	1162	0	0	2165	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		70.0			69.0			72.0			72.0	
Effective Green, g (s)		70.0			69.0			72.0			72.0	
Actuated g/C Ratio		0.47			0.46			0.48			0.48	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		504			705			1037			1570	
v/s Ratio Prot												
v/s Ratio Perm		c0.66			0.19			0.54			c0.66	
v/c Ratio		1.41			0.41			1.12			1.38	
Uniform Delay, d1		40.0			27.0			39.0			39.0	
Progression Factor		1.00			1.00			1.17			0.26	
Incremental Delay, d2		197.5			0.4			67.1			171.0	
Delay (s)		237.5			27.4			112.7			181.0	
Level of Service		F			C			F			F	
Approach Delay (s)		237.5			27.4			112.7			181.0	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	161.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	128.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	402	645	0	0	0	0	0	3271	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3473						6408	1468
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3473						6408	1468
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	423	679	0	0	0	0	0	3443	140
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	0	0	1097	0	0	0	0	0	3443	108
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					51.2						90.8	90.8
Effective Green, g (s)					51.2						90.8	90.8
Actuated g/C Ratio					0.34						0.61	0.61
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					1185						3878	888
v/s Ratio Prot											c0.54	
v/s Ratio Perm					0.32							0.07
v/c Ratio					0.93						0.89	0.12
Uniform Delay, d1					47.6						25.3	12.6
Progression Factor					0.32						0.47	0.18
Incremental Delay, d2					9.2						0.3	0.0
Delay (s)					24.5						12.1	2.4
Level of Service					C						B	A
Approach Delay (s)		0.0			24.5			0.0			11.7	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	989	49	162	3209	233	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3505		1770	7415				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3505		1770	7415				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1041	52	171	3378	245	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	14	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1093	0	157	3615	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					55.5		85.5	85.5				
Effective Green, g (s)					55.5		85.5	85.5				
Actuated g/C Ratio					0.37		0.57	0.57				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1296		1008	4226				
v/s Ratio Prot					c0.31		0.09	c0.49				
v/s Ratio Perm												
v/c Ratio					0.84		0.16	0.86				
Uniform Delay, d1					43.3		15.2	27.1				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.2		0.3	2.4				
Delay (s)					48.5		15.6	29.5				
Level of Service					D		B	C				
Approach Delay (s)		0.0			48.5			28.9			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	16	6	7	14	999	67	4	1799	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	7	6	17	6	7	15	1052	71	4	1894	4
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.53	0.53	0.53	0.53	0.53		0.53					
vC, conflicting volume	2477	3059	957	2091	3026	569	1899			1124		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2018	3110	0	1292	3048	569	932			1124		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	99	0	0	98	96			99		
cM capacity (veh/h)	0	6	573	0	6	462	388			616		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	25	31	541	596	951	951
Volume Left	12	17	15	0	4	0
Volume Right	6	7	0	71	0	4
cSH	0	0	388	1700	616	1700
Volume to Capacity	Err	Err	0.04	0.35	0.01	0.56
Queue Length 95th (ft)	Err	Err	3	0	1	0
Control Delay (s)	Err	Err	1.2	0.0	0.2	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	Err	Err	0.6		0.1	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	0	432	1832	752	217	0	0	0	0	1156	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.94	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1557	1407	4990	3387						3370	1373
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1557	1407	4990	3387						3370	1373
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	721	0	455	1928	792	228	0	0	0	0	1217	379
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	1	67
Lane Group Flow (vph)	404	403	369	1928	1001	0	0	0	0	0	1254	274
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	33.5	33.5	33.5	49.5	49.5						46.5	46.5
Effective Green, g (s)	33.5	33.5	33.5	49.5	49.5						46.5	46.5
Actuated g/C Ratio	0.24	0.24	0.24	0.35	0.35						0.33	0.33
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	402	372	336	1764	1197						1119	456
v/s Ratio Prot	0.24	0.26		c0.39	0.30						c0.37	
v/s Ratio Perm			c0.26									0.20
v/c Ratio	1.00	1.08	1.10	1.09	0.84						1.12	0.60
Uniform Delay, d1	53.2	53.2	53.2	45.2	41.5						46.8	39.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	46.1	70.8	78.1	51.6	5.2						66.4	5.7
Delay (s)	99.4	124.1	131.3	96.8	46.8						113.1	44.7
Level of Service	F	F	F	F	D						F	D
Approach Delay (s)		117.9			79.5			0.0			98.5	
Approach LOS		F			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	92.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	104.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1084	46	221	2266	974	0	0	1243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.95				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5051		1770	6004				3470
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5051		1770	6004				3470
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1141	48	233	2385	1025	0	0	1308
RTOR Reduction (vph)	0	0	0	0	3	0	27	61	0	0	0	427
Lane Group Flow (vph)	0	0	0	0	1186	0	206	3349	0	0	0	881
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					37.2		51.7	90.8				39.1
Effective Green, g (s)					37.2		51.7	90.8				39.1
Actuated g/C Ratio					0.27		0.37	0.65				0.28
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1342		653	3894				969
v/s Ratio Prot					c0.23		0.12	c0.32				
v/s Ratio Perm								0.24				c0.25
v/c Ratio					0.88		0.32	0.92dr				0.91
Uniform Delay, d1					49.3		31.5	19.5				48.7
Progression Factor					1.00		0.30	0.05				1.42
Incremental Delay, d2					7.2		0.4	0.7				11.6
Delay (s)					56.6		9.8	1.7				80.8
Level of Service					E		A	A				F
Approach Delay (s)		0.0			56.6			2.2			80.8	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	318	152	66	48	37	172	65	3102	13	287	1813	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.93	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1763		1770	1863	1523	1770	5085	1469	1770	5085	1518
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1763		1770	1863	1523	1770	5085	1469	1770	5085	1518
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	335	160	69	51	39	181	68	3265	14	302	1908	104
RTOR Reduction (vph)	0	0	0	0	0	161	0	0	8	0	0	44
Lane Group Flow (vph)	335	229	0	51	39	20	68	3265	6	302	1908	60
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	18.0	26.4		7.0	15.4	15.4	8.8	63.2	63.2	26.4	80.8	80.8
Effective Green, g (s)	18.0	26.4		7.0	15.4	15.4	8.8	63.2	63.2	26.4	80.8	80.8
Actuated g/C Ratio	0.13	0.19		0.05	0.11	0.11	0.06	0.45	0.45	0.19	0.58	0.58
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	332		88	204	167	111	2295	663	333	2934	876
v/s Ratio Prot	c0.19	c0.13		0.03	0.02		0.04	c0.64		c0.17	0.38	
v/s Ratio Perm						0.01			0.00			0.04
v/c Ratio	1.48	0.69		0.58	0.19	0.12	0.61	1.42	0.01	0.91	0.65	0.07
Uniform Delay, d1	61.0	53.0		65.1	56.6	56.2	63.9	38.4	21.2	55.6	20.0	13.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.69	0.74	0.83
Incremental Delay, d2	236.4	5.9		8.9	0.5	0.3	9.6	192.8	0.0	19.2	0.7	0.1
Delay (s)	297.4	58.9		74.0	57.1	56.5	73.6	231.2	21.2	57.3	15.5	10.9
Level of Service	F	E		E	E	E	E	F	C	E	B	B
Approach Delay (s)		200.5			59.9			227.1			20.8	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	144.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	163	9	58	50	395	28	2864	91	487	1148	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.88	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3509		1770	1531	1465	1770	6371		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3509		1770	1531	1465	1770	6371		1770	5085	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	167	172	9	61	53	416	29	3015	96	513	1208	165
RTOR Reduction (vph)	0	3	0	0	97	198	0	3	0	0	0	61
Lane Group Flow (vph)	167	178	0	61	143	31	29	3108	0	513	1208	104
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	11.0	17.5		12.4	18.9	18.9	4.5	60.5		32.6	88.6	88.6
Effective Green, g (s)	11.0	17.5		12.4	18.9	18.9	4.5	60.5		32.6	88.6	88.6
Actuated g/C Ratio	0.08	0.12		0.09	0.13	0.13	0.03	0.43		0.23	0.63	0.63
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	139	438		156	206	197	56	2753		412	3218	963
v/s Ratio Prot	c0.09	0.05		0.03	c0.09		0.02	c0.49		c0.29	0.24	
v/s Ratio Perm						0.02						0.07
v/c Ratio	1.20	0.41		0.39	0.69	0.16	0.52	1.13		1.25	0.38	0.11
Uniform Delay, d1	64.5	56.5		60.2	57.8	53.5	66.7	39.8		53.7	12.4	10.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.07	0.56		1.00	1.00	1.00
Incremental Delay, d2	140.5	0.6		1.6	9.7	0.4	6.1	62.2		129.3	0.3	0.2
Delay (s)	205.0	57.1		61.9	67.5	53.9	77.2	84.5		183.0	12.7	10.4
Level of Service	F	E		E	E	D	E	F		F	B	B
Approach Delay (s)		128.1			61.0			84.5			58.8	
Approach LOS		F			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	2	2	6	7	1185	186	64	1458	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	2	6	2	2	6	7	1247	196	67	1535	13
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	2344	3141	804	2294	3049	739	1553			1444		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2344	3141	804	2294	3049	739	1553			1444		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	16	77	98	85	80	98	98			86		
cM capacity (veh/h)	14	9	318	15	10	355	420			465		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	11	631	819	835	780
Volume Left	12	2	7	0	67	0
Volume Right	6	6	0	196	0	13
cSH	18	29	420	1700	465	1700
Volume to Capacity	1.10	0.37	0.02	0.48	0.14	0.46
Queue Length 95th (ft)	71	29	1	0	13	0
Control Delay (s)	536.8	190.1	0.5	0.0	4.5	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	536.8	190.1	0.2		2.3	
Approach LOS	F	F				

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	84	25	22	516	417	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	88	26	23	543	439	19
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	787	240	460			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	787	240	460			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	97	98			
cM capacity (veh/h)	316	754	1096			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	115	204	362	293	165
Volume Left	88	23	0	0	0
Volume Right	26	0	0	0	19
cSH	365	1096	1700	1700	1700
Volume to Capacity	0.31	0.02	0.21	0.17	0.10
Queue Length 95th (ft)	33	2	0	0	0
Control Delay (s)	19.3	1.1	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	19.3	0.4		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	7	9	51	10	30	15	278	330	100	320	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	7	9	54	11	32	16	293	347	105	337	21

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	23	96	162	494	463
Volume Left (vph)	6	54	16	0	105
Volume Right (vph)	9	32	0	347	21
Hadj (s)	-0.16	-0.05	0.08	-0.46	0.05
Departure Headway (s)	6.4	6.3	5.4	4.9	5.1
Degree Utilization, x	0.04	0.17	0.24	0.67	0.66
Capacity (veh/h)	478	502	648	725	689
Control Delay (s)	9.7	10.5	9.0	16.0	17.5
Approach Delay (s)	9.7	10.5	14.3		17.5
Approach LOS	A	B	B		C

Intersection Summary			
Delay	15.1		
Level of Service	C		
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	96	44	39	148	138	96
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	101	46	41	156	145	101

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	147	197	246
Volume Left (vph)	101	41	0
Volume Right (vph)	46	0	101
Hadj (s)	-0.02	0.08	-0.21
Departure Headway (s)	4.9	4.6	4.3
Degree Utilization, x	0.20	0.25	0.29
Capacity (veh/h)	679	744	798
Control Delay (s)	9.1	9.2	9.1
Approach Delay (s)	9.1	9.2	9.1
Approach LOS	A	A	A

Intersection Summary			
Delay	9.1		
Level of Service	A		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	131	128	95	356	474	123
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	138	135	100	375	499	129

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	273	475	628
Volume Left (vph)	138	0	499
Volume Right (vph)	135	375	0
Hadj (s)	-0.16	-0.44	0.19
Departure Headway (s)	6.6	5.5	5.8
Degree Utilization, x	0.50	0.72	1.0
Capacity (veh/h)	528	650	617
Control Delay (s)	15.9	21.2	63.2
Approach Delay (s)	15.9	21.2	63.2
Approach LOS	C	C	F

Intersection Summary			
Delay	39.3		
Level of Service	E		
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	408	237	119	61	123	61	172	3361	128	179	1813	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1757		1770	1863	1549	1770	6367		1770	5035	
Flt Permitted	0.63	1.00		0.29	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1175	1757		541	1863	1549	1770	6367		1770	5035	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	429	249	125	64	129	64	181	3538	135	188	1908	103
RTOR Reduction (vph)	0	13	0	0	0	44	0	4	0	0	0	0
Lane Group Flow (vph)	429	361	0	64	129	20	181	3670	0	188	2011	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	44.5	44.5		44.5	44.5	44.5	17.0	70.0		12.0	65.0	
Effective Green, g (s)	44.5	44.5		44.5	44.5	44.5	17.0	70.0		12.0	65.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.12	0.50		0.09	0.46	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	373	558		171	592	492	214	3183		151	2337	
v/s Ratio Prot		0.21			0.07		0.10	c0.58		c0.11	0.40	
v/s Ratio Perm	c0.37			0.12		0.01						
v/c Ratio	1.15	0.65		0.37	0.22	0.04	0.85	1.15		1.25	0.86	
Uniform Delay, d1	47.8	41.0		37.0	35.0	33.0	60.2	35.0		64.0	33.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.35	0.24		1.00	1.00	
Incremental Delay, d2	94.1	2.6		1.4	0.2	0.0	3.0	69.2		153.7	4.4	
Delay (s)	141.9	43.6		38.3	35.2	33.0	84.0	77.5		217.7	37.9	
Level of Service	F	D		D	D	C	F	E		F	D	
Approach Delay (s)		96.1			35.4			77.8			53.3	
Approach LOS		F			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	178	321	87	219	37	211	1255	97	51	1262	453
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1711			1808		1770	3492		1770	3366	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1711			1808		1770	3492		1770	3366	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	303	187	338	92	231	39	222	1321	102	54	1328	477
RTOR Reduction (vph)	0	16	0	0	3	0	0	4	0	0	24	0
Lane Group Flow (vph)	0	812	0	0	359	0	222	1419	0	54	1781	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		28.0			26.0		16.0	72.0		8.0	64.0	
Effective Green, g (s)		28.0			26.0		16.0	72.0		8.0	64.0	
Actuated g/C Ratio		0.19			0.17		0.11	0.48		0.05	0.43	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		319			313		188	1676		94	1436	
v/s Ratio Prot		c0.47			c0.20		c0.13	0.41		0.03	c0.53	
v/s Ratio Perm												
v/c Ratio		2.54			1.15		1.18	0.85		0.57	1.24	
Uniform Delay, d1		61.0			62.0		67.0	34.2		69.3	43.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		704.3			96.4		122.8	5.5		8.2	114.2	
Delay (s)		765.3			158.4		189.8	39.7		77.6	157.2	
Level of Service		F			F		F	D		E	F	
Approach Delay (s)		765.3			158.4			59.9			154.9	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	229.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	138.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	315	97	50	78	168	114	50	1286	66	25	1476	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1757			1741			3500			3436	
Flt Permitted		0.51			0.86			0.60			0.85	
Satd. Flow (perm)		921			1510			2088			2937	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	102	53	82	177	120	53	1354	69	26	1554	284
RTOR Reduction (vph)	0	6	0	0	19	0	0	4	0	0	19	0
Lane Group Flow (vph)	0	481	0	0	360	0	0	1472	0	0	1845	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		30.0			30.0			42.0			42.0	
Effective Green, g (s)		30.0			30.0			42.0			42.0	
Actuated g/C Ratio		0.38			0.38			0.52			0.52	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		345			566			1096			1541	
v/s Ratio Prot												
v/s Ratio Perm		c0.52			0.24			c0.70			0.63	
v/c Ratio		1.40			0.64			1.34			1.20	
Uniform Delay, d1		25.0			20.5			19.0			19.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		194.7			2.3			160.5			95.5	
Delay (s)		219.7			22.9			179.5			114.5	
Level of Service		F			C			F			F	
Approach Delay (s)		219.7			22.9			179.5			114.5	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	141.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	130.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	537	583	0	0	0	0	0	2849	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.79
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3456						6408	1258
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3456						6408	1258
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	565	614	0	0	0	0	0	2999	124
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	0	1174	0	0	0	0	0	2999	85
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					53.4						78.6	78.6
Effective Green, g (s)					53.4						78.6	78.6
Actuated g/C Ratio					0.38						0.56	0.56
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					1318						3597	706
v/s Ratio Prot											c0.47	
v/s Ratio Perm					0.34							0.07
v/c Ratio					0.89						0.83	0.12
Uniform Delay, d1					40.6						25.3	14.4
Progression Factor					0.28						0.48	0.16
Incremental Delay, d2					0.8						0.2	0.0
Delay (s)					12.3						12.3	2.3
Level of Service					B						B	A
Approach Delay (s)		0.0			12.3			0.0			11.9	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1084	173	195	3753	249	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3451		1770	7437				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3451		1770	7437				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1141	182	205	3951	262	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	4	9	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1323	0	201	4204	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					46.0		85.0	85.0				
Effective Green, g (s)					46.0		85.0	85.0				
Actuated g/C Ratio					0.33		0.61	0.61				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1133		1074	4515				
v/s Ratio Prot					c0.38		0.11	c0.57				
v/s Ratio Perm												
v/c Ratio					1.17		0.19	0.93				
Uniform Delay, d1					47.0		12.2	24.9				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					85.3		0.4	4.7				
Delay (s)					132.3		12.6	29.5				
Level of Service					F		B	C				
Approach Delay (s)		0.0			132.3			28.8			0.0	
Approach LOS		A			F			C			A	

Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	8	3	22	21	1255	92	23	1445	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	11	14	8	3	23	22	1321	97	24	1521	36
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.54	0.54	0.54	0.54	0.54		0.54					
vC, conflicting volume	2328	3061	789	2259	3031	726	1560			1427		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1764	3113	0	1637	3057	726	352			1427		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	98	0	48	94	97			95		
cM capacity (veh/h)	15	6	584	0	6	362	653			469		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	42	35	683	757	785	796
Volume Left	18	8	22	0	24	0
Volume Right	14	23	0	97	0	36
cSH	13	0	653	1700	469	1700
Volume to Capacity	3.13	Err	0.03	0.45	0.05	0.47
Queue Length 95th (ft)	Err	Err	3	0	4	0
Control Delay (s)	Err	Err	0.9	0.0	1.6	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	Err	Err	0.4		0.8	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	244	239	223	2156	1098	1319	324
v/c Ratio	0.84	0.91	0.90	1.11	0.81	1.06	0.57
Control Delay	84.6	97.3	96.1	99.1	45.9	50.3	3.8
Queue Delay	0.0	0.0	0.0	0.8	48.8	12.9	0.0
Total Delay	84.6	97.3	96.1	99.9	94.7	63.2	3.8
Queue Length 50th (ft)	244	252	225	~851	496	~781	79
Queue Length 95th (ft)	#388	#426	#383	#937	588	m314	m46
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	302	273	259	1946	1360	1240	568
Starvation Cap Reductn	0	0	0	436	388	0	0
Spillback Cap Reductn	0	0	0	67	0	36	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.88	0.86	1.43	1.13	1.10	0.57

Intersection Summary

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

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

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1444	139	2795	1817
v/c Ratio	0.98	0.36	0.70	1.05
Control Delay	71.8	32.9	2.5	76.7
Queue Delay	0.0	0.0	0.7	0.0
Total Delay	71.8	32.9	3.2	76.7
Queue Length 50th (ft)	515	113	1	~741
Queue Length 95th (ft)	#624	m131	0	#824
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1472	386	4018	1723
Starvation Cap Reductn	0	0	781	0
Spillback Cap Reductn	0	0	208	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.98	0.36	0.86	1.05

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	194	114	41	34	271	80	3033	11	342	2618	121
v/c Ratio	1.27	0.51	0.44	0.22	0.74	0.75	1.24	0.01	0.82	0.78	0.12
Control Delay	214.1	68.9	82.9	63.8	20.9	107.6	147.7	0.0	57.2	9.1	0.4
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	214.1	68.9	82.9	63.8	20.9	107.6	147.7	0.0	57.2	9.1	0.4
Queue Length 50th (ft)	~238	109	39	32	12	79	~1346	0	265	72	0
Queue Length 95th (ft)	#402	161	83	63	100	#170	#1418	0	m#342	m841	m7
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	153	331	106	310	473	106	2440	749	418	3337	1029
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	1.27	0.34	0.39	0.11	0.57	0.75	1.24	0.01	0.82	0.78	0.12

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	21	36	15	193	186	4	2910	476	1844	275
v/c Ratio	0.45	0.09	0.25	0.65	0.59	0.09	0.86	1.06	0.45	0.22
Control Delay	100.0	54.3	80.9	22.4	15.0	85.2	17.4	112.4	7.2	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	100.0	54.3	80.9	22.4	15.0	85.2	17.7	112.4	7.2	2.0
Queue Length 50th (ft)	21	16	14	28	0	4	269	~511	143	6
Queue Length 95th (ft)	#58	32	41	106	73	m10	#959	#736	376	48
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	47	634	61	406	416	47	3374	448	4055	1260
Starvation Cap Reductn	0	0	0	0	0	0	92	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.06	0.25	0.48	0.45	0.09	0.89	1.06	0.45	0.22

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	336	316	316	319	199	129	3334	187	2739
v/c Ratio	1.17	0.46	1.09	0.46	0.32	1.37	1.17	1.22	1.13
Control Delay	105.7	13.7	122.5	37.8	20.4	226.0	100.9	198.9	102.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.7	13.7	122.5	37.8	20.4	226.0	100.9	198.9	102.3
Queue Length 50th (ft)	~387	161	~347	234	78	~165	~1140	~224	~1136
Queue Length 95th (ft)	m211	m113	#543	327	145	m#128	m781	#386	#1215
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	287	684	290	701	630	94	2838	153	2417
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.17	0.46	1.09	0.46	0.32	1.37	1.17	1.22	1.13

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	377	729	42	1582	215	1994
v/c Ratio	1.19	1.44	0.38	1.32	1.41	1.47
Control Delay	164.7	241.9	82.8	188.0	263.4	251.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.7	241.9	82.8	188.0	263.4	251.2
Queue Length 50th (ft)	~443	~925	40	~1041	~281	~1450
Queue Length 95th (ft)	#655	m#1030	m36	m#773	#453	#1585
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	316	507	118	1198	153	1353
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.44	0.36	1.32	1.41	1.47

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	715	294	1164	2174
v/c Ratio	1.41	0.41	1.12	1.38
Control Delay	229.6	28.4	108.8	187.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	229.6	28.4	108.8	187.1
Queue Length 50th (ft)	~939	184	~690	~1513
Queue Length 95th (ft)	#1190	266	#833	m119
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	506	709	1038	1579
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.41	0.41	1.12	1.38

Intersection Summary

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

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

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1102	3443	140
v/c Ratio	0.93	0.89	0.15
Control Delay	26.4	12.3	1.1
Queue Delay	0.0	34.3	0.0
Total Delay	26.4	46.6	1.1
Queue Length 50th (ft)	206	459	7
Queue Length 95th (ft)	#460	m395	m6
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1208	3880	920
Starvation Cap Reductn	0	673	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.91	1.07	0.15

Intersection Summary

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

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1093	171	3623
v/c Ratio	0.84	0.17	0.86
Control Delay	49.9	13.6	30.2
Queue Delay	0.0	0.0	0.0
Total Delay	49.9	13.6	30.2
Queue Length 50th (ft)	505	63	723
Queue Length 95th (ft)	576	108	792
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1402	1022	4236
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.17	0.86

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	404	403	369	1928	1020	1255	341
v/c Ratio	1.00	1.08	1.10	1.09	0.84	1.12	0.65
Control Delay	98.7	120.1	126.8	94.0	47.8	109.6	34.2
Queue Delay	0.0	0.0	0.0	3.6	33.0	0.0	0.0
Total Delay	98.7	120.1	126.8	97.6	80.8	109.6	34.2
Queue Length 50th (ft)	~393	~450	~398	~700	437	~723	206
Queue Length 95th (ft)	#624	#678	#611	#792	527	#871	334
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	402	372	336	1764	1215	1119	523
Starvation Cap Reductn	0	0	0	316	254	0	0
Spillback Cap Reductn	0	0	0	51	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	1.08	1.10	1.33	1.06	1.12	0.65

Intersection Summary

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

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1189	233	3410	1308
v/c Ratio	0.88	0.34	0.92dr	0.94
Control Delay	58.0	8.4	1.4	49.8
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	58.0	8.4	1.5	49.8
Queue Length 50th (ft)	380	90	24	419
Queue Length 95th (ft)	441	m89	m28	488
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1355	680	4163	1455
Starvation Cap Reductn	0	0	95	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	0.34	0.84	0.90

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	335	229	51	39	181	68	3265	14	302	1908	104
v/c Ratio	1.48	0.69	0.50	0.20	0.56	0.53	1.40	0.02	0.90	0.64	0.11
Control Delay	277.4	64.1	80.4	56.2	14.1	77.7	216.4	0.1	62.8	16.2	2.5
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	277.4	64.1	80.4	56.2	14.1	77.7	216.4	0.1	62.8	16.2	2.5
Queue Length 50th (ft)	~418	202	46	33	0	60	~1455	0	232	586	11
Queue Length 95th (ft)	#615	271	92	65	67	113	#1526	0	m#485	682	m24
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	227	428	113	332	421	139	2324	726	334	2994	937
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	1.48	0.54	0.45	0.12	0.43	0.49	1.40	0.02	0.90	0.64	0.11

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	167	181	61	240	229	29	3111	513	1208	165
v/c Ratio	1.20	0.41	0.35	0.81	0.59	0.33	1.09	1.31	0.37	0.16
Control Delay	193.0	58.4	64.3	51.4	12.4	76.8	67.8	200.1	13.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	193.0	58.4	64.3	51.4	12.4	76.8	67.8	200.1	13.1	2.3
Queue Length 50th (ft)	~184	83	51	122	0	25	~934	~599	195	0
Queue Length 95th (ft)	#337	110	103	213	77	m38	#1086	#824	257	32
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	139	704	182	385	467	88	2864	391	3305	1046
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.26	0.34	0.62	0.49	0.33	1.09	1.31	0.37	0.16

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	429	374	64	129	64	181	3673	188	2011
v/c Ratio	1.15	0.65	0.37	0.22	0.12	0.84	1.15	1.25	0.86
Control Delay	136.9	45.4	44.9	36.3	3.5	83.6	82.5	204.1	38.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.9	45.4	44.9	36.3	3.5	83.6	82.5	204.1	38.5
Queue Length 50th (ft)	~458	279	45	86	0	148	~1126	~212	596
Queue Length 95th (ft)	#671	396	94	141	20	m111	m96	#371	667
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	373	571	171	592	551	227	3185	151	2336
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.65	0.37	0.22	0.12	0.80	1.15	1.25	0.86

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	828	362	222	1423	54	1805
v/c Ratio	2.47	1.15	1.18	0.84	0.49	1.24
Control Delay	695.0	148.9	178.0	39.7	82.7	149.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	695.0	148.9	178.0	39.7	82.7	149.4
Queue Length 50th (ft)	~1336	~411	~259	646	52	~1139
Queue Length 95th (ft)	#1595	#621	#433	753	101	#1276
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	335	316	188	1697	118	1459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.47	1.15	1.18	0.84	0.46	1.24

Intersection Summary

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	487	379	1476	1864
v/c Ratio	1.39	0.65	1.34	1.20
Control Delay	216.2	25.1	181.3	115.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	216.2	25.1	181.3	115.9
Queue Length 50th (ft)	~330	140	~518	~601
Queue Length 95th (ft)	#515	237	#652	#739
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	351	585	1101	1559
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.39	0.65	1.34	1.20

Intersection Summary

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

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1179	2999	124
v/c Ratio	0.89	0.83	0.17
Control Delay	12.6	12.6	0.9
Queue Delay	0.0	11.5	0.0
Total Delay	12.6	24.1	0.9
Queue Length 50th (ft)	91	397	4
Queue Length 95th (ft)	m82	m336	m3
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1363	3595	744
Starvation Cap Reductn	0	632	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.87	1.01	0.17

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1323	205	4213
v/c Ratio	1.17	0.19	0.93
Control Delay	127.0	12.2	29.7
Queue Delay	0.0	0.0	0.0
Total Delay	127.0	12.2	29.7
Queue Length 50th (ft)	~752	75	812
Queue Length 95th (ft)	#891	115	841
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1133	1078	4525
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.17	0.19	0.93

Intersection Summary

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

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

Appendix I – Cumulative plus Project Phase 1 and 2 Conditions Intersections Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	375	0	302	2085	925	127	0	0	0	0	1221	343
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.98	0.96	1.00	1.00						1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.94	0.85	1.00	0.98						1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1521	1437	4990	3469						3373	1395
Flt Permitted	0.95	0.97	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1521	1437	4990	3469						3373	1395
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	395	0	318	2195	974	134	0	0	0	0	1285	361
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	1	56
Lane Group Flow (vph)	249	241	223	2195	1101	0	0	0	0	0	1320	269
Confl. Peds. (#/hr)			19			2						12
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	25.9	25.9	25.9	58.5	58.5						55.1	55.1
Effective Green, g (s)	25.9	25.9	25.9	58.5	58.5						55.1	55.1
Actuated g/C Ratio	0.17	0.17	0.17	0.39	0.39						0.37	0.37
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	290	262	248	1946	1352						1239	512
v/s Ratio Prot	0.15	c0.16		c0.44	0.32						c0.39	
v/s Ratio Perm			0.16									0.19
v/c Ratio	0.86	0.92	0.90	1.13	0.81						1.07	0.53
Uniform Delay, d1	60.3	61.0	60.8	45.8	40.9						47.5	37.2
Progression Factor	1.00	1.00	1.00	1.00	1.00						0.36	0.12
Incremental Delay, d2	21.4	34.5	31.5	64.8	3.9						31.3	0.4
Delay (s)	81.7	95.5	92.3	110.6	44.8						48.2	4.9
Level of Service	F	F	F	F	D						D	A
Approach Delay (s)		89.7			88.5			0.0			39.7	
Approach LOS		F			F			A			D	

Intersection Summary			
HCM 2000 Control Delay	74.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1360	22	139	1994	695	0	0	1778
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		5.0	5.0				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.99				0.98
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					1.00		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5071		1770	6087				3528
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5071		1770	6087				3528
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1432	23	146	2099	732	0	0	1872
RTOR Reduction (vph)	0	0	0	0	1	0	32	46	0	0	0	230
Lane Group Flow (vph)	0	0	0	0	1454	0	114	2785	0	0	0	1642
Confl. Peds. (#/hr)						8			9			9
Confl. Bikes (#/hr)						3						
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					43.5		30.0	93.0				63.0
Effective Green, g (s)					43.5		30.0	93.0				63.0
Actuated g/C Ratio					0.29		0.20	0.62				0.42
Clearance Time (s)					3.5		5.0	5.0				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1470		354	3976				1481
v/s Ratio Prot					c0.29		0.06	c0.14				
v/s Ratio Perm								0.32				c0.47
v/c Ratio					0.99		0.32	0.70				1.11
Uniform Delay, d1					53.0		51.3	19.1				43.5
Progression Factor					1.00		0.85	0.12				1.27
Incremental Delay, d2					20.6		1.1	0.3				58.1
Delay (s)					73.6		44.6	2.7				113.5
Level of Service					E		D	A				F
Approach Delay (s)		0.0			73.6			4.7			113.5	
Approach LOS		A			E			A			F	

Intersection Summary			
HCM 2000 Control Delay	52.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	199	63	62	39	32	257	110	2940	10	325	2519	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.94	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1690		1770	1863	1553	1770	5085	1490	1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1690		1770	1863	1553	1770	5085	1490	1770	5085	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	66	65	41	34	271	116	3095	11	342	2652	129
RTOR Reduction (vph)	0	0	0	0	0	232	0	0	6	0	0	26
Lane Group Flow (vph)	209	131	0	41	34	39	116	3095	5	342	2652	103
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	13.0	20.5		6.9	14.4	14.4	9.0	71.1	71.1	34.5	96.6	96.6
Effective Green, g (s)	13.0	20.5		6.9	14.4	14.4	9.0	71.1	71.1	34.5	96.6	96.6
Actuated g/C Ratio	0.09	0.14		0.05	0.10	0.10	0.06	0.47	0.47	0.23	0.64	0.64
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	153	230		81	178	149	106	2410	706	407	3274	985
v/s Ratio Prot	c0.12	c0.08		0.02	0.02		0.07	c0.61		0.19	c0.52	
v/s Ratio Perm						0.02			0.00			0.07
v/c Ratio	1.37	0.57		0.51	0.19	0.26	1.09	1.28	0.01	0.84	0.81	0.10
Uniform Delay, d1	68.5	60.6		69.9	62.4	62.9	70.5	39.5	20.8	55.1	19.9	10.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.17	1.30	1.00	1.02	0.47	0.07
Incremental Delay, d2	200.7	3.2		4.9	0.5	0.9	87.9	129.5	0.0	1.5	0.2	0.0
Delay (s)	269.2	63.8		74.8	63.0	63.8	170.4	180.8	20.8	57.9	9.6	0.7
Level of Service	F	E		E	E	E	F	F	C	E	A	A
Approach Delay (s)		190.1			65.0			179.9			14.5	
Approach LOS		F			E			F			B	

Intersection Summary			
HCM 2000 Control Delay	101.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	36	8	14	29	336	14	2745	50	513	1796	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3435		1770	1512	1464	1770	6388		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3435		1770	1512	1464	1770	6388		1770	5085	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	40	38	8	15	31	354	15	2889	53	540	1891	285
RTOR Reduction (vph)	0	7	0	0	136	169	0	2	0	0	0	62
Lane Group Flow (vph)	40	39	0	15	58	22	15	2940	0	540	1891	223
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	4.0	20.0		1.6	17.6	17.6	1.6	71.0		40.4	109.8	109.8
Effective Green, g (s)	4.0	20.0		1.6	17.6	17.6	1.6	71.0		40.4	109.8	109.8
Actuated g/C Ratio	0.03	0.13		0.01	0.12	0.12	0.01	0.47		0.27	0.73	0.73
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	47	458		18	177	171	18	3023		476	3722	1114
v/s Ratio Prot	c0.02	0.01		0.01	c0.04		0.01	c0.46		c0.31	0.37	
v/s Ratio Perm						0.02						0.15
v/c Ratio	0.85	0.09		0.83	0.33	0.13	0.83	0.97		1.13	0.51	0.20
Uniform Delay, d1	72.7	57.0		74.1	60.8	59.3	74.1	38.6		54.8	8.6	6.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	0.39		0.70	1.26	2.58
Incremental Delay, d2	77.3	0.1		131.9	1.1	0.3	121.9	10.2		76.4	0.3	0.3
Delay (s)	150.0	57.1		206.0	61.9	59.7	204.3	25.1		114.9	11.1	16.5
Level of Service	F	E		F	E	E	F	C		F	B	B
Approach Delay (s)		100.3			66.2			26.0			32.3	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	8	7	4	1	11	14	954	84	39	1604	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	8	7	4	1	12	15	1004	88	41	1688	25
Pedestrians					3			5			5	
Lane Width (ft)					12.0			12.0			12.0	
Walking Speed (ft/s)					4.0			4.0			4.0	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	2332	2908	862	2024	2877	554	1714			1096		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2332	2908	862	2024	2877	554	1714			1096		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	81	39	98	73	93	98	96			93		
cM capacity (veh/h)	17	14	297	16	14	473	366			631		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	19	17	517	591	885	869
Volume Left	3	4	15	0	41	0
Volume Right	7	12	0	88	0	25
cSH	23	46	366	1700	631	1700
Volume to Capacity	0.83	0.37	0.04	0.35	0.07	0.51
Queue Length 95th (ft)	61	32	3	0	5	0
Control Delay (s)	368.6	123.6	1.3	0.0	1.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	368.6	123.6	0.6		0.9	
Approach LOS	F	F				

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	27	18	26	150	618	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	28	19	27	158	651	22
Pedestrians	1			5	3	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	799	342	674			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	799	342	674			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	97	97			
cM capacity (veh/h)	312	650	913			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	47	80	105	434	239
Volume Left	28	27	0	0	0
Volume Right	19	0	0	0	22
cSH	394	913	1700	1700	1700
Volume to Capacity	0.12	0.03	0.06	0.26	0.14
Queue Length 95th (ft)	10	2	0	0	0
Control Delay (s)	15.4	3.3	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	15.4	1.4		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	3	8	93	3	20	18	77	127	104	477	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	3	8	98	3	21	19	81	134	109	502	0

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	13	122	59	174	612
Volume Left (vph)	1	98	19	0	109
Volume Right (vph)	8	21	0	134	0
Hadj (s)	-0.35	0.09	0.19	-0.50	0.07
Departure Headway (s)	5.8	6.0	5.7	5.0	4.8
Degree Utilization, x	0.02	0.20	0.09	0.24	0.81
Capacity (veh/h)	552	550	605	689	742
Control Delay (s)	9.0	10.5	8.1	8.4	25.1
Approach Delay (s)	9.0	10.5	8.3		25.1
Approach LOS	A	B	A		D

Intersection Summary			
Delay	19.0		
Level of Service	C		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	43	13	2	27	198	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	45	14	2	28	208	141

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	59	31	349
Volume Left (vph)	45	2	0
Volume Right (vph)	14	0	141
Hadj (s)	0.05	0.05	-0.21
Departure Headway (s)	4.7	4.4	3.9
Degree Utilization, x	0.08	0.04	0.38
Capacity (veh/h)	699	781	916
Control Delay (s)	8.1	7.6	9.2
Approach Delay (s)	8.1	7.6	9.2
Approach LOS	A	A	A

Intersection Summary			
Delay	8.9		
Level of Service	A		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	263	156	76	145	456	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	277	164	80	153	480	137

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	441	233	617
Volume Left (vph)	277	0	480
Volume Right (vph)	164	153	0
Hadj (s)	-0.06	-0.36	0.19
Departure Headway (s)	6.2	6.1	6.0
Degree Utilization, x	0.76	0.39	1.0
Capacity (veh/h)	570	569	585
Control Delay (s)	26.0	13.0	70.8
Approach Delay (s)	26.0	13.0	70.8
Approach LOS	D	B	F

Intersection Summary			
Delay	45.1		
Level of Service	E		
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	319	240	60	300	303	189	123	3061	180	178	2571	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801		1770	1863	1538	1770	6346		1770	5037	
Flt Permitted	0.41	1.00		0.41	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	764	1801		770	1863	1538	1770	6346		1770	5037	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	336	253	63	316	319	199	129	3222	189	187	2706	75
RTOR Reduction (vph)	0	6	0	0	0	51	0	6	0	0	0	0
Lane Group Flow (vph)	336	310	0	316	319	148	129	3405	0	187	2781	0
Confl. Peds. (#/hr)			2			9			1			47
Confl. Bikes (#/hr)						2			1			
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8			4		4						
Actuated Green, G (s)	56.5	56.5		56.5	56.5	56.5	8.0	67.0		13.0	72.0	
Effective Green, g (s)	56.5	56.5		56.5	56.5	56.5	8.0	67.0		13.0	72.0	
Actuated g/C Ratio	0.38	0.38		0.38	0.38	0.38	0.05	0.45		0.09	0.48	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	287	678		290	701	579	94	2834		153	2417	
v/s Ratio Prot		0.17			0.17		0.07	c0.54		0.11	c0.55	
v/s Ratio Perm	c0.44			0.41		0.10						
v/c Ratio	1.17	0.46		1.09	0.46	0.26	1.37	1.20		1.22	1.15	
Uniform Delay, d1	46.8	35.2		46.8	35.2	32.2	71.0	41.5		68.5	39.0	
Progression Factor	0.49	0.39		1.00	1.00	1.00	1.10	0.47		1.00	1.00	
Incremental Delay, d2	80.5	0.0		78.9	0.5	0.2	173.7	91.1		144.7	73.0	
Delay (s)	103.6	13.8		125.7	35.6	32.5	251.7	110.7		213.2	112.0	
Level of Service	F	B		F	D	C	F	F		F	F	
Approach Delay (s)		60.1			69.0			115.8			118.4	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	107.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	239	31	295	189	208	40	992	532	204	1826	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.96		1.00	0.95		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1813			1736		1770	3318		1770	3508	
Flt Permitted		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1813			1736		1770	3318		1770	3508	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	252	33	311	199	219	42	1044	560	215	1922	83
RTOR Reduction (vph)	0	2	0	0	10	0	0	47	0	0	2	0
Lane Group Flow (vph)	0	375	0	0	719	0	42	1557	0	215	2003	0
Confl. Peds. (#/hr)			14			7			2			10
Confl. Bikes (#/hr)						2			2			1
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		26.0			43.0		8.0	51.2		13.8	57.0	
Effective Green, g (s)		26.0			43.0		8.0	51.2		13.8	57.0	
Actuated g/C Ratio		0.17			0.29		0.05	0.34		0.09	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		314			497		94	1132		162	1333	
v/s Ratio Prot		c0.21			c0.41		0.02	0.47		c0.12	c0.57	
v/s Ratio Perm												
v/c Ratio		1.19			1.45		0.45	1.38		1.33	1.50	
Uniform Delay, d1		62.0			53.5		68.9	49.4		68.1	46.5	
Progression Factor		1.00			0.91		1.21	1.21		1.00	1.00	
Incremental Delay, d2		113.8			210.4		0.3	169.3		183.4	230.2	
Delay (s)		175.8			259.0		83.5	229.2		251.5	276.7	
Level of Service		F			F		F	F		F	F	
Approach Delay (s)		175.8			259.0			225.4			274.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	248.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	131.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	411	127	141	47	192	58	27	1052	31	18	1768	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.97			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1745			1792			3515			3450	
Flt Permitted		0.59			0.85			0.61			0.89	
Satd. Flow (perm)		1056			1535			2161			3078	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	433	134	148	49	202	61	28	1107	33	19	1861	306
RTOR Reduction (vph)	0	3	0	0	6	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	712	0	0	306	0	0	1166	0	0	2177	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		70.0			69.0			72.0			72.0	
Effective Green, g (s)		70.0			69.0			72.0			72.0	
Actuated g/C Ratio		0.47			0.46			0.48			0.48	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		492			706			1037			1477	
v/s Ratio Prot												
v/s Ratio Perm		c0.67			0.20			0.54			c0.71	
v/c Ratio		1.45			0.43			1.12			1.47	
Uniform Delay, d1		40.0			27.3			39.0			39.0	
Progression Factor		1.00			1.00			1.17			0.25	
Incremental Delay, d2		212.7			0.4			68.5			213.7	
Delay (s)		252.7			27.7			114.2			223.6	
Level of Service		F			C			F			F	
Approach Delay (s)		252.7			27.7			114.2			223.6	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	185.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	136.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	422	645	0	0	0	0	0	3310	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.93
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3471						6408	1468
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3471						6408	1468
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	444	679	0	0	0	0	0	3484	140
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	0	0	1118	0	0	0	0	0	3484	108
Confl. Peds. (#/hr)												30
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					51.4						90.6	90.6
Effective Green, g (s)					51.4						90.6	90.6
Actuated g/C Ratio					0.34						0.60	0.60
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					1189						3870	886
v/s Ratio Prot											c0.54	
v/s Ratio Perm					0.32							0.07
v/c Ratio					0.94						0.90	0.12
Uniform Delay, d1					47.8						25.8	12.7
Progression Factor					0.33						0.46	0.18
Incremental Delay, d2					10.9						0.4	0.0
Delay (s)					26.6						12.2	2.3
Level of Service					C						B	A
Approach Delay (s)		0.0			26.6			0.0			11.8	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	989	50	162	3249	233	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	0.99				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.99		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3505		1770	7417				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3505		1770	7417				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1041	53	171	3420	245	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	14	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1094	0	157	3657	0	0	0	0
Confl. Peds. (#/hr)						28			29			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					55.5		85.5	85.5				
Effective Green, g (s)					55.5		85.5	85.5				
Actuated g/C Ratio					0.37		0.57	0.57				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1296		1008	4227				
v/s Ratio Prot					c0.31		0.09	c0.49				
v/s Ratio Perm												
v/c Ratio					0.84		0.16	0.87				
Uniform Delay, d1					43.3		15.2	27.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					5.2		0.3	2.6				
Delay (s)					48.5		15.6	30.0				
Level of Service					D		B	C				
Approach Delay (s)		0.0			48.5			29.3			0.0	
Approach LOS		A			D			C			A	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	7	6	17	6	9	14	1001	70	5	1800	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	7	6	18	6	9	15	1054	74	5	1895	4
Pedestrians		1			2			7			6	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.53	0.53	0.53	0.53	0.53		0.53					
vC, conflicting volume	2483	3067	957	2097	3032	572	1900			1129		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2029	3126	0	1303	3061	572	934			1129		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	99	0	0	98	96			99		
cM capacity (veh/h)	0	6	573	0	6	460	388			613		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	25	34	542	601	953	952
Volume Left	12	18	15	0	5	0
Volume Right	6	9	0	74	0	4
cSH	0	0	388	1700	613	1700
Volume to Capacity	Err	Err	0.04	0.35	0.01	0.56
Queue Length 95th (ft)	Err	Err	3	0	1	0
Control Delay (s)	Err	Err	1.2	0.0	0.3	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	Err	Err	0.6		0.1	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	29	49	19	53	292	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	31	52	20	56	307	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	415	319	331			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415	319	331			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	98			
cM capacity (veh/h)	584	722	1229			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	82	76	331
Volume Left	31	20	0
Volume Right	52	0	23
cSH	664	1229	1700
Volume to Capacity	0.12	0.02	0.19
Queue Length 95th (ft)	11	1	0
Control Delay (s)	11.2	2.2	0.0
Lane LOS	B	A	
Approach Delay (s)	11.2	2.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	89	0	3119	2576	44
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	94	0	3283	2712	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.76	0.58	0.58			
vC, conflicting volume	3556	927	2758			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1521			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	85	100			
cM capacity (veh/h)	773	634	254			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	94	821	821	821	821	1085	1085	589
Volume Left	0	0	0	0	0	0	0	0
Volume Right	94	0	0	0	0	0	0	46
cSH	634	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.48	0.48	0.48	0.48	0.64	0.64	0.35
Queue Length 95th (ft)	13	0	0	0	0	0	0	0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	11.7	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	293	8	19	246	11	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	308	8	20	259	12	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					0.99	
vC, conflicting volume			317		612	313
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			317		606	313
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		97	96
cM capacity (veh/h)			1243		450	728

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	317	279	44
Volume Left	0	20	12
Volume Right	8	0	33
cSH	1700	1243	626
Volume to Capacity	0.19	0.02	0.07
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.7	11.2
Lane LOS		A	B
Approach Delay (s)	0.0	0.7	11.2
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
1: Mission Blvd & A St

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	699	0	432	1868	761	217	0	0	0	0	1158	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Lane Util. Factor	0.95	0.91	0.95	0.94	0.95						0.91	0.91
Frpb, ped/bikes	1.00	0.99	0.94	1.00	0.99						1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Frt	1.00	0.97	0.85	1.00	0.97						1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)	1681	1560	1407	4990	3388						3370	1373
Flt Permitted	0.95	0.96	1.00	0.95	1.00						1.00	1.00
Satd. Flow (perm)	1681	1560	1407	4990	3388						3370	1373
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	736	0	455	1966	801	228	0	0	0	0	1219	380
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	1	67
Lane Group Flow (vph)	412	406	373	1966	1010	0	0	0	0	0	1256	275
Confl. Peds. (#/hr)			42			20						22
Confl. Bikes (#/hr)			1			2						2
Turn Type	Split	NA	Perm	Split	NA						NA	Perm
Protected Phases	8	8		4	4						2	
Permitted Phases			8									2
Actuated Green, G (s)	33.5	33.5	33.5	49.5	49.5						46.5	46.5
Effective Green, g (s)	33.5	33.5	33.5	49.5	49.5						46.5	46.5
Actuated g/C Ratio	0.24	0.24	0.24	0.35	0.35						0.33	0.33
Clearance Time (s)	3.5	3.5	3.5	3.5	3.5						3.5	3.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)	402	373	336	1764	1197						1119	456
v/s Ratio Prot	0.25	0.26		c0.39	0.30						c0.37	
v/s Ratio Perm			c0.27									0.20
v/c Ratio	1.02	1.09	1.11	1.11	0.84						1.12	0.60
Uniform Delay, d1	53.2	53.2	53.2	45.2	41.7						46.8	39.0
Progression Factor	1.00	1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2	51.4	72.4	82.1	60.1	5.6						67.1	5.8
Delay (s)	104.6	125.7	135.4	105.3	47.3						113.8	44.8
Level of Service	F	F	F	F	D						F	D
Approach Delay (s)		121.4			85.4			0.0			99.1	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	96.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.5
Intersection Capacity Utilization	105.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1093	63	238	2351	974	0	0	1293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5		3.5	3.5				5.0
Lane Util. Factor					0.91		1.00	0.86				0.76
Frpb, ped/bikes					1.00		1.00	0.98				0.96
Flpb, ped/bikes					1.00		1.00	1.00				1.00
Frt					0.99		1.00	0.96				0.85
Flt Protected					1.00		0.95	1.00				1.00
Satd. Flow (prot)					5039		1770	6015				3470
Flt Permitted					1.00		0.95	1.00				1.00
Satd. Flow (perm)					5039		1770	6015				3470
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1151	66	251	2475	1025	0	0	1361
RTOR Reduction (vph)	0	0	0	0	4	0	28	59	0	0	0	391
Lane Group Flow (vph)	0	0	0	0	1213	0	223	3441	0	0	0	970
Confl. Peds. (#/hr)						4			16			24
Turn Type					NA		Split	NA				Perm
Protected Phases					4		6	6				
Permitted Phases								2				2
Actuated Green, G (s)					37.4		49.5	90.6				41.1
Effective Green, g (s)					37.4		49.5	90.6				41.1
Actuated g/C Ratio					0.27		0.35	0.65				0.29
Clearance Time (s)					3.5		3.5	3.5				5.0
Vehicle Extension (s)					3.0		3.0	3.0				3.0
Lane Grp Cap (vph)					1346		625	3892				1018
v/s Ratio Prot					c0.24		0.13	c0.31				
v/s Ratio Perm								0.26				c0.28
v/c Ratio					0.90		0.36	0.92dr				0.95
Uniform Delay, d1					49.5		33.5	20.4				48.5
Progression Factor					1.00		0.31	0.07				0.86
Incremental Delay, d2					8.6		0.5	0.8				17.1
Delay (s)					58.1		10.7	2.2				58.8
Level of Service					E		B	A				E
Approach Delay (s)		0.0			58.1			2.8			58.8	
Approach LOS		A			E			A			E	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	332	152	82	48	37	172	150	3159	13	287	1893	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.93	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1748		1770	1863	1524	1770	5085	1469	1770	5085	1518
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1748		1770	1863	1524	1770	5085	1469	1770	5085	1518
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	349	160	86	51	39	181	158	3325	14	302	1993	125
RTOR Reduction (vph)	0	0	0	0	0	160	0	0	8	0	0	49
Lane Group Flow (vph)	349	246	0	51	39	21	158	3325	6	302	1993	76
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	18.0	27.3		7.0	16.3	16.3	11.0	63.2	63.2	25.5	77.7	77.7
Effective Green, g (s)	18.0	27.3		7.0	16.3	16.3	11.0	63.2	63.2	25.5	77.7	77.7
Actuated g/C Ratio	0.13	0.20		0.05	0.12	0.12	0.08	0.45	0.45	0.18	0.56	0.56
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	340		88	216	177	139	2295	663	322	2822	842
v/s Ratio Prot	c0.20	c0.14		0.03	0.02		0.09	c0.65		c0.17	0.39	
v/s Ratio Perm						0.01			0.00			0.05
v/c Ratio	1.54	0.72		0.58	0.18	0.12	1.14	1.45	0.01	0.94	0.71	0.09
Uniform Delay, d1	61.0	52.8		65.1	55.8	55.4	64.5	38.4	21.2	56.5	22.8	14.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.10	1.17	1.00	0.73	0.72	0.65
Incremental Delay, d2	262.7	7.4		8.9	0.4	0.3	70.0	202.2	0.0	23.5	0.9	0.1
Delay (s)	323.7	60.2		74.0	56.2	55.7	140.9	247.1	21.2	64.5	17.3	9.6
Level of Service	F	E		E	E	E	F	F	C	E	B	A
Approach Delay (s)		214.8			59.2			241.4			22.8	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	153.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	117.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	166	16	58	56	404	54	2941	91	546	1191	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.89	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3486		1770	1537	1465	1770	6372		1770	5085	1522
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3486		1770	1537	1465	1770	6372		1770	5085	1522
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	175	17	61	59	425	57	3096	96	575	1254	192
RTOR Reduction (vph)	0	6	0	0	86	204	0	3	0	0	0	77
Lane Group Flow (vph)	186	186	0	61	160	34	57	3189	0	575	1254	115
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	11.0	18.0		13.1	20.1	20.1	8.3	60.9		31.0	83.6	83.6
Effective Green, g (s)	11.0	18.0		13.1	20.1	20.1	8.3	60.9		31.0	83.6	83.6
Actuated g/C Ratio	0.08	0.13		0.09	0.14	0.14	0.06	0.43		0.22	0.60	0.60
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	139	448		165	220	210	104	2771		391	3036	908
v/s Ratio Prot	c0.11	0.05		0.03	c0.10		0.03	c0.50		c0.32	0.25	
v/s Ratio Perm						0.02						0.08
v/c Ratio	1.34	0.41		0.37	0.73	0.16	0.55	1.15		1.47	0.41	0.13
Uniform Delay, d1	64.5	56.2		59.6	57.3	52.6	64.0	39.5		54.5	15.1	12.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.06	0.57		0.67	0.93	2.80
Incremental Delay, d2	192.6	0.6		1.4	11.2	0.4	4.4	71.4		222.0	0.3	0.2
Delay (s)	257.1	56.8		61.0	68.5	52.9	72.2	94.0		258.3	14.4	34.6
Level of Service	F	E		E	E	D	E	F		F	B	C
Approach Delay (s)		155.4			60.9			93.6			85.7	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	91.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	112.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	2	6	4	2	8	7	1192	193	67	1459	12
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	2	6	4	2	8	7	1255	203	71	1536	13
Pedestrians		6			1			24			16	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								360				
pX, platoon unblocked												
vC, conflicting volume	2357	3163	804	2312	3068	746	1554			1459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2357	3163	804	2312	3068	746	1554			1459		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	12	76	98	70	79	98	98			85		
cM capacity (veh/h)	13	9	318	14	10	351	420			459		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	20	15	635	831	838	781
Volume Left	12	4	7	0	71	0
Volume Right	6	8	0	203	0	13
cSH	17	27	420	1700	459	1700
Volume to Capacity	1.15	0.54	0.02	0.49	0.15	0.46
Queue Length 95th (ft)	73	42	1	0	13	0
Control Delay (s)	571.3	240.2	0.5	0.0	4.9	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	571.3	240.2	0.2		2.5	
Approach LOS	F	F				

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	94	25	22	516	429	22
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	99	26	23	543	452	23
Pedestrians	2			9	19	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	0			1	2	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				423		
pX, platoon unblocked						
vC, conflicting volume	802	248	477			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	802	248	477			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	96	98			
cM capacity (veh/h)	309	745	1080			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	125	204	362	301	174
Volume Left	99	23	0	0	0
Volume Right	26	0	0	0	23
cSH	352	1080	1700	1700	1700
Volume to Capacity	0.36	0.02	0.21	0.18	0.10
Queue Length 95th (ft)	39	2	0	0	0
Control Delay (s)	20.7	1.1	0.0	0.0	0.0
Lane LOS	C	A			
Approach Delay (s)	20.7	0.4		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	6	7	9	67	10	38	15	278	340	111	320	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	7	9	71	11	40	16	293	358	117	337	21

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	23	121	162	504	475
Volume Left (vph)	6	71	16	0	117
Volume Right (vph)	9	40	0	358	21
Hadj (s)	-0.16	-0.05	0.08	-0.46	0.06
Departure Headway (s)	6.6	6.4	5.6	5.0	5.3
Degree Utilization, x	0.04	0.21	0.25	0.70	0.69
Capacity (veh/h)	467	510	632	697	671
Control Delay (s)	9.9	11.1	9.2	17.8	19.3
Approach Delay (s)	9.9	11.1	15.7		19.3
Approach LOS	A	B	C		C

Intersection Summary			
Delay	16.5		
Level of Service	C		
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	117	44	39	174	161	120
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	123	46	41	183	169	126

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	169	224	296
Volume Left (vph)	123	41	0
Volume Right (vph)	46	0	126
Hadj (s)	0.02	0.07	-0.22
Departure Headway (s)	5.1	4.8	4.4
Degree Utilization, x	0.24	0.30	0.36
Capacity (veh/h)	647	721	778
Control Delay (s)	9.7	9.8	9.9
Approach Delay (s)	9.7	9.8	9.9
Approach LOS	A	A	A

Intersection Summary			
Delay	9.8		
Level of Service	A		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Volume (vph)	134	136	103	366	485	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	141	143	108	385	511	141

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	284	494	652
Volume Left (vph)	141	0	511
Volume Right (vph)	143	385	0
Hadj (s)	-0.17	-0.43	0.19
Departure Headway (s)	6.5	5.4	5.9
Degree Utilization, x	0.51	0.75	1.0
Capacity (veh/h)	526	647	609
Control Delay (s)	16.2	22.7	78.5
Approach Delay (s)	16.2	22.7	78.5
Approach LOS	C	C	F

Intersection Summary			
Delay	46.8		
Level of Service	E		
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	408	237	119	61	123	61	172	3432	128	179	1912	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1757		1770	1863	1549	1770	6368		1770	5038	
Flt Permitted	0.63	1.00		0.29	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1175	1757		541	1863	1549	1770	6368		1770	5038	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	429	249	125	64	129	64	181	3613	135	188	2013	103
RTOR Reduction (vph)	0	13	0	0	0	44	0	4	0	0	0	0
Lane Group Flow (vph)	429	361	0	64	129	20	181	3745	0	188	2116	0
Confl. Peds. (#/hr)			6			5			1			6
Confl. Bikes (#/hr)						3						
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		8			4		5	2		1	6	
Permitted Phases	8			4		4						
Actuated Green, G (s)	44.5	44.5		44.5	44.5	44.5	17.0	70.0		12.0	65.0	
Effective Green, g (s)	44.5	44.5		44.5	44.5	44.5	17.0	70.0		12.0	65.0	
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.12	0.50		0.09	0.46	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	373	558		171	592	492	214	3184		151	2339	
v/s Ratio Prot		0.21			0.07		0.10	c0.59		c0.11	0.42	
v/s Ratio Perm	c0.37			0.12		0.01						
v/c Ratio	1.15	0.65		0.37	0.22	0.04	0.85	1.18		1.25	0.90	
Uniform Delay, d1	47.8	41.0		37.0	35.0	33.0	60.2	35.0		64.0	34.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.35	0.24		1.00	1.00	
Incremental Delay, d2	94.1	2.6		1.4	0.2	0.0	3.0	79.6		153.7	6.4	
Delay (s)	141.9	43.6		38.3	35.2	33.0	84.1	88.0		217.7	41.0	
Level of Service	F	D		D	D	C	F	F		F	D	
Approach Delay (s)		96.1			35.4			87.8			55.4	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	288	178	321	87	219	37	211	1275	97	51	1290	453
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			1.00		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.99		1.00	0.99		1.00	0.96	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1711			1808		1770	3493		1770	3369	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1711			1808		1770	3493		1770	3369	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	303	187	338	92	231	39	222	1342	102	54	1358	477
RTOR Reduction (vph)	0	16	0	0	3	0	0	4	0	0	24	0
Lane Group Flow (vph)	0	812	0	0	359	0	222	1440	0	54	1811	0
Confl. Peds. (#/hr)			7			8			4			4
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		28.0			26.0		16.0	72.0		8.0	64.0	
Effective Green, g (s)		28.0			26.0		16.0	72.0		8.0	64.0	
Actuated g/C Ratio		0.19			0.17		0.11	0.48		0.05	0.43	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		319			313		188	1676		94	1437	
v/s Ratio Prot		c0.47			c0.20		c0.13	0.41		0.03	c0.54	
v/s Ratio Perm												
v/c Ratio		2.54			1.15		1.18	0.86		0.57	1.26	
Uniform Delay, d1		61.0			62.0		67.0	34.5		69.3	43.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		704.3			96.4		122.8	6.0		8.2	123.0	
Delay (s)		765.3			158.4		189.8	40.5		77.6	166.0	
Level of Service		F			F		F	D		E	F	
Approach Delay (s)		765.3			158.4			60.4			163.5	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	231.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	315	97	50	78	168	130	50	1290	66	48	1482	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			0.99	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.95			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1757			1733			3500			3435	
Flt Permitted		0.49			0.86			0.59			0.74	
Satd. Flow (perm)		896			1511			2079			2533	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	102	53	82	177	137	53	1358	69	51	1560	284
RTOR Reduction (vph)	0	6	0	0	19	0	0	4	0	0	18	0
Lane Group Flow (vph)	0	481	0	0	377	0	0	1476	0	0	1877	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		30.0			30.0			42.0			42.0	
Effective Green, g (s)		30.0			30.0			42.0			42.0	
Actuated g/C Ratio		0.38			0.38			0.52			0.52	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		336			566			1091			1329	
v/s Ratio Prot												
v/s Ratio Perm		c0.54			0.25			0.71			c0.74	
v/c Ratio		1.43			0.67			1.35			1.41	
Uniform Delay, d1		25.0			20.8			19.0			19.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		211.1			3.0			164.8			190.1	
Delay (s)		236.1			23.8			183.8			209.1	
Level of Service		F			C			F			F	
Approach Delay (s)		236.1			23.8			183.8			209.1	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	186.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	142.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	557	583	0	0	0	0	0	2887	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0						4.0	4.0
Lane Util. Factor					0.95						0.86	1.00
Frpb, ped/bikes					1.00						1.00	0.79
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.98						1.00	1.00
Satd. Flow (prot)					3455						6408	1258
Flt Permitted					0.98						1.00	1.00
Satd. Flow (perm)					3455						6408	1258
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	586	614	0	0	0	0	0	3039	124
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	0	1195	0	0	0	0	0	3039	85
Confl. Peds. (#/hr)												103
Confl. Bikes (#/hr)												2
Turn Type				Perm	NA						NA	Perm
Protected Phases					4						2	
Permitted Phases				4								2
Actuated Green, G (s)					53.8						78.2	78.2
Effective Green, g (s)					53.8						78.2	78.2
Actuated g/C Ratio					0.38						0.56	0.56
Clearance Time (s)					4.0						4.0	4.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					1327						3579	702
v/s Ratio Prot											c0.47	
v/s Ratio Perm					0.35							0.07
v/c Ratio					0.90						0.85	0.12
Uniform Delay, d1					40.6						25.9	14.6
Progression Factor					0.27						0.47	0.15
Incremental Delay, d2					0.9						0.3	0.0
Delay (s)					11.8						12.5	2.3
Level of Service					B						B	A
Approach Delay (s)		0.0			11.8			0.0			12.1	
Approach LOS		A			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	1084	176	195	3852	249	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		5.0	5.0				
Lane Util. Factor					0.95		1.00	0.81				
Frpb, ped/bikes					1.00		1.00	1.00				
Flpb, ped/bikes					1.00		1.00	1.00				
Frt					0.98		1.00	0.99				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					3450		1770	7440				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					3450		1770	7440				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	1141	185	205	4055	262	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	4	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1326	0	201	4309	0	0	0	0
Confl. Peds. (#/hr)						15			22			
Confl. Bikes (#/hr)									2			
Turn Type					NA		Split	NA				
Protected Phases					4		6	6				
Permitted Phases												
Actuated Green, G (s)					46.0		85.0	85.0				
Effective Green, g (s)					46.0		85.0	85.0				
Actuated g/C Ratio					0.33		0.61	0.61				
Clearance Time (s)					4.0		5.0	5.0				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					1133		1074	4517				
v/s Ratio Prot					c0.38		0.11	c0.58				
v/s Ratio Perm												
v/c Ratio					1.17		0.19	0.95				
Uniform Delay, d1					47.0		12.2	25.7				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					86.3		0.4	6.3				
Delay (s)					133.3		12.6	32.0				
Level of Service					F		B	C				
Approach Delay (s)		0.0			133.3			31.1			0.0	
Approach LOS		A			F			C			A	

Intersection Summary			
HCM 2000 Control Delay	54.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	10	13	9	3	24	21	1257	99	26	1448	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	11	14	9	3	25	22	1323	104	27	1524	36
Pedestrians		3			9			8			8	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											748	
pX, platoon unblocked	0.54	0.54	0.54	0.54	0.54		0.54					
vC, conflicting volume	2340	3080	791	2272	3046	731	1563			1436		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1785	3148	0	1659	3085	731	353			1436		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	98	0	45	93	97			94		
cM capacity (veh/h)	14	5	583	0	6	359	651			465		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	42	38	684	766	789	798
Volume Left	18	9	22	0	27	0
Volume Right	14	25	0	104	0	36
cSH	12	0	651	1700	465	1700
Volume to Capacity	3.37	Err	0.03	0.45	0.06	0.47
Queue Length 95th (ft)	Err	Err	3	0	5	0
Control Delay (s)	Err	Err	0.9	0.0	1.8	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	Err	Err	0.4		0.9	
Approach LOS	F	F				

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	48	47	331	236	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	29	51	49	348	248	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					250	
pX, platoon unblocked						
vC, conflicting volume	725	278	307			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	725	278	307			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	93	96			
cM capacity (veh/h)	376	761	1253			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	80	398	307
Volume Left	29	49	0
Volume Right	51	0	59
cSH	553	1253	1700
Volume to Capacity	0.14	0.04	0.18
Queue Length 95th (ft)	13	3	0
Control Delay (s)	12.6	1.3	0.0
Lane LOS	B	A	
Approach Delay (s)	12.6	1.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	87	0	3522	1912	111
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	92	0	3707	2013	117
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				535	675	
pX, platoon unblocked	0.72	0.71	0.71			
vC, conflicting volume	2998	729	2129			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	1146			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	740	766	428			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	92	927	927	927	927	805	805	519
Volume Left	0	0	0	0	0	0	0	0
Volume Right	92	0	0	0	0	0	0	117
cSH	766	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.55	0.55	0.55	0.55	0.47	0.47	0.31
Queue Length 95th (ft)	10	0	0	0	0	0	0	0
Control Delay (s)	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B							
Approach Delay (s)	10.3	0.0				0.0		
Approach LOS	B							

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	536	21	48	258	11	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	564	22	51	272	12	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				323		
pX, platoon unblocked					0.99	
vC, conflicting volume			586		948	575
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			586		943	575
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		96	94
cM capacity (veh/h)			989		274	517

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	586	322	43
Volume Left	0	51	12
Volume Right	22	0	32
cSH	1700	989	418
Volume to Capacity	0.34	0.05	0.10
Queue Length 95th (ft)	0	4	9
Control Delay (s)	0.0	1.8	14.6
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	14.6
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: Foothill Blvd & Hazel Ave

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	199	63	62	39	32	257	110	2940	10	325	2519	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1690		1770	1863	1553	1770	6403		1770	5085	1531
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1690		1770	1863	1553	1770	6403		1770	5085	1531
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	66	65	41	34	271	116	3095	11	342	2652	129
RTOR Reduction (vph)	0	0	0	0	0	232	0	1	0	0	0	26
Lane Group Flow (vph)	209	131	0	41	34	39	116	3105	0	342	2652	103
Confl. Peds. (#/hr)			13			4			9			3
Confl. Bikes (#/hr)			3									
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	12.5	20.0		6.9	14.4	14.4	9.0	71.1		35.0	97.1	97.1
Effective Green, g (s)	12.5	20.0		6.9	14.4	14.4	9.0	71.1		35.0	97.1	97.1
Actuated g/C Ratio	0.08	0.13		0.05	0.10	0.10	0.06	0.47		0.23	0.65	0.65
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	286	225		81	178	149	106	3035		413	3291	991
v/s Ratio Prot	c0.06	c0.08		0.02	0.02		0.07	c0.48		0.19	c0.52	
v/s Ratio Perm						0.02						0.07
v/c Ratio	0.73	0.58		0.51	0.19	0.26	1.09	1.02		0.83	0.81	0.10
Uniform Delay, d1	67.1	61.1		69.9	62.4	62.9	70.5	39.5		54.6	19.5	10.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	1.01		1.03	0.46	0.06
Incremental Delay, d2	9.2	3.8		4.9	0.5	0.9	115.1	22.6		1.3	0.2	0.0
Delay (s)	76.3	64.9		74.8	63.0	63.8	186.2	62.3		57.7	9.3	0.7
Level of Service	E	E		E	E	E	F	E		E	A	A
Approach Delay (s)		71.9			65.0			66.8			14.2	
Approach LOS		E			E			E			B	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	36	8	14	29	336	14	2745	50	513	1796	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.87	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3435		1770	1512	1464	1770	6388		3433	4960	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3435		1770	1512	1464	1770	6388		3433	4960	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	40	38	8	15	31	354	15	2889	53	540	1891	285
RTOR Reduction (vph)	0	7	0	0	136	169	0	2	0	0	10	0
Lane Group Flow (vph)	40	39	0	15	58	22	15	2940	0	540	2166	0
Confl. Peds. (#/hr)			5			9			4			5
Confl. Bikes (#/hr)												1
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	4.0	20.0		1.6	17.6	17.6	1.6	71.0		40.4	109.8	
Effective Green, g (s)	4.0	20.0		1.6	17.6	17.6	1.6	71.0		40.4	109.8	
Actuated g/C Ratio	0.03	0.13		0.01	0.12	0.12	0.01	0.47		0.27	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	47	458		18	177	171	18	3023		924	3630	
v/s Ratio Prot	c0.02	0.01		0.01	c0.04		0.01	c0.46		c0.16	c0.44	
v/s Ratio Perm						0.02						
v/c Ratio	0.85	0.09		0.83	0.33	0.13	0.83	0.97		0.58	0.60	
Uniform Delay, d1	72.7	57.0		74.1	60.8	59.3	74.1	38.6		47.5	9.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.11	0.39		1.00	1.00	
Incremental Delay, d2	77.3	0.1		131.9	1.1	0.3	121.9	10.2		2.7	0.7	
Delay (s)	150.0	57.1		206.0	61.9	59.7	204.3	25.1		50.2	10.3	
Level of Service	F	E		F	E	E	F	C		D	B	
Approach Delay (s)		100.3			66.2			26.0			18.2	
Approach LOS		F			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	411	127	141	47	192	58	27	1052	31	18	1768	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.97			0.97			1.00			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		3308			3396			3518			3456	
Flt Permitted		0.64			0.64			0.68			0.94	
Satd. Flow (perm)		2182			2194			2398			3241	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	433	134	148	49	202	61	28	1107	33	19	1861	306
RTOR Reduction (vph)	0	15	0	0	21	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	700	0	0	291	0	0	1166	0	0	2173	0
Confl. Peds. (#/hr)	3		5	5		3	1		6	6		1
Confl. Bikes (#/hr)			1			1			5			4
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		28.0			27.0			64.0			64.0	
Effective Green, g (s)		28.0			27.0			64.0			64.0	
Actuated g/C Ratio		0.28			0.27			0.64			0.64	
Clearance Time (s)		4.0			5.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		610			592			1534			2074	
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.13			0.49			c0.67	
v/c Ratio		1.54dl			0.49			0.76			1.05	
Uniform Delay, d1		36.0			30.7			12.6			18.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		84.4			0.6			3.6			33.6	
Delay (s)		120.4			31.4			16.2			51.6	
Level of Service		F			C			B			D	
Approach Delay (s)		120.4			31.4			16.2			51.6	
Approach LOS		F			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: Foothill Blvd & Hazel Ave

3/18/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	332	152	82	48	37	172	150	3159	13	287	1893	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	1.00	0.86		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1748		1770	1863	1524	1770	6402		1770	5085	1518
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1748		1770	1863	1524	1770	6402		1770	5085	1518
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	349	160	86	51	39	181	158	3325	14	302	1993	125
RTOR Reduction (vph)	0	0	0	0	0	160	0	1	0	0	0	48
Lane Group Flow (vph)	349	246	0	51	39	21	158	3338	0	302	1993	77
Confl. Peds. (#/hr)			7			10			13			5
Confl. Bikes (#/hr)			4			5						2
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						2
Actuated Green, G (s)	17.3	26.7		7.0	16.4	16.4	11.0	63.2		26.1	78.3	78.3
Effective Green, g (s)	17.3	26.7		7.0	16.4	16.4	11.0	63.2		26.1	78.3	78.3
Actuated g/C Ratio	0.12	0.19		0.05	0.12	0.12	0.08	0.45		0.19	0.56	0.56
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	424	333		88	218	178	139	2890		329	2843	848
v/s Ratio Prot	c0.10	c0.14		0.03	0.02		0.09	c0.52		c0.17	0.39	
v/s Ratio Perm						0.01						0.05
v/c Ratio	0.82	0.74		0.58	0.18	0.12	1.14	1.16		0.92	0.70	0.09
Uniform Delay, d1	59.9	53.4		65.1	55.7	55.3	64.5	38.4		55.9	22.4	14.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.01	1.00		0.73	0.71	0.65
Incremental Delay, d2	12.2	8.3		8.9	0.4	0.3	117.8	74.2		19.7	0.9	0.1
Delay (s)	72.1	61.7		74.0	56.1	55.6	182.6	112.7		60.3	16.8	9.4
Level of Service	E	E		E	E	E	F	F		E	B	A
Approach Delay (s)		67.8			59.2			115.8			21.8	
Approach LOS		E			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	75.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	166	16	58	56	404	54	2941	91	546	1191	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	0.95	1.00	0.86		0.97	0.91	
Frpb, ped/bikes	1.00	1.00		1.00	0.98	0.97	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.89	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3486		1770	1537	1465	1770	6372		3433	4958	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3486		1770	1537	1465	1770	6372		3433	4958	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	186	175	17	61	59	425	57	3096	96	575	1254	192
RTOR Reduction (vph)	0	6	0	0	86	204	0	3	0	0	14	0
Lane Group Flow (vph)	186	186	0	61	160	34	57	3189	0	575	1432	0
Confl. Peds. (#/hr)			5			7			10			5
Confl. Bikes (#/hr)						2			5			3
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases						4						
Actuated Green, G (s)	11.0	18.0		13.1	20.1	20.1	8.3	60.9		31.0	83.6	
Effective Green, g (s)	11.0	18.0		13.1	20.1	20.1	8.3	60.9		31.0	83.6	
Actuated g/C Ratio	0.08	0.13		0.09	0.14	0.14	0.06	0.43		0.22	0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	448		165	220	210	104	2771		760	2960	
v/s Ratio Prot	c0.11	0.05		0.03	c0.10		0.03	c0.50		c0.17	0.29	
v/s Ratio Perm						0.02						
v/c Ratio	1.34	0.41		0.37	0.73	0.16	0.55	1.15		0.76	0.48	
Uniform Delay, d1	64.5	56.2		59.6	57.3	52.6	64.0	39.5		51.0	16.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.06	0.57		0.99	1.00	
Incremental Delay, d2	192.6	0.6		1.4	11.2	0.4	4.4	71.4		4.3	0.6	
Delay (s)	257.1	56.8		61.0	68.5	52.9	72.2	94.0		55.0	16.5	
Level of Service	F	E		E	E	D	E	F		D	B	
Approach Delay (s)		155.4			60.9			93.6			27.5	
Approach LOS		F			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	72.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	315	97	50	78	168	130	50	1290	66	48	1482	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.98			0.95			0.99			0.98	
Flt Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		3322			3269			3503			3442	
Flt Permitted		0.60			0.64			0.71			0.84	
Satd. Flow (perm)		2060			2112			2504			2909	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	332	102	53	82	177	137	53	1358	69	51	1560	284
RTOR Reduction (vph)	0	10	0	0	58	0	0	4	0	0	16	0
Lane Group Flow (vph)	0	477	0	0	338	0	0	1476	0	0	1879	0
Confl. Peds. (#/hr)	20		11	11		20	8		13	13		8
Confl. Bikes (#/hr)									1			1
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0			62.0			62.0	
Effective Green, g (s)		20.0			20.0			62.0			62.0	
Actuated g/C Ratio		0.22			0.22			0.69			0.69	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		457			469			1724			2003	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.16			0.59			c0.65	
v/c Ratio		1.99dl			0.72			0.86			0.94	
Uniform Delay, d1		35.0			32.4			10.6			12.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		53.9			5.2			5.7			10.0	
Delay (s)		88.9			37.7			16.3			22.3	
Level of Service		F			D			B			C	
Approach Delay (s)		88.9			37.7			16.3			22.3	
Approach LOS		F			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	125.8%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	249	241	223	2195	1108	1321	325
v/c Ratio	0.86	0.92	0.90	1.13	0.81	1.07	0.57
Control Delay	86.5	97.8	95.8	106.7	46.3	51.3	3.8
Queue Delay	0.0	0.0	0.0	0.8	48.7	13.0	0.0
Total Delay	86.5	97.8	95.8	107.5	95.1	64.4	3.8
Queue Length 50th (ft)	250	256	225	~879	502	~782	79
Queue Length 95th (ft)	#398	#427	#383	#965	595	m280	m42
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	302	274	259	1946	1360	1239	567
Starvation Cap Reductn	0	0	0	430	386	0	0
Spillback Cap Reductn	0	0	0	70	0	36	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.88	0.86	1.45	1.14	1.10	0.57

Intersection Summary

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

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

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1455	146	2831	1872
v/c Ratio	0.99	0.38	0.70	1.09
Control Delay	73.3	33.3	2.5	90.9
Queue Delay	0.0	0.0	0.8	0.0
Total Delay	73.3	33.3	3.3	90.9
Queue Length 50th (ft)	520	120	1	~821
Queue Length 95th (ft)	#631	m137	1	#853
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1472	386	4018	1712
Starvation Cap Reductn	0	0	779	0
Spillback Cap Reductn	0	0	219	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.99	0.38	0.87	1.09

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	131	41	34	271	116	3095	11	342	2652	129
v/c Ratio	1.37	0.57	0.44	0.20	0.73	1.09	1.27	0.01	0.84	0.80	0.13
Control Delay	248.9	70.3	82.9	62.4	19.9	158.5	164.0	0.2	58.7	10.0	0.4
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	248.9	70.3	82.9	62.4	19.9	158.5	164.0	0.2	58.7	10.0	0.4
Queue Length 50th (ft)	~268	125	39	32	13	~132	~1428	0	276	280	0
Queue Length 95th (ft)	#439	182	83	63	102	m#168	#1500	m0	m#340	m850	m8
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	153	327	106	310	473	106	2440	749	406	3303	1020
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	1.37	0.40	0.39	0.11	0.57	1.09	1.27	0.01	0.84	0.80	0.13

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	40	46	15	194	191	15	2942	540	1891	285
v/c Ratio	0.85	0.10	0.25	0.67	0.60	0.32	0.91	1.21	0.49	0.23
Control Delay	162.2	46.2	80.9	26.0	14.9	95.4	20.1	141.3	10.9	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Total Delay	162.2	46.2	80.9	26.0	14.9	95.4	20.8	141.3	10.9	5.2
Queue Length 50th (ft)	40	17	14	40	0	15	362	~631	139	16
Queue Length 95th (ft)	#118	36	41	117	74	m28	#977	#866	395	m111
Internal Link Dist (ft)		170		374			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	47	624	61	398	420	47	3230	448	3886	1218
Starvation Cap Reductn	0	0	0	0	0	0	85	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.07	0.25	0.49	0.45	0.32	0.94	1.21	0.49	0.23

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	336	316	316	319	199	129	3411	187	2781
v/c Ratio	1.21	0.47	1.12	0.46	0.32	1.37	1.18	1.22	1.13
Control Delay	122.6	14.4	134.4	38.7	21.1	226.1	104.7	198.9	102.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.6	14.4	134.4	38.7	21.1	226.1	104.7	198.9	102.4
Queue Length 50th (ft)	~397	166	~355	237	79	~163	~1173	~224	~1155
Queue Length 95th (ft)	m215	m116	#552	330	147	m#124	m776	#386	#1232
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	278	672	281	689	620	94	2883	153	2451
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.47	1.12	0.46	0.32	1.37	1.18	1.22	1.13

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	377	729	42	1604	215	2005
v/c Ratio	1.19	1.44	0.38	1.34	1.41	1.48
Control Delay	164.7	242.8	82.7	196.0	263.4	254.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	164.7	242.8	82.7	196.0	263.4	254.7
Queue Length 50th (ft)	~443	~925	41	~1066	~281	~1462
Queue Length 95th (ft)	#655	m#1030	m36	m#793	#453	#1596
Internal Link Dist (ft)	250	1581		1215		566
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	316	507	118	1197	153	1353
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.19	1.44	0.36	1.34	1.41	1.48

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	715	312	1168	2186
v/c Ratio	1.44	0.44	1.13	1.47
Control Delay	243.0	28.7	110.2	229.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	243.0	28.7	110.2	229.9
Queue Length 50th (ft)	~952	196	~695	~875
Queue Length 95th (ft)	#1202	282	#839	m#812
Internal Link Dist (ft)	429	643	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	495	712	1038	1486
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.44	0.44	1.13	1.47

Intersection Summary

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

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

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1123	3484	140
v/c Ratio	0.94	0.90	0.15
Control Delay	28.1	12.4	1.1
Queue Delay	0.0	41.0	0.0
Total Delay	28.1	53.4	1.1
Queue Length 50th (ft)	245	460	7
Queue Length 95th (ft)	#668	m388	m6
Internal Link Dist (ft)	1038	415	
Turn Bay Length (ft)			
Base Capacity (vph)	1208	3869	917
Starvation Cap Reductn	0	671	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.93	1.09	0.15

Intersection Summary

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

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1094	171	3665
v/c Ratio	0.84	0.17	0.87
Control Delay	49.9	13.6	30.7
Queue Delay	0.0	0.0	0.0
Total Delay	49.9	13.6	30.7
Queue Length 50th (ft)	506	63	740
Queue Length 95th (ft)	578	108	810
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1402	1022	4234
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.17	0.87

Intersection Summary

Queues
1: Mission Blvd & A St

7/5/2016

Lane Group	EBL	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	412	406	373	1966	1029	1257	342
v/c Ratio	1.02	1.09	1.11	1.11	0.85	1.12	0.65
Control Delay	103.1	121.5	130.4	101.9	48.2	110.3	34.3
Queue Delay	0.0	0.0	0.0	0.6	35.2	0.0	0.0
Total Delay	103.1	121.5	130.4	102.6	83.4	110.3	34.3
Queue Length 50th (ft)	~420	~454	~407	~726	442	~725	207
Queue Length 95th (ft)	#640	#685	#622	#817	535	#873	334
Internal Link Dist (ft)		448			405	280	
Turn Bay Length (ft)	120			220			100
Base Capacity (vph)	402	373	336	1764	1217	1119	523
Starvation Cap Reductn	0	0	0	312	253	0	0
Spillback Cap Reductn	0	0	0	54	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	1.09	1.11	1.35	1.07	1.12	0.65

Intersection Summary

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

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

Lane Group	WBT	NBL	NBT	SBR
Lane Group Flow (vph)	1217	251	3500	1361
v/c Ratio	0.90	0.38	0.92dr	0.97
Control Delay	59.4	9.2	1.7	55.0
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	59.4	9.2	1.9	55.0
Queue Length 50th (ft)	391	97	25	457
Queue Length 95th (ft)	#455	m96	m29	#539
Internal Link Dist (ft)	811		447	
Turn Bay Length (ft)				160
Base Capacity (vph)	1354	654	4160	1428
Starvation Cap Reductn	0	0	93	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.38	0.86	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	349	246	51	39	181	158	3325	14	302	1993	125
v/c Ratio	1.54	0.72	0.50	0.19	0.55	1.14	1.43	0.02	0.94	0.70	0.14
Control Delay	302.2	65.3	80.4	55.1	13.4	173.3	227.5	0.1	69.1	17.7	2.9
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	302.2	65.3	80.4	55.1	13.4	173.3	227.5	0.1	69.1	17.7	2.9
Queue Length 50th (ft)	~445	217	46	33	0	~167	~1497	0	246	643	16
Queue Length 95th (ft)	#645	292	92	65	67	#316	#1566	0	m#459	718	m30
Internal Link Dist (ft)		243		444			595			1845	
Turn Bay Length (ft)	100		55		55	550			500		100
Base Capacity (vph)	227	424	113	332	421	139	2324	726	322	2852	898
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	1.54	0.58	0.45	0.12	0.43	1.14	1.43	0.02	0.94	0.70	0.14

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	186	192	61	246	238	57	3192	575	1254	192
v/c Ratio	1.34	0.42	0.34	0.82	0.58	0.54	1.14	1.47	0.41	0.19
Control Delay	239.7	57.1	63.1	55.4	11.9	81.4	88.9	263.5	15.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	239.7	57.1	63.1	55.4	11.9	81.4	88.9	263.5	15.8	2.3
Queue Length 50th (ft)	~220	86	51	137	0	48	~998	~716	224	0
Queue Length 95th (ft)	#379	114	103	233	80	m#72	#1130	#949	268	34
Internal Link Dist (ft)		170		381			275		455	
Turn Bay Length (ft)	70		150			220		420		180
Base Capacity (vph)	139	703	190	378	475	105	2810	391	3065	992
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.34	0.27	0.32	0.65	0.50	0.54	1.14	1.47	0.41	0.19

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	429	374	64	129	64	181	3748	188	2116
v/c Ratio	1.15	0.65	0.37	0.22	0.12	0.84	1.18	1.25	0.91
Control Delay	136.9	45.4	44.9	36.3	3.5	83.8	93.1	204.1	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.9	45.4	44.9	36.3	3.5	83.8	93.1	204.1	41.5
Queue Length 50th (ft)	~458	279	45	86	0	146	~1166	~212	649
Queue Length 95th (ft)	#671	396	94	141	20	m109	m97	#371	724
Internal Link Dist (ft)		1581		323			1845		588
Turn Bay Length (ft)	100		100		60	170		250	
Base Capacity (vph)	373	571	171	592	551	227	3188	151	2338
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.65	0.37	0.22	0.12	0.80	1.18	1.25	0.91

Intersection Summary

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

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

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

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	828	362	222	1444	54	1835
v/c Ratio	2.47	1.15	1.18	0.85	0.49	1.26
Control Delay	695.0	148.9	178.0	40.4	82.7	157.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	695.0	148.9	178.0	40.4	82.7	157.5
Queue Length 50th (ft)	~1336	~411	~259	662	52	~1171
Queue Length 95th (ft)	#1595	#621	#433	772	101	#1308
Internal Link Dist (ft)	250	1581		1215		537
Turn Bay Length (ft)			150		220	
Base Capacity (vph)	335	316	188	1697	118	1460
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.47	1.15	1.18	0.85	0.46	1.26

Intersection Summary

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

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	487	396	1480	1895
v/c Ratio	1.43	0.68	1.35	1.41
Control Delay	233.7	26.2	186.2	209.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	233.7	26.2	186.2	209.2
Queue Length 50th (ft)	~335	149	~522	~681
Queue Length 95th (ft)	#520	251	#656	#820
Internal Link Dist (ft)	429	452	668	1215
Turn Bay Length (ft)				
Base Capacity (vph)	341	585	1095	1347
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.43	0.68	1.35	1.41

Intersection Summary

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

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

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	1200	3039	124
v/c Ratio	0.90	0.85	0.17
Control Delay	12.4	12.7	0.9
Queue Delay	0.0	17.3	0.0
Total Delay	12.4	30.0	0.9
Queue Length 50th (ft)	92	399	4
Queue Length 95th (ft)	m82	m330	m3
Internal Link Dist (ft)	1039	433	
Turn Bay Length (ft)			
Base Capacity (vph)	1361	3580	741
Starvation Cap Reductn	0	629	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	1.03	0.17

Intersection Summary

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

Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1326	205	4317
v/c Ratio	1.17	0.19	0.95
Control Delay	128.0	12.2	32.1
Queue Delay	0.0	0.0	0.0
Total Delay	128.0	12.2	32.1
Queue Length 50th (ft)	~755	75	860
Queue Length 95th (ft)	#895	115	890
Internal Link Dist (ft)	381		926
Turn Bay Length (ft)		100	
Base Capacity (vph)	1133	1078	4525
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.17	0.19	0.95

Intersection Summary

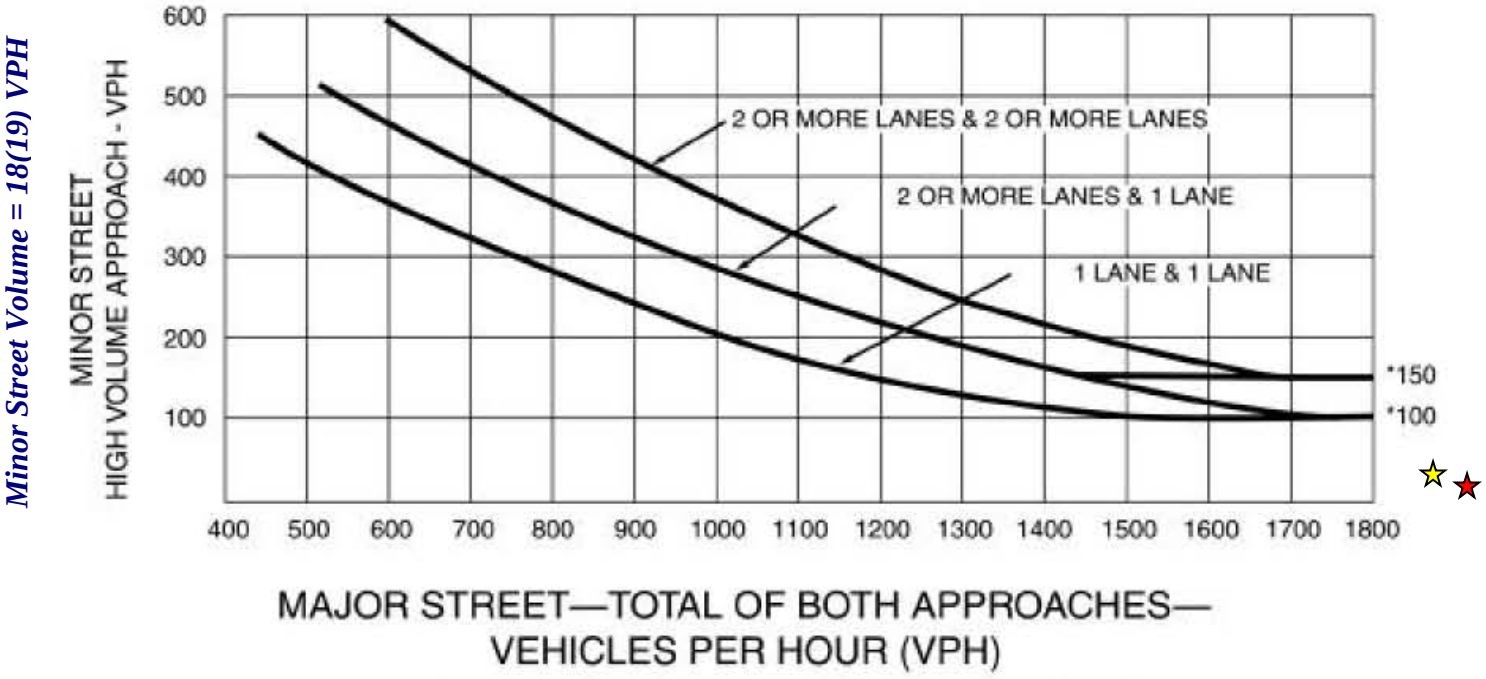
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Peak Hour Warrant (Urban Areas)

Intersection: Mission Boulevard and Hotel Avenue, Hayward, CA
Scenario: Cumulative plus Project Phase 1 and 2 Conditions AM (PM) Peak Hours

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 2,719(2,930) VPH

☆ ***AM Peak Hour***
★ ***PM Peak Hour***

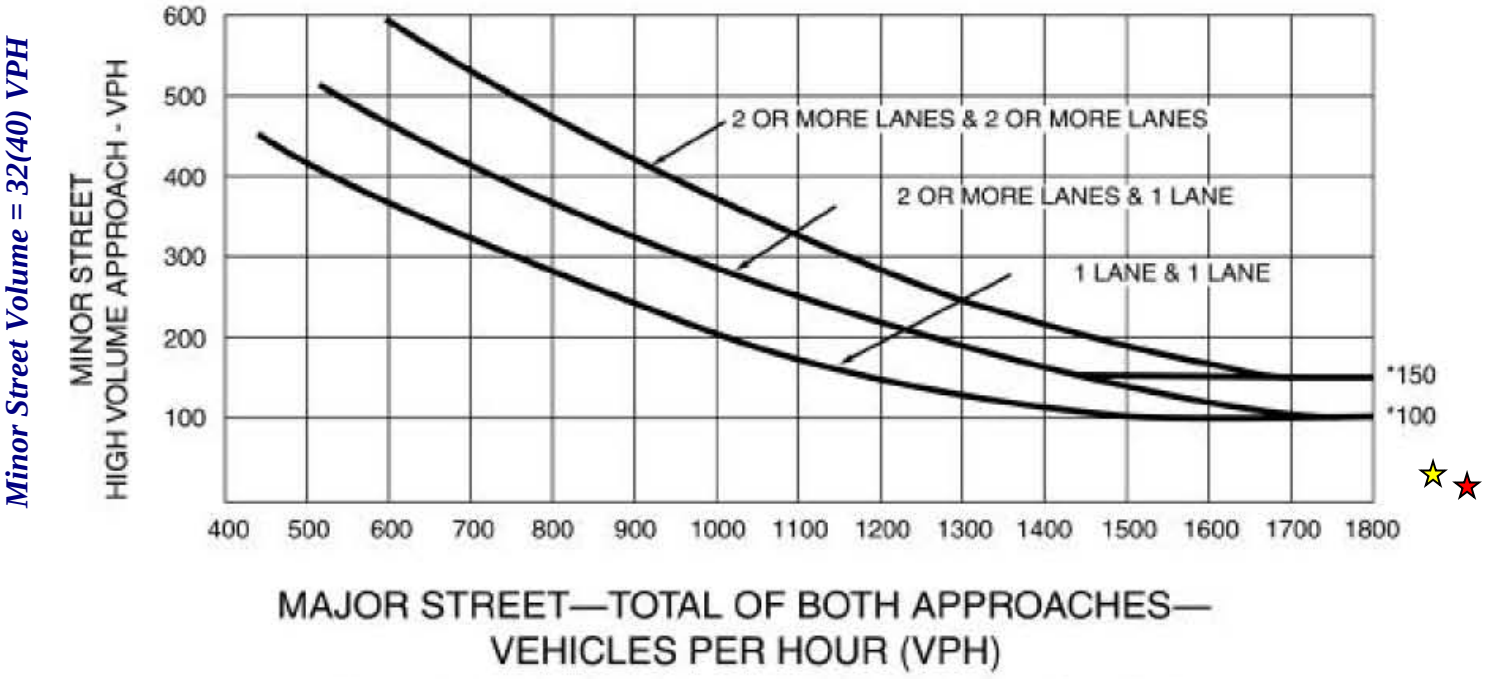
A signal is not warranted in the both A.M. and P.M. Peak Hours

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection: Mission Boulevard and Simon Street, Hayward, CA
Scenario: Cumulative plus Project Phase 1 and 2 Conditions AM (PM) Peak Hours

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 2,894(2,885) VPH

☆ ***AM Peak Hour***
★ ***PM Peak Hour***

A signal is not warranted in the both A.M. and P.M. Peak Hours

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

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Vision That Moves Your Community

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