Appendix J:
Transportation Impact Assessment

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FEHR PEERS

August 22, 2019

Mr. Troy Fujimoto
Senior Planner
City of Pleasant Hill
100 Gregory Lane
Pleasant Hill, California 95423

Subject: Oak Park Properties Specific Plan Transportation and Circulation Supporting Information

Dear Troy:

In support of the Oak Park Properties Specific Plan Draft Environmental Impact Report, Fehr & Peers prepared a Transportation Impact Assessment to evaluate the transportation effects of developing both the Civic Project site and the Residential Project site, assuming that construction and operation of both the Civic Project and the Residential Project would occur simultaneously. The analysis considered the effects of both projects on intersection operations, potential impacts to the bicycle, pedestrians and transit networks, as well as parking in the immediate area. An assessment of vehicle miles of travel was also conducted in addition to a construction assessment.

If you have any questions or comments, please contact Kathrin Tellez at (925) 930-7100.

Sincerely,

FEHR & PEERS

Kathrin Tellez, AICP
Principal

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Oak Park/Monticello Mixed-use Project

Final Transportation Impact Assessment

Prepared for:
City of Pleasant Hill
First Carbon Solutions

January 2019

WC18-3483

FEHR PEERS

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Executive Summary

This study presents the analysis and findings of the Transportation Impact Assessment (TIA) prepared for the Oak Park/Monticello Mixed-use Project (project) in Pleasant Hill, California.

Project Description and Analysis Parameters

The approximately 15-acre program area is located in the City of Pleasant Hill, north of Oak Park Boulevard and bisected by Monticello Avenue. The portion of the site west of Monticello Avenue is currently developed with the Pleasant Hill-Contra Costa Library, which would be relocated to a smaller parcel on the east side of Monticello Avenue as part of the project. The existing library would be demolished and approximately 34 single-family homes, with the potential for up to 20 percent of the homes to accommodate accessory dwelling units, would be constructed on the existing library site. Sports fields would be located on the remaining piece of the project site north of the relocated library.

Project effects on the study area roadway facilities were determined by measuring the effect project traffic would have on intersections in the vicinity of the site for typical weekday and weekend conditions. Conditions were evaluated under Existing and Cumulative conditions, both without and with the Project. An assessment of vehicle miles of travel (VMT) was also conducted in addition to a site plan review and a parking assessment. Impacts to bicycle, pedestrian and transit facilities were also evaluated.

Off-Site Findings

Significant impacts to intersections were identified with construction of the project in the existing and cumulative scenarios, and mitigation measures were developed to mitigate all significant impacts to a less-than-significant level.

On-Site Findings

Based on a detailed site plan review, recommendations were made to enhance access and circulation for all modes, as detailed in Chapter 6.

1. Introduction

This report presents the analysis results and findings of the Transportation Impact Assessment (TIA) prepared for the Oak Park/Monticello Mixed-use Project (project). This chapter discusses the analysis methods, criteria used to identify significant impacts, and report organization.

TIA Purpose

The TIA's purpose is to evaluate the transportation impacts of the Oak Park/Monticello Mixed-use Project. The approximately 15-acre program area is located in the City of Pleasant Hill, north of Oak Park Boulevard and bisected by Monticello Avenue, as shown on **Figure 1.** The portion of the site west of Monticello Avenue is currently developed with the Pleasant Hill-Contra Costa Library, which would be relocated to a smaller parcel on the east side of Monticello Avenue as part of the project. The existing library would be demolished and approximately 34 single-family homes, with the potential for up to 20 percent of the homes to accommodate accessory dwelling units, would be constructed on the existing library site. Sports fields would be located on the remaining piece of the project site, as shown on **Figure 2.**

This study addresses the project's impacts on the roadway system under existing and cumulative scenarios and discusses potential impacts to the adjacent bicycle, pedestrian, and transit network. A parking assessment was also conducted.

Report Organization

This report is divided into seven chapters as described below:

- ***Chapter 1 – Introduction*** discusses the purpose and organization of this report.
- ***Chapter 2 – Existing Conditions*** describes the transportation system in the project vicinity, including the surrounding roadway network, peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection operations. Existing parking conditions are also presented.
- ***Chapter 3 – Project Characteristics*** presents the project description, and trip generation, distribution, and assignment.
- ***Chapter 4 – Existing with Project Traffic Conditions*** addresses the existing condition with the project and discusses vehicular impacts.

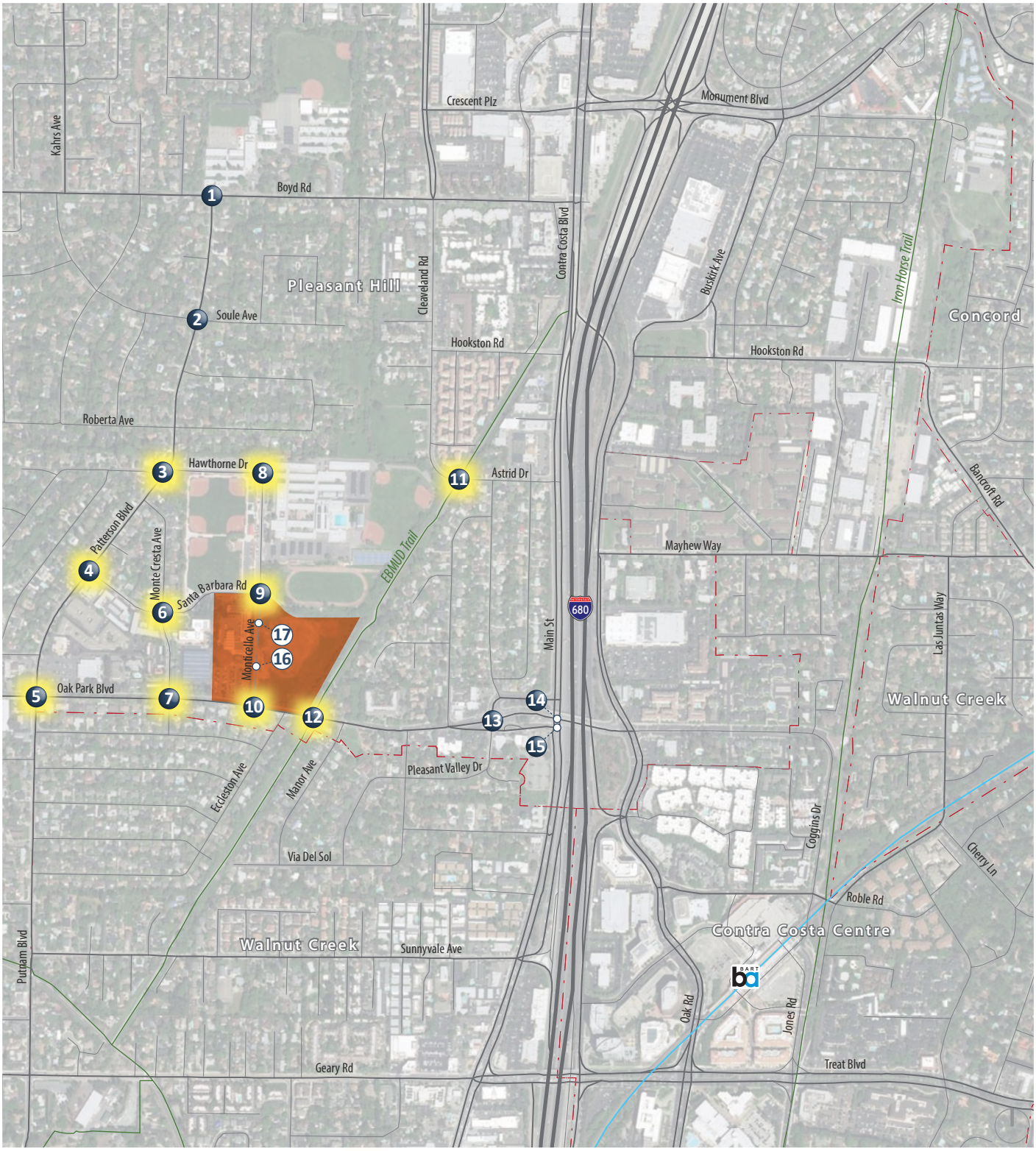

Figure 1

Oak Park Specific Plan

Project Site Vicinity and Study Intersection Locations

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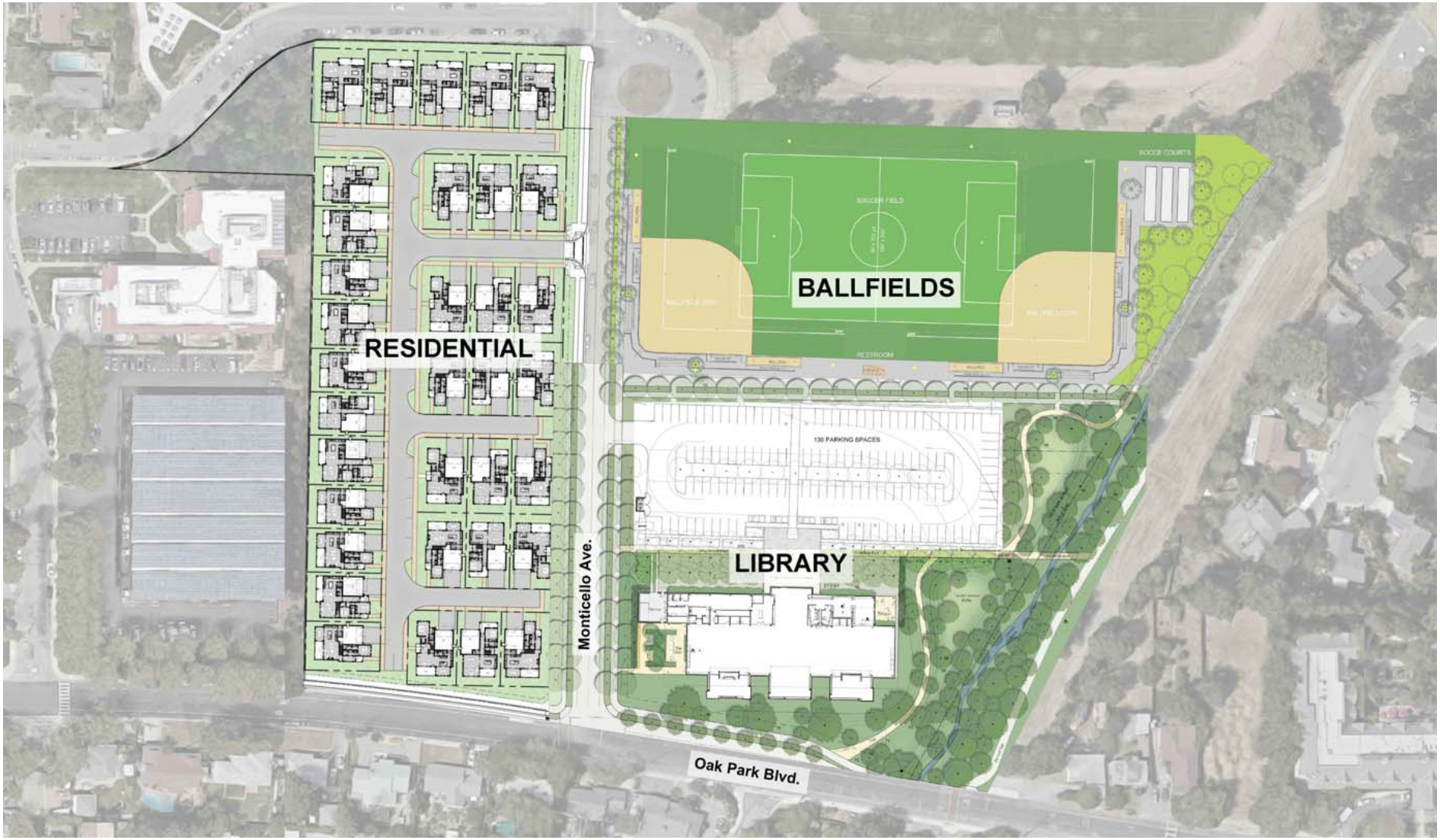

Site Plan Source: Bohlin Cywinski Jackson, 11/28/18

Figure 2

Oak Park Specific Plan

Conceptual Project Site Plan

- ***Chapter 5 – Cumulative Traffic Conditions*** addresses future conditions, both without and with the project, and discusses vehicular impacts.
- ***Chapter 6 – Site Access, Circulation and Parking*** discusses site access, circulation and parking based on the current site plan for all modes of travel. Recommendations are provided.
- ***Chapter 7 – Vehicle Miles of Travel*** presents the results of the VMT assessment conducted for informational purposes only.

Study Locations, Analysis Scenarios and Analysis Methods

Project impacts to the study area roadway facilities were identified by measuring the effect of project traffic during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods, when commute traffic is typically the highest, and Saturday afternoon (1:00 to 3:00 PM), when the project is expected to generate the most vehicular traffic overall. The weekday mid-day period (2:00 to 4:00 PM), when the adjacent middle school generates the most weekday vehicular traffic, was also evaluated for a select subset of study intersections closest to the project (noted in **bold** below). The study intersections were selected in consultation with City of Pleasant Hill staff based on a review of the project location and the amount of traffic that could be added to the intersections in the site vicinity. The study intersections are listed below and shown on Figure 1Figure 1.

1. Boyd Road at Patterson Boulevard
2. Soule Avenue at Patterson Boulevard
3. **Hawthorne Drive at Patterson Boulevard**
4. **Santa Barbara Road at Patterson Boulevard**
5. **Oak Park Boulevard at Patterson Boulevard**
6. **Santa Barbara Road at Monte Cresta Avenue**
7. **Oak Park Boulevard at Monte Cresta Avenue**
8. **Hawthorne Drive at Monticello Avenue**
9. **Santa Barbara Road at Monticello Avenue**
10. **Oak Park Boulevard at Monticello Avenue**
11. **Oak Park Boulevard at Canal Trail Crossing**
12. **Cleaveland Road at Canal Trail Crossing**
13. Oak Park Boulevard at Pleasant Valley Drive
14. Pleasant Valley Drive at Main Street
15. Oak Park Boulevard at Main Street

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow from a vehicle driver's perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (free-flow conditions) to LOS F (over capacity conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result, and operations are designated LOS F.

Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.

Signalized Intersections

Operations of signalized intersections were evaluated using the method from Transportation Research Board's 2010 Highway Capacity Manual (HCM 2010), which uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table 1** summarizes the relationship between average delay per vehicle and LOS for signalized intersections. This method evaluates each intersection in isolation and the effects of vehicle queue spillback are not considered in the analysis results.

Unsignalized Intersections

Operations at unsignalized intersections were evaluated using the method from the HCM 2010. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

Table 1: Signalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual*, 2010.

Table 2: Unsignalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual*, 2010.

Vehicle Miles of Travel

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) is updating the California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, with final guidelines published in November 2017 incorporating public comments from the August 2014 and January 2016 guidelines. In December 2018 the California Natural Resources Agency certified and adopted the CEQA Guidelines update package along with an updated Technical Advisory related to Evaluating Transportation Impacts in CEQA (December 2018). Full compliance with the guidelines is expected by July 2020. In response to the final guidelines, a preliminary assessment of vehicle miles of travel (VMT) generated by the proposed project was prepared for informational purposes only as the City of Pleasant Hill has not yet adopted significance thresholds related to VMT.

Regulatory Setting

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Pleasant Hill, Contra Costa County, and the Contra Costa Transportation Authority (CCTA). Changes to the CEQA guidelines as dictated by Senate Bill 743 are also considered.

The impacts of the project were evaluated by comparing the results of the level of service calculations under Existing with Project and Cumulative with Project conditions to the results under Existing and Cumulative without Project conditions, respectively. The following criteria were used to identify significant off-site impacts of the proposed project under the various criteria.

Roadway Network

For this study, based on guidance contained in the City of Pleasant Hill General Plan and recently prepared environmental documents for other projects in the City, a significant transportation-related impact would occur if a project results in:

- Deterioration of peak hour operations at a signalized intersection from acceptable to unacceptable operations:
    - For signalized study intersection not on the CCTA Congestion Management Plan (CMP) network, a decline from LOS D (an average delay of 55 seconds for signalized intersections) or better to LOS E or F, based on the HCM LOS method, with the addition of Project traffic would be considered significant.

- For a signalized study intersection on the CCTA CMP network, which includes intersections 14 and 15, a decline from LOS E (an average delay of 80 seconds for signalized intersections) or better to LOS F, based on the HCM LOS method, with the addition of Project traffic would be considered significant.

- At an intersection projected to operate at a deficient service level prior to the addition of project traffic, the project increases delay by more than 5-seconds

- Deterioration of peak hour operations at a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:

  i. Project traffic results in satisfaction at the peak hour volume traffic signal warrant;

  ii. Project traffic increases minor movement delay by more than 30 seconds; or

  iii. Where the peak hour volume signal warrant is met without project traffic and delay cannot be measured, project increases traffic by 10 or more vehicles per lane on the controlled approach.

- The addition of project traffic at a study intersection would result in the 95th percentile vehicle queue exceeding the available storage or would increase 95th percentile queue by more than two vehicles where the queue already exceeds the available storage space (for example, vehicle queues extending beyond the available turn pocket length, impeding travel in the adjacent lanes)

Bicycle and Pedestrian Network

The *City of Pleasant Hill 2003 General Plan* and *City of Pleasant Hill Draft Pedestrian and Bicycle Master Plan, 2011*, describes related policies necessary to ensure that pedestrian and bicycle facilities are safe and effective for City residents. Using these plans as a guide, significant impacts to these facilities would occur when a project or an element of the project:

- Creates a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian accessibility to the site and adjoining areas; or

- Conflicts with an existing or planned pedestrian or bicycle facility; or

- Conflicts with policies related to bicycle and pedestrian activity adopted by the City of Pleasant Hill.

Transit System

Generally, a project causes a significant impact to transit facilities and services if an element of it conflicts with existing or planned transit services. The evaluation of transit facilities shall consider if:

- A project creates demand for public transit services above the capacity which is provided, or planned;
- A project or project-related mitigation disrupts existing transit services or facilities;[1]
- A project or project-related mitigation conflicts with an existing or planned transit facility; or
- A project or project-related mitigation conflicts with transit policies adopted by the City of Pleasant Hill, CCTA, or County Connection for their respective facilities in the study area.

Vehicle Miles of Travel

According to the 2018 Update of the CEQA Guidelines[2], VMT impacts could have a significant effect on the environment if the project would:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities; or
2. Cause additional VMT per capita, per service population, or other appropriate efficiency measure[3]; or
3. Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.

However, as neither the City of Pleasant Hill, Contra Costa County nor the Contra Costa Transportation Authority have adopted VMT thresholds, and the new guidelines section 15064.3 states that they do not take effect until July 1, 2020 unless the lead agency adopts them earlier. Agencies have until 2020 to fully implement VMT, this analysis is being prepared for informational purposes only.

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[1] This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.

[2] http://opr.ca.gov/docs/20181228-743_Technical_Advisory.pdf and http://resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf

[3] Based on the latest guidance from OPR, residential development that would generate vehicle travel that is 15 or more percent below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact. In MPO areas, development measured against city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the region-based threshold would undermine the VMT containment needed to achieve regional targets under SB 375.

2. Existing Conditions

This chapter describes the existing transportation conditions in the study area including the roadway network, and transit, pedestrian, and bicycle facilities in the vicinity of the project site. Existing parking conditions in the area are also described.

Roadway System

The project site is located in the City of Pleasant Hill, a City in Contra Costa County, north of the City of Walnut Creek and west of the City of Concord. The immediate area surrounding the project site is primarily residential with supporting civic, recreational, educational and commercial uses in close proximity.

Regional access to the site is provided by Main Street and Interstate 680, with local access provided from Oak Park Boulevard and Patterson Boulevard. The following discusses the roadways that would provide access to the site and are most likely to experience direct traffic impacts, if any, from the proposed project.

Interstate I-680 is a north-south freeway located east of the project site. In the study area, it provides 5 mixed-flow and one high-occupancy vehicle lane in the southbound direction, and 5 mixed-flow lanes in the northbound direction, in addition to auxiliary lanes between interchanges. In the project area, approximately 260,000 vehicles per day travel on I-680. Access to/from northbound I-680 in the study area is provided from Oak Road on the east side of the freeway. Access to/from southbound I-680 is provided from Main Street at Sunnyvale Avenue. Ramps at Contra Costa Boulevard also provide freeway access to the area.

Oak Park Boulevard is an east-west collector roadway that extends west from Buskirk Avenue to Pleasant Hill Road. It features a four-lane bridge across I-680, and then reduces to a two-lane undivided road at Pleasant Valley Drive. The roadway has wide shoulders that are primarily used for on-street parking but is also used by bicyclists. The presence of sidewalks varies along the road, with small stretches without sidewalks on either side of the road. The posted speed limit is 30 miles per hour.

Patterson Boulevard is a north-south collector roadway that extends south from Boyd Road to Oak Park Boulevard where it continues as Putnam Boulevard. The road has one travel lane in each direction with time of day bicycle lanes created by prohibiting on-street parking between 7:30 AM and 6:00 PM. The east side of the street has a continuous sidewalk, while the sidewalk on the west side is intermittent. The posted speed limit is 25 miles per hour.

North Main Street is a north-south four-lane arterial that runs parallel to Interstate 680. Oak Park Boulevard has an overpass with ramps to access North Main Street. South of Oak Park Boulevard, the roadway is a

designated Class III bicycle facility with sharrow markings. North of Oak Park Boulevard, buffered bicycle lanes are provided until the roadway transitions to Contra Costa Boulevard, where a bicycle lane is provided in the northbound direction, and Class III lane marking provided in the southbound direction. Sidewalks are also present on both sides of the road. No on-street parking is allowed along this arterial in the study area. The posted speed limit is 35 miles per hour.

Monticello Avenue is a north-south local two-lane roadway that connects Oak Park Boulevard to the Pleasant Hill Middle School, and also serves the Pleasant Oaks Park. Sidewalks are continuously provided on the west side of the roadway. On the east side of the roadway, sidewalks are not provided between Oak Park Boulevard and the parking bulb south of Santa Barbara Road. On-street parking is general allowed along Monticello Avenue. This street provides primary north-south access to the Pleasant Hill Middle School and is heavily used around school peak hours. On evenings and weekends, it is primarily used to access Pleasant Oaks Park and the sports fields.

Santa Barbara Road is a two-lane east-west local road that connects Patterson Boulevard to Monticello Avenue. On-Street parking and sidewalks are provided along the roadway.

Monte Cresta Avenue is a north-south two-lane roadway that connects Patterson Boulevard to south of Oak Park Boulevard, where it terminates at McNutt Avenue in a residential subdivision. On-street parking is permitted; sidewalks are provided between Santa Barbra Road and Oak Park Boulevard.

Hawthorne Drive is a two-lane east-west local roadway that is off-set at Patterson Boulevard. To the east of Patterson Boulevard, it provides access to the Pleasant Hill Middle School with sidewalks on the north side of the street; no on-street parking is permitted on this section of roadway. To the west of Patterson Boulevard, it serves a residential neighborhood where on-street parking is allowed, and no sidewalks are provided.

Roadways in the study area also serve as emergency access routes and have been designed to accommodate the movements of emergency vehicles. The fire station closest to the site is located on 2012 Geary Road approximately 1-mile from the project site via Putnam Boulevard. The Boyd Road fire station is located approximately 1.1 miles from the project site via Patterson Boulevard. Primary emergency vehicle access to the study area would occur from Oak Park Boulevard, Patterson Boulevard and Main Street.

Pedestrian and Bicycle Facilities

Pedestrian Facilities

Pedestrian facilities include sidewalks, pathways, crosswalks, and pedestrian signals. Sidewalk coverage is not ubiquitous in the study area and there are gaps along sections of Oak Park Boulevard, and Monticello

Avenue in the immediate study area. Many of the residential streets in the area do not have sidewalks. There are a number of high-visibility crosswalks with pedestrian actuated warning light systems in the study area that include trail crossings on Oak Park Boulevard and Cleaveland Road, and Patterson Boulevard at Hawthorne Drive.

Bicycle Facilities

Bicycle facilities include the following general types:

- Class I: Shared Use Path – These facilities provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicle cross-flow minimized.
- Class II: Bicycle Lane – Bicycle lanes provide a restricted right-of-way and are designated for the use of bicycles for one-way travel with a striped lane on a street or highway. Bicycle lanes are generally a minimum of five feet wide. Vehicle/pedestrian cross-flow are permitted.
- Class III: Bicycle Route with Sharrows – These bikeways provide right-of-way designated by signs or pavement markings for shared use with motor vehicles. These include sharrows or "shared-lane markings" to highlight the presence of bicyclists.
- Class IV: Buffered Bicycle Lanes – Bicycle lanes that include a physically separated lane for increased comfort and protection of cyclists. Can be physically separated by a barrier, such as planters or on-street parking, grade-separated from the roadway, or a painted buffer area.

Figure 3 shows the location of various bicycle facilities in the study area, which includes Class IV and Class III facilities on North Main Street, Class II bicycle facilities on Patterson Boulevard created by time of day parking restrictions, and Class II and Class III bicycle facilities on portions of Oak Park Boulevard.

The East Bay Municipal Utilities District (EBMUB) Trail is a shared use path that crosses Oak Park Boulevard approximately 400-feet east from Monticello Avenue. This trail connects to the Contra Costa Canal Trail in the south and Contra Costa Boulevard in the north. From the Contra Costa Canal Trail, connections can be made to the regional trail system including the Iron Horse Trail.

Project Site

Existing

- Class 1 Bike Path
- Class 2 Bike Lane
- Class 3 Bike Route
- Class 4 Protected

Figure 3

Oak Park Specific Plan

Existing Bicycle Facilities

Transit Service

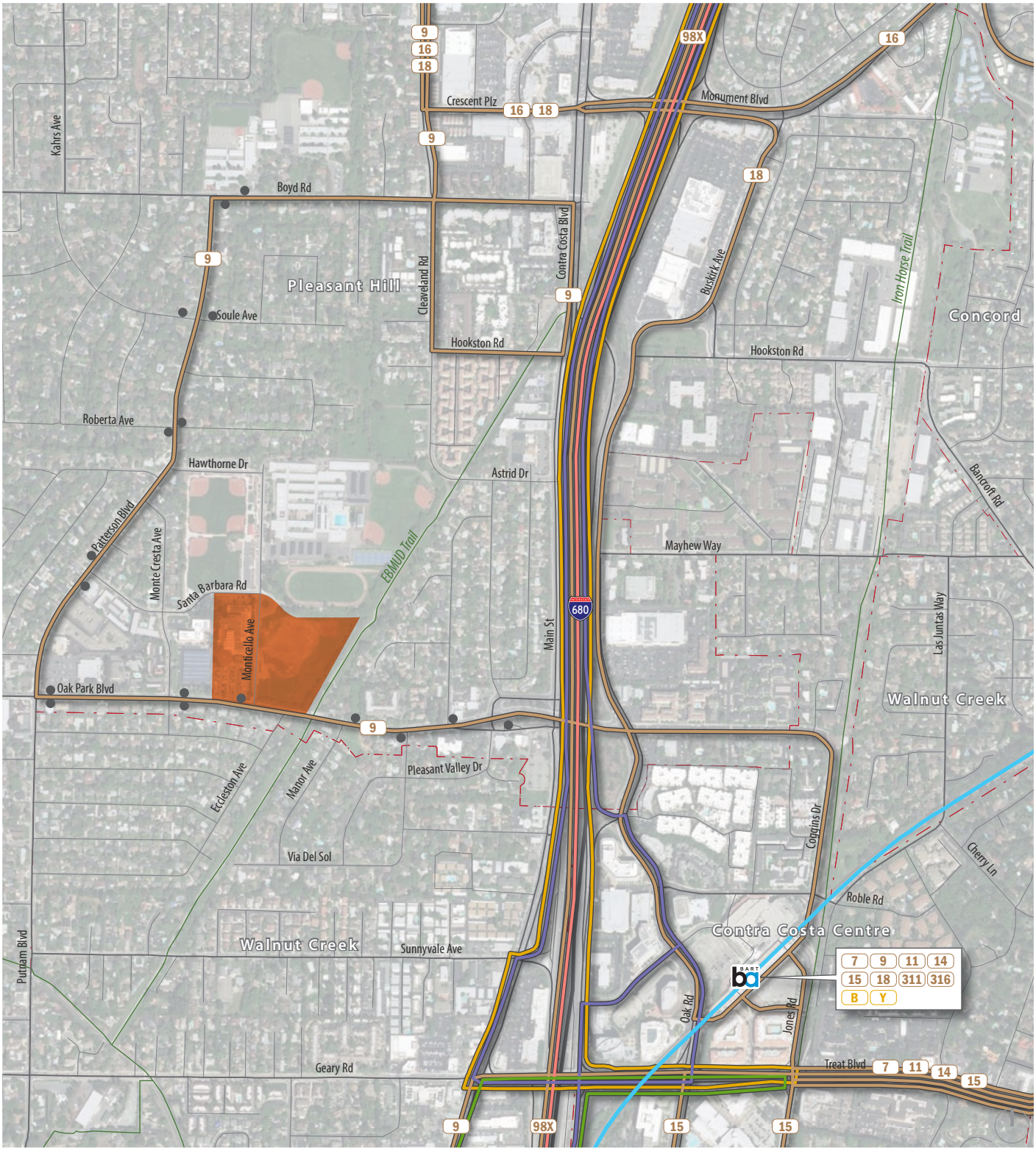
Transit service in the area is primarily provided by The County Connection and Bay Area Rapid Transit (BART), with existing transit routes in the area shown on **Figure 4**Figure 4, along with the transit stops in the immediate vicinity of the project site.

The County Connection provides fixed route, express route, school service and paratransit transit service within and connecting to Central Contra Costa County. The study area is served by Route 9, which travels on Oak Park Boulevard and Patterson Boulevard in the study area and connects the Pleasant Hill BART Station to Diablo Valley College (DVC), and numerous schools, residential areas, and commercial areas along the way. Service is provided on headways ranging between 30 and 60 minutes. On a typical weekday, this route serves approximately 500 passengers a day, with the majority of riders with a destination at the BART station or DVC. Approximately 50 passengers per day on Route 9 originate from within the study area and access service from a stop on Oak Park Boulevard or Patterson Boulevard. At the BART station, connections to numerous other County Connection routes and other transit service providers are available. Based on existing levels of ridership, excess capacity is available to accommodate increased levels of ridership.

Bay Area Rapid Transit (BART) provides regional transportation connections to much of the Bay Area and the Antioch line provides direct access to San Francisco, with several stops in Oakland where connections may be made to other lines. The closest BART station is the Pleasant Hill/Contra Costa Centre Station located less than a mile southeast the study area. BART train frequency ranges between 6-20 minutes from approximately 5:00 AM to 12:00 AM. Based on 2018 data from BART, approximately 8,000 passengers per day enter/exit the BART system at the Pleasant Hill/Contra Costa Centre Station.

Existing Traffic Counts

Weekday morning (7:00 to 9:00 AM), mid-day (2:00 to 4:00 PM), evening (4:00 to 6:00 PM), and Saturday afternoon (1:00 to 3:00 PM) peak period intersection turning movement counts were conducted at the study intersections, in addition to separate counts of pedestrians, bicycles and heavy vehicles on May 19th and May 22nd, supplemented by data previously collected on January 17, 2018 . For each of the count periods, a global peak hour was identified. Automatic machine traffic counts were conducted over a 72-hour period (Thursday May 17th through Saturday May 19th) on clear days with area schools in session and a tournament at the Pleasant Oaks Park in the immediate project vicinity. The weekday AM, mid-day, and PM peak hours were identified to be 7:15 to 8:15 AM, 2:30 to 3:30 PM, and 4:45 to 5:45 PM, respectively. The Saturday peak hour was identified to be 1:00 to 2:00 PM. The peak hour volumes are presented on **Figure 5** along with the existing lane configuration and traffic control. Existing bicycle and pedestrian volumes are shown on **Figure 6.** Traffic count worksheets are provided in **Appendix A**.



Project Site — BART — Bus Stop in Vicinity of Project Site

The County Connection — Fairfield-Suisun Transit — Tri Delta Transit — Soltrans — WHEELS

Figure 4

Oak Park Specific Plan

Existing Transit Facilities

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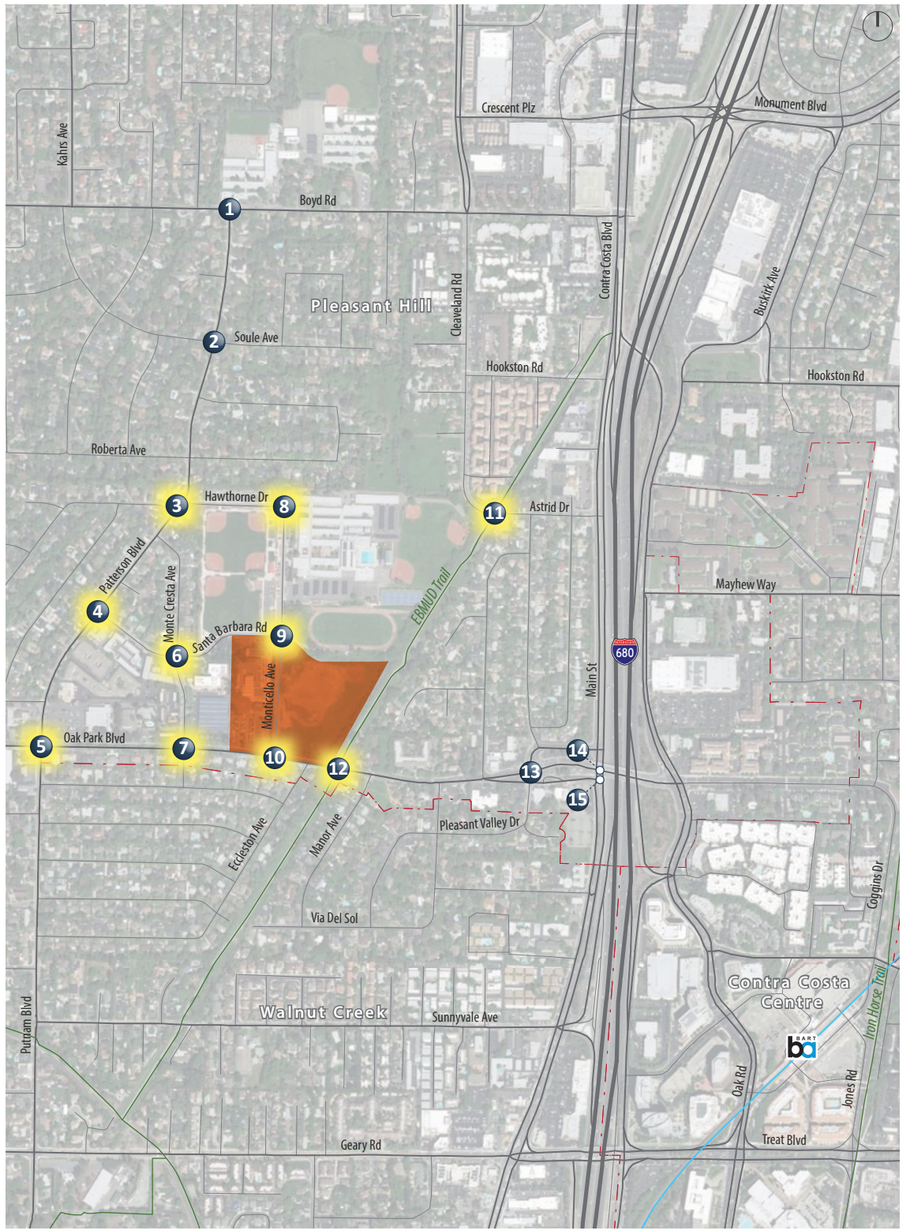


WW [XX] (YY) {ZZ} AM [Afternoon] (PM) {Weekend} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Yield Sign

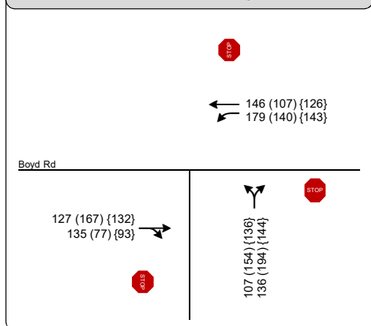
Project Site

Study Intersection

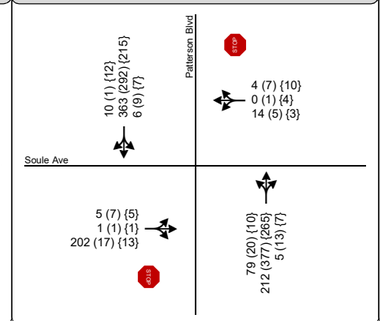
Afternoon Peak Hour Analysis Location

Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

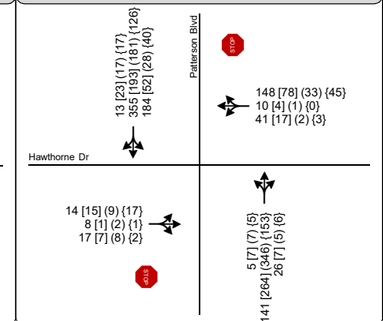
1. Patterson Blvd/Boyd Rd



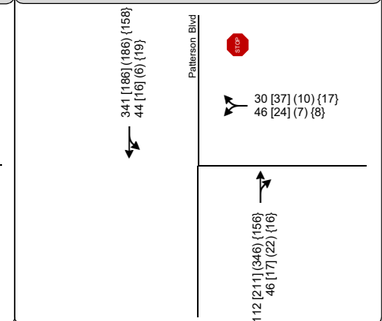
2. Patterson Blvd/Soule Ave



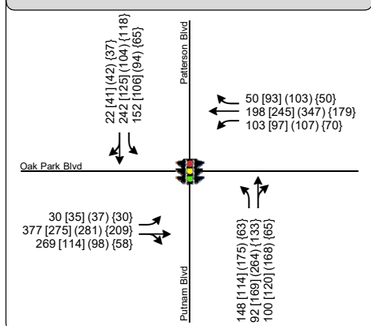
3. Patterson Blvd/Hawthorne Dr



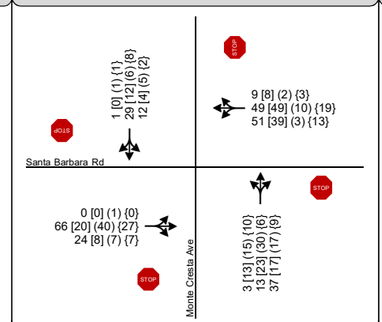
4. Patterson Blvd/Santa Barbara Rd



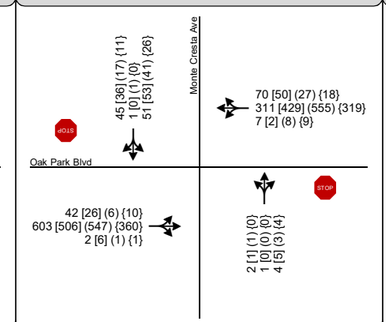
5. Patterson Blvd/Putnam Blvd/Oak Park Blvd



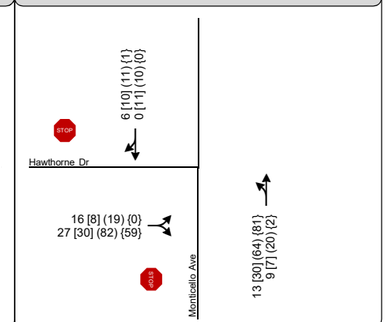
6. Monte Cresta Ave/Santa Barbara Rd



7. Monte Cresta Ave/Oak Park Blvd



8. Monticello Ave/Hawthorne Dr



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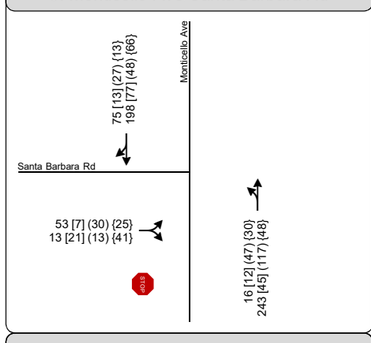
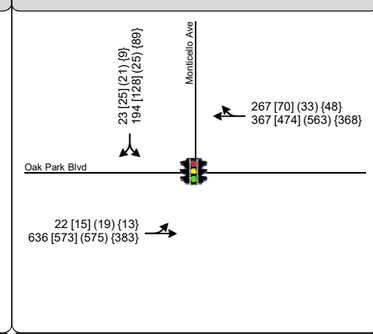
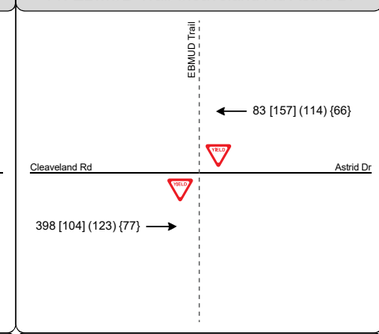


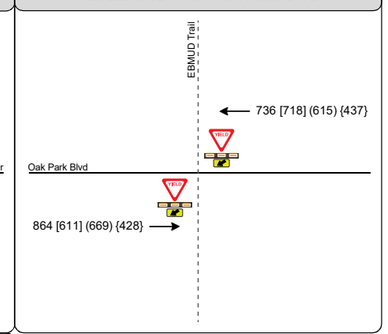
10. Monticello Ave/Oak Park Blvd



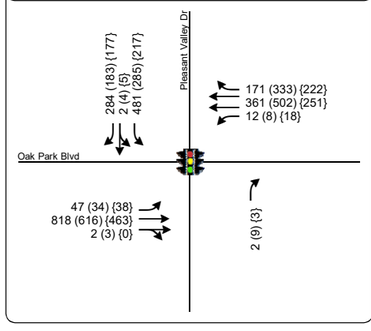
11. EBMUD Trail/Cleaveland Rd/Astrid Dr



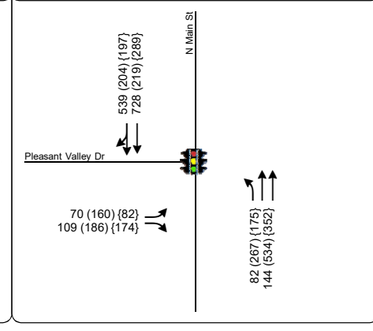
12. EBMUD Trail/Oak Park Blvd



13. Pleasant Valley Dr/Oak Park Blvd



14. N Main St/Pleasant Valley Dr



15. N Main St/Oak Park Blvd

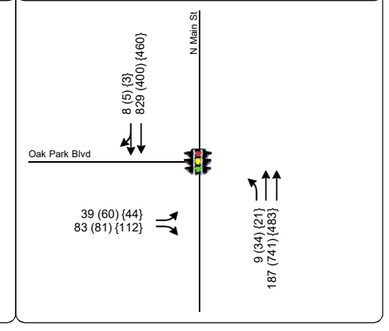
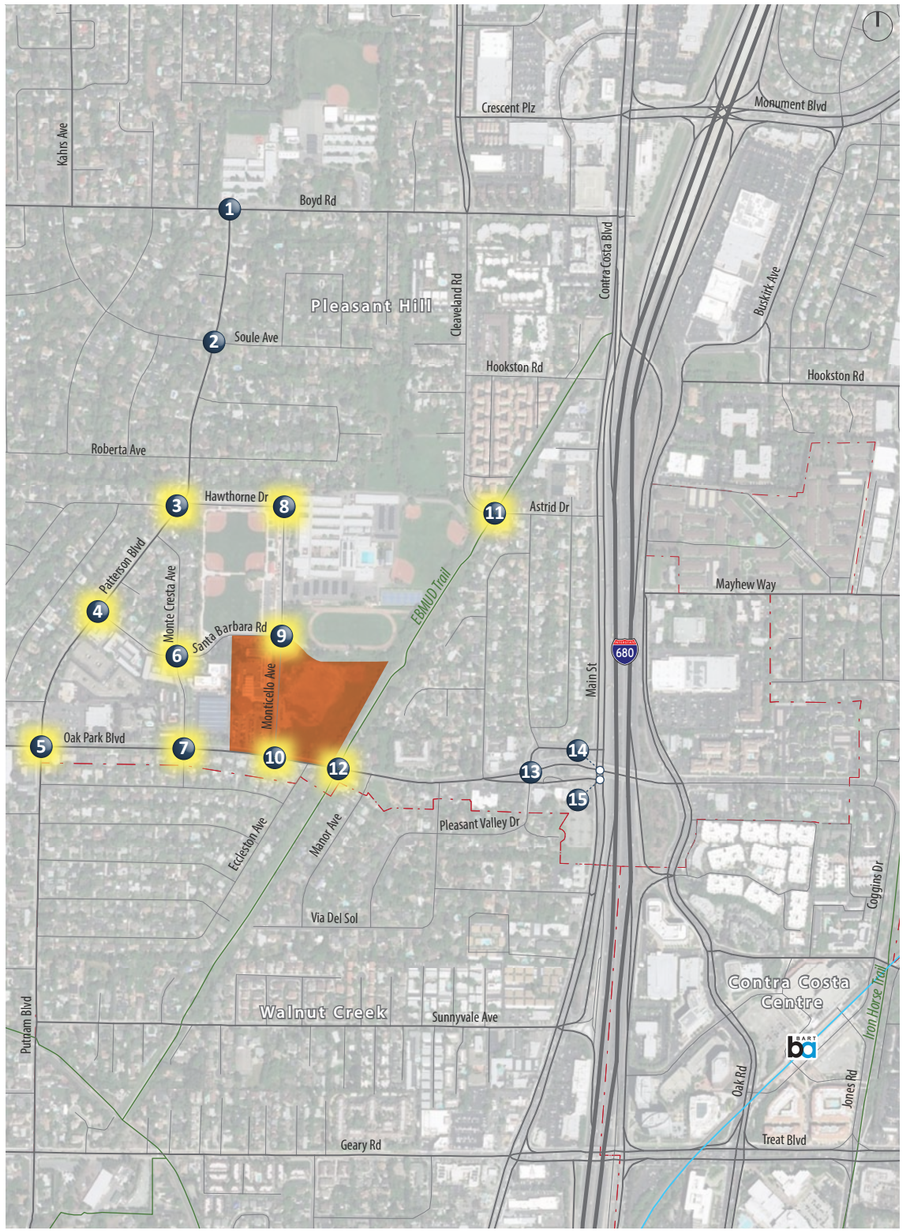


Figure 5

Existing Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls



w (x) [y] {z} AM (Afternoon) [PM] {Weekend} Peak Hour Pedestrian Volumes

WW (XX) [YY] {ZZ} AM (Afternoon) [PM] {Weekend} Peak Hour Bicycle Volumes

Project Site

Study Intersection

Signalized Intersection

STOP Stop Sign

YIELD Yield Sign

Afternoon Peak Hour Analysis Location

Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

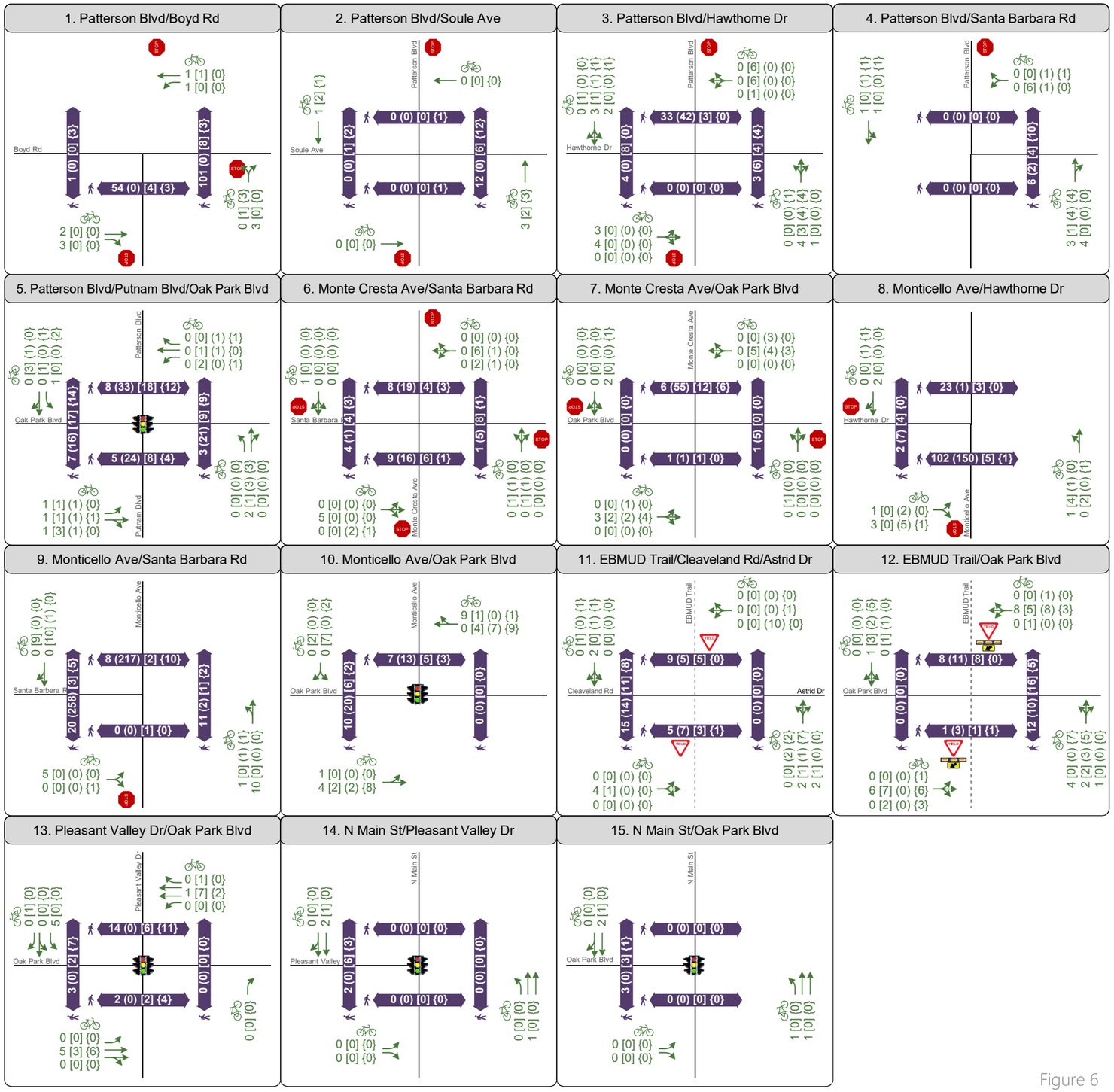


Figure 6

Existing Peak Hour Bicycle and Pedestrian Volumes

Daily traffic counts were collected at the following locations:

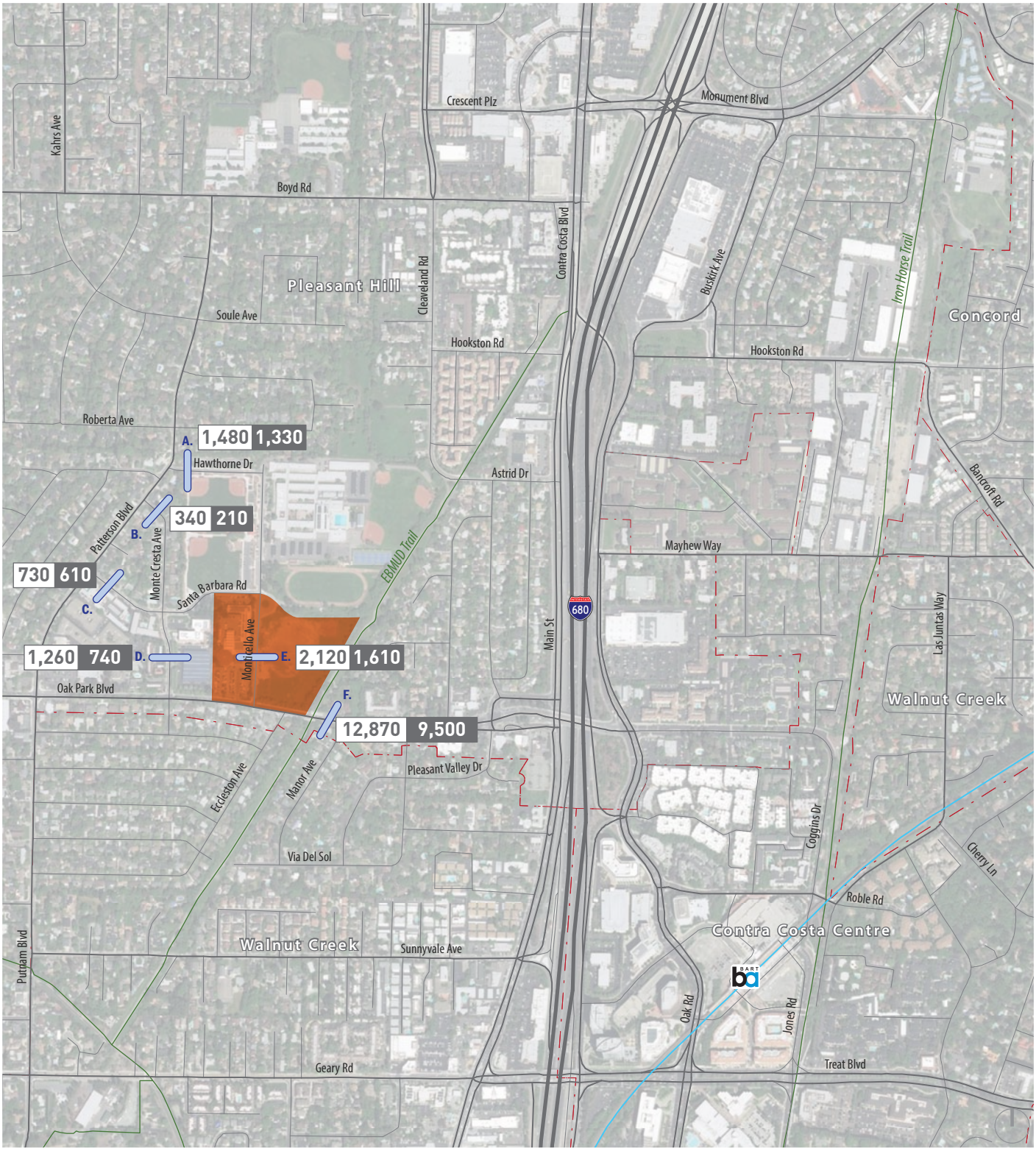
1. Hawthorne Drive, east of Patterson Boulevard
2. Monte Cresta Avenue, east of Patterson Boulevard
3. Santa Barbara Road, east of Patterson Boulevard
4. Monte Cresta Avenue, north of Oak Park Boulevard
5. Monticello Avenue, north of Oak Park Boulevard
6. Oak Park Boulevard at East Bay MUD Trail Crossing

The average daily traffic volumes on these roadways are summarized in **Table 3** and on **Figure 7.** Traffic volumes on local streets in the area are less than 1,500 vehicles per day and volumes on collectors are less than 3,000 vehicles per day. Hawthorne Drive and Monticello Avenue are the primary access routes to the Middle School and park areas, and as such, they experience the highest level of vehicle traffic, mostly concentrated around school bell times. Traffic volumes on Oak Park Boulevard are in the expected range for an arterial street. Saturday activity in the area is less than weekday activity, even considering tournament activities.

Table 3: Existing Daily Traffic Volumes

Roadway	Roadway Classification	Average Weekday		Saturday	
		Daily Traffic[1]	Peak Hourly Traffic[2]	Daily Traffic	Peak Hourly Traffic
Hawthorne Drive, east of Patterson Boulevard	Local Street	1,480	320	1,330	200
Monte Cresta Avenue, east of Patterson Boulevard	Local Street	340	60	210	30
Santa Barbara Road, east of Patterson Boulevard	Local Street	730	140	610	80
Monte Cresta Avenue, north of Oak Park Boulevard	Local Street	1,260	200	740	80
Monticello Avenue, north of Oak Park Boulevard	Collector	2,120	480	1,610	190
Oak Park Boulevard at East Bay MUD Trail Crossing	Arterial	12,870	1,300	9,500	860

Notes: 1. Average daily two-way traffic measured over two days in May 2018, rounded to the nearest 10.
Average peak hour volume from the two weekdays of data collection; the peak hour of traffic in the immediate project vicinity is the morning, generally between 7:15 and 8:15, which is heavily influenced by school travel in the area. In the afternoon, school traffic is more dispersed.
Source: Fehr & Peers, 2018.



Project Site | X. Study Segment | XX YY Weekday / Saturday Existing Daily Traffic

Figure 7

Oak Park Specific Plan

Existing Daily Roadway Segment Volume

WC18-3483_7_ADT

Parking

On-street and off-street parking facilities are provided throughout the immediate project vicinity to support the variety of public uses in the area. Approximately 945 parking spaces within the immediate project vicinity, including off-street parking for library, middle school, park, and Contra Costa County Education building, as well as on-street parking along Santa Barbara Road, Hawthorne Drive, Monte Cresta Avenue, and Monticello Avenue, were included in the parking survey. A weekday and weekend parking demand survey was conducted for the locations shown on **Figure 8**, with the weekday demand shown on **Figure 9** and the Saturday demand shown on **Figure 10**. Parking supply and demand by area is also summarized in **Table 4**. Parking data collection sheets are provided in **Appendix B.**

Table 4: Existing Parking Conditions

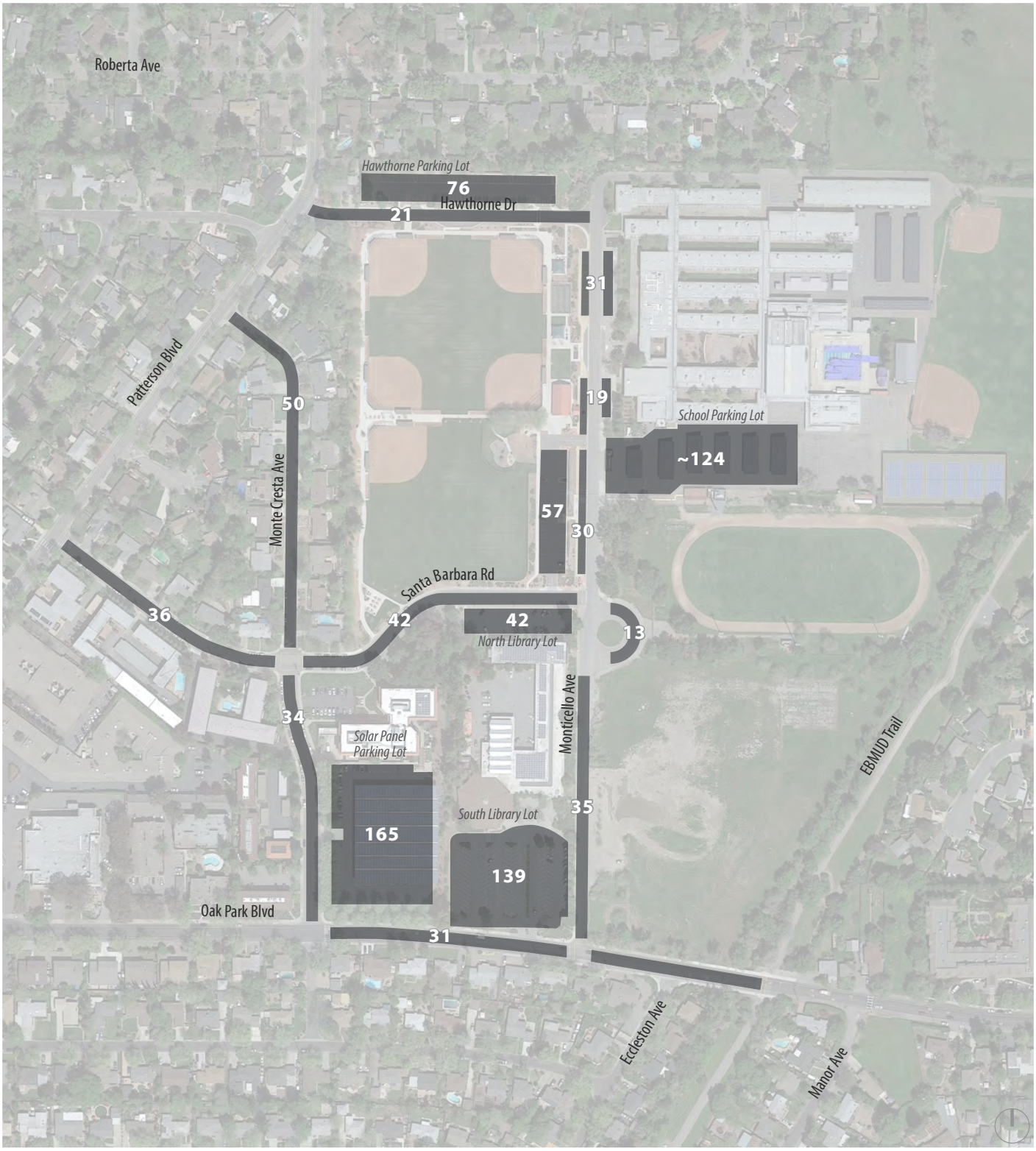
Parking Location	Total Supply	Saturday Demand		Weekday Demand	
		10 AM	Noon	2 PM	6 PM
A. Hawthorne Lot	76	41	57	14	75
B. Hawthorne Drive	21	11	8	7	18
C. Santa Barbara Between Patterson & Monte Cresta	36	23	24	15	20
D. Santa Barbara between Monte Cresta and Monticello Avenue	42	18	38	18	38
E. Oak Park Boulevard Monte Cresta and Monticello Avenue	31	18	3	1	1
F. Monte Cresta between Santa Barbara and Oak Park	34	18	19	15	15
G. Monte Cresta Between Hawthorne and Santa Barbara	50	18	4	4	13
H. Monticello Avenue between Santa Barbara and Oak Park	35	18	0	11	0
I2. Bulbout	13	0	0	13	4
I1. Monticello Avenue between Parking Lot and Santa Barbara	30	21	18	13	28
J. N. Library Lot	42	22	30	13	29
K. S. Library Lot	139	55	52	70	47
L. School Parking Lot	124	62	59	54	24
M. Solar Panel Lot	165	16	17	84	30
N. Monticello Avenue Lot	57	55	55	32	57
O. Monticello Avenue between Hawthorne and Midblock	31	12	12	21	22

Table 4: Existing Parking Conditions

Parking Location	Total Supply	Saturday Demand		Weekday Demand	
		10 AM	Noon	2 PM	6 PM
P. Monticello Avenue between Midblock and School Lot entrance	19	15	13	9	19
Total	**945**	**423**	**409**	**394**	**440**
Overall Occupancy	45%	43%	42%	47%	45%

Source: Fehr & Peers, 2018.

Overall, sufficient parking supplies are provided within the area to accommodate existing parking demands, although some areas can experience high levels of parking demand depending on the time of day and day of week. For example, parking demand for the library lot is approximately 50 percent of the supply on a weekday afternoon at 2 PM, but decreases to 35 percent at 6 PM. On a Saturday, parking demand is approximately 40 percent of the supply. Parking areas around the park were at capacity on weekday evenings and on Saturday at noon when tournaments are being held. On-street parking closest to the park and school experienced high levels of demand, while parking demand on the Monte Cresta Avenue was less than 20 percent of the available supply. This indicates that while parking demand from sports park activities is high, it does not appear to spill onto neighboring streets.



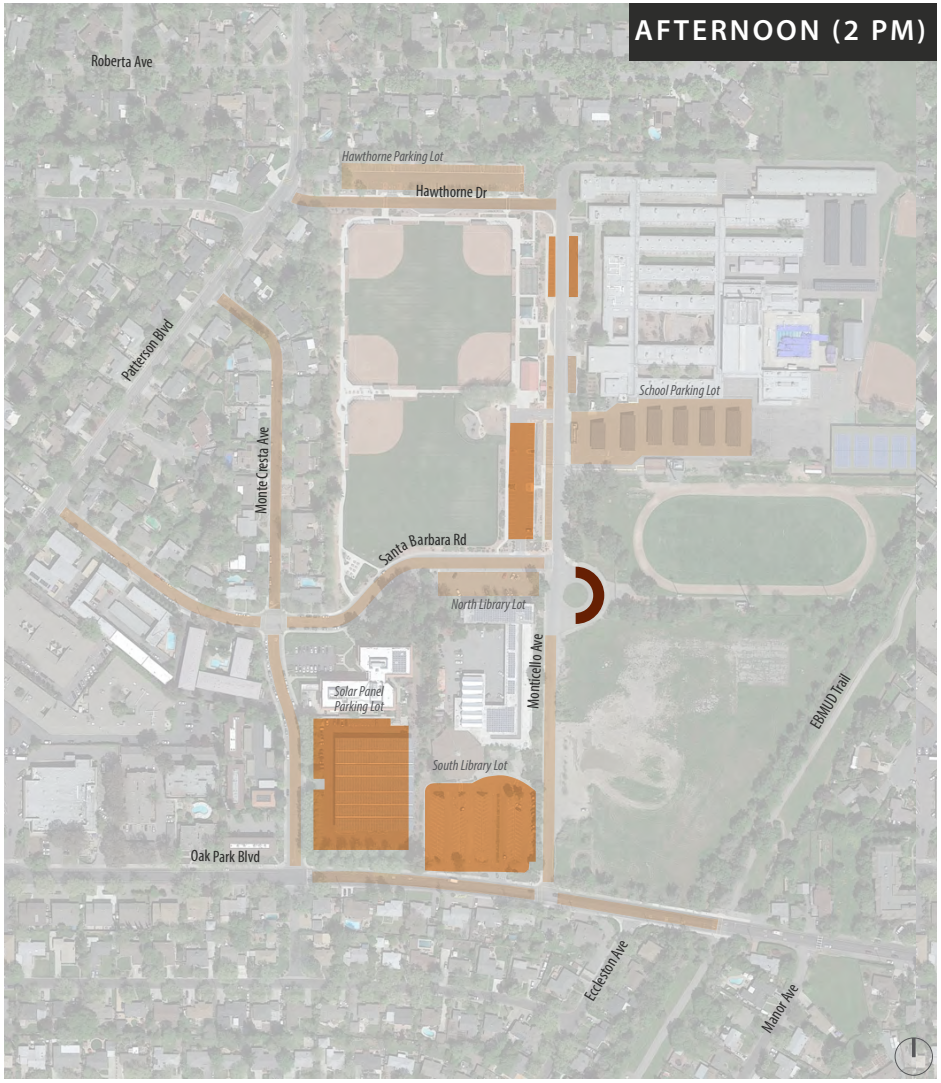
Parking Survey Location and Number of Total Spaces

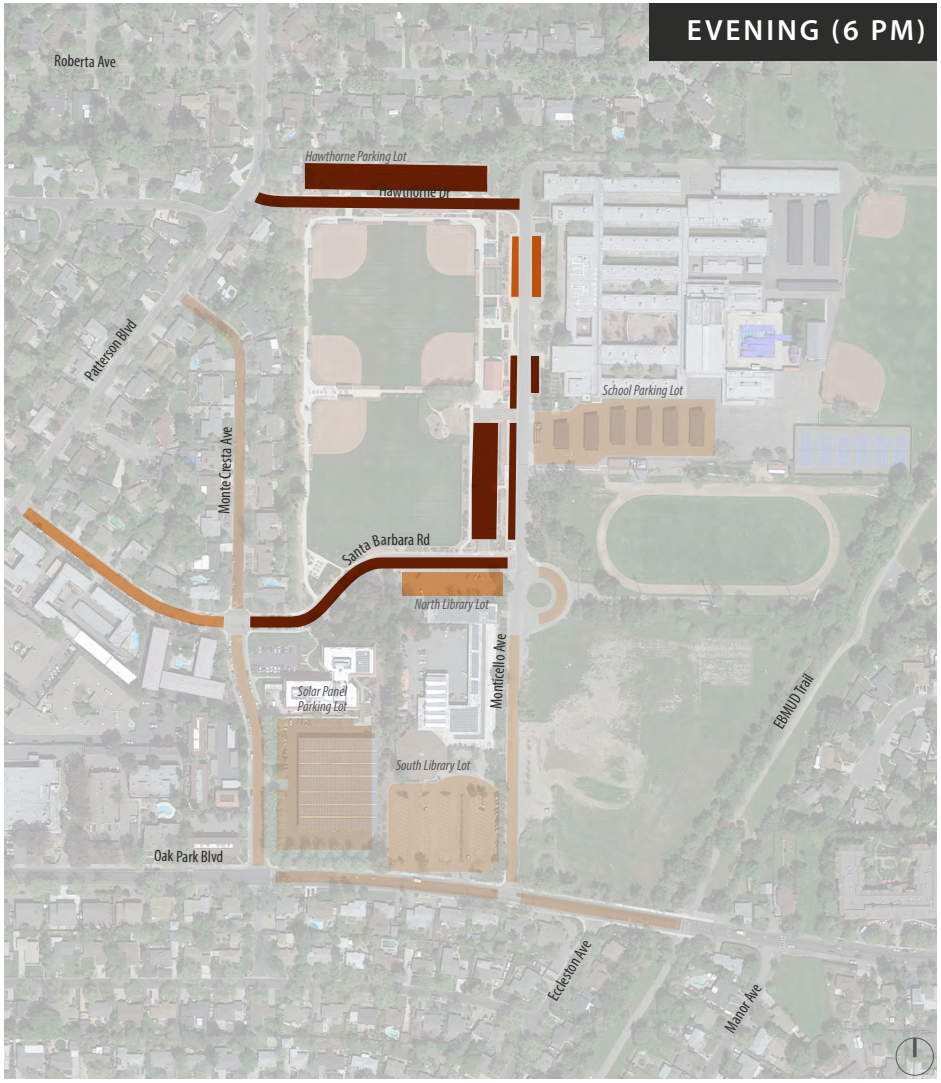
Figure 8

Oak Park Specific Plan

Parking Survey Locations

WC18-3483_8_SurveyLocs



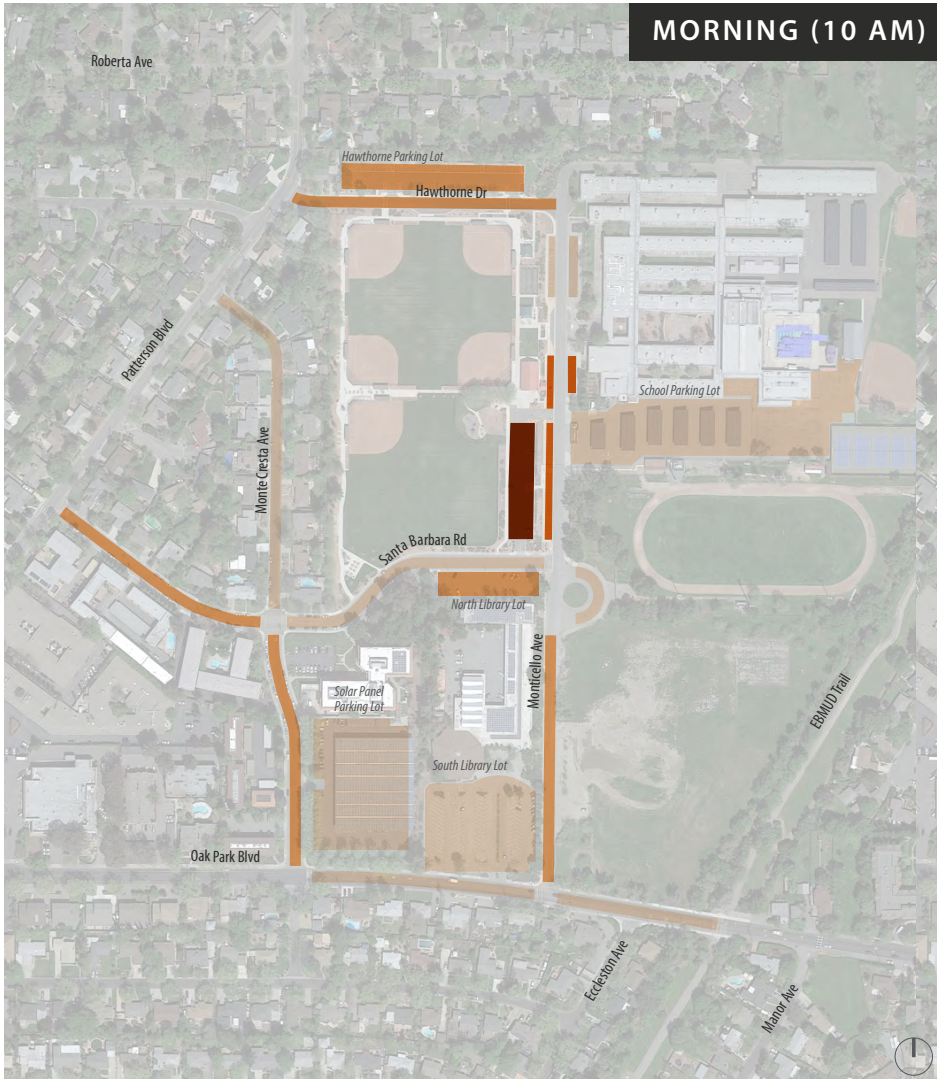


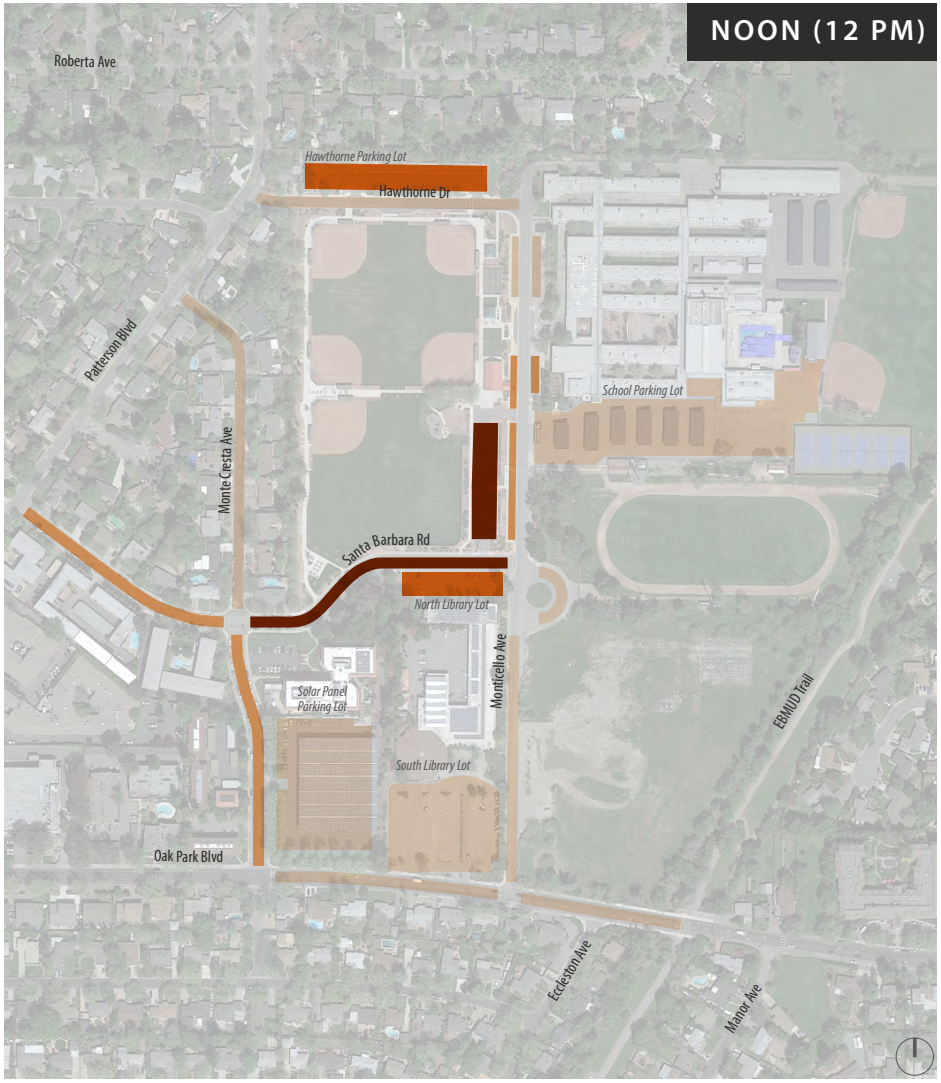
- < 50%
- 50-69%
- 70-84%
- > or equal to 85%

Figure 9

Oak Park Specific Plan

Weekday Parking Occupancy





< 50%

50-69%

70-84%

> or equal to 85%

Figure 10

Oak Park Specific Plan

Saturday Parking Occupancy

Existing Operations

Intersection Levels of Service

Existing operations were evaluated using the methodology described in Chapter 1. The results are summarized in **Table 5** based on the HCM 2010 method unless otherwise specified. Observed peak hour factors[4] were used at all intersections, and truck, pedestrian and bicycle activity were factored into the analysis. Study intersections generally operate at overall acceptable service levels in accordance with benchmarks set by the City of Pleasant Hill during both the weekday morning, weekday afternoon, weekday evening, and Saturday afternoon peak hours, which was confirmed during field observations. Detailed intersection LOS calculation worksheets are provided in **Appendix C**.

Although the study intersections are shown to operate within acceptable levels of service, significant levels of traffic diversion from I-680 and other regional travel routes can occur through the study area when there is recurring and non-recurring congestion on other routes. Congestion on I-680, State Route 242, and State Route 24 can influence the operations of intersections in the study area – for example, when traffic deviates from I-680 to Main Street, it can result in vehicle queue spillback that often extends from Geary Road through the signal at Oak Park Boulevard. The data collection effort and subsequent analysis is reflective of a day when there was not a major incident that resulted in atypical traffic diversion through the study area. Analyzing the effects of project traffic on roadway operations considering increased traffic diversion due to non-recurring incidents on the regional transportation system would serve to dilute the effects of project traffic and would reduce the projects proportionate share to potential impacts.

Additionally, traffic conditions in the study area are heavily influenced by school related traffic, especially along Boyd Road, Patterson Boulevard, Hawthorne Drive and Monticello Avenue. These peaking characteristics are accounted for in the analysis. Depending on when someone travels through an intersection, their travel experience can be different than shown in Table 5.

4 The relationship between the peak 15-minute flow rate and the full hourly volume is given by the peak-hour factor (PHF) based on the following equation: PHF=Hourly volume/(4* volume during the peak 15 minutes of flow). The analysis of level of service is based on peak rates of flow occurring within the peak hour because substantial short-term fluctuations typically occur during an hour.

Table 5: Existing Conditions - Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Existing Conditions	
			Delay (in seconds)[3]	LOS
1: Patterson Blvd & Boyd Rd	AWSC	AM PM SA	12 12 11	B B B
2: Patterson Blvd & Soule Ave	SSSC	AM PM SA	5 (39) 1 (15) 1 (12)	A (E) A (B) A (B)
3: Patterson Blvd & Hawthorne Dr	SSSC	AM MD PM SA	9 (38) 3 (14) 1 (11) 2 (10)	A (E) A (B) A (B) A (A)
4: Patterson Blvd & Santa Barbara Rd	SSSC	AM MD PM SA	2 (14) 2 (11) 1 (12) 1 (11)	A (B) A (B) A (B) A (B)
5: Putnam Blvd/Patterson Blvd & Oak Park Blvd	Signalized	AM MD PM SA	41 19 21 14	D B C B
6: Monte Cresta Ave & Santa Barbara Rd	AWSC	AM MD PM SA	8 9 7 7	A A A A
7: Monte Cresta Ave & Oak Park Blvd	SSSC	AM MD PM SA	3 (30) 3 (39) 2 (38) 1 (17)	A (D) A (E) A (E) A (C)
8: Monticello Ave & Hawthorne Dr	SSSC	AM MD PM SA	10 (11) 7 (10) 7 (9) 8 (9)	A (B) A (A) A (A) A (A)
9: Monticello Ave & Santa Barbara Rd	SSSC	AM MD PM SA	2 (17) 3 (16) 3 (11) 4 (10)	A (C) A (C) A (B) A (A)
10: Oak Park Blvd & Monticello Ave	Signalized	AM MD PM SA	7 6 3 4	A A A A
13: Pleasant Valley Dr & Oak Park Blvd[2]	Signalized	AM PM SA	11 10 13	B A B

Table 5: Existing Conditions - Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Existing Conditions	
			Delay (in seconds)[3]	LOS
14: N Main St & Pleasant Valley Dr[2]	Signalized	AM PM SA	15 11 11	B B B
15: N Main St & Oak Park Blvd[2]	Signalized	AM PM SA	7 10 9	A A A

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).
1. AWSC = All-way Stop Controlled; SSSC = Side-street Stop Controlled
2. Intersections 13, 14, and 15 are evaluated using the HCM 2000 methodology.
3. For side-street stop-controlled intersections, delay is presented for intersection average (worst movement).

Source: Fehr & Peers, 2018.

Vehicle Queues

Although all intersections currently operate within the standards set by the City of Pleasant Hill, there can be periodic vehicle queue spillback and delays greater than shown in Table 5 for some movements. For signalized intersections, **Table 6** presents the 95th percentile vehicle queue results for turn movements with exclusive lanes. Queue worksheets are provided in **Appendix E.**

Table 6: Existing Conditions – 95th Percentile Queue Summary at Signalized Intersections

Intersection	Movement	Storage Length (ft)[1]	AM Peak Period	Mid-Day Peak Period	PM Peak Period	Saturday Peak Period
5: Putnam Blvd/Patterson Blvd & Oak Park Blvd	EBL	100	50	75	75	50
	WBL	110	**200**	**150**	**150**	100
	WBR	230	20	50	75	25
	NBL	100	**200**	**125**	**150**	50
	SBL	210	200	125	100	50
10: Oak Park Blvd & Monticello Ave	SB	700	175	100	50	75
13: Pleasant Valley Dr & Oak Park Blvd	EBL	80	75	--	50	50
	WBL	80	25	--	25	50
	WBR	125	25	--	75	25
	NBR	25	0	--	0	0
	SBL	100	**175**	--	**125**	75

Table 6: Existing Conditions – 95th Percentile Queue Summary at Signalized Intersections

Intersection	Movement	Storage Length (ft)[1]	AM Peak Period	Mid-Day Peak Period	PM Peak Period	Saturday Peak Period
	SBR	100	50	--	50	50
14: N Main St & Pleasant Valley Dr	EBL	400	75	--	150	75
	EBR	100	75	--	25	25
	NBL	110	75	--	**125**	75
15: N Main St & Oak Park Blvd	EBL	310	50	--	75	50
	EBR	310	100	--	75	150
	NBL	110	25	--	50	25

Notes: **Bold** indicates queue potentially extends beyond available storage.
-- = intersection was not evaluated for this time period.
1. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.

Source: Fehr & Peers, 2018.

Peak Hour Signal Warrants

Peak hour traffic signal warrants were reviewed at the unsignalized study intersections. Peak hour warrants[5] are not met at any of the unsignalized study intersection based on existing traffic volumes. Peak hour signal warrant worksheets are shown in **Appendix E**.

Midblock Crossing Operations

Operations of the two East Bay MUD trail crossings was conducted to determine if the current pedestrian crossing treatments are appropriate. For this assessment, we used the Xwalk+ tool developed by Fehr & Peers based on research from the National Cooperative Highway Research Program, Federal Highway Administration and interviews with various cities throughout the country. The tool combines academic research on crosswalk treatment effectiveness with national best practices. Key inputs for the tool include:

[5] Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the Manual on Uniform Traffic Control Devices (MUTCD) and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible State or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

- speed limit
- pedestrian volume
- major and minor roadway volumes
- crossing distance
- number of lanes
- presence of bicyclists
- presence of transit
- presence of a median
- presence of on-street parking
- expected motorist compliance (yielding)

Analysis worksheets are provided in **Appendix F** with the data inputs for both the Oak Park Boulevard crossing and the Astrid Drive/Cleaveland Road crossing. Based on current conditions, the existing crossing treatments are appropriate, which include a rectangular rapid flashing beacon at the Oak Park Boulevard crossing, and a yield sign with pedestrian actuated lights at the Astrid Drive/Cleaveland Road crossing.

Existing Middle School Operations

Pleasant Hill Middle School is located within the immediate study area and contributes significantly to vehicle traffic within the area. School hours are typically from 8:10 AM to 2:30 PM with an enrollment in 6th through 8th grades of approximately 925 students. Vehicle congestion is typically concentrated around the morning and afternoon bell times when students are being dropped-off or pick-up. Based on the count data and field observations, most students are driven to school in a private vehicle, with a small percentage of students walking, biking or being bussed to/from school. In the afternoon, a higher proportion of students walked to their afterschool destination, although private vehicles are the primary mode of travel.

A number of students were also observed walking from the campus to the existing library to either utilize the library facilities and be picked-up at a later time, or for pick-up immediately after school without utilizing the library facilities. Some of these students opted to walk on Monticello Avenue behind parked cars as the sidewalk system on the west side of Monticello Avenue was developed to serve the sports fields, not the school. A number of students were also observed to be dropped-off/picked-up along Hawthorne Drive, where there are not continuous pedestrian facilities connecting parking and drop-off facilities on Hawthorne Drive to the campus. Vehicle and pedestrian conflicts at the intersections of Monticello Avenue with

Hawthorne Drive and Santa Barbara Road contribute to increased vehicle congestion around bell times. Two crossing guards were observed on the day of data collection.

With the project, pedestrian facilities would be provided along the east side of Monticello Avenue, connecting to Oak Park Boulevard and the library would be relocated to the east side of the roadway, which would reduce the number of pedestrian crossings at the Monticello Avenue at Santa Barbara Road intersection. Other measures that could be considered by the Pleasant Hill Unified School District to better manage vehicle and pedestrian flows into and out of campus in the near-term include:

- Add zero-period classes to disperse student arrivals
- Encourage families to not arrive for afterschool pick-up until after school is dismissed to reduce number of vehicles waiting for students
- Install sidewalks and crosswalks at the intersection of Hawthorne Drive at Monticello Avenue to better accommodate pedestrian and vehicle flows through the intersection
- Evaluate crossing guard location for maximum effectiveness in the near-term and upon project completion when the roadway network modifications may change pedestrian flows in the area

3. Project Characteristics

This chapter provides an overview of the proposed project components and addresses the proposed project trip generation, trip distribution, and trip assignment characteristics, allowing for an evaluation of project impacts on the surrounding roadway network. The amount of traffic associated with the project was estimated using a three-step process:

1. **Trip Generation** – The *amount* of vehicle traffic entering/exiting the site was estimated.
2. **Trip Distribution** – The *direction* trips would use to approach and depart the area was projected.
3. **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Project Description

The approximately 15-acre program area is located north of Oak Park Boulevard and bisected by Monticello Avenue. The western side of Monticello Avenue, which is currently occupied by the 40,000 square-foot Pleasant Hill library, would be developed with as a new residential neighborhood with 34 single-family homes, and the potential for up to 20 percent of the homes to accommodate accessory dwelling units. The eastern side of Monticello Avenue is currently an undeveloped lot and would become the new site of the new Pleasant Hill Library, on-site parking, and sports fields to the north of the parking lot. The analysis was conducted reflecting a maximum library square footage of 25,000 square-feet. The library plans have been refined since the transportation impact assessment was started and the final library is expected to be less than 24,000 square feet.

The sports fields would include two 200' baseball/softball fields, each with two dugouts and two bullpens per field. A soccer field overlay would be provided between the two diamonds. Lighting would allow for evening activities. Games would be held concurrently on each field with games expected to be scheduled on Monday through Friday from afterschool until 10:00 PM. On Saturday and Sundays, games would be scheduled from 8:00 AM to 10:00 PM, similar to the existing fields in the area.

Four bocce ball courts are also proposed in addition to restroom facilities. Built-in bleachers would also be provided, with seating for approximately 53 people per field.

The project includes new roadways as well as alterations to existing roadway facilities. New east-west roadway connections to serve the residential development as well as the library and sports fields would be provided from Monticello Avenue, with each connection off-set from the other. New sidewalks would also be constructed on roadway facilities in the area. A combination of private garages and on-street parking

would support the residential portion of the project, a new parking lot would be constructed for the library, and perpendicular parking would be provided along the southern portion of the sports fields.

A new parking lot is proposed between the sports fields and the library, with approximately 130 parking spaces provided. These spaces would be shared between the sports fields and the library.

The project also includes alterations to the study intersection of Oak Park Boulevard and Monticello Avenue (Intersection 10), which would be constructed as a part of the project. The proposed improvements include widening Oak Park Boulevard to include an eastbound left-turn pocket and a westbound right-turn pocket to Monticello Avenue.

Project Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Project trip generation estimates for the one-hour peak period during the weekday morning and evening commute when traffic volumes on the adjacent streets are typically the highest. Since the project is located directly adjacent to a school, the project's weekday mid-day trip generation was also estimated. Due to the weekend trip generating characteristics of the new sports park, weekend conditions were also considered. Project trip generation was estimated using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition) and existing count data.

For the library portion of the project, driveway counts at the existing facility were conducted in May of 2018. The approximately 40,000 square-foot existing facility generates approximately 45 morning peak hour trips, 320 afternoon peak hour trips, 170 PM peak hour trips, and 200 Saturday peak hour trips. This level of trip generation was compared to other library facilities on the basis of ITE trip Generation data. This review indicates that on a per square-foot basis, the existing library generates traffic at lower rates than other libraries. This is likely due to the high level of storage and administrative functions within the existing facility.

ITE trip generation rates were then used to estimate the potential trip generation of an up to 25,000 square-foot library. The resulting trip generation was higher than the existing facility for the weekday evening and Saturday afternoon time periods. As the relocated facility would have a wider variety of programming opportunities, it could potentially have higher levels of trip generation than the existing facility. Therefore, ITE rates were used to estimate the level of trip generation for the new library facility for the time periods where ITE trip generation rates yielded a higher estimate of activity; for the weekday morning and afternoon time periods when the library generates traffic at a higher level than other facilities, the existing observed trip generation was used.

For the sports fields portion of the project, a variety of trip generation rates published by ITE were reviewed. While rates are available for a variety of recreational facilities, none match the exact project description.

Based on a review of the available rates, the proposed programming information, as well as existing traffic counts in the area, the land use with available trip rate data that most closely approximates the proposed sports fields is a soccer complex, which is described as an outdoor facility that is used for non-professional soccer games. Although only one soccer field is proposed (which could be used as two softball fields), the rate was applied to two fields. For this project, the maximum observed rate from ITE was applied as a review of Saturday activity levels in the area as a function of the number of fields is higher than the average rate presented in ITE. This likely overstates the potential sports field trip generation but provides a conservative evaluation of potential project impacts to intersection operations in the area.

As shown in **Table 7**, the project is expected to generate 950 new weekday daily trips, including approximately 40 new morning peak hour, 100 new mid-day trips, and 125 new evening peak hour trips, including the potential for increased library trip generation during the evening peak hour, and considering maximum usage of the sports fields. The existing library trips would be shifted from their current location to the new location. On a Saturday, the project is expected to generate up to 2,450 new daily trips, and approximately 385 new peak hour trips, including the potential for the new library to generate more traffic than the existing library, and considering maximum levels of activity at the sports fields.

Trip Distribution & Assignment

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. Estimates of project trip distribution were developed based on existing travel patterns in the area, a select zone analysis using the Contra Costa Transportation Authority (CCTA) travel demand model, and the location of complementary land uses. Separate estimates were developed for the residential units, the sports park, and the library as they are likely to have different trip distribution patterns. The resulting trip distribution percentages are shown on **Figure 11**. For the library trips, existing trips were shifted from the existing access locations to the new access locations, and new trips assigned based on the sports fields trip distribution pattern.

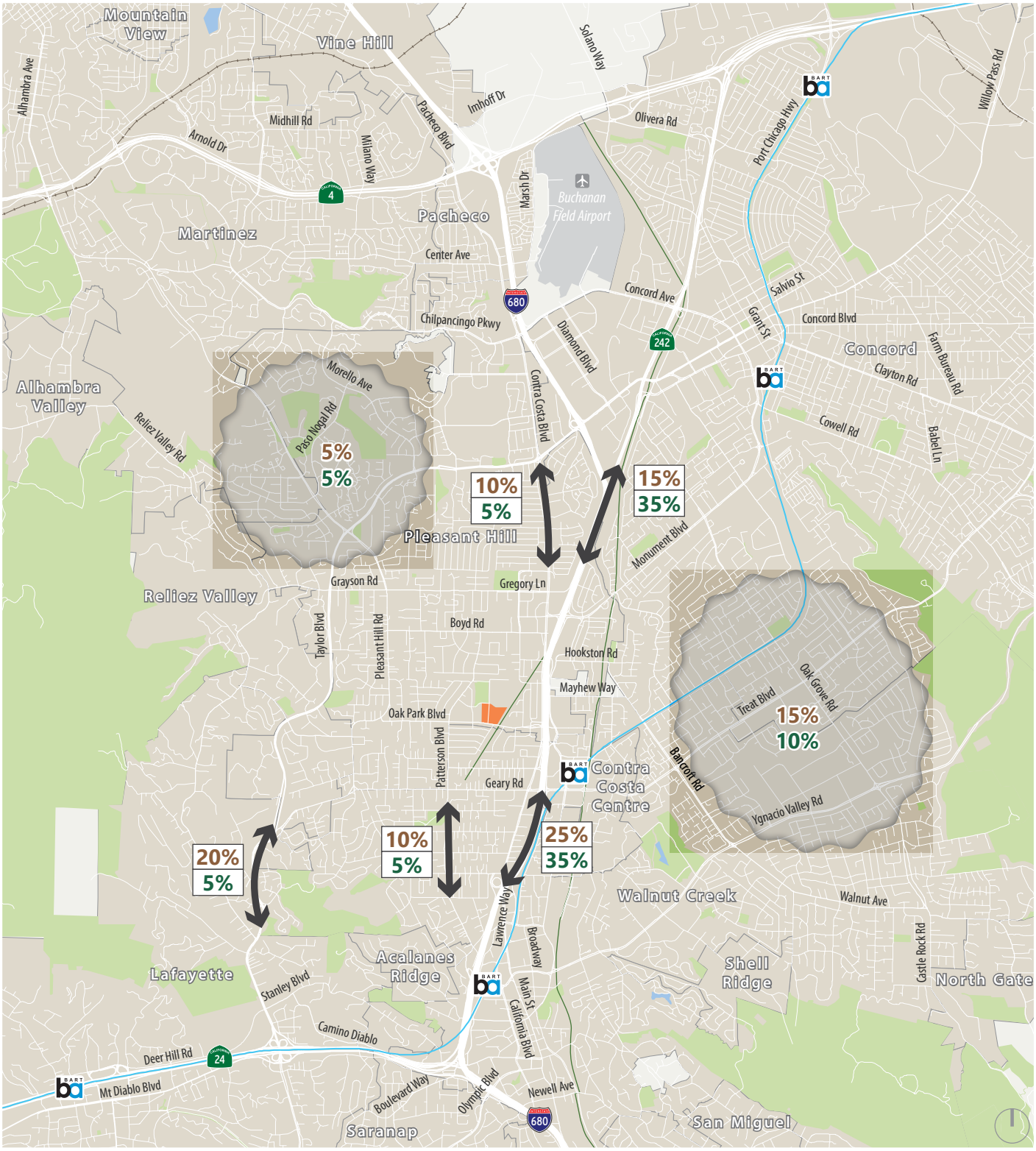
Project trips were assigned to the roadway network based on the general directions of approach and departure shown on Figure 11. The project trip assignment is shown on **Figure 12**.

Table 7: Project Trip Generation

Use	Size	Week-day Daily (Sat.)	Weekday AM Peak Hour			Weekday Mid-Day Peak Hour[1]			Weekday PM Peak Hour			Saturday (Sat.) Peak Hour[1]		
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Single-Family Detached Housing[2]	34 Dwelling Units	390 (360)	7	22	29	25	14	39	23	14	37	25	22	47
Accessory Dwelling Units[3]	7 Dwelling Units	60 (60)	0	4	4	3	2	5	3	1	4	2	3	5
Sports Park[4]	2 Fields	190 (1,260)	2	2	4	25	28	53	17	33	50	103	112	215
Existing Library to be Removed[5]	40,000 Square-feet	-1,500 -(1,270)	-24	-21	-45	-154	-167	-321	-93	-77	-170	-107	-92	-199
New Library[6]	25,000 square-feet	1,810 (2,010)	24	21	45	154	167	321	98	106	204	166	149	315
Project Trip Generation:		**950 (2,420)**	9	28	37	53	44	97	48	77	125	189	194	383

1. Weekday mid-day peak hour trip generation based on the PM peak hour of the generator rate which, which may not coincide with the afternoon peak hour in the study area but presents a conservative assessment of project effects.
2. ITE land use category 210 – Single-Family Detached Housing:
   Weekday Daily: Ln (T) = 0.92 Ln (X) +2.71
   Weekday AM Peak Hour: T = 0.71 (X) +4.80; Enter = 25%; Exit = 75%
   Weekday Mid-Day Peak Hour (PM Peak hour of the Generator): Ln (T) = 0.94 Ln (X) +0.34 Enter = 63%; Exit = 37%
   Weekday PM Peak Hour: Ln (T) = 0.96 Ln (X) +0.20; Enter = 63%; Exit = 37%
   Saturday Daily: Ln (T) = 0.94 Ln (X) +2.56
   Saturday Peak Hour: 0.84 (X) + 17.99; Enter = 54%; Exit 46%
3. ITE land use category 220 – Multi-Family Housing:
   Weekday Daily: T = 7.32 (X)
   Weekday AM Peak Hour: T = 0.46 (X); Enter = 23%; Exit = 77%
   Weekday Mid-Day Peak Hour (PM Peak hour of the Generator): T = 0.67 (X); Enter = 59%; Exit = 41%
   Weekday PM Peak Hour: T = 0.56 (X); Enter = 63%; Exit = 37%
   Saturday Daily: T = 8.14.14 (X)
   Saturday Peak Hour: T = 0.70 (X); Enter = 54%; Exit 46%
4. ITE land use category 488 – Soccer Complex: (max rate)
   Weekday Daily: T = 90.81 (X)
   Weekday AM Peak Hour: T = 1.88 (X); Enter = 61%; Exit = 39%
   Weekday Mid-Day Peak Hour (PM Peak hour of the Generator): T = 26.50 (X); Enter = 47%; Exit = 53%
   Weekday PM Peak Hour: T = 24.88 (X); Enter = 66%; Exit = 34%
   Saturday Daily: T = 628.44 (X)
   Saturday Peak Hour: T = 107.4 (X); Enter = 48%; Exit 52%
5. Driveway counts collected in May 2018 for peak hour's ratio of daily to peak hour was used in conjunction with ITE rates for libraries to estimate daily trip generation.
6. ITE land use category 590 – Library:
   Weekday Daily: T = 72.05 (X)
   Weekday AM Peak Hour: As ITE trip rates yielded lower estimate, existing observed trip generation was used
   Weekday Mid-Day Peak Hour: As ITE trip rates yielded lower estimate, existing observed trip generation was used
   Weekday PM Peak Hour: T = 8.16 (X); Enter = 48%; Exit = 52%
   Saturday Daily: T = 80.09 (X)
   Saturday Peak Hour: T = 12.6 (X); Enter = 52%; Exit 48%

Source: *Trip Generation Manual* (10th Edition), ITE; Fehr & Peers.



Project Site

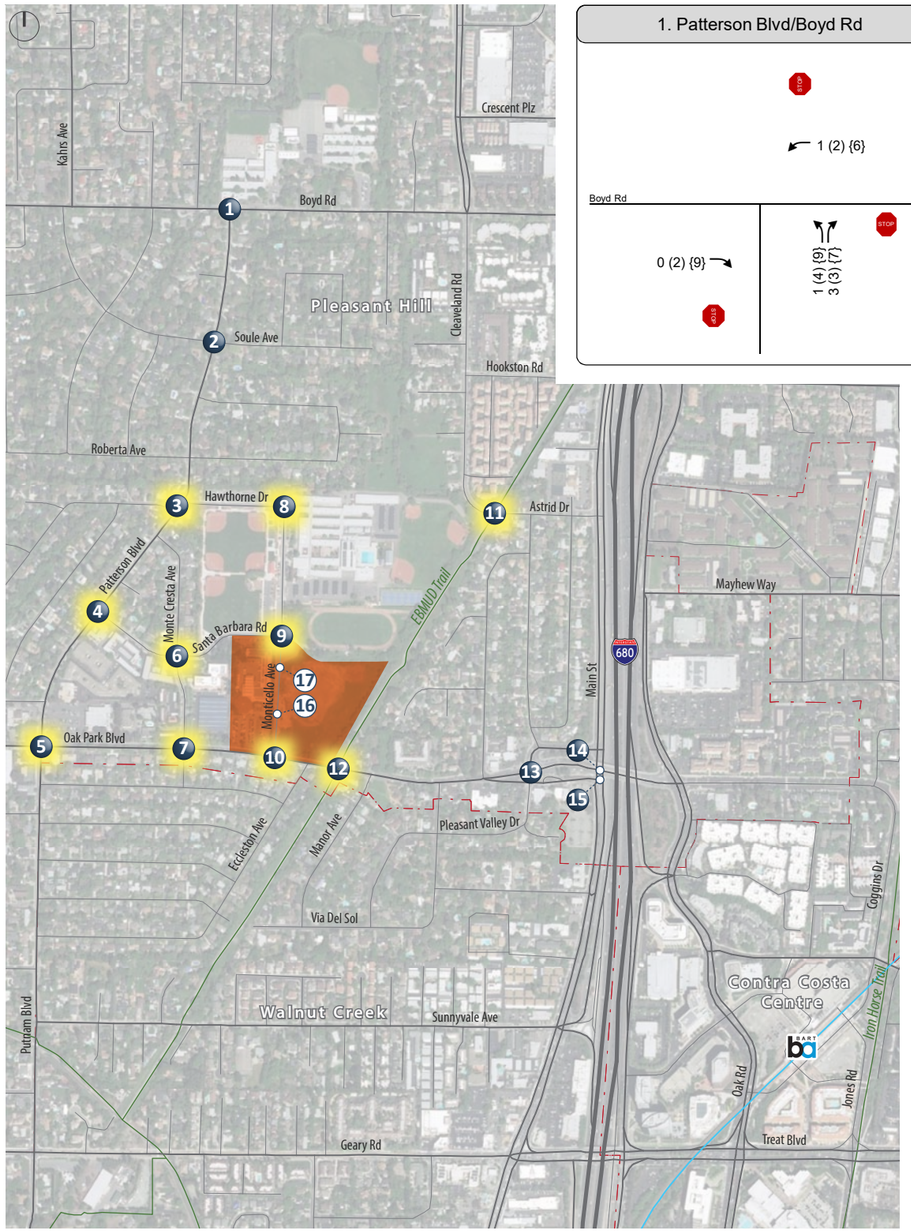
X%
Y%

Residential Trip Distribution

Sports Park/Library Trip Distribution

Figure 11

Project Trip Distribution



WW [XX] (YY) {ZZ} AM [Afternoon] (PM) {Weekend} Peak Hour Traffic Volumes

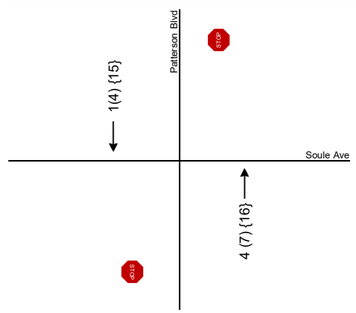
Signalized Intersection | Stop Sign | Yield Sign

(#) Study Intersection | (#) Afternoon Peak Hour Analysis Location | (#) With Project Analysis Location | Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

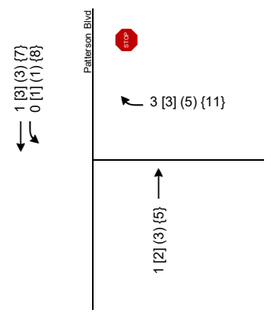
Project Site

1. Patterson Blvd/Boyd Rd

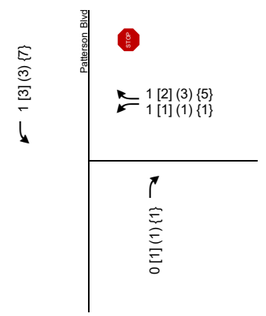
2. Patterson Blvd/Soule Ave



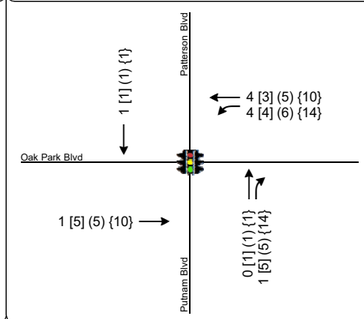
3. Patterson Blvd/Hawthorne Dr



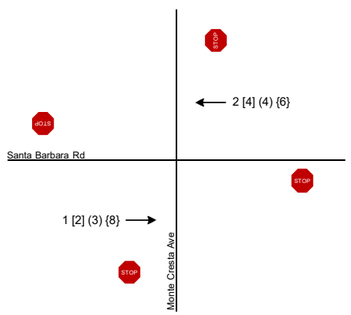
4. Patterson Blvd/Santa Barbara Rd



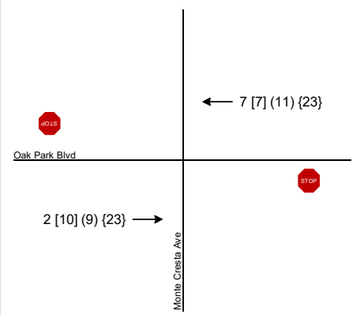
5. Patterson Blvd/Putnam Blvd/Oak Park Blvd



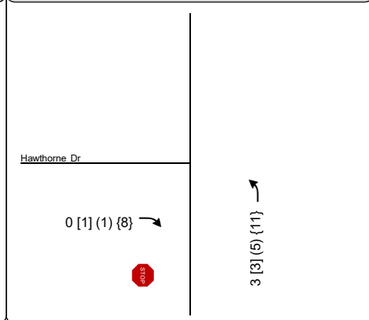
6. Monte Cresta Ave/Santa Barbara Rd



7. Monte Cresta Ave/Oak Park Blvd



8. Monticello Ave/Hawthorne Dr



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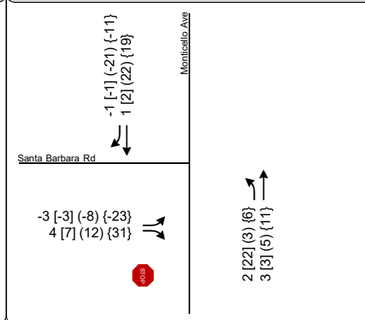
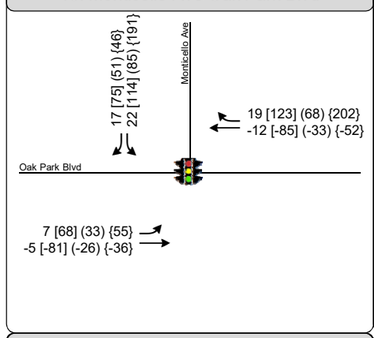
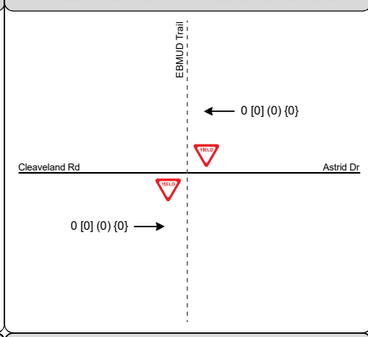


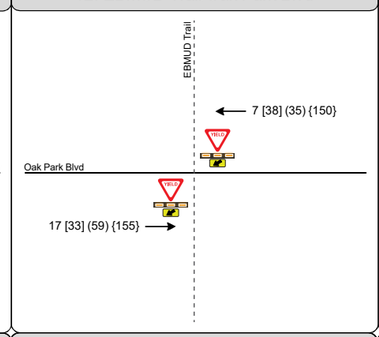
10. Monticello Ave/Oak Park Blvd



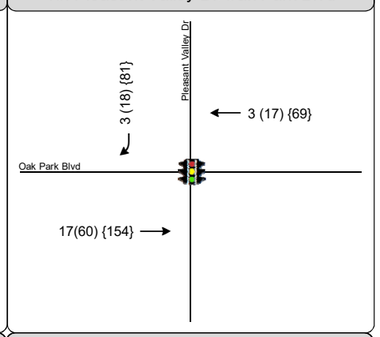
11. EBMUD Trail/Cleaveland Rd/Astrid Dr



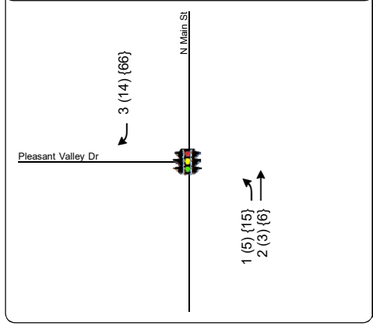
12. EBMUD Trail/Oak Park Blvd



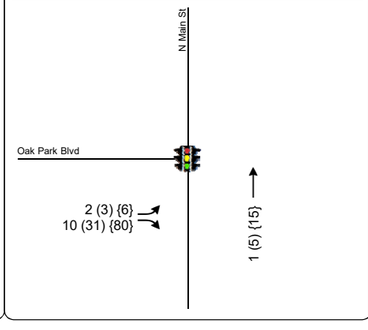
13. Pleasant Valley Dr/Oak Park Blvd



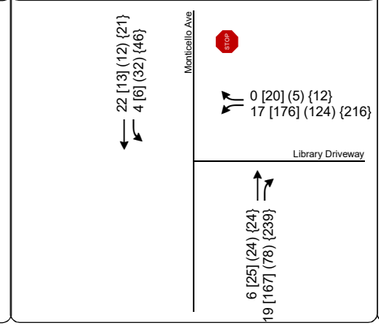
14. N Main St/Pleasant Valley Dr



15. N Main St/Oak Park Blvd



16. Monticello Ave/Library Driveway



17. Monticello Ave/Residential Driveway

NOTE: Reflects shifted and new library traffic.

Net New Project Trip Assignment

Figure 12

4. Existing with Project Conditions

This chapter evaluates potential off-site traffic impacts under Existing with Project conditions.

Existing with Project Traffic Volumes and Roadway Improvements

Project-only traffic volumes (Figure 12) were added to the existing peak hour traffic volumes (Figure 5) to estimate Existing with Project peak hour intersection turning movement volumes, as shown on **Figure 13.**

Traffic signal timings, peak hour factors, heavy vehicle percentages, and pedestrian and bicycle activity at the study intersections were left unchanged from existing conditions. Intersection improvements considered in the Existing with Project condition include those proposed to be constructed as part of the project, which include widening Oak Park Boulevard to include an eastbound left-turn pocket and a westbound right-turn pocket to Monticello Avenue with associated signal modifications; the analysis presented below assumes protected-permitted left-turn phasing for the eastbound left-turn phase and actuated uncoordinated signal control. Lane configurations that form the basis for the Existing with Project analysis are also presented on Figure 13.

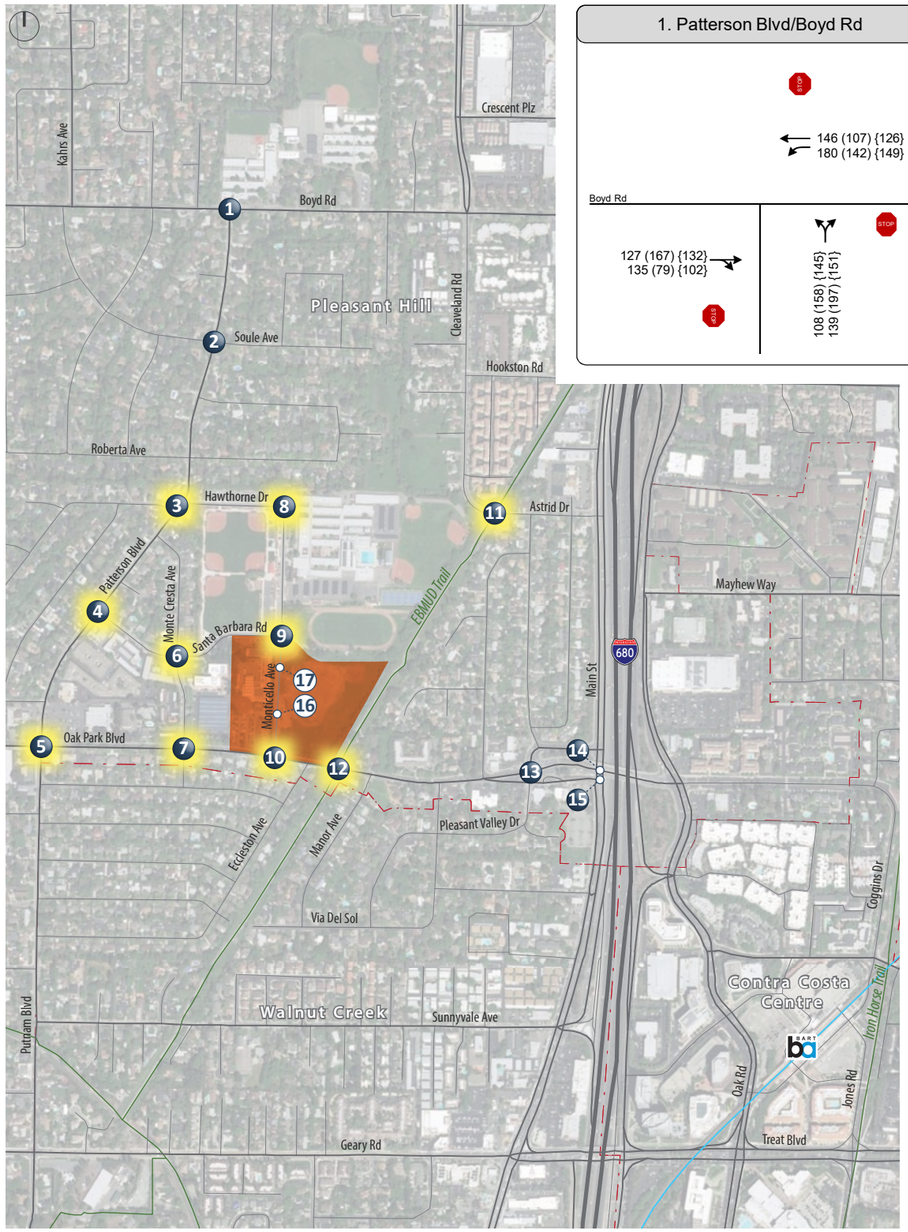
Analysis of Existing with Project Conditions

Intersection Levels of Service

Existing with Project conditions were evaluated using the same methods described in Chapter 1. The analysis results are presented in **Table 8**, based on the traffic volumes and lane configurations presented on Figure 13. Table 8 also includes the operations results for the Existing without Project conditions for comparison purposes.

The addition of project traffic would not degrade the operation of any study intersection from an overall acceptable service level to an unacceptable service level, although it would worsen side-street delay at three intersections where the side-street movement already experiences LOS E conditions:

- Patterson Boulevard at Soule Avenue
- Patterson Boulevard at Hawthorne Drive
- Monte Cresta Avenue at Oak Park Boulevard



WW [XX] (YY) {ZZ} AM [Afternoon] (PM) {Weekend} Peak Hour Traffic Volumes

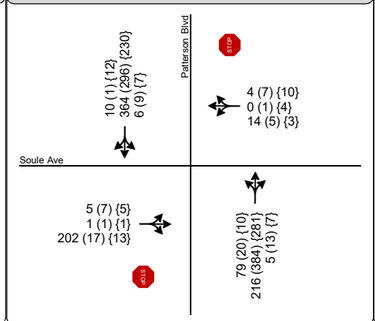
Signalized Intersection | Stop Sign | Yield Sign

Study Intersection | Afternoon Peak Hour Analysis Location | With Project Analysis Location | Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

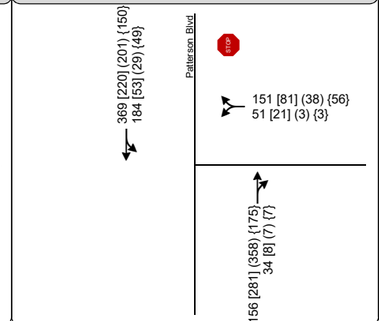
Project Site

1. Patterson Blvd/Boyd Rd

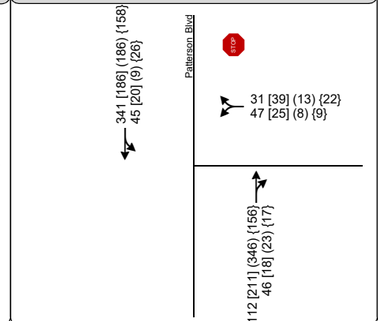
2. Patterson Blvd/Soule Ave



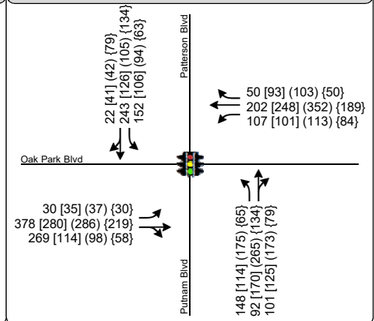
3. Patterson Blvd/Hawthorne Dr



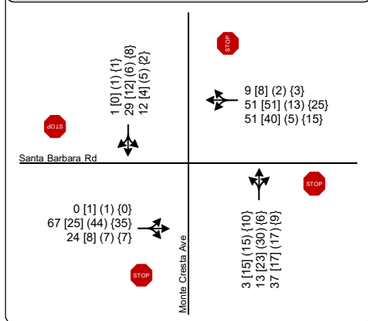
4. Patterson Blvd/Santa Barbara Rd



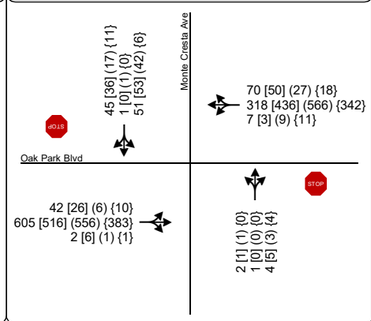
5. Patterson Blvd/Putnam Blvd/Oak Park Blvd



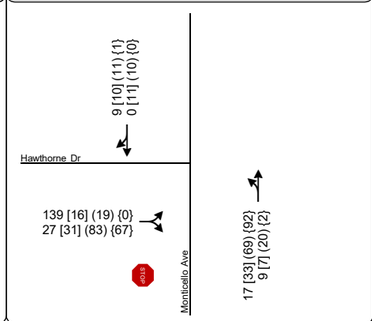
6. Monte Cresta Ave/Santa Barbara Rd



7. Monte Cresta Ave/Oak Park Blvd



8. Monticello Ave/Hawthorne Dr



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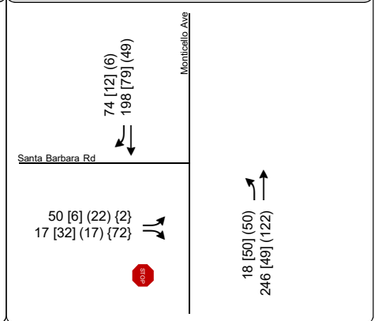
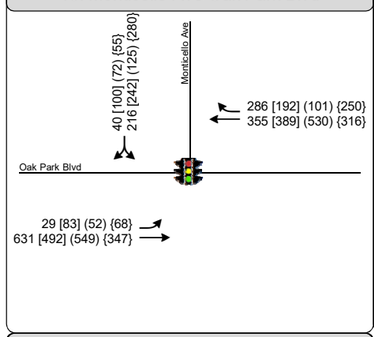
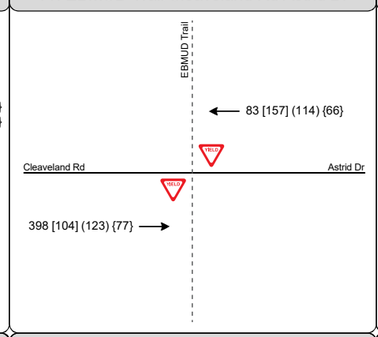


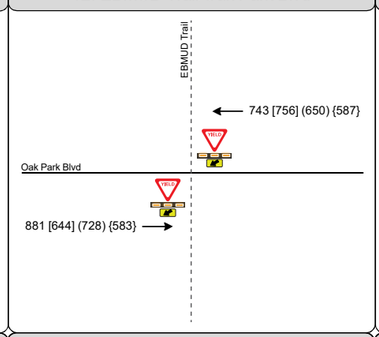
10. Monticello Ave/Oak Park Blvd



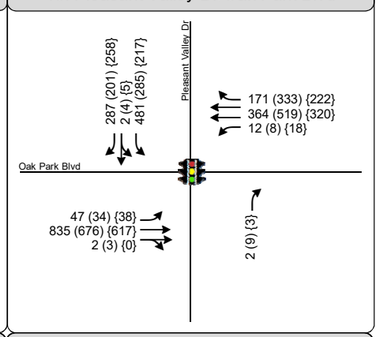
11. EBMUD Trail/Cleaveland Rd/Astrid Dr



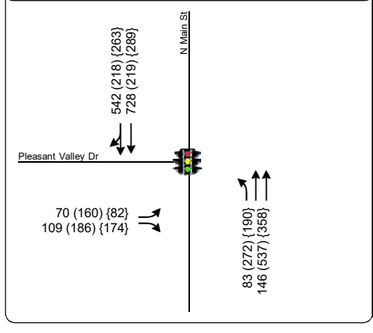
12. EBMUD Trail/Oak Park Blvd



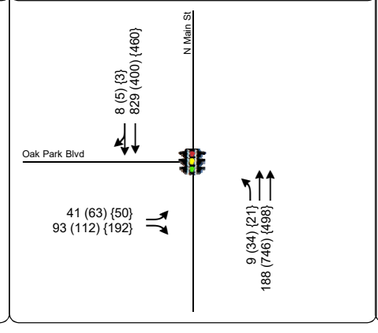
13. Pleasant Valley Dr/Oak Park Blvd



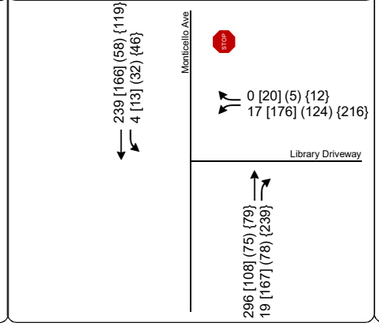
14. N Main St/Pleasant Valley Dr



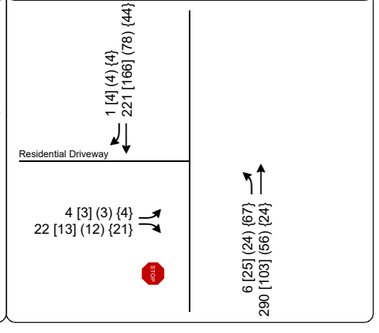
15. N Main St/Oak Park Blvd



16. Monticello Ave/Library Driveway



17. Monticello Ave/Residential Driveway



Existing with Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 8: Existing with Project Conditions - Peak Hour Intersection Levels of Service

	Intersection	Control[1]	Peak Hour	Existing Conditions		Existing with Project Conditions		
				Delay[2&3]	LOS	Delay[2&3]	LOS	Signal Warrant Met?
1	Patterson Blvd & Boyd Rd	AWSC	AM PM SA	12 12 11	B B B	12 12 12	B B B	- - -
2	Patterson Blvd & Soule Ave	SSSC	AM PM SA	5 (39) 1 (15) 1 (12)	A (E) A (B) A (B)	5 (40) 1 (15) 1 (12)	A (E) A (B) A (B)	No - -
3	Patterson Blvd & Hawthorne Dr	SSSC	AM MD PM SA	9 (38) 3 (14) 1 (11) 2 (10)	A (E) A (B) A (B) A (A)	10 (39) 3 (15) 1 (11) 2 (10)	B (E) A (B) A (B) A (A)	No - -
4	Patterson Blvd & Santa Barbara Rd	SSSC	AM MD PM SA	2 (14) 2 (11) 1 (12) 1 (11)	A (B) A (B) A (B) A (B)	2 (14) 2 (12) 1 (12) 1 (11)	A (B) A (B) A (B) A (B)	- - - -
5	Putnam Blvd/Patterson Blvd & Oak Park Blvd	Signalized	AM MD PM SA	41 19 21 14	D B C B	42 20 22 15	D B C B	- - - -
6	Monte Cresta Ave & Santa Barbara Rd	AWSC	AM MD PM SA	8 9 7 7	A A A A	8 9 7 7	A A A A	- - - -
7	Monte Cresta Ave & Oak Park Blvd	SSSC	AM MD PM SA	3 (30) 3 (39) 2 (38) 1 (17)	A (D) A (E) A (E) A (C)	3 (31) 4 (41) 2 (39) 1 (18)	A (D) A (E) A (E) A (C)	- No No -
8	Monticello Ave & Hawthorne Dr	SSSC	AM MD PM SA	10 (11) 7 (10) 7 (9) 8 (9)	A (B) A (A) A (A) A (A)	10 (11) 7 (11) 7 (9) 8 (9)	A (B) A (B) A (A) A (A)	- - - -
9	Monticello Ave & Santa Barbara Rd	SSSC	AM MD PM SA	2 (17) 3 (16) 3 (11) 4 (10)	A (C) A (C) A (B) A (A)	2 (19) 5 (17) 3 (11) 4 (9)	A (C) A (C) A (B) A (A)	- - - -
10	Oak Park Blvd & Monticello Ave	Signalized	AM MD PM SA	7 6 3 4	A A A A	9 12 7 12	A B A B	- - - -

Table 8: Existing with Project Conditions - Peak Hour Intersection Levels of Service

Intersection		Control[1]	Peak Hour	Existing Conditions		Existing with Project Conditions		
				Delay[2&3]	LOS	Delay[2&3]	LOS	Signal Warrant Met?
13	Pleasant Valley Dr & Oak Park Blvd[2]	Signalized	AM PM SA	11 10 13	B A B	11 10 9	B A A	- - -
14	N Main St & Pleasant Valley Dr[2]	Signalized	AM PM SA	15 11 11	B B B	18 11 13	B B B	- - -
15	N Main St & Oak Park Blvd[2]	Signalized	AM PM SA	7 10 9	A A A	7 10 11	A B B	- - -
16	Monticello Ave & Library Driveway	SSSC	AM MD PM SA	- - -	- - -	0 (13) 4 (14) 5 (11) 6 (17)	A (B) A (B) A (B) A (C)	- - - -
17	Monticello Ave & Residential Driveway	SSSC	AM MD PM SA	- - -	- - -	1 (11) 1 (10) 2 (7) 2 (9)	A (B) A (A) A (A) A (A)	- - - -

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).
1. AWSC = All-way Stop Controlled; SSSC = Side-street Stop Controlled
2. Delay presented in seconds
3. Intersections 13, 14, and 15 are evaluated using the HCM 2000 methodology.

Source: Fehr & Peers, 2018.

These are potentially significant impacts. All other study intersections would continue to operate at LOS D or better with the addition of project traffic in the existing condition. Detailed intersection LOS calculation worksheets are provided in **Appendix C**.

Vehicle Queues

Vehicle queues were assessed for the signalized intersections in the with project condition, and the addition of project traffic is not expected to cause vehicle queues to increase by more than 50-feet (or 2 car-lengths) for movements where the 95th percentile queue already exceeds the available storage or result in vehicle queues to exceed the available storage, as presented in **Table 9**. Queue worksheets are provided in **Appendix D.**

Table 9: Existing with Project Conditions – 95th Percentile Queue Summary at Signalized Intersections

Intersection	Movement	Storage Length (ft)[1]	AM Peak Period		Mid-Day Peak Period		PM Peak Period		Saturday Peak Hour	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
5: Putnam Blvd/Patterson Blvd & Oak Park Blvd	EBL	100	50	50	75	75	75	75	50	50
	WBL	110	**200**	**200**	**150**	**175**	**150**	**175**	100	100
	WBR	230	25	25	50	75	75	75	25	25
	NBL	100	**200**	**200**	**125**	**125**	**150**	**175**	50	75
	SBL	210	200	200	125	125	100	100	50	75
10: Oak Park Blvd & Monticello Ave	WBR	150	N/A	75	N/A	75	N/A	50	N/A	50
	SBL	700/300[2]	175	175	100	250	50	150	75	250
	EBL	150	N/A	25	N/A	50	N/A	25	N/A	50
13: Pleasant Valley Dr & Oak Park Blvd	EBL	80	75	75	--	--	50	50	50	50
	WBL	80	25	25	--	--	25	25	50	50
	WBR	125	25	25	--	--	75	75	25	25
	NBR	25	0	0	--	--	0	0	0	0
	SBL	100	**175**	**175**	--	--	**125**	**125**	75	75
	SBR	100	50	50	--	--	50	50	50	50
14: N Main St & Pleasant Valley Dr	EBL	400	75	75	--	--	150	150	75	75
	EBR	100	75	75	--	--	25	25	25	25
	NBL	125	75	75	--	--	125	125	75	100
15: N Main St & Oak Park Blvd	EBL	310	50	50	--	--	75	75	50	50
	EBR	310	75	100	--	--	75	75	100	150
	NBL	110	25	25	--	--	50	50	25	50

Notes: **Bold** indicates queue potentially extends beyond available storage.
Bold Italics indicates potentially significant impact.
-- = intersection was not evaluated for this time period.
N/A = turn lanes do not exist under this scenario.

1. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.
2. Reflects storage with the project.

Signal Warrants

Signal warrants were evaluated for the unsignalized intersections where the side-street movement operates at LOS E. As shown in Table 8, signalization of the unsignalized study intersections is not warranted with the addition of project traffic in the existing condition. Signal warrant worksheets are provided in **Appendix E**.

Trail Crossings

Operations of the trail crossings were evaluated based on the process outlined in Chapter 2. With the addition of project traffic in the existing condition, the existing crossing treatments continue to remain appropriate.

Construction Assessment

The assessment of construction activity considers construction vehicles (including vehicles removing or delivering fill material, bulldozers, and other heavy machinery, as well as building materials delivery) and construction worker activity.

Given the topography of the site, limited import and/or export of fill is expected. Truck traffic would follow designated truck routes. Project construction would likely stage any large vehicles (i.e., earth-moving equipment, etc.) on the site prior to beginning site work and remove these vehicles at project completion. As such, a daily influx of construction equipment is unlikely.

Detailed information relating to the construction schedule during site development or a construction management plan was being developed at the time this analysis was prepared, although some preliminary information was available. Based on the preliminary information, the existing library would be taken out of service in the first phase of construction with a temporary, limited-service library planned at the Senior Center at 233 Gregory Lane. The Storytime program would be held at the Teen Center, located at 147 Gregory Lane, during the construction period; if that space is not available then it would be held at the Senior Center. The Pleasant Hill Senior Center typically has scheduled activities from 8 AM to 9 AM most days, with some later evening activities on Fridays. Activities on Saturday and Sunday are minimal. Parking for the Senior Center is shared with the Pleasant Hill Park. This parking facility can often experience limited parking supplies, particularly during the mid-day time period coinciding with activities at the Senior Center, and on weekends when parking demand from park activities is high. The addition of parking demand from temporary library uses could result in parking shortages in the Senior Center parking lot.

To accelerate the construction schedule, closure of Monticello Avenue between Oak Park Boulevard and Santa Barbara Road for up to six months could be required. While the construction schedule would attempt to complete the bulk of this work when schools are not in session, there is the potential that a portion of the roadway closure could overlap with the school year. To assess the secondary effects of the temporary closure of Monticello Avenue between Oak Park Boulevard and Santa Barbara Road, a construction period assessment was conducted. Two routing options where considered. The first would route all traffic that currently uses Monticello Avenue to Monte Cresta Avenue. The second would route inbound trips that currently use Monticello Avenue to Monte Cresta Avenue, and would route outbound vehicles to Patterson

Boulevard via Hawthorne Drive. Results of this assessment are presented in **Table 10** for intersections 3 (Patterson Boulevard at Hawthorne Drive) and 7 (Monte Cresta Avenue at Oak Park Boulevard) that would experience the most changes in travel for the morning peak hour only when traffic volumes into and out of the school are the highest. This assessment is based on existing traffic volumes as the new trip generating uses would not be on-line when improvements are made to Monticello Avenue.

Table 10: Existing During Construction – AM Peak Hour Intersection Levels of Service

Intersection		Control[1]	Existing Conditions		Existing with Construction Conditions Routing 1			Existing with Construction Conditions Routing 2		
			Delay[2&3]	LOS	Delay[2]	LOS	Signal Warrant Met?	Delay[2]	LOS	Signal Warrant Met?
3	Patterson Blvd & Hawthorne Dr	SSSC	9 (38)	A (E)	3 (30)	A (D)	-	**> 180 (>180)**	**F (F)**	**Yes**
7	Monte Cresta Ave & Oak Park Blvd	SSSC	3 (30)	A (D)	**142 (> 180)**	**F (F)**	**Yes**	4 **(61)**	A **(F)**	No

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).
1. SSSC = Side-street Stop Controlled
2. Delay presented in seconds

Source: Fehr & Peers, 2018.

Results of the construction assessment considering the temporary closure of Monticello Avenue between Oak Park Boulevard and Santa Barbara Road indicate that either construction routing scenario would result in deficient overall service levels for at least one intersection. Providing one-way traffic control on Monticello Avenue would not be sufficient to result in acceptable service levels at both intersections under either routing option.

The potential closure of Monticello Avenue could also result in pedestrian impacts. During field observations, several students were observed to walk from the Middle School Campus along Monticello Avenue to the existing library parking lot for pick-up. Additionally, some students continued along Oak Park Boulevard, both to the east to access the EBMUD Trail, and to the west towards Patterson Boulevard. Without the ability of the library lot to accommodate some afternoon pick-up activities to disperse vehicle activity around the middle school around bell times, traffic congestion around the middle school could worsen during the construction period. Additionally, pedestrian access could be affected.

Potential migration measures to address these temporary parking, vehicle circulation, and pedestrian impacts are provided in the next section.

Existing Conditions Impacts and Mitigation

Three potential off-site intersection impacts were identified in the existing condition. Additionally, there could be temporary significant impacts during the construction phase of the project.

Impact Statement 1: Intersection 2 – Patterson Boulevard at Soule Avenue

The Patterson Boulevard at Soule Avenue intersection operates at an overall acceptable service level in the morning peak hour, although the side-street movement operates at a deficient LOS E. The addition of project traffic would worsen average side-street delay by 1-second. Peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required.

Mitigation Measure 1: None Required.

Impact Statement 2: Intersection 3 – Patterson Boulevard at Hawthorne Drive

The Patterson Boulevard at Hawthorne Drive intersection operates at an overall acceptable service level in the morning peak hour, although the side-street movement operates at a deficient LOS E. The addition of project traffic would worsen average side-street delay by 1-second. Peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required.

Mitigation Measure 2: None Required.

Impact Statement 3: Intersection 7 – Monte Cresta Avenue at Oak Park Boulevard

The Monte Cresta Avenue at Oak Park Boulevard intersection operates at an overall acceptable service level in the afternoon and evening peak hours, although the side-street movement operates at a deficient LOS E. The addition of project traffic would worsen average side-street delay by 2-seconds in the afternoon peak hour and 1-second in the evening peak hour. Peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required.

Mitigation Measure 3: None Required.

Impact Statement 4: Construction related activities could create potential conflicts with other roadway users, such as construction related activities resulting in lane closures along the project frontage, construction vehicles queuing within the public right-of-way waiting entry to the site, construction worker parking in non-designated parking areas, or construction debris on public streets. Additionally, the provision of a temporary library location could result in parking shortages at the existing senior center, and the temporary closure of Monticello Avenue between Oak Park Road and Santa Barbara Road could result

in temporary vehicle and pedestrian impacts. Construction impacts would be temporary in nature; however, this impact is considered ***potentially significant***.

Mitigation Measure 4: Although construction impacts would be temporary, development of a construction management plan would reduce the potential for construction vehicle conflicts with other roadway users. The plan should include:

- Provide a temporary traffic signal at the Oak Park Boulevard at Monte Cresta Avenue intersection during the time periods when Monticello Avenue is closed between Oak Park Boulevard and Santa Barbara Road
- Maintain a pedestrian connection between Santa Barbara Road and Oak Park Boulevard, to the greatest extent feasible. Should there be time periods when the provision of a pedestrian connection would affect worker or pedestrian safety, a pedestrian detour route shall be established with appropriate wayfinding, noticing, and potentially crossing guards during peak periods around school bell times.
- Conduct a parking occupancy survey at the existing senior and teen centers to demine the available parking supply and estimate the projected level of library parking demand during temporary operations. Should a potential parking shortage be identified, develop a parking management plan accommodate temporary library uses. The plan could include adjusting library hours, adjusting Senior Center activities, installing a temporary book drop-off depository that does not require library patrons to park, providing a mobile library that has a regular schedule of pop-up locations within the City, and/or expanding the library book delivery program to serve all patrons that reside in Pleasant Hill.
- Project staging plan to maximize on-site storage of materials and equipment
- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
- Permitted construction hours
- Location of construction staging
- Identification of parking areas for construction employees, site visitors, and inspectors, including on-site locations
- Provisions for street sweeping to remove construction related debris on public streets

- Implementation of the construction management plan would reduce the temporary construction impact to a ***less-than-significant*** level.

Notice of Preparation Comments

Caltrans provided transportation related comments on the Notice of Preparation (NOP) for the project. One specific request was to evaluate vehicle queues at the southbound off-ramp to Treat Boulevard/Geary Road and on-ramp from North Main Street at Geary Road, and the northbound off-ramp to Treat Boulevard and on-ramp from Oak Road. These are the primary freeway ramps that provide access to/from I-680 to the project area and vehicle queues are often observed to extend beyond the available storage at some locations, including the southbound off-ramp to Treat Boulevard/Geary Road. In the morning peak hour and the northbound off-ramp to Treat Boulevard in the evening peak hour. Queue spillback generally occurs when there has been an incident on the freeway that contributes to recurring and non-recurring congestion along the I-680, SR 24, and SR 242 and corridors.

Based on the level of project trip generation and expected trip distribution, the project is not expected to add more than 50 trips in either the morning or evening peak hour to the ramp terminal intersection, which is the standard for determining if a location needs to be evaluated based on the CCTA guidelines. The project would add less than 10 vehicle trips to any Caltrans facility in the study area during the morning peak hour and less than 25 vehicle trips during the evening peak hour. Although the project could contribute to worsening congestion along the I-680 corridor, it would represent a minimal proportion of overall freeway and interchange capacity and any project specific impacts are considered less-than-significant.

5. Cumulative Conditions

This chapter presents the results of the level of service calculations under cumulative conditions without and with the project.

Cumulative Intersection Volumes and Roadway Improvements

Cumulative forecasts were developed using traffic growth trends as described in the Pleasant Hill General Plan supplemented by a check of traffic forecasts for the study area in the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand Model, as well as considering approved and potential projects in the immediate study area.

Based on growth trends projected by the CCTA model, traffic volumes on Main Street are projected to increase by approximately 2 percent per year (between 2018 and 2040), with some of the increase from traffic diverting from regional travel routes to local roadways. Through traffic volumes are expected to increase on Boyd Road and Oak Park Boulevard by approximately 1 percent per year, and on Patterson Boulevard by 0.5 percent per year. Turning movements to/from residential neighborhoods are not expected to significantly change, but existing observed traffic volumes were rounded up to the nearest 10 vehicles. Model plots from the travel demand model near the study area are provided in **Appendix G**.

In addition to considering the regional growth trends, the forecasts also consider the following approved/pending projects in the immediate study area:

1. Cambria Hotel at the intersection Oak Park Boulevard at Main Street
2. Day Care center at the intersection of Boyd Road at Kahrs Avenue
3. Fountainhead Day Care Center on Oak Park Boulevard
4. Development of Housing Element Opportunity sites on Beatrice Road and Cleaveland Road[6]

The trip generation assumptions for these projects is provided in **Appendix H**.

The resulting intersection turning movement forecasts are presented on **Figure 14** for the cumulative without project scenario. Project-only traffic volumes (Figure 5) were added to the cumulative without

[6] No development is currently contemplated on these sites, but up to 200 multi-family homes could be constructed in the area. As no development is proposed, all access was assumed to occur from Cleaveland Road for the purposes of this analysis.

project peak hour traffic volumes (Figure 14) to estimate Cumulative with Project peak hour intersection turning movement volumes, presented on **Figure 15**. The resulting cumulative forecast are an estimate of conditions in 2040.

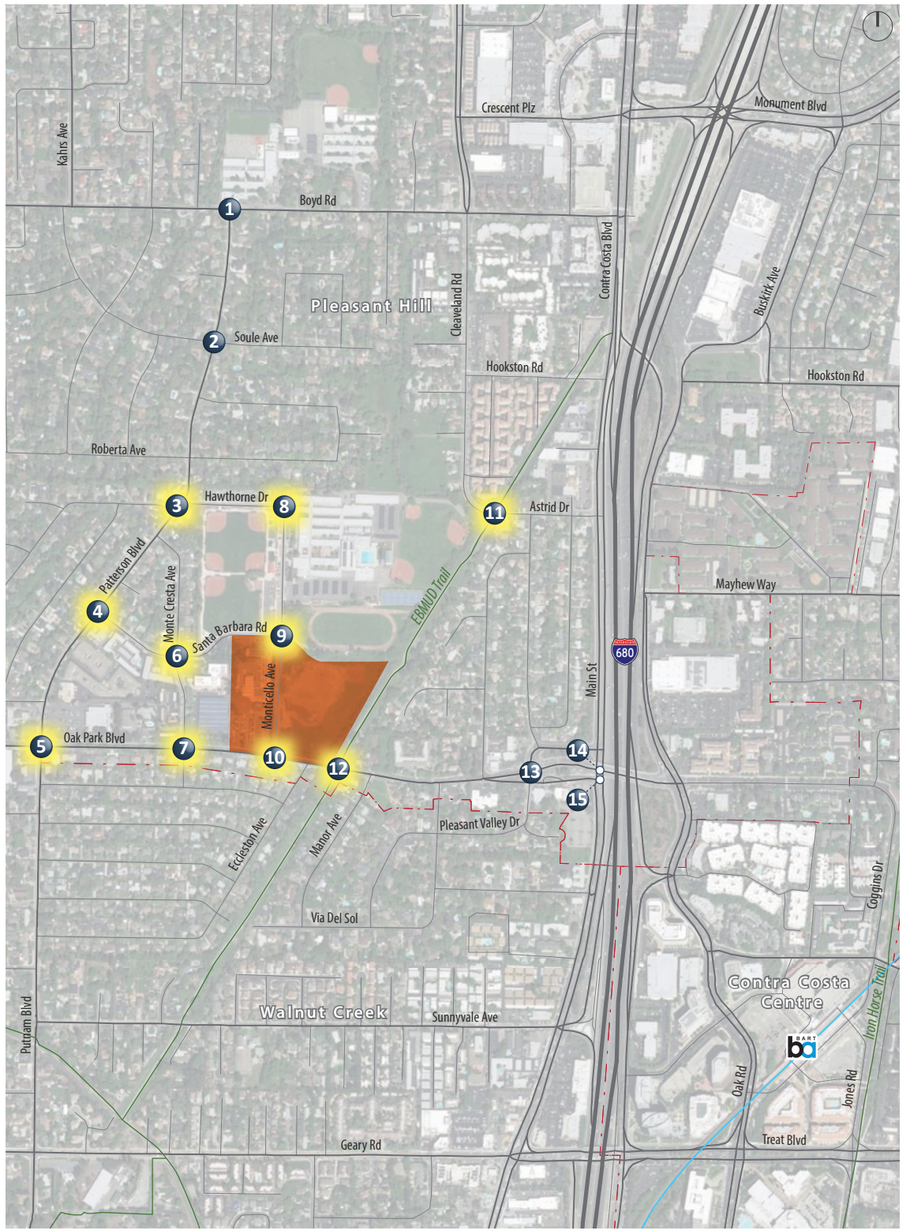
The forecasting described above does not take into consideration some foreseeable travel changes, including increased use of transportation network companies, such as Uber and Lyft, nor the potential for autonomous vehicles. Although the technology for autonomous vehicles is expected to be available over the planning horizon, the Federal and State legal and policy frameworks are uncertain. Initial modeling of an autonomous future indicates that with automated and connected vehicles, the capacity of the existing transportation system would increase as vehicles can travel closer together; however, these efficiencies are only realized when a high percentage of vehicles on the roadway are automated and connected. There is also the potential for vehicle travel to increase with zero-occupant vehicles on the roadway, off-setting any potential capacity benefits. Although the future baseline is uncertain, the projects incremental effect on that future baseline is expected to be similar to the analysis results presented below.

Analysis of Cumulative Conditions

Intersection Level of Service

Existing peak hour factors, heavy vehicle percentages, and pedestrian and bicycle activity at the study intersections remain unchanged from the existing condition for the assessment of Cumulative conditions, as the level of school traffic in the area is not expected to appreciably change. Intersection improvements considered in the Cumulative with Project condition include those proposed to be constructed as part of the project, which include widening Oak Park Boulevard to include an eastbound left-turn pocket and a westbound right-turn pocket to Monticello Avenue with associated signal modifications; the analysis presented below assumes protected-permitted left-turn phasing for the eastbound left-turn phase and actuated uncoordinated signal control. In the cumulative condition, a south-leg would also be added to this intersection to serve the Fountainhead Day Care Center with inbound access only.

Traffic signal timings were optimized at intersections where the initial analysis indicated LOS E or F operations, reflecting that as part of Pleasant Hill's continuing maintenance of traffic signals, signal timing for intersections near capacity are regularly updated to better accommodate actual travel demand. **Table 11** presents the Cumulative without and with Project intersection level of service results.



WW [XX] (YY) {ZZ} AM [Afternoon] (PM) {Weekend} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Yield Sign

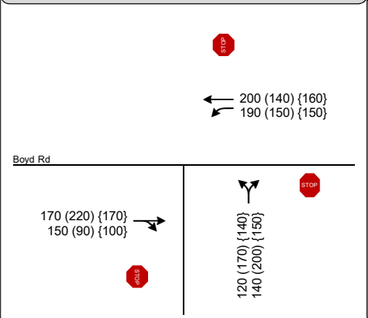
Project Site

Study Intersection

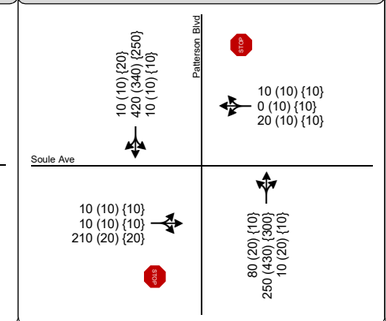
Afternoon Peak Hour Analysis Location

Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

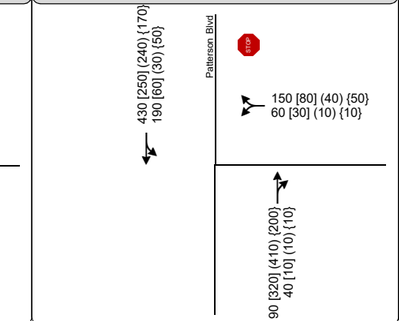
1. Patterson Blvd/Boyd Rd



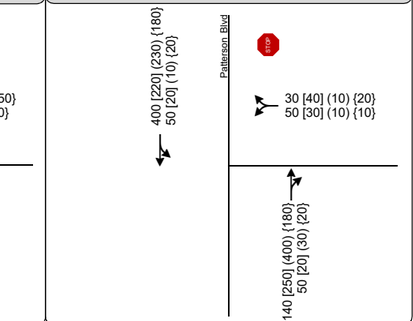
2. Patterson Blvd/Soule Ave



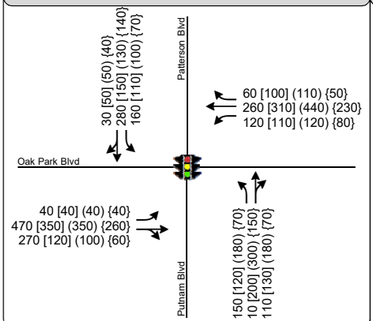
3. Patterson Blvd/Hawthorne Dr



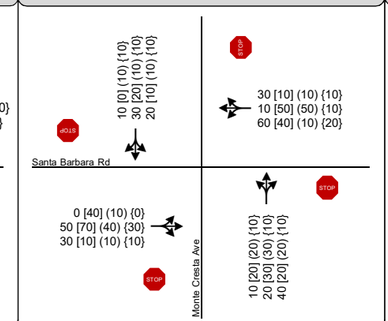
4. Patterson Blvd/Santa Barbara Rd



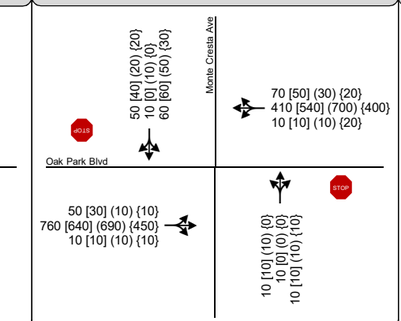
5. Patterson Blvd/Putnam Blvd/Oak Park Blvd



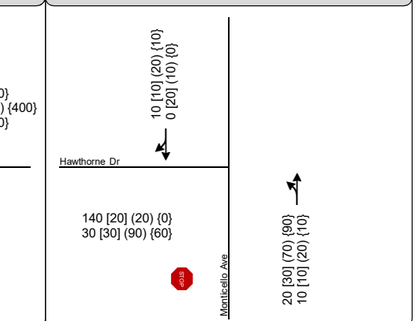
6. Monte Cresta Ave/Santa Barbara Rd



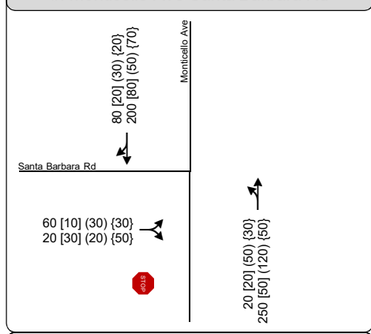
7. Monte Cresta Ave/Oak Park Blvd



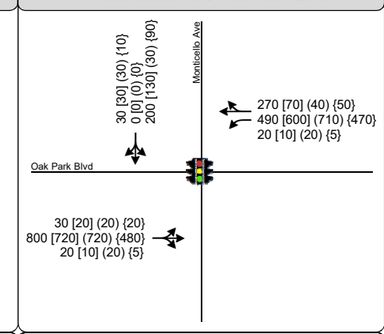
8. Monticello Ave/Hawthorne Dr



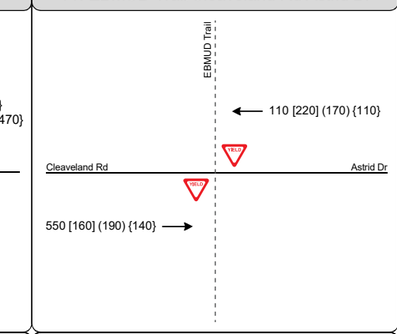
9. Monticello Ave/Santa Barbara Rd



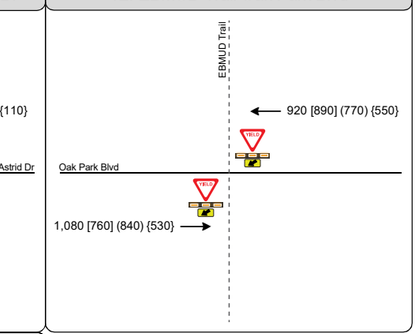
10. Monticello Ave/Oak Park Blvd



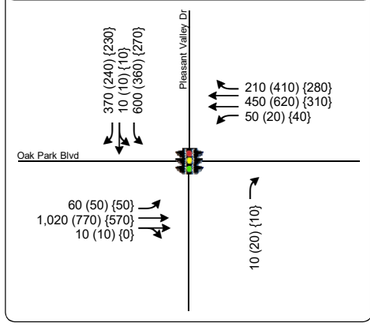
11. EBMUD Trail/Cleaveland Rd/Astrid Dr



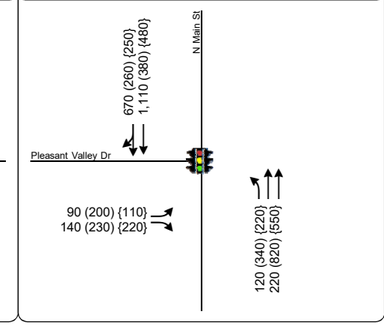
12. EBMUD Trail/Oak Park Blvd



13. Pleasant Valley Dr/Oak Park Blvd



14. N Main St/Pleasant Valley Dr



15. N Main St/Oak Park Blvd

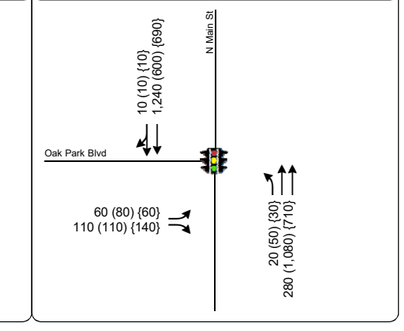
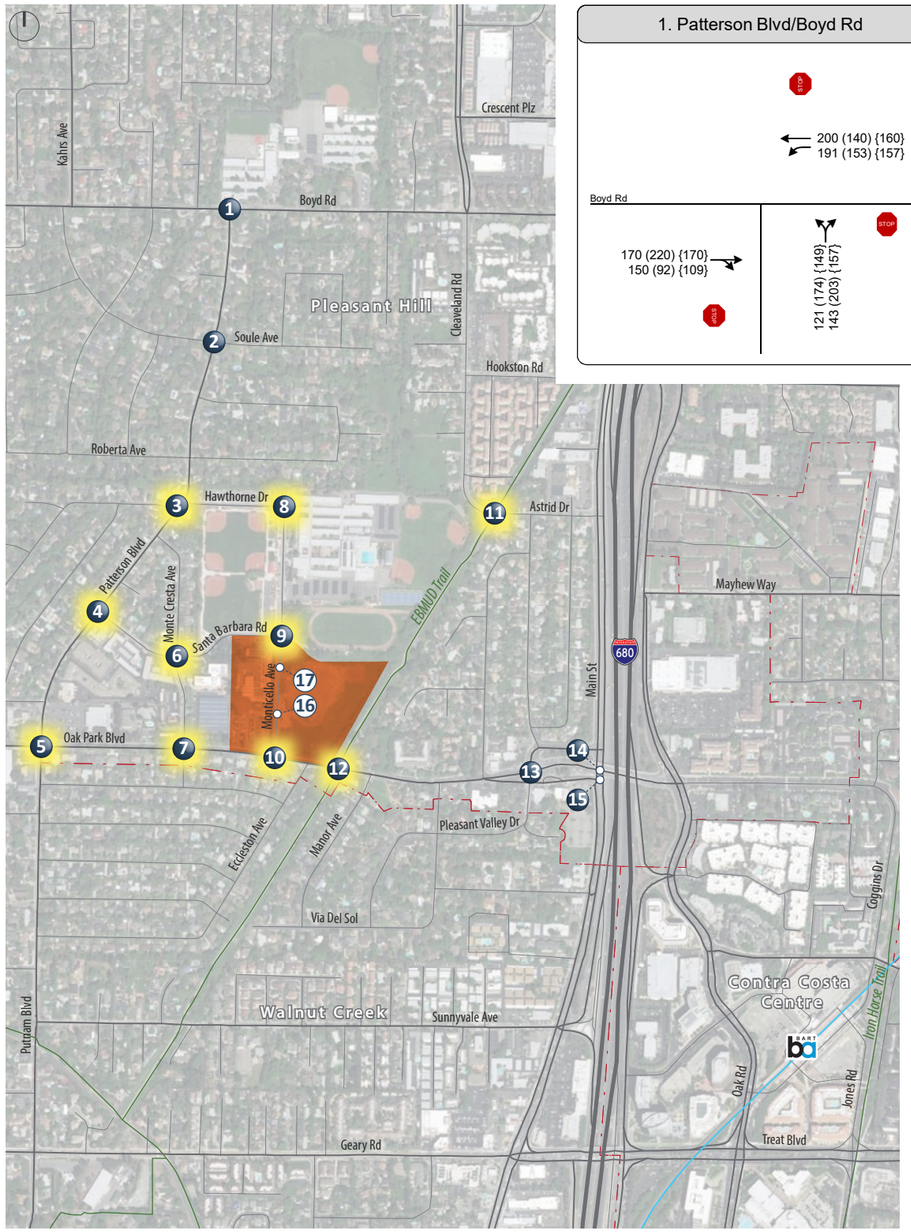


Figure 14

Cumulative without Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls



WW [XX] (YY) {ZZ} AM [Afternoon] (PM) {Weekend} Peak Hour Traffic Volumes

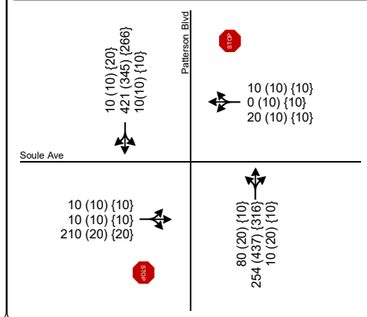
Signalized Intersection | Stop Sign | Yield Sign

Study Intersection | Afternoon Peak Hour Analysis Location | With Project Analysis Location | Rectangular Rapid Flashing Beacon (RRFB) + Yield Sign

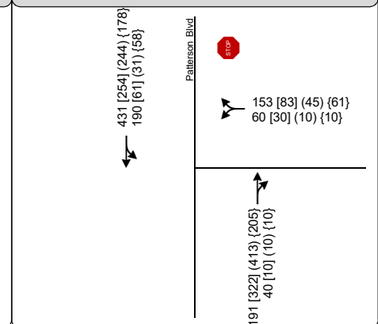
Project Site

1. Patterson Blvd/Boyd Rd

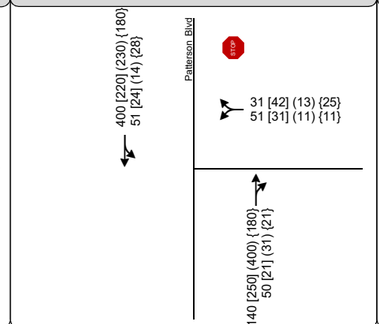
2. Patterson Blvd/Soule Ave



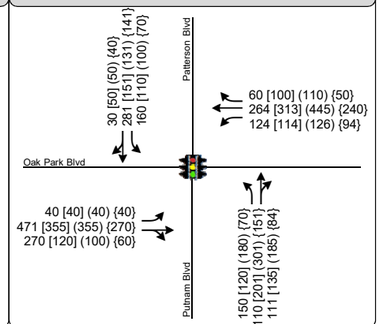
3. Patterson Blvd/Hawthorne Dr



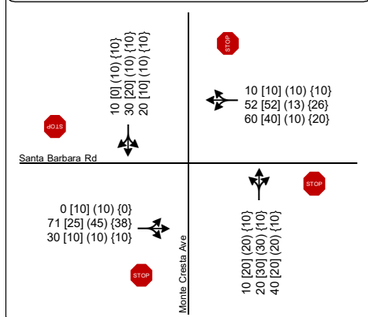
4. Patterson Blvd/Santa Barbara Rd



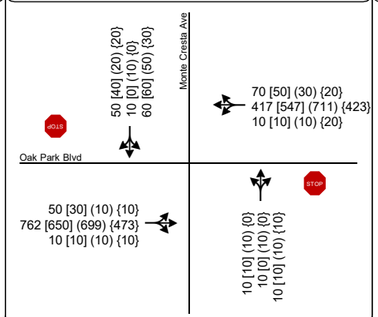
5. Patterson Blvd/Putnam Blvd/Oak Park Blvd



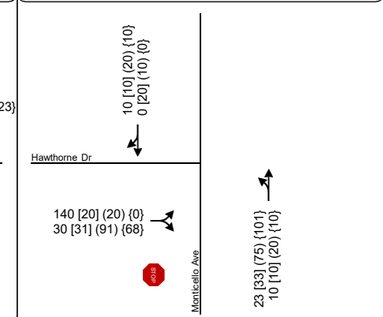
6. Monte Cresta Ave/Santa Barbara Rd



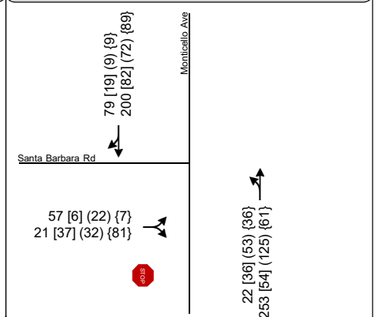
7. Monte Cresta Ave/Oak Park Blvd



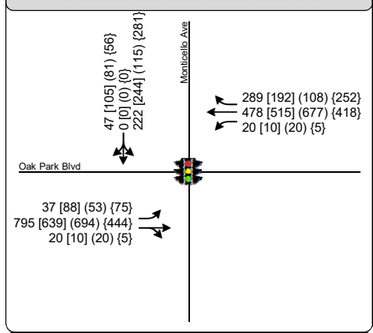
8. Monticello Ave/Hawthorne Dr



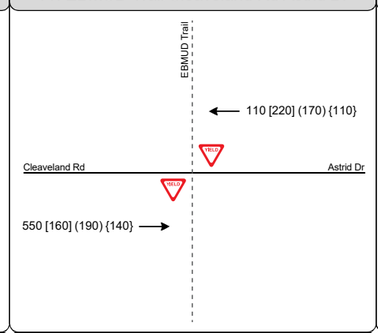
9. Monticello Ave/Santa Barbara Rd



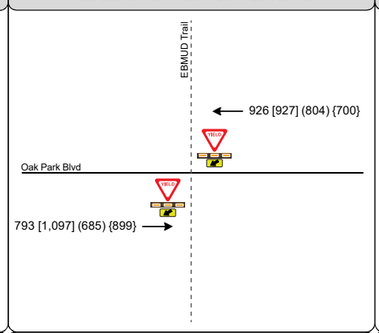
10. Monticello Ave/Oak Park Blvd



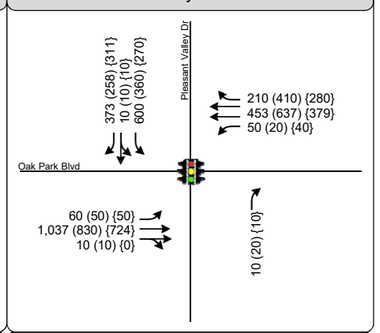
11. EBMUD Trail/Cleaveland Rd/Astrid Dr



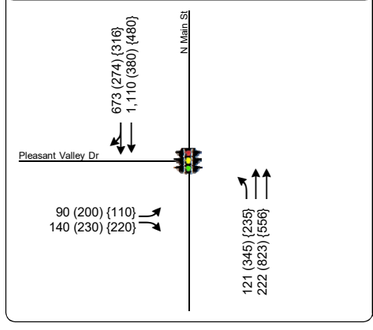
12. EBMUD Trail/Oak Park Blvd



13. Pleasant Valley Dr/Oak Park Blvd



14. N Main St/Pleasant Valley Dr



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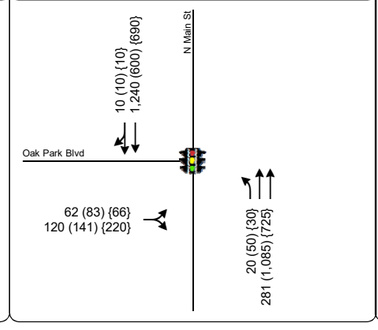
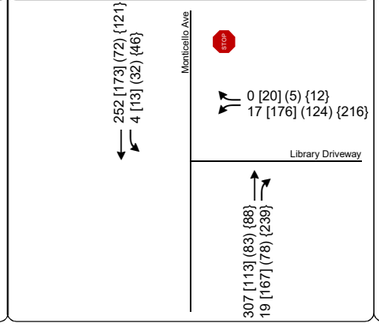
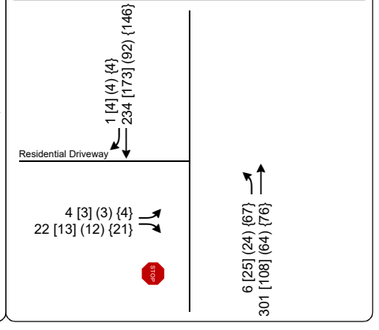


16. Monticello Ave/Library Driveway



17. Monticello Ave/Residential Driveway



Cumulative with Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 11: Cumulative Conditions - Peak Hour Intersection Levels of Service

	Intersection	Control	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions		
				Delay[1]	LOS	Delay[1]	LOS	Signal Warrant Met?
1	Patterson Blvd & Boyd Rd	AWSC	AM PM SA	14 13 12	B B B	14 13 13	B B B	- - -
2	Patterson Blvd & Soule Ave	SSSC	AM PM SA	8 **(62)** 2 (20) 2 (15)	A **(F)** A (C) A (B)	8 **(64)** 2 (20) 2 (16)	A **(F)** A (C) A (C)	No - -
3	Patterson Blvd & Hawthorne Dr	SSSC	AM MD PM SA	21 **(100)** 3 (17) 1 (13) 2 (11)	C **(F)** A (C) A (B) A (B)	22 **(102**) 3 (17) 1 (13) 2 (11)	C **(F)** A (C) A (B) A (B)	No - - -
4	Patterson Blvd & Santa Barbara Rd	SSSC	AM MD PM SA	2 (17) 2 (13) 1 (13) 1 (11)	A (C) A (B) A (B) A (B)	3 (17) 2 (13) 1 (13) 1 (11)	A (C) A (B) A (B) A (B)	- - - -
5	Putnam Blvd/Patterson Blvd & Oak Park Blvd	Signalized	AM MD PM SA	**66** 23 26 15	**E** C C B	**67** 24 27 16	**E** C C B	- - - -
6	Monte Cresta Ave & Santa Barbara Rd	AWSC	AM MD PM SA	9 9 7 7	A A A A	9 9 7 7	A A A A	- - - -
7	Monte Cresta Ave & Oak Park Blvd	SSSC	AM MD PM SA	12 **(>120)** 9 **(>120)** 7 **(>120)** 2 (22)	B **(F)** A **(F)** A **(F)** A (C)	13 **(>120)** 11 **(>120)** 8 **(>120)** 2 (23)	B **(F)** B **(F)** A **(F)** A (C)	No No No -
8	Monticello Ave & Hawthorne Dr	SSSC	AM MD PM SA	11 (11) 6 (11) 7 (9) 7 (9)	B (B) A (B) A (A) A (A)	10 (11) 6 (11) 7 (11) 7 (9)	A (B) A (B) A (B) A (A)	- - - -
9	Monticello Ave & Santa Barbara Rd	SSSC	AM MD PM SA	3 (18) 4 (17) 3 (11) 4 (11)	A (C) A (C) A (B) A (B)	3 (20) 5 (17) 3 (11) 4 (10)	A (C) A (C) A (B) A (A)	- - - -
10	Oak Park Blvd & Monticello Ave	Signalized	AM MD PM SA	11 7 4 5	B A A A	12 12 9 12	B B A B	- - - -

Table 11: Cumulative Conditions - Peak Hour Intersection Levels of Service

	Intersection	Control	Peak Hour	Cumulative Conditions		Cumulative Plus Project Conditions		
				Delay[1]	LOS	Delay[1]	LOS	Signal Warrant Met?
13	Pleasant Valley Dr & Oak Park Blvd[2]	Signalized	AM	16	B	16	B	-
			PM	12	B	12	B	-
			SA	9	A	11	B	-
14	N Main St & Pleasant Valley Dr[2]	Signalized	AM	31	C	33	C	-
			PM	14	B	15	B	-
			SA	12	B	15	B	-
15	N Main St & Oak Park Blvd[2]	Signalized	AM	9	A	9	A	-
			PM	11	B	11	B	-
			SA	9	A	11	B	-
16	Monticello Ave & Project Driveway	SSSC	AM	-	-	0 (13)	A (B)	-
			MD	-	-	4 (14)	A (B)	-
			PM	-	-	4 (11)	A (B)	-
			SA	-	-	6 (17)	A (C)	-
17	Santa Barbara Rd & Project Driveway	SSSC	AM	-	-	1 (11)	A (B)	-
			MD	-	-	1 (10)	A (A)	-
			PM	-	-	2 (10)	A (A)	-
			SA	-	-	2 (11)	A (B)	-

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).
1. AWSC = All-way Stop Controlled; SSSC = Side-street Stop Controlled
2. Intersections 13, 14, and 15 are evaluated using the HCM 2000 methodology.

Source: Fehr & Peers, 2018.

The addition of project traffic would not degrade the operation of any study intersection from an overall acceptable service level to an unacceptable service level, although it would worsen side-street delay at three intersections where the side-street movement is projected to experience LOS E or LOS F conditions during at least one peak hour:

- Patterson Boulevard at Soule Avenue
- Patterson Boulevard at Hawthorne Drive
- Monte Cresta Avenue at Oak Park Boulevard

Additionally, the project would add traffic to a signalized intersection projected to operate at an overall LOS E in the morning peak hour prior to the addition of project traffic: Putnam Boulevard/Patterson Boulevard at Oak Park Boulevard.

These are potentially significant impacts. All other study intersections would continue to operate at LOS D or better with the addition of project traffic in the existing condition. Detailed intersection LOS calculation worksheets are provided in **Appendix C**.

Vehicle Queues

Vehicle queues were assessed for the signalized intersections in the cumulative condition, and the addition of project traffic is not expected to result in vehicle queues to increase by more than 50-feet (or 2 car-lengths) for movements where the 95th percentile queue is already exceeded, as presented in **Table 12**. The addition of project traffic could result in the southbound vehicle queue on Monticello Avenue to extend beyond the library entrance during the afternoon peak period. Queue worksheets are provided in **Appendix D.**

Table 12: Cumulative Conditions – 95th Percentile Queue Summary at Signalized Intersections

Intersection	Movement	Storage Length (ft)[1]	AM Peak Period		Mid-Day Peak Period		PM Peak Period		Saturday Peak Hour	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
5: Putnam Blvd/Patterson Blvd & Oak Park Blvd	EBL	100	75	75	75	75	75	75	50	50
	WBL	110	**225**	**225**	**200**	**200**	**200**	**225**	100	110
	WBR	230	25	25	50	50	50	50	25	25
	NBL	100	**150**	**150**	**125**	**125**	**150**	**150**	75	75
	SBL	210	150	150	100	100	100	100	75	75
10: Oak Park Blvd & Monticello Ave	WBL	50	25	25	25	25	25	25	25	25
	WBR	0/150	--	100	--	100	--	50	--	100
	SB	700/300[2]	250	275	175	***375***	50	175	75	250
	EBL	150	--	25	--	50	--	25	--	50
13: Pleasant Valley Dr & Oak Park Blvd	EBL	80	75	75	--	--	75	75	75	75
	WBL	80	75	75	--	--	50	50	50	50
	WBR	125	25	25	--	--	75	75	25	25
	NBR	25	0	0	--	--	0	0	0	0
	SBL	100	**250**	**250**	--	--	**150**	**150**	100	100
	SBR	100	75	75	--	--	50	50	50	50
14: N Main St & Pleasant Valley Dr	EBL	400	100	125	--	--	175	175	100	100
	EBR	100	100	100	--	--	50	50	50	50
	NBL	125	125	125	--	--	ES	350	125	125
	EBL	310	100	100	--	--	75	100	75	75

Table 12: Cumulative Conditions – 95th Percentile Queue Summary at Signalized Intersections

Intersection	Movement	Storage Length (ft)[1]	AM Peak Period		Mid-Day Peak Period		PM Peak Period		Saturday Peak Hour	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
15: N Main St & Oak Park Blvd	EBR	310	150	150	--	--	100	125	125	225
	NBL	75	50	50	--	--	75	75	50	50

Notes: **Bold** indicates queue potentially extends beyond available storage.
Bold Italics indicates potentially significant impact
-- = intersection was not evaluated for this time period.
ES = Cannot be calculated.

1. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.
2. Reflects storage with the project

Signal Warrants

Signal warrants were evaluated for the unsignalized intersections where the side-street movement operates at LOS E or LOS F. As shown in Table 11Table 11, none of the unsignalized study intersections is projected to meet signal warrants in the cumulative condition prior to or with the addition of project traffic. Signal warrant worksheets are provided in **Appendix E**.

Trail Crossings

Operations of the trail crossings were evaluated based on the process outlined in Chapter 2. With the expected growth in vehicle traffic over the next 20-years, enhanced treatments could be warranted at the Astrid Drive/Cleaveland Road crossing; however, the project is not expected to increase traffic volumes along this roadway segment and would not contribute vehicle volumes to need to upgrade crossing treatments. Existing crossing treatments are expected to be sufficient at the Oak Park Boulevard crossing, although monitoring of conditions as development occurs in the area is recommended.

Cumulative Conditions Impacts and Mitigation

Five potential off-site intersection impacts were identified in the cumulative condition.

Impact Statement 5: Intersection 2 – Patterson Boulevard at Soule Avenue

The Patterson Boulevard at Soule Avenue intersection is projected to operate at an overall acceptable service level in the morning peak hour in the cumulative condition, although the side-street movement is projected to operate at a deficient LOS F. The addition of project traffic would worsen average side-street delay by 2-seconds. Peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required.

Mitigation Measure 5: None Required.

Impact Statement 6: Intersection 3 – Patterson Boulevard at Hawthorne Drive

The Patterson Boulevard at Hawthorne Drive intersection is projected to operate at an overall acceptable service level in the morning peak hour in the cumulative condition, although the side-street movement is projected to operate at a deficient LOS F. The addition of project traffic would worsen average side-street delay by 2-seconds. Peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required (would require increase in side-street delay of more than 30-seconds).

Mitigation Measure 6: None Required.

Impact Statement 7: Intersection 5 – Putnam Boulevard/Patterson Boulevard at Oak Park Boulevard

The Putnam Boulevard/Patterson Boulevard at Oak Park Boulevard is projected to operate at an overall level of service E in the morning peak hour in the cumulative condition. The addition of project traffic would worsen average delay by 1-second. Based on the significance criteria, this is not a significant impact and no mitigation is required (would require increase average delay increase of more than 5-seconds).

Mitigation Measure 7: None Required.

Impact Statement 8: Intersection 7 – Monte Cresta Avenue at Oak Park Boulevard

The Monte Cresta Avenue at Oak Park Boulevard intersection is projected to operate at an overall acceptable service level in the morning, afternoon and evening peak hours in the cumulative condition, although the side-street movement is projected to operate at a deficient LOS F. The addition of project traffic would worsen average side-street delay, but not by more than 30-seconds. Also, the project would not add more than 10 vehicle trips to the controlled movement and peak hour signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact and no mitigation is required.

Mitigation Measure 8: None Required.

Impact Statement 9: The project would potentially result in the southbound queue on Monticello Avenue at Oak Park Boulevard extending beyond the library entrance in the cumulative condition during the afternoon peak hour around school bell times. Although the queuing impact criteria relates to turn pockets, this level of queue spillback could make it difficult for patrons to access the library. Based on the significance criteria, this is considered a ***less-than-significant*** impact**.**

Mitigation Measure 9: None Required. Although this is not a significant impact based on the significance criteria, a mitigation measure was developed to minimize the level of vehicle queue spillback:

i. Construct a southbound right-turn pocket on Monticello Avenue at Oak Park Boulevard. Provision of a southbound right-turn only lane of at least 100-feet would reduce the maximum left-turn vehicle queue to approximately 250-feet, a level that could be accommodated within the available storage.

6. Site Access, Circulation & Parking

This section is based on the site plan presented previously on Figure 2. Considerations for all modes of travel as well as parking are provided. Site plan recommendations are summarized on **Figure 16.**

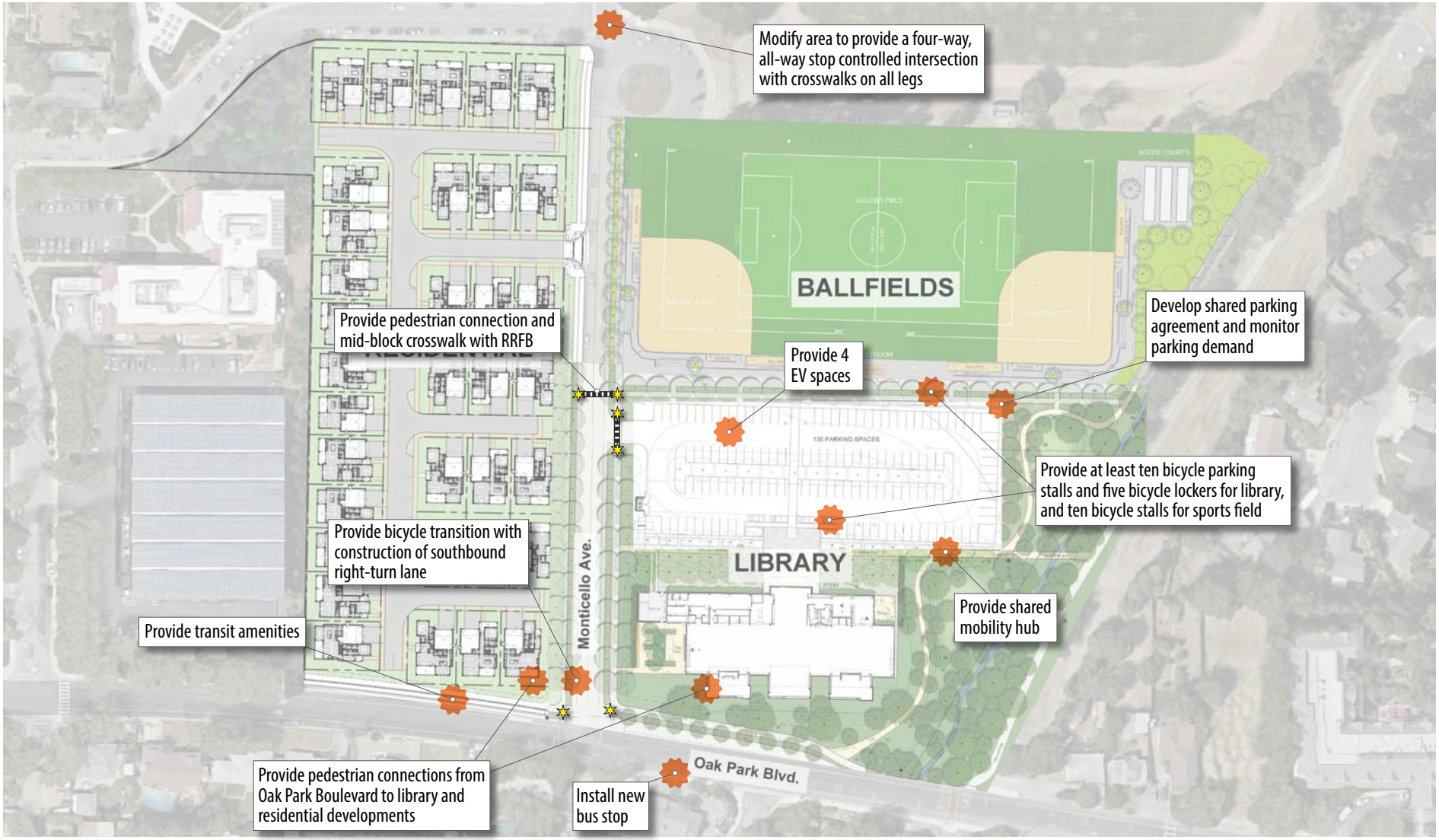
Site Access and Circulation

Vehicular Access

Primary vehicular access to the project area would be provided by an existing signalized intersection on Oak Park Boulevard at Monticello Avenue that would be modified as part of the project to provide an eastbound left-turn only lane and a westbound right-turn only lane. Approximately 300 feet north of Oak Park Boulevard, a new east-west roadway would be constructed to serve the library and sports fields. Approximately 150 feet north of the library entrance would be an entrance to the residential development, which would be located approximately 240 feet south of the Santa Barbara Road at Monticello Avenue intersection. To provide internal circulation for the residential project, a new north-south roadway would be built parallel to Monticello Avenue. As part of the project, two existing curb cuts on Oak Park Boulevard, which currently provide access to the library, would be eliminated as part of the project. As presented in the prior chapters, the primary access intersections would operate at acceptable service levels. A review of site access operations indicates that the site access intersections would operate acceptably as side-street stop-controlled intersections as summarized in **Table 13.**

A portion of the sports fields would be constructed within an area that currently provides a traffic circle and on-street parking, immediately north of the proposed ball fields and south of the existing middle school. The proposed project would eliminate the southern access location to these parking spaces and could make access and circulation to these parking stalls challenging. It could also increase conflicts at the Monticello Avenue at Santa Barbara Road intersection.

> ***Recommendation 1:*** Work with the school district to reconstruct the parking area between the proposed sports fields and the existing middle school with a goal of creating a four-way stop-controlled intersection with crosswalks on all legs. Considering some nominal shifts in traffic to a reconstructed parking area and all-way stop-control, the resulting intersection is projected to operate at a LOS B or better in the cumulative condition during all peak hours evaluated. Additionally, vehicle queues for the northbound and southbound movements would be less than 200 feet for all hours analyzed are not expected to block access to either the proposed residential development (for northbound queues), or the existing parking lot serving the existing sports fields (for southbound queues).



Provide directional curb ramps

Site Plan Source: Bohlin Cywinski Jackson, 11/28/18

Figure 16

Oak Park Specific Plan

Consultant Recommendations

Table 13: Site Access Intersections Peak Hour Intersection Levels of Service

Intersection	Control[1]	Peak Hour	Project Buildout	
			Delay[2,3]	LOS[2,3]
16. Monticello Avenue at Library Entry	SSSC	AM AFT PM SAT	0 (13) 4 (14) 4 (11) 5 (15)	A (B) A (B) A (B) A (B)
17. Monticello Avenue at Residential Project Entry	SSSC	AM AFT PM SAT	1 (11) 1 (10) 1 (9) 2 (11)	A (B) A (A) A (A) A (B)

Notes:
1. SSSC = side-street stop controlled intersection
2. Average and worst movement delay calculated using the 2010 HCM method.
3. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.

Source: Fehr & Peers, 2018.

Pedestrian Facilities

The conceptual project site plan shows pedestrian facilities along both sides of the project frontage on Monticello Avenue. As part of the project, roadway widening would occur on the north side of Oak Park Boulevard to accommodate the proposed turn-lanes into Monticello Avenue. New trail connections would also be provided connecting the library to Oak Park Boulevard via a trial as well as a trail and bridge connection to the EBMUD trail. Existing sidewalks would be reconstructed where roadway widening is proposed with landscape buffers provided where feasible. Along the library/sports park frontage on Monticello Avenue, a new 8-foot wide sidewalk would be constructed from Oak Park Boulevard to Santa Barbara Road. It is not clear from the conceptual project site plans if a direct pedestrian connection would be provided from Oak Park Boulevard and Monticello Avenue to the residential development.

> ***Recommendation 2:*** At new or reconstructed curb-ramps, provide directional ramps where feasible.
>
> ***Recommendation 3:*** Provide direct pedestrian connections to the residential development from Oak Park Boulevard and Monticello Avenue. Provide a mid-block high visibility pedestrian crosswalk on Monticello Avenue on the north side of the library driveways to better connect the residential project to the library and the existing trail system, in install a Rectangular Rapid Flashing Beacon (RRFB) at the crosswalk.

These recommendations are the same for the existing and cumulative conditions.

Bicycle Facilities

As part of the project, Oak Park Boulevard would be widened to provide a westbound right-turn only lane and an eastbound left-turn only lane. Existing Class II bicycle lanes would remain on this segment of Oak Park Boulevard. As part of the project, Class II Bicycle lanes would also be constructed along Monticello Avenue between Oak Park Boulevard and Santa Barbara Road. The proposed construction of a right-turn pocket on Oak Park Boulevard at Monticello Avenue could create conflicts between right-turning vehicles and bicyclists, especially during the morning peak hour when right-turn volumes are the highest.

> ***Recommendation 4:*** In the final design of the Monticello Avenue at Oak Park Boulevard, provide transitions to/from Oak Park Boulevard to Monticello Avenue for bicyclists.

This recommendation is the same for the existing and cumulative conditions.

Transit Accessibility

County Connection bus service provides local access to the area via Route 9. Based on the existing County Connection ridership data (Chapter 2), there is sufficient excess capacity to accommodate potential transit demand from the project.

A County Connection transit stop is located on the north side of Oak Park Boulevard, just west of the Monticello Avenue intersection. It is recommended that when Oak Park Boulevard is widened, the westbound bus-stop remain in the same general location. Relocating it closer to the library would place a bus stop within a right-turn lane, which would create conflicts for buses pulling back into the through lane across a bicycle lane. The closest eastbound bus stop is approximately 500 feet west of the Monticello Avenue intersection on Oak Park Boulevard. To access that bus stop from the project area, pedestrians could either cross Oak Park Boulevard at the signal at Monticello Avenue, but there is not a complete sidewalk network on the south side of the Oak Park Boulevard in this area, or walk along the north side of Oak Park Boulevard where sidewalk facilities are provided, and cross Oak Park Boulevard at an uncontrolled high-visibility crosswalk.

> ***Recommendation 5:*** Reconstruct the westbound bus route in its same general area, with transit amenities similar to those provided today (bench). Maintain a 5-foot pedestrian clear-way through the transit stop-area when considering transit amenity placement.

> ***Recommendation 6:*** Consider working with County Connection to provide an eastbound bus stop on the south side of Oak Park Boulevard, just east of Monticello Avenue.

These recommendations are the same for the existing and cumulative conditions.

Emergency Vehicles

Several factors determine whether a project has sufficient access for emergency vehicles, including:

1. Location of closest fire stations
2. Number of access points (both public and emergency access only)
3. Width of access points
4. Width of internal roadways

Each of these factors is discussed in further detail below.

The fire station closest to the site is located on 2012 Geary Road approximately 1-mile from the project site via Putnam Boulevard. The Boyd Road fire station is located approximately 1.1 miles from the project site via Patterson Boulevard. Primary access to the project site would occur from existing roadways that would not be changed as part of the project.

Based on the *2016 California Fire Code* as amended by Contra Costa County Ordinance 2016-23, the minimum number of access roads serving residential development(s) shall be based upon the number of dwelling units served as follows:

- Multiple Family Residential Projects having more than 100 dwelling units should be provided with two separated and approved fire apparatus access roads (D106.1)
- Development of one or two-family dwellings where the number of dwelling units exceed 30 shall be provided with two separate and approved fire apparatus access roads; where there are more than 30-dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3 of the *California Fire Code*, access from two directions shall not be required (D107.1)

Access to the residential project would be provided from a roadway connection to Monticello Avenue. It is unclear if additional emergency vehicle access is provided or if all homes would have an approved automatic sprinkler system. For commercial projects, at least two access roadways are required if the building height exceeds 30-feet or the square footage exceeds 62,000 square-feet. Based on the size parameters of the library, one access roadway is sufficient for emergency vehicle access to the library building.

Insufficient details are provided on the conceptual project site plan to evaluate the proposed roadway cross-section relative to emergency vehicle access.

Recommendation 7: Based on Fire Code requirements, two fire access roads may be required to the residential development unless all homes are equipped with an approved automatic sprinkler system. Within the residential development, to ensure emergency vehicles have an unobstructed access throughout the site, parking should be restricted within the first 50 feet of the project entrances, and if landscaped medians or other entry treatments are proposed, a 20-foot clear area should be provided. If on-street parking is proposed, the street cross-section should be of sufficient width to accommodate parking lanes and maintain a 20-foot clear path of travel.

This recommendation is the same for the existing and cumulative conditions.

Parking

Off-street parking requirements and design gudiance are outlined in the City of Pleasant Hill Municipal Code Chapter 18.55.30. A combination of private garages and on-street parking would support the residential portion of the project, a new shared parking lot would be constructed for the library and sports fields.

For the residential units, each home would have a private two-car garage as well as a driveway with space for additional vehicles; 20 on-street spaces would be provided. For the library and sports fields, approximately 130 off-street parking spaces would be provided.

Vehicle Parking Requirements

For residential uses, 2-enclosed spaces per unit are required, which is satisfied by the proposed 2-car garages for each unit. In addition, unenclosed parking is also provided for each home through driveway aprons that front each garage. For the accessory units, no parking spaces are required due to the presence of transit on Oak Park Boulevard.

For the library portion of the project, the City does not identify parking requirements. For the sports complex, parking is required as determined through the project review process. To determine if the proposed supply is sufficient for the proposed uses, a parking demand assessment was conducted based on the existing data collection effort (as documented in Chapter 2), and published parking demand information.

Peak observed parking demand at the existing library approximately 70-spaces on a weekday afternoon. Peak parking demand on a Saturday was observed to be about 55 spaces. This results in a peak parking demand ratio of 1.75 spaces per 1,000 square-feet for the existing 40,000 square foot library. However, as noted in the trip generation section, there is a large proportion of storage spaces within the existing spaces that would not exist at the new library. Additionally, the relocated library could have enhanced offerings

that could attract additional patrons. For the purposes of this parking assessment, it was assumed that future library parking demand would be 10 percent greater than existing parking demand.

For the sports fields, parking demand in the areas immediately adjacent to the existing sports fields, including on-street parking in the general vicinity was summed, and then divided by the number of sports fields in use at the time of data collection. On a weekday, peak parking demand on a tournament evening as 290 spaces – or 36.25 spaces per field that was in use. On a Saturday, the peak parking demand was 231, or 33 spaces per field that was in use. The resulting peak parking demand rate was then increased by 10 percent to account for vehicles that may have parked further away, with the resulting peak weekend parking demand rate of 36.3 spaces per field and the peak weekday parking demand of 39.9 spaces per field used to establish parking needs for the sports fields. Weekday parking demand could be higher than weekend parking demand as on weeknights, one parent may arrive with the player, and other family members arrive in separate vehicles, while on Saturdays, families are more likely to drive together. Based on the observed rates, the new sports fields could have a peak parking demand of 80 spaces on a weekday and 73 spaces on a weekend. This level of parking supply would exceed the proposed sports fields parking, but when considered with the library parking, sufficient parking spaces would be provided to accommodate both the library and sports fields peak parking demands, as shown in **Table 14**.

Table 14: Automobile Parking Requirements

Land Use	Size	Base Requirement	Total Requirement or Demand	Supply
Residential				
Single-Family	34-units	2 enclosed spaces per unit	68-covered spaces	68 covered spaces 68 driveway spaces 17 on-street spaces
Non-Residential				
Library	24,000 square feet	Weekday: 10 percent more than existing peak weekday demand of 70 spaces Weekend: 10 percent more than existing peak weekend demand of 55 spaces	77 61	130
Parks and Recreation Facilities	2-fields	Weekday: 39.9 spaces per field Weekend: 36.3 spaces per field	80 73	
Combined Parking for Library and Sports Fields		Peak weekday Peak Saturday	157 134	130

Total Peak Non-Residential Demand	**157**
Total Non-Residential Supply	**130**
Surplus/(Deficit)	**(27)**

Source: City Pleasant Hill Municipal Code, Fehr & Peers, 2018.

The residential portion of the project is expected to provide sufficient parking to meet city code requirements. For the library and sports fields, parking shortages could occur when both facilities experience peak demands. Additionally, development of the project would remove approximately 42 off-street parking spaces in the north Library parking lot. This lot was observed to serve the existing sports field uses in the area with a peak observed Saturday demand of 30-spaces and a peak observed weekday demand of 29-spaces. Based on the results of the parking surveys, there is some surplus parking available in existing parking lots serving the sports fields and on Monticello Avenue north of Santa Barbara Road, and parking demand spillover to nearby residential streets is not expected. However, it could become more difficult for existing park users to find parking.

> ***Recommendation 8:*** Develop a shared parking agreement between the Library and Sports Fields. Limit formal usage of the sports fields to one field during normal library operating hours. Conduct a parking demand assessment between 6 months and 1 year of occupancy. The parking monitoring shall include parking demand observations on a weekday and a weekend and will isolate parking demand for the library, project sports fields and other sports fields. Based on the occupancy levels at the time of data collection, project parking demands with both fields in use during normal library operating hours to determine if unrestricted use could be accommodated. With implementation of this measure, parking demand spillover to adjacent residential neighborhoods is expected to be minimal.

The City of Pleasant Hill requires that new parking commercial parking areas provide electric vehicle charging stations, at a rate of 1 space for each lot with between 25 and 50 spaces, and 1 EV charging station for each 50 additional spaces. Electric vehicle parking stalls are not identified on the site plan.

> ***Recommendation 9:*** Provide electric vehicle parking spaces in the library and sports fields parking areas.

Bicycle Parking

The City of Pleasant Hill requires that for commercial developments bicycle parking be provided at a rate of 2 percent of the parking supply, which would result in 4 bicycle spaces combined for the library and recreational areas. However, based on observations of existing bicycle use in the area, bicycle parking demand is expected to be higher than 4-spaces for the library and sports park combined.

Recommendation 10: Provide at least 10 short-term and 5 long-term (lockers) bicycle parking spaces for the library and at least 10 short-term bicycle parking spaces for the sports fields. Identify a designed shared mobility hub where shared bicycles and scoters could be staged outside of main pedestrian travel routes.

7. Vehicle Miles of Travel

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) updated the California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, with updated draft guidelines prepared January 2016, which incorporated public comments from the August 2014 guidelines. OPR released final proposed Guidelines on November 27, 2017. The final proposed Guidelines include a new Section 15064.3 on VMT analysis and thresholds for land use developments. OPR also released a Technical Advisory on Evaluating Transportation Impacts in CEQA. New Guidelines section 15064.3 states that they do not take effect until July 1, 2020 unless the lead agency adopts them earlier. Neither the City of Pleasant Hill nor Contra Costa Transportation Authority nor Contra Costa County has established any standards or thresholds on VMT. Therefore, the new guidelines have not yet been adopted and are not in effect at this time.

The final guidelines may change based on the comments received during the Natural Resources Agency formal administrative rulemaking process for adoption under the Administrative Procedure Act. Since there are no standards in effect on VMT analysis, a preliminary assessment of the vehicle miles of travel (VMT) generated by the proposed project was prepared for information and disclosure purposes only. No determination on the significance of VMT impacts is made in this document since none is legally required.

CEQA Guidelines

Proposed changes to Appendix G of the CEQA guidelines, as presented in *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA (November 2017)*[7] provides the potential basis for the evaluation of vehicle miles of travel generated by a project.

> **Text of Proposed Amendments to Appendix G**
>
> *b) For a land use project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1)?*
>
> **(b) Criteria for Analyzing Transportation Impacts.**
>
> **(1) Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a

[7] Full document can be found here:
http://www.fehrandpeers.com/wp-content/uploads/2016/01/Revised_VMT_CEQA_Guidelines_Proposal_January_20_2016.pdf

less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

OPR has established a draft threshold for the evaluation of different land use types. For residential uses, new developments that have an estimated vehicle miles of travel 15 percent below **existing regional and city VMT/capita** (household or home-based) would be considered less than significant.

For office uses, developments that would result in VMT 15 percent below **existing** regional VMT per employee (work tour or home-based work) would be considered less than significant.

Local-serving retail may be less than significant (projects less than 50,000 square feet). Retail which increases VMT compared to previous shopping patterns may be considered significant.

The library and sports park portions of the project are akin to a retail center in that they serve local residents and by providing these facilities, vehicle trip lengths may decrease as destinations are placed closer to homes. Additionally, the library portion of the project is shifting of an existing use and any net change in VMT would be negligible.

Analysis Methods

To conduct the VMT assessment, Fehr & Peers used the CCTA travel demand model as well as information from the Metropolitan Transportation Commission (MTC). The CCTA model was used to estimate average trip lengths for the proposed project, while MTC data[8] was used to establish average trip lengths for existing residential uses in Pleasant Hill. The existing average trip lengths for the City of Pleasant Hill, Contra Costa County and the Bay Area based on the MTC data are presented in **Table 15.** Home based trips in Pleasant Hill and Contra Costa County are slightly higher than the Bay Area average, while work based trips to jobs in Pleasant Hill are lower than the county average, but higher than the Bay Area average, indicating that people who have jobs in Pleasant Hill tend to commute longer than average distances than the remainder of the Bay Area.

[8] http://analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita

Table 15: Existing Average Trip Lengths

Land Use Type	Pleasant Hill	Contra Costa County	Bay Area
Home Based VMT	17.5	18.0	15.3
Work VMT	25.9	27.2	22.7

Source: Source: MTC, Fehr & Peers, 2018.

Analysis Results

A select zone analysis was conducted using the CCTA model whereby all the trips generated by the residential portion of the project were tracked through the transportation system. Based on this analysis, the proposed project is estimated to generate approximately **16.6 vehicle miles of travel** per day per household. This includes all trips generated by each household that either start or end at home. This level of vehicle travel is higher than the Bay Area average, but lower than both the County average (lower by 7.7 percent) or city-wide average (lower by 5 percent).

VMT Conclusions

Results of the VMT analysis indicate that the project would contribute to a decrease in vehicle miles of travel on a per-capita basis as the project adds a housing development in an area close to transit and employment centers; however, it VMT generated by the residential portion of the project is not expected to be 15 percent below the City baseline. As there are no thresholds of significance, this analysis is being prepared for informational purposes only.

Appendix A: Traffic Counts

Prepared by National Data & Surveying Services

Patterson Blvd & Boyd Rd

Peak Hour Turning Movement Count

ID: 18-08030-009
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Patterson Blvd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Boyd Rd)

AM	NOON	PM	
253	0	246	⇦
0	0	0	↶ 0
0	0	0	↱ 0
127	0	170	→ 0
135	0	81	↴ 0
AM	NOON	PM	

WESTBOUND (Boyd Rd)

PM	NOON	AM	
0	0	0	0 ↰
105	0	146	0 ←
144	0	179	0 ↙
0	0	0	0 ↲
368	0	263	⇨
PM	NOON	AM	

NORTHBOUND (Patterson Blvd)

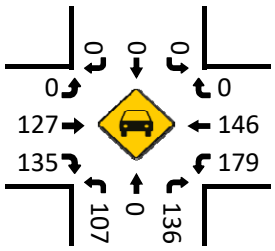
PM	225	0	141	0	198	PM
NOON	0	0	0	0	0	NOON
AM	314	0	107	0	136	AM

CONTROL

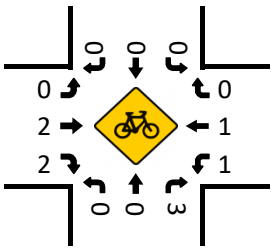
0

TEV	830 AM	0 NOON	839 PM
PHF	0.84		0.98

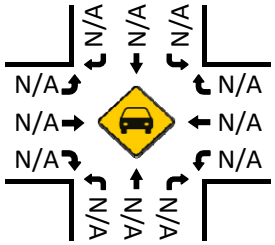
Total Vehicles (AM)



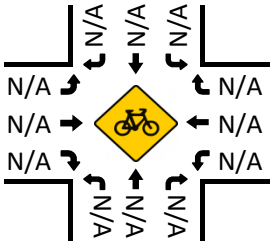
Bikes (AM)



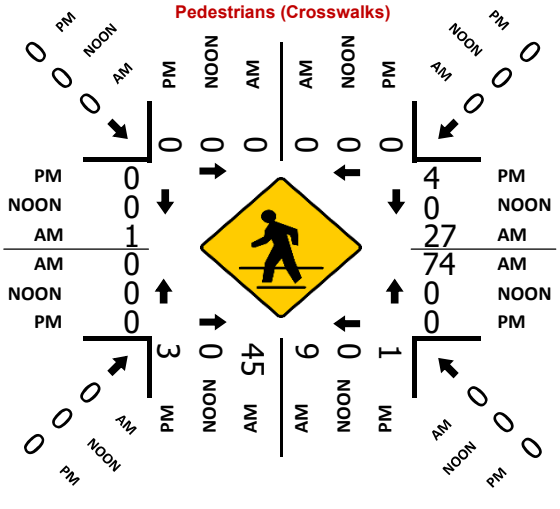
Total Vehicles (Noon)



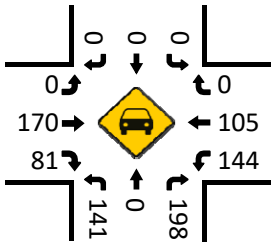
Bikes (NOON)



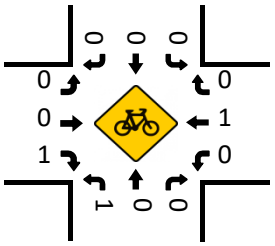
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Soule Ave

Peak Hour Turning Movement Count

ID: 18-08260-002
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Patterson Blvd — SOUTHBOUND

	Right	Through	Left	U-Turn	Outbound
AM	9	351	6	0	227
NOON	0	0	0	0	0
PM	1	292	8	1	392
Lanes	0	1	0	0	

Soule Ave — EASTBOUND

	AM	NOON	PM	Lanes
Outbound	90	0	22	
U-Turn	0	0	0	0
Left	7	0	7	0
Through	1	0	1	1
Right	225	0	17	0

Soule Ave — WESTBOUND

	Lanes	PM	NOON	AM
Right	0	7	0	4
Through	1	1	0	1
Left	0	5	0	18
U-Turn	0	0	0	0
Outbound		22	0	13

Patterson Blvd — NORTHBOUND

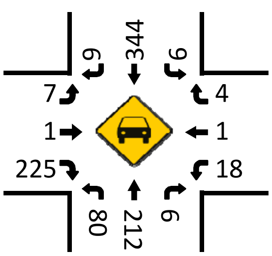
	Outbound	U-Turn	Left	Through	Right
Lanes		0	0	1	0
PM	314	0	20	377	13
NOON	0	0	0	0	0
AM	594	0	80	216	6

CONTROL

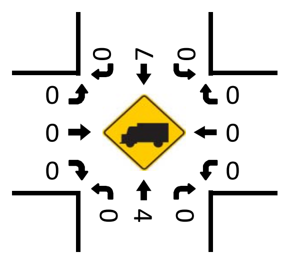
2-Way Stop(EB/WB)

	AM	NOON	PM
TEV	924	0	750
PHF	0.82		0.90

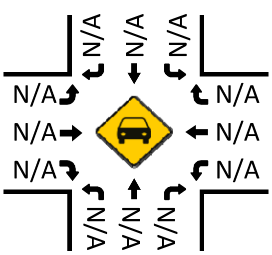
Cars (AM)



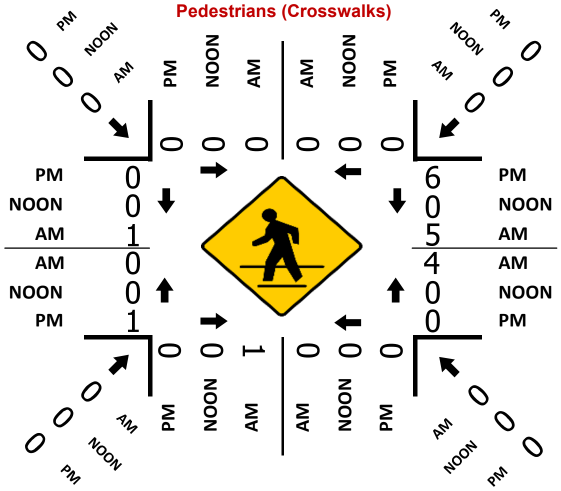
HT (AM)



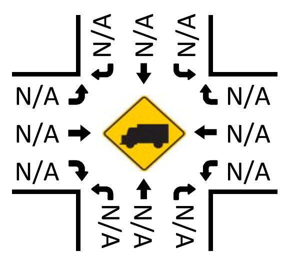
Cars (NOON)



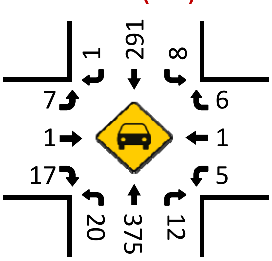
Pedestrians (Crosswalks)



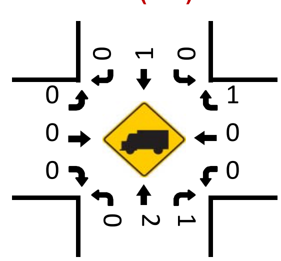
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Hawthorne Dr East

Peak Hour Turning Movement Count

ID: 18-08030-008
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Patterson Blvd

AM	13	355	184	0	303	AM
NOON	0	0	0	0	0	NOON
PM	17	181	28	0	388	PM

EASTBOUND — Hawthorne Dr East

AM	NOON	PM	
28	0	25	
0	0	0	0
14	0	9	0
8	0	2	0
17	0	8	0

WESTBOUND — Hawthorne Dr East

PM	NOON	AM	
33	0	148	0
1	0	10	0
2	0	41	0
0	0	0	0
35	0	218	

CONTROL

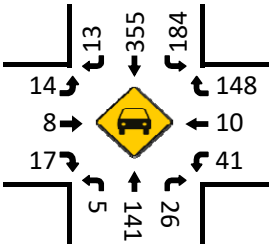
0

TEV	962	0	639
	AM	NOON	PM
PHF	0.74		0.94

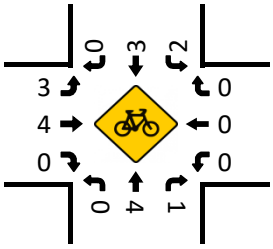
NORTHBOUND — Patterson Blvd

PM	191	0	7	346	5	PM
NOON	0	0	0	0	0	NOON
AM	413	0	5	141	26	AM

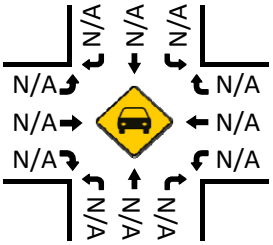
Total Vehicles (AM)



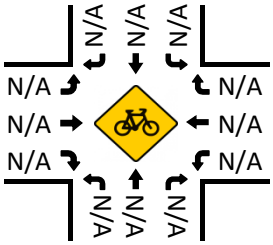
Bikes (AM)



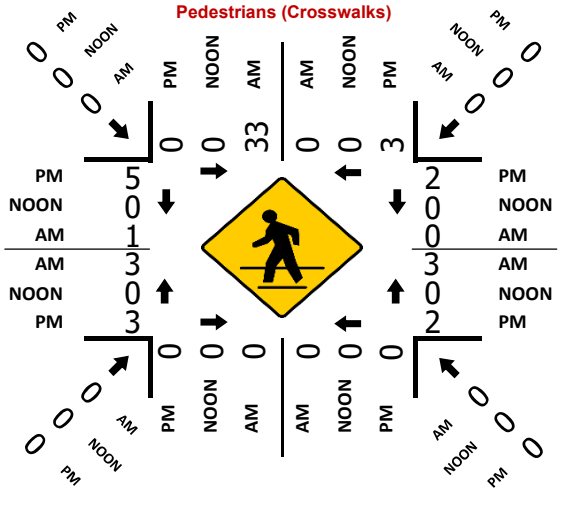
Total Vehicles (Noon)



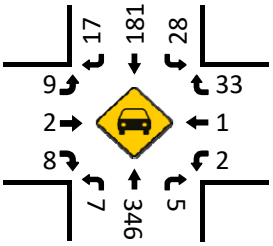
Bikes (NOON)



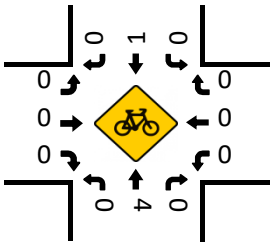
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Hawthorne Dr

Peak Hour Turning Movement Count

ID: 18-08260-003
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	NONE	NONE
PM	02:30 PM - 03:30 PM	02:00 PM - 04:00 PM

Patterson Blvd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	23	193	52	0	357
(red)	0	1	0	0	

Hawthorne Dr — EASTBOUND

	AM	NOON	PM	(red)
Departing	0	0	34	
U-Turn	0	0	0	0
Left	0	0	15	0
Thru	0	0	1	1
Right	0	0	7	0

Hawthorne Dr — WESTBOUND

	(red)	PM	NOON	AM
Right	0	78	0	0
Thru	1	4	0	0
Left	0	17	0	0
U-Turn	0	0	0	0
Departing		60	0	0

Patterson Blvd — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
(red)		0	0	1	0
PM	217	0	7	264	7
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

2-Way Stop(EB/WB)

	AM	NOON	PM
TEV	0	0	668
PHF			0.77

Cars (AM) / Cars (NOON) / HT (AM) / HT (NOON)

All movements: N/A

Cars (PM)

Approach	Left	Thru	Right
Southbound	52	189	21
Eastbound	15	1	7
Westbound	15	4	76
Northbound	7	260	7

HT (PM)

Approach	Left	Thru	Right
Southbound	0	4	2
Eastbound	0	0	0
Westbound	2	0	2
Northbound	0	4	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
NW diagonal	0	0	0
North (west half)	0	0	4
North (east half)	0	0	38
NE diagonal	0	0	0
West (north half)	0	0	0
West (south half)	0	0	0
East (north half)	0	0	4
East (south half)	0	0	2
South (west half)	0	0	0
South (east half)	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Patterson Blvd & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08030-006
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Patterson Blvd — SOUTHBOUND

AM	0	353	36	0	146	AM
NOON	0	0	0	0	0	NOON
PM	0	186	6	0	356	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

Santa Barbara Rd — WESTBOUND

PM	NOON	AM	
10	0	27	↰ 0
0	0	0	← 0
7	0	45	↰ 0
0	0	0	↶ 0
28	0	82	⇨
PM	NOON	AM	

CONTROL

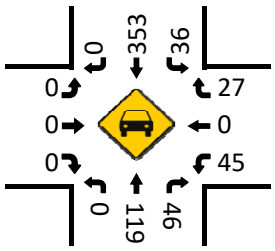
0

TEV	626	0	577
	AM	NOON	PM
PHF	0.79		0.94

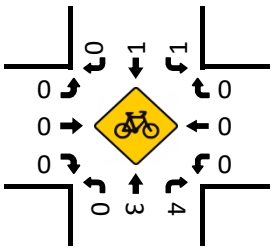
PM	193	0	0	346	22	PM
NOON	0	0	0	0	0	NOON
AM	398	0	0	119	46	AM

Patterson Blvd — NORTHBOUND

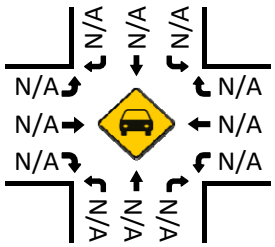
Total Vehicles (AM)



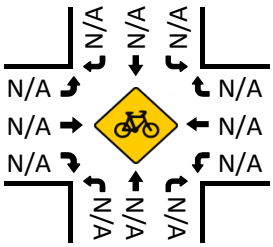
Bikes (AM)



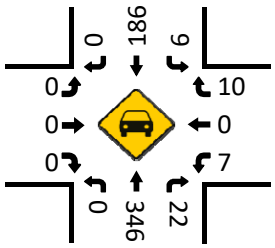
Total Vehicles (Noon)



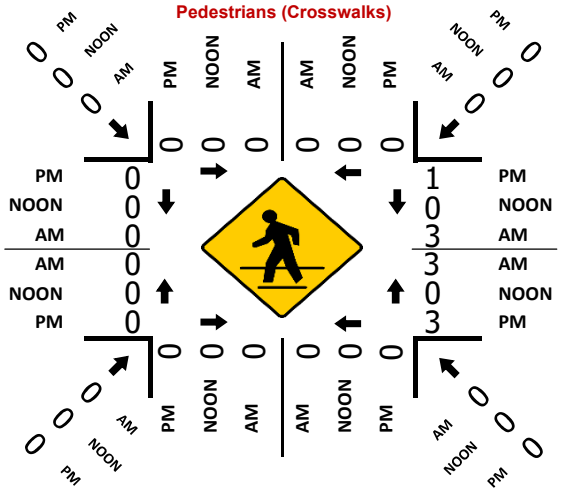
Bikes (NOON)



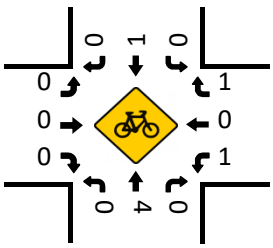
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-004
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	NONE	NONE
PM	02:30 PM - 03:30 PM	02:00 PM - 04:00 PM

Patterson Blvd – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	186	16	0	248
(red)	0	1	0	0	

Santa Barbara Rd – EASTBOUND

	AM	NOON	PM	(red)
Departing	0	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	0	0
Right	0	0	0	0

Santa Barbara Rd – WESTBOUND

	(red)	PM	NOON	AM
Right	0	37	0	0
Thru	1	0	0	0
Left	0	24	0	0
U-Turn	0	0	0	0
Departing		33	0	0

Patterson Blvd – NORTHBOUND

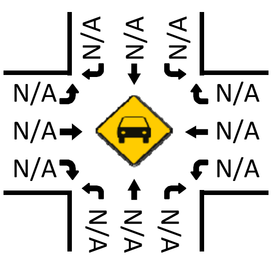
	Departing	U-Turn	Left	Thru	Right
(red)		0	0	1	0
PM	210	0	0	211	17
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

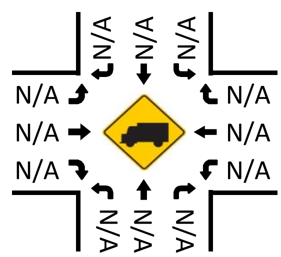
1-Way Stop(WB)

	AM	NOON	PM
TEV	0	0	491
PHF			0.83

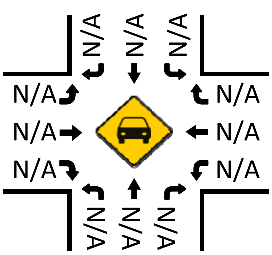
Cars (AM)



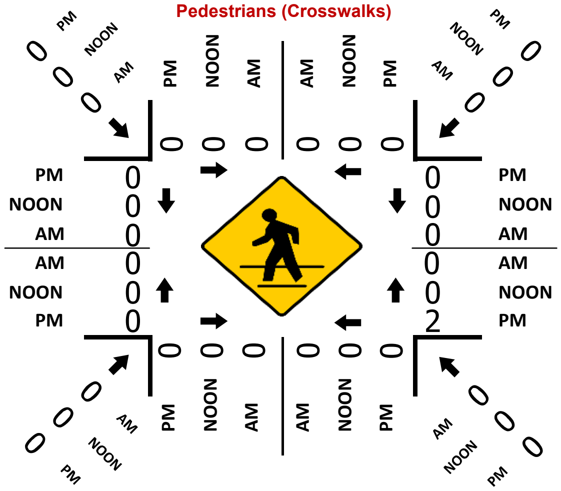
HT (AM)



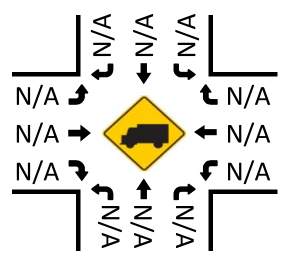
Cars (NOON)



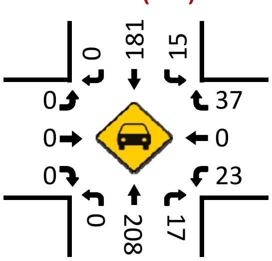
Pedestrians (Crosswalks)



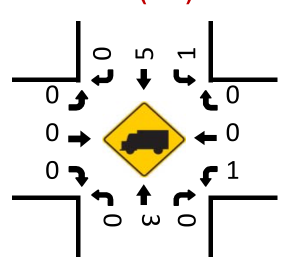
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Patterson Blvd/Putnam Blvd & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08030-005
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Patterson Blvd/Putnam Blvd

SOUTHBOUND

AM	26	256	149	0	184	AM
NOON	0	0	0	0	0	NOON
PM	42	104	94	0	404	PM

EASTBOUND (Oak Park Blvd)

AM	NOON	PM	
360	0	564	
0	0	0	0
37	0	37	0
349	0	281	0
264	0	98	0
AM	NOON	PM	

WESTBOUND (Oak Park Blvd)

PM	NOON	AM	
103	0	46	0
347	0	201	0
107	0	115	0
0	0	0	0
543	0	609	
PM	NOON	AM	

CONTROL

0

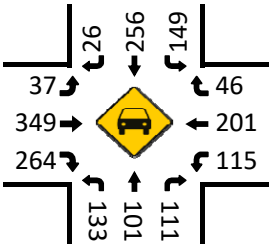
TEV	1788	0	1820
	AM	NOON	PM
PHF	0.83		0.95

PM	309	0	175	264	168	PM
NOON	0	0	0	0	0	NOON
AM	635	0	133	101	111	AM

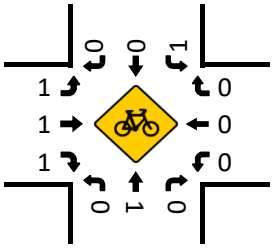
NORTHBOUND

Patterson Blvd/Putnam Blvd

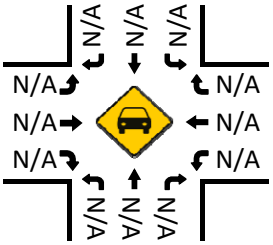
Total Vehicles (AM)



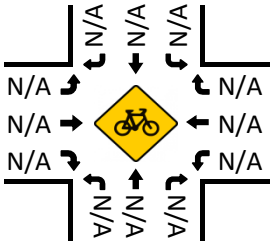
Bikes (AM)



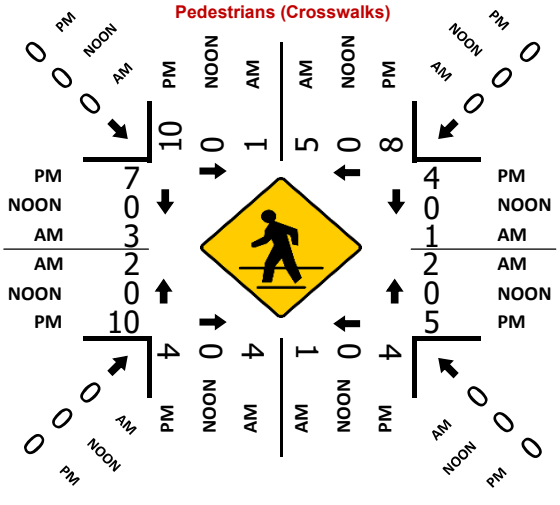
Total Vehicles (Noon)



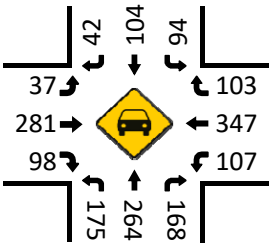
Bikes (NOON)



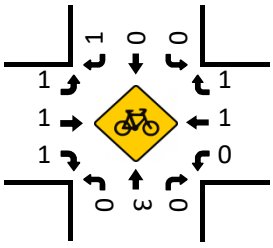
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-005
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS		COUNT PERIODS
NONE	AM	NONE
NONE	NOON	NONE
02:30 PM - 03:30 PM	PM	02:00 PM - 04:00 PM

SOUTHBOUND (Patterson Blvd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	41	125	106	0	297	PM

EASTBOUND (Oak Park Blvd)

AM	NOON	PM		
0	0	400		
0	0	0	0	
0	0	35	1	
0	0	275	1	
0	0	114	0	
AM	NOON	PM		

WESTBOUND (Oak Park Blvd)

PM	NOON	AM	
93	0	0	1
245	0	0	1
97	0	0	1
0	0	0	0
501	0	0	
PM	NOON	AM	

NORTHBOUND (Patterson Blvd)

PM	336	0	114	169	120	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

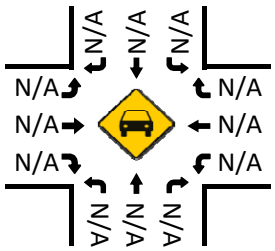
	0	1	1	0

CONTROL

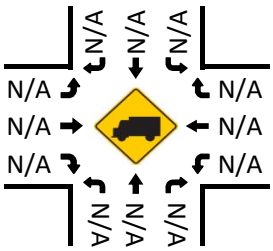
Signalized

TEV	0 AM	0 NOON	1534 PM
PHF			0.94

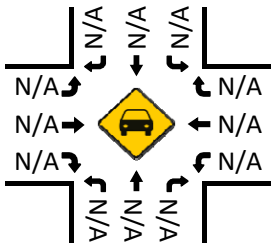
Cars (AM)



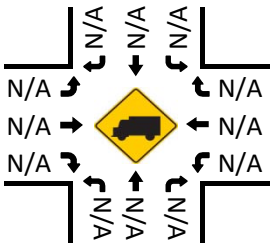
HT (AM)



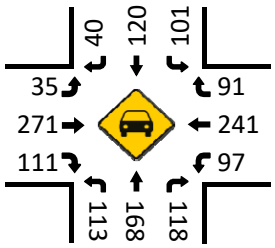
Cars (NOON)



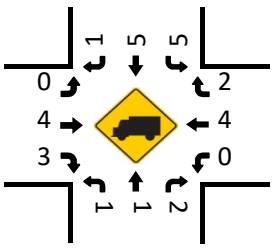
HT (NOON)



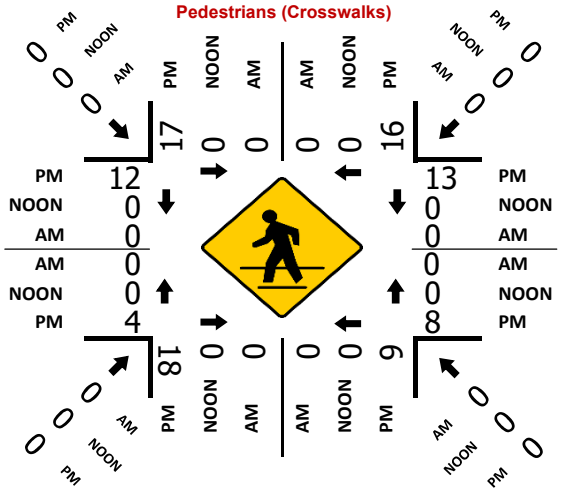
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Monte Cresta Ave & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-006
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	02:00 PM - 03:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

Monte Cresta Ave — SOUTHBOUND

AM	1	28	13	0	22	AM
NOON	0	0	0	0	0	NOON
PM	0	4	6	0	30	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM	
52	0	61	
0	0	1	0
0	0	2	0
64	0	47	1
38	0	7	0

CONTROL

4-Way Stop

TEV	307 AM	0 NOON	225 PM
PHF	0.67		0.49

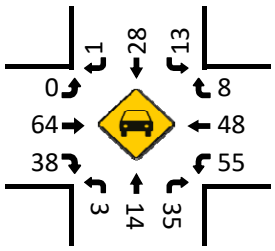
Santa Barbara Rd — WESTBOUND

PM	NOON	AM	
9	0	8	0
46	0	48	1
40	0	55	0
1	0	0	0
82	0	112	

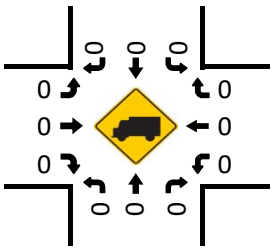
Monte Cresta Ave — NORTHBOUND

PM	52	1	14	19	28	PM
NOON	0	0	0	0	0	NOON
AM	121	0	3	14	35	AM

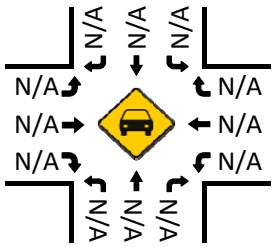
Cars (AM)



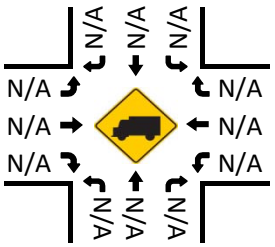
HT (AM)



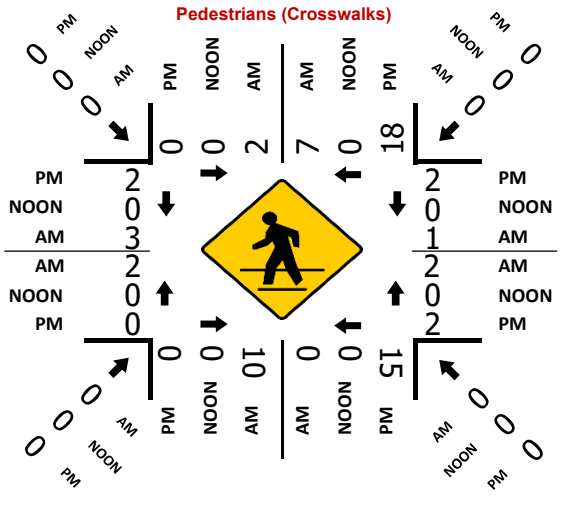
Cars (NOON)



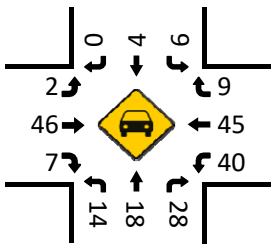
HT (NOON)



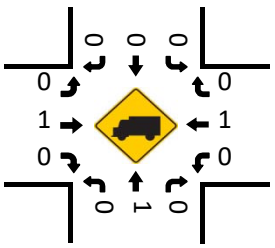
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Monte Cresta Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08030-004
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Monte Cresta Ave — SOUTHBOUND

AM	45	1	51	0	113
NOON	0	0	0	0	0
PM	17	1	41	1	34
	0	0	0	0	

Oak Park Blvd — EASTBOUND

AM	NOON	PM	
358	0	573	
0	0	0	0
42	0	6	0
603	0	547	0
2	0	1	0

Oak Park Blvd — WESTBOUND

	PM	NOON	AM
0	27	0	70
0	555	0	311
0	8	0	7
0	1	0	0
	592	0	658

Monte Cresta Ave — NORTHBOUND

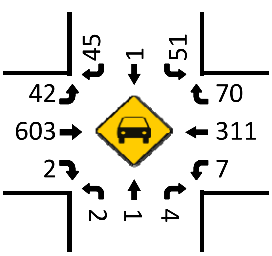
		0	0	0	0
PM	10	0	1	0	3
NOON	0	0	0	0	0
AM	10	0	2	1	4

CONTROL

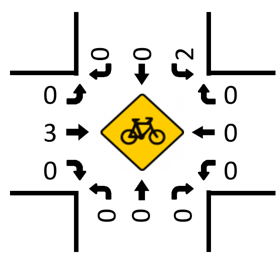
0

	AM	NOON	PM
TEV	1139	0	1209
PHF	0.91		0.91

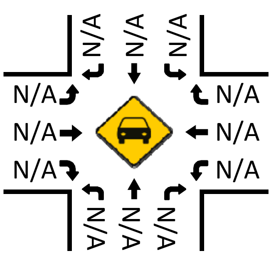
Total Vehicles (AM)



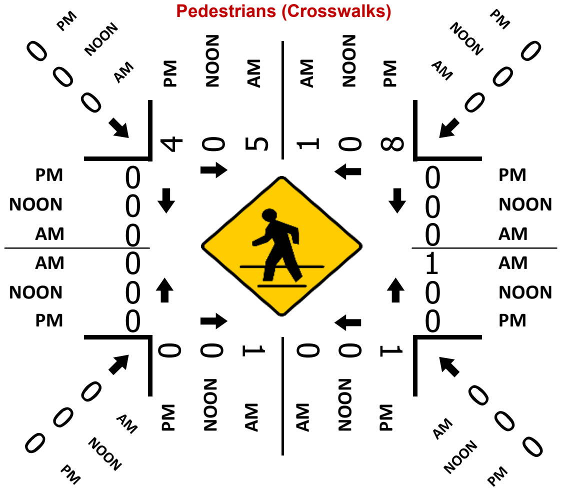
Bikes (AM)



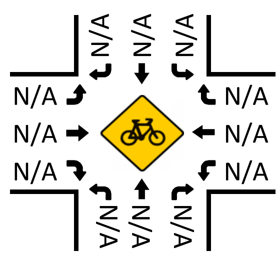
Total Vehicles (Noon)



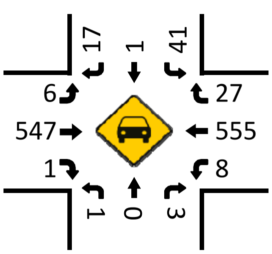
Pedestrians (Crosswalks)



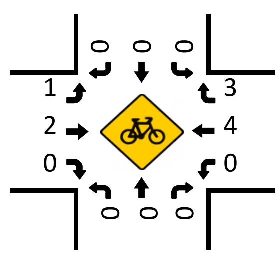
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Monte Cresta Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-007
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:30 PM - 03:30 PM	02:00 PM - 04:00 PM

Monte Cresta Ave — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	36	0	53	0	76	PM

EASTBOUND (Oak Park Blvd)

AM	NOON	PM	
0	0	466	⇦
0	0	0	↶ 0
0	0	26	↱ 0
0	0	506	→ 1
0	0	6	↴ 0

WESTBOUND (Oak Park Blvd)

	PM	NOON	AM
0 ↶	50	0	0
1 ←	429	0	0
0 ↰	2	0	0
0 ↰	1	0	0
⇨	565	0	0

CONTROL

2-Way Stop(NB/SB)

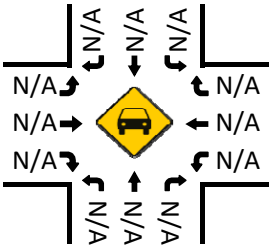
	AM	NOON	PM
TEV	0	0	1115
PHF			0.89

Monte Cresta Ave — NORTHBOUND

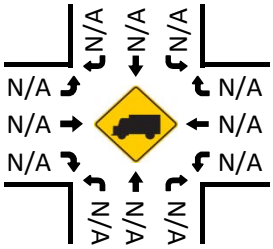
PM	8	0	1	0	5	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

0 0 1 0 ↰ ↰ ↑ ↱

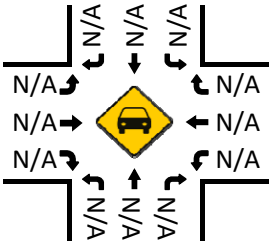
Cars (AM)



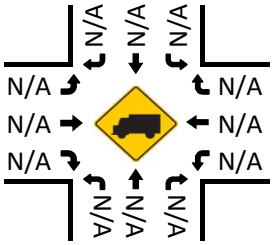
HT (AM)



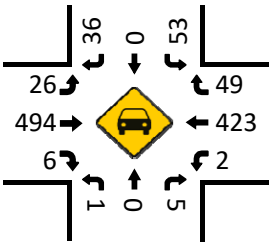
Cars (NOON)



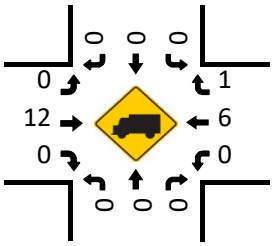
HT (NOON)



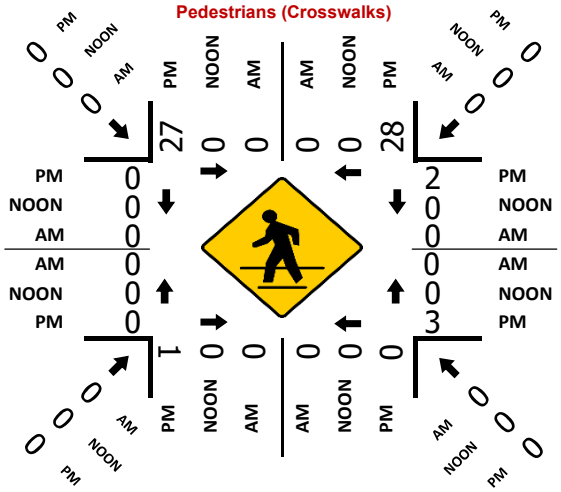
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Monticello Ave & Hawthorne Dr

Peak Hour Turning Movement Count

ID: 18-08260-008
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	
AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:15 PM - 05:15 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

Monticello Ave — SOUTHBOUND

AM	6	0	0	0	25	AM
NOON	0	0	0	0	0	NOON
PM	17	30	0	0	42	PM

EASTBOUND — Hawthorne Dr

AM	NOON	PM		
142	0	94	⇦	
123	0	0	↶	0
16	0	21	↱	0
0	0	0	→	1
27	0	67	↴	0
AM	NOON	PM		

WESTBOUND — Hawthorne Dr

PM	NOON	AM		
0	0	0	↰	0
0	0	0	←	0
0	0	0	↰	0
0	0	0	↶	0
0	0	0	⇨	
PM	NOON	AM		

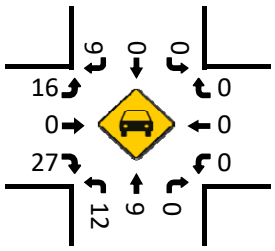
Monticello Ave — NORTHBOUND

PM	97	0	77	21	0	PM
NOON	0	0	0	0	0	NOON
AM	28	1	13	9	0	AM

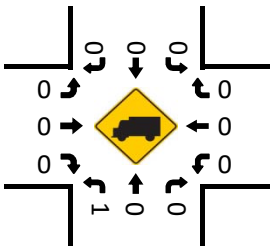
	0	1	0	0
	0	0	1	0

CONTROL			
2-Way Stop(SB/EB)			
TEV	195 AM	0 NOON	233 PM
PHF	0.62		0.87

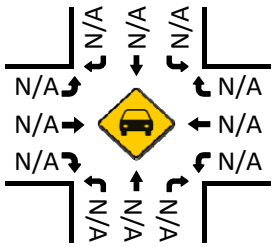
Cars (AM)



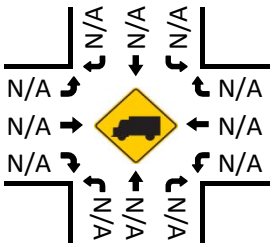
HT (AM)



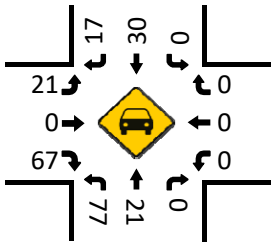
Cars (NOON)



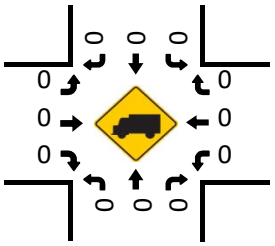
HT (NOON)



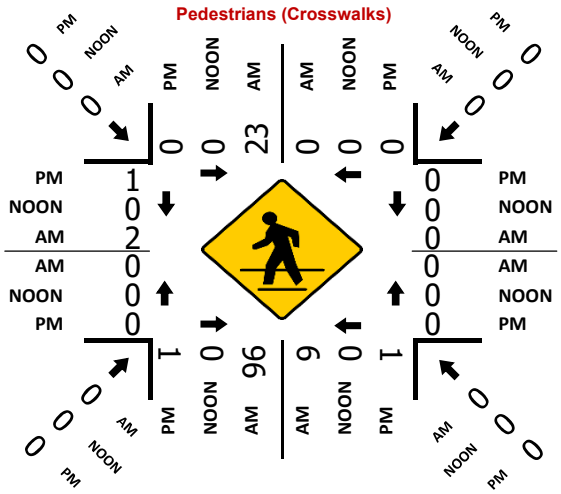
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Monticello Ave & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-009
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	02:00 PM - 06:00 PM

Monticello Ave — SOUTHBOUND

AM	75	198	1	0	298	AM
NOON	0	0	0	0	0	NOON
PM	31	66	0	0	138	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM		
92	0	77	⇦	
0	0	0	↶	0
53	0	18	↱	0
0	0	1	→	1
13	0	21	↴	0
AM	NOON	PM		

CONTROL

1-Way Stop(EB)

TEV	629 AM	0 NOON	309 PM
PHF	0.71		0.84

Santa Barbara Rd — WESTBOUND

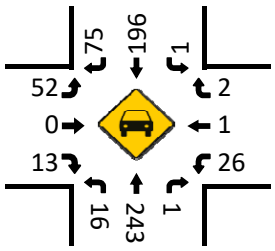
PM	NOON	AM		
4	0	2	↰	0
0	0	1	←	1
4	0	26	↰	0
0	0	0	↰	0
3	0	2	⇨	
PM	NOON	AM		

Monticello Ave — NORTHBOUND

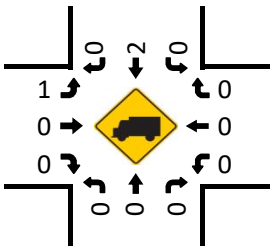
PM	91	0	46	116	2	PM
NOON	0	0	0	0	0	NOON
AM	237	0	16	243	1	AM

Monticello Ave

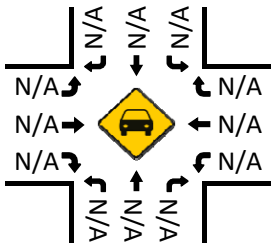
Cars (AM)



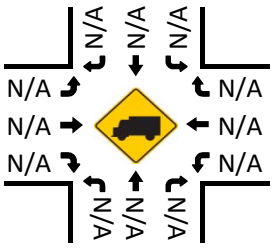
HT (AM)



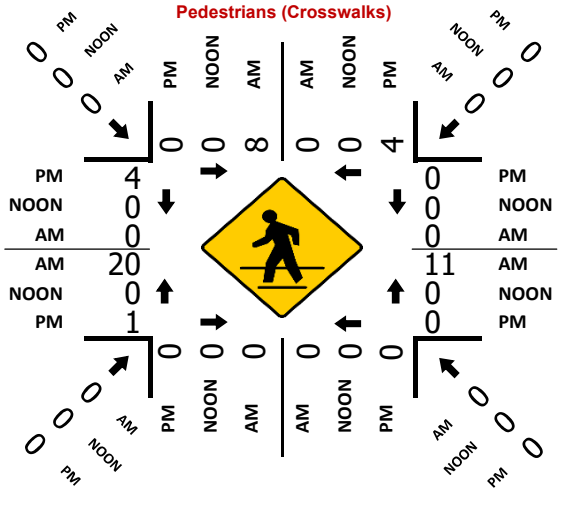
Cars (NOON)



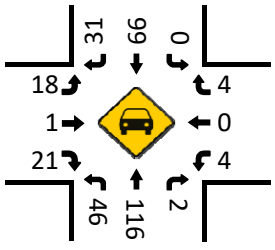
HT (NOON)



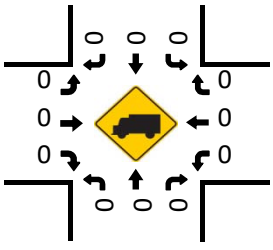
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Monticello Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08030-003
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Monticello Ave — SOUTHBOUND

AM	23	0	194	0	289	AM
NOON	0	0	0	0	0	NOON
PM	18	0	24	0	70	PM

Oak Park Blvd — EASTBOUND

AM	NOON	PM	
390	0	591	⇦
0	0	0	↶ 0
22	0	20	↱ 0
636	0	561	→ 0
0	0	0	↷ 0
AM	NOON	PM	

CONTROL

0

TEV	1509 AM	0 NOON	1246 PM
PHF	0.87		0.91

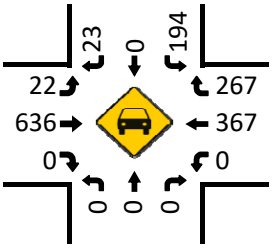
Oak Park Blvd — WESTBOUND

PM	NOON	AM	
50	0	267	0 ↰
573	0	367	0 ←
0	0	0	0 ↶
0	0	0	0 ↷
585	0	830	⇨
PM	NOON	AM	

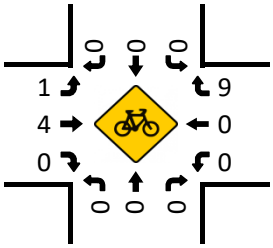
Monticello Ave — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

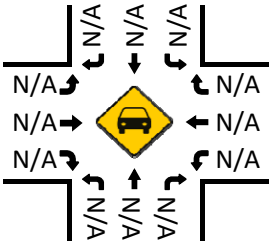
Total Vehicles (AM)



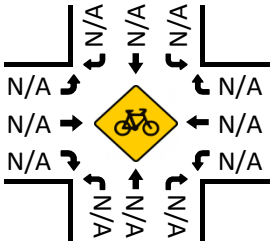
Bikes (AM)



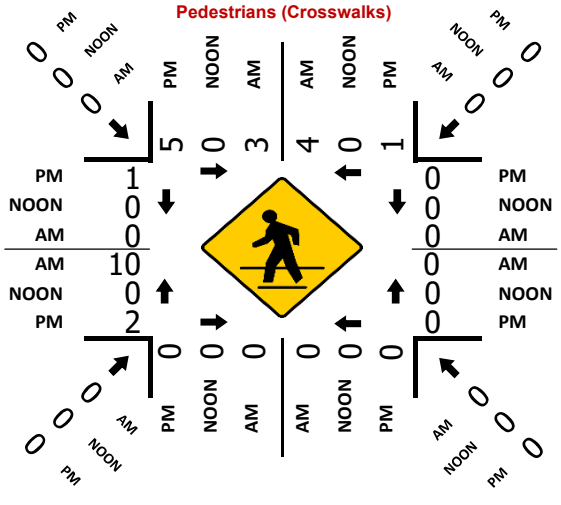
Total Vehicles (Noon)



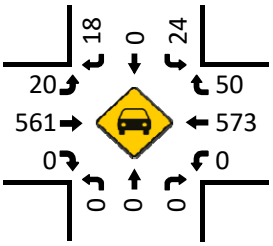
Bikes (NOON)



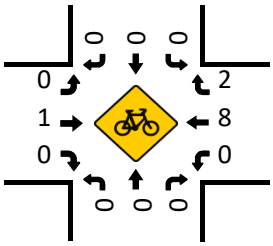
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Monticello Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-010
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	NONE	NONE
PM	02:15 PM - 03:15 PM	02:00 PM - 04:00 PM

Monticello Ave — SOUTHBOUND

	Right	Through	Left	U-Turn	Approach (Exit)
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	26	0	123	0	109
Lanes	0	1	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	Lanes
Exit	0	0	513	
U-Turn	0	0	0	0
Left	0	0	17	0
Through	0	0	536	1
Right	0	0	0	0

Oak Park Blvd — WESTBOUND

	PM	NOON	AM	Lanes
Right	92	0	0	0
Through	487	0	0	1
Left	0	0	0	0
U-Turn	0	0	0	0
Approach (Exit)	659	0	0	

Monticello Ave — NORTHBOUND

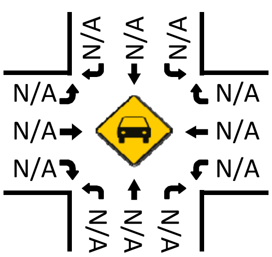
	Exit	U-Turn	Left	Through	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

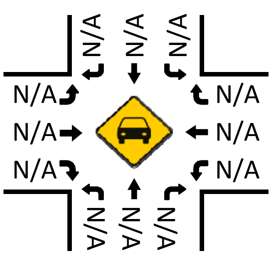
Signalized

	AM	NOON	PM
TEV	0	0	1281
PHF			0.87

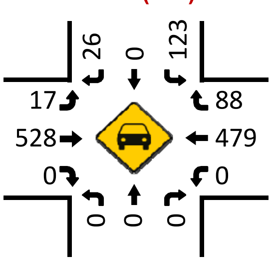
Cars (AM)



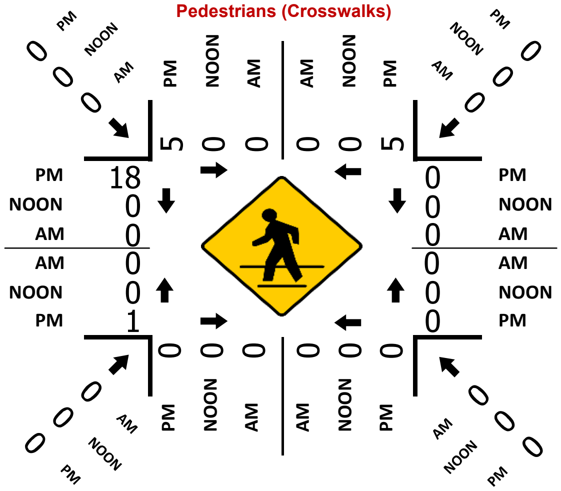
Cars (NOON)



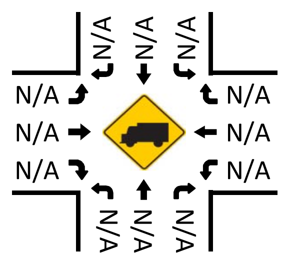
Cars (PM)



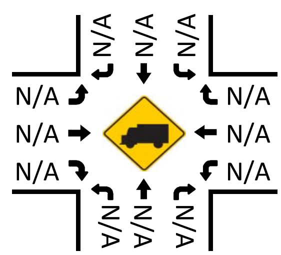
Pedestrians (Crosswalks)



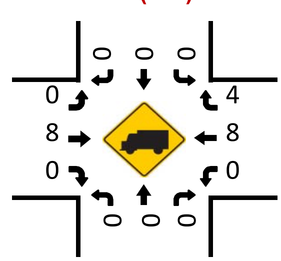
HT (AM)



HT (NOON)



HT (PM)



Prepared by National Data & Surveying Services

East Bay MUD Trail Crossing & Astrid Dr

Peak Hour Turning Movement Count

ID: 18-08260-011
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	02:00 PM - 06:00 PM

SOUTHBOUND — East Bay MUD Trail Crossing

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Astrid Dr

AM	NOON	PM	
83	0	157	⇦
0	0	0	↶ 0
0	0	0	↱ 0
398	0	104	→ 1
0	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Astrid Dr

PM	NOON	AM	
0	0	0	0 ↰
157	0	83	1 ←
0	0	0	0 ↙
0	0	0	0 ↲
104	0	398	⇨
PM	NOON	AM	

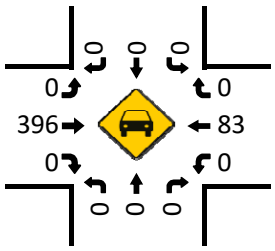
CONTROL: No Control

TEV	481	0	261
	AM	NOON	PM
PHF	0.82		0.91

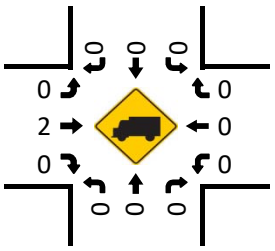
NORTHBOUND — East Bay MUD Trail Crossing

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

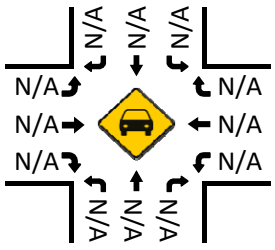
Cars (AM)



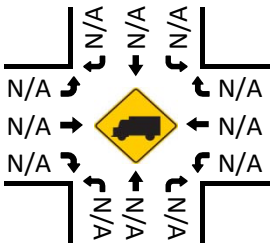
HT (AM)



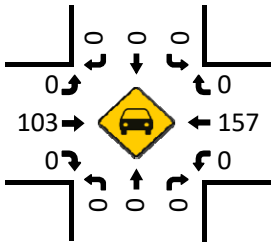
Cars (NOON)



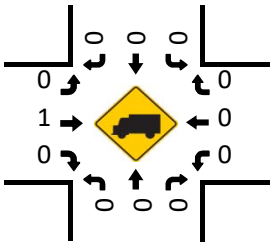
HT (NOON)



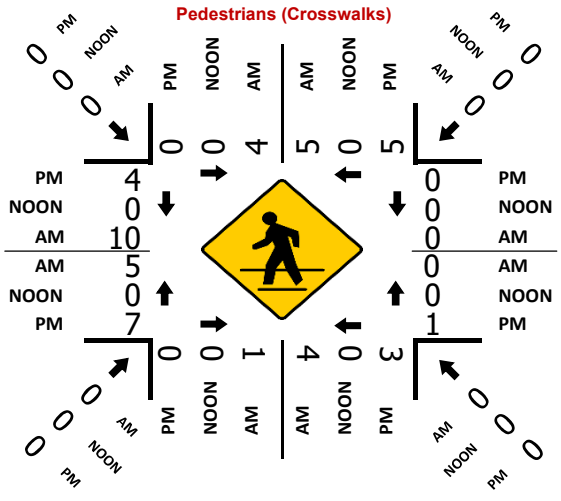
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



NORTHBOUND — East Bay MUD Trail Crossing

Prepared by National Data & Surveying Services

East Bay MUD Trail Crossing & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-012
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	02:00 PM - 06:00 PM

SOUTHBOUND — East Bay MUD Trail Crossing

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Oak Park Blvd

AM	NOON	PM	
736	0	718	⇦
0	0	0	↶ 0
0	0	0	↱ 0
864	0	611	→ 1
0	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Oak Park Blvd

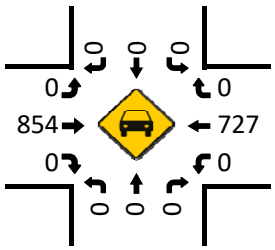
PM	NOON	AM	
0	0	0	↰ 0
718	0	736	← 1
0	0	0	↶ 0
0	0	0	↱ 0
611	0	864	⇨
PM	NOON	AM	

NORTHBOUND — East Bay MUD Trail Crossing

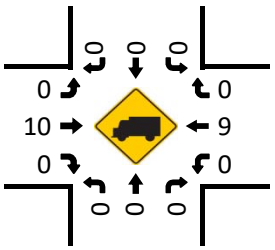
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL			
No Control			
TEV	1600	0	1329
	AM	NOON	PM
PHF	0.85		0.96

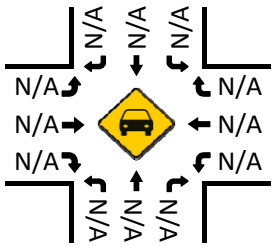
Cars (AM)



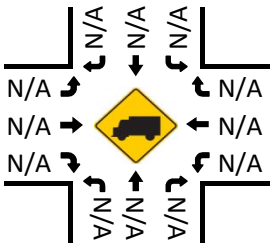
HT (AM)



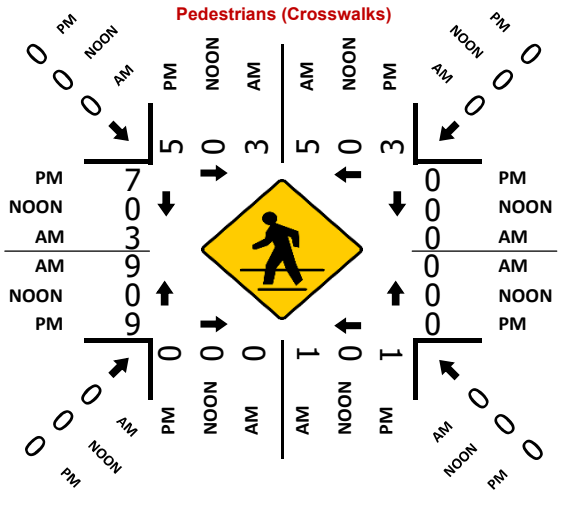
Cars (NOON)



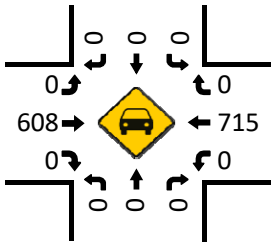
HT (NOON)



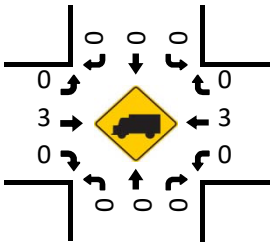
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Pleasant Valley Dr & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08030-002
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Pleasant Valley Dr – SOUTHBOUND

	Right	Through	Left	U-Turn	Out
AM	284	2	476	0	213
NOON	0	0	0	0	0
PM	174	5	292	0	359
	0	0	0	0	

Oak Park Blvd – EASTBOUND

	AM	NOON	PM	
Out	650	0	688	
U-Turn	5	0	3	0
Left	42	0	32	0
Through	720	0	534	0
Right	2	0	2	0

Oak Park Blvd – WESTBOUND

		PM	NOON	AM
Left	0	327	0	171
Through	0	511	0	361
Right	0	4	0	5
U-Turn	0	0	0	0
Out		826	0	1196

Pleasant Valley Dr – NORTHBOUND

	Out	U-Turn	Left	Through	Right
		0	0	0	0
PM	11	0	0	0	0
NOON	0	0	0	0	0
AM	9	0	0	0	0

CONTROL

0

	AM	NOON	PM
TEV	2068	0	1884
PHF	0.95		0.94

Total Vehicles (AM)

Approach	Left	Through	Right
Southbound	476	2	284
Eastbound	42	720	2
Westbound	5	361	171
Northbound	0	0	0

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

Approach	Left	Through	Right
Southbound	292	5	174
Eastbound	32	534	2
Westbound	4	511	327
Northbound	0	0	0

Bikes (AM)

Approach	Left	Through	Right
Southbound	5	0	0
Eastbound	0	5	0
Westbound	0	1	0
Northbound	0	0	0

Bikes (NOON)

All movements: N/A

Bikes (PM)

Approach	Left	Through	Right
Southbound	0	0	1
Eastbound	0	2	0
Westbound	0	8	2
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	Eastbound	11	0	4
North	Westbound	3	0	2
West	Southbound	0	0	1
West	Northbound	3	0	0
East	Southbound	0	0	0
East	Northbound	0	0	0
South	Eastbound	0	0	0
South	Westbound	2	0	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Main St & Pleasant Valley Dr

Peak Hour Turning Movement Count

ID: 18-08260-014
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Main St — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	556	740	0	0	230
NOON	0	0	0	0	0
PM	204	219	0	0	678
	0	2	0	0	

Pleasant Valley Dr — EASTBOUND

	AM	NOON	PM	
Departing	637	0	471	
U-Turn	0	0	0	0
Left	66	0	160	1
Thru	0	0	0	0
Right	110	0	186	1

Pleasant Valley Dr — WESTBOUND

		PM	NOON	AM
Right	0	0	0	0
Thru	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	0	0

Main St — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
		0	1	1	0
PM	405	0	267	518	0
NOON	0	0	0	0	0
AM	850	0	81	164	0

CONTROL

Signalized

	AM	NOON	PM
TEV	1717	0	1554
PHF	0.95		0.96

Cars (AM)

Approach	Right	Thru	Left
Southbound	547	726	0
Eastbound	108	0	66
Westbound	0	0	0
Northbound	0	160	80

HT (AM)

Approach	Right	Thru	Left
Southbound	9	14	0
Eastbound	2	0	0
Westbound	0	0	0
Northbound	0	4	1

Cars (NOON)

Approach	Right	Thru	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

HT (NOON)

Approach	Right	Thru	Left
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Cars (PM)

Approach	Right	Thru	Left
Southbound	202	218	0
Eastbound	185	0	159
Westbound	0	0	0
Northbound	0	517	266

HT (PM)

Approach	Right	Thru	Left
Southbound	2	1	0
Eastbound	1	0	1
Westbound	0	0	0
Northbound	0	1	1

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	Eastbound	0	0	0
North	Westbound	0	0	0
West	Southbound	0	0	4
West	Northbound	1	0	2
East	Southbound	0	0	0
East	Northbound	0	0	0
South	Eastbound	0	0	0
South	Westbound	0	0	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Main St & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-015
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Main St — SOUTHBOUND

	U-Turn	Left	Thru	Right	Northbound exit (Main St)
AM	10	837	0	0	249
NOON	0	0	0	0	0
PM	5	402	0	0	801
(red)	0	2	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	(red)
Westbound exit	16	0	39	
U-Turn	0	0	0	0
Left	35	0	60	0
Thru	0	0	0	1
Right	91	0	81	0

Oak Park Blvd — WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	0	0
Thru	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Eastbound exit		0	0	0

CONTROL

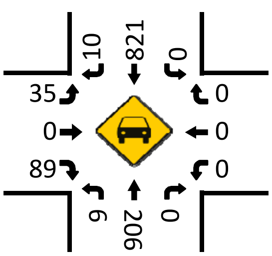
Signalized

	AM	NOON	PM
TEV	1193	0	1323
PHF	0.96		0.96

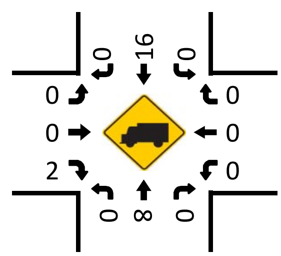
Main St — NORTHBOUND

	Southbound exit	U-Turn	Left	Thru	Right
(red)		0	1	2	0
PM	483	0	34	741	0
NOON	0	0	0	0	0
AM	928	0	6	214	0

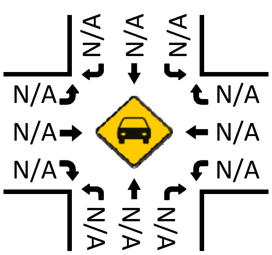
Cars (AM)



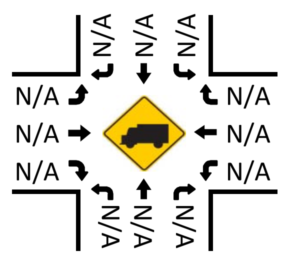
HT (AM)



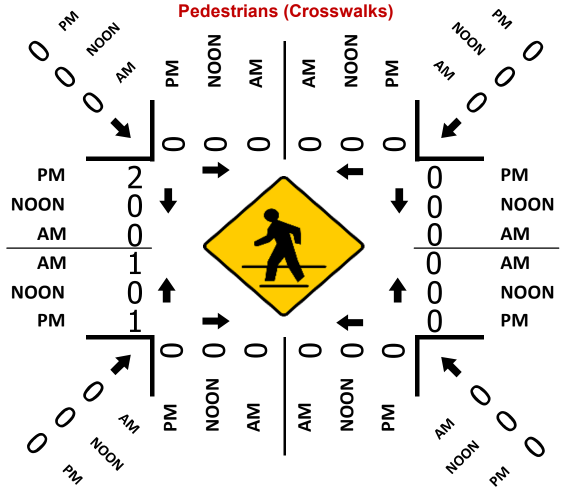
Cars (NOON)



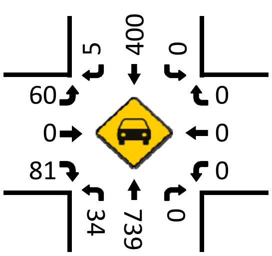
HT (NOON)



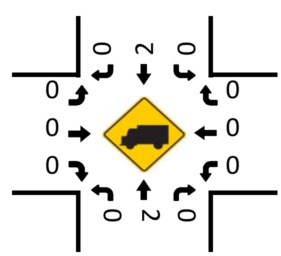
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Library Dwy & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-016
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	02:00 PM - 06:00 PM

SOUTHBOUND (Library Dwy)

	L	T	R	U	
AM	3	0	1	0	15
NOON	0	0	0	0	0
PM	14	0	24	0	57

EASTBOUND (Oak Park Blvd)

	L	T	R	U	
AM	469	0	576		
NOON	0	0	0	0	0
PM	6	0	24	0	0
AM	642	0	570	1	1
NOON	0	0	1	0	0
PM					

WESTBOUND (Oak Park Blvd)

	L	T	R	U	
PM	33	0	9	0	0
NOON	562	0	466	1	1
AM	0	0	0	0	0
PM	0	0	0	0	0
NOON					
AM	594	0	643		

NORTHBOUND (Library Dwy)

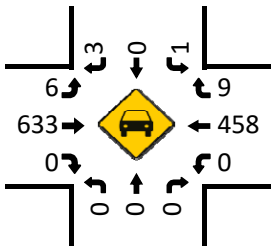
	L	T	R	U	
PM	1	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

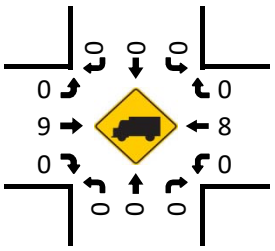
No Control

TEV	1127	0	1228
	AM	NOON	PM
PHF	0.91		0.98

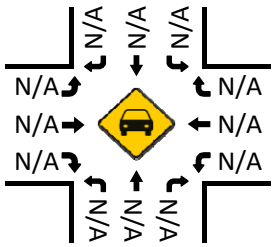
Cars (AM)



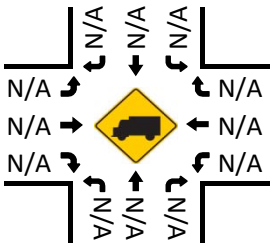
HT (AM)



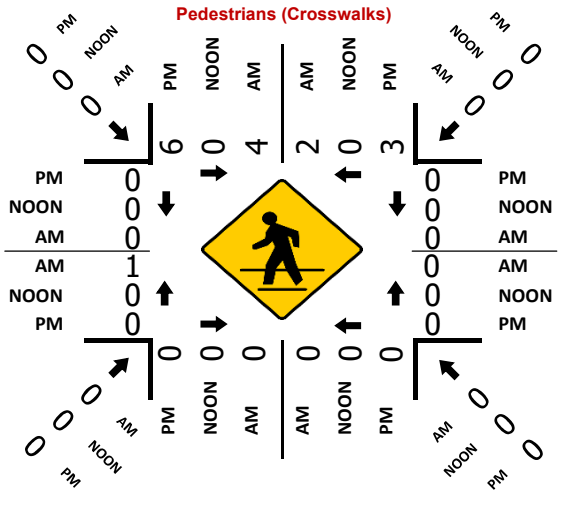
Cars (NOON)



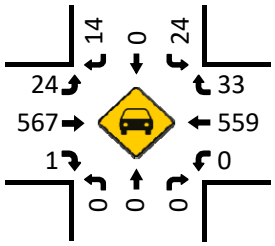
HT (NOON)



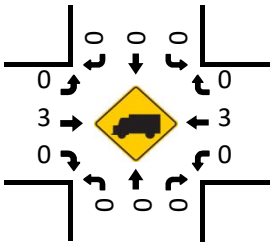
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Library Dwy & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-017
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
02:00 PM - 03:00 PM	02:00 PM - 06:00 PM

Library Dwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM		
110	0	92	⇦	
1	0	1	↶	0
0	0	0	↱	0
113	0	59	→	1
6	0	18	↴	0
AM	NOON	PM		

Santa Barbara Rd — WESTBOUND

PM	NOON	AM		
0	0	0	↰	0
91	0	109	←	1
2	0	1	↰	0
1	0	0	↰	0
60	0	113	⇨	
PM	NOON	AM		

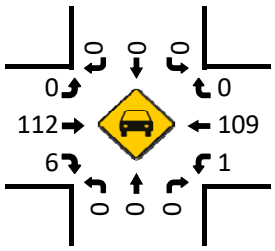
CONTROL: No Control

TEV	230 AM	0 NOON	172 PM
PHF	0.56		0.42

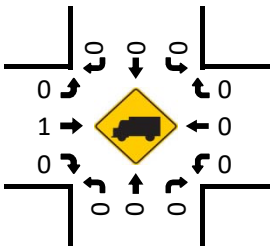
Library Dwy — NORTHBOUND

PM	20	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	7	0	0	0	0	AM

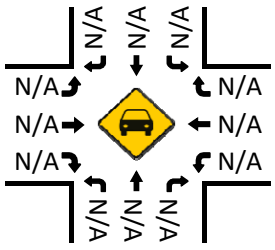
Cars (AM)



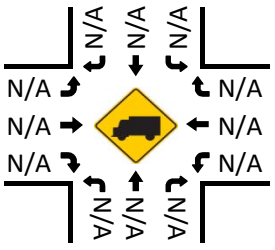
HT (AM)



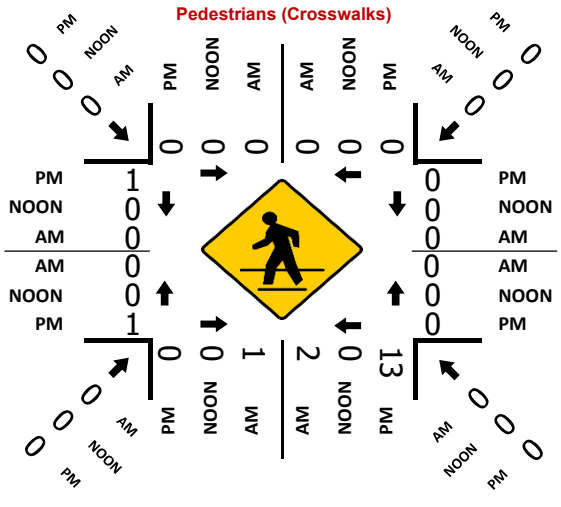
Cars (NOON)



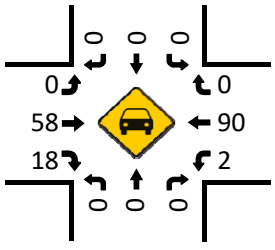
HT (NOON)



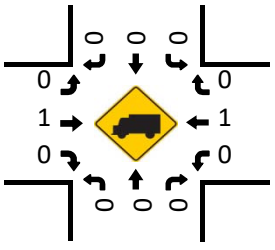
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Library Dwy & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-018
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
02:00 PM - 03:00 PM	02:00 PM - 06:00 PM

SOUTHBOUND (Library Dwy)

AM	25	0	9	0	71	AM
NOON	0	0	0	0	0	NOON
PM	48	0	9	0	45	PM

EASTBOUND (Santa Barbara Rd)

AM	NOON	PM	
109	0	89	
0	0	0	0
59	0	33	0
55	0	26	1
0	0	0	0

WESTBOUND (Santa Barbara Rd)

PM	NOON	AM	
12	0	11	0
25	0	81	1
0	0	0	0
1	0	0	0
41	0	66	

NORTHBOUND (Library Dwy)

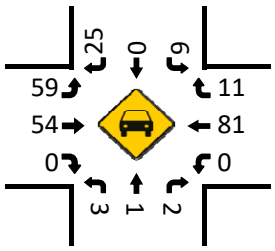
PM	0	0	16	0	5	PM
NOON	0	0	0	0	0	NOON
AM	0	0	3	1	2	AM

	0	1	0	0
	0	0	1	0

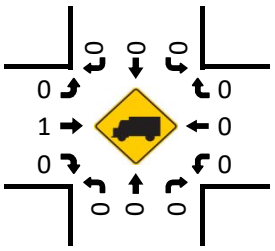
CONTROL: 1-Way Stop(SB)

TEV	246 AM	0 NOON	175 PM
PHF	0.55		0.47

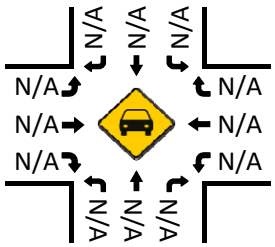
Cars (AM)



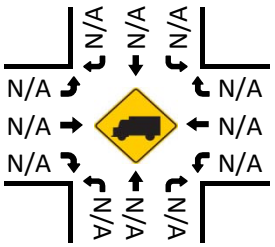
HT (AM)



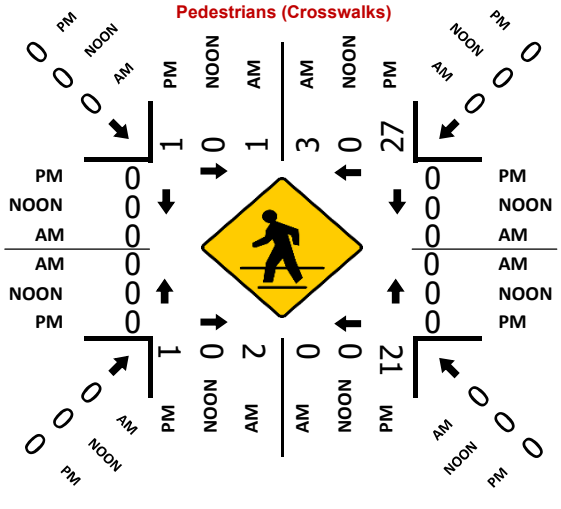
Cars (NOON)



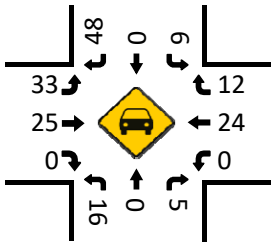
HT (NOON)



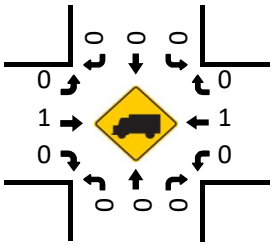
Pedestrians (Crosswalks)



Cars (PM)



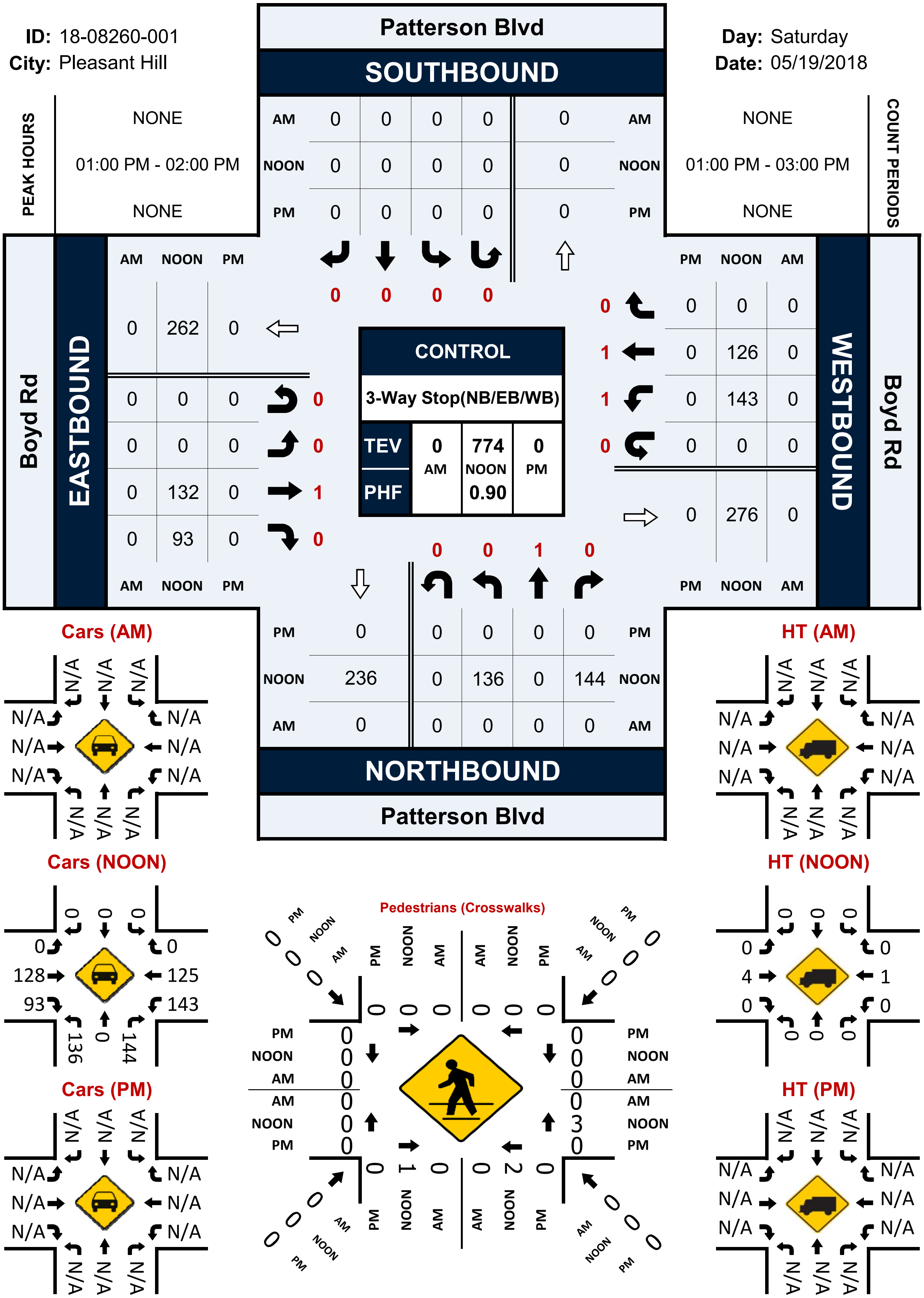
HT (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Boyd Rd

Peak Hour Turning Movement Count



Prepared by National Data & Surveying Services

Patterson Blvd & Soule Ave

Peak Hour Turning Movement Count

ID: 18-08260-002
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Patterson Blvd – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	12	215	7	0	280
PM	0	0	0	0	0
Lanes	0	1	0	0	

Soule Ave – EASTBOUND

	Lanes	AM	NOON	PM
Departing		0	26	0
U-Turn	0	0	0	0
Left	0	0	5	0
Thru	1	0	1	0
Right	0	0	13	0

Soule Ave – WESTBOUND

	Lanes	PM	NOON	AM
Right	0	0	10	0
Thru	1	0	4	0
Left	0	0	3	0
U-Turn	0	0	0	0
Departing		0	15	0

Patterson Blvd – NORTHBOUND

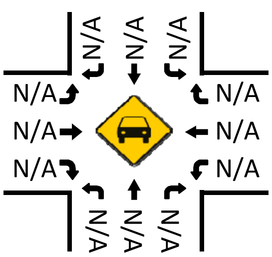
	Departing	U-Turn	Left	Thru	Right
Lanes		0	0	1	0
PM	0	0	0	0	0
NOON	231	0	10	265	7
AM	0	0	0	0	0

CONTROL

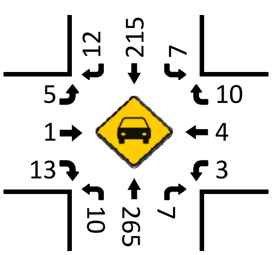
2-Way Stop(EB/WB)

	AM	NOON	PM
TEV	0	552	0
PHF		0.88	

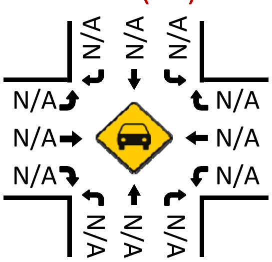
Cars (AM)



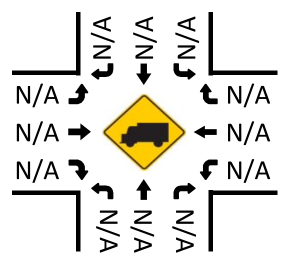
Cars (NOON)



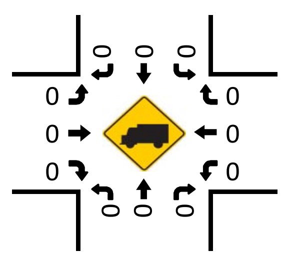
Cars (PM)



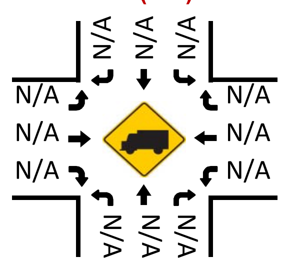
HT (AM)



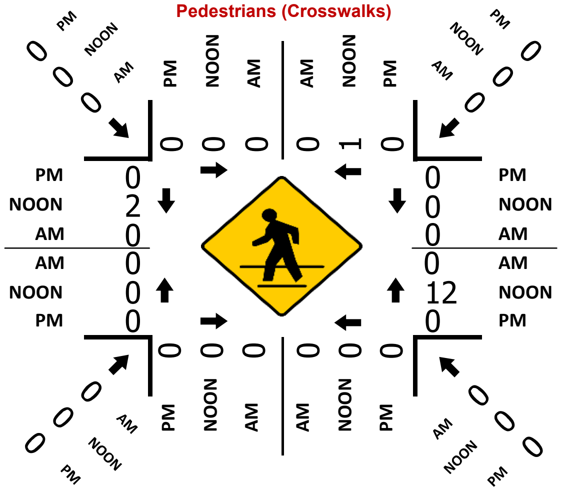
HT (NOON)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Patterson Blvd & Hawthorne Dr

Peak Hour Turning Movement Count

ID: 18-08260-003
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS

AM	NONE
NOON	01:30 PM - 02:30 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	01:00 PM - 03:00 PM
PM	NONE

SOUTHBOUND — Patterson Blvd

AM	0	0	0	0	0	AM
NOON	23	133	55	1	238	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Hawthorne Dr

AM	NOON	PM	
0	29	0	
0	0	0	0
0	13	0	0
0	1	0	1
0	3	0	0
AM	NOON	PM	

WESTBOUND — Hawthorne Dr

PM	NOON	AM	
0	53	0	0
0	0	0	1
0	2	0	0
0	0	0	0
0	60	0	
PM	NOON	AM	

NORTHBOUND — Patterson Blvd

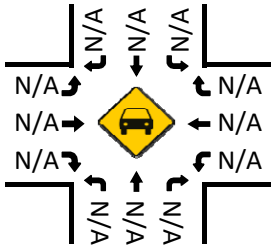
PM	0	0	0	0	0	PM
NOON	138	0	6	171	4	NOON
AM	0	0	0	0	0	AM

0 1 0 0 — 0 0 1 0

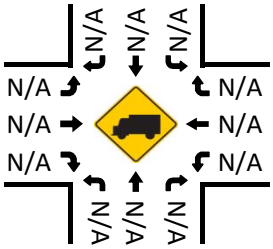
CONTROL: 2-Way Stop(EB/WB)

	AM	NOON	PM
TEV	0	465	0
PHF		0.89	

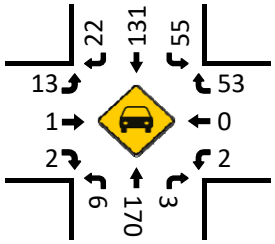
Cars (AM)



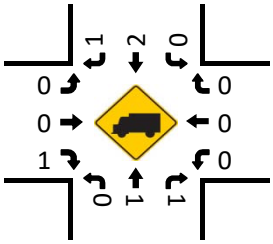
HT (AM)



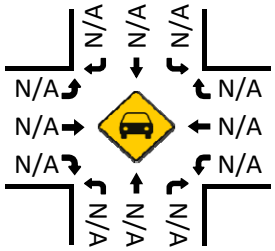
Cars (NOON)



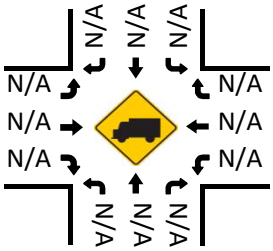
HT (NOON)



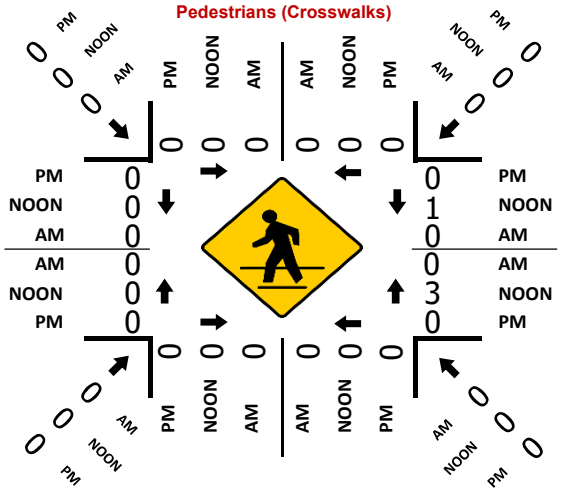
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Patterson Blvd & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-004
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	01:00 PM - 03:00 PM
PM	NONE

Patterson Blvd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	158	19	0	173	NOON
PM	0	0	0	0	0	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

Santa Barbara Rd — WESTBOUND

PM	NOON	AM	
0	17	0	0
0	0	0	1
0	8	0	0
0	0	0	0
0	35	0	
PM	NOON	AM	

CONTROL: 1-Way Stop(WB)

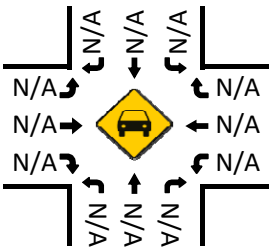
	AM	NOON	PM
TEV	0	375	0
PHF		0.91	

Patterson Blvd — NORTHBOUND

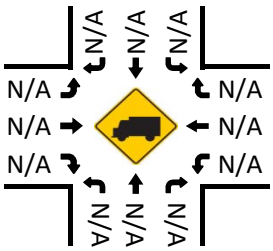
PM	0	0	0	0	0	PM
NOON	167	1	0	156	16	NOON
AM	0	0	0	0	0	AM

0 1 0 0 — 0 0 1 0

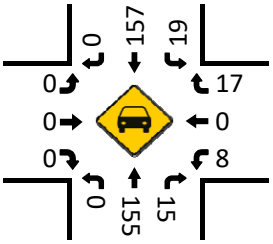
Cars (AM)



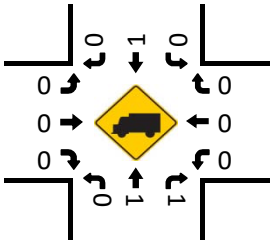
HT (AM)



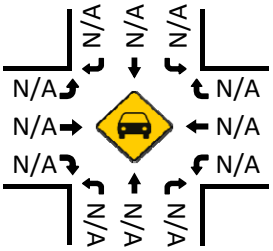
Cars (NOON)



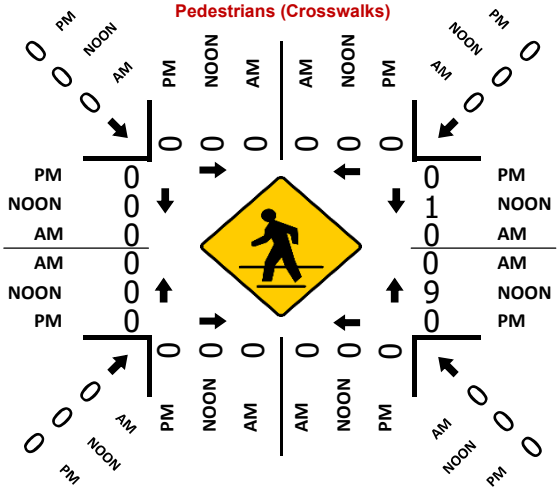
HT (NOON)



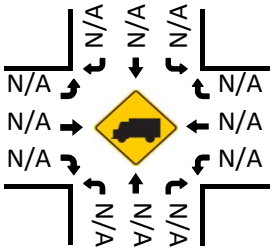
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



Prepared by National Data & Surveying Services

Patterson Blvd & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-005
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS	
AM	NONE
NOON	01:15 PM - 02:15 PM
PM	NONE

COUNT PERIODS	
AM	NONE
NOON	01:00 PM - 03:00 PM
PM	NONE

SOUTHBOUND — Patterson Blvd

AM	0	0	0	0	0	AM
NOON	29	111	75	0	214	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Oak Park Blvd

AM	NOON	PM	
0	276	0	
0	0	0	0
0	31	0	1
0	212	0	1
0	55	0	0
AM	NOON	PM	

WESTBOUND — Oak Park Blvd

PM	NOON	AM	
0	50	0	1
0	184	0	1
0	68	0	1
0	0	0	0
0	363	0	
PM	NOON	AM	

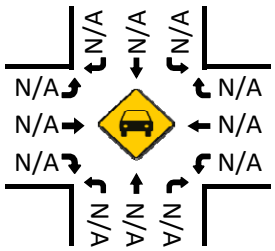
NORTHBOUND — Patterson Blvd

PM	0	0	0	0	0	PM
NOON	234	0	63	133	76	NOON
AM	0	0	0	0	0	AM

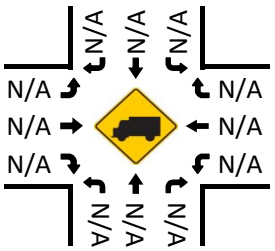
	0	1	1	0

CONTROL			
Signalized			
TEV	0 AM	1087 NOON	0 PM
PHF		0.93	

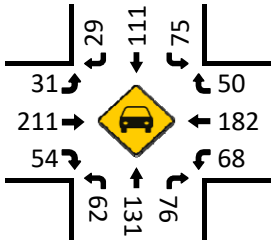
Cars (AM)



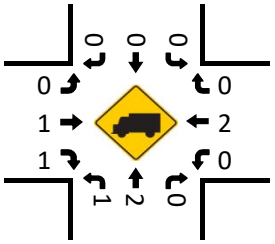
HT (AM)



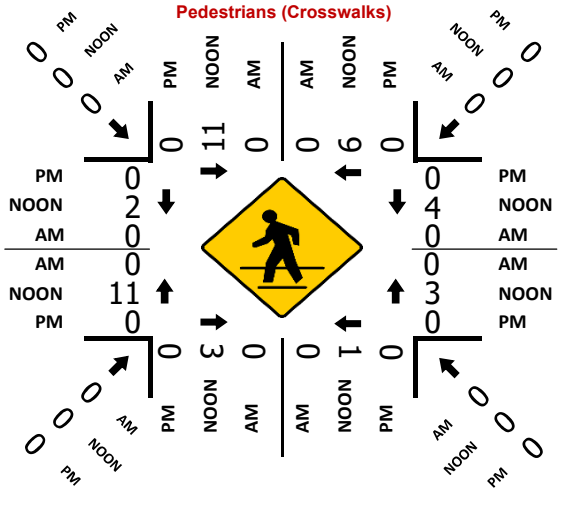
Cars (NOON)



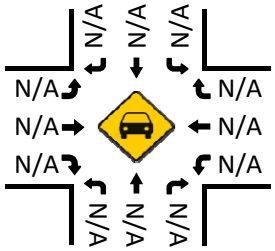
HT (NOON)



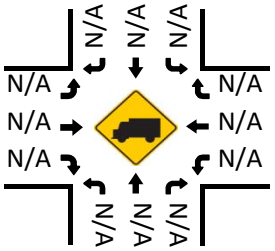
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Monte Cresta Ave & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-006
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Monte Cresta Ave — SOUTHBOUND

	↲	↓	↳	U-turn	⇧ (departing)
AM	0	0	0	0	0
NOON	1	8	2	0	9
PM	0	0	0	0	0
(red)	0	1	0	0	

Santa Barbara Rd — EASTBOUND

	AM	NOON	PM	(red)
⇦ (departing)	0	30	0	
U-turn	0	0	0	0
Left	0	0	0	0
Through	0	27	0	1
Right	0	7	0	0

Santa Barbara Rd — WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	3	0
Through	1	0	19	0
Left	0	0	13	0
U-turn	0	0	2	0
⇨ (departing)		0	40	0

Monte Cresta Ave — NORTHBOUND

	⇩ (departing)	U-turn	Left	Through	Right
(red)		0	0	1	0
PM	0	0	0	0	0
NOON	28	0	10	6	9
AM	0	0	0	0	0

CONTROL

4-Way Stop

	AM	NOON	PM
TEV	0	107	0
PHF		0.92	

Cars (AM)
SB: N/A N/A N/A; EB: N/A N/A N/A; WB: N/A N/A N/A; NB: N/A N/A N/A

Cars (NOON)
SB: Right 1, Through 8, Left 2; EB: Left 0, Through 27, Right 7; WB: Right 3, Through 19, Left 13; NB: Left 10, Through 5, Right 9

Cars (PM)
SB: N/A N/A N/A; EB: N/A N/A N/A; WB: N/A N/A N/A; NB: N/A N/A N/A

HT (AM)
SB: N/A N/A N/A; EB: N/A N/A N/A; WB: N/A N/A N/A; NB: N/A N/A N/A

HT (NOON)
SB: 0 0 0; EB: 0 0 0; WB: 0 0 0; NB: Left 0, Through 1, Right 0

HT (PM)
SB: N/A N/A N/A; EB: N/A N/A N/A; WB: N/A N/A N/A; NB: N/A N/A N/A

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	→	0	0	0
North	←	0	3	0
West	↓	0	3	0
West	↑	0	0	0
East	↓	0	0	0
East	↑	0	1	0
South	→	0	0	0
South	←	0	1	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Monte Cresta Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-007
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS		COUNT PERIODS
AM	NONE	NONE
NOON	01:30 PM - 02:30 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Monte Cresta Ave — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	8	0	24	0	34
PM	0	0	0	0	0
Lanes	0	1	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	Lanes
Departing	0	335	0	
U-Turn	0	0	0	0
Left	0	9	0	0
Through	0	380	0	1
Right	0	0	0	0

Oak Park Blvd — WESTBOUND

	PM	NOON	AM	Lanes
Right	0	25	0	0
Through	0	327	0	1
Left	0	5	0	0
U-Turn	0	1	0	0
Departing	0	411	0	

Monte Cresta Ave — NORTHBOUND

	Departing	U-Turn	Left	Through	Right
Lanes		0	0	1	0
PM	0	0	0	0	0
NOON	5	0	0	0	6
AM	0	0	0	0	0

CONTROL

2-Way Stop(NB/SB)

	AM	NOON	PM
TEV	0	785	0
PHF		0.94	

Cars (AM)

All movements: N/A

Cars (NOON)

Approach	Left	Through	Right
SB	23	0	8
EB	9	379	0
WB	5	325	24
NB	0	0	6

Cars (PM)

All movements: N/A

HT (AM)

All movements: N/A

HT (NOON)

Approach	Left	Through	Right
SB	1	0	0
EB	0	1	0
WB	0	2	1
NB	0	0	0

HT (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	→	0	5	0
North	←	0	1	0
South	→	0	1	0
South	←	0	0	0
West	↓	0	0	0
West	↑	0	0	0
East	↓	0	0	0
East	↑	0	1	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Monticello Ave & Hawthorne Dr

Peak Hour Turning Movement Count

ID: 18-08260-008
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Monticello Ave – SOUTHBOUND

	Right	Thru	Left	U-Turn	(Exit)
AM	0	0	0	0	0
NOON	1	0	0	0	2
PM	0	0	0	0	0
	0	1	0	0	

Hawthorne Dr – EASTBOUND

	AM	NOON	PM	
(Exit)	0	82	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	0	1
Right	0	59	0	0

Hawthorne Dr – WESTBOUND

		PM	NOON	AM
Right	0	0	0	0
Thru	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
(Exit)		0	0	0

Monticello Ave – NORTHBOUND

	(Exit)	U-Turn	Left	Thru	Right
		0	0	1	0
PM	0	0	0	0	0
NOON	59	0	81	2	0
AM	0	0	0	0	0

CONTROL

2-Way Stop(SB/EB)

	AM	NOON	PM
TEV	0	143	0
PHF		0.67	

Cars (AM)

	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

Cars (NOON)

	Left	Thru	Right
SB	0	0	1
EB	0	0	58
WB	0	0	0
NB	81	2	0

Cars (PM)

	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

HT (AM)

	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

HT (NOON)

	Left	Thru	Right
SB	0	0	0
EB	0	0	1
WB	0	0	0
NB	0	0	0

HT (PM)

	Left	Thru	Right
SB	N/A	N/A	N/A
EB	N/A	N/A	N/A
WB	N/A	N/A	N/A
NB	N/A	N/A	N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (eastbound)	0	0	0
North (westbound)	0	0	0
South (eastbound)	0	1	0
South (westbound)	0	0	0
West (southbound)	0	0	0
West (northbound)	0	0	0
East (southbound)	0	0	0
East (northbound)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Monticello Ave & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-009
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
NONE	NONE

Monticello Ave — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	13	66	0	0	73	NOON
PM	0	0	0	0	0	PM

Santa Barbara Rd — EASTBOUND

AM	NOON	PM	
0	46	0	
0	1	0	0
0	25	0	0
0	1	0	1
0	41	0	0

Santa Barbara Rd — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	2	0	1
0	0	0	0
0	0	0	0
0	1	0	

Monticello Ave — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	107	0	30	48	0	NOON
AM	0	0	0	0	0	AM

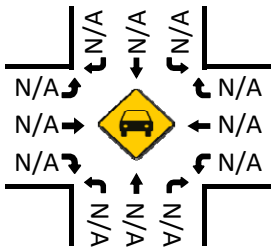
	0	1	0	0
	0	0	1	0

CONTROL

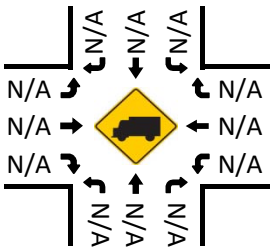
1-Way Stop(EB)

TEV	0 AM	227 NOON	0 PM
PHF		0.79	

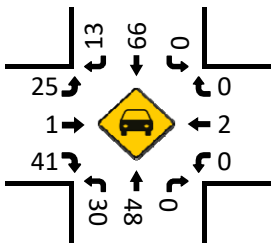
Cars (AM)



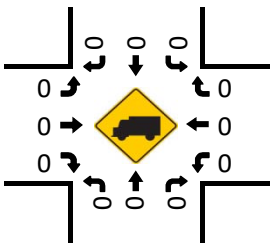
HT (AM)



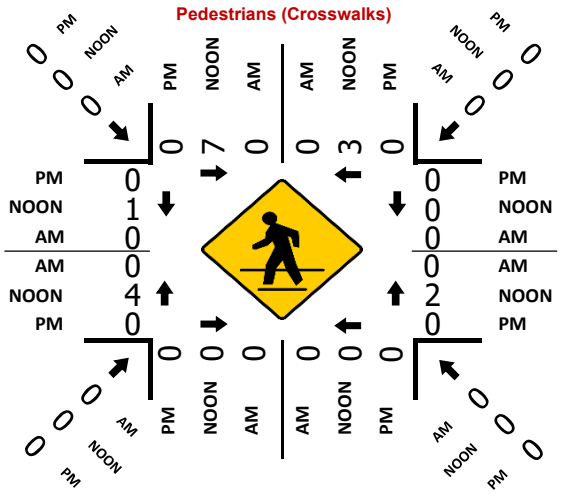
Cars (NOON)



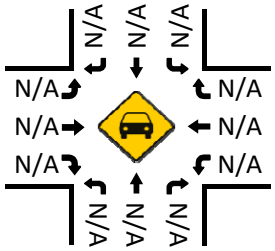
HT (NOON)



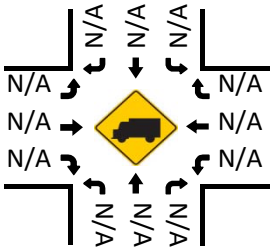
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Monticello Ave & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-010
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Monticello Ave – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	9	0	89	0	61
PM	0	0	0	0	0
(red)	0	1	0	0	

Oak Park Blvd – EASTBOUND

	AM	NOON	PM	(red)
Departing	0	377	0	
U-Turn	0	0	0	0
Left	0	13	0	0
Thru	0	379	0	1
Right	0	0	0	0

Oak Park Blvd – WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	48	0
Thru	1	0	368	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	468	0

Monticello Ave – NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
(red)		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	0	906	0
PHF		0.91	

Cars (AM) / Cars (PM) / HT (AM) / HT (PM)

All movements: N/A

Cars (NOON)

Approach	Left	Thru	Right
Southbound	89	0	9
Eastbound	13	377	0
Westbound	0	365	48
Northbound	0	0	0

HT (NOON)

Approach	Left	Thru	Right
Southbound	0	0	0
Eastbound	0	2	0
Westbound	0	3	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (west half)	0	1	0
North (east half)	0	2	0
West (north half)	0	1	0
West (south half)	0	1	0
East (north half)	0	0	0
East (south half)	0	0	0
South (west half)	0	0	0
South (east half)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

East Bay MUD Trail Crossing & Astrid Dr

Peak Hour Turning Movement Count

ID: 18-08260-011
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

East Bay MUD Trail Crossing – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departure
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
Peak	0	0	0	0	

Astrid Dr – EASTBOUND

	AM	NOON	PM	Peak
Departure	0	66	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	77	0	1
Right	0	0	0	0

Astrid Dr – WESTBOUND

	Peak	PM	NOON	AM
Right	0	0	0	0
Thru	1	0	66	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departure		0	77	0

East Bay MUD Trail Crossing – NORTHBOUND

	Departure	U-Turn	Left	Thru	Right
Peak		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

No Control

	AM	NOON	PM
TEV	0	143	0
PHF		0.97	

Cars and HT

Movement	Cars (AM)	Cars (NOON)	Cars (PM)	HT (AM)	HT (NOON)	HT (PM)
SB Right	N/A	0	N/A	N/A	0	N/A
SB Thru	N/A	0	N/A	N/A	0	N/A
SB Left	N/A	0	N/A	N/A	0	N/A
EB Left	N/A	0	N/A	N/A	0	N/A
EB Thru	N/A	77	N/A	N/A	0	N/A
EB Right	N/A	0	N/A	N/A	0	N/A
WB Right	N/A	0	N/A	N/A	0	N/A
WB Thru	N/A	66	N/A	N/A	0	N/A
WB Left	N/A	0	N/A	N/A	0	N/A
NB Left	N/A	0	N/A	N/A	0	N/A
NB Thru	N/A	0	N/A	N/A	0	N/A
NB Right	N/A	0	N/A	N/A	0	N/A

Pedestrians (Crosswalks)

Crosswalk / direction	AM	NOON	PM
North leg, eastbound	0	0	0
North leg, westbound	0	0	0
West leg, southbound	0	4	0
West leg, northbound	0	4	0
East leg, southbound	0	0	0
East leg, northbound	0	0	0
South leg, eastbound	0	1	0
South leg, westbound	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

East Bay MUD Trail Crossing & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-012
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS		COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

East Bay MUD Trail Crossing — SOUTHBOUND

	Right	Through	Left	U-Turn	Departure
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
	0	0	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	
Departure	0	437	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	0	428	0	1
Right	0	0	0	0

Oak Park Blvd — WESTBOUND

		PM	NOON	AM
Right	0	0	0	0
Through	1	0	437	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departure		0	428	0

East Bay MUD Trail Crossing — NORTHBOUND

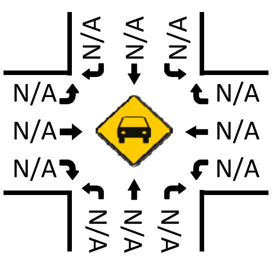
	Departure	U-Turn	Left	Through	Right
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

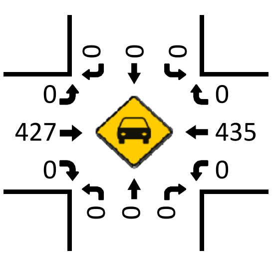
No Control

	AM	NOON	PM
TEV	0	865	0
PHF		0.90	

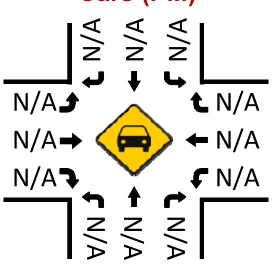
Cars (AM)



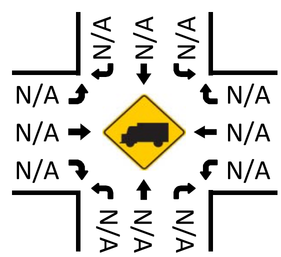
Cars (NOON)



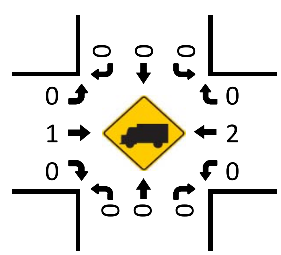
Cars (PM)



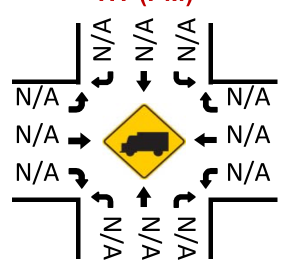
HT (AM)



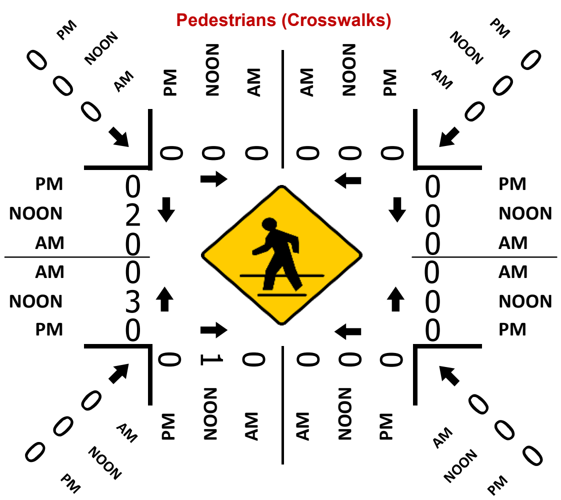
HT (NOON)



HT (PM)



Pedestrians (Crosswalks)



Crosswalk	Direction	AM	NOON	PM
North	Eastbound	0	0	0
North	Westbound	0	0	0
West	Southbound	0	2	0
West	Northbound	0	3	0
East	Southbound	0	0	0
East	Northbound	0	0	0
South	Eastbound	0	1	0
South	Westbound	0	0	0
Diagonals	all	0	0	0

Prepared by National Data & Surveying Services

Pleasant Valley Dr & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-013
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS	COUNT PERIODS
AM: NONE	AM: NONE
NOON: 01:30 PM - 02:30 PM	NOON: 01:00 PM - 03:00 PM
PM: NONE	PM: NONE

SOUTHBOUND — Pleasant Valley Dr

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	189	3	213	0	253	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Oak Park Blvd

AM	NOON	PM	
0	454	0	
0	5	0	0
0	38	0	1
0	344	0	1.5
0	0	0	0.5

WESTBOUND — Oak Park Blvd

PM	NOON	AM	
0	215	0	1
0	260	0	2
0	7	0	1
0	0	0	0
0	557	0	

NORTHBOUND — Pleasant Valley Dr

	L	T	R	U	Total	
PM	0	0	0	0	0	PM
NOON	10	0	0	0	0	NOON
AM	0	0	0	0	0	AM

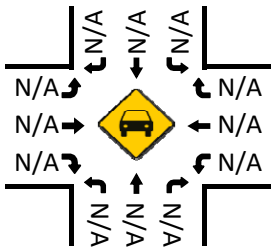
	L	T	R	U
	1	0.5	1.5	0
	0	0	1	0

CONTROL

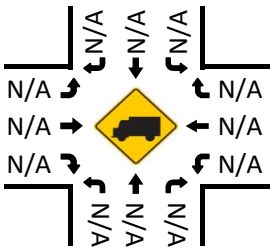
Signalized

	AM	NOON	PM
TEV	0	1274	0
PHF		0.96	

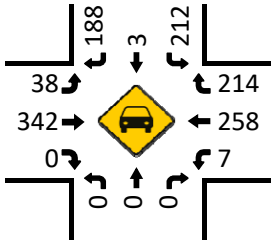
Cars (AM)



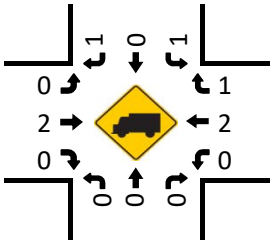
HT (AM)



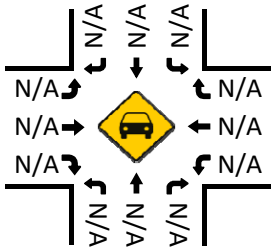
Cars (NOON)



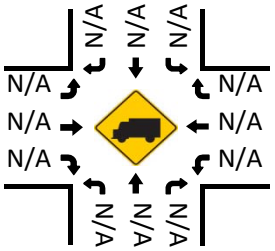
HT (NOON)



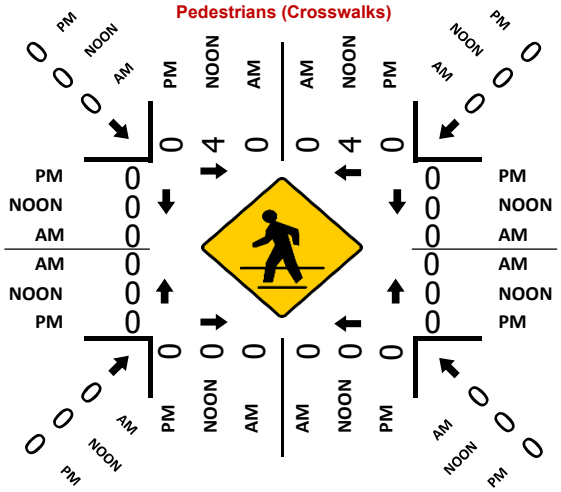
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Main St & Pleasant Valley Dr

Peak Hour Turning Movement Count

ID: 18-08260-014
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
NONE	NONE

Main St — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	197	289	0	0	432	NOON
PM	0	0	0	0	0	PM

Pleasant Valley Dr — EASTBOUND

AM	NOON	PM	
0	372	0	
0	0	0	0
0	82	0	1
0	0	0	0
0	174	0	1
AM	NOON	PM	

Pleasant Valley Dr — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

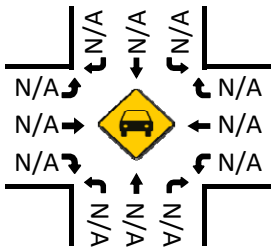
Main St — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	463	0	175	350	0	NOON
AM	0	0	0	0	0	AM

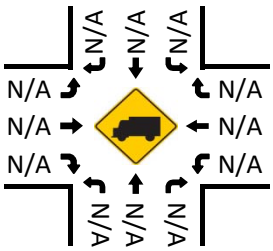
	0	2	0	0
	0	1	1	0

CONTROL			
Signalized			
TEV	0 AM	1267 NOON	0 PM
PHF		0.97	

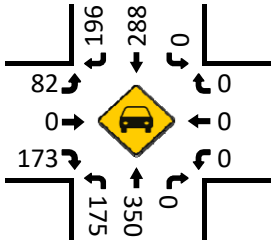
Cars (AM)



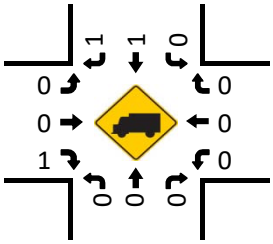
HT (AM)



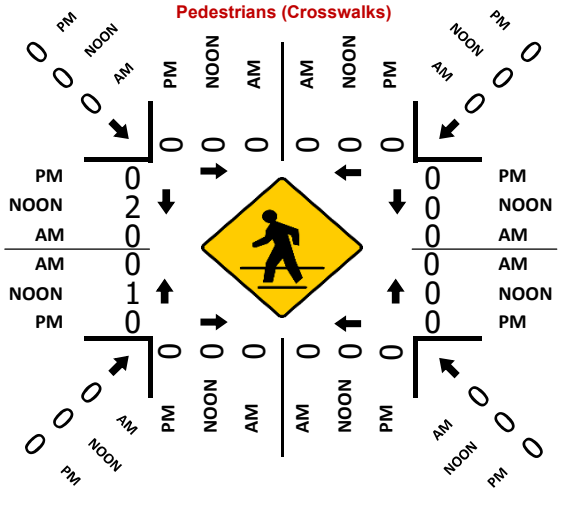
Cars (NOON)



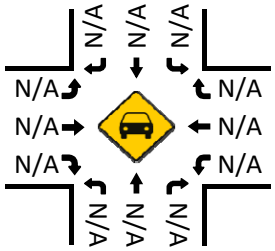
HT (NOON)



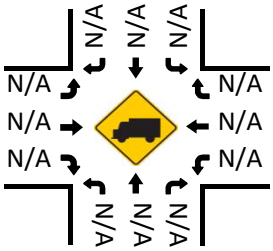
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Main St & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-015
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Main St — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	3	458	0	0	527
PM	0	0	0	0	0
HT	0	2	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	HT
Departing	0	24	0	
U-Turn	0	0	0	0
Left	0	44	0	0
Through	0	0	0	1
Right	0	112	0	0

Oak Park Blvd — WESTBOUND

	HT	PM	NOON	AM
Right	0	0	0	0
Through	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	0	0

Main St — NORTHBOUND

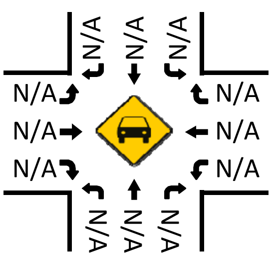
	Departing	U-Turn	Left	Through	Right
HT		0	1	2	0
PM	0	0	0	0	0
NOON	570	0	21	483	0
AM	0	0	0	0	0

CONTROL

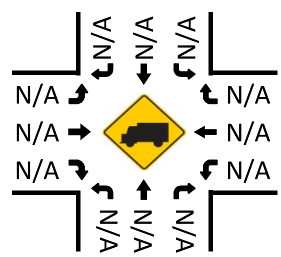
Signalized

	AM	NOON	PM
TEV	0	1121	0
PHF		0.96	

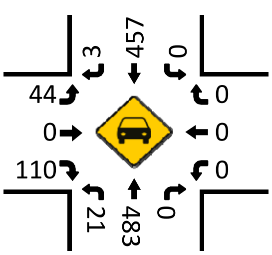
Cars (AM)



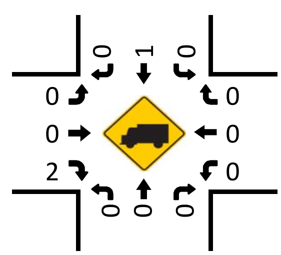
HT (AM)



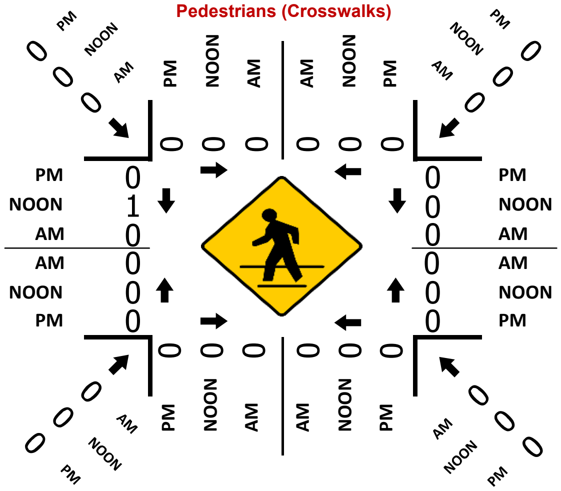
Cars (NOON)



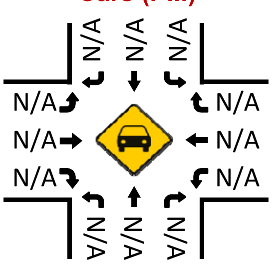
HT (NOON)



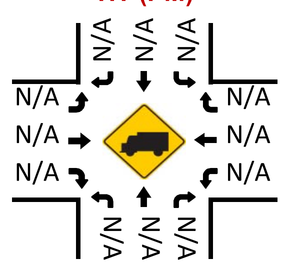
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Library Dwy & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-016
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Library Dwy — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	21	0	28	0	84
PM	0	0	0	0	0
Lanes	0	1	0	0	

Oak Park Blvd — EASTBOUND

	AM	NOON	PM	Lanes
Departing	0	347	0	
U-Turn	0	0	0	0
Left	0	32	0	0
Through	0	368	0	1
Right	0	0	0	0

Oak Park Blvd — WESTBOUND

	PM	NOON	AM	Lanes
Right	0	52	0	0
Through	0	326	0	1
Left	0	0	0	0
U-Turn	0	0	0	0
Departing	0	396	0	

Library Dwy — NORTHBOUND

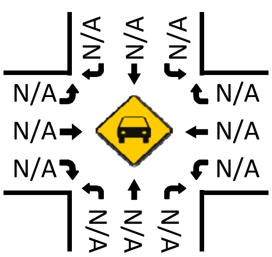
	Departing	U-Turn	Left	Through	Right
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0
Lanes		0	0	0	0

CONTROL

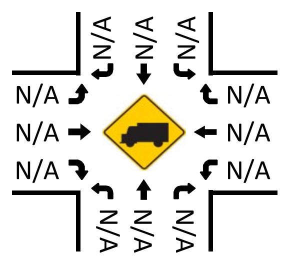
No Control

	AM	NOON	PM
TEV	0	827	0
PHF		0.93	

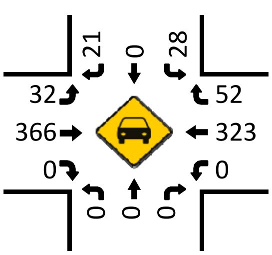
Cars (AM)



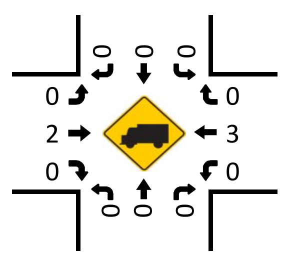
HT (AM)



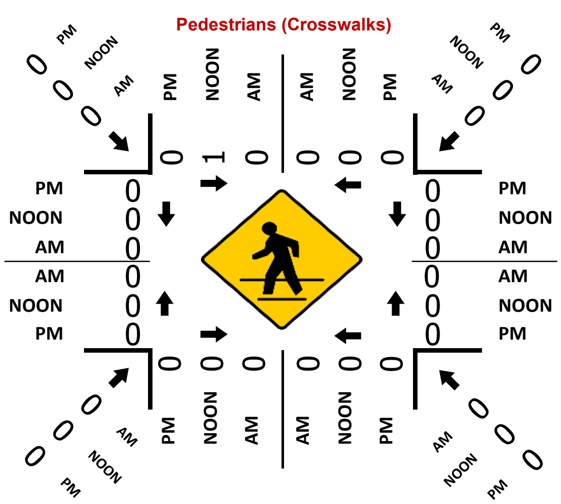
Cars (NOON)



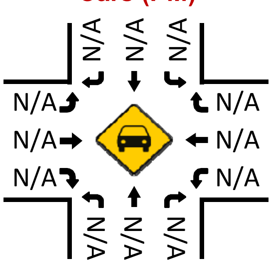
HT (NOON)



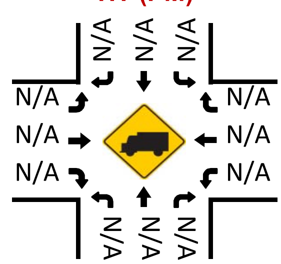
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Library Dwy & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-017
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

Period	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
PM	NONE	NONE

Library Dwy – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing (⇧)
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
(red)	0	0	0	0	

Santa Barbara Rd – EASTBOUND

	AM	NOON	PM	(red)
Departing (⇦)	0	37	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	32	0	1
Right	0	7	0	0

Santa Barbara Rd – WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	0	0
Thru	1	0	37	0
Left	0	0	16	0
U-Turn	0	0	1	0
Departing (⇨)		0	33	0

Library Dwy – NORTHBOUND

	Departing (⇩)	U-Turn	Left	Thru	Right
(red)		0	0	0	0
PM	0	0	0	0	0
NOON	23	0	0	0	0
AM	0	0	0	0	0

CONTROL

No Control

	AM	NOON	PM
TEV	0	93	0
PHF		0.78	

Cars (AM)

Approach	Left	Thru	Right	U-Turn
Southbound	N/A	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A	
Westbound	N/A	N/A	N/A	
Northbound	N/A	N/A	N/A	

Cars (NOON)

Approach	Movements
Southbound	0, 0, 0
Eastbound	0 ↰, 32 →, 7 ↴
Westbound	0 ↰, 37 ←, 16 ↱
Northbound	0, 0, 0

Cars (PM)

All movements: N/A

HT (AM)

All movements: N/A

HT (NOON)

All movements: 0

HT (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	→	0	0	0
North	←	0	0	0
West	↓	0	6	0
West	↑	0	13	0
East	↓	0	28	0
East	↑	0	12	0
South	→	0	3	0
South	←	0	9	0
Diagonal NW	↘	0	0	0
Diagonal NE	↙	0	0	0
Diagonal SW	↗	0	0	0
Diagonal SE	↖	0	0	0

Prepared by National Data & Surveying Services

Library Dwy & Santa Barbara Rd

Peak Hour Turning Movement Count

ID: 18-08260-018
City: Pleasant Hill

Day: Saturday
Date: 05/19/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	01:00 PM - 03:00 PM
NONE	NONE

SOUTHBOUND — Library Dwy

AM	0	0	0	0	0	AM
NOON	15	0	30	0	32	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Santa Barbara Rd

AM	NOON	PM	
0	55	0	
0	2	0	0
0	13	0	0
0	16	0	1
0	0	0	0
AM	NOON	PM	

WESTBOUND — Santa Barbara Rd

PM	NOON	AM	
0	18	0	0
0	28	0	1
0	0	0	0
0	0	0	0
0	68	0	
PM	NOON	AM	

NORTHBOUND — Library Dwy

PM	0	0	0	0	0	PM
NOON	0	0	10	1	22	NOON
AM	0	0	0	0	0	AM

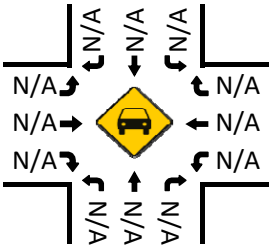
	0	1	0	0
	0	0	1	0

CONTROL

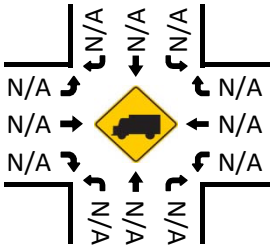
1-Way Stop(SB)

	AM	NOON	PM
TEV	0	155	0
PHF		0.76	

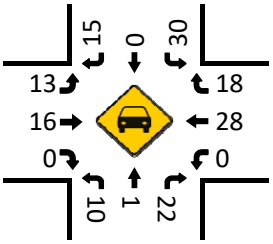
Cars (AM)



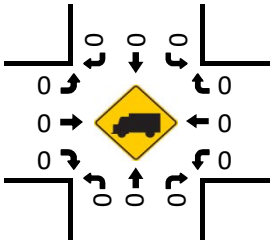
HT (AM)



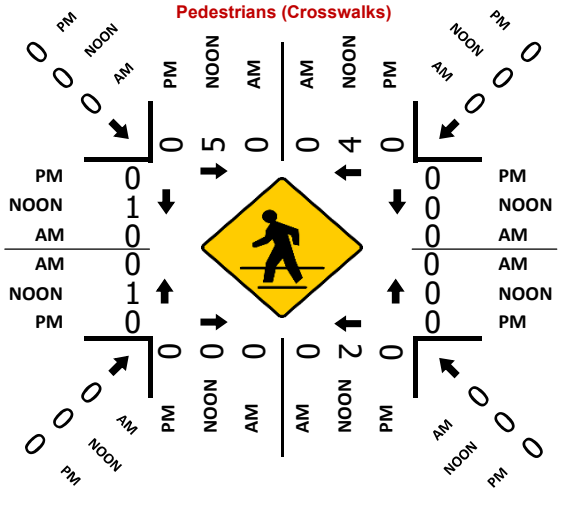
Cars (NOON)



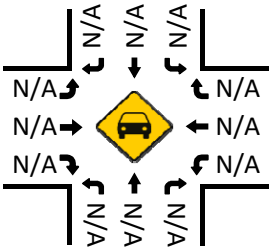
HT (NOON)



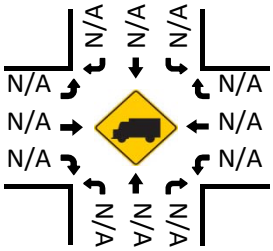
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Appendix B: Parking Occupancy Counts


A - Hawthorne Parking Lot
B - Hawthorne Dr
O - Monticello
P - Monticello
L - School Parking Lot
G - N Monte Cresta Ave
N - Monticello Parking Lot
I1 - N Monticello Ave
I2 - N Monticello Ave Bulb
C - W Santa Barbara Rd
D - E Santa Barbara Rd
J - N Library Parking Lots
F - S Monte Cresta Ave
H - S Monticello Ave
M - Solar Panel Parking Lot
K - S Library Parking Lot
E - Oak Park Blvd
Pleasant Hill Baseball Association...
Pleasant Oaks Park
Prospect Alternative High School
Pleasant Hill Middle School
Horizons Center for Independent Study
The Father's House - East Bay
Pleasant Hill Library - Contra Costa County...
Aegis of Pleasant Hill
Hawthorne Dr
Patterson Blvd
Oak Park Blvd
EBMUD Trail

Parking Demand Observations - Oak Park Specific Plan

Area	Parking Supply		Raw Counts				Percent			
			Weekend		Weekday		Weekend		Weekday	
			10:00 AM	Noon	2:00 PM	6:00 PM	10:00 AM	Noon	2:00 PM	6:00 PM
A. Hawthorne Lot	Reg:	72	39	57	14	72	54%	79%	19%	100%
	ADA:	4	2	0	0	3	50%	0%	0%	75%
A	**Total**	**76**	**41**	**57**	**14**	**75**	**54%**	**75%**	**18%**	**99%**
B1. Hawthorne Drive - Northside		21	11	7	6	16	52%	33%	29%	76%
B2. Hawthorne Drive - Southside		0	0	1	1	2	100%	100%	100%	100%
B	**Total**	**21**	**11**	**8**	**7**	**18**	**52%**	**38%**	**33%**	**86%**
C1. Santa Barbara Between Patterson & Monte Cresta - Southside		20	13	15	10	13	65%	75%	50%	65%
C1. Santa Barbara Between Patterson & Monte Cresta - north side		16	10	9	5	7	63%	56%	31%	44%
C	**Total**	**36**	**23**	**24**	**15**	**20**	**64%**	**67%**	**42%**	**56%**
D1. Santa Barbara between Monte Cresta and Monticello Avenue - Southside		21	16	18	10	20	76%	86%	48%	95%
D. Santa Barbara between Monte Cresta and Monticello Avenue - Northside		21	18	20	8	18	86%	95%	38%	86%
D	**Total**	**42**	**18**	**38**	**18**	**38**	**43%**	**90%**	**43%**	**90%**
E1. Oak Park Boulevard Monte Cresta and Monticello Avenue - Southside		11	2	3	1	1	18%	27%	9%	9%
E2. Oak Park Boulevard Monte Cresta and Monticello Avenue - north side		20	0	0	0	0	0%	0%	0%	0%
E	**Total**	**31**	**18**	**3**	**1**	**1**	**58%**	**10%**	**3%**	**3%**
F1. Monte Cresta between Santa Barbara and Oak Park - north side		17	10	10	7	8	59%	59%	41%	47%
F2. Monte Cresta between Santa Barbara and Oak Park - Southside		17	12	9	8	7	71%	53%	47%	41%
F	**Total**	**34**	**18**	**19**	**15**	**15**	**53%**	**56%**	**44%**	**44%**
G1. Monte Cresta Between Hawthorne and Santa Barbara - west side		25	0	0	4	5	0%	0%	16%	20%
G2. Monte Cresta Between Hawthorne and Santa Barbara - eastside		25	4	4	0	8	16%	16%	0%	32%
G	**Total**	**50**	**18**	**4**	**4**	**13**	**36%**	**8%**	**8%**	**26%**
H1. Monticello Avenue between Santa Barbara and Oak Park - west side		35	0	0	11	0	0%	0%	31%	0%
H2. Monticello Avenue between Santa Barbara and Oak Park - eastside		0	0	0	0	0	100%	100%	100%	100%
H	**Total**	**35**	**18**	**0**	**11**	**0**	**51%**	**0%**	**31%**	**0%**
I1. Monticello Avenue between Parking Lot and Santa Barbara - west side	Reg:	30	21	18	13	28	70%	60%	43%	93%
	ADA:		0	0		0				
I1	**Total**	**30**	**21**	**18**	**13**	**28**	**70%**	**60%**	**43%**	**93%**
I2. Bulbout	Reg:	13	0	0	13	4	0%	0%	100%	31%
	ADA:	0	0	0	0	0	100%	100%	100%	100%
I2. Bulbout	**Total**	**13**	**0**	**0**	**13**	**4**	**0%**	**0%**	**100%**	**31%**
J. N. Library Lot	Reg:	39	22	30	12	29	56%	77%	31%	74%
	ADA:	3	0	0	1	0	0%	0%	33%	0%

J	**Total**	**42**	**22**	**30**	**13**	**29**	**52%**	**71%**	**31%**	**69%**
K. S. Library Lot	Reg:	133	53	52	68	47	40%	39%	51%	35%
	ADA:	6	2	0	2	0	33%	0%	33%	0%
K	**Total**	**139**	**55**	**52**	**70**	**47**	**40%**	**37%**	**50%**	**34%**
L. School Parking Lot	Reg:	118	62	59	52	24	53%	50%	44%	20%
	ADA:	6	0	0	2	0	0%	0%	33%	0%
L	**Total**	**124**	**62**	**59**	**54**	**24**	**50%**	**48%**	**44%**	**19%**
M. Solar Panel Lot	Reg:	160	16	17	83	30	10%	11%	52%	19%
	ADA:	5	0	0	1	0	0%	0%	20%	0%
M	**Total**	**165**	**16**	**17**	**84**	**30**	**10%**	**10%**	**51%**	**18%**
N. Monticello Avenue Lot	Reg:	54	54	53	32	54	100%	98%	59%	100%
	ADA:	3	1	2	0	3	33%	67%	0%	100%
N	**Total**	**57**	**55**	**55**	**32**	**57**	**96%**	**96%**	**56%**	**100%**
O1. Monticello Avenue between Hawthorne and Midblock - west side	Reg:	16	8	9	10	14	50%	56%	63%	88%
	ADA:	0	0	0	0	0	100%	100%	100%	100%
O1	**Total**	**16**	**8**	**9**	**10**	**14**	**50%**	**56%**	**63%**	**88%**
O2. Monticello Avenue between Hawthorne and Midblock - east side	Reg:	14	4	3	10	8	29%	21%	71%	57%
	ADA:	1			1	0	0%	0%	100%	0%
O2	**Total**	**15**	**4**	**3**	**11**	**8**	**27%**	**20%**	**73%**	**53%**
P1. Monticello Avenue between Midblock - and parking lot west side	Reg:	11	11	11	5	11	100%	100%	45%	100%
	ADA:	0	0	0	0	0	100%	100%	100%	100%
P1	**Total**	**11**	**11**	**11**	**5**	**11**	**100%**	**100%**	**45%**	**100%**
P2. Monticello Avenue between Midblock and parking lot - east side	Reg:	4	4	2	3	4	100%	50%	75%	100%
	ADA:	4			1	4	0%	0%	25%	100%
P2	**Total**	**8**	**4**	**2**	**4**	**8**	**50%**	**25%**	**50%**	**100%**

Appendix C: LOS Worksheets

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	135	179	146	107	136
Future Vol, veh/h	127	135	179	146	107	136
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	151	161	213	174	127	162
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	12	11.6	12.4
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	44%	0%	100%	0%
Vol Thru, %	0%	48%	0%	100%
Vol Right, %	56%	52%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	243	262	179	146
LT Vol	107	0	179	0
Through Vol	0	127	0	146
RT Vol	136	135	0	0
Lane Flow Rate	289	312	213	174
Geometry Grp	2	5	7	7
Degree of Util (X)	0.43	0.439	0.367	0.275
Departure Headway (Hd)	5.357	5.062	6.205	5.699
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	671	711	582	631
Service Time	3.389	3.089	3.933	3.427
HCM Lane V/C Ratio	0.431	0.439	0.366	0.276
HCM Control Delay	12.4	12	12.5	10.6
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.2	2.2	1.7	1.1

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	202	14	0	4	79	212	5	6	363	10
Future Vol, veh/h	5	1	202	14	0	4	79	212	5	6	363	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	6	1	253	18	0	5	99	265	6	8	454	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	946	958	461	1082	961	280	467	0	0	283	0	0
Stage 1	477	477	-	478	478	-	-	-	-	-	-	-
Stage 2	469	481	-	604	483	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	243	259	605	197	258	764	1100	-	-	1279	-	-
Stage 1	573	559	-	572	559	-	-	-	-	-	-	-
Stage 2	579	557	-	489	556	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	220	227	605	103	226	755	1100	-	-	1264	-	-
Mov Cap-2 Maneuver	220	227	-	103	226	-	-	-	-	-	-	-
Stage 1	512	554	-	506	494	-	-	-	-	-	-	-
Stage 2	514	492	-	282	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	39.4	2.3	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1100	-	-	576	127	1264	-	-
HCM Lane V/C Ratio	0.09	-	-	0.451	0.177	0.006	-	-
HCM Control Delay (s)	8.6	0	-	16.3	39.4	7.9	0	-
HCM Lane LOS	A	A	-	C	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	2.3	0.6	0	-	-

Intersection	
Int Delay, s/veh	9.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	148	155	34	184	368
Future Vol, veh/h	51	148	155	34	184	368
Conflicting Peds, #/hr	0	33	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	69	200	209	46	249	497

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1230	268	0	0	258	0
Stage 1	235	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	198	776	-	-	1318	-
Stage 1	809	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	146	749	-	-	1314	-
Mov Cap-2 Maneuver	146	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	361	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.2	0	2.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	364	1314	-
HCM Lane V/C Ratio	-	-	0.739	0.189	-
HCM Control Delay (s)	-	-	38.2	8.4	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	5.7	0.7	-

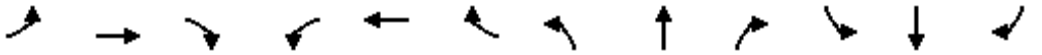
Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	30	112	46	44	341
Future Vol, veh/h	46	30	112	46	44	341
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	58	38	142	58	56	432

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	721	177	0	0	206	0
Stage 1	177	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	397	871	-	-	1377	-
Stage 1	859	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	373	866	-	-	1369	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	481	1369	-
HCM Lane V/C Ratio	-	-	0.2	0.041	-
HCM Control Delay (s)	-	-	14.3	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	377	269	103	198	50	148	92	100	152	242	22
Future Volume (veh/h)	30	377	269	103	198	50	148	92	100	152	242	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	454	313	124	239	21	178	111	100	183	292	25
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	748	501	345	155	294	243	269	169	152	334	326	28
Arrive On Green	0.41	0.48	0.48	0.09	0.15	0.15	0.10	0.19	0.19	0.10	0.19	0.19
Sat Flow, veh/h	1810	1037	715	1810	1900	1573	1810	907	817	1810	1723	148
Grp Volume(v), veh/h	36	0	767	124	239	21	178	0	211	183	0	317
Grp Sat Flow(s),veh/h/ln	1810	0	1752	1810	1900	1573	1810	0	1724	1810	0	1871
Q Serve(g_s), s	1.3	0.0	44.7	7.5	13.5	1.0	8.7	0.0	12.6	8.9	0.0	18.4
Cycle Q Clear(g_c), s	1.3	0.0	44.7	7.5	13.5	1.0	8.7	0.0	12.6	8.9	0.0	18.4
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.47	1.00		0.08
Lane Grp Cap(c), veh/h	748	0	846	155	294	243	269	0	322	334	0	354
V/C Ratio(X)	0.05	0.00	0.91	0.80	0.81	0.09	0.66	0.00	0.66	0.55	0.00	0.89
Avail Cap(c_a), veh/h	748	0	1187	473	603	499	482	0	559	624	0	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.5	0.0	26.4	49.8	45.4	25.4	33.2	0.0	41.8	32.2	0.0	43.9
Incr Delay (d2), s/veh	0.0	0.0	8.8	3.6	7.5	0.2	1.0	0.0	0.9	0.5	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	23.6	3.9	7.7	0.4	4.4	0.0	6.1	4.5	0.0	10.0
LnGrp Delay(d),s/veh	19.5	0.0	35.2	53.5	52.9	25.6	34.3	0.0	42.7	32.7	0.0	48.7
LnGrp LOS	B		D	D	D	C	C		D	C		D
Approach Vol, veh/h		803			384			389			500	
Approach Delay, s/veh		34.5			51.6			38.8			42.8	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	57.6	14.9	25.0	49.9	21.2	15.2	24.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	9.5	46.7	10.7	20.4	3.3	15.5	10.9	14.6
Green Ext Time (p_c), s	0.2	6.8	0.3	0.7	0.0	1.4	0.4	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	40.5
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	66	24	51	49	9	3	13	37	12	29	1
Future Vol, veh/h	0	0	66	24	51	49	9	3	13	37	12	29	1
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	1	1	1	1	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	103	38	80	77	14	5	20	58	19	45	2
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.6	7.8	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	47%	29%
Vol Thru, %	25%	73%	45%	69%
Vol Right, %	70%	27%	8%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	53	90	109	42
LT Vol	3	0	51	12
Through Vol	13	66	49	29
RT Vol	37	24	9	1
Lane Flow Rate	83	141	170	66
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.167	0.21	0.086
Departure Headway (Hd)	4.269	4.285	4.434	4.734
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	840	838	811	757
Service Time	2.293	2.304	2.453	2.759
HCM Lane V/C Ratio	0.099	0.168	0.21	0.087
HCM Control Delay	7.8	8.2	8.6	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0.8	0.3

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	603	2	7	311	70	2	1	4	51	1	45
Future Vol, veh/h	42	603	2	7	311	70	2	1	4	51	1	45
Conflicting Peds, #/hr	6	0	1	1	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	46	663	2	8	342	77	2	1	4	56	1	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	666	0	0	1179	1198	666	1163	1161	387
Stage 1	-	-	-	-	-	-	757	757	-	403	403	-
Stage 2	-	-	-	-	-	-	422	441	-	760	758	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1145	-	-	933	-	-	169	187	463	173	197	665
Stage 1	-	-	-	-	-	-	403	419	-	628	603	-
Stage 2	-	-	-	-	-	-	613	580	-	401	418	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1138	-	-	932	-	-	147	172	462	160	181	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	172	-	160	181	-
Stage 1	-	-	-	-	-	-	377	392	-	585	593	-
Stage 2	-	-	-	-	-	-	560	570	-	370	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	19.9	30.2
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	1138	-	-	932	-	-	247
HCM Lane V/C Ratio	0.031	0.041	-	-	0.008	-	-	0.432
HCM Control Delay (s)	19.9	8.3	0	-	8.9	0	-	30.2
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	2

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	139	27	14	9	0	6
Future Vol, veh/h	139	27	14	9	0	6
Conflicting Peds, #/hr	23	102	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	0	0	4	4	0	0
Mvmt Flow	224	44	23	15	0	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	91	109	12	0	-	0
Stage 1	7	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	914	950	1594	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	897	856	1591	-	-	-
Mov Cap-2 Maneuver	897	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	942	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	4.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1591	-	890	-	-
HCM Lane V/C Ratio	0.014	-	0.301	-	-
HCM Control Delay (s)	7.3	0	10.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.3	-	-

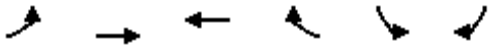
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	13	16	243	198	75
Future Vol, veh/h	53	13	16	243	198	75
Conflicting Peds, #/hr	8	0	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	75	18	23	342	279	106

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	748	352	405	0	-	0
Stage 1	352	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	380	692	1165	-	-	-
Stage 1	712	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	356	679	1143	-	-	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1143	-	393	-	-
HCM Lane V/C Ratio	0.02	-	0.237	-	-
HCM Control Delay (s)	8.2	0	17	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

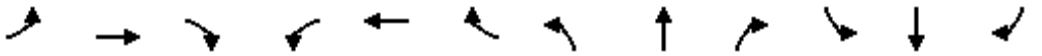


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	636	367	267	194	23
Future Volume (veh/h)	22	636	367	267	194	23
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	25	731	422	281	223	21
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	96	1183	684	456	300	28
Arrive On Green	0.64	0.64	0.64	0.64	0.18	0.18
Sat Flow, veh/h	25	1838	1063	708	1626	153
Grp Volume(v), veh/h	756	0	0	703	245	0
Grp Sat Flow(s),veh/h/ln	1863	0	0	1771	1787	0
Q Serve(g_s), s	0.0	0.0	0.0	10.9	6.0	0.0
Cycle Q Clear(g_c), s	11.0	0.0	0.0	10.9	6.0	0.0
Prop In Lane	0.03			0.40	0.91	0.09
Lane Grp Cap(c), veh/h	1279	0	0	1140	330	0
V/C Ratio(X)	0.59	0.00	0.00	0.62	0.74	0.00
Avail Cap(c_a), veh/h	3025	0	0	2849	1150	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.9	0.0	0.0	4.9	18.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.0	5.3	3.0	0.0
LnGrp Delay(d),s/veh	5.1	0.0	0.0	5.1	19.2	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h		756	703		245	
Approach Delay, s/veh		5.1	5.1		19.2	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		34.0		12.6		34.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s		13.0		8.0		12.9		
Green Ext Time (p_c), s		4.1		0.4		3.8		

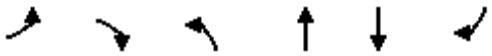
Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Notes



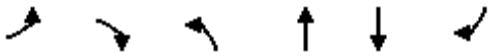
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	818	2	12	361	171	0	0	2	481	2	284
Future Volume (vph)	47	818	2	12	361	171	0	0	2	481	2	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3609		1805	3610	1588			1644	1715	1720	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3609		1805	3610	1588			1644	1715	1720	1593
Peak-hour factor, PHF	0.95	0.95	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	861	2	13	380	180	0	0	2	506	2	299
RTOR Reduction (vph)	0	0	0	0	0	55	0	0	1	0	0	202
Lane Group Flow (vph)	49	863	0	13	380	125	0	0	1	253	255	97
Confl. Peds. (#/hr)						14	3					3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	2.2	18.6		0.7	17.1	32.2			15.1	15.1	15.1	15.1
Effective Green, g (s)	2.2	18.6		0.7	17.1	32.2			15.1	15.1	15.1	15.1
Actuated g/C Ratio	0.05	0.40		0.02	0.37	0.69			0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	85	1446		27	1330	1238			535	558	559	518
v/s Ratio Prot	c0.03	c0.24		0.01	0.11	0.03				0.15	c0.15	
v/s Ratio Perm						0.05			0.00			0.06
v/c Ratio	0.58	0.60		0.48	0.29	0.10			0.00	0.45	0.46	0.19
Uniform Delay, d1	21.6	10.9		22.7	10.3	2.3			10.6	12.4	12.4	11.2
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	5.8	0.4		4.9	0.2	0.0			0.0	0.2	0.2	0.1
Delay (s)	27.4	11.4		27.5	10.5	2.3			10.6	12.6	12.6	11.3
Level of Service	C	B		C	B	A			B	B	B	B
Approach Delay (s)		12.3			8.3			10.6			12.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	46.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	109	82	144	728	539
Future Volume (vph)	70	109	82	144	728	539
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3325	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3325	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	77	120	90	158	800	592
RTOR Reduction (vph)	0	21	0	0	99	0
Lane Group Flow (vph)	77	99	90	158	1293	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	6.9	19.3	8.4	43.0	30.6	
Effective Green, g (s)	6.9	19.3	8.4	43.0	30.6	
Actuated g/C Ratio	0.11	0.31	0.14	0.69	0.49	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	195	488	240	2458	1643	
v/s Ratio Prot	c0.04	0.06	c0.05	c0.04	c0.39	
v/s Ratio Perm						
v/c Ratio	0.39	0.20	0.38	0.06	0.79	
Uniform Delay, d1	25.6	15.6	24.4	3.0	13.0	
Progression Factor	1.00	1.00	0.83	0.90	1.00	
Incremental Delay, d2	0.5	0.1	0.7	0.0	2.4	
Delay (s)	26.0	15.7	21.0	2.7	15.3	
Level of Service	C	B	C	A	B	
Approach Delay (s)	19.8			9.3	15.3	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	83	9	187	829	8
Future Volume (vph)	39	83	9	187	829	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1698		1770	3539	3534	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1698		1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	46	98	11	220	975	9
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	144	0	11	220	984	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	9.8		5.9	42.7	32.8	
Effective Green, g (s)	9.8		5.9	42.7	32.8	
Actuated g/C Ratio	0.15		0.09	0.66	0.51	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	257		161	2342	1797	
v/s Ratio Prot	c0.08		0.01	c0.06	c0.28	
v/s Ratio Perm						
v/c Ratio	0.56		0.07	0.09	0.55	
Uniform Delay, d1	25.4		26.8	3.9	10.8	
Progression Factor	1.00		1.00	1.00	0.51	
Incremental Delay, d2	1.7		0.1	0.0	0.1	
Delay (s)	27.0		26.9	3.9	5.7	
Level of Service	C		C	A	A	
Approach Delay (s)	27.0			5.0	5.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	78	279	8	52	216
Future Vol, veh/h	21	78	279	8	52	216
Conflicting Peds, #/hr	0	42	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	4	4	1	1	2	2
Mvmt Flow	27	101	362	10	68	281

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	790	415	0	0	378	0
Stage 1	373	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	356	633	-	-	1180	-
Stage 1	692	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	329	604	-	-	1173	-
Mov Cap-2 Maneuver	329	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	661	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	513	1173	-
HCM Lane V/C Ratio	-	-	0.251	0.058	-
HCM Control Delay (s)	-	-	14.3	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

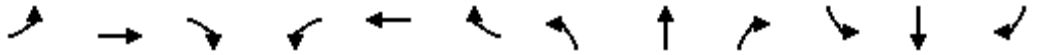
Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	37	211	17	16	186
Future Vol, veh/h	24	37	211	17	16	186
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	1	1	3	3
Mvmt Flow	29	45	254	20	19	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	528	266	0	0	276	0
Stage 1	266	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	511	773	-	-	1281	-
Stage 1	779	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	501	772	-	-	1279	-
Mov Cap-2 Maneuver	501	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	637	1279	-
HCM Lane V/C Ratio	-	-	0.115	0.015	-
HCM Control Delay (s)	-	-	11.4	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	275	114	97	245	93	114	169	120	106	125	41
Future Volume (veh/h)	35	275	114	97	245	93	114	169	120	106	125	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1881	1881	1881	1900	1827	1827	1900
Adj Flow Rate, veh/h	37	293	112	103	261	36	121	180	115	113	133	38
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	4	4	4
Cap, veh/h	294	408	156	135	438	346	450	254	162	342	324	93
Arrive On Green	0.17	0.32	0.32	0.08	0.23	0.23	0.07	0.24	0.24	0.07	0.24	0.24
Sat Flow, veh/h	1774	1261	482	1792	1881	1486	1792	1044	667	1740	1348	385
Grp Volume(v), veh/h	37	0	405	103	261	36	121	0	295	113	0	171
Grp Sat Flow(s),veh/h/ln	1774	0	1743	1792	1881	1486	1792	0	1710	1740	0	1733
Q Serve(g_s), s	1.0	0.0	11.4	3.2	6.9	0.8	2.8	0.0	8.8	2.7	0.0	4.6
Cycle Q Clear(g_c), s	1.0	0.0	11.4	3.2	6.9	0.8	2.8	0.0	8.8	2.7	0.0	4.6
Prop In Lane	1.00		0.28	1.00		1.00	1.00		0.39	1.00		0.22
Lane Grp Cap(c), veh/h	294	0	564	135	438	346	450	0	417	342	0	417
V/C Ratio(X)	0.13	0.00	0.72	0.76	0.60	0.10	0.27	0.00	0.71	0.33	0.00	0.41
Avail Cap(c_a), veh/h	762	0	2347	930	1186	936	1087	0	1102	1122	0	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	16.7	25.3	19.1	8.7	14.3	0.0	19.3	14.9	0.0	17.9
Incr Delay (d2), s/veh	0.1	0.0	2.5	3.4	1.8	0.2	0.1	0.0	0.8	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	5.8	1.7	3.8	0.4	1.4	0.0	4.2	1.3	0.0	2.3
LnGrp Delay(d),s/veh	19.9	0.0	19.1	28.7	20.9	8.9	14.4	0.0	20.1	15.1	0.0	18.1
LnGrp LOS	B		B	C	C	A	B		C	B		B
Approach Vol, veh/h		442			400			416			284	
Approach Delay, s/veh		19.2			21.8			18.5			16.9	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	22.1	8.2	17.4	13.3	17.0	8.0	17.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	5.2	13.4	4.8	6.6	3.0	8.9	4.7	10.8
Green Ext Time (p_c), s	0.1	4.5	0.1	0.7	0.0	2.4	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	1	20	8	40	49	8	15	23	17	4	12	0
Future Vol, veh/h	0	1	20	8	40	49	8	15	23	17	4	12	0
Peak Hour Factor	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Heavy Vehicles, %	3	3	3	3	1	1	1	2	2	2	0	0	0
Mvmt Flow	0	2	47	19	93	114	19	35	53	40	9	28	0
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	9.1	8.4	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	3%	41%	25%
Vol Thru, %	42%	69%	51%	75%
Vol Right, %	31%	28%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	29	97	16
LT Vol	15	1	40	4
Through Vol	23	20	49	12
RT Vol	17	8	8	0
Lane Flow Rate	128	67	226	37
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.083	0.277	0.049
Departure Headway (Hd)	4.519	4.43	4.413	4.774
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	794	809	814	750
Service Time	2.542	2.456	2.434	2.803
HCM Lane V/C Ratio	0.161	0.083	0.278	0.049
HCM Control Delay	8.4	7.9	9.1	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	1.1	0.2

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	506	6	3	429	50	1	0	5	53	0	36
Future Vol, veh/h	26	506	6	3	429	50	1	0	5	53	0	36
Conflicting Peds, #/hr	55	0	1	1	0	55	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	29	569	7	3	482	56	1	0	6	60	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	593	0	0	577	0	0	1168	1231	579	1210	1206	565
Stage 1	-	-	-	-	-	-	632	632	-	571	571	-
Stage 2	-	-	-	-	-	-	536	599	-	639	635	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	983	-	-	1001	-	-	172	179	519	161	185	528
Stage 1	-	-	-	-	-	-	472	477	-	509	508	-
Stage 2	-	-	-	-	-	-	532	494	-	468	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	932	-	-	1000	-	-	152	161	516	144	167	500
Mov Cap-2 Maneuver	-	-	-	-	-	-	152	161	-	144	167	-
Stage 1	-	-	-	-	-	-	450	455	-	460	480	-
Stage 2	-	-	-	-	-	-	487	466	-	440	454	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	14.9	39.1
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	369	932	-	-	1000	-	-	202
HCM Lane V/C Ratio	0.018	0.031	-	-	0.003	-	-	0.495
HCM Control Delay (s)	14.9	9	0	-	8.6	0	-	39.1
HCM Lane LOS	B	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	2.5

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	30	30	7	11	10
Future Vol, veh/h	16	30	30	7	11	10
Conflicting Peds, #/hr	1	150	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	11	11	0	0
Mvmt Flow	19	36	36	8	13	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	107	176	32	0	-	0
Stage 1	26	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	895	872	1524	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	861	742	1514	-	-	-
Mov Cap-2 Maneuver	861	-	-	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	940	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1514	-	779	-	-
HCM Lane V/C Ratio	0.024	-	0.07	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

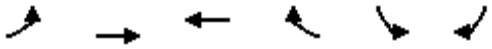
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	21	13	45	77	13
Future Vol, veh/h	7	21	13	45	77	13
Conflicting Peds, #/hr	217	0	258	0	0	258
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	4	4	5	5	1	1
Mvmt Flow	11	34	21	74	126	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	728	395	405	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	333	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.245	-	-	-
Pot Cap-1 Maneuver	387	650	1138	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	214	490	858	-	-	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	496	-	-	-	-	-
Stage 2	544	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	2.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	858	-	371	-	-
HCM Lane V/C Ratio	0.025	-	0.124	-	-
HCM Control Delay (s)	9.3	0	16.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	573	474	70	128	25
Future Volume (veh/h)	15	573	474	70	128	25
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1900	1900
Adj Flow Rate, veh/h	17	659	545	75	147	21
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	93	1221	1067	147	235	34
Arrive On Green	0.67	0.67	0.67	0.67	0.15	0.15
Sat Flow, veh/h	16	1826	1596	220	1531	219
Grp Volume(v), veh/h	676	0	0	620	169	0
Grp Sat Flow(s),veh/h/ln	1842	0	0	1816	1761	0
Q Serve(g_s), s	0.0	0.0	0.0	7.7	4.0	0.0
Cycle Q Clear(g_c), s	8.5	0.0	0.0	7.7	4.0	0.0
Prop In Lane	0.03			0.12	0.87	0.12
Lane Grp Cap(c), veh/h	1313	0	0	1214	270	0
V/C Ratio(X)	0.51	0.00	0.00	0.51	0.63	0.00
Avail Cap(c_a), veh/h	3121	0	0	3034	1177	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.9	0.0	0.0	3.7	17.8	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	3.8	2.0	0.0
LnGrp Delay(d),s/veh	4.0	0.0	0.0	3.9	18.7	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h		676	620		169	
Approach Delay, s/veh		4.0	3.9		18.7	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		34.0		10.9		34.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s		10.5		6.0		9.7		
Green Ext Time (p_c), s		3.4		0.2		3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	77	140	107	154	194
Future Vol, veh/h	167	77	140	107	154	194
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	170	79	143	109	157	198
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11	10.5	12.7
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	44%	0%	100%	0%
Vol Thru, %	0%	68%	0%	100%
Vol Right, %	56%	32%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	348	244	140	107
LT Vol	154	0	140	0
Through Vol	0	167	0	107
RT Vol	194	77	0	0
Lane Flow Rate	355	249	143	109
Geometry Grp	2	5	7	7
Degree of Util (X)	0.492	0.356	0.249	0.175
Departure Headway (Hd)	4.986	5.153	6.273	5.766
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	728	700	573	622
Service Time	2.986	3.182	4.002	3.495
HCM Lane V/C Ratio	0.488	0.356	0.25	0.175
HCM Control Delay	12.7	11	11.1	9.7
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2.7	1.6	1	0.6

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	1	17	5	1	7	20	377	13	9	292	1
Future Vol, veh/h	7	1	17	5	1	7	20	377	13	9	292	1
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	6	6	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	0	0	0
Mvmt Flow	8	1	19	6	1	8	22	419	14	10	324	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	821	829	326	831	822	432	326	0	0	439	0	0
Stage 1	346	346	-	476	476	-	-	-	-	-	-	-
Stage 2	475	483	-	355	346	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.18	6.58	6.28	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	296	308	720	282	302	611	1239	-	-	1132	-	-
Stage 1	674	639	-	559	547	-	-	-	-	-	-	-
Stage 2	574	556	-	650	625	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	284	295	719	265	290	608	1238	-	-	1126	-	-
Mov Cap-2 Maneuver	284	295	-	265	290	-	-	-	-	-	-	-
Stage 1	658	631	-	543	531	-	-	-	-	-	-	-
Stage 2	552	540	-	625	618	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	14.7	0.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1238	-	-	484	384	1126	-	-
HCM Lane V/C Ratio	0.018	-	-	0.057	0.038	0.009	-	-
HCM Control Delay (s)	8	0	-	12.9	14.7	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	33	355	7	28	198
Future Vol, veh/h	3	33	355	7	28	198
Conflicting Peds, #/hr	0	3	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	35	378	7	30	211

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	657	389	0	0	389	0
Stage 1	386	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	433	664	-	-	1181	-
Stage 1	691	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	660	-	-	1177	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	779	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	630	1177	-
HCM Lane V/C Ratio	-	-	0.061	0.025	-
HCM Control Delay (s)	-	-	11.1	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	10	346	22	6	186
Future Vol, veh/h	7	10	346	22	6	186
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	7	11	368	23	6	198

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	594	384	0	0	395	0
Stage 1	384	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	471	668	-	-	1175	-
Stage 1	693	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	466	665	-	-	1171	-
Mov Cap-2 Maneuver	466	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	830	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	566	1171	-
HCM Lane V/C Ratio	-	-	0.032	0.005	-
HCM Control Delay (s)	-	-	11.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	281	98	107	347	103	175	264	168	94	104	42
Future Volume (veh/h)	37	281	98	107	347	103	175	264	168	94	104	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	39	296	95	113	365	54	184	278	166	99	109	37
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	198	404	130	148	510	419	544	334	199	290	352	119
Arrive On Green	0.11	0.30	0.30	0.08	0.27	0.27	0.10	0.30	0.30	0.06	0.26	0.26
Sat Flow, veh/h	1810	1366	438	1810	1900	1561	1810	1098	656	1810	1345	457
Grp Volume(v), veh/h	39	0	391	113	365	54	184	0	444	99	0	146
Grp Sat Flow(s),veh/h/ln	1810	0	1804	1810	1900	1561	1810	0	1754	1810	0	1801
Q Serve(g_s), s	1.2	0.0	12.1	3.8	10.8	1.2	4.4	0.0	14.6	2.4	0.0	4.0
Cycle Q Clear(g_c), s	1.2	0.0	12.1	3.8	10.8	1.2	4.4	0.0	14.6	2.4	0.0	4.0
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.37	1.00		0.25
Lane Grp Cap(c), veh/h	198	0	533	148	510	419	544	0	533	290	0	471
V/C Ratio(X)	0.20	0.00	0.73	0.76	0.72	0.13	0.34	0.00	0.83	0.34	0.00	0.31
Avail Cap(c_a), veh/h	702	0	2192	848	1080	888	1060	0	1020	1029	0	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	19.6	27.8	20.5	9.4	13.7	0.0	20.1	16.4	0.0	18.4
Incr Delay (d2), s/veh	0.2	0.0	2.8	3.0	2.7	0.2	0.1	0.0	1.3	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	6.4	2.0	6.0	0.7	2.2	0.0	7.2	1.2	0.0	2.0
LnGrp Delay(d),s/veh	25.3	0.0	22.4	30.9	23.2	9.6	13.8	0.0	21.4	16.6	0.0	18.5
LnGrp LOS	C		C	C	C	A	B		C	B		B
Approach Vol, veh/h		430			532			628			245	
Approach Delay, s/veh		22.7			23.4			19.2			17.7	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	22.3	10.3	20.2	10.8	20.6	7.7	22.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	5.8	14.1	6.4	6.0	3.2	12.8	4.4	16.6
Green Ext Time (p_c), s	0.1	4.2	0.2	0.6	0.0	3.4	0.1	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	1	40	7	5	10	2	15	30	17	5	6	1
Future Vol, veh/h	0	1	40	7	5	10	2	15	30	17	5	6	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1	47	8	6	12	2	18	35	20	6	7	1
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.3	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	2%	29%	42%
Vol Thru, %	48%	83%	59%	50%
Vol Right, %	27%	15%	12%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	48	17	12
LT Vol	15	1	5	5
Through Vol	30	40	10	6
RT Vol	17	7	2	1
Lane Flow Rate	73	56	20	14
Geometry Grp	1	1	1	1
Degree of Util (X)	0.08	0.062	0.023	0.016
Departure Headway (Hd)	3.928	3.984	4.084	4.122
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	910	896	872	864
Service Time	1.963	2.024	2.13	2.169
HCM Lane V/C Ratio	0.08	0.063	0.023	0.016
HCM Control Delay	7.3	7.3	7.2	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	547	1	9	555	27	1	0	3	42	1	17
Future Vol, veh/h	6	547	1	9	555	27	1	0	3	42	1	17
Conflicting Peds, #/hr	12	0	1	1	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	601	1	10	610	30	1	0	3	46	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	652	0	0	603	0	0	1272	1289	603	1274	1274	637
Stage 1	-	-	-	-	-	-	617	617	-	657	657	-
Stage 2	-	-	-	-	-	-	655	672	-	617	617	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	944	-	-	984	-	-	146	165	503	145	169	481
Stage 1	-	-	-	-	-	-	481	484	-	457	465	-
Stage 2	-	-	-	-	-	-	458	458	-	481	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	933	-	-	983	-	-	137	159	503	139	163	476
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	159	-	139	163	-
Stage 1	-	-	-	-	-	-	475	478	-	447	452	-
Stage 2	-	-	-	-	-	-	432	446	-	473	478	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.1	37.8
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	933	-	-	983	-	-	174
HCM Lane V/C Ratio	0.015	0.007	-	-	0.01	-	-	0.379
HCM Control Delay (s)	17.1	8.9	0	-	8.7	0	-	37.8
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.6

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	82	64	20	10	11
Future Vol, veh/h	19	82	64	20	10	11
Conflicting Peds, #/hr	3	5	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	106	83	26	13	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	219	29	31	0	-	0
Stage 1	24	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	774	1052	1595	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	843	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	727	1043	1589	-	-	-
Mov Cap-2 Maneuver	727	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	5.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1589	-	964	-	-
HCM Lane V/C Ratio	0.052	-	0.136	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

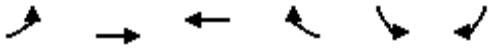
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	13	47	117	48	27
Future Vol, veh/h	30	13	47	117	48	27
Conflicting Peds, #/hr	2	1	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	16	59	146	60	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	346	81	97	0	-	0
Stage 1	80	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	655	985	1509	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	623	981	1505	-	-	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	781	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1505	-	700	-	-
HCM Lane V/C Ratio	0.039	-	0.077	-	-
HCM Control Delay (s)	7.5	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

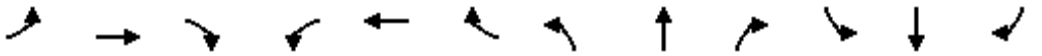


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	575	563	33	25	21
Future Volume (veh/h)	19	575	563	33	25	21
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	21	639	626	35	28	2
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	108	1378	1326	74	91	7
Arrive On Green	0.74	0.74	0.74	0.74	0.06	0.06
Sat Flow, veh/h	21	1850	1780	100	1622	116
Grp Volume(v), veh/h	660	0	0	661	31	0
Grp Sat Flow(s),veh/h/ln	1871	0	0	1879	1796	0
Q Serve(g_s), s	0.0	0.0	0.0	5.6	0.7	0.0
Cycle Q Clear(g_c), s	5.5	0.0	0.0	5.6	0.7	0.0
Prop In Lane	0.03			0.05	0.90	0.06
Lane Grp Cap(c), veh/h	1486	0	0	1400	101	0
V/C Ratio(X)	0.44	0.00	0.00	0.47	0.31	0.00
Avail Cap(c_a), veh/h	3517	0	0	3500	1338	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	2.0	0.0	0.0	2.0	18.2	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	2.8	0.3	0.0
LnGrp Delay(d),s/veh	2.1	0.0	0.0	2.1	18.9	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h		660	661		31	
Approach Delay, s/veh		2.1	2.1		18.9	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		34.0		6.3		34.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s		7.5		2.7		7.6		
Green Ext Time (p_c), s		3.4		0.0		3.3		

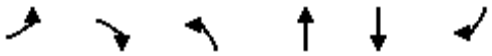
Intersection Summary	
HCM 2010 Ctrl Delay	2.5
HCM 2010 LOS	A

Notes



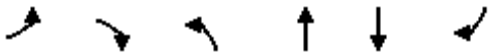
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	616	3	8	502	333	0	0	9	285	4	183
Future Volume (vph)	34	616	3	8	502	333	0	0	9	285	4	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3607		1805	3610	1565			1644	1715	1721	1594
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3607		1805	3610	1565			1644	1715	1721	1594
Peak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	662	3	9	540	358	0	0	10	306	4	197
RTOR Reduction (vph)	0	0	0	0	0	202	0	0	7	0	0	147
Lane Group Flow (vph)	37	665	0	9	540	156	0	0	3	156	154	50
Confl. Peds. (#/hr)						6	2					2
Confl. Bikes (#/hr)						7						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm			Perm	Perm	NA	Perm
Protected Phases	5	2		1	6						4	
Permitted Phases						6			8	4		4
Actuated Green, G (s)	2.0	21.2		0.6	19.8	19.8			11.6	11.6	11.6	11.6
Effective Green, g (s)	2.0	21.2		0.6	19.8	19.8			11.6	11.6	11.6	11.6
Actuated g/C Ratio	0.04	0.47		0.01	0.44	0.44			0.26	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	4.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	79	1684		23	1574	682			420	438	439	407
v/s Ratio Prot	c0.02	c0.18		0.00	0.15							
v/s Ratio Perm						0.10			0.00	c0.09	0.09	0.03
v/c Ratio	0.47	0.39		0.39	0.34	0.23			0.01	0.36	0.35	0.12
Uniform Delay, d1	21.2	7.9		22.2	8.5	8.0			12.6	13.8	13.8	13.0
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1		4.0	0.2	0.2			0.0	0.2	0.2	0.0
Delay (s)	22.8	8.0		26.2	8.7	8.3			12.6	14.0	14.0	13.0
Level of Service	C	A		C	A	A			B	B	B	B
Approach Delay (s)		8.7			8.7			12.6			13.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	186	267	534	219	204
Future Volume (vph)	160	186	267	534	219	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3286	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3286	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	194	278	556	228	212
RTOR Reduction (vph)	0	87	0	0	164	0
Lane Group Flow (vph)	167	107	278	556	277	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	10.0	30.5	16.5	33.1	12.6	
Effective Green, g (s)	10.0	30.5	16.5	33.1	12.6	
Actuated g/C Ratio	0.18	0.55	0.30	0.60	0.23	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	324	885	540	2168	751	
v/s Ratio Prot	c0.09	0.07	c0.15	0.15	c0.08	
v/s Ratio Perm						
v/c Ratio	0.52	0.12	0.51	0.26	0.37	
Uniform Delay, d1	20.4	5.9	16.0	5.2	17.9	
Progression Factor	1.00	1.00	0.79	0.51	1.00	
Incremental Delay, d2	0.6	0.0	0.6	0.0	0.1	
Delay (s)	20.9	5.9	13.3	2.7	18.0	
Level of Service	C	A	B	A	B	
Approach Delay (s)	12.9			6.2	18.0	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	81	34	741	400	5
Future Volume (vph)	60	81	34	741	400	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.92		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1717		1805	3610	3602	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1717		1805	3610	3602	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	84	35	772	417	5
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	147	0	35	772	421	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	10.0		11.5	33.1	17.6	
Effective Green, g (s)	10.0		11.5	33.1	17.6	
Actuated g/C Ratio	0.18		0.21	0.60	0.32	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	311		376	2168	1150	
v/s Ratio Prot	c0.09		0.02	c0.21	c0.12	
v/s Ratio Perm						
v/c Ratio	0.47		0.09	0.36	0.37	
Uniform Delay, d1	20.2		17.6	5.6	14.4	
Progression Factor	1.00		1.00	1.00	0.78	
Incremental Delay, d2	0.4		0.0	0.0	0.1	
Delay (s)	20.6		17.6	5.6	11.3	
Level of Service	C		B	A	B	
Approach Delay (s)	20.6			6.1	11.3	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	132	93	143	126	136	144
Future Vol, veh/h	132	93	143	126	136	144
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	147	103	159	140	151	160
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	10.8	10.6	12.1
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	49%	0%	100%	0%
Vol Thru, %	0%	59%	0%	100%
Vol Right, %	51%	41%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	280	225	143	126
LT Vol	136	0	143	0
Through Vol	0	132	0	126
RT Vol	144	93	0	0
Lane Flow Rate	311	250	159	140
Geometry Grp	2	5	7	7
Degree of Util (X)	0.441	0.352	0.272	0.22
Departure Headway (Hd)	5.102	5.073	6.157	5.651
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	709	710	585	636
Service Time	3.102	3.099	3.883	3.377
HCM Lane V/C Ratio	0.439	0.352	0.272	0.22
HCM Control Delay	12.1	10.8	11.2	10
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2.3	1.6	1.1	0.8

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	13	3	4	10	10	265	7	7	215	12
Future Vol, veh/h	5	1	13	3	4	10	10	265	7	7	215	12
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	12	12	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	1	15	3	5	11	11	301	8	8	244	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	605	612	253	614	615	318	260	0	0	321	0	0
Stage 1	269	269	-	339	339	-	-	-	-	-	-	-
Stage 2	336	343	-	275	276	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	413	411	791	407	409	727	1316	-	-	1250	-	-
Stage 1	741	690	-	680	643	-	-	-	-	-	-	-
Stage 2	682	641	-	736	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	396	398	789	389	396	718	1313	-	-	1236	-	-
Mov Cap-2 Maneuver	396	398	-	389	396	-	-	-	-	-	-	-
Stage 1	732	683	-	666	629	-	-	-	-	-	-	-
Stage 2	659	628	-	715	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	12	0.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	601	536	1236	-	-
HCM Lane V/C Ratio	0.009	-	-	0.036	0.036	0.006	-	-
HCM Control Delay (s)	7.8	0	-	11.2	12	7.9	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	45	170	7	41	143
Future Vol, veh/h	3	45	170	7	41	143
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	3	49	187	8	45	157

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	441	194	0	0	198	0
Stage 1	194	-	-	-	-	-
Stage 2	247	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	577	853	-	-	1381	-
Stage 1	844	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	554	851	-	-	1377	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	1.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	823	1377	-
HCM Lane V/C Ratio	-	-	0.064	0.033	-
HCM Control Delay (s)	-	-	9.7	7.7	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	17	156	16	19	158
Future Vol, veh/h	8	17	156	16	19	158
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	9	19	171	18	21	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	406	190	0	0	199	0
Stage 1	190	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	605	857	-	-	1379	-
Stage 1	847	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	589	849	-	-	1366	-
Mov Cap-2 Maneuver	589	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	825	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	744	1366	-
HCM Lane V/C Ratio	-	-	0.037	0.015	-
HCM Control Delay (s)	-	-	10	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	209	58	70	179	50	63	133	65	65	118	37
Future Volume (veh/h)	30	209	58	70	179	50	63	133	65	65	118	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.95	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	227	56	76	195	19	68	145	62	71	128	33
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	225	378	93	106	365	301	424	227	97	389	268	69
Arrive On Green	0.13	0.26	0.26	0.06	0.19	0.19	0.05	0.18	0.18	0.06	0.19	0.19
Sat Flow, veh/h	1792	1448	357	1792	1881	1550	1792	1230	526	1810	1437	370
Grp Volume(v), veh/h	33	0	283	76	195	19	68	0	207	71	0	161
Grp Sat Flow(s),veh/h/ln	1792	0	1806	1792	1881	1550	1792	0	1756	1810	0	1807
Q Serve(g_s), s	0.6	0.0	5.0	1.5	3.4	0.2	1.1	0.0	4.0	1.1	0.0	2.9
Cycle Q Clear(g_c), s	0.6	0.0	5.0	1.5	3.4	0.2	1.1	0.0	4.0	1.1	0.0	2.9
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.30	1.00		0.20
Lane Grp Cap(c), veh/h	225	0	471	106	365	301	424	0	324	389	0	337
V/C Ratio(X)	0.15	0.00	0.60	0.72	0.53	0.06	0.16	0.00	0.64	0.18	0.00	0.48
Avail Cap(c_a), veh/h	1181	0	3729	1427	1819	1498	1507	0	1736	1728	0	1787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	11.8	16.8	13.2	5.2	11.1	0.0	13.7	11.1	0.0	13.2
Incr Delay (d2), s/veh	0.1	0.0	1.8	3.4	1.7	0.1	0.1	0.0	0.8	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.7	0.8	1.9	0.2	0.5	0.0	2.0	0.6	0.0	1.5
LnGrp Delay(d),s/veh	14.3	0.0	13.6	20.3	14.9	5.3	11.1	0.0	14.5	11.2	0.0	13.6
LnGrp LOS	B		B	C	B	A	B		B	B		B
Approach Vol, veh/h		316			290			275			232	
Approach Delay, s/veh		13.6			15.7			13.7			12.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	13.5	6.0	10.8	8.6	11.1	6.0	10.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	3.5	7.0	3.1	4.9	2.6	5.4	3.1	6.0
Green Ext Time (p_c), s	0.1	2.9	0.1	0.6	0.0	1.7	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	27	7	15	19	3	10	6	9	2	8	1
Future Vol, veh/h	0	0	27	7	15	19	3	10	6	9	2	8	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	4	4	0	0	0
Mvmt Flow	0	0	29	8	16	21	3	11	7	10	2	9	1
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.2	7.1	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	41%	18%
Vol Thru, %	24%	79%	51%	73%
Vol Right, %	36%	21%	8%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	34	37	11
LT Vol	10	0	15	2
Through Vol	6	27	19	8
RT Vol	9	7	3	1
Lane Flow Rate	27	37	40	12
Geometry Grp	1	1	1	1
Degree of Util (X)	0.03	0.04	0.045	0.013
Departure Headway (Hd)	3.976	3.875	4.029	4.037
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	898	924	889	884
Service Time	2.009	1.899	2.051	2.073
HCM Lane V/C Ratio	0.03	0.04	0.045	0.014
HCM Control Delay	7.1	7.1	7.2	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	360	1	11	319	18	0	0	4	26	0	11
Future Vol, veh/h	10	360	1	11	319	18	0	0	4	26	0	11
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	3	3	3
Mvmt Flow	11	396	1	12	351	20	0	0	4	29	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	377	0	0	397	0	0	810	820	397	812	810	367
Stage 1	-	-	-	-	-	-	419	419	-	391	391	-
Stage 2	-	-	-	-	-	-	391	401	-	421	419	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1193	-	-	1167	-	-	301	312	657	296	313	676
Stage 1	-	-	-	-	-	-	616	593	-	631	605	-
Stage 2	-	-	-	-	-	-	637	604	-	608	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1186	-	-	1167	-	-	290	302	657	287	303	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	302	-	287	303	-
Stage 1	-	-	-	-	-	-	609	586	-	620	594	-
Stage 2	-	-	-	-	-	-	617	593	-	597	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	10.5	16.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	657	1186	-	-	1167	-	-	346
HCM Lane V/C Ratio	0.007	0.009	-	-	0.01	-	-	0.118
HCM Control Delay (s)	10.5	8.1	0	-	8.1	0	-	16.8
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	59	81	2	0	1
Future Vol, veh/h	0	59	81	2	0	1
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	88	121	3	0	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	246	2	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	742	1082	1635	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	687	1081	1635	-	-	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1081	-	-
HCM Lane V/C Ratio	0.074	-	0.081	-	-
HCM Control Delay (s)	7.4	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

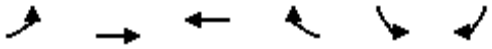
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	41	30	48	66	13
Future Vol, veh/h	26	41	30	48	66	13
Conflicting Peds, #/hr	10	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	52	38	61	84	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	244	97	105	0	-	0
Stage 1	97	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	749	965	1499	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	722	960	1492	-	-	-
Mov Cap-2 Maneuver	722	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	881	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	2.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1492	-	851	-	-
HCM Lane V/C Ratio	0.025	-	0.1	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

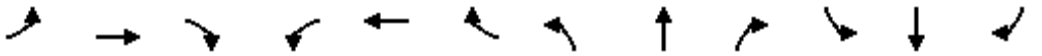


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	383	368	48	89	9
Future Volume (veh/h)	13	383	368	48	89	9
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1881	1900	1900	1900
Adj Flow Rate, veh/h	14	421	404	49	98	6
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	0	0
Cap, veh/h	100	1305	1161	141	174	11
Arrive On Green	0.71	0.71	0.71	0.71	0.10	0.10
Sat Flow, veh/h	18	1845	1641	199	1677	103
Grp Volume(v), veh/h	435	0	0	453	105	0
Grp Sat Flow(s),veh/h/ln	1863	0	0	1840	1797	0
Q Serve(g_s), s	0.0	0.0	0.0	4.1	2.4	0.0
Cycle Q Clear(g_c), s	3.7	0.0	0.0	4.1	2.4	0.0
Prop In Lane	0.03			0.11	0.93	0.06
Lane Grp Cap(c), veh/h	1406	0	0	1301	187	0
V/C Ratio(X)	0.31	0.00	0.00	0.35	0.56	0.00
Avail Cap(c_a), veh/h	3340	0	0	3253	1271	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	2.4	0.0	0.0	2.4	18.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	2.0	1.2	0.0
LnGrp Delay(d),s/veh	2.4	0.0	0.0	2.5	19.1	0.0
LnGrp LOS	A			A	B	
Approach Vol, veh/h		435	453		105	
Approach Delay, s/veh		2.4	2.5		19.1	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		34.0		8.4		34.0		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s		5.7		4.4		6.1		
Green Ext Time (p_c), s		1.9		0.1		2.0		

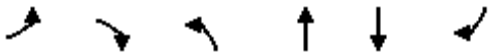
Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	463	0	18	251	222	0	0	3	217	5	177
Future Volume (vph)	38	463	0	18	251	222	0	0	3	217	5	177
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	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1787	3574		1787	3574	1574			1644	1715	1723	1591
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1787	3574		1787	3574	1574			1644	1715	1723	1591
Peak-hour factor, PHF	0.96	0.96	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	40	482	0	19	261	231	0	0	3	226	5	184
RTOR Reduction (vph)	0	0	0	0	0	79	0	0	2	0	0	131
Lane Group Flow (vph)	40	482	0	19	261	152	0	0	1	115	116	53
Confl. Peds. (#/hr)						11	7					7
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	1%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	0.8	14.2		0.6	14.0	24.8			10.8	10.8	10.8	10.8
Effective Green, g (s)	0.8	14.2		0.6	14.0	24.8			10.8	10.8	10.8	10.8
Actuated g/C Ratio	0.02	0.38		0.02	0.37	0.66			0.29	0.29	0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	38	1349		28	1330	1205			472	492	494	456
v/s Ratio Prot	c0.02	c0.13		0.01	0.07	0.04				0.07	c0.07	
v/s Ratio Perm						0.06			0.00			0.03
v/c Ratio	1.05	0.36		0.68	0.20	0.13			0.00	0.23	0.23	0.12
Uniform Delay, d1	18.4	8.4		18.4	8.0	2.4			9.6	10.2	10.2	9.9
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	162.1	0.1		40.8	0.1	0.0			0.0	0.1	0.1	0.0
Delay (s)	180.5	8.5		59.3	8.1	2.4			9.6	10.3	10.3	9.9
Level of Service	F	A		E	A	A			A	B	B	A
Approach Delay (s)		21.7			7.4			9.6			10.1	
Approach LOS		C			A			A			B	

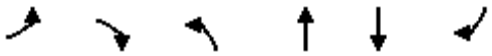
Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	37.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	82	174	175	352	289	197
Future Volume (vph)	82	174	175	352	289	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3371	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3371	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	85	179	180	363	298	203
RTOR Reduction (vph)	0	91	0	0	131	0
Lane Group Flow (vph)	85	88	180	363	370	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	8.3	23.6	11.3	27.7	12.4	
Effective Green, g (s)	8.3	23.6	11.3	27.7	12.4	
Actuated g/C Ratio	0.17	0.49	0.24	0.58	0.26	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	312	794	424	2083	870	
v/s Ratio Prot	c0.05	0.05	c0.10	c0.10	c0.11	
v/s Ratio Perm						
v/c Ratio	0.27	0.11	0.42	0.17	0.43	
Uniform Delay, d1	17.2	6.6	15.6	4.8	14.8	
Progression Factor	1.00	1.00	0.81	0.57	1.00	
Incremental Delay, d2	0.2	0.0	0.5	0.0	0.1	
Delay (s)	17.4	6.6	13.2	2.7	15.0	
Level of Service	B	A	B	A	B	
Approach Delay (s)	10.1			6.2	15.0	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	112	21	483	460	3
Future Volume (vph)	44	112	21	483	460	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.90		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1675		1805	3610	3606	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1675		1805	3610	3606	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	46	117	22	503	479	3
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	163	0	22	503	481	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	9.7		8.2	28.1	15.9	
Effective Green, g (s)	9.7		8.2	28.1	15.9	
Actuated g/C Ratio	0.19		0.16	0.56	0.32	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	326		297	2036	1151	
v/s Ratio Prot	c0.10		0.01	c0.14	c0.13	
v/s Ratio Perm						
v/c Ratio	0.50		0.07	0.25	0.42	
Uniform Delay, d1	17.9		17.6	5.5	13.3	
Progression Factor	1.00		1.00	1.00	0.68	
Incremental Delay, d2	0.4		0.0	0.0	0.1	
Delay (s)	18.3		17.6	5.5	9.1	
Level of Service	B		B	A	A	
Approach Delay (s)	18.3			6.0	9.1	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	135	180	146	108	139
Future Vol, veh/h	127	135	180	146	108	139
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	151	161	214	174	129	165
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	12.1	11.7	12.5
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	44%	0%	100%	0%
Vol Thru, %	0%	48%	0%	100%
Vol Right, %	56%	52%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	247	262	180	146
LT Vol	108	0	180	0
Through Vol	0	127	0	146
RT Vol	139	135	0	0
Lane Flow Rate	294	312	214	174
Geometry Grp	2	5	7	7
Degree of Util (X)	0.438	0.44	0.37	0.276
Departure Headway (Hd)	5.362	5.081	6.223	5.717
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	673	708	579	629
Service Time	3.393	3.11	3.953	3.446
HCM Lane V/C Ratio	0.437	0.441	0.37	0.277
HCM Control Delay	12.5	12.1	12.6	10.6
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.2	2.3	1.7	1.1

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	202	14	0	4	79	216	5	6	364	10
Future Vol, veh/h	5	1	202	14	0	4	79	216	5	6	364	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	6	1	253	18	0	5	99	270	6	8	455	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	952	964	462	1088	967	285	468	0	0	288	0	0
Stage 1	478	478	-	483	483	-	-	-	-	-	-	-
Stage 2	474	486	-	605	484	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	241	257	604	195	256	759	1099	-	-	1274	-	-
Stage 1	572	559	-	569	556	-	-	-	-	-	-	-
Stage 2	575	554	-	488	555	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	218	225	604	102	224	750	1099	-	-	1259	-	-
Mov Cap-2 Maneuver	218	225	-	102	224	-	-	-	-	-	-	-
Stage 1	511	554	-	502	491	-	-	-	-	-	-	-
Stage 2	510	489	-	281	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	39.7	2.3	0.1
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	575	126	1259	-	-
HCM Lane V/C Ratio	0.09	-	-	0.452	0.179	0.006	-	-
HCM Control Delay (s)	8.6	0	-	16.3	39.7	7.9	0	-
HCM Lane LOS	A	A	-	C	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	2.3	0.6	0	-	-

Intersection	
Int Delay, s/veh	10

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	151	156	34	184	369
Future Vol, veh/h	51	151	156	34	184	369
Conflicting Peds, #/hr	0	33	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	69	204	211	46	249	499

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1234	270	0	0	260	0
Stage 1	237	-	-	-	-	-
Stage 2	997	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	197	774	-	-	1316	-
Stage 1	807	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	145	748	-	-	1312	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39	0	2.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	365	1312	-
HCM Lane V/C Ratio	-	-	0.748	0.19	-
HCM Control Delay (s)	-	-	39	8.4	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	5.9	0.7	-

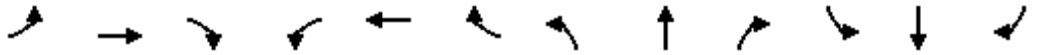
Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	31	112	46	45	341
Future Vol, veh/h	47	31	112	46	45	341
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	59	39	142	58	57	432

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	723	177	0	0	206	0
Stage 1	177	-	-	-	-	-
Stage 2	546	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	396	871	-	-	1377	-
Stage 1	859	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	372	866	-	-	1369	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	584	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	481	1369	-
HCM Lane V/C Ratio	-	-	0.205	0.042	-
HCM Control Delay (s)	-	-	14.4	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	378	269	107	202	50	148	92	101	152	243	22
Future Volume (veh/h)	30	378	269	107	202	50	148	92	101	152	243	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	36	455	313	129	243	21	178	111	100	183	293	25
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	750	501	344	160	296	245	267	169	153	333	327	28
Arrive On Green	0.41	0.48	0.48	0.09	0.16	0.16	0.10	0.19	0.19	0.10	0.19	0.19
Sat Flow, veh/h	1810	1038	714	1810	1900	1574	1810	907	817	1810	1724	147
Grp Volume(v), veh/h	36	0	768	129	243	21	178	0	211	183	0	318
Grp Sat Flow(s),veh/h/ln	1810	0	1752	1810	1900	1574	1810	0	1724	1810	0	1871
Q Serve(g_s), s	1.3	0.0	45.6	7.9	14.0	1.0	8.8	0.0	12.8	9.0	0.0	18.7
Cycle Q Clear(g_c), s	1.3	0.0	45.6	7.9	14.0	1.0	8.8	0.0	12.8	9.0	0.0	18.7
Prop In Lane	1.00		0.41	1.00		1.00	1.00		0.47	1.00		0.08
Lane Grp Cap(c), veh/h	750	0	845	160	296	245	267	0	322	333	0	355
V/C Ratio(X)	0.05	0.00	0.91	0.81	0.82	0.09	0.67	0.00	0.66	0.55	0.00	0.90
Avail Cap(c_a), veh/h	750	0	1168	465	593	491	474	0	551	616	0	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	26.9	50.5	46.0	25.8	33.8	0.0	42.5	32.7	0.0	44.6
Incr Delay (d2), s/veh	0.0	0.0	9.1	3.7	7.8	0.2	1.1	0.0	0.8	0.5	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	24.1	4.1	8.0	0.6	4.4	0.0	6.2	4.5	0.0	10.2
LnGrp Delay(d),s/veh	19.7	0.0	36.0	54.1	53.8	26.0	34.8	0.0	43.3	33.2	0.0	50.1
LnGrp LOS	B		D	D	D	C	C		D	C		D
Approach Vol, veh/h		804			393			389			501	
Approach Delay, s/veh		35.3			52.4			39.4			43.9	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	58.4	15.0	25.4	50.7	21.6	15.4	25.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	9.9	47.6	10.8	20.7	3.3	16.0	11.0	14.8
Green Ext Time (p_c), s	0.2	6.8	0.3	0.7	0.0	1.4	0.4	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	67	24	51	51	9	3	13	37	12	29	1
Future Vol, veh/h	0	0	67	24	51	51	9	3	13	37	12	29	1
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	1	1	1	1	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	105	38	80	80	14	5	20	58	19	45	2
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.7	7.8	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	46%	29%
Vol Thru, %	25%	74%	46%	69%
Vol Right, %	70%	26%	8%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	53	91	111	42
LT Vol	3	0	51	12
Through Vol	13	67	51	29
RT Vol	37	24	9	1
Lane Flow Rate	83	142	173	66
Geometry Grp	1	1	1	1
Degree of Util (X)	0.098	0.169	0.214	0.086
Departure Headway (Hd)	4.28	4.29	4.435	4.745
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	838	837	812	756
Service Time	2.304	2.31	2.454	2.77
HCM Lane V/C Ratio	0.099	0.17	0.213	0.087
HCM Control Delay	7.8	8.2	8.7	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0.8	0.3

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	605	2	7	318	70	2	1	4	51	1	45
Future Vol, veh/h	42	605	2	7	318	70	2	1	4	51	1	45
Conflicting Peds, #/hr	6	0	1	1	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	46	665	2	8	349	77	2	1	4	56	1	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	432	0	0	668	0	0	1188	1207	668	1172	1170	394
Stage 1	-	-	-	-	-	-	759	759	-	410	410	-
Stage 2	-	-	-	-	-	-	429	448	-	762	760	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1138	-	-	931	-	-	167	185	462	171	195	659
Stage 1	-	-	-	-	-	-	402	418	-	623	599	-
Stage 2	-	-	-	-	-	-	608	576	-	400	417	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1131	-	-	930	-	-	145	170	461	158	179	655
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	170	-	158	179	-
Stage 1	-	-	-	-	-	-	375	390	-	579	589	-
Stage 2	-	-	-	-	-	-	555	566	-	369	389	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	20	30.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	247	1131	-	-	930	-	-	244
HCM Lane V/C Ratio	0.031	0.041	-	-	0.008	-	-	0.437
HCM Control Delay (s)	20	8.3	0	-	8.9	0	-	30.7
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	2.1

Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	139	27	17	9	0	6
Future Vol, veh/h	139	27	17	9	0	6
Conflicting Peds, #/hr	23	102	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	0	0	4	4	0	0
Mvmt Flow	224	44	27	15	0	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	99	109	12	0	-	0
Stage 1	7	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	905	950	1594	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	886	856	1591	-	-	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	935	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	4.8	0
HCM LOS	B		

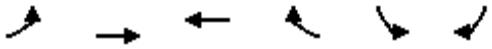
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1591	-	881	-	-
HCM Lane V/C Ratio	0.017	-	0.304	-	-
HCM Control Delay (s)	7.3	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	0	19	0	0	0	19	246	0	0	199	74
Future Vol, veh/h	53	0	19	0	0	0	19	246	0	0	199	74
Peak Hour Factor	0.71	0.92	0.71	0.92	0.92	0.92	0.71	0.71	0.92	0.92	0.71	0.71
Heavy Vehicles, %	2	2	2	2	2	2	0	0	2	2	1	1
Mvmt Flow	75	0	27	0	0	0	27	346	0	0	280	104
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	0	11.8	11.5
HCM LOS	A	-	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	74%	0%	0%
Vol Thru, %	93%	0%	100%	73%
Vol Right, %	0%	26%	0%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	72	0	273
LT Vol	19	53	0	0
Through Vol	246	0	0	199
RT Vol	0	19	0	74
Lane Flow Rate	373	101	0	385
Geometry Grp	1	1	1	1
Degree of Util (X)	0.477	0.156	0	0.475
Departure Headway (Hd)	4.604	5.552	5.775	4.446
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	780	641	0	807
Service Time	2.649	3.628	3.873	2.49
HCM Lane V/C Ratio	0.478	0.158	0	0.477
HCM Control Delay	11.8	9.7	8.9	11.5
HCM Lane LOS	B	A	N	B
HCM 95th-tile Q	2.6	0.6	0	2.6

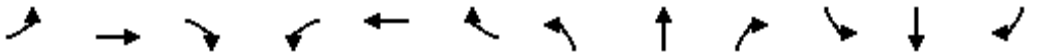


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	631	355	285	216	40
Future Volume (veh/h)	29	631	355	285	216	40
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	725	408	196	248	41
Adj No. of Lanes	1	1	1	1	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	540	1235	1030	870	311	51
Arrive On Green	0.04	0.65	0.54	0.54	0.21	0.21
Sat Flow, veh/h	1810	1900	1900	1605	1516	251
Grp Volume(v), veh/h	33	725	408	196	290	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1900	1605	1773	0
Q Serve(g_s), s	0.4	11.9	6.9	3.5	8.6	0.0
Cycle Q Clear(g_c), s	0.4	11.9	6.9	3.5	8.6	0.0
Prop In Lane	1.00			1.00	0.86	0.14
Lane Grp Cap(c), veh/h	540	1235	1030	870	364	0
V/C Ratio(X)	0.06	0.59	0.40	0.23	0.80	0.00
Avail Cap(c_a), veh/h	835	2575	2575	2174	961	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.9	5.5	7.4	6.6	20.9	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.1	0.0	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.1	3.7	1.5	4.3	0.0
LnGrp Delay(d),s/veh	5.0	5.6	7.5	6.7	22.4	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		758	604		290	
Approach Delay, s/veh		5.6	7.2		22.4	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.0		15.4	6.0	34.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		75.0		30.0	11.0	75.0		
Max Q Clear Time (g_c+I1), s		13.9		10.6	2.4	8.9		
Green Ext Time (p_c), s		3.7		0.4	0.0	2.0		

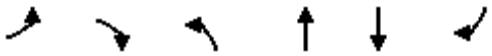
Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes



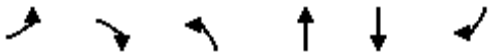
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	835	2	12	364	171	0	0	2	481	2	287
Future Volume (vph)	47	835	2	12	364	171	0	0	2	481	2	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3609		1805	3610	1588			1644	1715	1720	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3609		1805	3610	1588			1644	1715	1720	1593
Peak-hour factor, PHF	0.95	0.95	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	879	2	13	383	180	0	0	2	506	2	302
RTOR Reduction (vph)	0	0	0	0	0	55	0	0	1	0	0	203
Lane Group Flow (vph)	49	881	0	13	383	125	0	0	1	253	255	99
Confl. Peds. (#/hr)						14	3					3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	2.3	18.8		0.7	17.2	32.6			15.4	15.4	15.4	15.4
Effective Green, g (s)	2.3	18.8		0.7	17.2	32.6			15.4	15.4	15.4	15.4
Actuated g/C Ratio	0.05	0.40		0.01	0.37	0.70			0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	88	1446		26	1323	1239			539	563	564	523
v/s Ratio Prot	c0.03	c0.24		0.01	0.11	0.03				0.15	c0.15	
v/s Ratio Perm						0.05			0.00			0.06
v/c Ratio	0.56	0.61		0.50	0.29	0.10			0.00	0.45	0.45	0.19
Uniform Delay, d1	21.8	11.1		22.9	10.5	2.3			10.6	12.4	12.4	11.3
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	0.5		5.4	0.2	0.0			0.0	0.2	0.2	0.1
Delay (s)	26.1	11.6		28.3	10.7	2.4			10.6	12.6	12.6	11.3
Level of Service	C	B		C	B	A			B	B	B	B
Approach Delay (s)		12.4			8.5			10.6			12.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	46.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	109	83	146	728	541
Future Volume (vph)	70	109	83	146	728	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3324	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3324	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	77	120	91	160	800	595
RTOR Reduction (vph)	0	21	0	0	100	0
Lane Group Flow (vph)	77	99	91	160	1295	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	7.2	19.7	8.5	43.1	30.6	
Effective Green, g (s)	7.2	19.7	8.5	43.1	30.6	
Actuated g/C Ratio	0.12	0.32	0.14	0.69	0.49	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	202	495	241	2448	1632	
v/s Ratio Prot	c0.04	0.06	c0.05	c0.05	c0.39	
v/s Ratio Perm						
v/c Ratio	0.38	0.20	0.38	0.07	0.79	
Uniform Delay, d1	25.5	15.5	24.5	3.1	13.2	
Progression Factor	1.00	1.00	0.82	0.90	1.00	
Incremental Delay, d2	0.4	0.1	0.7	0.0	2.6	
Delay (s)	25.9	15.6	20.8	2.8	15.8	
Level of Service	C	B	C	A	B	
Approach Delay (s)	19.6			9.3	15.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	93	9	188	829	8
Future Volume (vph)	41	93	9	188	829	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1696		1770	3539	3534	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1696		1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	48	109	11	221	975	9
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	157	0	11	221	984	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	10.3		5.9	42.8	32.9	
Effective Green, g (s)	10.3		5.9	42.8	32.9	
Actuated g/C Ratio	0.16		0.09	0.66	0.51	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	268		160	2326	1786	
v/s Ratio Prot	c0.09		0.01	c0.06	c0.28	
v/s Ratio Perm						
v/c Ratio	0.59		0.07	0.10	0.55	
Uniform Delay, d1	25.4		27.1	4.1	11.0	
Progression Factor	1.00		1.00	1.00	0.52	
Incremental Delay, d2	2.1		0.1	0.0	0.1	
Delay (s)	27.5		27.2	4.1	5.9	
Level of Service	C		C	A	A	
Approach Delay (s)	27.5			5.2	5.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	22	17	0	6	6	289	19	7	217	0
Future Vol, veh/h	0	0	22	17	0	6	6	289	19	7	217	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	24	18	0	7	7	314	21	8	236	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	594	601	236	603	591	325	236	0	0	335	0	0
Stage 1	252	252	-	339	339	-	-	-	-	-	-	-
Stage 2	342	349	-	264	252	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	417	414	803	411	420	716	1331	-	-	1224	-	-
Stage 1	752	698	-	676	640	-	-	-	-	-	-	-
Stage 2	673	633	-	741	698	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	409	408	803	395	414	716	1331	-	-	1224	-	-
Mov Cap-2 Maneuver	409	408	-	395	414	-	-	-	-	-	-	-
Stage 1	747	692	-	672	636	-	-	-	-	-	-	-
Stage 2	663	629	-	713	692	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	13.5	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1331	-	-	803	447	1224	-	-
HCM Lane V/C Ratio	0.005	-	-	0.03	0.056	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.6	13.5	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	115	1	0	109	2	3
Future Vol, veh/h	115	1	0	109	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	1	0	118	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	244	126
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	118	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1460	-	744	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1460	-	744	924
Mov Cap-2 Maneuver	-	-	-	-	744	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	842	-	-	1460	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	81	281	8	53	220
Future Vol, veh/h	21	81	281	8	53	220
Conflicting Peds, #/hr	0	42	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	4	4	1	1	2	2
Mvmt Flow	27	105	365	10	69	286

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	800	418	0	0	381	0
Stage 1	376	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	351	631	-	-	1177	-
Stage 1	690	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	324	602	-	-	1170	-
Mov Cap-2 Maneuver	324	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	656	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	512	1170	-
HCM Lane V/C Ratio	-	-	0.259	0.059	-
HCM Control Delay (s)	-	-	14.5	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-

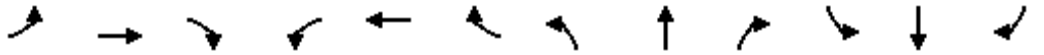
Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	39	211	18	20	186
Future Vol, veh/h	25	39	211	18	20	186
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	1	1	3	3
Mvmt Flow	30	47	254	22	24	224

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	539	267	0	0	278	0
Stage 1	267	-	-	-	-	-
Stage 2	272	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	503	772	-	-	1279	-
Stage 1	778	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	491	771	-	-	1277	-
Mov Cap-2 Maneuver	491	-	-	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	631	1277	-
HCM Lane V/C Ratio	-	-	0.122	0.019	-
HCM Control Delay (s)	-	-	11.5	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	280	114	101	248	93	114	170	125	106	126	41
Future Volume (veh/h)	35	280	114	101	248	93	114	170	125	106	126	41
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1881	1881	1881	1900	1827	1827	1900
Adj Flow Rate, veh/h	37	298	112	107	264	37	121	181	120	113	134	38
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	4	4	4
Cap, veh/h	301	411	154	140	438	346	450	252	167	337	328	93
Arrive On Green	0.17	0.32	0.32	0.08	0.23	0.23	0.07	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	1774	1268	477	1792	1881	1486	1792	1026	681	1740	1351	383
Grp Volume(v), veh/h	37	0	410	107	264	37	121	0	301	113	0	172
Grp Sat Flow(s),veh/h/ln	1774	0	1745	1792	1881	1486	1792	0	1707	1740	0	1734
Q Serve(g_s), s	1.0	0.0	11.8	3.3	7.1	0.8	2.8	0.0	9.2	2.7	0.0	4.7
Cycle Q Clear(g_c), s	1.0	0.0	11.8	3.3	7.1	0.8	2.8	0.0	9.2	2.7	0.0	4.7
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.40	1.00		0.22
Lane Grp Cap(c), veh/h	301	0	565	140	438	346	450	0	420	337	0	421
V/C Ratio(X)	0.12	0.00	0.73	0.76	0.60	0.11	0.27	0.00	0.72	0.34	0.00	0.41
Avail Cap(c_a), veh/h	748	0	2304	912	1163	918	1072	0	1079	1100	0	1096
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	17.0	25.7	19.5	9.0	14.5	0.0	19.7	15.1	0.0	18.1
Incr Delay (d2), s/veh	0.1	0.0	2.5	3.2	1.9	0.2	0.1	0.0	0.9	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.1	1.8	3.9	0.5	1.4	0.0	4.4	1.3	0.0	2.3
LnGrp Delay(d),s/veh	20.1	0.0	19.6	29.0	21.4	9.2	14.6	0.0	20.5	15.4	0.0	18.4
LnGrp LOS	C		B	C	C	A	B		C	B		B
Approach Vol, veh/h		447			408			422			285	
Approach Delay, s/veh		19.6			22.3			18.8			17.2	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	22.4	8.2	17.8	13.7	17.2	8.0	18.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	5.3	13.8	4.8	6.7	3.0	9.1	4.7	11.2
Green Ext Time (p_c), s	0.1	4.5	0.1	0.7	0.0	2.5	0.1	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	25	8	40	51	8	15	23	17	4	12	0
Future Vol, veh/h	0	1	25	8	40	51	8	15	23	17	4	12	0
Peak Hour Factor	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Heavy Vehicles, %	3	3	3	3	1	1	1	2	2	2	0	0	0
Mvmt Flow	0	2	58	19	93	119	19	35	53	40	9	28	0
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8	9.2	8.5	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	3%	40%	25%
Vol Thru, %	42%	74%	52%	75%
Vol Right, %	31%	24%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	34	99	16
LT Vol	15	1	40	4
Through Vol	23	25	51	12
RT Vol	17	8	8	0
Lane Flow Rate	128	79	230	37
Geometry Grp	1	1	1	1
Degree of Util (X)	0.162	0.098	0.283	0.05
Departure Headway (Hd)	4.556	4.461	4.428	4.814
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	788	803	813	744
Service Time	2.581	2.489	2.451	2.844
HCM Lane V/C Ratio	0.162	0.098	0.283	0.05
HCM Control Delay	8.5	8	9.2	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	1.2	0.2

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	516	6	3	436	50	1	0	5	53	0	36
Future Vol, veh/h	26	516	6	3	436	50	1	0	5	53	0	36
Conflicting Peds, #/hr	55	0	1	1	0	55	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	29	580	7	3	490	56	1	0	6	60	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	601	0	0	588	0	0	1187	1250	590	1229	1225	573
Stage 1	-	-	-	-	-	-	643	643	-	579	579	-
Stage 2	-	-	-	-	-	-	544	607	-	650	646	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	976	-	-	992	-	-	167	174	511	156	180	523
Stage 1	-	-	-	-	-	-	465	472	-	504	504	-
Stage 2	-	-	-	-	-	-	527	489	-	461	470	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	925	-	-	991	-	-	147	156	508	140	162	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	156	-	140	162	-
Stage 1	-	-	-	-	-	-	443	449	-	455	476	-
Stage 2	-	-	-	-	-	-	482	462	-	432	447	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	15.2	40.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	360	925	-	-	991	-	-	197
HCM Lane V/C Ratio	0.019	0.032	-	-	0.003	-	-	0.508
HCM Control Delay (s)	15.2	9	0	-	8.6	0	-	40.7
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	2.6

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	31	33	7	11	10
Future Vol, veh/h	16	31	33	7	11	10
Conflicting Peds, #/hr	1	150	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	11	11	0	0
Mvmt Flow	19	37	39	8	13	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	113	176	32	0	-	0
Stage 1	26	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	888	872	1524	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	852	742	1514	-	-	-
Mov Cap-2 Maneuver	852	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	6.1	0
HCM LOS	B		

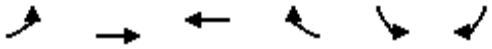
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1514	-	776	-	-
HCM Lane V/C Ratio	0.026	-	0.072	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	29	7	3	3	26	46	6	3	76	12
Future Vol, veh/h	6	3	29	7	3	3	26	46	6	3	76	12
Peak Hour Factor	0.61	0.92	0.61	0.92	0.92	0.92	0.61	0.61	0.92	0.92	0.61	0.61
Heavy Vehicles, %	4	2	4	2	2	2	5	5	2	2	1	1
Mvmt Flow	10	3	48	8	3	3	43	75	7	3	125	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.7	8.1	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	16%	54%	3%
Vol Thru, %	59%	8%	23%	84%
Vol Right, %	8%	76%	23%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	38	13	91
LT Vol	26	6	7	3
Through Vol	46	3	3	76
RT Vol	6	29	3	12
Lane Flow Rate	125	61	14	148
Geometry Grp	1	1	1	1
Degree of Util (X)	0.147	0.07	0.018	0.168
Departure Headway (Hd)	4.25	4.157	4.571	4.088
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	835	867	787	867
Service Time	2.324	2.158	2.573	2.161
HCM Lane V/C Ratio	0.15	0.07	0.018	0.171
HCM Control Delay	8.1	7.5	7.7	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.1	0.6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	83	492	389	192	242	100
Future Volume (veh/h)	83	492	389	192	242	100
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.96	1.00	0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1900	1900
Adj Flow Rate, veh/h	95	566	447	123	278	105
Adj No. of Lanes	1	1	1	1	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	500	1142	901	738	321	121
Arrive On Green	0.06	0.61	0.48	0.48	0.26	0.26
Sat Flow, veh/h	1774	1863	1863	1526	1245	470
Grp Volume(v), veh/h	95	566	447	123	384	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1863	1526	1720	0
Q Serve(g_s), s	1.5	10.5	10.1	2.8	13.2	0.0
Cycle Q Clear(g_c), s	1.5	10.5	10.1	2.8	13.2	0.0
Prop In Lane	1.00			1.00	0.72	0.27
Lane Grp Cap(c), veh/h	500	1142	901	738	443	0
V/C Ratio(X)	0.19	0.50	0.50	0.17	0.87	0.00
Avail Cap(c_a), veh/h	699	2253	2253	1845	832	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	7.1	6.7	10.9	9.0	22.0	0.0
Incr Delay (d2), s/veh	0.1	0.1	0.2	0.0	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	5.4	5.1	1.2	6.5	0.0
LnGrp Delay(d),s/veh	7.2	6.8	11.0	9.0	24.0	0.0
LnGrp LOS	A	A	B	A	C	
Approach Vol, veh/h		661	570		384	
Approach Delay, s/veh		6.8	10.6		24.0	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		42.0		20.0	8.0	34.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		75.0		30.0	11.0	75.0		
Max Q Clear Time (g_c+I1), s		12.5		15.2	3.5	12.1		
Green Ext Time (p_c), s		2.6		0.6	0.1	2.1		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	13	69	0	14	24	90	161	7	160	0
Future Vol, veh/h	0	0	13	69	0	14	24	90	161	7	160	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	75	0	15	26	98	175	8	174	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	435	515	174	435	428	186	174	0	0	273	0	0
Stage 1	190	190	-	238	238	-	-	-	-	-	-	-
Stage 2	245	325	-	197	190	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	531	464	869	531	519	856	1403	-	-	1290	-	-
Stage 1	812	743	-	765	708	-	-	-	-	-	-	-
Stage 2	759	649	-	805	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	510	451	869	511	504	856	1403	-	-	1290	-	-
Mov Cap-2 Maneuver	510	451	-	511	504	-	-	-	-	-	-	-
Stage 1	794	738	-	748	692	-	-	-	-	-	-	-
Stage 2	729	635	-	786	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	12.9	0.7	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1403	-	-	869	548	1290	-	-
HCM Lane V/C Ratio	0.019	-	-	0.016	0.165	0.006	-	-
HCM Control Delay (s)	7.6	0	-	9.2	12.9	7.8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.6	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	42	4	0	97	2	2
Future Vol, veh/h	42	4	0	97	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	4	0	105	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	153	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	105	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1557	-	839	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	919	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1557	-	839	1021
Mov Cap-2 Maneuver	-	-	-	-	839	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	919	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	921	-	-	1557	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	167	79	143	107	158	197
Future Vol, veh/h	167	79	143	107	158	197
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	170	81	146	109	161	201
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11.1	10.6	13
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	45%	0%	100%	0%
Vol Thru, %	0%	68%	0%	100%
Vol Right, %	55%	32%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	355	246	143	107
LT Vol	158	0	143	0
Through Vol	0	167	0	107
RT Vol	197	79	0	0
Lane Flow Rate	362	251	146	109
Geometry Grp	2	5	7	7
Degree of Util (X)	0.504	0.361	0.255	0.176
Departure Headway (Hd)	5.006	5.179	6.301	5.795
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	695	571	619
Service Time	3.006	3.21	4.033	3.527
HCM Lane V/C Ratio	0.5	0.361	0.256	0.176
HCM Control Delay	13	11.1	11.2	9.8
HCM Lane LOS	B	B	B	A
HCM 95th-tile Q	2.9	1.6	1	0.6

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	1	17	5	1	7	20	384	13	9	297	1
Future Vol, veh/h	7	1	17	5	1	7	20	384	13	9	297	1
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	6	6	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	0	0	0
Mvmt Flow	8	1	19	6	1	8	22	427	14	10	330	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	835	843	332	845	836	440	332	0	0	447	0	0
Stage 1	352	352	-	484	484	-	-	-	-	-	-	-
Stage 2	483	491	-	361	352	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.18	6.58	6.28	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	289	303	714	276	297	605	1233	-	-	1124	-	-
Stage 1	669	635	-	553	542	-	-	-	-	-	-	-
Stage 2	569	552	-	645	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	277	291	713	259	285	602	1232	-	-	1118	-	-
Mov Cap-2 Maneuver	277	291	-	259	285	-	-	-	-	-	-	-
Stage 1	652	627	-	536	526	-	-	-	-	-	-	-
Stage 2	547	535	-	620	614	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	14.9	0.4	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1232	-	-	476	377	1118	-	-
HCM Lane V/C Ratio	0.018	-	-	0.058	0.038	0.009	-	-
HCM Control Delay (s)	8	0	-	13	14.9	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	38	358	7	29	202
Future Vol, veh/h	3	38	358	7	29	202
Conflicting Peds, #/hr	0	3	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	40	381	7	31	215

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	666	392	0	0	392	0
Stage 1	389	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	428	661	-	-	1178	-
Stage 1	689	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	657	-	-	1174	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	630	1174	-
HCM Lane V/C Ratio	-	-	0.069	0.026	-
HCM Control Delay (s)	-	-	11.1	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

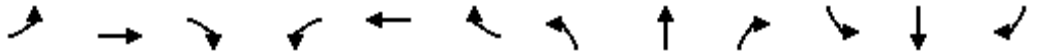
Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	13	346	23	10	186
Future Vol, veh/h	8	13	346	23	10	186
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	14	368	24	11	198

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	604	384	0	0	396	0
Stage 1	384	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	465	668	-	-	1174	-
Stage 1	693	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	458	665	-	-	1170	-
Mov Cap-2 Maneuver	458	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	821	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	567	1170	-
HCM Lane V/C Ratio	-	-	0.039	0.009	-
HCM Control Delay (s)	-	-	11.6	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	286	98	113	352	103	175	265	173	94	105	42
Future Volume (veh/h)	37	286	98	113	352	103	175	265	173	94	105	42
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	39	301	95	119	371	57	184	279	171	99	111	37
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	205	407	128	156	511	420	541	332	204	284	357	119
Arrive On Green	0.11	0.30	0.30	0.09	0.27	0.27	0.10	0.31	0.31	0.06	0.26	0.26
Sat Flow, veh/h	1810	1372	433	1810	1900	1561	1810	1086	666	1810	1352	451
Grp Volume(v), veh/h	39	0	396	119	371	57	184	0	450	99	0	148
Grp Sat Flow(s),veh/h/ln	1810	0	1805	1810	1900	1561	1810	0	1752	1810	0	1803
Q Serve(g_s), s	1.2	0.0	12.6	4.1	11.3	1.3	4.5	0.0	15.2	2.5	0.0	4.2
Cycle Q Clear(g_c), s	1.2	0.0	12.6	4.1	11.3	1.3	4.5	0.0	15.2	2.5	0.0	4.2
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.38	1.00		0.25
Lane Grp Cap(c), veh/h	205	0	535	156	511	420	541	0	536	284	0	476
V/C Ratio(X)	0.19	0.00	0.74	0.76	0.73	0.14	0.34	0.00	0.84	0.35	0.00	0.31
Avail Cap(c_a), veh/h	684	0	2138	826	1053	865	1041	0	993	1002	0	1022
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	0.0	20.1	28.4	21.1	9.8	14.0	0.0	20.6	16.7	0.0	18.7
Incr Delay (d2), s/veh	0.2	0.0	2.9	2.9	2.8	0.2	0.1	0.0	1.4	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	6.6	2.2	6.3	0.7	2.2	0.0	7.6	1.3	0.0	2.1
LnGrp Delay(d),s/veh	25.7	0.0	23.0	31.3	23.9	10.0	14.1	0.0	22.0	17.0	0.0	18.9
LnGrp LOS	C		C	C	C	B	B		C	B		B
Approach Vol, veh/h		435			547			634			247	
Approach Delay, s/veh		23.3			24.1			19.7			18.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	22.8	10.4	20.8	11.2	21.1	7.8	23.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	6.1	14.6	6.5	6.2	3.2	13.3	4.5	17.2
Green Ext Time (p_c), s	0.1	4.3	0.2	0.6	0.0	3.5	0.1	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	1	45	7	5	13	2	15	30	17	5	6	1
Future Vol, veh/h	0	1	45	7	5	13	2	15	30	17	5	6	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1	53	8	6	15	2	18	35	20	6	7	1
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.3	7.3	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	2%	25%	42%
Vol Thru, %	48%	85%	65%	50%
Vol Right, %	27%	13%	10%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	53	20	12
LT Vol	15	1	5	5
Through Vol	30	45	13	6
RT Vol	17	7	2	1
Lane Flow Rate	73	62	24	14
Geometry Grp	1	1	1	1
Degree of Util (X)	0.08	0.069	0.027	0.016
Departure Headway (Hd)	3.943	3.995	4.09	4.138
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	904	893	870	859
Service Time	1.985	2.035	2.138	2.19
HCM Lane V/C Ratio	0.081	0.069	0.028	0.016
HCM Control Delay	7.3	7.3	7.3	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	556	1	9	566	27	1	0	3	42	1	17
Future Vol, veh/h	6	556	1	9	566	27	1	0	3	42	1	17
Conflicting Peds, #/hr	12	0	1	1	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	611	1	10	622	30	1	0	3	46	1	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	664	0	0	613	0	0	1294	1311	613	1296	1296	649
Stage 1	-	-	-	-	-	-	627	627	-	669	669	-
Stage 2	-	-	-	-	-	-	667	684	-	627	627	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	935	-	-	976	-	-	141	160	496	140	164	473
Stage 1	-	-	-	-	-	-	475	479	-	450	459	-
Stage 2	-	-	-	-	-	-	451	452	-	475	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	924	-	-	975	-	-	132	154	496	135	158	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	154	-	135	158	-
Stage 1	-	-	-	-	-	-	469	473	-	440	447	-
Stage 2	-	-	-	-	-	-	425	440	-	467	473	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	17.4	39
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	924	-	-	975	-	-	170
HCM Lane V/C Ratio	0.015	0.007	-	-	0.01	-	-	0.388
HCM Control Delay (s)	17.4	8.9	0	-	8.7	0	-	39
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.7

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	83	69	20	10	11
Future Vol, veh/h	19	83	69	20	10	11
Conflicting Peds, #/hr	3	5	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	108	90	26	13	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	233	29	31	0	-	0
Stage 1	24	-	-	-	-	-
Stage 2	209	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	760	1052	1595	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	711	1043	1589	-	-	-
Mov Cap-2 Maneuver	711	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	5.7	0
HCM LOS	A		

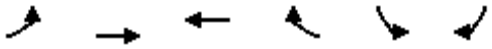
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1589	-	960	-	-
HCM Lane V/C Ratio	0.056	-	0.138	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	2	27	8	4	4	48	124	4	2	68	6
Future Vol, veh/h	24	2	27	8	4	4	48	124	4	2	68	6
Peak Hour Factor	0.80	0.92	0.80	0.92	0.92	0.92	0.80	0.80	0.92	0.92	0.80	0.80
Heavy Vehicles, %	0	2	0	2	2	2	0	0	2	2	0	0
Mvmt Flow	30	2	34	9	4	4	60	155	4	2	85	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.8	7.8	8.7	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	27%	45%	50%	3%
Vol Thru, %	70%	4%	25%	89%
Vol Right, %	2%	51%	25%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	176	53	16	76
LT Vol	48	24	8	2
Through Vol	124	2	4	68
RT Vol	4	27	4	6
Lane Flow Rate	219	66	17	95
Geometry Grp	1	1	1	1
Degree of Util (X)	0.253	0.081	0.022	0.113
Departure Headway (Hd)	4.158	4.4	4.657	4.309
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	851	818	772	836
Service Time	2.241	2.404	2.664	2.315
HCM Lane V/C Ratio	0.257	0.081	0.022	0.114
HCM Control Delay	8.7	7.8	7.8	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.3	0.1	0.4

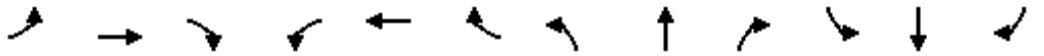


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	549	530	100	125	72
Future Volume (veh/h)	52	549	530	100	125	72
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	58	610	589	82	139	63
Adj No. of Lanes	1	1	1	1	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	521	1319	1073	886	184	83
Arrive On Green	0.05	0.69	0.56	0.56	0.16	0.16
Sat Flow, veh/h	1810	1900	1900	1568	1187	538
Grp Volume(v), veh/h	58	610	589	82	203	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1900	1568	1733	0
Q Serve(g_s), s	0.6	7.7	10.4	1.3	6.0	0.0
Cycle Q Clear(g_c), s	0.6	7.7	10.4	1.3	6.0	0.0
Prop In Lane	1.00			1.00	0.68	0.31
Lane Grp Cap(c), veh/h	521	1319	1073	886	269	0
V/C Ratio(X)	0.11	0.46	0.55	0.09	0.75	0.00
Avail Cap(c_a), veh/h	798	2683	2683	2214	979	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.8	3.7	7.3	5.3	21.5	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.9	5.4	0.6	2.9	0.0
LnGrp Delay(d),s/veh	4.8	3.8	7.5	5.3	23.1	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		668	671		203	
Approach Delay, s/veh		3.8	7.2		23.1	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		40.9		12.2	6.9	34.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		75.0		30.0	11.0	75.0		
Max Q Clear Time (g_c+I1), s		9.7		8.0	2.6	12.4		
Green Ext Time (p_c), s		2.9		0.3	0.0	2.9		

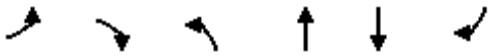
Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Notes



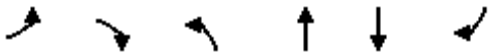
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	676	3	8	519	333	0	0	9	285	4	201
Future Volume (vph)	34	676	3	8	519	333	0	0	9	285	4	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3607		1805	3610	1565			1644	1715	1721	1594
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3607		1805	3610	1565			1644	1715	1721	1594
Peak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	727	3	9	558	358	0	0	10	306	4	216
RTOR Reduction (vph)	0	0	0	0	0	199	0	0	7	0	0	161
Lane Group Flow (vph)	37	730	0	9	558	159	0	0	3	156	154	55
Confl. Peds. (#/hr)						6	2					2
Confl. Bikes (#/hr)						7						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm			Perm	Perm	NA	Perm
Protected Phases	5	2		1	6						4	
Permitted Phases						6			8	4		4
Actuated Green, G (s)	2.0	22.0		0.6	20.6	20.6			11.7	11.7	11.7	11.7
Effective Green, g (s)	2.0	22.0		0.6	20.6	20.6			11.7	11.7	11.7	11.7
Actuated g/C Ratio	0.04	0.48		0.01	0.44	0.44			0.25	0.25	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	4.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	77	1713		23	1606	696			415	433	434	402
v/s Ratio Prot	c0.02	c0.20		0.00	0.15							
v/s Ratio Perm						0.10			0.00	c0.09	0.09	0.03
v/c Ratio	0.48	0.43		0.39	0.35	0.23			0.01	0.36	0.35	0.14
Uniform Delay, d1	21.6	8.0		22.7	8.4	7.9			12.9	14.2	14.2	13.4
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1		4.0	0.2	0.2			0.0	0.2	0.2	0.1
Delay (s)	23.4	8.1		26.6	8.6	8.2			13.0	14.4	14.4	13.4
Level of Service	C	A		C	A	A			B	B	B	B
Approach Delay (s)		8.8			8.6			13.0			14.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	186	272	537	219	217
Future Volume (vph)	160	186	272	537	219	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3278	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3278	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	194	283	559	228	226
RTOR Reduction (vph)	0	86	0	0	174	0
Lane Group Flow (vph)	167	108	283	559	280	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	10.1	30.8	16.7	33.4	12.7	
Effective Green, g (s)	10.1	30.8	16.7	33.4	12.7	
Actuated g/C Ratio	0.18	0.55	0.30	0.60	0.23	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	325	887	543	2172	750	
v/s Ratio Prot	c0.09	0.07	c0.16	0.15	c0.09	
v/s Ratio Perm						
v/c Ratio	0.51	0.12	0.52	0.26	0.37	
Uniform Delay, d1	20.5	5.9	16.1	5.2	18.0	
Progression Factor	1.00	1.00	0.79	0.52	1.00	
Incremental Delay, d2	0.6	0.0	0.7	0.0	0.1	
Delay (s)	21.1	5.9	13.4	2.7	18.2	
Level of Service	C	A	B	A	B	
Approach Delay (s)	12.9			6.3	18.2	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	63	112	34	746	400	5
Future Volume (vph)	63	112	34	746	400	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1705		1805	3610	3602	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1705		1805	3610	3602	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	117	35	777	417	5
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	183	0	35	777	421	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	10.8		11.8	33.5	17.7	
Effective Green, g (s)	10.8		11.8	33.5	17.7	
Actuated g/C Ratio	0.19		0.21	0.60	0.31	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	327		378	2148	1132	
v/s Ratio Prot	c0.11		0.02	c0.22	c0.12	
v/s Ratio Perm						
v/c Ratio	0.56		0.09	0.36	0.37	
Uniform Delay, d1	20.6		17.9	5.9	15.0	
Progression Factor	1.00		1.00	1.00	0.78	
Incremental Delay, d2	1.2		0.0	0.0	0.1	
Delay (s)	21.8		18.0	5.9	11.8	
Level of Service	C		B	A	B	
Approach Delay (s)	21.8			6.4	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	12	116	0	8	23	55	74	34	69	0
Future Vol, veh/h	0	0	12	116	0	8	23	55	74	34	69	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	126	0	9	25	60	80	37	75	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	304	339	75	306	299	100	75	0	0	140	0	0
Stage 1	149	149	-	150	150	-	-	-	-	-	-	-
Stage 2	155	190	-	156	149	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	648	582	986	646	613	956	1524	-	-	1443	-	-
Stage 1	854	774	-	853	773	-	-	-	-	-	-	-
Stage 2	847	743	-	846	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	620	556	986	616	585	956	1524	-	-	1443	-	-
Mov Cap-2 Maneuver	620	556	-	616	585	-	-	-	-	-	-	-
Stage 1	839	753	-	838	759	-	-	-	-	-	-	-
Stage 2	824	730	-	812	753	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	12.3	1.1	2.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	986	630	1443	-	-
HCM Lane V/C Ratio	0.016	-	-	0.013	0.214	0.026	-	-
HCM Control Delay (s)	7.4	0	-	8.7	12.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	4	0	18	2	2
Future Vol, veh/h	63	4	0	18	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	4	0	20	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	72	0	90	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1528	-	910	993
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1528	-	910	993
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	1003	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	950	-	-	1528	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	132	102	150	126	145	151
Future Vol, veh/h	132	102	150	126	145	151
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	147	113	167	140	161	168
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11.2	10.9	12.7
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	49%	0%	100%	0%
Vol Thru, %	0%	56%	0%	100%
Vol Right, %	51%	44%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	296	234	150	126
LT Vol	145	0	150	0
Through Vol	0	132	0	126
RT Vol	151	102	0	0
Lane Flow Rate	329	260	167	140
Geometry Grp	2	5	7	7
Degree of Util (X)	0.472	0.371	0.289	0.223
Departure Headway (Hd)	5.163	5.137	6.238	5.732
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	704	699	577	627
Service Time	3.163	3.169	3.97	3.463
HCM Lane V/C Ratio	0.467	0.372	0.289	0.223
HCM Control Delay	12.7	11.2	11.5	10.1
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.5	1.7	1.2	0.8

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	1	13	3	4	10	10	281	7	7	231	12
Future Vol, veh/h	5	1	13	3	4	10	10	281	7	7	231	12
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	12	12	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	1	15	3	5	11	11	319	8	8	263	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	642	649	272	651	652	336	279	0	0	339	0	0
Stage 1	288	288	-	357	357	-	-	-	-	-	-	-
Stage 2	354	361	-	294	295	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	390	391	772	384	390	711	1295	-	-	1231	-	-
Stage 1	724	677	-	665	632	-	-	-	-	-	-	-
Stage 2	667	629	-	719	673	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	374	379	771	366	378	702	1293	-	-	1217	-	-
Mov Cap-2 Maneuver	374	379	-	366	378	-	-	-	-	-	-	-
Stage 1	715	670	-	651	619	-	-	-	-	-	-	-
Stage 2	644	616	-	698	666	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	12.3	0.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1293	-	-	578	515	1217	-	-
HCM Lane V/C Ratio	0.009	-	-	0.037	0.038	0.007	-	-
HCM Control Delay (s)	7.8	0	-	11.5	12.3	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	3	0	56	0	175	7	49	151	0
Future Vol, veh/h	0	0	0	3	0	56	0	175	7	49	151	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	1	1	1
Mvmt Flow	0	0	0	3	0	62	0	192	8	54	166	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	501	477	166	473	473	199	166	0	0	203	0	0
Stage 1	274	274	-	199	199	-	-	-	-	-	-	-
Stage 2	227	203	-	274	274	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.209	-	-
Pot Cap-1 Maneuver	484	490	884	505	493	847	1418	-	-	1375	-	-
Stage 1	736	687	-	807	740	-	-	-	-	-	-	-
Stage 2	780	737	-	736	687	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	434	467	884	487	470	845	1418	-	-	1371	-	-
Mov Cap-2 Maneuver	434	467	-	487	470	-	-	-	-	-	-	-
Stage 1	736	657	-	805	738	-	-	-	-	-	-	-
Stage 2	723	735	-	704	657	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.8	0	1.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	-	815	1371	-	-
HCM Lane V/C Ratio	-	-	-	-	0.08	0.039	-	-
HCM Control Delay (s)	0	-	-	0	9.8	7.7	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	22	156	17	27	158
Future Vol, veh/h	9	22	156	17	27	158
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	10	24	171	19	30	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	425	191	0	0	200	0
Stage 1	191	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	590	856	-	-	1378	-
Stage 1	846	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	570	848	-	-	1365	-
Mov Cap-2 Maneuver	570	-	-	-	-	-
Stage 1	817	-	-	-	-	-
Stage 2	810	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	1.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	743	1365	-
HCM Lane V/C Ratio	-	-	0.046	0.022	-
HCM Control Delay (s)	-	-	10.1	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	219	58	84	189	50	63	134	79	65	119	37
Future Volume (veh/h)	30	219	58	84	189	50	63	134	79	65	119	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.95	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	33	238	56	91	205	19	68	146	75	71	129	33
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	235	389	92	117	376	310	426	224	115	379	282	72
Arrive On Green	0.13	0.27	0.27	0.07	0.20	0.20	0.05	0.19	0.19	0.06	0.20	0.20
Sat Flow, veh/h	1792	1464	344	1792	1881	1551	1792	1151	591	1810	1440	368
Grp Volume(v), veh/h	33	0	294	91	205	19	68	0	221	71	0	162
Grp Sat Flow(s),veh/h/ln	1792	0	1808	1792	1881	1551	1792	0	1742	1810	0	1809
Q Serve(g_s), s	0.6	0.0	5.4	1.9	3.7	0.3	1.1	0.0	4.5	1.2	0.0	3.0
Cycle Q Clear(g_c), s	0.6	0.0	5.4	1.9	3.7	0.3	1.1	0.0	4.5	1.2	0.0	3.0
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.34	1.00		0.20
Lane Grp Cap(c), veh/h	235	0	481	117	376	310	426	0	339	379	0	355
V/C Ratio(X)	0.14	0.00	0.61	0.78	0.55	0.06	0.16	0.00	0.65	0.19	0.00	0.46
Avail Cap(c_a), veh/h	1126	0	3562	1361	1734	1430	1455	0	1642	1653	0	1705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	12.3	17.6	13.7	5.5	11.3	0.0	14.2	11.5	0.0	13.6
Incr Delay (d2), s/veh	0.1	0.0	1.8	4.2	1.8	0.1	0.1	0.0	0.8	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.9	1.1	2.1	0.2	0.6	0.0	2.2	0.6	0.0	1.5
LnGrp Delay(d),s/veh	14.8	0.0	14.1	21.8	15.5	5.7	11.4	0.0	15.0	11.5	0.0	13.9
LnGrp LOS	B		B	C	B	A	B		B	B		B
Approach Vol, veh/h		327			315			289			233	
Approach Delay, s/veh		14.2			16.7			14.1			13.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	14.2	6.1	11.5	9.0	11.6	6.1	11.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	29.0	75.2	24.0	36.0	24.0	35.2	29.0	36.0
Max Q Clear Time (g_c+I1), s	3.9	7.4	3.1	5.0	2.6	5.7	3.2	6.5
Green Ext Time (p_c), s	0.1	3.0	0.1	0.7	0.0	1.8	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	35	7	15	25	3	10	6	9	2	8	1
Future Vol, veh/h	0	0	35	7	15	25	3	10	6	9	2	8	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	4	4	0	0	0
Mvmt Flow	0	0	38	8	16	27	3	11	7	10	2	9	1
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.3	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	0%	35%	18%
Vol Thru, %	24%	83%	58%	73%
Vol Right, %	36%	17%	7%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	42	43	11
LT Vol	10	0	15	2
Through Vol	6	35	25	8
RT Vol	9	7	3	1
Lane Flow Rate	27	46	47	12
Geometry Grp	1	1	1	1
Degree of Util (X)	0.03	0.05	0.052	0.013
Departure Headway (Hd)	4.003	3.904	4.031	4.064
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	891	917	889	877
Service Time	2.041	1.928	2.055	2.106
HCM Lane V/C Ratio	0.03	0.05	0.053	0.014
HCM Control Delay	7.2	7.1	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.2	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	383	1	11	342	18	0	0	4	26	0	11
Future Vol, veh/h	10	383	1	11	342	18	0	0	4	26	0	11
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	3	3	3
Mvmt Flow	11	421	1	12	376	20	0	0	4	29	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	422	0	0	860	870	422	862	860	392
Stage 1	-	-	-	-	-	-	444	444	-	416	416	-
Stage 2	-	-	-	-	-	-	416	426	-	446	444	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1168	-	-	1143	-	-	278	292	636	274	292	655
Stage 1	-	-	-	-	-	-	597	579	-	612	590	-
Stage 2	-	-	-	-	-	-	618	589	-	590	573	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1161	-	-	1143	-	-	268	283	636	266	283	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	268	283	-	266	283	-
Stage 1	-	-	-	-	-	-	590	572	-	601	579	-
Stage 2	-	-	-	-	-	-	599	578	-	579	566	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	10.7	17.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	636	1161	-	-	1143	-	-	323
HCM Lane V/C Ratio	0.007	0.009	-	-	0.011	-	-	0.126
HCM Control Delay (s)	10.7	8.1	0	-	8.2	0	-	17.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	67	92	2	0	1
Future Vol, veh/h	0	67	92	2	0	1
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	100	137	3	0	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	278	2	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	277	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	712	1082	1635	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	652	1081	1635	-	-	-
Mov Cap-2 Maneuver	652	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	7.2	0
HCM LOS	A		

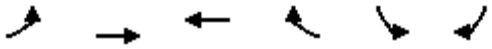
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1635	-	1081	-	-
HCM Lane V/C Ratio	0.084	-	0.093	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	13	39	28	14	14	25	65	26	13	72	2
Future Vol, veh/h	6	13	39	28	14	14	25	65	26	13	72	2
Peak Hour Factor	0.79	0.92	0.79	0.92	0.92	0.92	0.79	0.79	0.92	0.92	0.79	0.79
Heavy Vehicles, %	0	2	0	2	2	2	0	0	2	2	0	0
Mvmt Flow	8	14	49	30	15	15	32	82	28	14	91	3
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.9	8.1	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	10%	50%	15%
Vol Thru, %	56%	22%	25%	83%
Vol Right, %	22%	67%	25%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	58	56	87
LT Vol	25	6	28	13
Through Vol	65	13	14	72
RT Vol	26	39	14	2
Lane Flow Rate	142	71	61	108
Geometry Grp	1	1	1	1
Degree of Util (X)	0.167	0.082	0.076	0.132
Departure Headway (Hd)	4.233	4.143	4.517	4.394
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	853	866	795	818
Service Time	2.233	2.161	2.535	2.407
HCM Lane V/C Ratio	0.166	0.082	0.077	0.132
HCM Control Delay	8.1	7.5	7.9	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.2	0.5

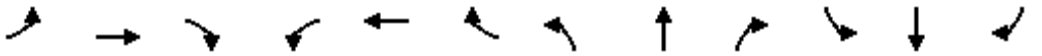


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	68	347	316	250	280	55
Future Volume (veh/h)	68	347	316	250	280	55
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1900	1900
Adj Flow Rate, veh/h	75	381	347	200	308	52
Adj No. of Lanes	1	1	1	1	0	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	0	0
Cap, veh/h	564	1183	945	780	359	61
Arrive On Green	0.06	0.63	0.50	0.50	0.24	0.24
Sat Flow, veh/h	1792	1881	1881	1552	1517	256
Grp Volume(v), veh/h	75	381	347	200	361	0
Grp Sat Flow(s),veh/h/ln	1792	1881	1881	1552	1778	0
Q Serve(g_s), s	1.1	5.6	6.7	4.4	11.6	0.0
Cycle Q Clear(g_c), s	1.1	5.6	6.7	4.4	11.6	0.0
Prop In Lane	1.00			1.00	0.85	0.14
Lane Grp Cap(c), veh/h	564	1183	945	780	421	0
V/C Ratio(X)	0.13	0.32	0.37	0.26	0.86	0.00
Avail Cap(c_a), veh/h	788	2363	2363	1949	893	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.8	5.2	9.1	8.5	21.8	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.1	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.9	3.5	1.9	5.8	0.0
LnGrp Delay(d),s/veh	5.8	5.2	9.2	8.5	23.8	0.0
LnGrp LOS	A	A	A	A	C	
Approach Vol, veh/h		456	547		361	
Approach Delay, s/veh		5.3	8.9		23.8	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		41.6		18.2	7.6	34.0		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		75.0		30.0	11.0	75.0		
Max Q Clear Time (g_c+I1), s		7.6		13.6	3.1	8.7		
Green Ext Time (p_c), s		1.6		0.5	0.0	1.8		

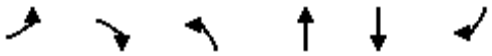
Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	617	0	18	320	222	0	0	3	217	5	258
Future Volume (vph)	38	617	0	18	320	222	0	0	3	217	5	258
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	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1787	3574		1787	3574	1573			1644	1715	1723	1591
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1787	3574		1787	3574	1573			1644	1715	1723	1591
Peak-hour factor, PHF	0.96	0.96	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	40	643	0	19	333	231	0	0	3	226	5	269
RTOR Reduction (vph)	0	0	0	0	0	81	0	0	2	0	0	195
Lane Group Flow (vph)	40	643	0	19	333	150	0	0	1	115	116	74
Confl. Peds. (#/hr)						11	7					7
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	1%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	2.0	16.2		0.7	14.9	25.8			10.9	10.9	10.9	10.9
Effective Green, g (s)	2.0	16.2		0.7	14.9	25.8			10.9	10.9	10.9	10.9
Actuated g/C Ratio	0.05	0.41		0.02	0.37	0.65			0.27	0.27	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	89	1454		31	1338	1177			450	469	471	435
v/s Ratio Prot	c0.02	c0.18		0.01	0.09	0.03				0.07	c0.07	
v/s Ratio Perm						0.06			0.00			0.05
v/c Ratio	0.45	0.44		0.61	0.25	0.13			0.00	0.25	0.25	0.17
Uniform Delay, d1	18.4	8.5		19.4	8.6	2.7			10.5	11.2	11.3	11.0
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.1		22.6	0.1	0.0			0.0	0.1	0.1	0.1
Delay (s)	19.7	8.6		42.0	8.7	2.7			10.5	11.3	11.4	11.1
Level of Service	B	A		D	A	A			B	B	B	B
Approach Delay (s)		9.3			7.4			10.5			11.2	
Approach LOS		A			A			B			B	

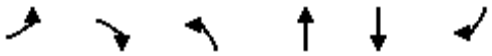
Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	82	174	190	358	289	263
Future Volume (vph)	82	174	190	358	289	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3329	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3329	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	85	179	196	369	298	271
RTOR Reduction (vph)	0	84	0	0	183	0
Lane Group Flow (vph)	85	95	196	369	386	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	11.9	28.4	12.5	29.6	13.1	
Effective Green, g (s)	11.9	28.4	12.5	29.6	13.1	
Actuated g/C Ratio	0.22	0.53	0.23	0.55	0.24	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	401	857	421	1997	815	
v/s Ratio Prot	c0.05	0.06	c0.11	c0.10	c0.12	
v/s Ratio Perm						
v/c Ratio	0.21	0.11	0.47	0.18	0.47	
Uniform Delay, d1	17.0	6.3	17.6	5.9	17.3	
Progression Factor	1.00	1.00	0.79	0.54	1.00	
Incremental Delay, d2	0.1	0.0	0.6	0.0	0.2	
Delay (s)	17.1	6.3	14.5	3.2	17.4	
Level of Service	B	A	B	A	B	
Approach Delay (s)	9.8			7.1	17.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	192	21	498	460	3
Future Volume (vph)	50	192	21	498	460	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.89		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1662		1805	3610	3606	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1662		1805	3610	3606	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	200	22	519	479	3
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	252	0	22	519	481	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	14.8		8.7	29.6	16.9	
Effective Green, g (s)	14.8		8.7	29.6	16.9	
Actuated g/C Ratio	0.26		0.15	0.52	0.30	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	436		278	1894	1080	
v/s Ratio Prot	c0.15		0.01	c0.14	c0.13	
v/s Ratio Perm						
v/c Ratio	0.58		0.08	0.27	0.45	
Uniform Delay, d1	18.1		20.4	7.4	16.0	
Progression Factor	1.00		1.00	1.00	0.71	
Incremental Delay, d2	1.2		0.0	0.0	0.1	
Delay (s)	19.2		20.5	7.5	11.4	
Level of Service	B		C	A	B	
Approach Delay (s)	19.2			8.0	11.4	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	56.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	21	188	0	17	23	82	213	4	126	0
Future Vol, veh/h	0	0	21	188	0	17	23	82	213	4	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	204	0	18	25	89	232	4	137	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	409	516	137	412	400	205	137	0	0	321	0	0
Stage 1	145	145	-	255	255	-	-	-	-	-	-	-
Stage 2	264	371	-	157	145	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	553	463	911	550	538	836	1447	-	-	1239	-	-
Stage 1	858	777	-	749	696	-	-	-	-	-	-	-
Stage 2	741	620	-	845	777	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	530	451	911	526	525	836	1447	-	-	1239	-	-
Mov Cap-2 Maneuver	530	451	-	526	525	-	-	-	-	-	-	-
Stage 1	839	775	-	733	681	-	-	-	-	-	-	-
Stage 2	709	606	-	821	775	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	16.2	0.5	0.2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1447	-	-	911	543	1239	-	-
HCM Lane V/C Ratio	0.017	-	-	0.025	0.41	0.004	-	-
HCM Control Delay (s)	7.5	0	-	9.1	16.2	7.9	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	2	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	42	4	0	41	2	3
Future Vol, veh/h	42	4	0	41	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	4	0	45	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	50	0	93	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1557	-	907	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1557	-	907	1021
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	972	-	-	1557	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	170	150	190	200	120	140
Future Vol, veh/h	170	150	190	200	120	140
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	202	179	226	238	143	167
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	15	13	14.2
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	46%	0%	100%	0%
Vol Thru, %	0%	53%	0%	100%
Vol Right, %	54%	47%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	260	320	190	200
LT Vol	120	0	190	0
Through Vol	0	170	0	200
RT Vol	140	150	0	0
Lane Flow Rate	310	381	226	238
Geometry Grp	2	5	7	7
Degree of Util (X)	0.491	0.562	0.405	0.392
Departure Headway (Hd)	5.706	5.31	6.439	5.931
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	631	678	559	605
Service Time	3.753	3.354	4.185	3.677
HCM Lane V/C Ratio	0.491	0.562	0.404	0.393
HCM Control Delay	14.2	15	13.5	12.5
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.7	3.5	1.9	1.9

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	210	20	0	10	80	250	10	10	420	10
Future Vol, veh/h	10	10	210	20	0	10	80	250	10	10	420	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	13	13	263	25	0	13	100	313	13	13	525	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1084	1096	532	1228	1096	332	538	0	0	338	0	0
Stage 1	558	558	-	532	532	-	-	-	-	-	-	-
Stage 2	526	538	-	696	564	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	196	215	551	156	215	714	1035	-	-	1221	-	-
Stage 1	518	515	-	535	529	-	-	-	-	-	-	-
Stage 2	539	526	-	435	512	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	173	185	551	69	185	706	1035	-	-	1207	-	-
Mov Cap-2 Maneuver	173	185	-	69	185	-	-	-	-	-	-	-
Stage 1	457	507	-	467	461	-	-	-	-	-	-	-
Stage 2	467	459	-	219	504	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.3	62	2.1	0.2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1035	-	-	467	99	1207	-	-
HCM Lane V/C Ratio	0.097	-	-	0.616	0.379	0.01	-	-
HCM Control Delay (s)	8.8	0	-	24.3	62	8	0	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	4.1	1.5	0	-	-

Intersection	
Int Delay, s/veh	21.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	150	190	40	190	430
Future Vol, veh/h	60	150	190	40	190	430
Conflicting Peds, #/hr	0	33	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	81	203	257	54	257	581

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1382	320	0	0	314	0
Stage 1	287	-	-	-	-	-
Stage 2	1095	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	160	725	-	-	1258	-
Stage 1	766	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	111	700	-	-	1254	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	323	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	99.9	0	2.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	278	1254	-
HCM Lane V/C Ratio	-	-	1.021	0.205	-
HCM Control Delay (s)	-	-	99.9	8.6	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	10.7	0.8	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	30	140	50	50	400
Future Vol, veh/h	50	30	140	50	50	400
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	63	38	177	63	63	506

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	847	215	0	0	246	0
Stage 1	215	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	335	830	-	-	1332	-
Stage 1	826	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	311	825	-	-	1324	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	406	1324	-
HCM Lane V/C Ratio	-	-	0.249	0.048	-
HCM Control Delay (s)	-	-	16.8	7.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	470	270	120	260	60	150	110	110	160	280	30
Future Volume (veh/h)	40	470	270	120	260	60	150	110	110	160	280	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	566	309	145	313	27	181	133	100	193	337	32
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	608	501	273	175	376	313	269	212	159	357	373	35
Arrive On Green	0.34	0.44	0.44	0.10	0.20	0.20	0.10	0.21	0.21	0.10	0.22	0.22
Sat Flow, veh/h	1810	1145	625	1810	1900	1582	1810	994	747	1810	1706	162
Grp Volume(v), veh/h	48	0	875	145	313	27	181	0	233	193	0	369
Grp Sat Flow(s),veh/h/ln	1810	0	1770	1810	1900	1582	1810	0	1741	1810	0	1868
Q Serve(g_s), s	1.9	0.0	46.0	8.3	16.6	1.1	8.1	0.0	12.8	8.6	0.0	20.2
Cycle Q Clear(g_c), s	1.9	0.0	46.0	8.3	16.6	1.1	8.1	0.0	12.8	8.6	0.0	20.2
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.43	1.00		0.09
Lane Grp Cap(c), veh/h	608	0	774	175	376	313	269	0	372	357	0	408
V/C Ratio(X)	0.08	0.00	1.13	0.83	0.83	0.09	0.67	0.00	0.63	0.54	0.00	0.90
Avail Cap(c_a), veh/h	608	0	774	189	831	692	285	0	596	364	0	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	29.6	46.7	40.5	20.9	30.1	0.0	37.6	28.6	0.0	40.0
Incr Delay (d2), s/veh	0.0	0.0	74.7	22.3	6.8	0.2	4.4	0.0	0.7	0.8	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	38.4	5.2	9.4	0.6	4.4	0.0	6.2	4.4	0.0	11.3
LnGrp Delay(d),s/veh	23.8	0.0	104.3	69.0	47.3	21.1	34.5	0.0	38.2	29.4	0.0	47.8
LnGrp LOS	C		F	E	D	C	C		D	C		D
Approach Vol, veh/h		923			485			414			562	
Approach Delay, s/veh		100.1			52.3			36.6			41.5	
Approach LOS		F			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	50.0	14.1	27.0	39.3	24.8	14.6	26.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	10.3	48.0	10.1	22.2	3.9	18.6	10.6	14.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	2.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	65.5
HCM 2010 LOS	E

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	70	30	60	50	10	10	20	40	20	30	10
Future Vol, veh/h	0	0	70	30	60	50	10	10	20	40	20	30	10
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	1	1	1	1	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	109	47	94	78	16	16	31	63	31	47	16
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	9.1	8.2	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	0%	50%	33%
Vol Thru, %	29%	70%	42%	50%
Vol Right, %	57%	30%	8%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	100	120	60
LT Vol	10	0	60	20
Through Vol	20	70	50	30
RT Vol	40	30	10	10
Lane Flow Rate	109	156	188	94
Geometry Grp	1	1	1	1
Degree of Util (X)	0.136	0.192	0.24	0.125
Departure Headway (Hd)	4.49	4.429	4.6	4.785
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	796	808	780	747
Service Time	2.531	2.467	2.635	2.826
HCM Lane V/C Ratio	0.137	0.193	0.241	0.126
HCM Control Delay	8.2	8.5	9.1	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.7	0.9	0.4

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	760	10	10	410	70	10	10	10	60	10	50
Future Vol, veh/h	50	760	10	10	410	70	10	10	10	60	10	50
Conflicting Peds, #/hr	6	0	1	1	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	55	835	11	11	451	77	11	11	11	66	11	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	534	0	0	847	0	0	1497	1508	843	1481	1475	496
Stage 1	-	-	-	-	-	-	952	952	-	518	518	-
Stage 2	-	-	-	-	-	-	545	556	-	963	957	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1044	-	-	799	-	-	102	122	367	105	128	578
Stage 1	-	-	-	-	-	-	314	341	-	544	536	-
Stage 2	-	-	-	-	-	-	526	516	-	310	339	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1038	-	-	798	-	-	78	107	366	85	112	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	78	107	-	85	112	-
Stage 1	-	-	-	-	-	-	282	307	-	487	522	-
Stage 2	-	-	-	-	-	-	456	503	-	261	305	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	46	132.3
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	120	1038	-	-	798	-	-	136
HCM Lane V/C Ratio	0.275	0.053	-	-	0.014	-	-	0.97
HCM Control Delay (s)	46	8.7	0	-	9.6	0	-	132.3
HCM Lane LOS	E	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1	0.2	-	-	0	-	-	6.8

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	30	20	10	0	10
Future Vol, veh/h	140	30	20	10	0	10
Conflicting Peds, #/hr	23	102	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	0	0	4	4	0	0
Mvmt Flow	226	48	32	16	0	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	113	112	18	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	103	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	888	947	1586	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	867	853	1583	-	-	-
Mov Cap-2 Maneuver	867	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	864	-	-
HCM Lane V/C Ratio	0.02	-	0.317	-	-
HCM Control Delay (s)	7.3	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	20	20	250	200	80
Future Vol, veh/h	60	20	20	250	200	80
Conflicting Peds, #/hr	8	0	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	71	71	71	71
Heavy Vehicles, %	2	2	0	0	1	1
Mvmt Flow	85	28	28	352	282	113

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	775	359	415	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	366	685	1155	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	341	672	1133	-	-	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	653	-	-	-	-	-

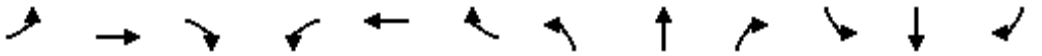
Approach	EB	NB	SB
HCM Control Delay, s	18	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1133	-	389	-	-
HCM Lane V/C Ratio	0.025	-	0.29	-	-
HCM Control Delay (s)	8.3	0	18	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	800	20	20	490	270	0	0	0	200	0	30
Future Volume (veh/h)	30	800	20	20	490	270	0	0	0	200	0	30
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1899	1900	1863	1900	1900				1900	1900	1900
Adj Flow Rate, veh/h	34	920	22	22	563	299				230	0	0
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.87	0.87	0.92	0.92	0.87	0.87				0.87	0.92	0.87
Percent Heavy Veh, %	0	0	0	2	0	0				0	2	0
Cap, veh/h	80	1046	25	373	810	430				315	0	0
Arrive On Green	0.59	0.59	0.59	0.03	0.69	0.69				0.17	0.00	0.00
Sat Flow, veh/h	32	1758	41	1774	1167	620				1810	0	0
Grp Volume(v), veh/h	976	0	0	22	0	862				230	0	0
Grp Sat Flow(s),veh/h/ln	1831	0	0	1774	0	1787				1810	0	0
Q Serve(g_s), s	9.8	0.0	0.0	0.3	0.0	17.3				7.3	0.0	0.0
Cycle Q Clear(g_c), s	27.5	0.0	0.0	0.3	0.0	17.3				7.3	0.0	0.0
Prop In Lane	0.03		0.02	1.00		0.35				1.00		0.00
Lane Grp Cap(c), veh/h	1150	0	0	373	0	1241				315	0	0
V/C Ratio(X)	0.85	0.00	0.00	0.06	0.00	0.69				0.73	0.00	0.00
Avail Cap(c_a), veh/h	2287	0	0	780	0	2208				894	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	10.4	0.0	0.0	3.7	0.0	5.5				23.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.1	0.0	0.3				1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	0.0	0.0	0.1	0.0	8.5				3.7	0.0	0.0
LnGrp Delay(d),s/veh	11.1	0.0	0.0	3.8	0.0	5.7				25.0	0.0	0.0
LnGrp LOS	B			A		A				C		
Approach Vol, veh/h		976			884						230	
Approach Delay, s/veh		11.1			5.7						25.0	
Approach LOS		B			A						C	

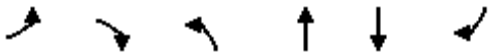
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	6.0	40.1		14.6		46.2		
Change Period (Y+Rc), s	4.5	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.5	75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s	2.3	29.5		9.3		19.3		
Green Ext Time (p_c), s	0.0	6.6		0.9		5.3		

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B



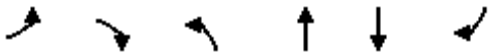
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1020	10	50	450	210	0	0	10	600	10	370
Future Volume (vph)	60	1020	10	50	450	210	0	0	10	600	10	370
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3604		1805	3610	1584			1644	1715	1722	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3604		1805	3610	1584			1644	1715	1722	1593
Peak-hour factor, PHF	0.95	0.95	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	1074	11	53	474	221	0	0	11	632	11	389
RTOR Reduction (vph)	0	1	0	0	0	56	0	0	7	0	0	260
Lane Group Flow (vph)	63	1084	0	53	474	165	0	0	4	322	321	129
Confl. Peds. (#/hr)						14	3					3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	4.1	26.7		3.8	26.4	47.5			21.1	21.1	21.1	21.1
Effective Green, g (s)	4.1	26.7		3.8	26.4	47.5			21.1	21.1	21.1	21.1
Actuated g/C Ratio	0.06	0.42		0.06	0.42	0.75			0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	116	1513		107	1498	1282			545	568	571	528
v/s Ratio Prot	c0.03	c0.30		0.03	0.13	0.04				c0.19	0.19	
v/s Ratio Perm						0.06			0.00			0.08
v/c Ratio	0.54	0.72		0.50	0.32	0.13			0.01	0.57	0.56	0.24
Uniform Delay, d1	28.8	15.3		29.0	12.5	2.3			14.2	17.5	17.5	15.5
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	1.4		1.3	0.2	0.0			0.0	0.8	0.8	0.1
Delay (s)	31.6	16.7		30.3	12.7	2.3			14.2	18.3	18.2	15.5
Level of Service	C	B		C	B	A			B	B	B	B
Approach Delay (s)		17.5			10.9			14.2			17.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	90	140	120	220	1110	670
Future Volume (vph)	90	140	120	220	1110	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3353	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3353	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	99	154	132	242	1220	736
RTOR Reduction (vph)	0	32	0	0	80	0
Lane Group Flow (vph)	99	122	132	242	1876	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	11.4	27.0	11.6	67.9	52.3	
Effective Green, g (s)	11.4	27.0	11.6	67.9	52.3	
Actuated g/C Ratio	0.12	0.30	0.13	0.74	0.57	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	218	463	224	2631	1920	
v/s Ratio Prot	c0.06	0.08	c0.07	0.07	c0.56	
v/s Ratio Perm						
v/c Ratio	0.45	0.26	0.59	0.09	0.98	
Uniform Delay, d1	37.1	24.5	37.6	3.2	18.9	
Progression Factor	1.00	1.00	0.85	1.01	1.00	
Incremental Delay, d2	0.5	0.1	3.3	0.0	15.2	
Delay (s)	37.6	24.7	35.0	3.2	34.1	
Level of Service	D	C	D	A	C	
Approach Delay (s)	29.7			14.5	34.1	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	110	20	280	1240	10
Future Volume (vph)	60	110	20	280	1240	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1704		1770	3539	3534	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1704		1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	71	129	24	329	1459	12
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	200	0	24	329	1471	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	14.0		6.8	68.0	57.2	
Effective Green, g (s)	14.0		6.8	68.0	57.2	
Actuated g/C Ratio	0.15		0.07	0.72	0.61	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	253		128	2560	2150	
v/s Ratio Prot	c0.12		c0.01	0.09	c0.42	
v/s Ratio Perm						
v/c Ratio	0.79		0.19	0.13	0.68	
Uniform Delay, d1	38.6		41.0	4.0	12.3	
Progression Factor	1.00		1.00	1.00	0.42	
Incremental Delay, d2	14.4		0.3	0.0	0.3	
Delay (s)	53.0		41.3	4.0	5.5	
Level of Service	D		D	A	A	
Approach Delay (s)	53.0			6.5	5.5	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	80	320	10	60	250
Future Vol, veh/h	30	80	320	10	60	250
Conflicting Peds, #/hr	0	42	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	4	4	1	1	2	2
Mvmt Flow	39	104	416	13	78	325

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	910	471	0	0	435	0
Stage 1	429	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	302	589	-	-	1125	-
Stage 1	652	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	275	562	-	-	1119	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.2	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	437	1119	-
HCM Lane V/C Ratio	-	-	0.327	0.07	-
HCM Control Delay (s)	-	-	17.2	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.2	-

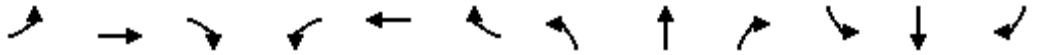
Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	40	250	20	20	220
Future Vol, veh/h	30	40	250	20	20	220
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	1	1	3	3
Mvmt Flow	36	48	301	24	24	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	628	315	0	0	327	0
Stage 1	315	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	447	725	-	-	1227	-
Stage 1	740	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	436	724	-	-	1225	-
Mov Cap-2 Maneuver	436	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	564	1225	-
HCM Lane V/C Ratio	-	-	0.15	0.02	-
HCM Control Delay (s)	-	-	12.5	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	350	120	110	310	100	120	200	130	110	150	50
Future Volume (veh/h)	40	350	120	110	310	100	120	200	130	110	150	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1881	1881	1881	1900	1827	1827	1900
Adj Flow Rate, veh/h	43	372	116	117	330	39	128	213	117	117	160	42
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	4	4	4
Cap, veh/h	329	474	148	150	475	377	414	278	152	305	337	89
Arrive On Green	0.19	0.35	0.35	0.08	0.25	0.25	0.08	0.25	0.25	0.07	0.24	0.24
Sat Flow, veh/h	1774	1342	419	1792	1881	1494	1792	1113	612	1740	1377	362
Grp Volume(v), veh/h	43	0	488	117	330	39	128	0	330	117	0	202
Grp Sat Flow(s),veh/h/ln	1774	0	1761	1792	1881	1494	1792	0	1725	1740	0	1739
Q Serve(g_s), s	1.3	0.0	16.4	4.2	10.5	1.0	3.5	0.0	11.7	3.3	0.0	6.6
Cycle Q Clear(g_c), s	1.3	0.0	16.4	4.2	10.5	1.0	3.5	0.0	11.7	3.3	0.0	6.6
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.35	1.00		0.21
Lane Grp Cap(c), veh/h	329	0	622	150	475	377	414	0	430	305	0	426
V/C Ratio(X)	0.13	0.00	0.78	0.78	0.70	0.10	0.31	0.00	0.77	0.38	0.00	0.47
Avail Cap(c_a), veh/h	329	0	1225	298	1309	1040	576	0	940	471	0	947
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	19.1	29.7	22.4	10.5	16.8	0.0	23.0	17.7	0.0	21.3
Incr Delay (d2), s/veh	0.1	0.0	3.1	3.2	2.6	0.2	0.2	0.0	1.1	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	8.4	2.2	5.8	0.5	1.7	0.0	5.7	1.6	0.0	3.2
LnGrp Delay(d),s/veh	22.6	0.0	22.2	32.9	25.0	10.6	17.0	0.0	24.1	18.0	0.0	21.6
LnGrp LOS	C		C	C	C	B	B		C	B		C
Approach Vol, veh/h		531			486			458			319	
Approach Delay, s/veh		22.3			25.8			22.1			20.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	27.4	9.0	20.2	16.2	20.7	8.7	20.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	6.2	18.4	5.5	8.6	3.3	12.5	5.3	13.7
Green Ext Time (p_c), s	0.1	5.0	0.1	0.8	0.0	3.3	0.1	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	10	20	10	40	50	10	20	30	20	10	20	0
Future Vol, veh/h	0	10	20	10	40	50	10	20	30	20	10	20	0
Peak Hour Factor	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Heavy Vehicles, %	3	3	3	3	1	1	1	2	2	2	0	0	0
Mvmt Flow	0	23	47	23	93	116	23	47	70	47	23	47	0
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	9.6	9	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	25%	40%	33%
Vol Thru, %	43%	50%	50%	67%
Vol Right, %	29%	25%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	40	100	30
LT Vol	20	10	40	10
Through Vol	30	20	50	20
RT Vol	20	10	10	0
Lane Flow Rate	163	93	233	70
Geometry Grp	1	1	1	1
Degree of Util (X)	0.211	0.121	0.298	0.096
Departure Headway (Hd)	4.674	4.687	4.607	4.937
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	765	762	779	723
Service Time	2.716	2.732	2.644	2.985
HCM Lane V/C Ratio	0.213	0.122	0.299	0.097
HCM Control Delay	9	8.4	9.6	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.4	1.3	0.3

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	640	10	10	540	50	10	0	10	60	0	40
Future Vol, veh/h	30	640	10	10	540	50	10	0	10	60	0	40
Conflicting Peds, #/hr	55	0	1	1	0	55	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	34	719	11	11	607	56	11	0	11	67	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	718	0	0	731	0	0	1474	1534	731	1515	1511	690
Stage 1	-	-	-	-	-	-	794	794	-	712	712	-
Stage 2	-	-	-	-	-	-	680	740	-	803	799	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	883	-	-	878	-	-	106	118	425	99	121	449
Stage 1	-	-	-	-	-	-	384	403	-	427	439	-
Stage 2	-	-	-	-	-	-	444	426	-	380	401	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	877	-	-	88	102	423	85	105	425
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	102	-	85	105	-
Stage 1	-	-	-	-	-	-	357	375	-	377	408	-
Stage 2	-	-	-	-	-	-	389	396	-	343	373	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	34.1	121.4
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	146	837	-	-	877	-	-	125
HCM Lane V/C Ratio	0.154	0.04	-	-	0.013	-	-	0.899
HCM Control Delay (s)	34.1	9.5	0	-	9.2	0	-	121.4
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	5.7

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	30	30	10	20	10
Future Vol, veh/h	20	30	30	10	20	10
Conflicting Peds, #/hr	1	150	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	11	11	0	0
Mvmt Flow	24	36	36	12	24	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	122	187	43	0	-	0
Stage 1	37	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	878	860	1510	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	845	732	1500	-	-	-
Mov Cap-2 Maneuver	845	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	5.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1500	-	773	-	-
HCM Lane V/C Ratio	0.024	-	0.077	-	-
HCM Control Delay (s)	7.5	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	20	50	80	20
Future Vol, veh/h	10	30	20	50	80	20
Conflicting Peds, #/hr	217	0	258	0	0	258
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	61	61	61	61
Heavy Vehicles, %	4	4	5	5	1	1
Mvmt Flow	16	49	33	82	131	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	771	406	422	0	-	0
Stage 1	406	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.15	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.245	-	-	-
Pot Cap-1 Maneuver	366	641	1121	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	199	483	846	-	-	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	846	-	356	-	-
HCM Lane V/C Ratio	0.039	-	0.184	-	-
HCM Control Delay (s)	9.4	0	17.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	720	10	10	600	70	0	0	0	130	0	30
Future Volume (veh/h)	20	720	10	10	600	70	0	0	0	130	0	30
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900				1900	1900	1900
Adj Flow Rate, veh/h	23	828	11	11	690	78				149	0	0
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.87	0.87	0.92	0.92	0.87	0.87				0.87	0.92	0.87
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	85	1062	14	469	1145	129				257	0	0
Arrive On Green	0.60	0.60	0.60	0.01	0.70	0.70				0.14	0.00	0.00
Sat Flow, veh/h	19	1783	23	1774	1638	185				1810	0	0
Grp Volume(v), veh/h	862	0	0	11	0	768				149	0	0
Grp Sat Flow(s),veh/h/ln	1826	0	0	1774	0	1823				1810	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	11.0				3.9	0.0	0.0
Cycle Q Clear(g_c), s	17.6	0.0	0.0	0.1	0.0	11.0				3.9	0.0	0.0
Prop In Lane	0.03		0.01	1.00		0.10				1.00		0.00
Lane Grp Cap(c), veh/h	1161	0	0	469	0	1275				257	0	0
V/C Ratio(X)	0.74	0.00	0.00	0.02	0.00	0.60				0.58	0.00	0.00
Avail Cap(c_a), veh/h	2751	0	0	990	0	2715				1078	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	7.7	0.0	0.0	3.1	0.0	3.9				20.2	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	0.0	0.2				0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	0.0	0.0	0.1	0.0	5.4				2.0	0.0	0.0
LnGrp Delay(d),s/veh	8.0	0.0	0.0	3.1	0.0	4.1				21.0	0.0	0.0
LnGrp LOS	A			A		A				C		
Approach Vol, veh/h		862			779						149	
Approach Delay, s/veh		8.0			4.1						21.0	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.2	34.0		11.1		39.2		
Change Period (Y+Rc), s	4.5	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.5	75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s	2.1	19.6		5.9		13.0		
Green Ext Time (p_c), s	0.0	5.2		0.6		4.2		

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	220	90	150	140	170	200
Future Vol, veh/h	220	90	150	140	170	200
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	224	92	153	143	173	204
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	13.1	11.2	14.6
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	46%	0%	100%	0%
Vol Thru, %	0%	71%	0%	100%
Vol Right, %	54%	29%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	370	310	150	140
LT Vol	170	0	150	0
Through Vol	0	220	0	140
RT Vol	200	90	0	0
Lane Flow Rate	378	316	153	143
Geometry Grp	2	5	7	7
Degree of Util (X)	0.552	0.471	0.277	0.238
Departure Headway (Hd)	5.268	5.363	6.506	5.998
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	683	671	553	599
Service Time	3.305	3.399	4.246	3.738
HCM Lane V/C Ratio	0.553	0.471	0.277	0.239
HCM Control Delay	14.6	13.1	11.7	10.6
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	3.4	2.5	1.1	0.9

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	20	10	10	10	20	430	20	10	340	10
Future Vol, veh/h	10	10	20	10	10	10	20	430	20	10	340	10
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	6	6	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	0	0	0
Mvmt Flow	11	11	22	11	11	11	22	478	22	11	378	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	951	957	385	961	951	495	390	0	0	506	0	0
Stage 1	407	407	-	539	539	-	-	-	-	-	-	-
Stage 2	544	550	-	422	412	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.18	6.58	6.28	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	242	260	667	230	254	563	1174	-	-	1069	-	-
Stage 1	625	601	-	516	512	-	-	-	-	-	-	-
Stage 2	527	519	-	598	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	222	248	666	207	243	560	1173	-	-	1063	-	-
Mov Cap-2 Maneuver	222	248	-	207	243	-	-	-	-	-	-	-
Stage 1	608	593	-	499	496	-	-	-	-	-	-	-
Stage 2	492	502	-	560	576	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	19.6	0.3	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	347	280	1063	-	-
HCM Lane V/C Ratio	0.019	-	-	0.128	0.119	0.01	-	-
HCM Control Delay (s)	8.1	0	-	16.9	19.6	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	40	410	10	30	240
Future Vol, veh/h	10	40	410	10	30	240
Conflicting Peds, #/hr	0	3	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	43	436	11	32	255

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	765	449	0	0	451	0
Stage 1	446	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	374	614	-	-	1120	-
Stage 1	649	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	360	610	-	-	1116	-
Mov Cap-2 Maneuver	360	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	1116	-
HCM Lane V/C Ratio	-	-	0.099	0.029	-
HCM Control Delay (s)	-	-	12.5	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

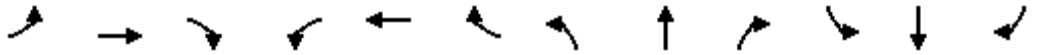
Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	400	30	10	230
Future Vol, veh/h	10	10	400	30	10	230
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	11	426	32	11	245

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	713	446	0	0	462	0
Stage 1	446	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	401	617	-	-	1110	-
Stage 1	649	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	395	615	-	-	1106	-
Mov Cap-2 Maneuver	395	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	782	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	481	1106	-
HCM Lane V/C Ratio	-	-	0.044	0.01	-
HCM Control Delay (s)	-	-	12.8	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	350	100	120	440	110	180	300	180	100	130	50
Future Volume (veh/h)	40	350	100	120	440	110	180	300	180	100	130	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	42	368	96	126	463	45	189	316	171	105	137	40
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	176	463	121	161	594	490	513	359	194	255	389	113
Arrive On Green	0.10	0.32	0.32	0.09	0.31	0.31	0.10	0.31	0.31	0.06	0.28	0.28
Sat Flow, veh/h	1810	1442	376	1810	1900	1568	1810	1144	619	1810	1403	410
Grp Volume(v), veh/h	42	0	464	126	463	45	189	0	487	105	0	177
Grp Sat Flow(s),veh/h/ln	1810	0	1818	1810	1900	1568	1810	0	1762	1810	0	1812
Q Serve(g_s), s	1.6	0.0	17.3	5.1	16.5	1.1	5.3	0.0	19.5	3.0	0.0	5.8
Cycle Q Clear(g_c), s	1.6	0.0	17.3	5.1	16.5	1.1	5.3	0.0	19.5	3.0	0.0	5.8
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.35	1.00		0.23
Lane Grp Cap(c), veh/h	176	0	584	161	594	490	513	0	554	255	0	502
V/C Ratio(X)	0.24	0.00	0.79	0.78	0.78	0.09	0.37	0.00	0.88	0.41	0.00	0.35
Avail Cap(c_a), veh/h	268	0	1125	268	1176	971	604	0	854	413	0	878
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	23.0	33.2	23.2	10.3	16.0	0.0	24.1	19.4	0.0	21.5
Incr Delay (d2), s/veh	0.3	0.0	3.5	3.2	3.2	0.1	0.2	0.0	4.6	0.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	9.2	2.7	9.1	0.6	2.6	0.0	10.2	1.5	0.0	2.9
LnGrp Delay(d),s/veh	31.3	0.0	26.5	36.4	26.4	10.4	16.2	0.0	28.7	19.8	0.0	21.7
LnGrp LOS	C		C	D	C	B	B		C	B		C
Approach Vol, veh/h		506			634			676			282	
Approach Delay, s/veh		26.9			27.3			25.2			21.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	27.9	11.3	24.6	11.2	27.2	8.5	27.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	7.1	19.3	7.3	7.8	3.6	18.5	5.0	21.5
Green Ext Time (p_c), s	0.1	4.6	0.1	0.7	0.0	4.8	0.1	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	10	40	10	10	10	10	20	30	20	10	10	10
Future Vol, veh/h	0	10	40	10	10	10	10	20	30	20	10	10	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	12	47	12	12	12	12	24	35	24	12	12	12
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.3	7.5	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	17%	33%	33%
Vol Thru, %	43%	67%	33%	33%
Vol Right, %	29%	17%	33%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	60	30	30
LT Vol	20	10	10	10
Through Vol	30	40	10	10
RT Vol	20	10	10	10
Lane Flow Rate	82	71	35	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0.091	0.08	0.039	0.039
Departure Headway (Hd)	3.996	4.063	4.024	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	890	875	881	883
Service Time	2.051	2.12	2.09	2.078
HCM Lane V/C Ratio	0.092	0.081	0.04	0.04
HCM Control Delay	7.5	7.5	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.1	0.1

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	690	10	10	700	30	10	0	10	50	10	20
Future Vol, veh/h	10	690	10	10	700	30	10	0	10	50	10	20
Conflicting Peds, #/hr	12	0	1	1	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	758	11	11	769	33	11	0	11	55	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	770	0	0	1611	1623	765	1611	1612	798
Stage 1	-	-	-	-	-	-	787	787	-	820	820	-
Stage 2	-	-	-	-	-	-	824	836	-	791	792	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	822	-	-	854	-	-	85	104	406	85	105	389
Stage 1	-	-	-	-	-	-	388	406	-	372	392	-
Stage 2	-	-	-	-	-	-	370	385	-	386	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	813	-	-	853	-	-	71	98	406	79	99	385
Mov Cap-2 Maneuver	-	-	-	-	-	-	71	98	-	79	99	-
Stage 1	-	-	-	-	-	-	378	396	-	359	379	-
Stage 2	-	-	-	-	-	-	331	372	-	367	394	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	41.2	130.3
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	121	813	-	-	853	-	-	102
HCM Lane V/C Ratio	0.182	0.014	-	-	0.013	-	-	0.862
HCM Control Delay (s)	41.2	9.5	0	-	9.3	0	-	130.3
HCM Lane LOS	E	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	4.9

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	90	70	20	10	20
Future Vol, veh/h	20	90	70	20	10	20
Conflicting Peds, #/hr	3	5	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	117	91	26	13	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	241	35	43	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	211	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	752	1044	1579	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	702	1035	1573	-	-	-
Mov Cap-2 Maneuver	702	-	-	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	5.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1573	-	953	-	-
HCM Lane V/C Ratio	0.058	-	0.15	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	20	50	120	50	30
Future Vol, veh/h	30	20	50	120	50	30
Conflicting Peds, #/hr	2	1	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	25	63	150	63	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	363	86	104	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	640	978	1500	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	607	974	1496	-	-	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	772	-	-	-	-	-

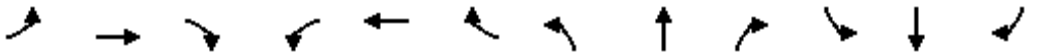
Approach	EB	NB	SB
HCM Control Delay, s	10.5	2.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1496	-	715	-	-
HCM Lane V/C Ratio	0.042	-	0.087	-	-
HCM Control Delay (s)	7.5	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	720	20	20	710	40	0	0	0	30	0	30
Future Volume (veh/h)	20	720	20	20	710	40	0	0	0	30	0	30
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1899	1900	1863	1900	1900				1900	1900	1900
Adj Flow Rate, veh/h	22	800	22	22	789	43				33	0	0
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.90	0.90	0.92	0.92	0.90	0.90				0.90	0.92	0.90
Percent Heavy Veh, %	0	0	0	2	0	0				0	2	0
Cap, veh/h	91	1158	31	593	1373	75				104	0	0
Arrive On Green	0.65	0.65	0.65	0.03	0.77	0.77				0.06	0.00	0.00
Sat Flow, veh/h	18	1790	48	1774	1783	97				1810	0	0
Grp Volume(v), veh/h	844	0	0	22	0	832				33	0	0
Grp Sat Flow(s),veh/h/ln	1857	0	0	1774	0	1880				1810	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	8.5				0.8	0.0	0.0
Cycle Q Clear(g_c), s	13.2	0.0	0.0	0.2	0.0	8.5				0.8	0.0	0.0
Prop In Lane	0.03		0.03	1.00		0.05				1.00		0.00
Lane Grp Cap(c), veh/h	1280	0	0	593	0	1448				104	0	0
V/C Ratio(X)	0.66	0.00	0.00	0.04	0.00	0.57				0.32	0.00	0.00
Avail Cap(c_a), veh/h	3030	0	0	1138	0	3039				1170	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	5.2	0.0	0.0	1.9	0.0	2.2				21.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.1				0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	0.1	0.0	4.2				0.4	0.0	0.0
LnGrp Delay(d),s/veh	5.4	0.0	0.0	1.9	0.0	2.3				21.6	0.0	0.0
LnGrp LOS	A			A		A				C		
Approach Vol, veh/h		844			854						33	
Approach Delay, s/veh		5.4			2.3						21.6	
Approach LOS		A			A						C	

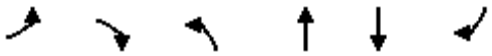
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	5.7	34.0		6.7		39.7		
Change Period (Y+Rc), s	4.5	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.5	75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s	2.2	15.2		2.8		10.5		
Green Ext Time (p_c), s	0.0	5.0		0.1		4.7		

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A



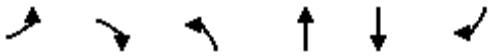
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	770	10	20	620	410	0	0	20	360	10	240
Future Volume (vph)	50	770	10	20	620	410	0	0	20	360	10	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3602		1805	3610	1564			1644	1715	1724	1594
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3602		1805	3610	1564			1644	1715	1724	1594
Peak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	828	11	22	667	441	0	0	22	387	11	258
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	16	0	0	192
Lane Group Flow (vph)	54	838	0	22	667	202	0	0	6	197	201	66
Confl. Peds. (#/hr)						6	2					2
Confl. Bikes (#/hr)						7						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm			Perm	Perm	NA	Perm
Protected Phases	5	2		1	6						4	
Permitted Phases						6			8	4		4
Actuated Green, G (s)	3.7	27.0		1.9	25.2	25.2			14.0	14.0	14.0	14.0
Effective Green, g (s)	3.7	27.0		1.9	25.2	25.2			14.0	14.0	14.0	14.0
Actuated g/C Ratio	0.07	0.49		0.03	0.46	0.46			0.26	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	4.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	121	1771		62	1657	717			419	437	439	406
v/s Ratio Prot	c0.03	c0.23		0.01	0.18							
v/s Ratio Perm						0.13			0.00	0.11	0.12	0.04
v/c Ratio	0.45	0.47		0.35	0.40	0.28			0.01	0.45	0.46	0.16
Uniform Delay, d1	24.6	9.2		25.9	9.9	9.2			15.3	17.2	17.2	15.9
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1		1.3	0.2	0.3			0.0	0.3	0.3	0.1
Delay (s)	25.6	9.3		27.2	10.1	9.5			15.3	17.5	17.5	16.0
Level of Service	C	A		C	B	A			B	B	B	B
Approach Delay (s)		10.3			10.2			15.3			16.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	200	230	340	820	380	260
Future Volume (vph)	200	230	340	820	380	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3331	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3331	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	240	354	854	396	271
RTOR Reduction (vph)	0	122	0	0	152	0
Lane Group Flow (vph)	208	118	354	854	515	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	12.4	33.0	16.6	42.7	22.1	
Effective Green, g (s)	12.4	33.0	16.6	42.7	22.1	
Actuated g/C Ratio	0.18	0.49	0.25	0.64	0.33	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	330	786	446	2297	1097	
v/s Ratio Prot	c0.12	0.07	c0.20	c0.24	c0.15	
v/s Ratio Perm						
v/c Ratio	0.63	0.15	0.79	0.37	0.47	
Uniform Delay, d1	25.2	9.4	23.6	5.8	17.9	
Progression Factor	1.00	1.00	0.89	0.44	1.00	
Incremental Delay, d2	2.9	0.0	8.8	0.1	0.1	
Delay (s)	28.1	9.4	29.8	2.6	18.0	
Level of Service	C	A	C	A	B	
Approach Delay (s)	18.1			10.6	18.0	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	110	50	1080	600	10
Future Volume (vph)	80	110	50	1080	600	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.92		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1715		1805	3610	3600	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1715		1805	3610	3600	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	115	52	1125	625	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	198	0	52	1125	634	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	12.4		14.9	42.7	23.8	
Effective Green, g (s)	12.4		14.9	42.7	23.8	
Actuated g/C Ratio	0.18		0.22	0.64	0.35	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	316		400	2297	1276	
v/s Ratio Prot	c0.12		0.03	c0.31	0.18	
v/s Ratio Perm						
v/c Ratio	0.63		0.13	0.49	0.50	
Uniform Delay, d1	25.2		20.9	6.4	17.0	
Progression Factor	1.00		1.00	1.00	0.66	
Incremental Delay, d2	2.8		0.1	0.1	0.1	
Delay (s)	28.0		21.0	6.5	11.3	
Level of Service	C		C	A	B	
Approach Delay (s)	28.0			7.1	11.3	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	67.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	170	100	150	160	140	150
Future Vol, veh/h	170	100	150	160	140	150
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	189	111	167	178	156	167
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	12.3	11.2	13.1
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	48%	0%	100%	0%
Vol Thru, %	0%	63%	0%	100%
Vol Right, %	52%	37%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	290	270	150	160
LT Vol	140	0	150	0
Through Vol	0	170	0	160
RT Vol	150	100	0	0
Lane Flow Rate	322	300	167	178
Geometry Grp	2	5	7	7
Degree of Util (X)	0.475	0.436	0.292	0.286
Departure Headway (Hd)	5.308	5.234	6.304	5.797
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	687	570	620
Service Time	3.342	3.264	4.035	3.528
HCM Lane V/C Ratio	0.474	0.437	0.293	0.287
HCM Control Delay	13.1	12.3	11.6	10.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.6	2.2	1.2	1.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	20	10	10	10	10	300	10	10	250	20
Future Vol, veh/h	10	10	20	10	10	10	10	300	10	10	250	20
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	12	12	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	11	23	11	11	11	11	341	11	11	284	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	701	706	298	716	712	360	309	0	0	364	0	0
Stage 1	320	320	-	381	381	-	-	-	-	-	-	-
Stage 2	381	386	-	335	331	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	356	363	746	348	360	689	1263	-	-	1206	-	-
Stage 1	696	656	-	645	617	-	-	-	-	-	-	-
Stage 2	645	614	-	683	649	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	335	350	745	320	347	680	1261	-	-	1192	-	-
Mov Cap-2 Maneuver	335	350	-	320	347	-	-	-	-	-	-	-
Stage 1	687	647	-	631	603	-	-	-	-	-	-	-
Stage 2	615	600	-	643	641	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	14.8	0.2	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1261	-	-	469	401	1192	-	-
HCM Lane V/C Ratio	0.009	-	-	0.097	0.085	0.01	-	-
HCM Control Delay (s)	7.9	0	-	13.5	14.8	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	50	200	10	50	170
Future Vol, veh/h	10	50	200	10	50	170
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	55	220	11	55	187

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	526	229	0	0	234	0
Stage 1	229	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	516	815	-	-	1339	-
Stage 1	814	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	491	813	-	-	1335	-
Mov Cap-2 Maneuver	491	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	758	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	733	1335	-
HCM Lane V/C Ratio	-	-	0.09	0.041	-
HCM Control Delay (s)	-	-	10.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

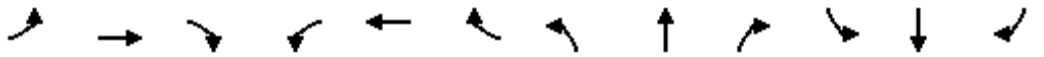
Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	20	180	20	20	180
Future Vol, veh/h	10	20	180	20	20	180
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	22	198	22	22	198

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	461	219	0	0	230	0
Stage 1	219	-	-	-	-	-
Stage 2	242	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	562	826	-	-	1344	-
Stage 1	822	-	-	-	-	-
Stage 2	803	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	546	818	-	-	1331	-
Mov Cap-2 Maneuver	546	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	803	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	702	1331	-
HCM Lane V/C Ratio	-	-	0.047	0.017	-
HCM Control Delay (s)	-	-	10.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	260	60	80	230	50	70	150	70	70	140	40
Future Volume (veh/h)	40	260	60	80	230	50	70	150	70	70	140	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.95	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	43	283	58	87	250	17	76	163	61	76	152	33
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	221	442	91	110	436	361	399	248	93	369	289	63
Arrive On Green	0.12	0.29	0.29	0.06	0.23	0.23	0.06	0.19	0.19	0.06	0.19	0.19
Sat Flow, veh/h	1792	1507	309	1792	1881	1558	1792	1286	481	1810	1495	325
Grp Volume(v), veh/h	43	0	341	87	250	17	76	0	224	76	0	185
Grp Sat Flow(s),veh/h/ln	1792	0	1816	1792	1881	1558	1792	0	1767	1810	0	1819
Q Serve(g_s), s	0.9	0.0	6.6	1.9	4.8	0.2	1.3	0.0	4.7	1.3	0.0	3.7
Cycle Q Clear(g_c), s	0.9	0.0	6.6	1.9	4.8	0.2	1.3	0.0	4.7	1.3	0.0	3.7
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.27	1.00		0.18
Lane Grp Cap(c), veh/h	221	0	533	110	436	361	399	0	341	369	0	351
V/C Ratio(X)	0.19	0.00	0.64	0.79	0.57	0.05	0.19	0.00	0.66	0.21	0.00	0.53
Avail Cap(c_a), veh/h	487	0	2063	487	2137	1769	784	0	1571	757	0	1617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	12.4	18.7	13.8	5.4	12.1	0.0	15.1	12.2	0.0	14.7
Incr Delay (d2), s/veh	0.2	0.0	1.8	4.6	1.7	0.1	0.1	0.0	0.8	0.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	3.6	1.1	2.6	0.1	0.7	0.0	2.4	0.7	0.0	1.9
LnGrp Delay(d),s/veh	16.1	0.0	14.3	23.4	15.5	5.5	12.2	0.0	15.9	12.3	0.0	15.1
LnGrp LOS	B		B	C	B	A	B		B	B		B
Approach Vol, veh/h		384			354			300			261	
Approach Delay, s/veh		14.5			16.9			15.0			14.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	15.9	6.3	11.8	9.0	13.4	6.3	11.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	3.9	8.6	3.3	5.7	2.9	6.8	3.3	6.7
Green Ext Time (p_c), s	0.0	3.4	0.0	0.8	0.0	2.4	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	30	10	20	20	10	10	10	10	10	10	10
Future Vol, veh/h	0	0	30	10	20	20	10	10	10	10	10	10	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	4	4	0	0	0
Mvmt Flow	0	0	33	11	22	22	11	11	11	11	11	11	11
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.3	7.2	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	40%	33%
Vol Thru, %	33%	75%	40%	33%
Vol Right, %	33%	25%	20%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	40	50	30
LT Vol	10	0	20	10
Through Vol	10	30	20	10
RT Vol	10	10	10	10
Lane Flow Rate	33	43	54	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.036	0.047	0.06	0.036
Departure Headway (Hd)	4.029	3.904	4.007	3.961
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	884	914	892	899
Service Time	2.074	1.942	2.041	2.006
HCM Lane V/C Ratio	0.037	0.047	0.061	0.037
HCM Control Delay	7.2	7.1	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.1

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	450	10	20	400	20	0	0	10	30	0	20
Future Vol, veh/h	10	450	10	20	400	20	0	0	10	30	0	20
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	3	3	3
Mvmt Flow	11	495	11	22	440	22	0	0	11	33	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	506	0	0	1029	1035	501	1029	1029	457
Stage 1	-	-	-	-	-	-	523	523	-	501	501	-
Stage 2	-	-	-	-	-	-	506	512	-	528	528	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1104	-	-	1064	-	-	214	234	574	211	233	602
Stage 1	-	-	-	-	-	-	541	534	-	550	541	-
Stage 2	-	-	-	-	-	-	552	540	-	532	526	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1098	-	-	1064	-	-	200	223	574	199	222	599
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	223	-	199	222	-
Stage 1	-	-	-	-	-	-	533	527	-	539	523	-
Stage 2	-	-	-	-	-	-	517	522	-	515	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	11.4	21.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	574	1098	-	-	1064	-	-	272
HCM Lane V/C Ratio	0.019	0.01	-	-	0.021	-	-	0.202
HCM Control Delay (s)	11.4	8.3	0	-	8.5	0	-	21.6
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.7

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	60	90	10	0	10
Future Vol, veh/h	0	60	90	10	0	10
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	90	134	15	0	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	291	9	15	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	700	1073	1616	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	641	1072	1616	-	-	-
Mov Cap-2 Maneuver	641	-	-	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	6.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1072	-	-
HCM Lane V/C Ratio	0.083	-	0.084	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	50	30	50	70	20
Future Vol, veh/h	30	50	30	50	70	20
Conflicting Peds, #/hr	10	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	38	63	38	63	89	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	256	107	119	0	-	0
Stage 1	107	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	737	953	1482	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	710	948	1475	-	-	-
Mov Cap-2 Maneuver	710	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	880	-	-	-	-	-

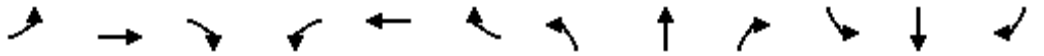
Approach	EB	NB	SB
HCM Control Delay, s	9.9	2.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1475	-	842	-	-
HCM Lane V/C Ratio	0.026	-	0.12	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	480	5	5	470	50	0	0	0	90	0	10
Future Volume (veh/h)	20	480	5	5	470	50	0	0	0	90	0	10
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1863	1881	1900				1900	1900	1900
Adj Flow Rate, veh/h	22	527	5	5	516	52				99	0	0
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.91	0.91	0.92	0.92	0.91	0.91				0.91	0.92	0.91
Percent Heavy Veh, %	1	1	1	2	1	1				0	2	0
Cap, veh/h	97	1140	11	727	1233	124				173	0	0
Arrive On Green	0.63	0.63	0.63	0.01	0.74	0.74				0.10	0.00	0.00
Sat Flow, veh/h	28	1799	17	1774	1677	169				1810	0	0
Grp Volume(v), veh/h	554	0	0	5	0	568				99	0	0
Grp Sat Flow(s),veh/h/ln	1844	0	0	1774	0	1846				1810	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.6				2.5	0.0	0.0
Cycle Q Clear(g_c), s	7.3	0.0	0.0	0.0	0.0	5.6				2.5	0.0	0.0
Prop In Lane	0.04		0.01	1.00		0.09				1.00		0.00
Lane Grp Cap(c), veh/h	1247	0	0	727	0	1357				173	0	0
V/C Ratio(X)	0.44	0.00	0.00	0.01	0.00	0.42				0.57	0.00	0.00
Avail Cap(c_a), veh/h	2949	0	0	1295	0	2924				1146	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	4.5	0.0	0.0	2.4	0.0	2.4				20.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.1				1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	0.0	0.0	2.7				1.3	0.0	0.0
LnGrp Delay(d),s/veh	4.6	0.0	0.0	2.4	0.0	2.5				21.6	0.0	0.0
LnGrp LOS	A			A		A				C		
Approach Vol, veh/h		554			573						99	
Approach Delay, s/veh		4.6			2.5						21.6	
Approach LOS		A			A						C	

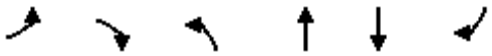
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	4.8	34.0		8.5		38.8		
Change Period (Y+Rc), s	4.5	4.0		4.0		4.0		
Max Green Setting (Gmax), s	15.5	75.0		30.0		75.0		
Max Q Clear Time (g_c+I1), s	2.0	9.3		4.5		7.6		
Green Ext Time (p_c), s	0.0	2.6		0.3		2.7		

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	570	0	40	310	280	0	0	10	270	10	230
Future Volume (vph)	50	570	0	40	310	280	0	0	10	270	10	230
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	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.96	1.00
Satd. Flow (prot)	1787	3574		1787	3574	1574			1644	1715	1725	1591
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.96	1.00
Satd. Flow (perm)	1787	3574		1787	3574	1574			1644	1715	1725	1591
Peak-hour factor, PHF	0.96	0.96	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	594	0	42	323	292	0	0	10	281	10	240
RTOR Reduction (vph)	0	0	0	0	0	99	0	0	7	0	0	169
Lane Group Flow (vph)	52	594	0	42	323	193	0	0	3	146	145	71
Confl. Peds. (#/hr)						11	7					7
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	1%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	2.1	15.3		2.0	15.2	27.5			12.3	12.3	12.3	12.3
Effective Green, g (s)	2.1	15.3		2.0	15.2	27.5			12.3	12.3	12.3	12.3
Actuated g/C Ratio	0.05	0.37		0.05	0.37	0.66			0.30	0.30	0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	90	1314		85	1305	1191			486	507	510	470
v/s Ratio Prot	c0.03	c0.17		0.02	0.09	0.05				c0.09	0.08	
v/s Ratio Perm						0.07			0.00			0.04
v/c Ratio	0.58	0.45		0.49	0.25	0.16			0.01	0.29	0.28	0.15
Uniform Delay, d1	19.3	10.0		19.3	9.2	2.7			10.3	11.3	11.3	10.8
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.1		1.6	0.1	0.0			0.0	0.1	0.1	0.1
Delay (s)	24.8	10.1		20.9	9.3	2.7			10.3	11.4	11.4	10.9
Level of Service	C	B		C	A	A			B	B	B	B
Approach Delay (s)		11.2			7.1			10.3			11.1	
Approach LOS		B			A			B			B	

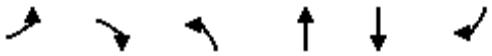
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	41.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	110	220	220	550	480	250
Future Volume (vph)	110	220	220	550	480	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3407	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3407	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	113	227	227	567	495	258
RTOR Reduction (vph)	0	120	0	0	94	0
Lane Group Flow (vph)	113	107	227	567	659	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	10.1	28.2	14.1	37.7	19.6	
Effective Green, g (s)	10.1	28.2	14.1	37.7	19.6	
Actuated g/C Ratio	0.17	0.47	0.24	0.63	0.33	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	304	761	425	2275	1116	
v/s Ratio Prot	c0.06	0.07	c0.13	c0.16	c0.19	
v/s Ratio Perm						
v/c Ratio	0.37	0.14	0.53	0.25	0.59	
Uniform Delay, d1	22.0	8.9	20.0	4.8	16.8	
Progression Factor	1.00	1.00	0.83	0.53	1.00	
Incremental Delay, d2	0.3	0.0	1.0	0.0	0.6	
Delay (s)	22.3	9.0	17.6	2.6	17.3	
Level of Service	C	A	B	A	B	
Approach Delay (s)	13.4			6.9	17.3	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	59.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	140	30	710	690	10
Future Volume (vph)	60	140	30	710	690	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1678		1805	3610	3602	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1678		1805	3610	3602	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	146	31	740	719	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	209	0	31	740	728	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	12.6		11.4	38.3	22.9	
Effective Green, g (s)	12.6		11.4	38.3	22.9	
Actuated g/C Ratio	0.20		0.18	0.61	0.36	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	336		327	2198	1311	
v/s Ratio Prot	c0.12		0.02	c0.20	c0.20	
v/s Ratio Perm						
v/c Ratio	0.62		0.09	0.34	0.56	
Uniform Delay, d1	23.0		21.5	6.1	15.9	
Progression Factor	1.00		1.00	1.00	0.52	
Incremental Delay, d2	2.6		0.0	0.0	0.3	
Delay (s)	25.5		21.5	6.1	8.5	
Level of Service	C		C	A	A	
Approach Delay (s)	25.5			6.7	8.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	170	150	191	200	121	143
Future Vol, veh/h	170	150	191	200	121	143
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	202	179	227	238	144	170
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	15.1	13	14.4
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	46%	0%	100%	0%
Vol Thru, %	0%	53%	0%	100%
Vol Right, %	54%	47%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	264	320	191	200
LT Vol	121	0	191	0
Through Vol	0	170	0	200
RT Vol	143	150	0	0
Lane Flow Rate	314	381	227	238
Geometry Grp	2	5	7	7
Degree of Util (X)	0.499	0.564	0.408	0.394
Departure Headway (Hd)	5.711	5.329	6.457	5.95
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	629	674	557	605
Service Time	3.758	3.375	4.206	3.698
HCM Lane V/C Ratio	0.499	0.565	0.408	0.393
HCM Control Delay	14.4	15.1	13.6	12.5
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	2.8	3.5	2	1.9

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	210	20	0	10	80	254	10	10	421	10
Future Vol, veh/h	10	10	210	20	0	10	80	254	10	10	421	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	12	12	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	1	1	1	2	2	2
Mvmt Flow	13	13	263	25	0	13	100	318	13	13	526	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1090	1102	533	1234	1102	337	539	0	0	343	0	0
Stage 1	559	559	-	537	537	-	-	-	-	-	-	-
Stage 2	531	543	-	697	565	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.218	-	-
Pot Cap-1 Maneuver	194	213	551	155	213	710	1034	-	-	1216	-	-
Stage 1	517	514	-	532	526	-	-	-	-	-	-	-
Stage 2	536	523	-	435	511	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	171	183	551	68	183	702	1034	-	-	1202	-	-
Mov Cap-2 Maneuver	171	183	-	68	183	-	-	-	-	-	-	-
Stage 1	455	506	-	463	458	-	-	-	-	-	-	-
Stage 2	464	456	-	219	503	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.5	63.8	2.1	0.2
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1034	-	-	465	97	1202	-	-
HCM Lane V/C Ratio	0.097	-	-	0.618	0.387	0.01	-	-
HCM Control Delay (s)	8.9	0	-	24.5	63.8	8	0	-
HCM Lane LOS	A	A	-	C	F	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	4.1	1.6	0	-	-

Intersection	
Int Delay, s/veh	21.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	153	191	40	190	431
Future Vol, veh/h	60	153	191	40	190	431
Conflicting Peds, #/hr	0	33	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	81	207	258	54	257	582

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1384	321	0	0	315	0
Stage 1	288	-	-	-	-	-
Stage 2	1096	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	160	724	-	-	1257	-
Stage 1	766	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	111	699	-	-	1253	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	323	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	101.5	0	2.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	1253	-
HCM Lane V/C Ratio	-	-	1.028	0.205	-
HCM Control Delay (s)	-	-	101.5	8.6	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	10.9	0.8	-

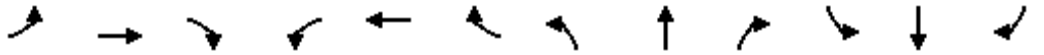
Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	31	140	50	51	400
Future Vol, veh/h	51	31	140	50	51	400
Conflicting Peds, #/hr	0	0	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	79	79	79	79	79	79
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	65	39	177	63	65	506

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	851	215	0	0	246	0
Stage 1	215	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	333	830	-	-	1332	-
Stage 1	826	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	308	825	-	-	1324	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	531	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	0.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	404	1324	-
HCM Lane V/C Ratio	-	-	0.257	0.049	-
HCM Control Delay (s)	-	-	17	7.9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	471	270	124	264	60	150	110	111	160	281	30
Future Volume (veh/h)	40	471	270	124	264	60	150	110	111	160	281	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	48	567	309	149	318	27	181	133	101	193	339	31
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	604	499	272	179	381	317	268	211	161	357	375	34
Arrive On Green	0.33	0.44	0.44	0.10	0.20	0.20	0.10	0.21	0.21	0.10	0.22	0.22
Sat Flow, veh/h	1810	1146	624	1810	1900	1583	1810	989	751	1810	1713	157
Grp Volume(v), veh/h	48	0	876	149	318	27	181	0	234	193	0	370
Grp Sat Flow(s),veh/h/ln	1810	0	1770	1810	1900	1583	1810	0	1740	1810	0	1869
Q Serve(g_s), s	1.9	0.0	46.0	8.5	17.0	1.1	8.1	0.0	12.9	8.6	0.0	20.4
Cycle Q Clear(g_c), s	1.9	0.0	46.0	8.5	17.0	1.1	8.1	0.0	12.9	8.6	0.0	20.4
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.43	1.00		0.08
Lane Grp Cap(c), veh/h	604	0	771	179	381	317	268	0	372	357	0	409
V/C Ratio(X)	0.08	0.00	1.14	0.83	0.84	0.09	0.68	0.00	0.63	0.54	0.00	0.90
Avail Cap(c_a), veh/h	604	0	771	188	827	689	283	0	593	363	0	637
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.1	0.0	29.8	46.8	40.6	20.9	30.2	0.0	37.7	28.7	0.0	40.2
Incr Delay (d2), s/veh	0.0	0.0	77.0	23.7	6.8	0.2	4.6	0.0	0.7	0.8	0.0	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	38.7	5.4	9.6	0.6	4.4	0.0	6.2	4.4	0.0	11.4
LnGrp Delay(d),s/veh	24.1	0.0	106.8	70.5	47.3	21.0	34.8	0.0	38.4	29.6	0.0	48.2
LnGrp LOS	C		F	E	D	C	C		D	C		D
Approach Vol, veh/h		924			494			415			563	
Approach Delay, s/veh		102.5			52.9			36.8			41.8	
Approach LOS		F			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	50.0	14.1	27.1	39.3	25.2	14.6	26.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	10.5	48.0	10.1	22.4	3.9	19.0	10.6	14.9
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8	0.0	2.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	66.6
HCM 2010 LOS	E

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	71	30	60	52	10	10	20	40	20	30	10
Future Vol, veh/h	0	0	71	30	60	52	10	10	20	40	20	30	10
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
Heavy Vehicles, %	1	1	1	1	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	111	47	94	81	16	16	31	63	31	47	16
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	9.1	8.3	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	0%	49%	33%
Vol Thru, %	29%	70%	43%	50%
Vol Right, %	57%	30%	8%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	101	122	60
LT Vol	10	0	60	20
Through Vol	20	71	52	30
RT Vol	40	30	10	10
Lane Flow Rate	109	158	191	94
Geometry Grp	1	1	1	1
Degree of Util (X)	0.137	0.195	0.244	0.125
Departure Headway (Hd)	4.502	4.437	4.603	4.796
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	794	806	780	745
Service Time	2.544	2.474	2.639	2.841
HCM Lane V/C Ratio	0.137	0.196	0.245	0.126
HCM Control Delay	8.3	8.6	9.1	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.7	1	0.4

Intersection	
Int Delay, s/veh	12.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	50	762	10	10	417	70	10	10	10	60	10	50
Future Vol, veh/h	50	762	10	10	417	70	10	10	10	60	10	50
Conflicting Peds, #/hr	6	0	1	1	0	6	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	55	837	11	11	458	77	11	11	11	66	11	55

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	541	0	0	849	0	0	1506	1517	845	1490	1484	503
Stage 1	-	-	-	-	-	-	954	954	-	525	525	-
Stage 2	-	-	-	-	-	-	552	563	-	965	959	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1038	-	-	798	-	-	100	120	366	103	126	573
Stage 1	-	-	-	-	-	-	313	340	-	540	533	-
Stage 2	-	-	-	-	-	-	522	512	-	309	338	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1032	-	-	797	-	-	76	105	365	83	110	570
Mov Cap-2 Maneuver	-	-	-	-	-	-	76	105	-	83	110	-
Stage 1	-	-	-	-	-	-	281	305	-	483	519	-
Stage 2	-	-	-	-	-	-	452	499	-	259	304	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	46.9	140.1
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	118	1032	-	-	797	-	-	133
HCM Lane V/C Ratio	0.279	0.053	-	-	0.014	-	-	0.991
HCM Control Delay (s)	46.9	8.7	0	-	9.6	0	-	140.1
HCM Lane LOS	E	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1.1	0.2	-	-	0	-	-	7

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	140	30	23	10	0	10
Future Vol, veh/h	140	30	23	10	0	10
Conflicting Peds, #/hr	23	102	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	0	0	4	4	0	0
Mvmt Flow	226	48	37	16	0	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	123	112	18	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	877	947	1586	-	-	-
Stage 1	1018	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	852	853	1583	-	-	-
Mov Cap-2 Maneuver	852	-	-	-	-	-
Stage 1	992	-	-	-	-	-
Stage 2	915	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	5.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1583	-	852	-	-
HCM Lane V/C Ratio	0.023	-	0.322	-	-
HCM Control Delay (s)	7.3	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	60	0	26	0	0	0	23	253	0	0	201	79
Future Vol, veh/h	60	0	26	0	0	0	23	253	0	0	201	79
Peak Hour Factor	0.71	0.92	0.71	0.92	0.92	0.92	0.71	0.71	0.92	0.92	0.71	0.71
Heavy Vehicles, %	2	2	2	2	2	2	0	0	2	2	1	1
Mvmt Flow	85	0	37	0	0	0	32	356	0	0	283	111
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

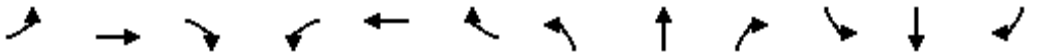
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10	0	12.5	12
HCM LOS	A	-	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	70%	0%	0%
Vol Thru, %	92%	0%	100%	72%
Vol Right, %	0%	30%	0%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	276	86	0	280
LT Vol	23	60	0	0
Through Vol	253	0	0	201
RT Vol	0	26	0	79
Lane Flow Rate	389	121	0	394
Geometry Grp	1	1	1	1
Degree of Util (X)	0.506	0.188	0	0.496
Departure Headway (Hd)	4.683	5.587	6.009	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	636	0	793
Service Time	2.74	3.677	4.009	2.579
HCM Lane V/C Ratio	0.508	0.19	0	0.497
HCM Control Delay	12.5	10	9	12
HCM Lane LOS	B	A	N	B
HCM 95th-tile Q	2.9	0.7	0	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	795	20	20	478	288	0	0	0	222	0	47
Future Volume (veh/h)	37	795	20	20	478	288	0	0	0	222	0	47
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1899	1900	1863	1900	1900				1900	1900	1900
Adj Flow Rate, veh/h	43	914	22	22	549	317				255	0	18
Adj No. of Lanes	1	1	0	1	1	1				0	1	0
Peak Hour Factor	0.87	0.87	0.92	0.92	0.87	0.87				0.87	0.92	0.87
Percent Heavy Veh, %	0	0	0	2	0	0				0	2	0
Cap, veh/h	432	1035	25	245	1032	872				337	0	24
Arrive On Green	0.04	0.56	0.56	0.03	0.54	0.54				0.20	0.00	0.20
Sat Flow, veh/h	1810	1846	44	1774	1900	1605				1674	0	118
Grp Volume(v), veh/h	43	0	936	22	549	317				273	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1891	1774	1900	1605				1792	0	0
Q Serve(g_s), s	0.6	0.0	25.4	0.3	10.9	6.6				8.4	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	25.4	0.3	10.9	6.6				8.4	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00				0.93		0.07
Lane Grp Cap(c), veh/h	432	0	1060	245	1032	872				361	0	0
V/C Ratio(X)	0.10	0.00	0.88	0.09	0.53	0.36				0.76	0.00	0.00
Avail Cap(c_a), veh/h	831	0	2120	667	2130	1799				944	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	6.2	0.0	11.3	10.8	8.6	7.7				22.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.2	0.2	0.1				1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	13.3	0.2	5.7	2.9				4.3	0.0	0.0
LnGrp Delay(d),s/veh	6.3	0.0	12.3	10.9	8.8	7.7				23.4	0.0	0.0
LnGrp LOS	A		B	B	A	A				C		
Approach Vol, veh/h		979			888						273	
Approach Delay, s/veh		12.0			8.5						23.4	
Approach LOS		B			A						C	

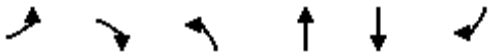
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	6.0	37.0		15.9	7.0	36.0		
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		
Max Green Setting (Gmax), s	15.5	66.0		31.0	15.5	66.0		
Max Q Clear Time (g_c+I1), s	2.3	27.4		10.4	2.6	12.9		
Green Ext Time (p_c), s	0.0	5.6		1.1	0.0	3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B



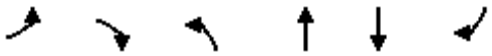
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	1037	10	50	453	210	0	0	10	600	10	373
Future Volume (vph)	60	1037	10	50	453	210	0	0	10	600	10	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3604		1805	3610	1583			1644	1715	1722	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3604		1805	3610	1583			1644	1715	1722	1593
Peak-hour factor, PHF	0.95	0.95	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	63	1092	11	53	477	221	0	0	11	632	11	393
RTOR Reduction (vph)	0	1	0	0	0	56	0	0	7	0	0	263
Lane Group Flow (vph)	63	1102	0	53	477	165	0	0	4	322	321	130
Confl. Peds. (#/hr)						14	3					3
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	4.1	27.0		3.8	26.7	47.9			21.2	21.2	21.2	21.2
Effective Green, g (s)	4.1	27.0		3.8	26.7	47.9			21.2	21.2	21.2	21.2
Actuated g/C Ratio	0.06	0.42		0.06	0.42	0.75			0.33	0.33	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	115	1520		107	1506	1283			544	568	570	527
v/s Ratio Prot	c0.03	c0.31		0.03	0.13	0.04				c0.19	0.19	
v/s Ratio Perm						0.06			0.00			0.08
v/c Ratio	0.55	0.73		0.50	0.32	0.13			0.01	0.57	0.56	0.25
Uniform Delay, d1	29.1	15.4		29.2	12.5	2.2			14.3	17.6	17.6	15.6
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	1.5		1.3	0.2	0.0			0.0	0.8	0.8	0.1
Delay (s)	31.9	16.9		30.5	12.7	2.3			14.3	18.4	18.4	15.7
Level of Service	C	B		C	B	A			B	B	B	B
Approach Delay (s)		17.7			10.9			14.3			17.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	90	140	121	222	1110	672
Future Volume (vph)	90	140	121	222	1110	672
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3352	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3352	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	99	154	133	244	1220	738
RTOR Reduction (vph)	0	32	0	0	81	0
Lane Group Flow (vph)	99	122	133	244	1877	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	11.9	27.6	11.7	68.0	52.3	
Effective Green, g (s)	11.9	27.6	11.7	68.0	52.3	
Actuated g/C Ratio	0.13	0.30	0.13	0.74	0.57	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	226	470	225	2618	1907	
v/s Ratio Prot	c0.06	0.08	c0.08	0.07	c0.56	
v/s Ratio Perm						
v/c Ratio	0.44	0.26	0.59	0.09	0.98	
Uniform Delay, d1	36.9	24.4	37.8	3.3	19.4	
Progression Factor	1.00	1.00	0.85	1.01	1.00	
Incremental Delay, d2	0.5	0.1	3.4	0.0	16.8	
Delay (s)	37.4	24.5	35.4	3.4	36.2	
Level of Service	D	C	D	A	D	
Approach Delay (s)	29.6			14.7	36.2	
Approach LOS	C			B	D	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	62	120	20	281	1240	10
Future Volume (vph)	62	120	20	281	1240	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1702		1770	3539	3534	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1702		1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	73	141	24	331	1459	12
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	214	0	24	331	1471	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	14.4		6.8	68.0	57.2	
Effective Green, g (s)	14.4		6.8	68.0	57.2	
Actuated g/C Ratio	0.15		0.07	0.72	0.61	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	259		127	2549	2141	
v/s Ratio Prot	c0.13		c0.01	0.09	c0.42	
v/s Ratio Perm						
v/c Ratio	0.83		0.19	0.13	0.69	
Uniform Delay, d1	38.8		41.2	4.1	12.6	
Progression Factor	1.00		1.00	1.00	0.41	
Incremental Delay, d2	18.1		0.3	0.0	0.3	
Delay (s)	56.9		41.5	4.1	5.6	
Level of Service	E		D	A	A	
Approach Delay (s)	56.9			6.6	5.6	
Approach LOS	E			A	A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	22	17	0	6	6	300	19	7	230	0
Future Vol, veh/h	0	0	22	17	0	6	6	300	19	7	230	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	24	18	0	7	7	326	21	8	250	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	620	627	250	629	617	337	250	0	0	347	0	0
Stage 1	266	266	-	351	351	-	-	-	-	-	-	-
Stage 2	354	361	-	278	266	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	400	400	789	395	405	705	1316	-	-	1212	-	-
Stage 1	739	689	-	666	632	-	-	-	-	-	-	-
Stage 2	663	626	-	728	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	392	394	789	379	399	705	1316	-	-	1212	-	-
Mov Cap-2 Maneuver	392	394	-	379	399	-	-	-	-	-	-	-
Stage 1	734	683	-	661	628	-	-	-	-	-	-	-
Stage 2	652	622	-	700	683	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	13.9	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1316	-	-	789	431	1212	-	-
HCM Lane V/C Ratio	0.005	-	-	0.03	0.058	0.006	-	-
HCM Control Delay (s)	7.7	0	-	9.7	13.9	8	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	1	0	120	2	3
Future Vol, veh/h	130	1	0	120	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	1	0	130	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	142	0	272	142
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1441	-	717	906
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	896	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1441	-	717	906
Mov Cap-2 Maneuver	-	-	-	-	717	-
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	820	-	-	1441	-
HCM Lane V/C Ratio	0.007	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	83	322	10	61	254
Future Vol, veh/h	30	83	322	10	61	254
Conflicting Peds, #/hr	0	42	0	6	6	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	4	4	1	1	2	2
Mvmt Flow	39	108	418	13	79	330

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	919	473	0	0	437	0
Stage 1	431	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	299	587	-	-	1123	-
Stage 1	651	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	271	560	-	-	1117	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	591	-	-	-	-	-
Stage 2	613	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.4	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	436	1117	-
HCM Lane V/C Ratio	-	-	0.337	0.071	-
HCM Control Delay (s)	-	-	17.4	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-

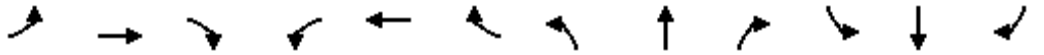
Intersection	
Int Delay, s/veh	1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	42	250	21	24	220
Future Vol, veh/h	31	42	250	21	24	220
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	1	1	3	3
Mvmt Flow	37	51	301	25	29	265

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	639	316	0	0	328	0
Stage 1	316	-	-	-	-	-
Stage 2	323	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	440	724	-	-	1226	-
Stage 1	739	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	427	723	-	-	1224	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	559	1224	-
HCM Lane V/C Ratio	-	-	0.157	0.024	-
HCM Control Delay (s)	-	-	12.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	355	120	114	313	100	120	201	135	110	151	50
Future Volume (veh/h)	40	355	120	114	313	100	120	201	135	110	151	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.93	0.98		0.94	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1881	1881	1881	1900	1827	1827	1900
Adj Flow Rate, veh/h	43	378	117	121	333	39	128	214	122	117	161	42
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	1	1	1	1	1	1	4	4	4
Cap, veh/h	339	478	148	155	472	375	412	275	157	299	340	89
Arrive On Green	0.19	0.36	0.36	0.09	0.25	0.25	0.08	0.25	0.25	0.07	0.25	0.25
Sat Flow, veh/h	1774	1345	416	1792	1881	1494	1792	1097	625	1740	1380	360
Grp Volume(v), veh/h	43	0	495	121	333	39	128	0	336	117	0	203
Grp Sat Flow(s),veh/h/ln	1774	0	1761	1792	1881	1494	1792	0	1722	1740	0	1740
Q Serve(g_s), s	1.4	0.0	17.1	4.5	10.9	1.0	3.5	0.0	12.3	3.3	0.0	6.7
Cycle Q Clear(g_c), s	1.4	0.0	17.1	4.5	10.9	1.0	3.5	0.0	12.3	3.3	0.0	6.7
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.36	1.00		0.21
Lane Grp Cap(c), veh/h	339	0	626	155	472	375	412	0	432	299	0	429
V/C Ratio(X)	0.13	0.00	0.79	0.78	0.71	0.10	0.31	0.00	0.78	0.39	0.00	0.47
Avail Cap(c_a), veh/h	339	0	1195	291	1277	1014	568	0	915	458	0	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	19.6	30.3	23.1	10.9	17.2	0.0	23.6	18.1	0.0	21.8
Incr Delay (d2), s/veh	0.1	0.0	3.2	3.2	2.8	0.2	0.2	0.0	1.2	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	8.8	2.4	6.0	0.5	1.8	0.0	5.9	1.6	0.0	3.3
LnGrp Delay(d),s/veh	22.8	0.0	22.8	33.5	25.9	11.1	17.3	0.0	24.8	18.5	0.0	22.1
LnGrp LOS	C		C	C	C	B	B		C	B		C
Approach Vol, veh/h		538			493			464			320	
Approach Delay, s/veh		22.8			26.6			22.7			20.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	28.1	9.1	20.7	17.0	21.0	8.8	21.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	6.5	19.1	5.5	8.7	3.4	12.9	5.3	14.3
Green Ext Time (p_c), s	0.1	5.0	0.1	0.8	0.0	3.4	0.1	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	10	25	10	40	52	10	20	30	20	10	20	0
Future Vol, veh/h	0	10	25	10	40	52	10	20	30	20	10	20	0
Peak Hour Factor	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Heavy Vehicles, %	3	3	3	3	1	1	1	2	2	2	0	0	0
Mvmt Flow	0	23	58	23	93	121	23	47	70	47	23	47	0
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	9.7	9	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	22%	39%	33%
Vol Thru, %	43%	56%	51%	67%
Vol Right, %	29%	22%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	45	102	30
LT Vol	20	10	40	10
Through Vol	30	25	52	20
RT Vol	20	10	10	0
Lane Flow Rate	163	105	237	70
Geometry Grp	1	1	1	1
Degree of Util (X)	0.213	0.137	0.305	0.096
Departure Headway (Hd)	4.714	4.708	4.626	4.979
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	759	759	776	717
Service Time	2.759	2.754	2.664	3.032
HCM Lane V/C Ratio	0.215	0.138	0.305	0.098
HCM Control Delay	9	8.5	9.7	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.8	0.5	1.3	0.3

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	650	10	10	547	50	10	0	10	60	0	40
Future Vol, veh/h	30	650	10	10	547	50	10	0	10	60	0	40
Conflicting Peds, #/hr	55	0	1	1	0	55	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	1	1	1	0	0	0	0	0	0
Mvmt Flow	34	730	11	11	615	56	11	0	11	67	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	726	0	0	742	0	0	1493	1553	742	1534	1530	698
Stage 1	-	-	-	-	-	-	805	805	-	720	720	-
Stage 2	-	-	-	-	-	-	688	748	-	814	810	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	877	-	-	870	-	-	103	114	419	96	118	444
Stage 1	-	-	-	-	-	-	379	398	-	422	435	-
Stage 2	-	-	-	-	-	-	440	423	-	375	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	831	-	-	869	-	-	86	98	417	82	102	421
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	98	-	82	102	-
Stage 1	-	-	-	-	-	-	352	370	-	372	404	-
Stage 2	-	-	-	-	-	-	385	393	-	338	368	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.2	34.8	131.3
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	143	831	-	-	869	-	-	121
HCM Lane V/C Ratio	0.157	0.041	-	-	0.013	-	-	0.929
HCM Control Delay (s)	34.8	9.5	0	-	9.2	0	-	131.3
HCM Lane LOS	D	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	6

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	31	33	10	20	10
Future Vol, veh/h	20	31	33	10	20	10
Conflicting Peds, #/hr	1	150	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	0	0	11	11	0	0
Mvmt Flow	24	37	39	12	24	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	128	187	43	0	-	0
Stage 1	37	-	-	-	-	-
Stage 2	91	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	871	860	1510	-	-	-
Stage 1	991	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	836	732	1500	-	-	-
Mov Cap-2 Maneuver	836	-	-	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	931	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	5.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1500	-	770	-	-
HCM Lane V/C Ratio	0.026	-	0.079	-	-
HCM Control Delay (s)	7.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	3	38	7	3	3	33	51	6	3	79	19
Future Vol, veh/h	9	3	38	7	3	3	33	51	6	3	79	19
Peak Hour Factor	0.61	0.92	0.61	0.92	0.92	0.92	0.61	0.61	0.92	0.92	0.61	0.61
Heavy Vehicles, %	4	2	4	2	2	2	5	5	2	2	1	1
Mvmt Flow	15	3	62	8	3	3	54	84	7	3	130	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.8	8.3	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	37%	18%	54%	3%
Vol Thru, %	57%	6%	23%	78%
Vol Right, %	7%	76%	23%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	50	13	101
LT Vol	33	9	7	3
Through Vol	51	3	3	79
RT Vol	6	38	3	19
Lane Flow Rate	144	80	14	164
Geometry Grp	1	1	1	1
Degree of Util (X)	0.173	0.095	0.018	0.187
Departure Headway (Hd)	4.31	4.247	4.679	4.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	819	849	769	859
Service Time	2.404	2.247	2.683	2.2
HCM Lane V/C Ratio	0.176	0.094	0.018	0.191
HCM Control Delay	8.3	7.7	7.8	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.1	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	639	10	10	515	192	0	0	0	244	0	105
Future Volume (veh/h)	88	639	10	10	515	192	0	0	0	244	0	105
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863				1900	1900	1900
Adj Flow Rate, veh/h	101	734	11	11	592	0				280	0	0
Adj No. of Lanes	1	1	0	1	1	1				0	1	0
Peak Hour Factor	0.87	0.87	0.92	0.92	0.87	0.87				0.87	0.92	0.87
Percent Heavy Veh, %	2	2	2	2	2	2				0	2	0
Cap, veh/h	474	1032	15	340	949	806				380	0	0
Arrive On Green	0.07	0.56	0.56	0.01	0.51	0.00				0.21	0.00	0.00
Sat Flow, veh/h	1774	1830	27	1774	1863	1583				1810	0	0
Grp Volume(v), veh/h	101	0	745	11	592	0				280	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1858	1774	1863	1583				1810	0	0
Q Serve(g_s), s	1.5	0.0	17.2	0.2	13.5	0.0				8.5	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	17.2	0.2	13.5	0.0				8.5	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00				1.00		0.00
Lane Grp Cap(c), veh/h	474	0	1047	340	949	806				380	0	0
V/C Ratio(X)	0.21	0.00	0.71	0.03	0.62	0.00				0.74	0.00	0.00
Avail Cap(c_a), veh/h	819	0	2081	782	2087	1774				952	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	7.2	0.0	9.4	8.4	10.4	0.0				21.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.0	0.3	0.0				1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	8.8	0.1	7.0	0.0				4.3	0.0	0.0
LnGrp Delay(d),s/veh	7.4	0.0	9.7	8.5	10.6	0.0				22.8	0.0	0.0
LnGrp LOS	A		A	A	B					C		
Approach Vol, veh/h		846			603						280	
Approach Delay, s/veh		9.4			10.6						22.8	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	5.3	37.2		16.4	8.5	34.0		
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		
Max Green Setting (Gmax), s	15.5	66.0		31.0	15.5	66.0		
Max Q Clear Time (g_c+I1), s	2.2	19.2		10.5	3.5	15.5		
Green Ext Time (p_c), s	0.0	3.9		1.1	0.2	2.8		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	13	169	0	14	24	95	161	7	167	0
Future Vol, veh/h	0	0	13	169	0	14	24	95	161	7	167	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	14	184	0	15	26	103	175	8	182	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	448	528	182	448	441	191	182	0	0	278	0	0
Stage 1	198	198	-	243	243	-	-	-	-	-	-	-
Stage 2	250	330	-	205	198	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	521	456	861	521	510	851	1393	-	-	1285	-	-
Stage 1	804	737	-	761	705	-	-	-	-	-	-	-
Stage 2	754	646	-	797	737	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	500	442	861	501	495	851	1393	-	-	1285	-	-
Mov Cap-2 Maneuver	500	442	-	501	495	-	-	-	-	-	-	-
Stage 1	786	732	-	743	689	-	-	-	-	-	-	-
Stage 2	723	631	-	778	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	16.3	0.7	0.3
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1393	-	-	861	517	1285	-	-
HCM Lane V/C Ratio	0.019	-	-	0.016	0.385	0.006	-	-
HCM Control Delay (s)	7.6	0	-	9.3	16.3	7.8	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	1.8	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	4	0	100	2	2
Future Vol, veh/h	51	4	0	100	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	4	0	109	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	166	57
Stage 1	-	-	-	-	57	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1545	-	824	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1545	-	824	1009
Mov Cap-2 Maneuver	-	-	-	-	824	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1545	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	220	92	153	140	174	203
Future Vol, veh/h	220	92	153	140	174	203
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	224	94	156	143	178	207
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	13.3	11.3	15
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	46%	0%	100%	0%
Vol Thru, %	0%	71%	0%	100%
Vol Right, %	54%	29%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	377	312	153	140
LT Vol	174	0	153	0
Through Vol	0	220	0	140
RT Vol	203	92	0	0
Lane Flow Rate	385	318	156	143
Geometry Grp	2	5	7	7
Degree of Util (X)	0.565	0.477	0.284	0.239
Departure Headway (Hd)	5.287	5.392	6.538	6.03
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	681	669	550	594
Service Time	3.327	3.432	4.282	3.774
HCM Lane V/C Ratio	0.565	0.475	0.284	0.241
HCM Control Delay	15	13.3	11.9	10.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	3.6	2.6	1.2	0.9

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	10	20	10	10	10	20	437	20	10	345	10
Future Vol, veh/h	10	10	20	10	10	10	20	437	20	10	345	10
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	6	6	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	8	8	8	1	1	1	0	0	0
Mvmt Flow	11	11	22	11	11	11	22	486	22	11	383	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	964	970	390	974	964	503	395	0	0	514	0	0
Stage 1	412	412	-	547	547	-	-	-	-	-	-	-
Stage 2	552	558	-	427	417	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.18	6.58	6.28	4.11	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.572	4.072	3.372	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	237	255	663	225	249	557	1169	-	-	1062	-	-
Stage 1	621	598	-	511	508	-	-	-	-	-	-	-
Stage 2	522	515	-	594	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	217	244	662	203	238	554	1168	-	-	1056	-	-
Mov Cap-2 Maneuver	217	244	-	203	238	-	-	-	-	-	-	-
Stage 1	604	590	-	495	492	-	-	-	-	-	-	-
Stage 2	487	499	-	556	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	20	0.3	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1168	-	-	341	274	1056	-	-
HCM Lane V/C Ratio	0.019	-	-	0.13	0.122	0.011	-	-
HCM Control Delay (s)	8.1	0	-	17.1	20	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	45	413	10	31	244
Future Vol, veh/h	10	45	413	10	31	244
Conflicting Peds, #/hr	0	3	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	48	439	11	33	260

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	775	452	0	0	454	0
Stage 1	449	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	369	612	-	-	1117	-
Stage 1	647	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	355	608	-	-	1113	-
Mov Cap-2 Maneuver	355	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	538	1113	-
HCM Lane V/C Ratio	-	-	0.109	0.03	-
HCM Control Delay (s)	-	-	12.5	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

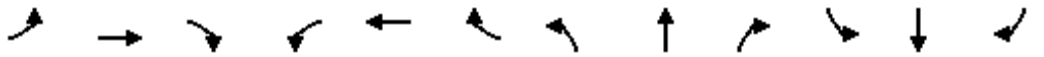
Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	13	400	31	14	230
Future Vol, veh/h	11	13	400	31	14	230
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	12	14	426	33	15	245

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	722	447	0	0	463	0
Stage 1	447	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	397	616	-	-	1109	-
Stage 1	649	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	389	614	-	-	1105	-
Mov Cap-2 Maneuver	389	-	-	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	485	1105	-
HCM Lane V/C Ratio	-	-	0.053	0.013	-
HCM Control Delay (s)	-	-	12.8	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	355	100	126	445	110	180	301	185	100	131	50
Future Volume (veh/h)	40	355	100	126	445	110	180	301	185	100	131	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	42	374	96	133	468	44	189	317	176	105	138	41
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	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
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	185	466	120	168	594	491	511	358	199	249	391	116
Arrive On Green	0.10	0.32	0.32	0.09	0.31	0.31	0.10	0.32	0.32	0.06	0.28	0.28
Sat Flow, veh/h	1810	1448	372	1810	1900	1569	1810	1132	628	1810	1397	415
Grp Volume(v), veh/h	42	0	470	133	468	44	189	0	493	105	0	179
Grp Sat Flow(s),veh/h/ln	1810	0	1819	1810	1900	1569	1810	0	1760	1810	0	1811
Q Serve(g_s), s	1.6	0.0	18.1	5.5	17.3	1.2	5.5	0.0	20.4	3.1	0.0	6.1
Cycle Q Clear(g_c), s	1.6	0.0	18.1	5.5	17.3	1.2	5.5	0.0	20.4	3.1	0.0	6.1
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.36	1.00		0.23
Lane Grp Cap(c), veh/h	185	0	586	168	594	491	511	0	557	249	0	507
V/C Ratio(X)	0.23	0.00	0.80	0.79	0.79	0.09	0.37	0.00	0.89	0.42	0.00	0.35
Avail Cap(c_a), veh/h	259	0	1090	259	1138	939	594	0	825	399	0	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	23.8	34.1	24.1	10.8	16.5	0.0	24.9	20.0	0.0	22.1
Incr Delay (d2), s/veh	0.2	0.0	3.7	4.1	3.3	0.1	0.2	0.0	5.8	0.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	9.6	3.0	9.5	0.6	2.7	0.0	10.8	1.6	0.0	3.1
LnGrp Delay(d),s/veh	31.9	0.0	27.5	38.2	27.4	10.9	16.6	0.0	30.7	20.5	0.0	22.3
LnGrp LOS	C		C	D	C	B	B		C	C		C
Approach Vol, veh/h		512			645			682			284	
Approach Delay, s/veh		27.8			28.5			26.8			21.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	28.7	11.4	25.5	11.9	28.0	8.6	28.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	7.5	20.1	7.5	8.1	3.6	19.3	5.1	22.4
Green Ext Time (p_c), s	0.1	4.6	0.1	0.7	0.0	4.8	0.1	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	26.9
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	10	45	10	10	13	10	20	30	20	10	10	10
Future Vol, veh/h	0	10	45	10	10	13	10	20	30	20	10	10	10
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	12	53	12	12	15	12	24	35	24	12	12	12
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.3	7.5	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	15%	30%	33%
Vol Thru, %	43%	69%	39%	33%
Vol Right, %	29%	15%	30%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	65	33	30
LT Vol	20	10	10	10
Through Vol	30	45	13	10
RT Vol	20	10	10	10
Lane Flow Rate	82	76	39	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0.092	0.086	0.044	0.04
Departure Headway (Hd)	4.013	4.071	4.041	4.031
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	885	872	876	878
Service Time	2.073	2.134	2.111	2.101
HCM Lane V/C Ratio	0.093	0.087	0.045	0.04
HCM Control Delay	7.5	7.5	7.3	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.1	0.1

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	699	10	10	711	30	10	0	10	50	10	20
Future Vol, veh/h	10	699	10	10	711	30	10	0	10	50	10	20
Conflicting Peds, #/hr	12	0	1	1	0	12	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	768	11	11	781	33	11	0	11	55	11	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	826	0	0	780	0	0	1633	1645	775	1633	1634	810
Stage 1	-	-	-	-	-	-	797	797	-	832	832	-
Stage 2	-	-	-	-	-	-	836	848	-	801	802	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	813	-	-	846	-	-	82	101	401	82	102	383
Stage 1	-	-	-	-	-	-	383	401	-	366	387	-
Stage 2	-	-	-	-	-	-	364	380	-	381	399	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	804	-	-	845	-	-	68	95	401	76	96	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	95	-	76	96	-
Stage 1	-	-	-	-	-	-	373	391	-	353	373	-
Stage 2	-	-	-	-	-	-	325	367	-	362	389	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	43.2	142.5
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	116	804	-	-	845	-	-	98
HCM Lane V/C Ratio	0.189	0.014	-	-	0.013	-	-	0.897
HCM Control Delay (s)	43.2	9.5	-	-	9.3	-	-	142.5
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	5.1

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	91	75	20	10	20
Future Vol, veh/h	20	91	75	20	10	20
Conflicting Peds, #/hr	3	5	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	118	97	26	13	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	253	35	43	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	740	1044	1579	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	688	1035	1573	-	-	-
Mov Cap-2 Maneuver	688	-	-	-	-	-
Stage 1	931	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	5.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1573	-	949	-	-
HCM Lane V/C Ratio	0.062	-	0.152	-	-
HCM Control Delay (s)	7.4	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	2	34	8	4	4	55	97	4	2	158	9
Future Vol, veh/h	24	2	34	8	4	4	55	97	4	2	158	9
Peak Hour Factor	0.80	0.92	0.80	0.92	0.92	0.92	0.80	0.80	0.92	0.92	0.80	0.80
Heavy Vehicles, %	0	2	0	2	2	2	0	0	2	2	0	0
Mvmt Flow	30	2	43	9	4	4	69	121	4	2	198	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

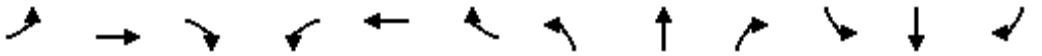
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	8	8.8	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	40%	50%	1%
Vol Thru, %	62%	3%	25%	93%
Vol Right, %	3%	57%	25%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	60	16	169
LT Vol	55	24	8	2
Through Vol	97	2	4	158
RT Vol	4	34	4	9
Lane Flow Rate	194	75	17	211
Geometry Grp	1	1	1	1
Degree of Util (X)	0.237	0.095	0.024	0.254
Departure Headway (Hd)	4.392	4.559	4.88	4.327
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	818	786	733	831
Service Time	2.412	2.585	2.91	2.346
HCM Lane V/C Ratio	0.237	0.095	0.023	0.254
HCM Control Delay	8.8	8.1	8	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.3	0.1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	694	20	20	677	107	0	0	0	115	0	81
Future Volume (veh/h)	53	694	20	20	677	107	0	0	0	115	0	81
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1899	1900	1863	1900	1900				1900	1900	1900
Adj Flow Rate, veh/h	59	771	22	22	752	116				128	0	23
Adj No. of Lanes	1	1	0	1	1	1				0	1	0
Peak Hour Factor	0.90	0.90	0.92	0.92	0.90	0.90				0.90	0.92	0.90
Percent Heavy Veh, %	0	0	0	2	0	0				0	2	0
Cap, veh/h	434	1116	32	405	1099	907				188	0	34
Arrive On Green	0.06	0.61	0.61	0.03	0.58	0.58				0.13	0.00	0.13
Sat Flow, veh/h	1810	1837	52	1774	1900	1569				1500	0	270
Grp Volume(v), veh/h	59	0	793	22	752	116				151	0	0
Grp Sat Flow(s),veh/h/ln	1810	0	1889	1774	1900	1569				1770	0	0
Q Serve(g_s), s	0.6	0.0	14.7	0.3	14.3	1.7				4.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	14.7	0.3	14.3	1.7				4.2	0.0	0.0
Prop In Lane	1.00		0.03	1.00		1.00				0.85		0.15
Lane Grp Cap(c), veh/h	434	0	1148	405	1099	907				222	0	0
V/C Ratio(X)	0.14	0.00	0.69	0.05	0.68	0.13				0.68	0.00	0.00
Avail Cap(c_a), veh/h	875	0	2404	889	2417	1996				1058	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	6.9	5.8	7.6	5.0				21.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.3	0.0				1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	7.6	0.1	7.4	0.7				2.1	0.0	0.0
LnGrp Delay(d),s/veh	5.9	0.0	7.2	5.9	7.9	5.0				23.1	0.0	0.0
LnGrp LOS	A		A	A	A	A				C		
Approach Vol, veh/h		852			890						151	
Approach Delay, s/veh		7.1			7.5						23.1	
Approach LOS		A			A						C	

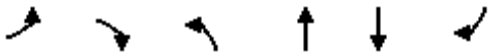
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	5.9	35.5		10.5	7.4	34.0		
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		
Max Green Setting (Gmax), s	15.5	66.0		31.0	15.5	66.0		
Max Q Clear Time (g_c+I1), s	2.3	16.7		6.2	2.6	16.3		
Green Ext Time (p_c), s	0.0	4.3		0.6	0.1	4.1		

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A



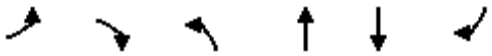
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	830	10	20	637	410	0	0	20	360	10	258
Future Volume (vph)	50	830	10	20	637	410	0	0	20	360	10	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97			1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (prot)	1805	3603		1805	3610	1564			1644	1715	1724	1580
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.95	1.00
Satd. Flow (perm)	1805	3603		1805	3610	1564			1644	1715	1724	1580
Peak-hour factor, PHF	0.93	0.93	0.92	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	892	11	22	685	441	0	0	22	387	11	277
RTOR Reduction (vph)	0	1	0	0	0	235	0	0	16	0	0	208
Lane Group Flow (vph)	54	903	0	22	685	206	0	0	6	197	201	69
Confl. Peds. (#/hr)						6	2					2
Confl. Bikes (#/hr)						7						
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	Perm			Perm	Perm	NA	Perm
Protected Phases	5	2		1	6						4	
Permitted Phases						6			8	4		4
Actuated Green, G (s)	3.7	27.9		1.9	26.1	26.1			14.0	14.0	14.0	14.0
Effective Green, g (s)	3.7	27.9		1.9	26.1	26.1			14.0	14.0	14.0	14.0
Actuated g/C Ratio	0.07	0.50		0.03	0.47	0.47			0.25	0.25	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	4.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	119	1801		61	1688	731			412	430	432	396
v/s Ratio Prot	c0.03	c0.25		0.01	0.19							
v/s Ratio Perm						0.13			0.00	0.11	0.12	0.04
v/c Ratio	0.45	0.50		0.36	0.41	0.28			0.01	0.46	0.47	0.18
Uniform Delay, d1	25.1	9.3		26.4	9.8	9.1			15.7	17.7	17.7	16.4
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1		1.3	0.2	0.3			0.0	0.3	0.3	0.1
Delay (s)	26.1	9.4		27.7	10.0	9.4			15.7	18.0	18.0	16.5
Level of Service	C	A		C	A	A			B	B	B	B
Approach Delay (s)		10.3			10.1			15.7			17.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	55.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	200	230	345	823	380	273
Future Volume (vph)	200	230	345	823	380	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3324	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3324	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	208	240	359	857	396	284
RTOR Reduction (vph)	0	122	0	0	181	0
Lane Group Flow (vph)	208	118	359	857	499	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	12.2	32.6	16.4	42.2	21.8	
Effective Green, g (s)	12.2	32.6	16.4	42.2	21.8	
Actuated g/C Ratio	0.18	0.49	0.25	0.64	0.33	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	328	785	445	2294	1091	
v/s Ratio Prot	c0.12	0.07	c0.20	c0.24	c0.15	
v/s Ratio Perm						
v/c Ratio	0.63	0.15	0.81	0.37	0.46	
Uniform Delay, d1	25.0	9.3	23.5	5.8	17.6	
Progression Factor	1.00	1.00	0.87	0.45	1.00	
Incremental Delay, d2	2.9	0.0	9.7	0.1	0.1	
Delay (s)	28.0	9.3	30.2	2.7	17.7	
Level of Service	C	A	C	A	B	
Approach Delay (s)	18.0			10.8	17.7	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	83	141	50	1085	600	10
Future Volume (vph)	83	141	50	1085	600	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.91		1.00	1.00	1.00	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1707		1805	3610	3600	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1707		1805	3610	3600	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	86	147	52	1130	625	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	233	0	52	1130	634	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	14.0		15.3	42.6	23.3	
Effective Green, g (s)	14.0		15.3	42.6	23.3	
Actuated g/C Ratio	0.20		0.22	0.62	0.34	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	348		402	2241	1222	
v/s Ratio Prot	c0.14		0.03	c0.31	0.18	
v/s Ratio Perm						
v/c Ratio	0.67		0.13	0.50	0.52	
Uniform Delay, d1	25.2		21.3	7.2	18.2	
Progression Factor	1.00		1.00	1.00	0.69	
Incremental Delay, d2	3.8		0.1	0.1	0.2	
Delay (s)	28.9		21.4	7.2	12.7	
Level of Service	C		C	A	B	
Approach Delay (s)	28.9			7.9	12.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	68.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	12	116	0	8	23	63	74	34	68	0
Future Vol, veh/h	0	0	12	116	0	8	23	63	74	34	68	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	13	126	0	9	25	68	80	37	74	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	311	346	74	313	306	108	74	0	0	148	0	0
Stage 1	148	148	-	158	158	-	-	-	-	-	-	-
Stage 2	163	198	-	155	148	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	642	577	988	640	608	946	1526	-	-	1434	-	-
Stage 1	855	775	-	844	767	-	-	-	-	-	-	-
Stage 2	839	737	-	847	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	614	551	988	610	581	946	1526	-	-	1434	-	-
Mov Cap-2 Maneuver	614	551	-	610	581	-	-	-	-	-	-	-
Stage 1	840	754	-	829	753	-	-	-	-	-	-	-
Stage 2	816	724	-	813	754	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	12.4	1.1	2.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1526	-	-	988	624	1434	-	-
HCM Lane V/C Ratio	0.016	-	-	0.013	0.216	0.026	-	-
HCM Control Delay (s)	7.4	0	-	8.7	12.4	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	4	0	31	2	2
Future Vol, veh/h	71	4	0	31	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	4	0	34	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	81	0	113	79
Stage 1	-	-	-	-	79	-
Stage 2	-	-	-	-	34	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1517	-	884	981
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	988	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1517	-	884	981
Mov Cap-2 Maneuver	-	-	-	-	884	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	930	-	-	1517	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	170	109	157	160	149	157
Future Vol, veh/h	170	109	157	160	149	157
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	189	121	174	178	166	174
Number of Lanes	1	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	12.8	11.5	13.8
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	49%	0%	100%	0%
Vol Thru, %	0%	61%	0%	100%
Vol Right, %	51%	39%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	306	279	157	160
LT Vol	149	0	157	0
Through Vol	0	170	0	160
RT Vol	157	109	0	0
Lane Flow Rate	340	310	174	178
Geometry Grp	2	5	7	7
Degree of Util (X)	0.507	0.457	0.31	0.291
Departure Headway (Hd)	5.368	5.303	6.391	5.884
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	670	679	563	612
Service Time	3.406	3.339	4.128	3.62
HCM Lane V/C Ratio	0.507	0.457	0.309	0.291
HCM Control Delay	13.8	12.8	12	11
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.9	2.4	1.3	1.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	10	20	10	10	10	10	316	10	10	266	20
Future Vol, veh/h	10	10	20	10	10	10	10	316	10	10	266	20
Conflicting Peds, #/hr	1	0	0	0	0	1	2	0	12	12	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	11	11	23	11	11	11	11	359	11	11	302	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	742	316	752	748	378	327	0	0	382	0	0
Stage 1	338	338	-	399	399	-	-	-	-	-	-	-
Stage 2	399	404	-	353	349	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	337	346	729	329	343	673	1244	-	-	1188	-	-
Stage 1	681	644	-	631	606	-	-	-	-	-	-	-
Stage 2	631	603	-	668	637	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	316	334	728	302	331	665	1242	-	-	1174	-	-
Mov Cap-2 Maneuver	316	334	-	302	331	-	-	-	-	-	-	-
Stage 1	672	636	-	617	593	-	-	-	-	-	-	-
Stage 2	601	590	-	629	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	15.3	0.2	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1242	-	-	449	383	1174	-	-
HCM Lane V/C Ratio	0.009	-	-	0.101	0.089	0.01	-	-
HCM Control Delay (s)	7.9	0	-	13.9	15.3	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	61	205	10	58	178
Future Vol, veh/h	10	61	205	10	58	178
Conflicting Peds, #/hr	0	0	0	3	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	11	67	225	11	64	196

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	558	234	0	0	239	0
Stage 1	234	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	494	810	-	-	1334	-
Stage 1	810	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	466	808	-	-	1330	-
Mov Cap-2 Maneuver	466	-	-	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	732	1330	-
HCM Lane V/C Ratio	-	-	0.107	0.048	-
HCM Control Delay (s)	-	-	10.5	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-

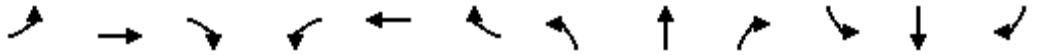
Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	25	180	21	28	180
Future Vol, veh/h	11	25	180	21	28	180
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	12	27	198	23	31	198

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	480	220	0	0	231	0
Stage 1	220	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.11	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.209	-
Pot Cap-1 Maneuver	548	825	-	-	1343	-
Stage 1	821	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	528	817	-	-	1330	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	791	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	700	1330	-
HCM Lane V/C Ratio	-	-	0.057	0.023	-
HCM Control Delay (s)	-	-	10.5	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	270	60	94	240	50	70	151	84	70	141	40
Future Volume (veh/h)	40	270	60	94	240	50	70	151	84	70	141	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.95	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	43	293	57	102	261	18	76	164	71	76	153	33
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	236	450	87	131	445	369	397	245	106	358	299	65
Arrive On Green	0.13	0.30	0.30	0.07	0.24	0.24	0.06	0.20	0.20	0.06	0.20	0.20
Sat Flow, veh/h	1792	1523	296	1792	1881	1558	1792	1226	531	1810	1497	323
Grp Volume(v), veh/h	43	0	350	102	261	18	76	0	235	76	0	186
Grp Sat Flow(s),veh/h/ln	1792	0	1819	1792	1881	1558	1792	0	1756	1810	0	1820
Q Serve(g_s), s	0.9	0.0	7.1	2.4	5.2	0.3	1.4	0.0	5.3	1.4	0.0	3.9
Cycle Q Clear(g_c), s	0.9	0.0	7.1	2.4	5.2	0.3	1.4	0.0	5.3	1.4	0.0	3.9
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.30	1.00		0.18
Lane Grp Cap(c), veh/h	236	0	537	131	445	369	397	0	351	358	0	364
V/C Ratio(X)	0.18	0.00	0.65	0.78	0.59	0.05	0.19	0.00	0.67	0.21	0.00	0.51
Avail Cap(c_a), veh/h	463	0	1967	463	2035	1686	761	0	1487	725	0	1541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	13.1	19.4	14.4	5.8	12.5	0.0	15.7	12.7	0.0	15.2
Incr Delay (d2), s/veh	0.1	0.0	1.9	3.8	1.8	0.1	0.1	0.0	0.8	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	3.8	1.3	2.9	0.2	0.7	0.0	2.6	0.7	0.0	2.0
LnGrp Delay(d),s/veh	16.6	0.0	15.0	23.1	16.1	5.9	12.6	0.0	16.6	12.8	0.0	15.6
LnGrp LOS	B		B	C	B	A	B		B	B		B
Approach Vol, veh/h		393			381			311			262	
Approach Delay, s/veh		15.2			17.5			15.6			14.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	16.6	6.4	12.5	9.6	14.1	6.4	12.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	46.0	11.0	36.0	11.0	46.0	11.0	36.0
Max Q Clear Time (g_c+I1), s	4.4	9.1	3.4	5.9	2.9	7.2	3.4	7.3
Green Ext Time (p_c), s	0.1	3.5	0.0	0.8	0.0	2.5	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	38	10	20	26	10	10	10	10	10	10	10
Future Vol, veh/h	0	0	38	10	20	26	10	10	10	10	10	10	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	4	4	4	0	0	0
Mvmt Flow	0	0	41	11	22	28	11	11	11	11	11	11	11
Number of Lanes	0	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.4	7.3	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	0%	36%	33%
Vol Thru, %	33%	79%	46%	33%
Vol Right, %	33%	21%	18%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	48	56	30
LT Vol	10	0	20	10
Through Vol	10	38	26	10
RT Vol	10	10	10	10
Lane Flow Rate	33	52	61	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.037	0.057	0.068	0.036
Departure Headway (Hd)	4.054	3.934	4.017	3.986
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	877	906	889	891
Service Time	2.109	1.976	2.056	2.042
HCM Lane V/C Ratio	0.038	0.057	0.069	0.037
HCM Control Delay	7.3	7.2	7.4	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.2	0.1

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	473	10	20	423	20	0	0	10	30	0	20
Future Vol, veh/h	10	473	10	20	423	20	0	0	10	30	0	20
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	3	3	3
Mvmt Flow	11	520	11	22	465	22	0	0	11	33	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	493	0	0	531	0	0	1079	1085	526	1079	1079	482
Stage 1	-	-	-	-	-	-	548	548	-	526	526	-
Stage 2	-	-	-	-	-	-	531	537	-	553	553	-
Critical Hdwy	4.1	-	-	4.11	-	-	7.1	6.5	6.2	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.53	-
Follow-up Hdwy	2.2	-	-	2.209	-	-	3.5	4	3.3	3.527	4.027	3.327
Pot Cap-1 Maneuver	1081	-	-	1042	-	-	198	218	556	195	217	582
Stage 1	-	-	-	-	-	-	524	520	-	533	527	-
Stage 2	-	-	-	-	-	-	536	526	-	516	513	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1075	-	-	1042	-	-	184	207	556	184	206	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	207	-	184	206	-
Stage 1	-	-	-	-	-	-	516	512	-	522	509	-
Stage 2	-	-	-	-	-	-	501	508	-	498	505	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	11.6	23.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	556	1075	-	-	1042	-	-	253
HCM Lane V/C Ratio	0.02	0.01	-	-	0.021	-	-	0.217
HCM Control Delay (s)	11.6	8.4	0	-	8.5	0	-	23.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.8

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	68	101	10	0	10
Future Vol, veh/h	0	68	101	10	0	10
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	0	101	151	15	0	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	325	9	15	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	669	1073	1616	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	606	1072	1616	-	-	-
Mov Cap-2 Maneuver	606	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1072	-	-
HCM Lane V/C Ratio	0.093	-	0.095	-	-
HCM Control Delay (s)	7.5	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	13	48	28	14	14	25	67	26	13	76	9
Future Vol, veh/h	10	13	48	28	14	14	25	67	26	13	76	9
Peak Hour Factor	0.79	0.92	0.79	0.92	0.92	0.92	0.79	0.79	0.92	0.92	0.79	0.79
Heavy Vehicles, %	0	2	0	2	2	2	0	0	2	2	0	0
Mvmt Flow	13	14	61	30	15	15	32	85	28	14	96	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

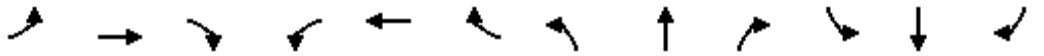
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	8	8.2	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	14%	50%	13%
Vol Thru, %	57%	18%	25%	78%
Vol Right, %	22%	68%	25%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	71	56	98
LT Vol	25	10	28	13
Through Vol	67	13	14	76
RT Vol	26	48	14	9
Lane Flow Rate	145	88	61	122
Geometry Grp	1	1	1	1
Degree of Util (X)	0.172	0.102	0.077	0.149
Departure Headway (Hd)	4.276	4.189	4.576	4.392
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	841	857	784	818
Service Time	2.292	2.208	2.597	2.409
HCM Lane V/C Ratio	0.172	0.103	0.078	0.149
HCM Control Delay	8.2	7.7	8	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.2	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	444	5	5	418	252	0	0	0	281	0	56
Future Volume (veh/h)	75	444	5	5	418	252	0	0	0	281	0	56
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1863	1881	1881				1900	1900	1900
Adj Flow Rate, veh/h	82	488	5	5	459	264				309	0	30
Adj No. of Lanes	1	1	0	1	1	1				0	1	0
Peak Hour Factor	0.91	0.91	0.92	0.92	0.91	0.91				0.91	0.92	0.91
Percent Heavy Veh, %	1	1	1	2	1	1				0	2	0
Cap, veh/h	475	1025	11	483	934	770				383	0	37
Arrive On Green	0.06	0.55	0.55	0.01	0.50	0.50				0.23	0.00	0.23
Sat Flow, veh/h	1792	1859	19	1774	1881	1552				1631	0	158
Grp Volume(v), veh/h	82	0	493	5	459	264				339	0	0
Grp Sat Flow(s),veh/h/ln	1792	0	1878	1774	1881	1552				1790	0	0
Q Serve(g_s), s	1.2	0.0	9.6	0.1	9.8	6.2				10.8	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	9.6	0.1	9.8	6.2				10.8	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00				0.91		0.09
Lane Grp Cap(c), veh/h	475	0	1036	483	934	770				420	0	0
V/C Ratio(X)	0.17	0.00	0.48	0.01	0.49	0.34				0.81	0.00	0.00
Avail Cap(c_a), veh/h	824	0	2051	927	2055	1695				918	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	8.2	7.8	10.1	9.2				21.8	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.0	0.1	0.1				1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	5.0	0.0	5.1	2.7				5.4	0.0	0.0
LnGrp Delay(d),s/veh	7.0	0.0	8.4	7.8	10.3	9.3				23.2	0.0	0.0
LnGrp LOS	A		A	A	B	A				C		
Approach Vol, veh/h		575			728						339	
Approach Delay, s/veh		8.2			9.9						23.2	
Approach LOS		A			A						C	

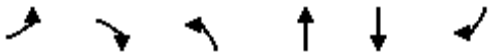
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		
Phs Duration (G+Y+Rc), s	4.9	37.3		18.2	8.2	34.0		
Change Period (Y+Rc), s	4.5	4.0		4.0	4.5	4.0		
Max Green Setting (Gmax), s	15.5	66.0		31.0	15.5	66.0		
Max Q Clear Time (g_c+I1), s	2.1	11.6		12.8	3.2	11.8		
Green Ext Time (p_c), s	0.0	2.2		1.4	0.1	2.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	724	0	40	379	280	0	0	10	270	10	311
Future Volume (vph)	50	724	0	40	379	280	0	0	10	270	10	311
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	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98			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	1.00		1.00	1.00	0.85			0.86	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.96	1.00
Satd. Flow (prot)	1787	3574		1787	3574	1573			1644	1715	1725	1591
Flt Permitted	0.95	1.00		0.95	1.00	1.00			1.00	0.95	0.96	1.00
Satd. Flow (perm)	1787	3574		1787	3574	1573			1644	1715	1725	1591
Peak-hour factor, PHF	0.96	0.96	0.92	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	52	754	0	42	395	292	0	0	10	281	10	324
RTOR Reduction (vph)	0	0	0	0	0	96	0	0	7	0	0	230
Lane Group Flow (vph)	52	754	0	42	395	196	0	0	3	146	145	94
Confl. Peds. (#/hr)						11	7					7
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	1%	1%	2%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA		Prot	NA	pm+ov			Perm	Split	NA	Perm
Protected Phases	5	2		1	6	4				4	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	2.2	16.7		2.0	16.5	29.1			12.6	12.6	12.6	12.6
Effective Green, g (s)	2.2	16.7		2.0	16.5	29.1			12.6	12.6	12.6	12.6
Actuated g/C Ratio	0.05	0.39		0.05	0.38	0.67			0.29	0.29	0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0			4.0	4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0		2.0	4.0	2.0			3.0	2.0	2.0	2.0
Lane Grp Cap (vph)	90	1378		82	1361	1202			478	499	501	462
v/s Ratio Prot	c0.03	c0.21		0.02	0.11	0.05				c0.09	0.08	
v/s Ratio Perm						0.08			0.00			0.06
v/c Ratio	0.58	0.55		0.51	0.29	0.16			0.01	0.29	0.29	0.20
Uniform Delay, d1	20.1	10.4		20.2	9.3	2.6			10.9	11.9	11.9	11.6
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	0.2		2.2	0.2	0.0			0.0	0.1	0.1	0.1
Delay (s)	25.6	10.6		22.4	9.5	2.6			10.9	12.0	12.0	11.7
Level of Service	C	B		C	A	A			B	B	B	B
Approach Delay (s)		11.6			7.5			10.9			11.8	
Approach LOS		B			A			B			B	

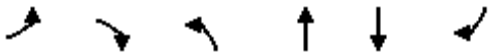
Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	110	220	235	556	480	316
Future Volume (vph)	110	220	235	556	480	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3375	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3375	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	113	227	242	573	495	326
RTOR Reduction (vph)	0	112	0	0	159	0
Lane Group Flow (vph)	113	115	242	573	662	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	14.6	33.3	14.7	39.1	20.4	
Effective Green, g (s)	14.6	33.3	14.7	39.1	20.4	
Actuated g/C Ratio	0.22	0.51	0.22	0.60	0.31	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	401	818	403	2148	1047	
v/s Ratio Prot	c0.06	0.07	c0.13	c0.16	c0.20	
v/s Ratio Perm						
v/c Ratio	0.28	0.14	0.60	0.27	0.63	
Uniform Delay, d1	21.2	8.6	22.9	6.4	19.4	
Progression Factor	1.00	1.00	0.81	0.49	1.00	
Incremental Delay, d2	0.1	0.0	2.1	0.0	0.9	
Delay (s)	21.3	8.6	20.6	3.2	20.4	
Level of Service	C	A	C	A	C	
Approach Delay (s)	12.9			8.4	20.4	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	14.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	66	220	30	725	690	10
Future Volume (vph)	66	220	30	725	690	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	8.0	
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	0.90		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1667		1805	3610	3601	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1667		1805	3610	3601	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	69	229	31	755	719	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	298	0	31	755	728	0
Confl. Peds. (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	0%	0%
Turn Type	Prot		Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases						
Actuated Green, G (s)	16.2		12.0	39.2	23.2	
Effective Green, g (s)	16.2		12.0	39.2	23.2	
Actuated g/C Ratio	0.24		0.18	0.58	0.34	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.0		2.0	
Lane Grp Cap (vph)	400		321	2099	1239	
v/s Ratio Prot	c0.18		0.02	c0.21	c0.20	
v/s Ratio Perm						
v/c Ratio	0.74		0.10	0.36	0.59	
Uniform Delay, d1	23.7		23.2	7.5	18.2	
Progression Factor	1.00		1.00	1.00	0.57	
Incremental Delay, d2	6.5		0.0	0.0	0.4	
Delay (s)	30.2		23.2	7.5	10.8	
Level of Service	C		C	A	B	
Approach Delay (s)	30.2			8.1	10.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	21	188	0	17	23	91	213	4	128	0
Future Vol, veh/h	0	0	21	188	0	17	23	91	213	4	128	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	23	204	0	18	25	99	232	4	139	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	421	528	139	424	412	215	139	0	0	331	0	0
Stage 1	147	147	-	265	265	-	-	-	-	-	-	-
Stage 2	274	381	-	159	147	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	543	456	909	540	530	825	1445	-	-	1228	-	-
Stage 1	856	775	-	740	689	-	-	-	-	-	-	-
Stage 2	732	613	-	843	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	520	444	909	516	516	825	1445	-	-	1228	-	-
Mov Cap-2 Maneuver	520	444	-	516	516	-	-	-	-	-	-	-
Stage 1	837	772	-	724	674	-	-	-	-	-	-	-
Stage 2	700	600	-	819	772	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	16.5	0.5	0.2
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1445	-	-	909	533	1228	-	-
HCM Lane V/C Ratio	0.017	-	-	0.025	0.418	0.004	-	-
HCM Control Delay (s)	7.5	0	-	9.1	16.5	7.9	0	-
HCM Lane LOS	A	A	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	2	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	54	4	0	54	2	3
Future Vol, veh/h	54	4	0	54	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	4	0	59	2	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	63	0	120	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1540	-	876	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1540	-	876	1004
Mov Cap-2 Maneuver	-	-	-	-	876	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	964	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	949	-	-	1540	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix D: Queue Worksheets

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	778	124	239	60	178	231	183	319
v/c Ratio	0.08	0.88	0.70	0.34	0.10	0.75	0.68	0.60	0.89
Control Delay	36.4	47.5	88.4	49.5	6.0	59.6	62.2	47.6	86.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	47.5	88.4	49.5	6.0	59.6	62.2	47.6	86.2
Queue Length 50th (ft)	21	672	122	230	0	132	191	136	308
Queue Length 95th (ft)	50	#988	191	316	19	191	282	196	423
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	827	885	348	749	646	330	430	419	510
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	0.04	0.88	0.36	0.32	0.09	0.54	0.54	0.44	0.63

Intersection Summary

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

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	756	729	249
v/c Ratio	0.66	0.65	0.61
Control Delay	10.6	9.8	26.4
Queue Delay	0.0	0.0	0.0
Total Delay	10.6	9.8	26.4
Queue Length 50th (ft)	121	101	63
Queue Length 95th (ft)	286	255	156
Internal Link Dist (ft)	21	1367	681
Turn Bay Length (ft)			
Base Capacity (vph)	1845	1758	1015
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.41	0.25

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	863	13	380	180	2	253	255	299
v/c Ratio	0.18	0.57	0.06	0.28	0.15	0.00	0.43	0.44	0.40
Control Delay	25.0	12.9	26.8	13.1	0.7	0.0	15.4	15.4	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	12.9	26.8	13.1	0.7	0.0	15.4	15.4	4.0
Queue Length 50th (ft)	9	66	3	24	0	0	38	38	0
Queue Length 95th (ft)	53	236	23	104	10	0	154	155	47
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	717	2942	932	3104	1472	1347	1316	1320	1290
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	0.07	0.29	0.01	0.12	0.12	0.00	0.19	0.19	0.23

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	77	120	90	158	1392
v/c Ratio	0.33	0.24	0.37	0.06	0.79
Control Delay	29.4	12.7	25.5	2.3	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	12.7	25.5	2.3	17.2
Queue Length 50th (ft)	27	24	29	7	190
Queue Length 95th (ft)	65	55	60	15	#401
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	466	1202	1061	2788	1758
Starvation Cap Reductn	0	0	16	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.10	0.09	0.06	0.79

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	144	11	220	984
v/c Ratio	0.56	0.07	0.09	0.55
Control Delay	34.6	29.9	3.1	6.8
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	34.6	29.9	3.1	6.8
Queue Length 50th (ft)	53	4	10	52
Queue Length 95th (ft)	102	18	22	91
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	423	441	3434	2753
Starvation Cap Reductn	0	0	0	528
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.02	0.06	0.44

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	414	103	261	99	121	308	113	177
v/c Ratio	0.13	0.73	0.50	0.42	0.20	0.26	0.67	0.32	0.36
Control Delay	36.5	37.1	54.3	35.1	10.1	21.3	40.5	22.2	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	37.1	54.3	35.1	10.1	21.3	40.5	22.2	31.0
Queue Length 50th (ft)	18	209	59	143	3	44	156	41	79
Queue Length 95th (ft)	56	409	144	288	50	107	329	101	183
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1324	1366	574	750	580	653	684	619	785
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	0.03	0.30	0.18	0.35	0.17	0.19	0.45	0.18	0.23

Intersection Summary

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	676	625	176
v/c Ratio	0.58	0.54	0.49
Control Delay	8.6	7.8	21.2
Queue Delay	0.0	0.0	0.0
Total Delay	8.6	7.8	21.2
Queue Length 50th (ft)	80	69	41
Queue Length 95th (ft)	224	196	87
Internal Link Dist (ft)	21	1367	681
Turn Bay Length (ft)			
Base Capacity (vph)	1833	1815	1097
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	0.34	0.16

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	399	113	365	108	184	455	99	153
v/c Ratio	0.22	0.77	0.57	0.57	0.20	0.31	0.72	0.30	0.25
Control Delay	46.5	44.2	57.5	35.2	12.4	19.2	38.7	19.9	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	44.2	57.5	35.2	12.4	19.2	38.7	19.9	28.0
Queue Length 50th (ft)	25	231	71	197	14	66	248	34	66
Queue Length 95th (ft)	59	382	147	378	65	147	#542	84	156
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1228	1336	516	668	557	710	629	612	719
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	0.03	0.30	0.22	0.55	0.19	0.26	0.72	0.16	0.21

Intersection Summary

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

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	660	663	51
v/c Ratio	0.45	0.44	0.18
Control Delay	5.6	5.5	12.6
Queue Delay	0.0	0.0	0.0
Total Delay	5.6	5.5	12.6
Queue Length 50th (ft)	57	56	9
Queue Length 95th (ft)	232	229	26
Internal Link Dist (ft)	21	1367	681
Turn Bay Length (ft)			
Base Capacity (vph)	1858	1880	1021
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.36	0.35	0.05

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	665	9	540	358	10	156	154	197
v/c Ratio	0.14	0.38	0.04	0.34	0.40	0.01	0.34	0.34	0.35
Control Delay	25.7	9.2	27.8	10.9	3.5	0.0	17.2	17.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	9.2	27.8	10.9	3.5	0.0	17.2	17.1	5.0
Queue Length 50th (ft)	6	32	1	25	0	0	24	23	0
Queue Length 95th (ft)	46	171	19	144	51	0	102	101	40
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	752	2973	978	3080	1379	1372	1340	1346	1288
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	0.05	0.22	0.01	0.18	0.26	0.01	0.12	0.11	0.15

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	167	194	278	556	441
v/c Ratio	0.52	0.20	0.52	0.23	0.49
Control Delay	29.5	1.7	17.3	2.1	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	1.7	17.4	2.2	12.8
Queue Length 50th (ft)	47	0	49	15	31
Queue Length 95th (ft)	131	23	102	26	89
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	537	1461	1221	3449	1944
Starvation Cap Reductn	0	0	148	1034	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.13	0.26	0.23	0.23

Intersection Summary

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	147	35	772	422
v/c Ratio	0.48	0.09	0.32	0.37
Control Delay	28.7	22.3	4.4	12.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.7	22.3	4.4	12.8
Queue Length 50th (ft)	41	9	41	39
Queue Length 95th (ft)	117	38	87	75
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	516	542	3510	3176
Starvation Cap Reductn	0	0	0	335
Spillback Cap Reductn	0	0	26	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.06	0.22	0.15

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	290	76	195	54	68	216	71	168
v/c Ratio	0.12	0.50	0.30	0.28	0.09	0.15	0.51	0.17	0.37
Control Delay	27.0	23.3	32.9	21.4	4.3	14.9	27.5	14.8	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	23.3	32.9	21.4	4.3	14.9	27.5	14.8	23.9
Queue Length 50th (ft)	12	88	26	39	0	16	69	16	51
Queue Length 95th (ft)	39	206	81	158	18	48	163	49	124
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1702	1750	980	1171	948	923	1113	1006	1244
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	0.02	0.17	0.08	0.17	0.06	0.07	0.19	0.07	0.14

Intersection Summary

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	435	457	108
v/c Ratio	0.33	0.35	0.33
Control Delay	5.3	5.4	18.5
Queue Delay	0.0	0.0	0.0
Total Delay	5.3	5.4	18.5
Queue Length 50th (ft)	36	37	25
Queue Length 95th (ft)	130	135	55
Internal Link Dist (ft)	21	1367	681
Turn Bay Length (ft)			
Base Capacity (vph)	1855	1844	1132
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.25	0.10

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	40	482	19	261	231	3	115	116	184
v/c Ratio	0.12	0.34	0.06	0.19	0.20	0.00	0.22	0.22	0.30
Control Delay	20.1	10.1	21.4	9.8	0.7	0.0	11.4	11.4	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	10.1	21.4	9.8	0.7	0.0	11.4	11.4	3.9
Queue Length 50th (ft)	4	20	2	10	0	0	10	10	0
Queue Length 95th (ft)	46	125	28	72	10	0	72	73	37
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	919	3183	1256	3225	1527	1503	1510	1516	1417
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	0.04	0.15	0.02	0.08	0.15	0.00	0.08	0.08	0.13

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	85	179	180	363	501
v/c Ratio	0.28	0.20	0.43	0.15	0.51
Control Delay	22.0	2.1	17.2	2.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	2.1	17.2	2.1	12.6
Queue Length 50th (ft)	19	0	31	10	37
Queue Length 95th (ft)	64	24	74	17	93
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	616	1538	1387	3488	2219
Starvation Cap Reductn	0	0	64	1185	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.12	0.14	0.16	0.23

Intersection Summary

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	163	22	503	482
v/c Ratio	0.51	0.08	0.22	0.42
Control Delay	25.9	22.4	4.2	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.9	22.4	4.2	10.6
Queue Length 50th (ft)	40	5	24	34
Queue Length 95th (ft)	112	26	54	66
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	553	596	3610	3342
Starvation Cap Reductn	0	0	0	223
Spillback Cap Reductn	0	0	2	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.04	0.14	0.15

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	779	129	243	60	178	233	183	320
v/c Ratio	0.08	0.88	0.71	0.34	0.10	0.75	0.68	0.61	0.89
Control Delay	36.6	48.3	88.9	49.7	6.0	60.1	62.4	48.0	86.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	48.3	88.9	49.7	6.0	60.1	62.4	48.0	86.8
Queue Length 50th (ft)	21	680	127	234	0	133	193	137	310
Queue Length 95th (ft)	50	#998	197	323	19	191	285	197	427
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	824	881	346	748	646	328	429	417	507
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	0.04	0.88	0.37	0.32	0.09	0.54	0.54	0.44	0.63

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	33	725	408	328	294
v/c Ratio	0.06	0.64	0.40	0.34	0.64
Control Delay	6.3	11.7	11.9	4.0	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	11.7	11.9	4.0	26.1
Queue Length 50th (ft)	4	132	59	6	76
Queue Length 95th (ft)	17	313	202	56	174
Internal Link Dist (ft)		536	1367		393
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	655	1900	1894	1534	949
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.38	0.22	0.21	0.31

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	49	881	13	383	180	2	253	255	302
v/c Ratio	0.18	0.58	0.06	0.29	0.15	0.00	0.43	0.43	0.41
Control Delay	25.2	13.1	27.1	13.1	0.7	0.0	15.5	15.5	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	13.1	27.1	13.1	0.7	0.0	15.5	15.5	4.0
Queue Length 50th (ft)	9	68	3	25	0	0	38	40	0
Queue Length 95th (ft)	54	241	23	105	10	0	156	157	47
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	707	2931	919	3096	1464	1337	1304	1308	1282
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	0.07	0.30	0.01	0.12	0.12	0.00	0.19	0.19	0.24

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	77	120	91	160	1395
v/c Ratio	0.32	0.24	0.37	0.06	0.80
Control Delay	28.9	12.6	25.5	2.4	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	12.6	25.5	2.4	17.7
Queue Length 50th (ft)	27	24	29	7	194
Queue Length 95th (ft)	65	55	60	15	#411
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	463	1200	1053	2773	1747
Starvation Cap Reductn	0	0	17	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.10	0.09	0.06	0.80

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	157	11	221	984
v/c Ratio	0.59	0.07	0.09	0.55
Control Delay	35.1	30.3	3.2	7.0
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	35.1	30.3	3.2	7.1
Queue Length 50th (ft)	58	4	10	53
Queue Length 95th (ft)	110	18	23	93
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	418	436	3411	2726
Starvation Cap Reductn	0	0	0	524
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.03	0.06	0.45

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	419	107	264	99	121	314	113	178
v/c Ratio	0.12	0.73	0.51	0.43	0.20	0.26	0.68	0.32	0.35
Control Delay	37.0	38.1	55.3	35.8	10.4	21.7	41.0	22.6	31.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	38.1	55.3	35.8	10.4	21.7	41.0	22.6	31.4
Queue Length 50th (ft)	18	220	63	150	3	45	162	42	81
Queue Length 95th (ft)	56	419	151	294	52	110	343	103	187
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1300	1343	560	735	570	650	666	607	765
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	0.03	0.31	0.19	0.36	0.17	0.19	0.47	0.19	0.23

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	95	566	447	221	393
v/c Ratio	0.22	0.55	0.56	0.30	0.68
Control Delay	9.2	13.0	20.6	6.2	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	13.0	20.6	6.2	27.4
Queue Length 50th (ft)	18	147	152	14	147
Queue Length 95th (ft)	41	246	264	57	242
Internal Link Dist (ft)		536	1367		361
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	502	1863	1835	1447	739
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.30	0.24	0.15	0.53

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	404	119	371	108	184	461	99	155
v/c Ratio	0.21	0.77	0.58	0.57	0.20	0.32	0.74	0.31	0.26
Control Delay	46.2	43.9	58.2	35.5	12.5	19.7	40.2	20.7	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	43.9	58.2	35.5	12.5	19.7	40.2	20.7	28.8
Queue Length 50th (ft)	25	236	76	200	14	68	256	35	68
Queue Length 95th (ft)	59	390	156	391	66	151	#562	86	161
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1211	1319	509	662	553	699	621	598	710
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	0.03	0.31	0.23	0.56	0.20	0.26	0.74	0.17	0.22

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	58	610	589	111	219
v/c Ratio	0.12	0.49	0.56	0.12	0.60
Control Delay	4.6	7.0	13.1	5.2	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	7.0	13.1	5.2	27.9
Queue Length 50th (ft)	5	82	135	8	65
Queue Length 95th (ft)	20	194	297	36	146
Internal Link Dist (ft)		536	1367		341
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	600	1900	1895	1540	936
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.32	0.31	0.07	0.23

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	37	730	9	558	358	10	156	154	216
v/c Ratio	0.14	0.41	0.04	0.34	0.40	0.01	0.35	0.34	0.37
Control Delay	26.5	9.3	28.4	10.8	3.4	0.0	17.8	17.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	9.3	28.4	10.8	3.4	0.0	17.8	17.7	5.1
Queue Length 50th (ft)	6	36	2	26	0	0	25	25	0
Queue Length 95th (ft)	46	190	19	149	51	0	105	104	43
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	740	2946	962	3057	1372	1353	1319	1325	1275
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	0.05	0.25	0.01	0.18	0.26	0.01	0.12	0.12	0.17

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	167	194	283	559	454
v/c Ratio	0.52	0.20	0.53	0.23	0.50
Control Delay	29.6	1.7	17.4	2.2	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	1.7	17.4	2.2	12.7
Queue Length 50th (ft)	47	0	50	15	32
Queue Length 95th (ft)	131	23	103	26	90
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	535	1458	1216	3448	1936
Starvation Cap Reductn	0	0	150	1037	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.13	0.27	0.23	0.23

Intersection Summary

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	183	35	777	422
v/c Ratio	0.57	0.09	0.32	0.38
Control Delay	30.8	22.7	4.6	13.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	30.8	22.7	4.6	13.3
Queue Length 50th (ft)	53	9	46	41
Queue Length 95th (ft)	144	38	88	75
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	501	531	3506	3134
Starvation Cap Reductn	0	0	0	341
Spillback Cap Reductn	0	0	25	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.37	0.07	0.22	0.15

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	301	91	205	54	68	232	71	169
v/c Ratio	0.12	0.51	0.34	0.29	0.09	0.15	0.55	0.17	0.36
Control Delay	27.7	24.1	34.6	22.3	4.3	16.1	29.5	16.1	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	24.1	34.6	22.3	4.3	16.1	29.5	16.1	25.1
Queue Length 50th (ft)	12	97	34	44	0	17	78	17	54
Queue Length 95th (ft)	40	219	96	172	18	51	186	53	134
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	1666	1738	948	1131	918	843	1065	975	1200
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	0.02	0.17	0.10	0.18	0.06	0.08	0.22	0.07	0.14

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	75	381	347	275	368
v/c Ratio	0.13	0.34	0.40	0.32	0.71
Control Delay	7.2	8.6	15.6	3.4	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	8.6	15.6	3.4	29.8
Queue Length 50th (ft)	12	72	96	1	134
Queue Length 95th (ft)	32	140	186	45	229
Internal Link Dist (ft)		536	1367		401
Turn Bay Length (ft)	100			100	
Base Capacity (vph)	627	1881	1881	1539	825
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.20	0.18	0.18	0.45

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	40	643	19	333	231	3	115	116	269
v/c Ratio	0.13	0.42	0.07	0.25	0.21	0.00	0.23	0.23	0.42
Control Delay	21.9	10.3	23.3	11.4	0.9	0.0	13.0	13.0	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	10.3	23.3	11.4	0.9	0.0	13.0	13.0	4.5
Queue Length 50th (ft)	4	28	2	13	0	0	10	10	0
Queue Length 95th (ft)	46	170	28	90	10	0	72	73	44
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	866	3105	1187	3225	1497	1443	1437	1443	1372
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	0.05	0.21	0.02	0.10	0.15	0.00	0.08	0.08	0.20

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	85	179	196	369	569
v/c Ratio	0.21	0.19	0.47	0.16	0.58
Control Delay	21.0	1.9	19.0	2.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	1.9	19.0	2.5	13.4
Queue Length 50th (ft)	21	0	37	11	45
Queue Length 95th (ft)	67	24	80	20	107
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	556	1511	1250	3358	2023
Starvation Cap Reductn	0	0	88	1165	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.12	0.17	0.17	0.28

Intersection Summary

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	252	22	519	482
v/c Ratio	0.58	0.08	0.24	0.45
Control Delay	27.3	24.8	5.6	12.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.3	24.8	5.6	12.7
Queue Length 50th (ft)	71	6	40	45
Queue Length 95th (ft)	#197	27	57	71
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	480	521	3580	3169
Starvation Cap Reductn	0	0	0	304
Spillback Cap Reductn	0	0	9	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.04	0.15	0.17

Intersection Summary

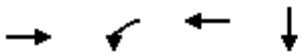
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	891	145	313	72	181	266	193	373
v/c Ratio	0.16	1.16	0.81	0.42	0.11	0.76	0.61	0.60	0.84
Control Delay	38.5	116.0	82.8	32.8	6.2	45.3	37.0	32.4	56.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	116.0	82.8	32.8	6.2	45.3	37.0	32.4	56.9
Queue Length 50th (ft)	24	~744	102	207	0	88	141	95	249
Queue Length 95th (ft)	61	#984	#205	271	23	128	200	135	321
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	343	769	183	915	786	252	604	335	624
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	0.14	1.16	0.79	0.34	0.09	0.72	0.44	0.58	0.60

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	WBL	WBT	SBT
Lane Group Flow (vph)	976	22	873	264
v/c Ratio	0.81	0.05	0.70	0.68
Control Delay	19.7	4.8	10.9	40.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.7	4.8	10.9	40.6
Queue Length 50th (ft)	299	3	225	122
Queue Length 95th (ft)	768	12	423	248
Internal Link Dist (ft)	536		1367	681
Turn Bay Length (ft)		100		
Base Capacity (vph)	1472	574	1634	686
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	0.66	0.04	0.53	0.38

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	63	1085	53	474	221	11	322	321	389
v/c Ratio	0.29	0.71	0.26	0.31	0.18	0.01	0.56	0.56	0.49
Control Delay	36.3	20.0	36.5	15.0	0.7	0.0	23.9	23.8	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	20.0	36.5	15.0	0.7	0.0	23.9	23.8	4.7
Queue Length 50th (ft)	26	200	21	71	0	0	117	117	0
Queue Length 95th (ft)	70	342	63	133	11	0	232	232	58
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	501	2268	652	2472	1389	1093	986	990	1080
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	0.13	0.48	0.08	0.19	0.16	0.01	0.33	0.32	0.36

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	99	154	132	242	1956
v/c Ratio	0.46	0.31	0.59	0.09	0.98
Control Delay	44.6	18.2	43.3	2.6	34.8
Queue Delay	0.0	0.1	0.7	0.3	0.5
Total Delay	44.6	18.3	43.9	2.9	35.3
Queue Length 50th (ft)	54	47	64	16	505
Queue Length 95th (ft)	107	94	109	26	#840
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	308	563	311	2766	2001
Starvation Cap Reductn	0	0	43	2016	0
Spillback Cap Reductn	0	53	0	0	7
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.30	0.49	0.32	0.98

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	200	24	329	1471
v/c Ratio	0.79	0.19	0.12	0.68
Control Delay	61.8	46.2	3.1	6.3
Queue Delay	0.0	0.0	0.0	8.8
Total Delay	61.8	46.2	3.1	15.0
Queue Length 50th (ft)	116	14	23	108
Queue Length 95th (ft)	#204	38	32	m116
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	291	302	2710	2149
Starvation Cap Reductn	0	0	0	652
Spillback Cap Reductn	0	0	23	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.08	0.12	0.98

Intersection Summary

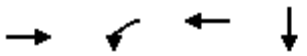
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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)	43	500	117	330	106	128	351	117	213
v/c Ratio	0.17	0.80	0.60	0.48	0.18	0.32	0.78	0.41	0.47
Control Delay	38.8	37.5	58.3	30.7	6.9	21.9	43.7	24.2	32.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	37.5	58.3	30.7	6.9	21.9	43.7	24.2	32.2
Queue Length 50th (ft)	20	247	64	170	0	47	175	43	96
Queue Length 95th (ft)	64	453	#179	311	41	102	326	95	195
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	325	962	233	1027	814	461	750	333	746
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	0.13	0.52	0.50	0.32	0.13	0.28	0.47	0.35	0.29

Intersection Summary

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



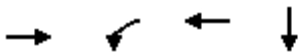
Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	862	11	770	183
v/c Ratio	0.74	0.02	0.64	0.49
Control Delay	13.4	4.1	8.8	24.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.4	4.1	8.8	24.5
Queue Length 50th (ft)	149	1	119	34
Queue Length 95th (ft)	488	6	261	154
Internal Link Dist (ft)	163		1367	681
Turn Bay Length (ft)		100		
Base Capacity (vph)	1709	688	1785	973
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	0.02	0.43	0.19

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	473	126	463	116	189	505	105	190
v/c Ratio	0.27	0.77	0.66	0.61	0.17	0.40	0.85	0.42	0.36
Control Delay	51.6	39.2	65.2	31.5	5.4	21.8	46.4	23.8	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	39.2	65.2	31.5	5.4	21.8	46.4	23.8	28.5
Queue Length 50th (ft)	26	285	83	283	0	73	291	38	86
Queue Length 95th (ft)	68	414	#196	405	38	146	#572	86	170
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	220	922	217	956	809	492	709	301	712
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	0.19	0.51	0.58	0.48	0.14	0.38	0.71	0.35	0.27

Intersection Summary

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



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	844	22	833	66
v/c Ratio	0.63	0.04	0.57	0.25
Control Delay	10.4	3.0	5.7	16.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.4	3.0	5.7	16.1
Queue Length 50th (ft)	86	1	83	5
Queue Length 95th (ft)	477	9	290	46
Internal Link Dist (ft)	536		1367	681
Turn Bay Length (ft)		100		
Base Capacity (vph)	1771	757	1880	918
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	0.03	0.44	0.07

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	839	22	667	441	22	197	201	258
v/c Ratio	0.23	0.46	0.11	0.41	0.47	0.03	0.44	0.45	0.43
Control Delay	31.2	11.4	32.6	12.8	3.6	0.1	22.4	22.5	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	11.4	32.6	12.8	3.6	0.1	22.4	22.5	5.4
Queue Length 50th (ft)	16	57	7	73	0	0	58	60	0
Queue Length 95th (ft)	63	227	34	184	55	0	141	143	49
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	603	2594	785	2739	1286	1204	1124	1130	1133
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	0.09	0.32	0.03	0.24	0.34	0.02	0.18	0.18	0.23

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	208	240	354	854	667
v/c Ratio	0.63	0.26	0.80	0.34	0.54
Control Delay	36.4	2.8	41.2	2.3	13.3
Queue Delay	0.0	0.0	10.5	0.0	0.0
Total Delay	36.4	2.8	51.7	2.4	13.3
Queue Length 50th (ft)	80	0	93	26	71
Queue Length 95th (ft)	169	39	#368	37	132
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	601	901	442	3424	2409
Starvation Cap Reductn	0	0	67	719	0
Spillback Cap Reductn	0	2	0	0	39
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.27	0.94	0.32	0.28

Intersection Summary

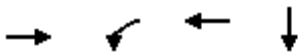
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	198	52	1125	635
v/c Ratio	0.63	0.13	0.45	0.50
Control Delay	36.6	26.1	5.6	13.0
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	36.8	26.1	5.6	13.1
Queue Length 50th (ft)	76	17	84	62
Queue Length 95th (ft)	162	55	166	104
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	577	442	3399	2536
Starvation Cap Reductn	0	0	0	358
Spillback Cap Reductn	82	0	238	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.12	0.36	0.29

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	348	87	250	54	76	239	76	195
v/c Ratio	0.14	0.59	0.35	0.41	0.10	0.18	0.57	0.19	0.44
Control Delay	27.9	24.3	34.5	23.5	3.2	15.7	28.3	15.7	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	24.3	34.5	23.5	3.2	15.7	28.3	15.7	25.7
Queue Length 50th (ft)	14	108	31	81	0	18	75	18	60
Queue Length 95th (ft)	50	243	92	190	15	53	178	53	146
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	438	1365	402	1410	1151	588	1118	557	1145
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	0.10	0.25	0.22	0.18	0.05	0.13	0.21	0.14	0.17

Intersection Summary



Lane Group	EBT	WBL	WBT	SBT
Lane Group Flow (vph)	554	5	571	110
v/c Ratio	0.43	0.01	0.42	0.33
Control Delay	7.8	4.0	5.4	14.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.8	4.0	5.4	14.9
Queue Length 50th (ft)	45	1	45	15
Queue Length 95th (ft)	262	4	174	55
Internal Link Dist (ft)	163		1367	681
Turn Bay Length (ft)		100		
Base Capacity (vph)	1830	852	1848	1125
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	0.30	0.01	0.31	0.10

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	594	42	323	292	10	146	145	240
v/c Ratio	0.17	0.44	0.14	0.24	0.25	0.01	0.28	0.28	0.37
Control Delay	23.2	12.8	23.5	11.8	0.9	0.0	14.0	14.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	12.8	23.5	11.8	0.9	0.0	14.0	14.0	4.4
Queue Length 50th (ft)	7	31	6	15	0	0	16	16	0
Queue Length 95th (ft)	56	162	48	89	12	0	91	90	42
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	805	3020	1107	3132	1502	1420	1401	1410	1339
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	0.06	0.20	0.04	0.10	0.19	0.01	0.10	0.10	0.18

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	113	227	227	567	753
v/c Ratio	0.37	0.26	0.54	0.23	0.63
Control Delay	28.4	2.7	24.3	2.1	16.7
Queue Delay	0.0	0.0	1.0	0.0	0.0
Total Delay	28.4	2.7	25.3	2.1	16.7
Queue Length 50th (ft)	38	0	54	17	99
Queue Length 95th (ft)	92	35	112	26	168
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	497	923	497	3595	2929
Starvation Cap Reductn	0	0	107	1159	0
Spillback Cap Reductn	0	0	0	0	8
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.25	0.58	0.23	0.26

Intersection Summary

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	209	31	740	729
v/c Ratio	0.63	0.10	0.31	0.56
Control Delay	34.4	25.4	4.8	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.4	25.4	4.8	10.4
Queue Length 50th (ft)	77	10	51	52
Queue Length 95th (ft)	162	35	83	87
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	438	471	3550	2960
Starvation Cap Reductn	0	0	0	295
Spillback Cap Reductn	0	0	30	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.07	0.21	0.27

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	892	149	318	72	181	267	193	375
v/c Ratio	0.16	1.16	0.83	0.42	0.11	0.76	0.61	0.60	0.85
Control Delay	38.9	117.8	84.7	32.8	6.1	45.4	37.1	32.5	57.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	117.8	84.7	32.8	6.1	45.4	37.1	32.5	57.1
Queue Length 50th (ft)	25	~746	105	210	0	88	141	95	251
Queue Length 95th (ft)	62	#985	#213	275	23	128	201	135	323
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	339	767	182	915	786	252	602	334	622
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	0.14	1.16	0.82	0.35	0.09	0.72	0.44	0.58	0.60

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	SBT
Lane Group Flow (vph)	43	936	22	549	331	309
v/c Ratio	0.08	0.81	0.09	0.50	0.34	0.68
Control Delay	6.1	21.0	6.5	13.6	5.9	34.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	21.0	6.5	13.6	5.9	34.9
Queue Length 50th (ft)	6	260	3	168	36	102
Queue Length 95th (ft)	21	716	14	311	95	270
Internal Link Dist (ft)		536		1367		377
Turn Bay Length (ft)	100		100		100	
Base Capacity (vph)	663	1554	474	1560	1297	789
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.60	0.05	0.35	0.26	0.39

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	63	1103	53	477	221	11	322	321	393
v/c Ratio	0.29	0.72	0.26	0.31	0.18	0.01	0.56	0.56	0.49
Control Delay	36.5	20.1	36.6	15.0	0.7	0.0	24.1	24.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	20.1	36.6	15.0	0.7	0.0	24.1	24.0	4.8
Queue Length 50th (ft)	26	204	22	71	0	0	120	118	0
Queue Length 95th (ft)	70	350	63	133	11	0	232	232	58
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	497	2259	646	2459	1386	1085	977	980	1075
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	0.13	0.49	0.08	0.19	0.16	0.01	0.33	0.33	0.37

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	99	154	133	244	1958
v/c Ratio	0.44	0.31	0.59	0.09	0.99
Control Delay	43.8	18.0	43.7	2.7	36.8
Queue Delay	0.0	0.1	0.7	0.3	0.6
Total Delay	43.8	18.1	44.4	3.0	37.4
Queue Length 50th (ft)	54	47	65	17	519
Queue Length 95th (ft)	107	94	110	27	#842
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	306	565	309	2750	1987
Starvation Cap Reductn	0	0	43	2004	0
Spillback Cap Reductn	0	55	0	0	7
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.30	0.50	0.33	0.99

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	214	24	331	1471
v/c Ratio	0.83	0.19	0.12	0.69
Control Delay	65.4	46.4	3.2	6.3
Queue Delay	0.0	0.0	0.0	10.4
Total Delay	65.4	46.4	3.2	16.7
Queue Length 50th (ft)	126	14	24	108
Queue Length 95th (ft)	#224	38	32	m116
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	289	300	2698	2139
Starvation Cap Reductn	0	0	0	655
Spillback Cap Reductn	0	0	24	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.74	0.08	0.12	0.99

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)	43	506	121	333	106	128	358	117	214
v/c Ratio	0.17	0.81	0.62	0.48	0.18	0.32	0.79	0.42	0.47
Control Delay	39.1	38.1	59.7	30.8	6.9	22.0	44.5	24.6	32.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	38.1	59.7	30.8	6.9	22.0	44.5	24.6	32.4
Queue Length 50th (ft)	20	255	68	174	0	47	181	43	98
Queue Length 95th (ft)	64	462	#187	312	41	102	333	95	195
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	323	949	230	1013	805	458	739	327	736
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	0.13	0.53	0.53	0.33	0.13	0.28	0.48	0.36	0.29

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	101	745	11	592	221	401
v/c Ratio	0.25	0.69	0.03	0.67	0.29	0.76
Control Delay	8.9	16.9	7.9	22.6	8.7	34.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	16.9	7.9	22.6	8.7	34.6
Queue Length 50th (ft)	19	211	2	227	30	147
Queue Length 95th (ft)	44	499	9	386	79	#358
Internal Link Dist (ft)		536		1367		383
Turn Bay Length (ft)	100		100		100	
Base Capacity (vph)	538	1567	539	1571	1256	748
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	0.19	0.48	0.02	0.38	0.18	0.54

Intersection Summary

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
Lane Group Flow (vph)	42	479	133	468	116	189	512	105	191
v/c Ratio	0.27	0.80	0.71	0.64	0.18	0.38	0.88	0.45	0.34
Control Delay	52.2	41.8	69.2	32.6	5.4	21.4	50.3	24.7	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.2	41.8	69.2	32.6	5.4	21.4	50.3	24.7	28.2
Queue Length 50th (ft)	26	290	88	287	0	73	300	39	88
Queue Length 95th (ft)	68	420	#210	411	38	146	#585	86	172
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	206	865	203	896	765	525	666	280	669
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	0.20	0.55	0.66	0.52	0.15	0.36	0.77	0.38	0.29

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	59	793	22	752	119	218
v/c Ratio	0.14	0.67	0.06	0.69	0.13	0.59
Control Delay	5.2	13.9	4.9	16.3	6.4	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.2	13.9	4.9	16.3	6.4	27.7
Queue Length 50th (ft)	6	135	2	224	13	58
Queue Length 95th (ft)	22	480	11	458	45	166
Internal Link Dist (ft)		536		1367		320
Turn Bay Length (ft)	100		100		100	
Base Capacity (vph)	621	1722	622	1730	1410	905
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	0.10	0.46	0.04	0.43	0.08	0.24

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	54	903	22	685	441	22	197	201	277
v/c Ratio	0.23	0.49	0.11	0.41	0.46	0.03	0.45	0.45	0.45
Control Delay	31.5	11.6	33.0	12.7	3.5	0.1	22.8	22.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	11.6	33.0	12.7	3.5	0.1	22.8	22.9	5.6
Queue Length 50th (ft)	16	63	7	76	0	0	58	60	0
Queue Length 95th (ft)	63	250	34	190	55	0	141	143	50
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	587	2559	763	2727	1282	1191	1109	1115	1118
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	0.09	0.35	0.03	0.25	0.34	0.02	0.18	0.18	0.25

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	208	240	359	857	680
v/c Ratio	0.64	0.27	0.81	0.34	0.54
Control Delay	36.7	2.8	40.9	2.3	12.0
Queue Delay	0.0	0.0	11.4	0.0	0.0
Total Delay	36.7	2.8	52.3	2.3	12.0
Queue Length 50th (ft)	80	0	95	26	65
Queue Length 95th (ft)	167	38	#343	37	116
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	439	891	444	3561	2688
Starvation Cap Reductn	0	0	67	732	0
Spillback Cap Reductn	0	2	0	0	38
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.27	0.95	0.30	0.26

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	233	52	1130	635
v/c Ratio	0.67	0.13	0.46	0.52
Control Delay	38.2	25.5	5.9	14.3
Queue Delay	1.2	0.0	0.0	0.0
Total Delay	39.5	25.5	6.0	14.3
Queue Length 50th (ft)	92	18	105	71
Queue Length 95th (ft)	#207	52	142	102
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	405	429	3561	2782
Starvation Cap Reductn	0	0	0	359
Spillback Cap Reductn	55	0	281	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.12	0.34	0.26

Intersection Summary

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
Lane Group Flow (vph)	43	358	102	261	54	76	255	76	196
v/c Ratio	0.14	0.59	0.39	0.41	0.10	0.18	0.60	0.20	0.44
Control Delay	28.5	24.8	35.9	24.0	3.1	16.3	29.5	16.4	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	24.8	35.9	24.0	3.1	16.3	29.5	16.4	26.3
Queue Length 50th (ft)	14	117	37	89	0	19	83	19	63
Queue Length 95th (ft)	50	251	106	199	15	54	193	54	149
Internal Link Dist (ft)		696		860			1759		890
Turn Bay Length (ft)	100		110		230	100		210	
Base Capacity (vph)	423	1331	378	1373	1123	564	1085	522	1118
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	0.10	0.27	0.27	0.19	0.05	0.13	0.24	0.15	0.18

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	82	493	5	459	277	371
v/c Ratio	0.16	0.44	0.01	0.51	0.34	0.75
Control Delay	7.1	11.1	7.0	17.4	6.6	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	11.1	7.0	17.4	6.6	30.6
Queue Length 50th (ft)	12	89	1	132	22	123
Queue Length 95th (ft)	36	274	5	274	81	229
Internal Link Dist (ft)		536		1367		376
Turn Bay Length (ft)	100		100		100	
Base Capacity (vph)	662	1770	734	1774	1462	878
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	0.12	0.28	0.01	0.26	0.19	0.42

Intersection Summary

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	52	754	42	395	292	10	146	145	324
v/c Ratio	0.18	0.53	0.15	0.28	0.25	0.01	0.29	0.28	0.46
Control Delay	24.2	13.6	24.6	11.9	0.9	0.0	14.9	14.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	13.6	24.6	11.9	0.9	0.0	14.9	14.8	4.6
Queue Length 50th (ft)	8	43	6	20	0	0	18	18	0
Queue Length 95th (ft)	56	212	48	108	12	0	91	90	48
Internal Link Dist (ft)		188		874				412	
Turn Bay Length (ft)	80		80		125		100		
Base Capacity (vph)	776	2965	1069	3071	1486	1380	1357	1366	1322
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	0.07	0.25	0.04	0.13	0.20	0.01	0.11	0.11	0.25

Intersection Summary

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	113	227	242	573	821
v/c Ratio	0.28	0.24	0.60	0.24	0.68
Control Delay	26.0	2.6	27.4	2.5	17.2
Queue Delay	0.0	0.0	1.8	0.0	0.0
Total Delay	26.0	2.6	29.2	2.6	17.3
Queue Length 50th (ft)	39	0	60	19	113
Queue Length 95th (ft)	92	35	#121	28	168
Internal Link Dist (ft)	412			145	1448
Turn Bay Length (ft)		100	110		
Base Capacity (vph)	447	953	447	3559	2736
Starvation Cap Reductn	0	0	92	1047	0
Spillback Cap Reductn	0	1	0	0	21
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.24	0.68	0.23	0.30

Intersection Summary

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

Lane Group	EBL	NBL	NBT	SBT
Lane Group Flow (vph)	298	31	755	729
v/c Ratio	0.75	0.10	0.33	0.59
Control Delay	40.1	25.7	5.7	12.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.1	25.7	5.7	12.4
Queue Length 50th (ft)	116	11	62	63
Queue Length 95th (ft)	#279	35	85	96
Internal Link Dist (ft)	60		1029	145
Turn Bay Length (ft)		110		
Base Capacity (vph)	399	432	3536	2806
Starvation Cap Reductn	0	0	0	331
Spillback Cap Reductn	0	0	37	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.07	0.22	0.29

Intersection Summary

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

Appendix E: Signal Warrants

FEHR PEERS

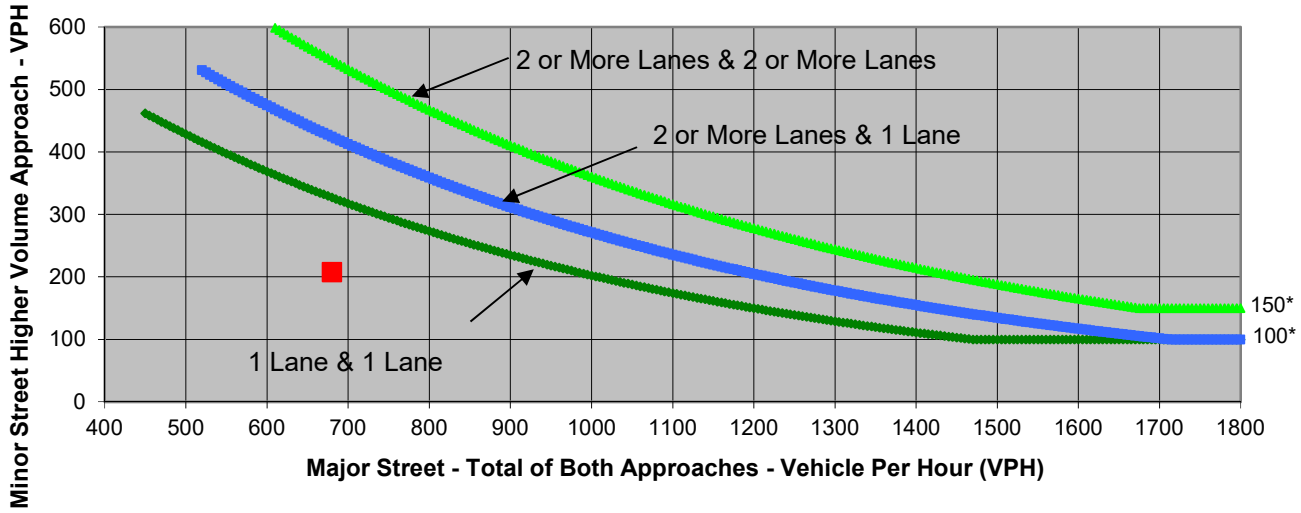
Major Street	Patternson Blvd	Project	Oak Park Specific Plan
Minor Street	Soule Avenue	Scenario	Existing Plus Project Conditions
		Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	79	6	5	14
Through	216	364	1	0
Right	5	10	202	4
Total	300	380	208	18

Major Street Direction

x	North/South
	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Patternson Blvd	Soule Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**680**	**208**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday AM

Major Street	Patternson Blvd
Minor Street	Soule Avenue

Turn Movement Volumes

	NB	SB	EB	WB
Left	79	6	5	14
Through	216	364	1	0
Right	5	10	202	4
Total	300	380	208	18

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	39.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	18

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**0.2**	**208**	**906**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

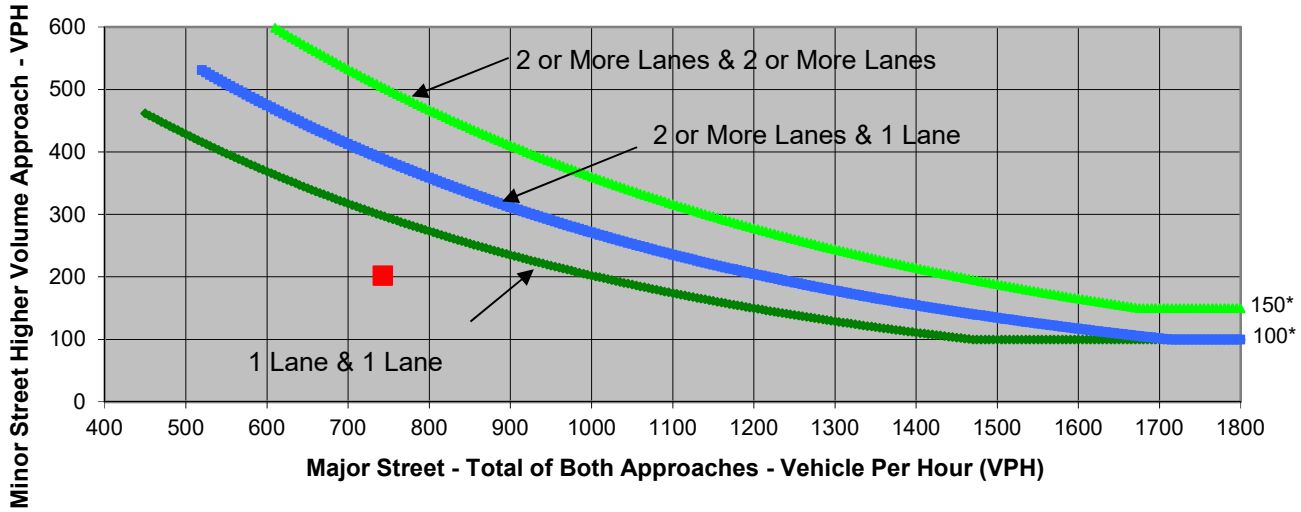
Major Street	Patternson Blvd	Project	Oak Park Specific Plan
Minor Street	Hawthorn Dr	Scenario	Existing Plus Project Conditions
		Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	184	0	51
Through	156	369	0	0
Right	34	0	0	151
Total	190	553	0	202

Major Street Direction

x	North/South
	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Patternson Blvd	Hawthorn Dr	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**743**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday AM

Major Street	Patternson Blvd
Minor Street	Hawthorn Dr

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	184	0	51
Through	156	369	0	0
Right	34	0	0	151
Total	190	553	0	202

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	39
Approach with Worst Case Delay	WB
Total Vehicles on Approach	202

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**2.2**	**202**	**945**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

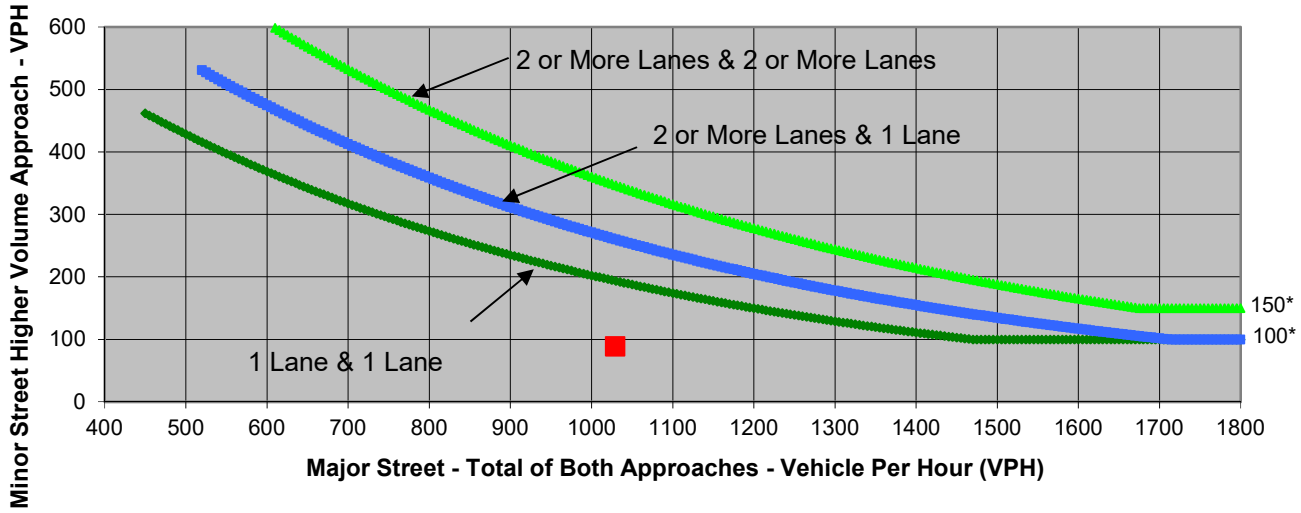
Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday Mid-day

Turn Movement Volumes

	NB	SB	EB	WB
Left	1	53	26	3
Through	0	0	512	432
Right	5	36	6	50
Total	6	89	544	485

Major Street Direction

	North/South
x	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Blvd	Monte Cresta Ave	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,029**	**89**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday Mid-day
Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

Turn Movement Volumes

	NB	SB	EB	WB
Left	1	53	26	3
Through	0	0	512	432
Right	5	36	6	50
Total	6	89	544	485

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	40.7
Approach with Worst Case Delay	SB
Total Vehicles on Approach	89

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**1**	**89**	**1,124**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

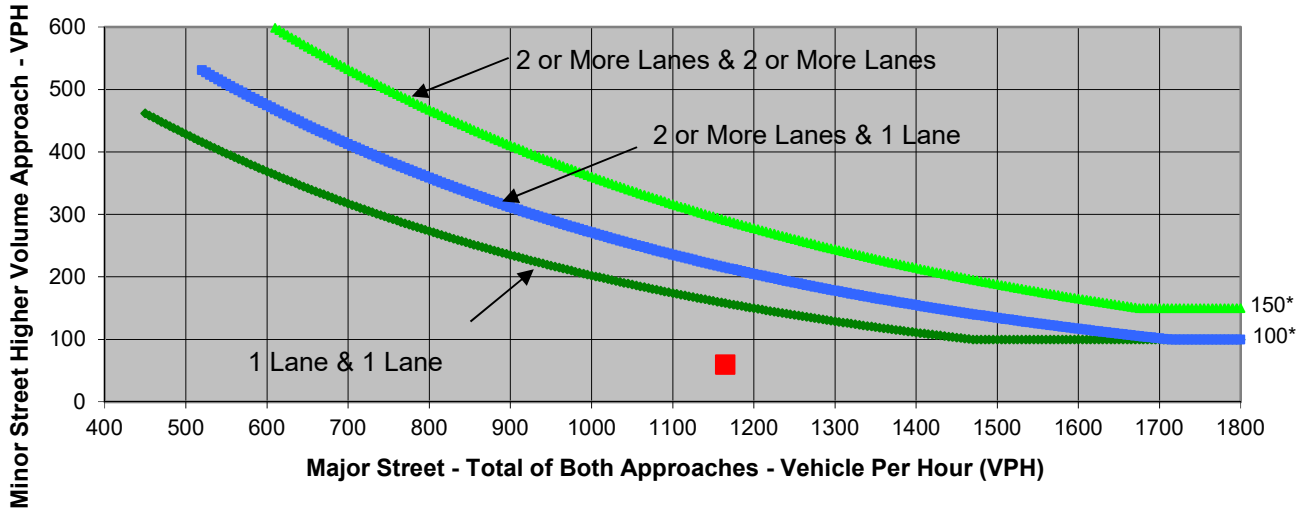
Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	1	42	6	9
Through	0	1	556	566
Right	3	17	1	27
Total	4	60	563	602

Major Street Direction

	North/South
x	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Blvd	Monte Cresta Ave	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,165**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	Weekday PM
Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

Turn Movement Volumes

	NB	SB	EB	WB
Left	1	42	6	9
Through	0	1	556	566
Right	3	17	1	27
Total	4	60	563	602

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	39
Approach with Worst Case Delay	SB
Total Vehicles on Approach	60

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Plus Project Conditions	**0.7**	**60**	**1,229**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

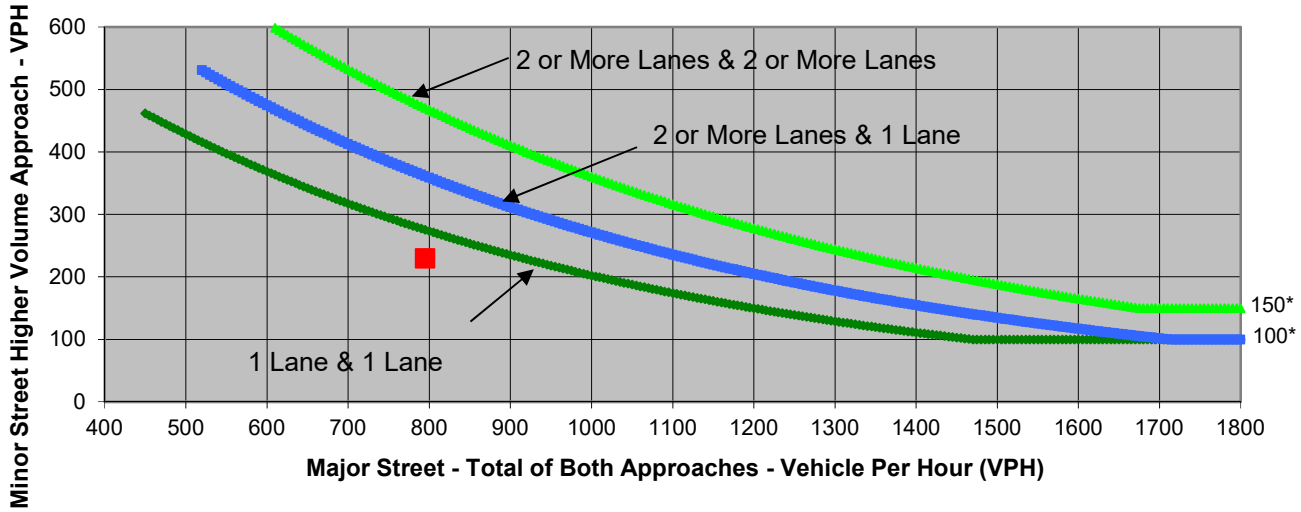
Major Street	Patternson Blvd	Project	Oak Park Specific Plan
Minor Street	Soule Avenue	Scenario	Cumulative Plus Project Conditions
		Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	80	10	10	20
Through	254	431	10	0
Right	10	10	210	10
Total	344	451	230	30

Major Street Direction

x	North/South
	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Patternson Blvd	Soule Avenue	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**795**	**230**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday AM

Major Street	Patternson Blvd
Minor Street	Soule Avenue

Turn Movement Volumes

	NB	SB	EB	WB
Left	80	10	10	20
Through	254	431	10	0
Right	10	10	210	10
Total	344	451	230	30

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	63.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	30

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**0.5**	**230**	**1,055**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

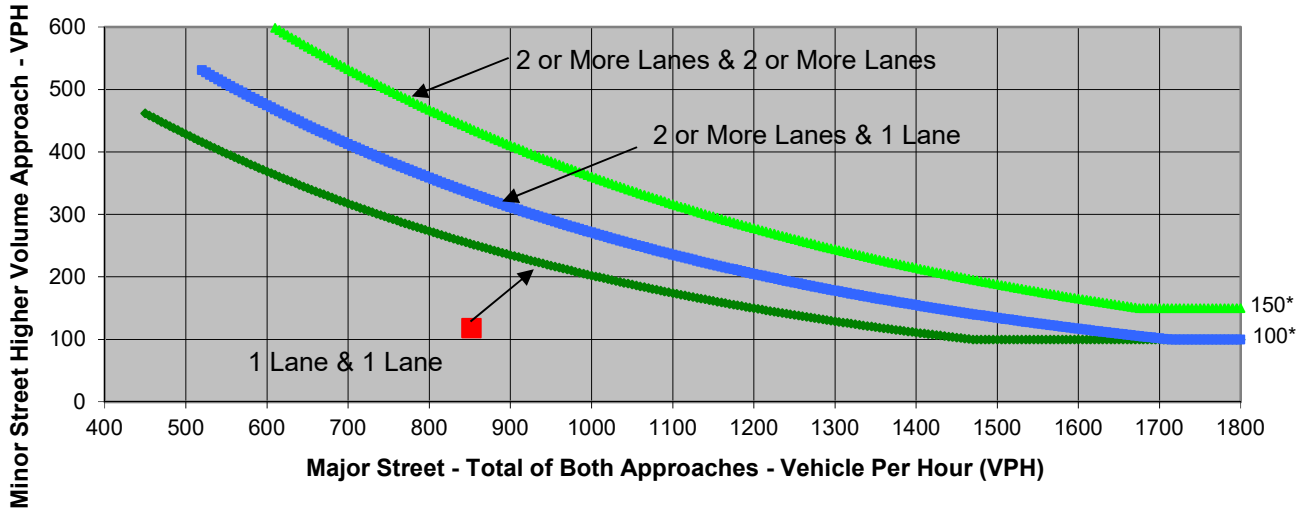
Major Street	Patternson Blvd	Project	Oak Park Specific Plan
Minor Street	Hawthorn Dr	Scenario	Cumulative Plus Project Conditions
		Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	190	0	60
Through	191	431	0	0
Right	40	0	0	58
Total	231	621	0	118

Major Street Direction

x	North/South
	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Patternson Blvd	Hawthorn Dr	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**852**	**118**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Patternson Blvd
Minor Street	Hawthorn Dr

Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	190	0	60
Through	191	431	0	0
Right	40	0	0	58
Total	231	621	0	118

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	101.5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	118

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**3.3**	**118**	**970**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

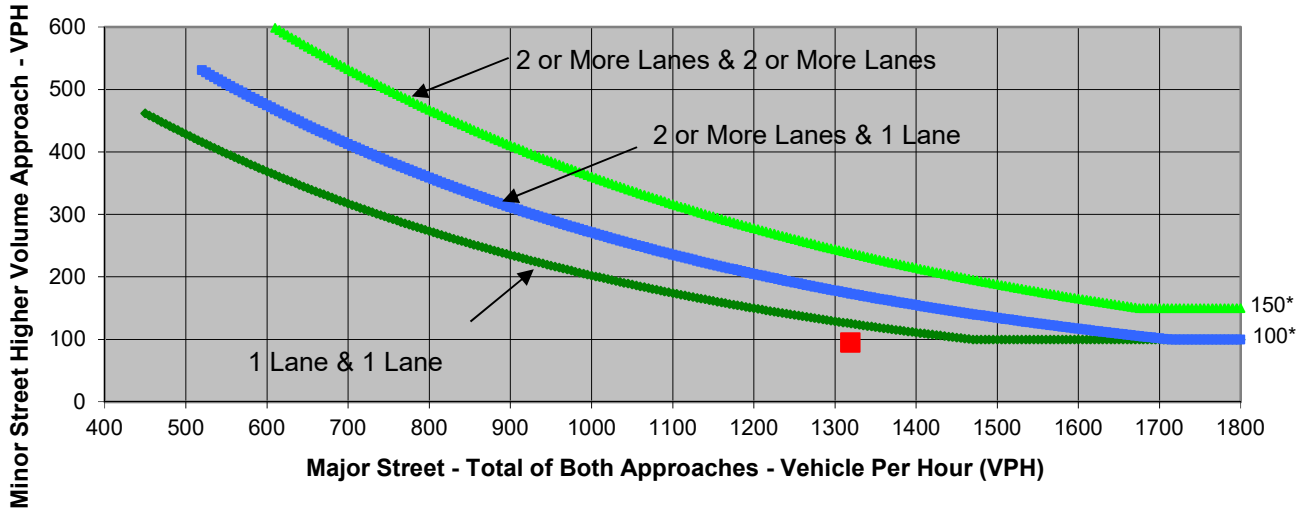
Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	60	50	10
Through	10	10	762	417
Right	10	25	10	70
Total	30	95	822	497

Major Street Direction

	North/South
x	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Blvd	Monte Cresta Ave	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,319**	**95**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday AM
Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	60	50	10
Through	10	10	762	417
Right	10	50	10	70
Total	30	120	822	497

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	140.1
Approach with Worst Case Delay	SB
Total Vehicles on Approach	95

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**3.7**	**120**	**1,469**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

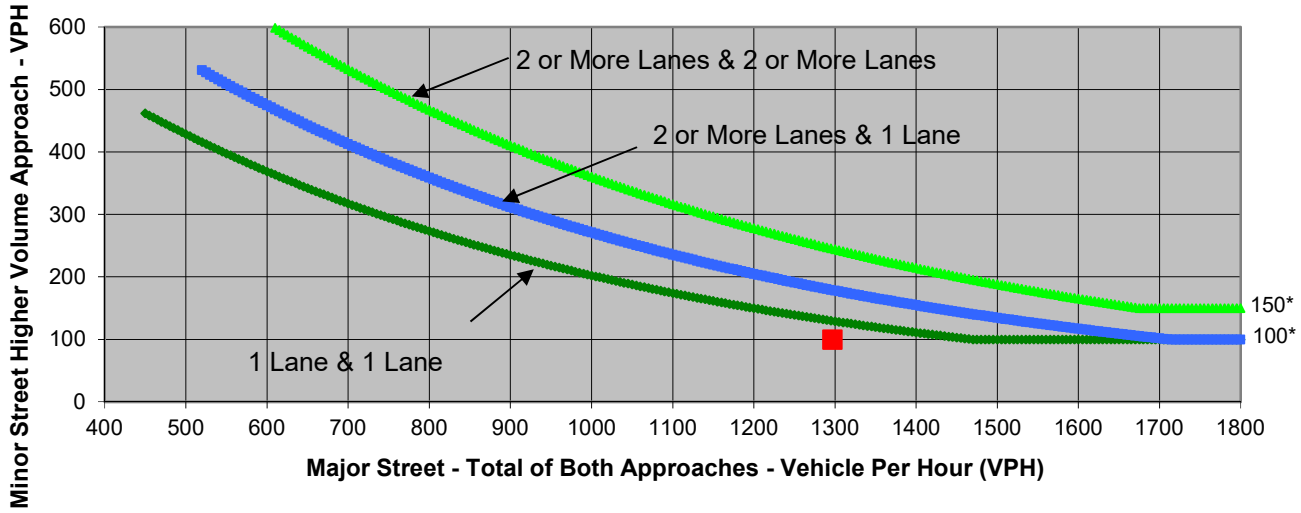
Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday Mid-day

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	60	30	10
Through	0	0	650	547
Right	10	40	10	50
Total	20	100	690	607

Major Street Direction

	North/South
x	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Blvd	Monte Cresta Ave	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,297**	**100**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday Mid-day
Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	60	30	10
Through	0	0	650	547
Right	10	40	10	50
Total	20	100	690	607

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	131.3
Approach with Worst Case Delay	SB
Total Vehicles on Approach	100

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**3.6**	**100**	**1,417**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

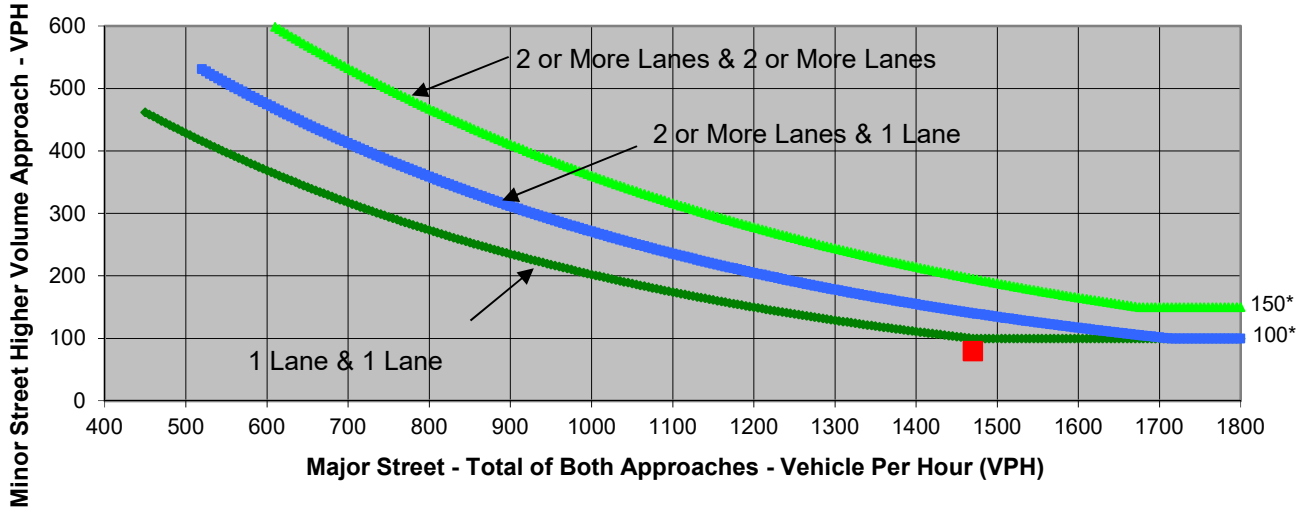
Major Street	Oak Park Blvd	Project	Oak Park Specific Plan
Minor Street	Monte Cresta Ave	Scenario	Cumulative Plus Project Conditions
		Peak Hour	Weekday PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	50	10	10
Through	0	10	699	711
Right	10	20	10	30
Total	20	80	719	751

Major Street Direction

	North/South
x	East/West



* 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.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Blvd	Monte Cresta Ave	
Number of Approach Lanes	**1**	**1**	**NO**
Traffic Volume (VPH) *	**1,470**	**80**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Oak Park Specific Plan
Scenario	Cumulative Plus Project Conditions
Peak Hour	Weekday PM
Major Street	Oak Park Blvd
Minor Street	Monte Cresta Ave

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	50	10	10
Through	0	10	699	711
Right	10	20	10	30
Total	20	80	719	751

Major Street Direction

	North/South
x	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	142.5
Approach with Worst Case Delay	SB
Total Vehicles on Approach	80

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Cumulative Plus Project Conditions	**3.2**	**80**	**1,570**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

Appendix F: Midblock Crossing Assessment

XWalk+

Location Astrid Dr at EBMUD Trail (AM Peak Existing)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	481	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	398	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	83	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	D
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (AM Peak Cumulative without Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	660	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	550	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	110	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Afternoon Peak Cumulative without Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	13	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	380	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	160	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	220	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (PM Cumulative without Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	360	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	190	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	170	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Weekend Cumulative without Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	16	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	250	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	140	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	110	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	B
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (AM Peak Cumulative without Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	16	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	2,000	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	1,080	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	920	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Afternoon Peak Cumulative without Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,650	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	760	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	890	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (PM Peak Cumulative without Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,610	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	840	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	770	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Weekend Peak Cumulative without Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	8	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,080	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	530	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	550	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (AM Peak Cumulative with Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	660	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	550	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	110	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Afternoon Peak Cumulative with Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	13	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	380	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	160	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	220	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (PM Cumulative with Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	360	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	190	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	170	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Weekend Cumulative with Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	16	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	250	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	140	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	110	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	B
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (AM Peak Cumulative with Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	16	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	2,023	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	1,097	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	926	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

1 of 2 Recommendations

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Afternoon Peak Cumulative with Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,720	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	793	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	927	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (PM Peak Cumulative with Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,703	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	899	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	804	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Weekend Peak Cumulative with Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	8	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,385	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	685	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	700	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Afternoon Peak Existing)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	13	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	261	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	104	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	157	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (PM Existing)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	237	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	123	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	114	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	B
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Weekend Existing)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	143	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	77	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	66	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	A
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (AM Peak Existing)

User Julia Wunsch **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,600	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	864	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	736	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Afternoon Peak Existing)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,329	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	611	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	718	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (PM Peak Existing)

User Julia Wunsch **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,284	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	669	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	615	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Weekend Peak Existing)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	863	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	426	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	437	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (AM Peak Existing With Project)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	481	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	398	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	83	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	D
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Afternoon Peak Existing With Project)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	13	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	261	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	104	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	157	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	C
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (PM Existing With Project)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	237	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	123	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	114	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS			
PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	B
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Astrid Dr at EBMUD Trail (Weekend Existing With Project)

User Julia Wunsch

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	○	●
Major Road Peak Hour Volume Total	143	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	77	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	66	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	32	Downtown area?	○	●
1st Half Crossing Distance	16	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	16	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

Curb Extensions

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	A
Candidate Pedestrian Treatment Identified	**Curb Extensions**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge
Paired Treatments for Consideration**	High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (AM Peak Existing With Project)

User Julia Wunsch **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	15	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,623	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	881	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	742	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Afternoon Peak Existing With Project)

User Diwu Zhou **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,399	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	644	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	755	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (PM Peak Existing With Project)

User Julia Wunsch **Date : 9-17-2018**

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	20	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,377	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	728	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	649	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

XWalk+

Location Oak Park Boulevard at EBMUD Trail (Weekend Peak Existing With Project)

User Diwu Zhou

Date : 9-17-2018

Type Uncontrolled Intersection

Input Parameters	Value	Intersection Characteristics	Yes	No
Speed Limit	25	Frequent at-grade transit?	○	●
Peak Hour Pedestrian Vol	10	Bicycle lanes?	●	○
Major Road Peak Hour Volume Total	1,170	Heavy bicycle traffic?	○	●
Major Road Peak Hour Vol Dir 1	583	Major/minor road intersection?	○	●
Major Road Peak Hour Vol Dir 2	587	Midblock/off-set intersection?	●	○
Avg Pedestrian Walking Speed	4	Heavy truck traffic?	○	●
15th Percentile Crossing Speed	3	Existing infrastructure limit treatments?	○	●
Ped start-up/end clearance time	5	On-street parking?	○	●
Pedestrian Crossing Distance	40	Downtown area?	○	●
1st Half Crossing Distance	20	Built-up area of an isolated community?	○	●
2nd Half Crossing Distance	20	Median refuge island?	○	●
Number of Lanes	2	Sufficient width for a median?	○	●
Actual Total Pedestrian Delay				
Expected Motorist Compliance	Moderate			

◀ 1 of 2 Recommendations ▶

In-pavement flashers

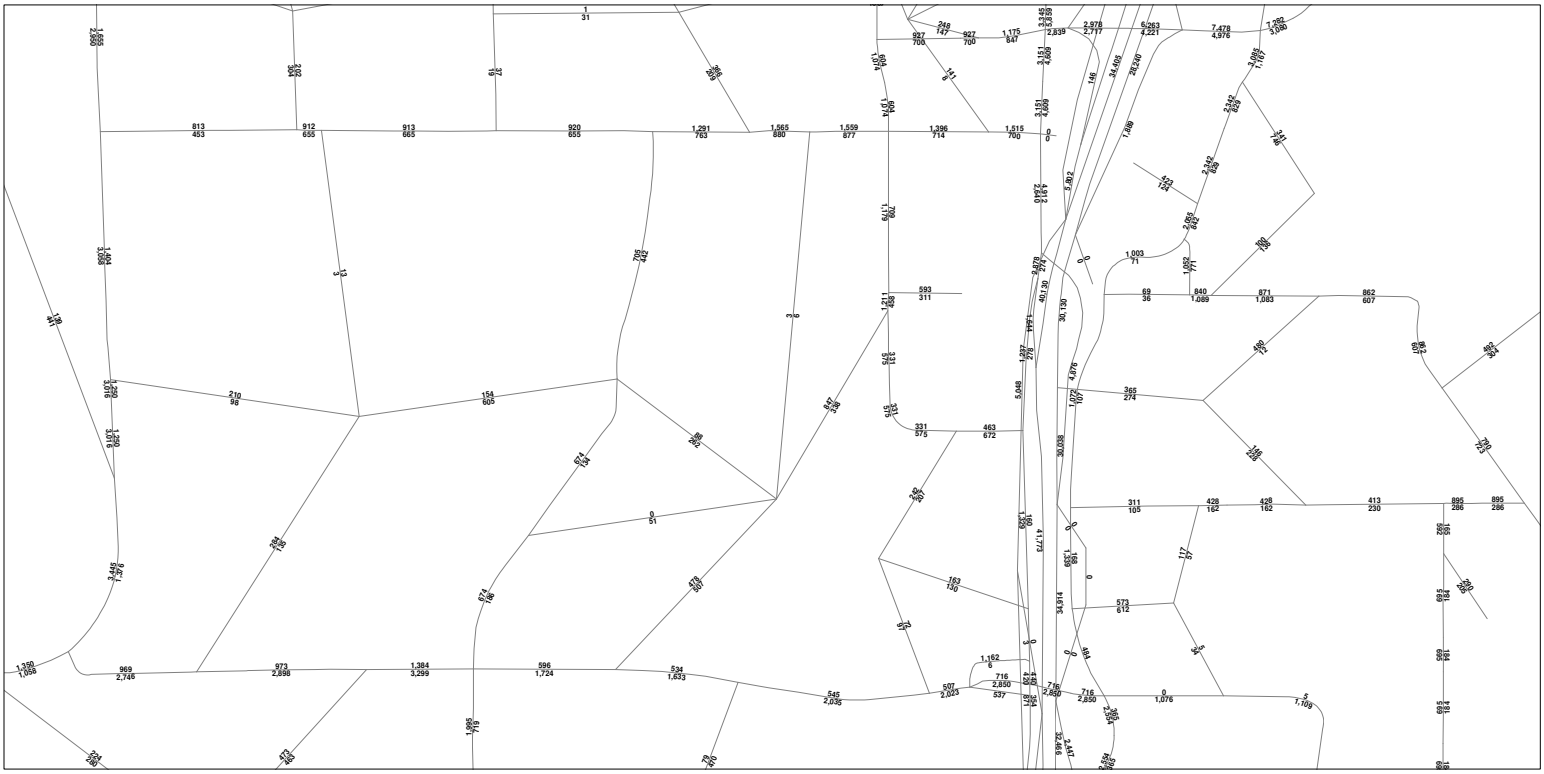
TREATMENT IDENTIFICATION MATRIX FOR UNCONTROLLED LOCATIONS

PEDESTRIAN LEVEL OF SERVICE	EXPECTED MOTORIST COMPLIANCE		
	LOW (or Speed > 35 MPH)	MODERATE	HIGH
LOS A-D (average delay up to 30 seconds)	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	**LEVEL 1** High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 PHB*, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1, 2, and 3	**LEVEL 3** 2 Lane Road: In-Pavement Flashers, Overhead Flashing Beacons Multi-Lane Road: RRFB Plus LEVELS 1 and 2	**LEVEL 2** Curb Extentions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

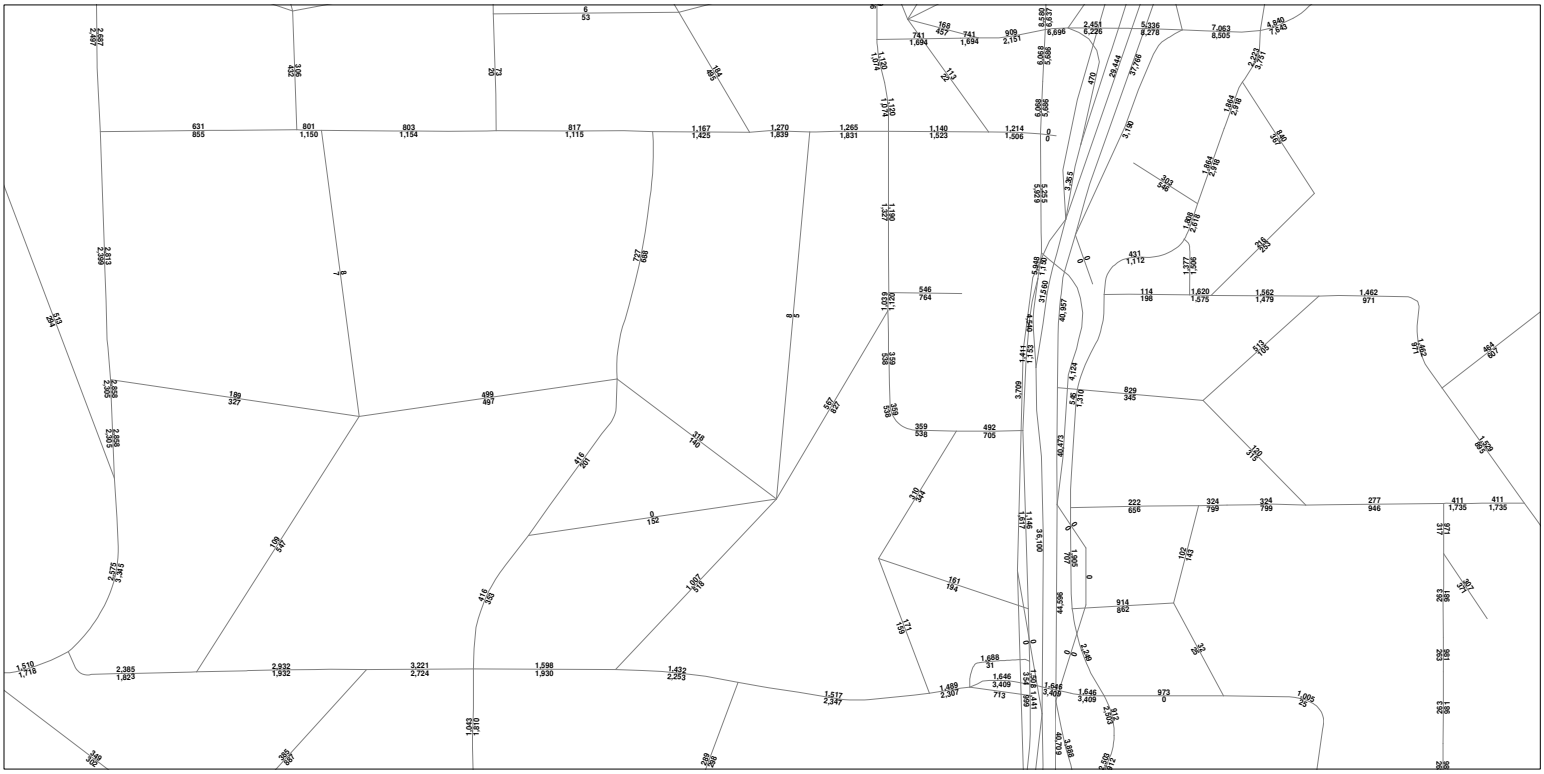
Signalized or Unsignalized Crossing?	Unsignalized Crossing
Pedestrian LOS	F
Candidate Pedestrian Treatment Identified	**In-pavement flashers**
Candidate for Median Refuge Island?	NO
Candidate for Road Diet?	NO
Other Treatments for Consideration**	2 lane road: In-pavement flashers, overhead flashing beacons; Multi-lane road: RRFB
Paired Treatments for Consideration**	Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge, High Visibility Crosswalk Markings, Advance Yield Lines, Advance signage

* Fehr & Peers is monitoring ongoing discussions re: patent concerns for the RRFB and jurisdictions should consult legal counsel before installing the RRFB at this time.*

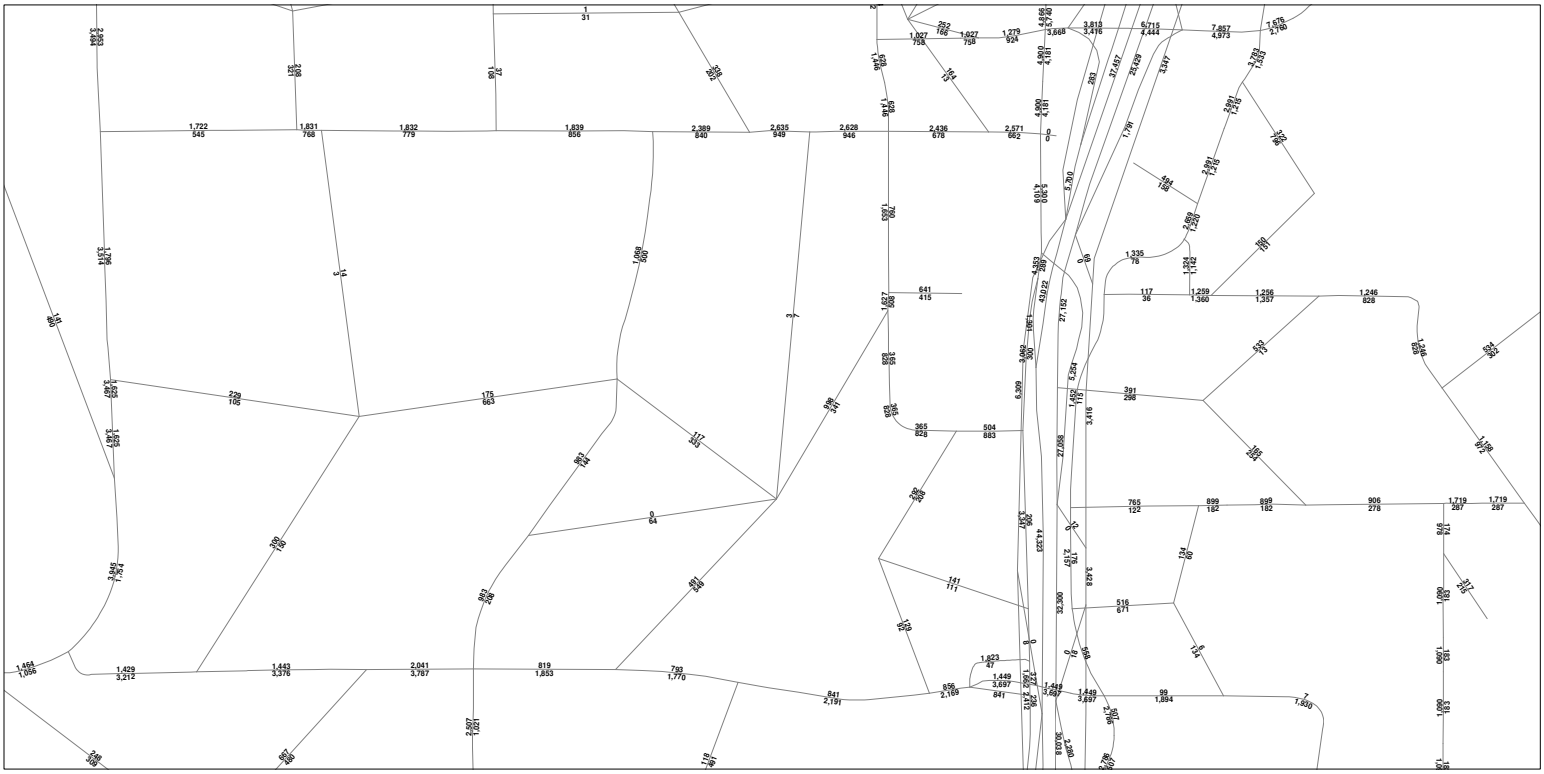
Appendix G: Model Plots



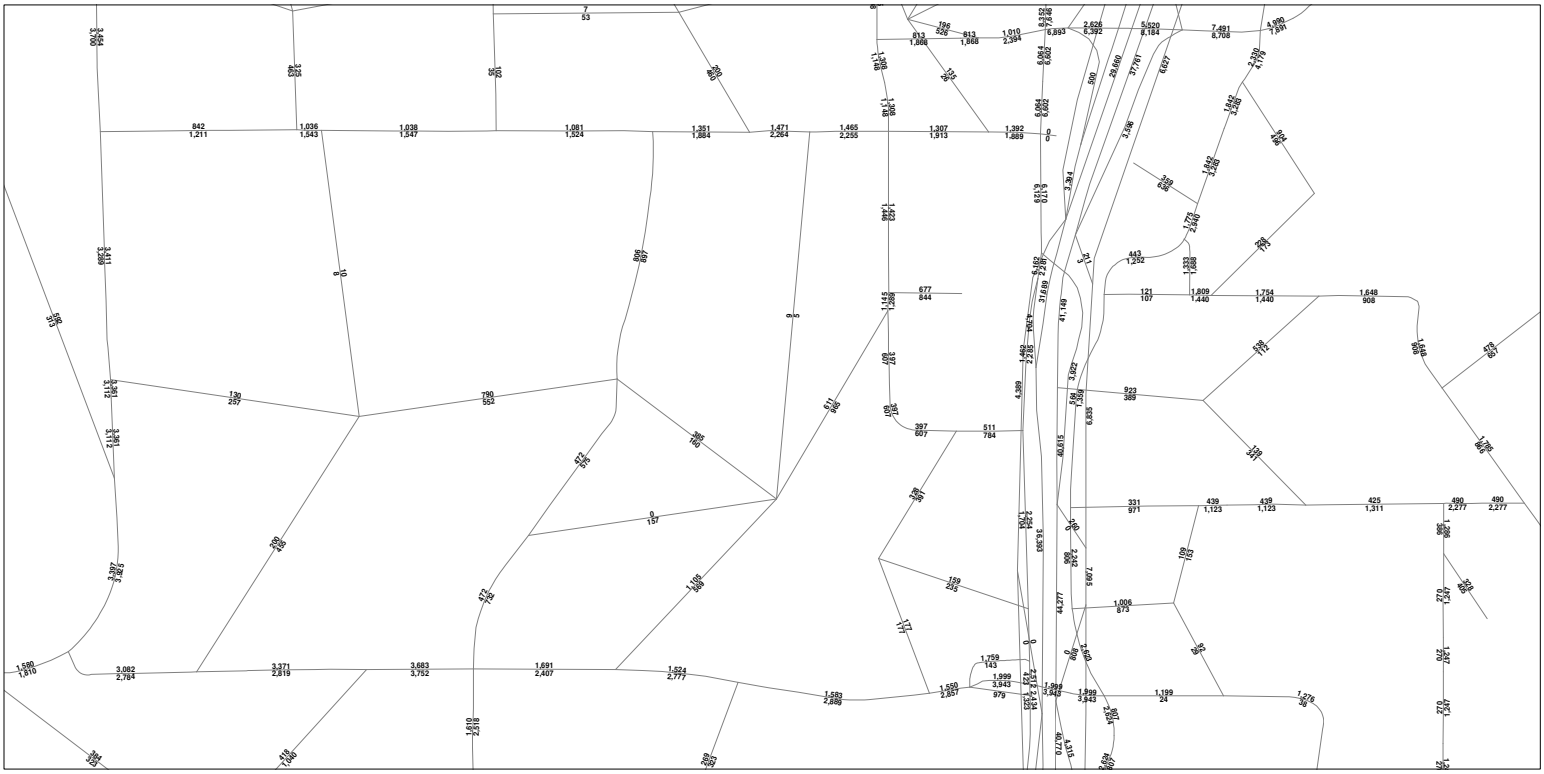
CCTA Model
2018 AM Peak



CCTA Model
2018 PM Peak



CCTA Model
2040 AM Peak



CCTA Model
2040 PM Peak

Appendix H: Approved Project Trip Generation

Appendix H: Approved Projects Trip Generation

Use	Size	Week-day Daily (Sat.)	Weekday AM Peak Hour			Weekday Mid-Day Peak Hour			Weekday PM Peak Hour			Saturday (Sat.) Peak Hour		
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Multi-Family Housing[1]	200 Dwelling Units	1,470 (1,630)	21	71	92	62	37	99	70	42	112	65	56	121
Cambria Hotel[2]	155 Guest Rooms	1,900 (1,270)	55	38	93	63	63	128	3	28	31	25	21	46
Fountainhead Day Care[3]	72 Students	315 (30)	31	27	58	15	18	33	27	31	58	5	3	8
Montessori Preschool[3]	72 Students	315 (30)	31	27	58	15	18	33	27	31	58	5	3	8

1. ITE land use category 220 – Multi-Family Housing:
   Weekday Daily: T = 7.32 (X)
   Weekday AM Peak Hour: T = 0.46 (X); Enter = 23%; Exit = 77%
   Weekday Mid-Day Peak Hour (2:30 – 3:30 PM): T = Weekday Daily (0.067); Enter = 63%; Exit = 37%
   Weekday PM Peak Hour: T = 0.56 (X); Enter = 63%; Exit = 37%
   Saturday Daily: T = 8.14 (X)
   Saturday Peak Hour (1:00 – 2:00): T = Saturday Daily (0.074); Enter = 54%; Exit 46%
2. Trip Generation Estimates from the Cambria Hotel Transportation Assumptions Memorandum
   ITE land use category 310 - Hotel
   Weekday Daily: T = 12.23 (X)
   Weekday Mid-Day Peak Hour (2:30 – 3:30 PM): T = Weekday Daily (0.067); Enter = 50%; Exit = 50%
   Saturday Daily: T = 8.19 (X)
   Saturday Peak Hour (1:00 -2:00): T = Saturday Daily (0.036); Enter = 56%; Exist = 44%
3. Trip Generation Estimates derived from published Traffic Impact Assessment
   ITE land use category 565 – Day Care Center
   Weekday Mid-Day Peak Hour (2:30 – 3:30 PM): T = Weekday Daily (0.102); Enter = 47%; Exit = 53%
   Saturday Daily: T = 0.39 (X)
   Saturday Peak Hour (1:00 -2:00): T = 0.11 (X); Enter = 63%; Exist = 37%

Source: *Trip Generation Manual* (10th Edition), ITE; Fehr & Peers.