Appendix D

Transportation Plan

Contents

Chapter 1: Introduction **5**
Purpose 5
Planning Requirements 5
Role of the Transportation Element 6
Public Outreach 7
Mind Mixer Feedback 7
Walking/Bus Tour 8
Public Meeting 9
Regional Coordination 9
Plan Organization 10
Chapter 2: Conditions and Trends **11**
Existing Conditions 11
Transportation Network Overview 11
Functional Classification of Roadways 11
Pedestrian Facilities and User GROUPS 14
Existing Bicycle Facilities and Users 16
Public Transit 16
Goods Movement 17
Motor Vehicles 18
Aviation 21
Current Challenges and Observations 21
Train Complications 21
Lack of Bicycle and Pedestrian Facilities 21
Through Traffic 21

Transit accessibility 21
Funding 21
Opportunities and trends 22
Downtown Revitalization and the Gateway 22
Transportation Level-of-Service: A broader pespective 22
Chapter 3: Transportation Goals, Policies, and Actions 24
Chapter 4: Future Transportation Vision 25
Introduction to the Layered Network 25
Walking And Biking 26
Transit 27
Auto And Freight 29
Chapter 5: Near Term and Long Term Capital Plan 32
Chapter 6: Implementing the Transportation Element 36
Overview of Costs and Revenues 36
Setting Priorities 37
Monitoring and Evaluation 38
Bi-Annual Mobility Report Card 38

Figures

Figure 1: Regional Map 6
Figure 2: Bus Tour Route 8
Figure 3: Commute Mode to Work 11
Figure 4: Roadway Network 12
Figure 5: Pedestrian Facilities in Monroe 15
Figure 6: Existing Walking and Biking Facilities 15
Figure 7: Existing Transit Facilities and Ridership 17
Figure 8: Existing Truck Routes 18
Figure 9: Auto Average Daily Existing Volumes 20
Figure 10: Auto LOS 20
Figure 11: Layered Network Concept 25
Figure 12: Walking and Biking Priority Network 26
Figure 13: Transit Service Corridors 28
Figure 14: LOS Corridors and Constituent Intersections 30
Figure 15: Future Traffic Volumes 31
Figure 16: 20-Year Auto Projects List 35
Figure 17: Walking and Biking Priority Network 35

Tables

Table 1: Mind Mixer Feedback 7
Table 2: Functional Classification of Roadways 12
Table 3: Level of Service Definitions 18
Table 4: Pedestrian LOS – Sidewalk Requirements 27
Table 5: Bicycle LOS – Facility Requirements 27
Table 6: Transit Priority Corridor Level of Service 28
Table 7: Project List 33
Table 8: Costs of Monroe Transportation Element (20+ years) 36

Appendices

Appendix A: Traffic Operations Level of Service 38

CHAPTER 1: INTRODUCTION

Since incorporating in 1902, the City of Monroe has evolved as a community. With its roots as an important stop along the Great Northern Railway, Monroe has grown steadily over the past century as home to the Monroe Correctional Complex (which began as the Washington State Reformatory in 1910) and a desirable Puget Sound bedroom community. Over the past decade, the City has made strides toward becoming a vibrant community in which to live, work, and play with its Old Town revitalization and by rebranding itself as an outdoor recreation destination (the adventure starts here!). This Transportation Element aims to support adequate mobility for all modes of travel through the year 2035, including driving, walking, biking, and riding transit.

PURPOSE

The overall vision for Monroe's Transportation Element is to provide a safe, balanced, and efficient multi-modal transportation system that is consistent with the City's overall vision and adequately serves anticipated growth. Guidance from members of the community, City staff and City Council helped identify several priorities:

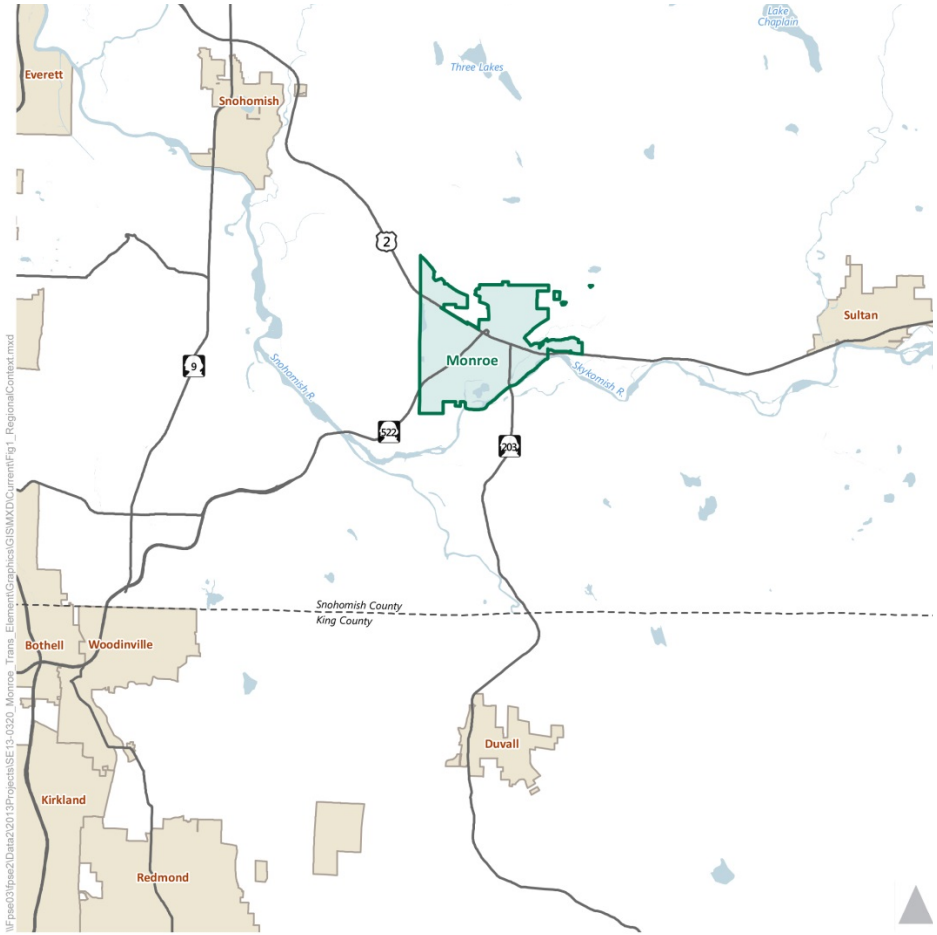
- Improve safety for all road users in Monroe through street designs that accommodate all modes
- Provide connectivity to support local travel in Monroe while allowing through trips to occur in a timely fashion
- Encourage placemaking and the creation of a vibrant, walkable identity for Monroe's downtown

The Transportation Element sets a framework for understanding, prioritizing, measuring, and creating a transportation network to help Monroe achieve its vision.

PLANNING REQUIREMENTS

Monroe's regional setting is important. Nestled in the Skykomish River Valley at the foothills of the Cascade Range, Monroe sits at the junction of US2, SR 522, and SR 203 and serves as a major gateway to the Mount Baker-Snoqualmie National Forest and Eastern Washington. Given this strategic location, transportation conditions in the City are influenced by pass-through traffic connecting between the heavily urbanized communities in western Snohomish and King Counties and communities and recreation areas along US2 to the east. The City must coordinate its transportation planning with a variety of jurisdictions, including Snohomish County, the Puget Sound Regional Council (PSRC), and the State of Washington. Figure 1 shows the location of Monroe in this regional setting.

Figure 1: Regional Map



GMA

The State's Growth Management Act of 1990 requires communities to prepare a transportation plan that ties directly to the City's land use decisions and financial planning. This Transportation Element Update fulfills the mandate.

In addition to this state act, the Washington State Department of Transportation (WSDOT) maintains multiple highway routes that meet in Monroe, including US2, SR 522, and SR 203. As such, this plan aims to coordinate with WSDOT and other neighboring communities to ensure that these highway routes and all of Monroe's streets serve local as well as regional travel needs.

OTHER PLANS

The Puget Sound Regional Council (PSRC) is the region's metropolitan planning organization made up of cities, towns, counties, ports, tribes, transit agencies, and major employers. PSRC has set policy for King, Pierce, Snohomish, and Kitsap Counties through Vision 2040, which lays out the long term goals for growth management, economic, and transportation issues.

Vision 2040 identifies several key goals for transportation in the region:

- **Maintenance, Management, and Safety** – Maintain, preserve, and operate the existing transportation system in a safe and usable state.
- **Support the Growth Strategy** – Support the regional growth strategy by focusing on connecting centers with a highly efficient multimodal transportation network.
- **Greater Options, Mobility, and Access** – Invest in transportation systems that offer greater options, mobility, and access in support of the regional growth strategy.

This Transportation Element is consistent with the Vision 2040 priorities.

ROLE OF THE TRANSPORTATION ELEMENT

The Transportation Element serves both as a functional plan to guide the City's transportation investments and as the overarching framework for transportation in Monroe's Comprehensive Plan. The document also ensures coordination with the City's Land Use Element and other major planning efforts, including the Downtown Master Plan and the 2008 Parks, Recreation & Open Space Plan.

In essence, the Transportation Element informs the development of the Capital Improvement Program by identifying the types of projects the City should undertake to support future travel trends. The plan also evaluates how these projects coincide with the community's values and financial resources.

PUBLIC OUTREACH

This plan included public outreach through an online forum (Mind Mixer), a public workshop, bus tour, and City Council meetings. The City held an open public workshop in Spring of 2014 to gain insight on how Monroe residents would like to prioritize transportation for the next 20 years. City staff and the also consultant team met with the school district, Parks Department, Washington State Department of Transportation, and Parks Department throughout the course of the planning effort.

MIND MIXER FEEDBACK

Mind Mixer is an online-based forum for people to provide feedback on a variety of issues. This online tool was used to engage residents who may not otherwise participate in the planning process. A variety of responses relating to transportation were provided and the feedback is summarized in Table 1.

Table 1: Mind Mixer Feedback

Neighborhood Cut-Through	Railroad Track Crossing	Overall Mobility
• An expected increase in local traffic upon completion of the Wal-Mart should be supplemented by the extension of Tjerne Place.[1] • Back-ups along Main Street and Lewis Street have led to drivers detouring through the residential neighborhoods. These roads are not suited for these types of volumes and it has been detrimental to the community.	• The city comes to a standstill when a train passes through and there have been times when trains have come from both directions, causing even greater delay. • Concern over the condition of the railroad crossings for cars and pedestrians (the crossing at Lewis Street was specifically mentioned).	• Backups along eastbound Blueberry Lane. • The northern portion of the City is relatively isolated. There is desire to create additional access via extension of 191st Street. • Signal timing concerns for north/south drivers attempting to merge onto US 2. • Hard to turn left onto Lewis Street – this movement is prohibited from Main Street between 4pm and 6pm and other access points lack signals. • Curb extensions designed to improve pedestrian safety impact right turning vehicles.

1. The project to extend Tjerne Place through to Old Owen Road has been approved and will begin construction in the spring of 2014

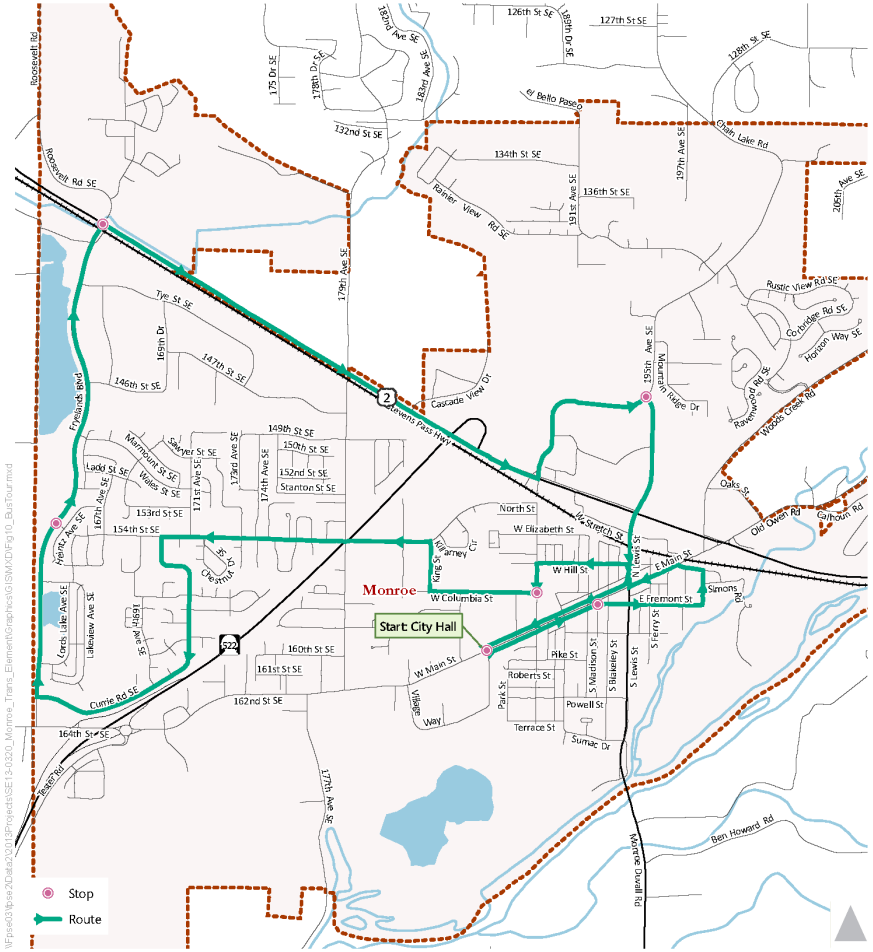
WALKING/BUS TOUR

On March 26th, 2014 Fehr & Peers led a walking and busing tour of the city to highlight transportation issues in Monroe. The tour was attended by city staff, members of the Citizen Advisory Committee, and additional members of the consultant team. The tour route, shown in Figure 2, made five stops to discuss key transportation challenges and opportunities in Monroe.

Bus tour participants.

Bus tour stop at Columbia Street

Figure 2: Bus Tour Route



The intersection of **Madison Street and Main Street** was the first stop in the tour. The group discussed preliminary plans for a roundabout at this intersection, which has been met with mixed reviews. The intersection is viewed as a gateway into Monroe's historic downtown, suggesting it warrants investments to welcome

residents and visitors. Possible improvement options range from simpler signage to roundabout installation to more complex downtown-wide traffic reroutes.

Planned Roundabout Location on Main Street

At **W Columbia Street and Kelsey Street**, the second stop, providing a new east-west through connection was the underlying theme. Route options including Columbia Street and Hill Street vary in their effectiveness and cost.

Fryelands Elementary was the third stop, with school safety being the main topic. There was praise for the two nearby signalized intersections that give students easy access across Fryelands Boulevard, as well as the interactive speed monitor placed to help deter speeders in the school zones. The stop also discussed how ROW along Fryelands Boulevard might be reallocated to provide a wider easement for non-motorized travel.

The fourth stop was at the intersection of **Fryelands Boulevard and US 2**, south of the train tracks. Issues were brought up regarding the lack of pedestrian facilities connecting to transit on US 2. Participants noted that it is unappealing and dangerous for pedestrians to walk between the bus stop and Fryelands Boulevard due to the train tracks and gravel path.

The fifth stop was at **Chain Lake Road and North Kelsey Street**. Retail expansion has been heavy in this area, and the addition of a Wal-Mart has some residents concerned about traffic growth. There are preliminary plans for a roundabout at the intersection, as well as numerous crosswalks and pedestrian pathways. The Tjerne Extension, filling the gap between Chain Lake Road and Woods Creek Road, is set to be complete in Fall 2016 and should alleviate some stress on the US 2 intersection.

PUBLIC MEETING

In the evening of March 27th, 2014 a public meeting was held in downtown Monroe, with over 20 people attending. The purpose of the meeting was to hear what the public felt important to include in the transportation plan, share with the public the progress to date, as well as the next steps. Participants expressed their support for projects like the US 2 Bypass and expanded sidewalk infrastructure and identified the following transportation challenges:

- Limited pedestrian and bicycle facilities in certain areas of the city
- Growth in cut through traffic in the southeast Monroe

REGIONAL COORDINATION

As part of the planning process the City reached out to other agencies and government bodies that have an interest in or influence on transportation in Monroe. Groups that the City has met with include:

- Washington Department of Transportation (WSDOT)
- Police and Fire Departments
- Parks and School District

The goal of these meetings was to ensure that the City's plans were consistent with other goals, including regional mobility, public safety, and schools and parks access.

WSDOT

Discussions with WSDOT staff primarily focused on the plans and likelihood of a US 2 bypass, which would realign the highway north. WSDOT currently owns the ROW to this area, and has included the realignment in its long term project list, but funding has not been identified. Given that the bypass has not been identified as a statewide priority due to lack of congestion and safety issues relative to other competing projects, the time frame for bypass construction is highly speculative.

There's been interest in using portions of the ROW to accommodate additional connections between the relatively isolated northern portion of the City and the North Kelsey District. However, crossing the state ROW has always been problemmatic, with the ROW bisecting many potential road extensions, such as 191st Avenue SE. During the meeting, WSDOT staff indicated willingness to work with the city to help move those local projects along, so long as measures are taken to preserve the bypass' viability in the future.

Other minor issues were discussed as well:

- US 2/ SR 522 flyover ramp turning lanes
- Local street lighting (179th Street) under SR 522
- Potential modifications to the signal at US 2 and Fryelands Boulevard to improve function
- Access onto Tester Road from SR 522

POLICE AND FIRE DEPARTMENT

The city and consultant team met with both the Police Department and Fire Department met to discuss transportation related to public safety. The main points discussed were:

- The effects of train crossings and traffic congestion on response times
- Collision hot spots (e.g. the Chevron access from Main Street, the Rite Aid driveway nearby Kelsey and US 2)
- Enforcement issues related to school drop-off and pick-up area, and the overall lack of students walking to school
- The potential of adding a new fire station
- Future airport expansion and how that may affect traffic patterns on US 2

PARKS AND SCHOOLS

City staff and the consultant team also met with representatives from the School District and Parks Department. Main points from that meeting were:

- Interest in using the US 2 right of way to enhance the Centennial Trail's route through Monroe
- Use of private trails along Fryelands Boulevard by students
- The overall lack of children walking to school or the bus stop
- The Parks Department's goal to build portions of trails as funding allows

PLAN ORGANIZATION

This document includes five chapters in addition to the Introduction (Chapter 1):

- **Chapter 2 – Conditions and Trends:**
  Describes conditions for all travel modes in the existing transportation system. This chapter also identifies current challenges and trends that will affect Monroe's transportation network in the future.
- **Chapter 3 – Transportation Vision and Goals:**
  Explains Monroe's vision for transportation and the goals that serve as the basis for the Transportation Element.
- **Chapter 4 – Future Transportation Vision:**
  Introduces a layered network concept that forms the foundation of this plan to accommodate all modes of travel and create a complete transportation network in Monroe. This section also details how to accommodate each travel mode and establishes the City's level of service standards.
- **Chapter 5 – Capital Plan:**
  Provides near-term and long-range projects based on the community values expressed in the transportation goals and layered network.
- **Chapter 6 – Implementing the Transportation Element:**
  Evaluates Monroe's financial conditions over the next 20 years and provides guidance on plan implementation.

CHAPTER 2: CONDITIONS AND TRENDS

EXISTING CONDITIONS

TRANSPORTATION NETWORK OVERVIEW

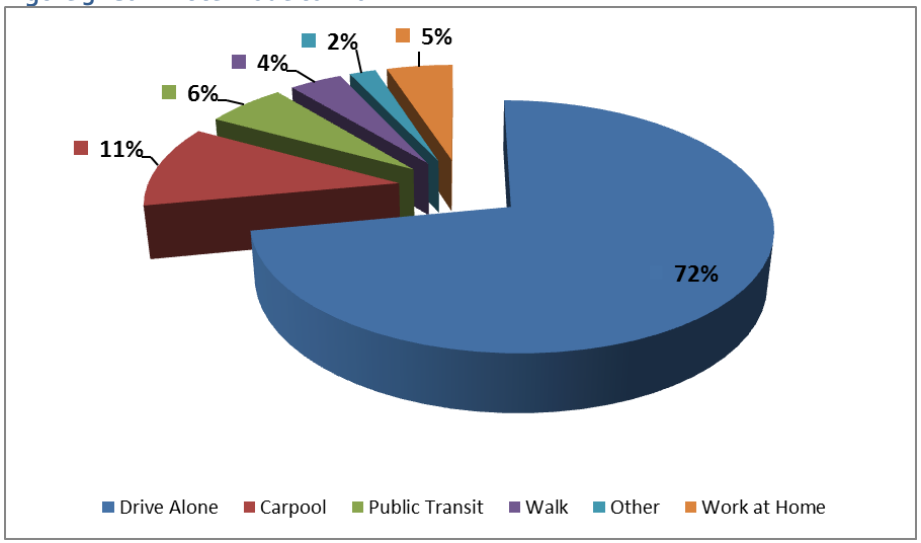
Monroe's street system carries a variety of transportation modes that move people and freight throughout the City and broader region. While driving a car is the primary way that people get around in Monroe, the City's street network accommodates many modes of travel, including walking, bicycling, public transit, and driving.

Three highways, SR 522, US 2, and SR 203, provide the backbone of the City's transportation grid and shape how residents and visitors experience Monroe. The Burlington Northern and Santa Fe Railway (BNSF) runs along the south side US 2, creating railroad crossings near major roadway intersections. SR 522 runs through the southwest of Monroe and culminates with a connection to US 2. SR 203 runs south from US 2 on the eastside of downtown, over the Skykomish River to points south.

Some of Monroe's major roadways lack facilities like sidewalks and bike lanes that would make them more welcoming to users of other modes. These streets include portions of US 2, W Main Street, and Woods Creek Road. This style of design (lacking non-motorized accommodations) reinforces observed commute patterns (see **Figure 3**). As the figure shows, 72% of Monroe residents drove to work alone while an additional 11% carpool. Of the remaining 17% of workers who reside in Monroe, there was a comparable split between various modes, such as walking, biking, or people choosing to work from home.

US 2 serves as major north/south divider, because the signal timing favors the throughput of east/west highway traffic, and the width of roadway makes it unappealing for crossing pedestrians. SR 522 is also a major highway but is elevated, allowing travelers to cross under its right of way (ROW) albeit at only a few locations (154th Street SE, Main Street, and US 2).

Figure 3: Commute Mode to Work



The City provides sidewalks with crosswalks built to Americans with Disabilities Act standards on most streets in central Monroe. An example of a recent investment includes the construction in the N Kelsey shopping area, where there has been an emphasis on pedestrian safety with the new multi-purpose paths.

FUNCTIONAL CLASSIFICATION OF ROADWAYS

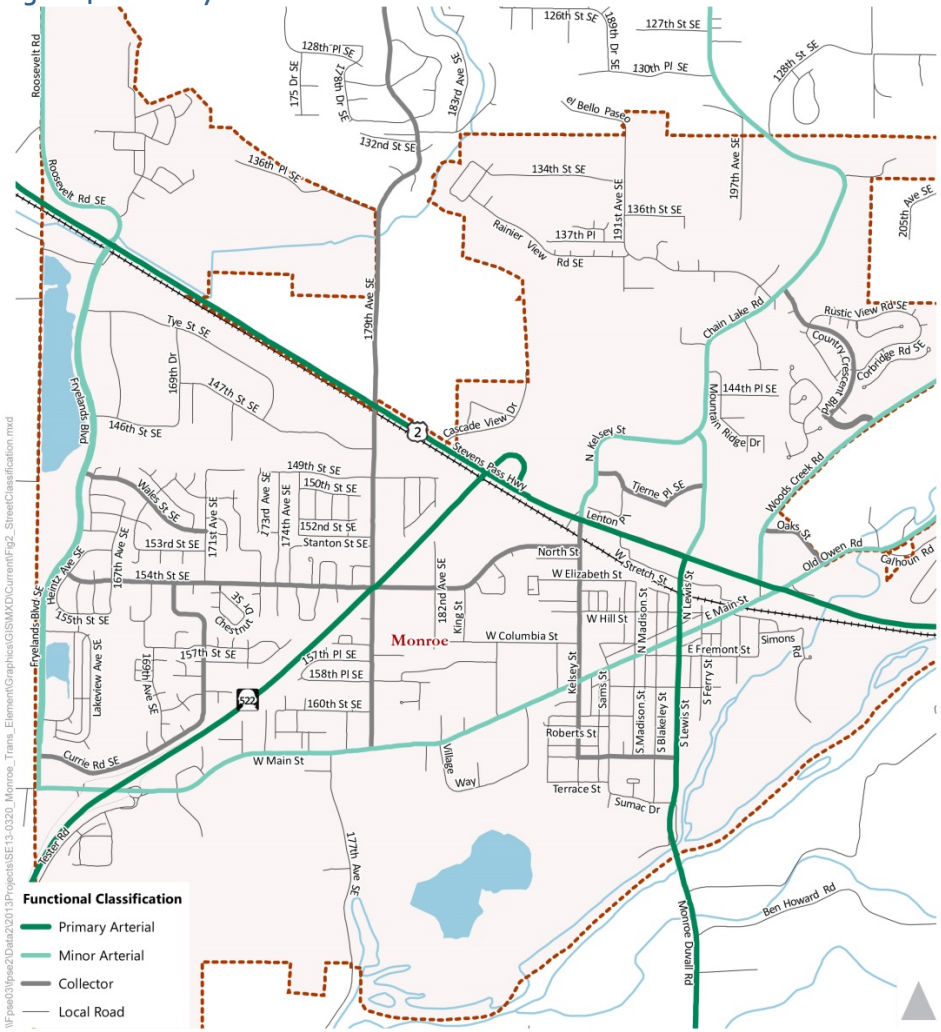
Streets function as a network. The efficiency of a street network system is dependent upon how the streets are able to complement each other to serve different trip types. Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. The proper balance of classes is necessary to reach the aforementioned efficiency. There are currently three main classes of

streets in Monroe: arterials, collectors, and local streets. All streets have been classified using the Federal Functional Classification system described in **Table 2.** The locations of city street classifications are identified in **Figure 4**.

Table 2: Functional Classification of Roadways

Roadway Type	Description / Purpose	Example
Primary Arterial	A high-speed roadway that serves through trips and connects Monroe with other areas.	SR 522 US 2
Minor Arterial	Minor arterial streets provide inter-neighborhood connections and serve both local and through trips.	W Main Street Fryelands Boulevard Woods Creek Road
Collectors	Collect traffic from the local roads and connect to the arterials.	Country Crescent Boulevard Kelsey Street 179th Street SE
Local	Local streets provide access to private property or low-volume public facilities.	Sumac Drive Currie Road

Figure 4: Roadway Network



PRIMARY ARTERIALS

US 2 and State Route 522 serve as the major east-west and north-south routes through Monroe, respectively. The Federal Highway Administration (FHWA) includes both corridors as part of the National Highway System. SR 203, locally known as Lewis Street, is another primary arterial, which connects Monroe with Duvall, and continues south to Fall City.

US Highway 2 (US 2) is a state-controlled route that runs east/west through the City. It originates from the west at Interstate 5 (I-5) in the City of Everett and runs east through Monroe and over Stevens Pass into Eastern Washington. It has two through lanes approaching Monroe from the west, expands to three lanes at its intersection with 179th Avenue SE, then to five lanes (with turn lanes) between SR 522 and Old Owen Road. US 2 narrows back to two lanes east of Old Owen Road. US 2 is identified as a Highway of Statewide Significance, and is on the National Highway System.

State Route 522 (SR 522) is also a state controlled roadway. From the south, it originates at I-5 within the City of Seattle and terminates at US 2 in Monroe. From I-405 in Bothell, SR 522 operates as a four-lane freeway to a point just east of the Paradise Lake Road intersection. From Paradise Lake Road to Elliot Road, the highway has two lanes with limited access points. From Elliot Road (just west of the Snohomish River) to the US 2 merge, construction was recently completed to create a four-lane divided highway. In 2012, a direct ramp was completed from eastbound SR 522 to eastbound US 2. SR 522 is identified as a Highway of Statewide Significance.

Lewis Street (SR 203) is the third state controlled route in Monroe. It begins at SR 202 in Fall City and terminates at US 2 just north of downtown. Within the city limits the roadway is known as Lewis Street. Between US 2 and the south side of the rail tracks, Lewis Street is a four-lane roadway, with no parking. It then becomes a two-lane facility with parking on both sides through downtown. South of Main Street, the surrounding land uses become residential and Lewis Street continues as two lanes with a planted median, parking on sides, sidewalk, and planter strips. SR 203 crosses the Skykomish River, which forms the city's southern boundary. SR 203 is identified as a Highway of Regional Significance.

Lewis Street (SR 203) and Medians

MINOR ARTERIALS

Described below are the existing minor arterials and their characteristics.

The **Chain Lake Road** corridor is a minor arterial originating from the north at Trombley Road (outside of city limits) near Chain Lake and terminating at US 2 where it continues south as SR 203. North of the N Kelsey Street, it is a two-lane roadway with a 35 mph speed limit. From N Kelsey Street to US 2, it operates as a two / three lane roadway with widening to provide additional turn lanes at the US 2 intersection.

Fryelands Boulevard/ Roosevelt Road is a minor arterial that begins at West Main Street and operates with four lanes to US 2, where it narrows to two lanes and continues north of the city limits. The presence of the train, as well as land uses along Fryelands Boulevard, creates congestion at peak times. Much of Fryelands Boulevard features a median with a shared-use trail that runs along the west side of the street. The speed limit is 35.

Woods Creek Road is a two-lane minor arterial with a 35 mph posted speed limit over most of its length, beginning at US 2 and ending north of the City at Lake Roesiger road. Except at the south end, Woods Creek Road has a rural character and provides few pedestrian facilities.

The **Old Owen Road / Main Street** corridor is a two-lane minor arterial with the name change occurring at US 2. Main Street runs southwest to eventually become Old Snohomish-Monroe Road at the city limits. Downtown is located along this corridor for the most part, with shops and eateries along the sidewalk, as well as parking. It has a posted speed limit of 25 mph and runs through downtown, residential and commercial areas. Old Owen Road is a two-lane minor arterial that runs northeast beginning at the intersection of US 2/ Main Street into the City of Sultan. The speed limit is 25 mph within the City limits and is 35 mph otherwise.

North Kelsey Street is a five-lane minor arterial extending from US 2 to the intersection of Chain Lake Road. South of US 2, N Kelsey Street becomes a collector. The roadway has curbs, sidewalks, and gutters, as well as pedestrian pathways that provide full separation from cars near the shopping district.

There are long steady plans to create a Monroe Bypass, which would realign US 2 to the north and extend SR 522 to meet with the realigned US 2. US 2 would then tie back into its current alignment east of Old Owen Road. This bypass would eliminate much of the through traffic cutting the City in half, and provide opportunities to redesign the original US 2 corridor, making it more welcoming to all modes and more permeable to north/south crossings.

PEDESTRIAN FACILITIES AND USER GROUPS

Residents and visitors in Monroe walk as part of their daily travel for many reasons. Children attending school, commuters taking the bus or connecting with a carpool to get to work, and senior citizens making midday trips, all require safe pedestrian amenities. Sidewalks, crosswalks, curb ramps, and small curb radii are all key features in creating a safe and welcoming environment for people to walk. Buffers between sidewalks and lanes of traffic, such as landscaping or on-street parking, can also provide some relief from traffic for pedestrians.

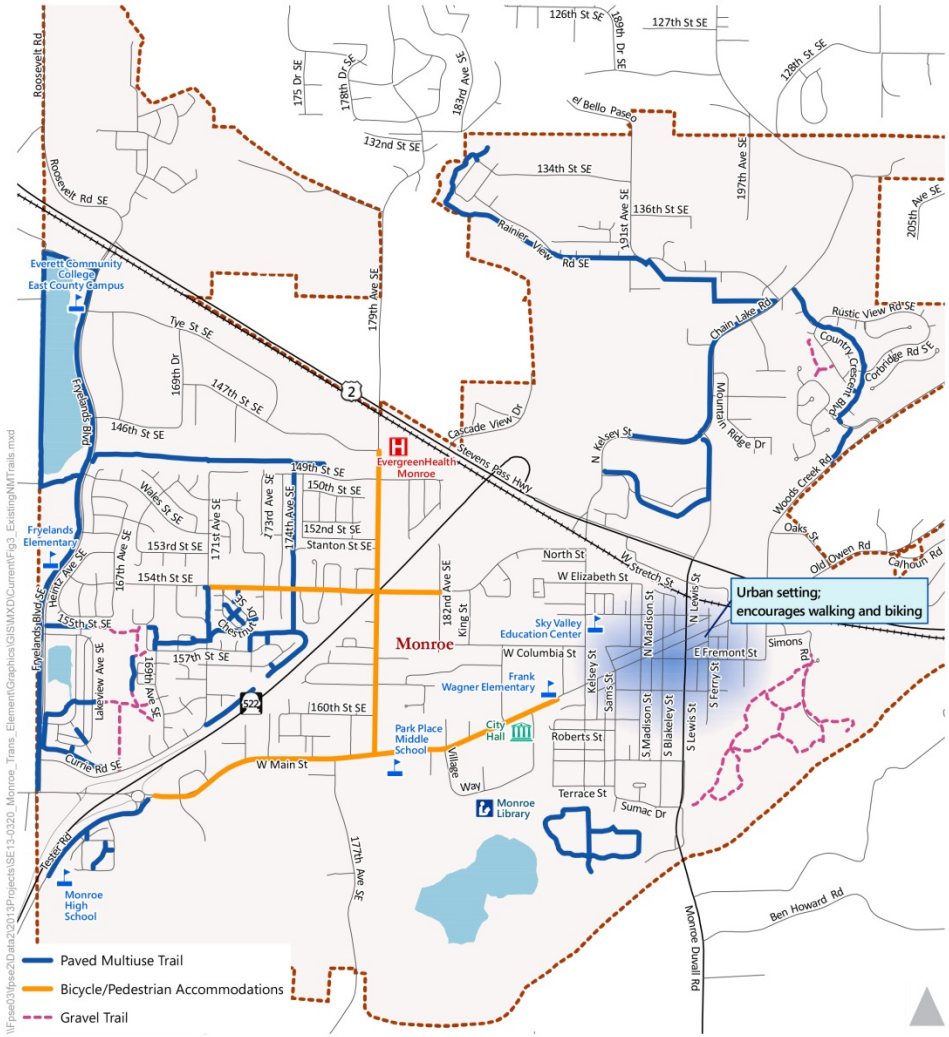
As shown in **Figure 5**, Monroe currently offers a mix of pedestrian amenities to serve walking trips around the City, including concrete sidewalks, pedestrian bulb outs, separated multipurpose paths and gravel shoulders.

Figure 5: Pedestrian Facilities in Monroe

Figure 5 shows the locations of the City's existing multiuse trails and bicycle accommodations. The concrete sidewalks with curbs and gutters tend to be located along major streets and adjacent to schools or parks. Retail areas tend to offer more raised sidewalks with buffers between the sidewalk and the roadway. It is worthwhile to note that many of the City's local streets offer a low speed, low volume environment that is comfortable for walking and bicycling, even where sidewalks are not provided.

At intersections along US 2 with traffic signals, marked crosswalks for pedestrians are provided in most locations. There are also marked crosswalks near most schools, as well as in the retail district north of US 2 and downtown.

Figure 6: Existing Walking and Biking Facilities



EXISTING BICYCLE FACILITIES AND USERS

Monroe area residents travel by bicycle for a variety of purposes. The City's multiuse trails can serve both commute and recreational trips and provide a high level of user comfort, but there are also a number of quiet local streets (particularly south of US 2) that can provide reasonable accommodations for bicycling as a part of day-to-day travel. However, very few people tend to use bicycles to get between locations in Monroe, as is exhibited in the journey to work data. Part of this may be that existing facilities (particularly north of US 2) are not ideal for the bicyclists, and another aspect may be that the routes between origins (like homes) and destinations (work, school, or shopping) are too long or hilly. The city does not currently have many on-street bicycle facilities but has identified key bicycling routes for future improvements. **Figure 6** shows the existing multi-purpose path ways.

PUBLIC TRANSIT

Some Monroe residents rely on public transit, although it is not the main method for most residents' journey-to-work (see Figure 1). Currently, Community Transit is the sole provider of public transit in Monroe. As of Spring 2015, existing routes included 270, 275, 277, and 424. The route map is shown in **Figure 7**, and most of the routes utilize the Monroe Park and Ride on US 2, west of 179th Avenue SE.

270 – Monroe/Everett to Gold Bar. This route offers one-hour headways during peak periods towards Gold Bar, and slightly over one-hour headways towards Everett between 5 AM and 7 PM.

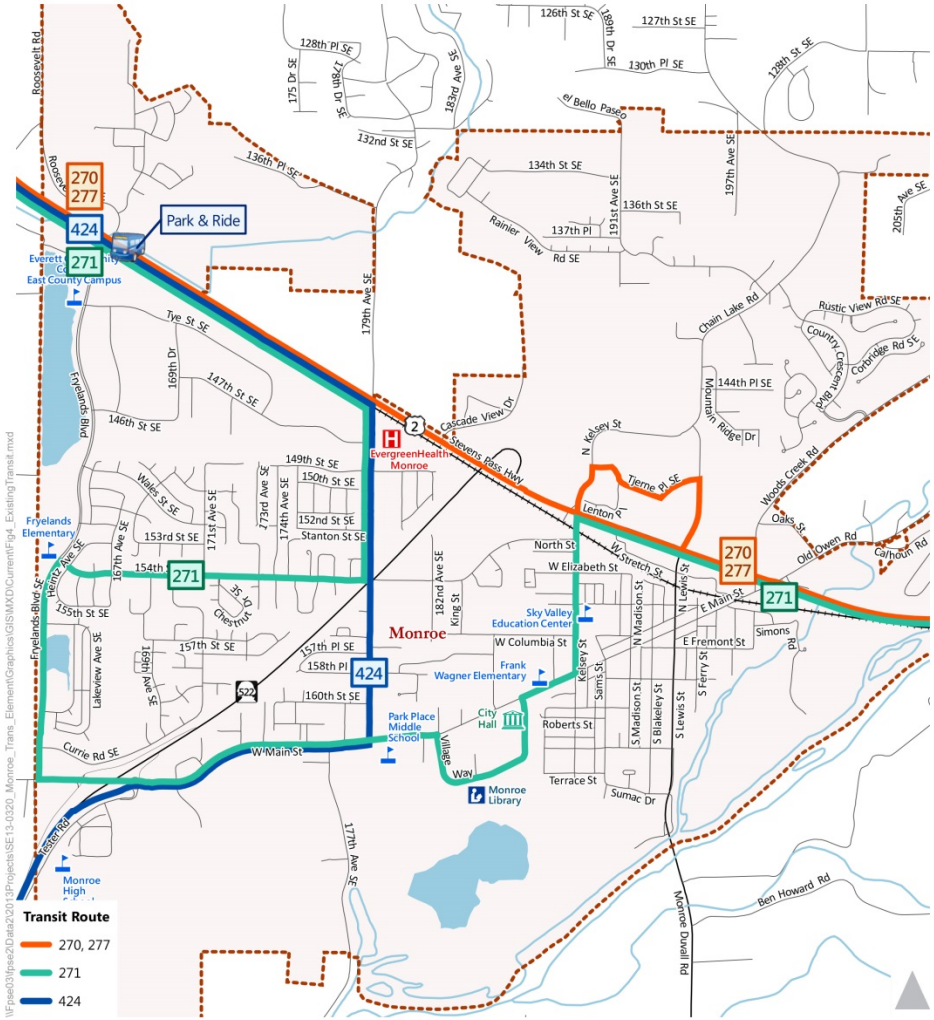
275 – Everett to Monroe. This route offers one-hour headways in both directions on weekdays and Saturdays.

277 – Boeing via Everett Station to Gold Bar. This route has a terminus at the Boeing plant in Everett, and offers two peak-hour trips in the peak-direction every weekday.

424 – Downtown Seattle to Snohomish. This route offers two peak-hour trips in the peak direction every weekday, stopping at the Monroe Park and Ride.

All routes except route 424 stop at Highway 2 & Chain Lake Road, as well as along Tjerne Place. The Monroe Park and Ride is used as a hub for all routes.

Figure 7: Existing Transit Facilities

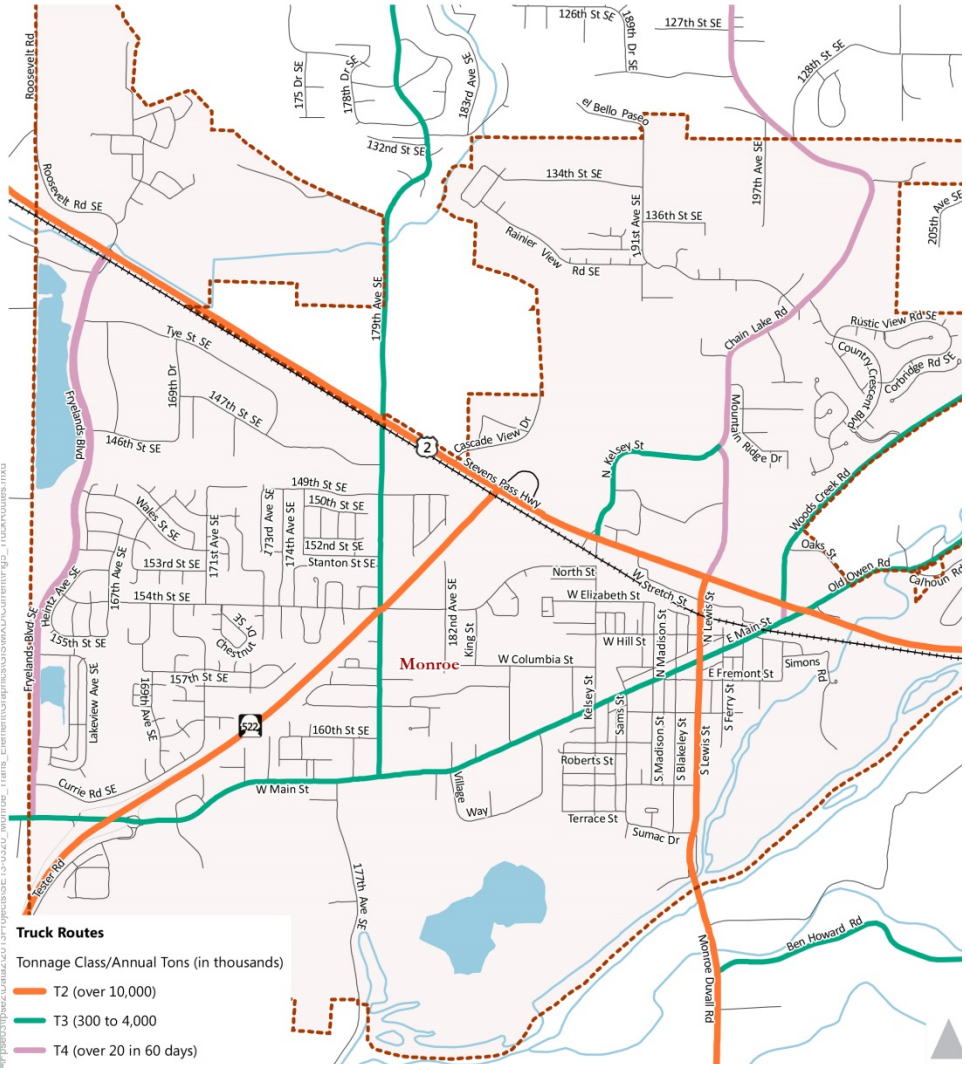


GOODS MOVEMENT

In addition to the BNSF railroad line, movement of freight through Monroe occurs primarily along US 2, SR 522, and SR 203 (Lewis Street), as shown in **Figure 8**. US 2 provides the only east/west route through Monroe, which makes it a very heavily travelled freight corridor. SR 203 and SR 522 also are vital for freight movement and connect cities to the south with Monroe. Beyond these primary routes, delivery vehicles use many other streets to reach their final destinations.

One issue that emerged frequently during the planning process was the impact of rail traffic on mobility in the city. When a train passes (and often two pass simultaneously), traffic conditions in Monroe can become very congested.

Figure 8: Existing Truck Routes



MOTOR VEHICLES

Most Monroe residents (about 83%) use motor vehicles as their primary mode of transportation to work. Moreover, many non-resident travelers pass through the City via highway routes US 2, SR 522, and SR 203. There is peak hour congestion at some City intersections, as well as cut through traffic in locations such as Sumac Drive, Powell Street and McDougall Street.

Analysis of Monroe's congestion for motorists is based on traffic counts collected in March 2014. Each of the 43 study intersections was evaluated based on their ability to accommodate PM peak hour demand in their existing configuration (number of lanes, traffic control, etc.).

Intersections were scored into one of six level of service (LOS) categories based on aspects of traffic flow, such as speed, travel time, delay, and freedom to maneuver. Levels from LOS A to LOS F correspond to a range of completely uncongested to oversaturated operational conditions. **Table 3** describes the LOS definitions laid out in Chapter 16 of the *Highway Capacity Manual* (HCM) (Transportation Research Board, 2010), which is the methodology applied to Monroe's transportation network.

Table 3: Level of Service Definitions

Level of Service	Description
A	Free-flowing conditions.
B	Stable operating conditions.
C	Stable operating conditions, but individual motorists are affected by the interaction with other motorists.
D	High density of motorists, but stable flow.
E	Near-capacity operations, with speeds reduced to a low but uniform speed.
F	Over capacity, with delays.

Source: 2010 Highway Capacity Manual.

It should be noted that this methodology measures the average delay experienced by all motorists at a signalized intersection rather than the highest delay experienced at an individual approach.

The LOS standards for the City of Monroe are as follows:

- LOS D for intersections with roadways with functional classification of Arterial.
- LOS C for intersections with roadways with functional classification of Collector and Local roadways.

An Inter-local Agreement between the City and WSDOT establishes the following LOS standards for intersections located along US 2, SR 203, and SR 522 (City of Monroe 1990):

- Where the LOS prior to development is D or better, attempts to maintain LOS D be undertaken.
- Where the LOS prior to development is E, the state will request that LOS E be maintained after development.
- Where the LOS prior to development is F, the state will request mitigation measures so that with the project in place, the estimated delay for signalized intersections, or the reserve capacity for non-signalized intersections, or the volume-to-capacity ratio for segments, be no worse than pre-development conditions.

Figure 9 shows Average Daily Traffic (ADT) in two-way traffic volumes and **Figure 10** shows the calculated LOS at each of the 42 intersections. As the figures show, Monroe's primary arterials see the highest traffic volumes, but generally meet the City's LOS policy.

Locations along US 2, Main Street, and Lewis Street meet overall intersection LOS standards today, but may warrant reevaluation in the future to improve operations. For example, along US 2 signal timing is optimized to provide for smooth east-west flow, but serves as a major barrier for local, north-south trips. Although the peak hour study only identified one intersection along US 2 as having overall operations worse than LOS B, it is worthwhile to note that the signal timing is optimized to favor east-west flows, with north-south traffic experiencing much longer wait times. Moreover, congestion at these intersections increase significantly when a train (or trains) are passing through the city.

Unsignalized intersections along Lewis Street (SR 203) do not provide easy east-west movement due to heavy north-south flows. Public feedback indicates that at certain times of day, congestion along Lewis Street leads to neighborhood cut-through traffic and speeding.

Residents have also commented on long delays at the Kelsey Street and Blueberry Lane intersection. Despite the intersection being up to standard, there have been complaints of a queue for drivers turning left onto Kelsey Street.

One of two intersections that does not meet the current LOS standard is at the west end of Main Street and the on and off ramps for SR 522 southbound (LOS E). This intersection is currently being converted into a roundabout, and traffic operations are expected to meet City standards following conversion. Another is located at 147th St SE and 179th Ave SE (LOS E), which experiences heavy congestion from the eastbound approach. The City has plans to add a signal to the intersection to reduce the congestion. Detailed reports of LOS are available in **Appendix A**.

Figure 9: Auto Average Daily Existing Volumes

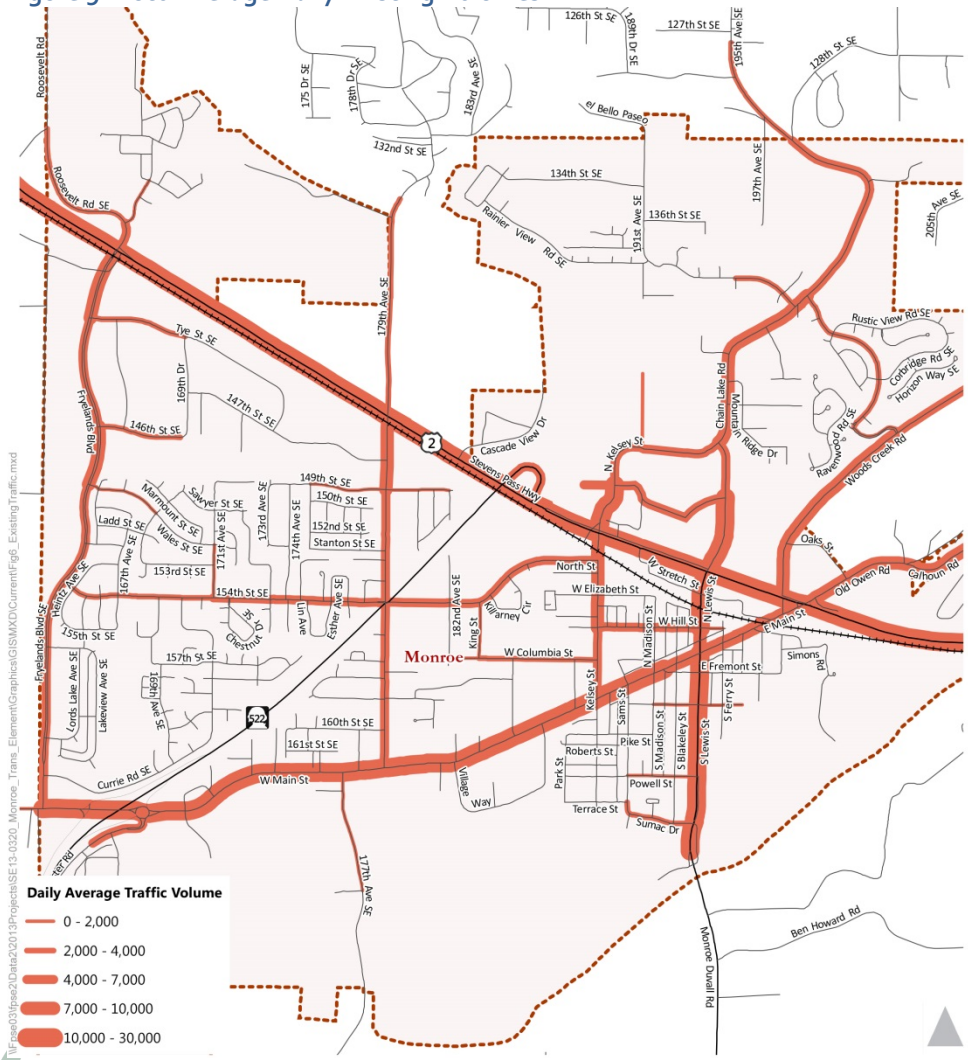
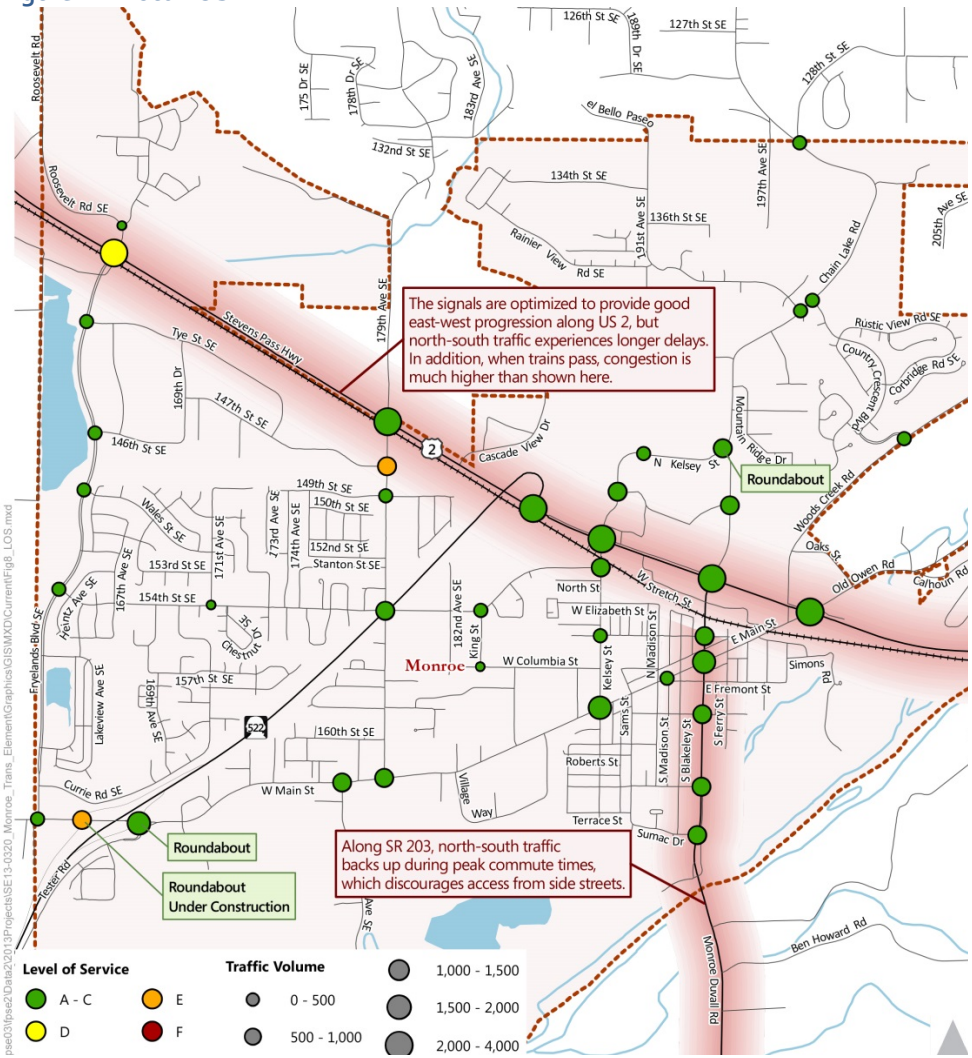


Figure 10: Auto LOS



AVIATION

General aviation in Monroe is accommodated by FirstAir Field, a privately-owned airport adjacent to the Evergreen State Fairgrounds that is available for public use. FirstAir Field currently serves an average of 50 aircrafts per day (Federal Aviation Administration, 2015).

Under Alternative 1, FirstAir Field and the adjacent fairground would be re-designated as Tourist Commercial to promote additional economic growth. As an associated action, the City would lead the preparation of a development strategy for the current airport site, including an assessment of local transportation operating conditions and improvements needed to accommodate the land use change.

CURRENT CHALLENGES AND OBSERVATIONS

The City of Monroe has several important challenges to face as it prepares for future growth. Motor vehicle travel currently dominates the City's transportation framework and many travelers along US 2 view Monroe as a "pass-through town." Monroe is working to create a greater sense of place and facing these transportation challenges will be a key to the City's success.

TRAIN COMPLICATIONS

With the train tracks bisecting the City, travelling between the two areas can prove difficult. When a train (or multiple trains) passes through the area, north-south mobility is hindered and traffic can back up along the major arterials, often spilling into neighborhood streets. Roads most affected by the railroad and the issues it creates with turning onto US 2 are Fryelands Boulevard, 179th Ave SE, Kelsey Street, Lewis Street, and Main Street.

LACK OF BICYCLE AND PEDESTRIAN FACILITIES

Monroe has made great strides to improve the walkability of its neighborhoods, most noticeably in school areas. Crosswalks with lighted signs have been put in place, as well as off-street paths. Although there have been many new infrastructure projects throughout Monroe that have helped improve the safety of pedestrians and bicyclists, there is room for improvement. Pedestrians' safety crossing US 2 and the railroad tracks was identified as an issue in the public feedback collected for this plan, as was sidewalk coverage in certain parts of the city.

THROUGH TRAFFIC

The high volume of through traffic creates a negative impact on residents. Cut through traffic on neighborhood streets, such as Sumac Drive, Powell Street, and McDougall Street impacts the pedestrians and homeowners who have difficulty crossing the street or pulling out of parking spaces. This plan includes policies to address concerns related to neighborhood cut-through.

TRANSIT ACCESSIBILITY

Although not many people use public transit in Monroe, some limited infrastructure is in place with a park-and-ride lot, bus stops and shelters. There are limited routes and frequencies, and while Monroe cannot control transit service levels, the City can strive to create a welcoming environment for transit.

FUNDING

A major obstacle within Monroe is funding maintenance of its existing system, as well as obtaining the necessary funding for desired future projects. Strong foresight and decision making will be required to make the most of the funds available, as well as consideration of whether additional funding could be made available for needed projects or whether the City's LOS standards should be revisited to limit the need for future projects.

OPPORTUNITIES AND TRENDS

Aside from existing conditions and challenges, there are other factors that will affect Monroe's transportation system. Investment in Monroe's Downtown, as well as State investments in the highway system, generally plays a role in how the City will plan the improvements to its transportation network for the future.

DOWNTOWN REVITALIZATION AND THE GATEWAY

Monroe's historic downtown gives the City character and there is considerable interest in ensuring that it is friendly to folks wishing to walk, bike, and park on street while shopping or meeting with neighbors. In 2014, the City began an effort to redesign in intersections of Fremont, Madison and Main Streets to form a more effective gateway into downtown. This project makes possible other future transformations in downtown, including creating a festival street along Main, revisiting its two-way operation, and potentially exploring how local traffic accesses Lewis Street (SR 203).

There has also been recent discussion about revising how parking is arranged on Main Street in downtown to create a curbless festival street environment and allow for wider pedestrian facilities. Beyond affecting the aesthetics of downtown, this project would reduce pedestrian crossing distances and reduce conflicts related to parking ingress and egress.

There has also been discussion of converting Main/Fremont into a one-way couplet. The project would make Main Street a less direct alternative to US 2, reducing cut-through in downtown Monroe and putting less pressure on the congested Main/Lewis Street intersection. On the other hand, the project would necessitate additional investments at the bookends of the one-way couplet (at Fremont/Main and Lewis/Main) and may not alleviate speeding in downtown, which is a major impetus for this project.

TRANSPORTATION LEVEL-OF-SERVICE: A BROADER PESPECTIVE

In this round of plan updates, the Puget Sound Regional Council has required that communities set level of service standards that speak to the experience of all travel modes. This plan revises the City's transportation level of service policy to measure vehicle operations at the corridor level and to incorporate planning considerations for walking, biking and transit. The new corridor standard recognizes that the overall concern of residents and travelers is not the experience at a single intersection, but that they can make it through multiple intersections in a reasonable amount of time. The level of service standards established for walking, biking, and transit modes refer to the built environment and how welcoming it is for these modes in key areas.

MONROE TRAVEL DEMAND FORECASTING

The Growth Management Act (GMA) requires that the Transportation Element supports the land uses envisioned in the Comprehensive Plan. Thus, an important component of the work was forecasting how the future land uses envisioned in the City, as well as regional growth, would influence demand on Monroe's transportation network.

- **The Tool.** As a part of the last major update (2007), the City created a travel model with the Visum software package. This model forecasted traffic volumes during the evening commute hour (5-6pm) along many of Monroe's key streets and intersections. This tool provides a reasonable foundation developing year 2035 forecasts, as the underlying land use assumptions have been updated to match the land use forecasts for the current Comprehensive Plan.

- **Estimate Land Use Growth in the City.** As a part of the Comprehensive Plan update, the City is planning for expected growth in population and employment over the next 20 years through 2035. Based on adopted growth targets, Monroe is expecting a population of25,119 and a total employment of 11,781 within the City limits and urban growth area (UGA) in 2035. These totals constitute 6,313 more people and 4,002 more jobs compared to existing conditions. The City allocates this growth throughout Monroe based on adopted zoning, observed development patterns, the 2012 Snohomish County Buildable Lands Report, and other city policies.

- **Capture Regional Growth Patterns.** Other communities throughout the region are going through this very same process, based on direction from the Puget Sound Regional Council (PSRC). Since travel does not stop at a jurisdiction's borders, it is important to capture how regional growth could influence travel patterns on Monroe's streets. In addition to the regional growth estimates PSRC, output from the recently updated Snohomish County Travel Demand Model informs the regional growth component of the Monroe model.

- **Translating Land Uses into Trips.** The next step is evaluating how the City and regional growth assumptions described above translate into walking, biking, transit, and auto trips. The travel model represents the number of housing units (population) and employees in spatial units called traffic analysis zones (TAZs). TAZs can be as small as a few street blocks to as large as an entire neighborhood. They provide a simplified means to represent trip making rather than modeling individual parcels. The travel model estimates trips generated from each TAZ (both inside and outside of the City) using established relationships between different land use types with trip making. These trips are then assigned onto the roadway network to estimate how much traffic would be on each street during the evening commute hour.

- **Model Refinements.** The final step is refining the forecasts based on reality checks that the travel model may not capture. For example, vehicles entering eastbound US2 from the SR 522 direct-access off-ramp (completed in 2012) are restricted from turning left onto N Kelsey Street. Because the model cannot account for this turn-lane access restriction, a manual adjustment is made to ensure the final forecasts reflect logical traffic patterns.

CHAPTER 3: TRANSPORTATION GOALS, POLICIES, AND ACTIONS

Monroe has established eight goals to accomplish its overall vision for the future. The goals establish overarching priorities that serve the vision of this Transportation Element and throughout the Comprehensive Plan, while policies and actions lay out more concrete steps. This chapter summarizes the top four goals that relate to transportation. The consolidated set of goals, policies, and actions is included in Chapter 2 of the Comprehensive Plan.

- **Goal 1:** Establish and maintain a safe, secure environment in Monroe for residents, businesses, and visitors.

Maintaining public safety and protecting property underpin nearly all governmental activities. This goal articulates Monroe's pledge to maintain transportation infrastructure that provides safe and comfortable travel options for all.

- **Goal 4:** Provide for and appropriately locate the types, quality, and quantities of development in Monroe to assure land use compatibility, enhance neighborhood character, and facilitate the City's long-term sustainability.

Monroe can influence the type and character of its transportation investments in a way that respects existing community character. Transportation investments should align with the overall scale and feel of Monroe, which its residents prize.

- **Goal 6:** Provide and promote both utility and transportation infrastructures that coincide with need, growth, and long-term objectives.

All cities require functional, resilient utility and street networks providing for the flow of services, people and materials. This goal supports a range of policies to help realize a more connected, walkable Monroe, improved crossing conditions at major arterials, and other measures supporting the type of infrastructure that Monroe needs as part of its long-term future.

- **Goal 8:** Establish downtown Monroe as a thriving commercial, civic, and residential area.

Downtown represents much of Monroe's civic identity. This goal underpins transportation policies and programs to help downtown thrive, enhancing the attractiveness, value and function of the entire city.

CHAPTER 4: FUTURE TRANSPORTATION VISION

Monroe envisions a future transportation system that serves all users and modes of travel by offering a safe and robust network of walkways, bicycle facilities, intersections, and roadways. This chapter describes Monroe's vision for its future transportation network and the infrastructure improvements that will get the City there.

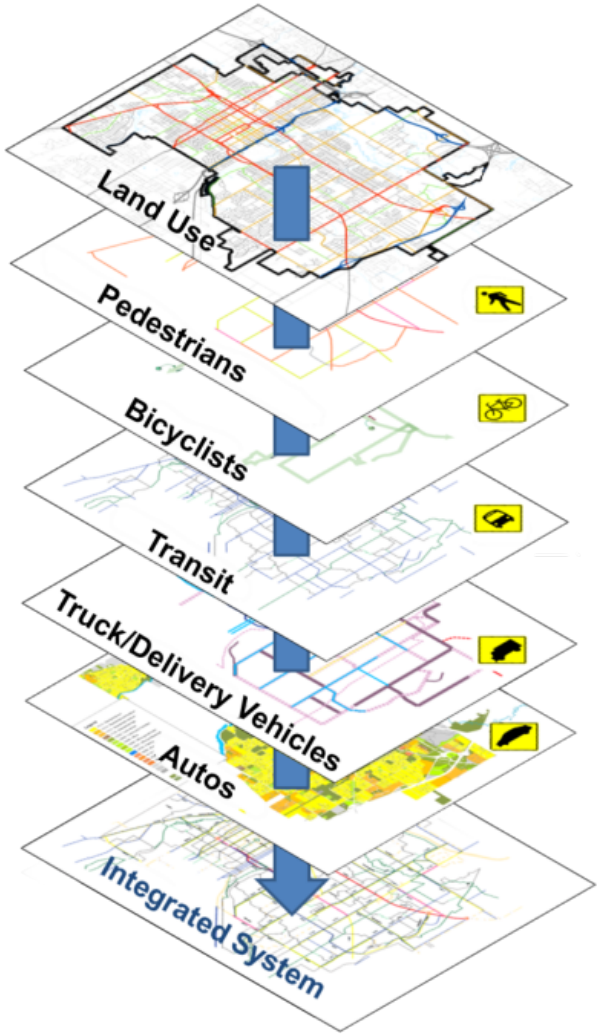
As identified in this plan, most of the improvements are focused on the development of a 'layered' transportation network, which balances providing vehicular capacity with accommodating all modes of travel. The capital improvements recommended in this plan include a mix of projects needed to meet the City's vehicular level of service (LOS) standard, as well as provide safer and more complete facilities for walking, bicycling, and riding transit in order to improve access and mobility for all road users.

INTRODUCTION TO THE LAYERED NETWORK

It can be a challenge for a single roadway to meet the demands and expectations of all modes at any given time. This is also generally not desirable from a user or a planning perspective.

In response to this challenge, this plan follows a layered network approach that focuses on how the City's transportation network can function as a system to meet the needs of all users. In such a system, individual travel modes are prioritized on different facilities throughout the overall network. Figure 11 illustrates the concept of a layered network. The following sections review the priority networks for each mode and establish their level of service standards.

Figure 11: Layered Network Concept



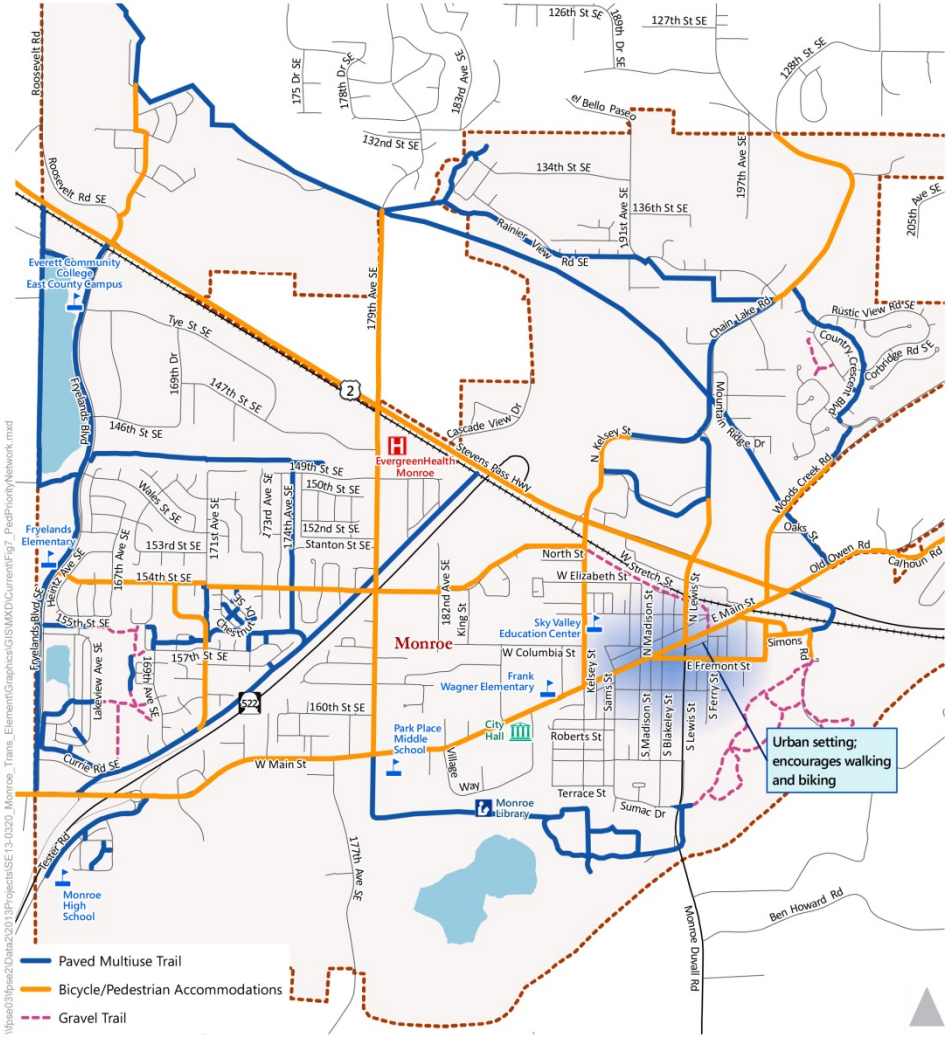
WALKING AND BIKING

Figure 12 highlights the City's envisioned Walking and Biking Priority Network, as described in the 2008 Parks, Recreations & Open Space Plan and the Downtown Master Plan. Three primary facility types are identified on the map:

- **Paved Multiuse Trails** – facilities that are off-street or separated from the roadway by a physical buffer; can accommodate walkers and bikers of all ages and abilities.
- **Bicycle/Pedestrian Accommodations** – corridors that provide sidewalks and on-street accommodations for bicyclists (e.g. bike lanes, sharrows, shared street signage, etc.).
- **Gravel Trail** – unpaved trail connections; mostly within parks and City-owned open space.

The envisioned Walking and Biking Priority Network connects residents in central and north Monroe with businesses and community amenities throughout the City. Dense areas with commercial land uses and streets that serve schools are particularly important for investing in safe infrastructure for non-motorized travel, as they support more walkers and bikers and may have a larger portion of vulnerable users than other streets.

Figure 12: Walking and Biking Priority Network



Building on the envisioned walking and biking network in **Figure 12**, **Tables 4** and **5** establish the level of service standard for pedestrian and bicycle facilities around the City. The best level of service for walking, indicated in the green row, would provide walkways with buffers. The yellow level of service, which meets the basic needs for safe walking around the City, requires sidewalks or paved trails on one side of all the routes called out in the Walking and Biking Priority Network. Incomplete or missing pedestrian facilities would fall into the red category and not satisfy the City's LOS for walking.

Table 4: Pedestrian LOS – Sidewalk Requirements

LOS	Within Priority Network
	Pedestrian facility* where indicated in Walking and Biking Priority Network, with a buffer
	Pedestrian facility* provided on one side of the street
	No pedestrian facility

* Pedestrian facility includes sidewalks and shoulders protected by a raised curb

Similar to Pedestrian LOS, the Monroe can achieve the green level of service for bicycling by installing the bicycle facilities depicted in the Walking and Biking Priority Network or a facility that offers more separation from vehicle traffic. At a minimum, the City plans to provide the yellow LOS by installing some sort of bicycle infrastructure on the identified routes (see Figure 15). Incomplete or missing bicycle facilities would fall into the red standard and not meet the City's LOS for bicycling.

Table 5: Bicycle LOS – Facility Requirements

LOS	Within Priority Network
	Provides minimum treatment* recommendation, as shown within Walking and Biking Priority Network
	Provides a lower-level facility* than recommended in the Walking and Biking Priority Network
	No biking facility or signage

* Bicycle facilities – lowest-level to highest-level of treatment: shared street; bike lanes; buffered bike facility; separated trail.

TRANSIT

Transit operations are out of the City's direct control, but Monroe can still aim to create corridors that are welcoming to transit. Along streets that are currently served by transit (**Figure 13**), the City can boost transit use by offering and improving:

- Street lighting
- Bus shelters and benches
- Safe routes for accessing transit stops

Monroe's transit LOS is defined based on the amenities, access, and service frequencies discussed above. The City can reach the green LOS standard by providing a high level of the transit supportive amenities at major stops, installing sidewalks and marked crosswalks at all stops, and attracting frequent, all day

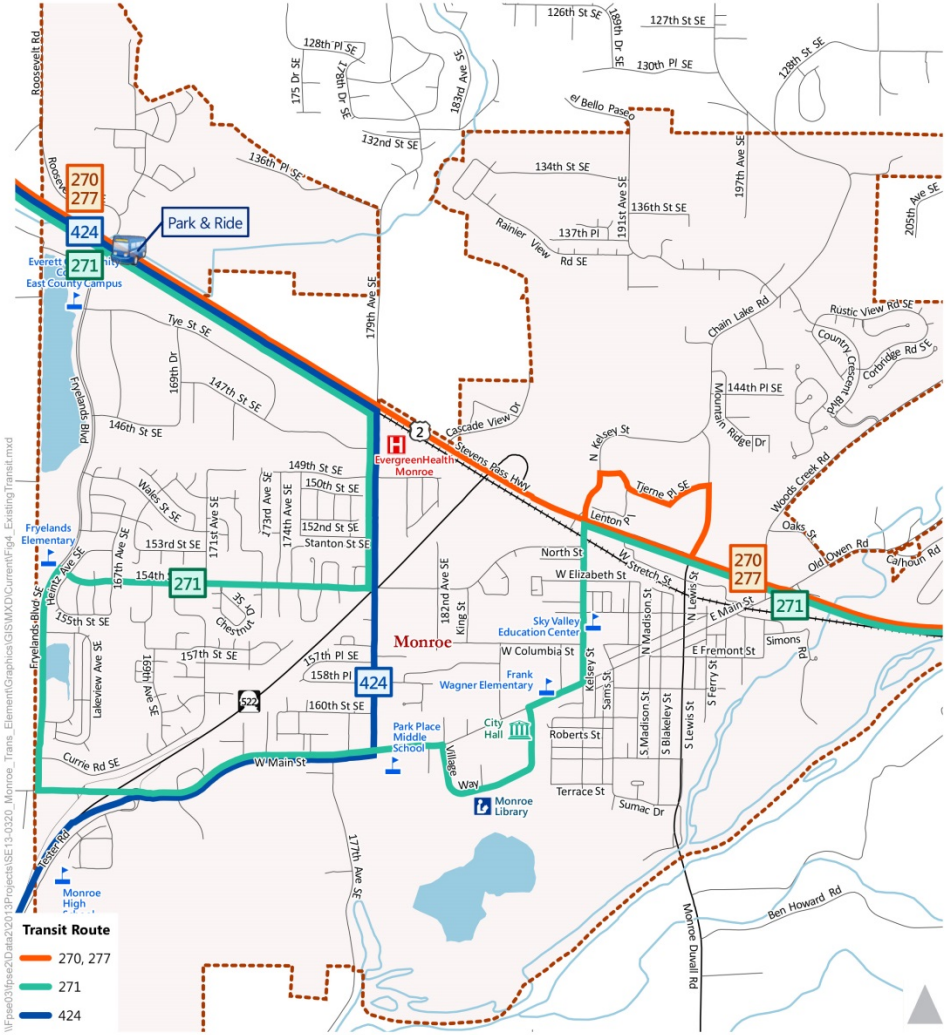
transit service. The yellow standard, which the City will adopt as its minimum target, includes some transit stop amenities, sidewalks and marked crosswalks at some stops, and all day service with headways of 30 minutes or less during the peak hour and 60 minutes or less during midday. Monroe's measurement of transit LOS is summarized in the **Table 6** below.

Table 6: Transit Priority Corridor Level of Service

LOS	Transit Stop Amenities	Pedestrian Access	Frequency of Service
	High level	Sidewalks and marked crosswalks serving stops	All day service. Peak service 15 minutes or less, midday 30 minutes or less
	Some amenities	Sidewalks and marked crosswalks serving some stops	All day service. Peak services 30 minutes or less, midday service 60 minutes or less
	Little or no amenities	General lack of sidewalks and marked crosswalks	Low level of service

While the City itself does not operate transit, these amenities can encourage residents and employees to use transit and therefore gain additional service hours from Community Transit.

Figure 13: Transit Service Corridors



AUTO AND FREIGHT

Most residents and workers in Monroe use the roadway network at some point each day to access their homes, jobs, and other destinations. Many of these streets are local streets, however, and do not see significant traffic volumes throughout the day. Similarly, goods movement and delivery vehicles use some corridors frequently while other streets see only the occasional local delivery.

The 2015 Comprehensive Plan updates the City's measurement of automobile LOS to consider corridors rather than individual intersections. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. For this reason, average delay along the corridor is a more meaningful level of service standard than the experience at a single intersection.

The City's LOS policy sets a standard of D or better for all City corridors. **Figure 14** shows the locations of these corridors and the individual intersections taken into account for the calculation of average delay/LOS. It should be noted that the intersection of W Columbia Street and King Street is not included in a LOS corridor since there are no other major intersections located along W Columbia Street. As such, this intersection can be assigned an individual standard of LOS D or better.

The expected growth in Monroe and across the region by 2035 will generate higher auto volumes on City roadways. **Figure 15** displays the forecast volumes on Monroe's street network. Detailed LOS results are available in **Appendix A**.

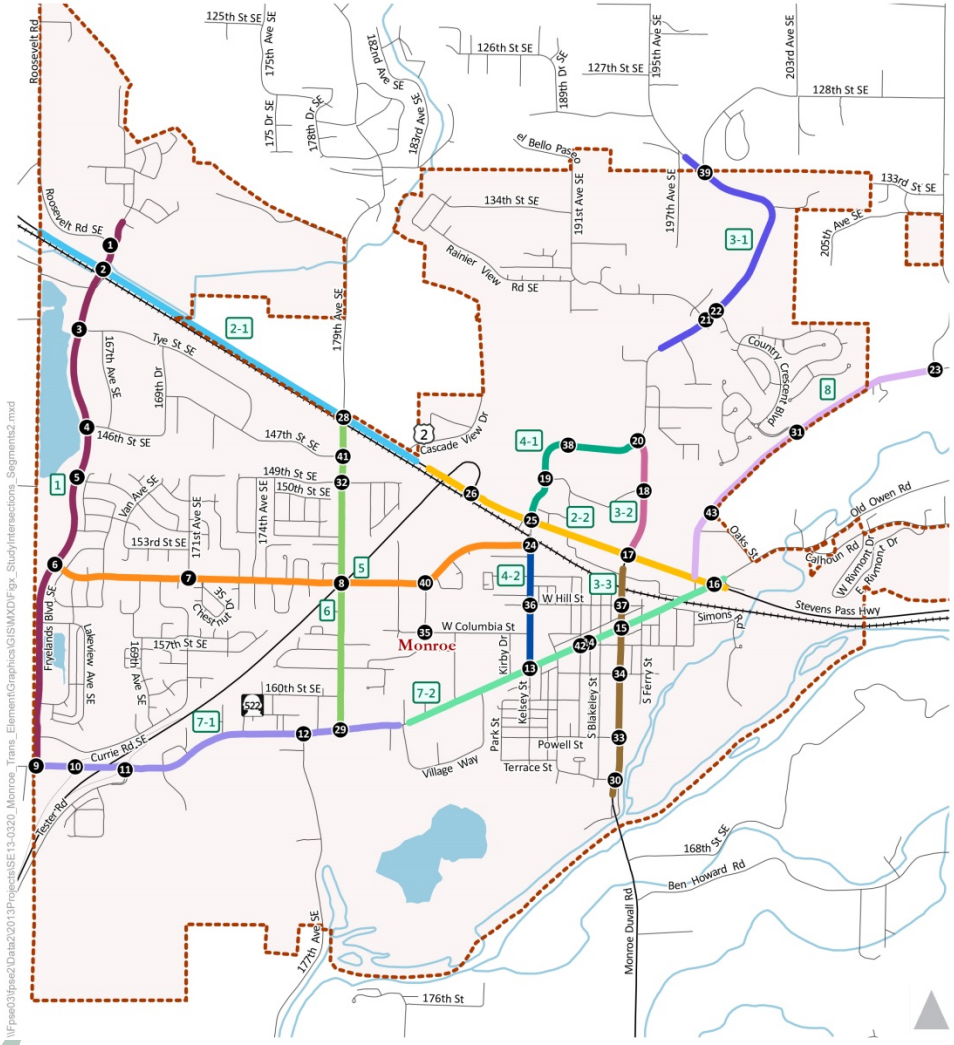
DOWNTOWN REVITALIZATION

Monroe's historic downtown gives the City character and there is considerable interest in ensuring that it is friendly to folks wishing to walk, bike, and park on street while shopping or meeting with neighbors. The City is evaluating capital investments that could greatly influence how people experience Monroe's historic core:

- In 2014, the City began an effort to redesign in intersections of Fremont, Madison and Main Streets to form a more effective gateway into downtown. This project makes possible other future transformations in downtown, including creating a festival street along Main, revisiting its two-way operation, and potentially exploring how local traffic accesses Lewis Street (SR 203).
- There has also been recent discussion about revising how parking is arranged on Main Street in downtown to create a curbless festival street environment and allow for wider pedestrian facilities. Beyond affecting the aesthetics of downtown, this project would reduce pedestrian crossing distances and reduce conflicts related to parking ingress and egress.

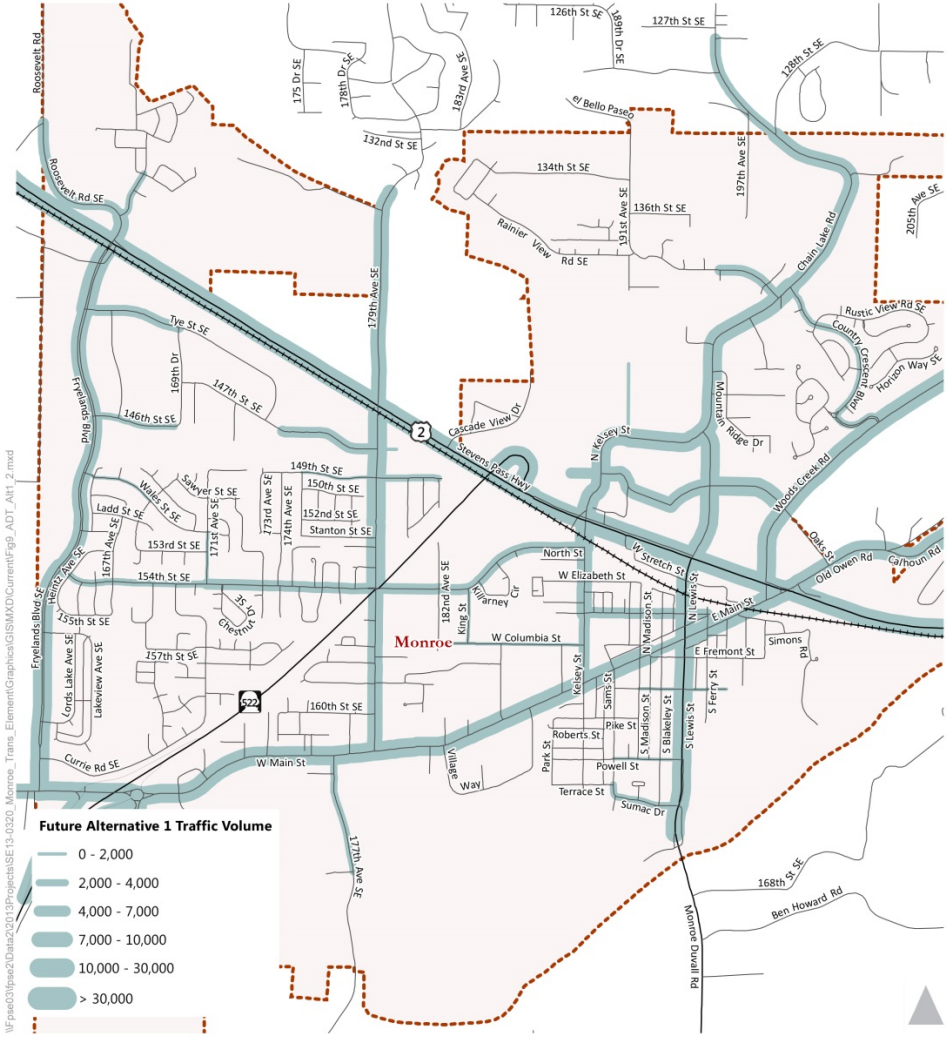
Lastly, there has been discussion of converting Main/Fremont into a one-way couplet. The project would make Main Street a less direct alternative to US 2, reducing cut-through in downtown Monroe and putting less pressure on the congested Main/Lewis Street intersection. On the other hand, the project would necessitate additional investments at the bookends of the one-way couplet (at Fremont/Main and Lewis/Main) and may not alleviate speeding in downtown, with is a major impetus for this project.

Figure 14: LOS Corridors and Constituent Intersections



Corridor ID	Description
1	Fryelands Boulevard
2-1	US 2 (west of SR 522)
2-2	US 2 (east of SR 522)
3-1	Chain Lake Road (north of Kelsey Street)
3-2	Chain Lake Road (south of Kelsey Street)
3-3	Lewis Street
4-1	Kelsey Street (north of US 2)
4-2	Kelsey Street (south of US 2)
5	154th Street
6	179th Street
7-1	Main Street (west of 179th)
7-2	Main Street (east of 179th)
8	Woods Creek Road

Figure 15: Future Traffic Volumes



CHAPTER 5: NEAR TERM AND LONG TERM CAPITAL PLAN

The overall capital plan was developed to create a transportation system that realizes Monroe's vision and embodies the transportation-focused goals within the Comprehensive Plan:

- **Goal 1:** *Establish and maintain a safe, secure environment in Monroe for residents, businesses, and visitors*. This goal articulates Monroe's pledge to maintain transportation infrastructure that provides safe and comfortable travel options for all.
- **Goal 4:** *Provide for and appropriately locate the types, quality, and quantities of development in Monroe to assure land use compatibility, enhance neighborhood character, and facilitate the City's long-term sustainability.* Transportation investments should align with the overall scale and feel of Monroe, which resident's prize.
- **Goal 6:** *Provide and promote both utility and transportation infrastructures that coincide with need, growth, and long-term objectives.* This goal supports a range of policies to help realize a more connected, walkable Monroe that keeps pace with growth.
- **Goal 8:** *Establish downtown Monroe as a thriving commercial, civic, and residential area*. This goal underpins transportation policies and programs to help downtown thrive, enhancing the attractiveness, value and function of the entire city.

With these goals in mind, as well as the future transportation vision described in the previous chapter, a list of high priority transportation projects was developed, shown in the top portion of **Table 7**. Projects included on this list are considered community priorities for which the City has begun identifying funds. These projects provide a starting point for the City in developing its financial constrained Six-Year Capital Improvement Plan, which is updated every two years and is developed based on more updated knowledge related to project feasibility and funding availability.

The bottom portion of **Table 7** contains a list of contingency transportation projects. These projects tend to lack identified funding sources and are not necessary to address existing or anticipated level of service deficiencies. However, the City recognizes that the contingency projects would help realize many of Monroe's transportation goals and should be pursued if funding becomes available.

Figure 16 displays the locations of projects in **Table 7** that benefit auto mobility, and **Figure 17** shows the Walking and Biking Priority Network (which is the same as **Figure 12**, just reproduced here for clarity).

Table 7: Project List

Project	*Benefit to Monroe*	*Auto Mobility Benefits*	*Benefits to Other Modes of Travel*	*Total Cost*	*Goal Met*
High Priority Projects					
US 2 / 179th Avenue SE intersection improvements	Improves local/regional mobility by improving traffic operations	x		$1.0M	1,8
Additional Downtown Signal	Improves local mobility by improving traffic operations; adds signalized crossing for pedestrians in Downtown core (potential locations Hill/Lewis or Fremont/Lewis)	x	x	$500K	1,2,8
179th Avenue SE / 147th Street SE signalization	Improves local mobility by improving traffic operations; adds signalized crossing for pedestrian access to Valley General Hospital	x	x	$387K	1,2,8
Main Street Gateway project – signal installation only	Improves intersections of Fremont, Madison and Main St by adding a traffic signal; addresses non-motorized safety and improves traffic operations	x		$387K	1,2,8
Woods Creek Road / Tjerne Place extension signalization	Improves circulation in North Kelsey, while relieving pressure on US 2; accommodates non-motorized travel	x	x	$387K	1,2,8
Tjerne Place extension	Improves circulation in North Kelsey, while relieving pressure on US 2; accommodates non-motorized travel	x	x	$4.1M	1,2,8
Woods Creek Road, Phase 1	Upgrades road design to City standard; provides non-motorized connection on north side of roadway between Oak St and existing trail at Country Crescent Blvd		x	$2.1M	1,2,8
Chain Lake Road, Phase 2	Increases roadway auto capacity and provides high quality bicycle and pedestrian accommodations between N Kelsey St and Rainier View Rd	x	x	$9.3M	1,2,8
			Total	**$18.2M**	

Contingency Projects					
Main Street Gateway project – roundabout installation	Improves intersections of Fremont, Madison and Main St to form a more effective gateway into downtown, address non-motorized safety, and improve traffic operations	x	x	$1.0M	1,2,3,6,8
Fryelands Boulevard / Main Street roundabout	Improves local/regional mobility by improving traffic operations	x		$984K	1,8
Old Owen Road/Oaks Street signalization	Improves local mobility by improving traffic operations; adds signalized crossing for pedestrians across Woods Creek Rd	x	x	$387K	1,2,8
Oak Street widening and realignment	Extends circulation benefits of Tjerne Pl Extension to Old Owen Rd	x		$1.2M	1,8
North Kelsey Area east/west connector	Provides an access alternative to neighborhoods along 191st Avenue and Rainier View Road	x		$5.0M	1,8

Paved multiuse trail network (off-street accommodations)	Provides an extensive network of off-street multiuse trails that connects many homes and destinations in central and north Monroe	x	$7.2M	1,2,6,8
Citywide on-street bicycle accommodations	Provides an extensive network of sidewalks and on-street bicycle accommodations to connect many homes and destinations in central Monroe	x	$6.0M	1,2,6,8
Downtown Master Plan access improvements/Festival Street	Provides pedestrian and bicycle connectivity improvements in downtown Monroe, creating more opportunities for non-motorized travel; would achieve festival street goal	x	$1.0M	1,2,3,6,8
		Total	**$22.8M**	

Figure 16: 20-Year Auto Projects List

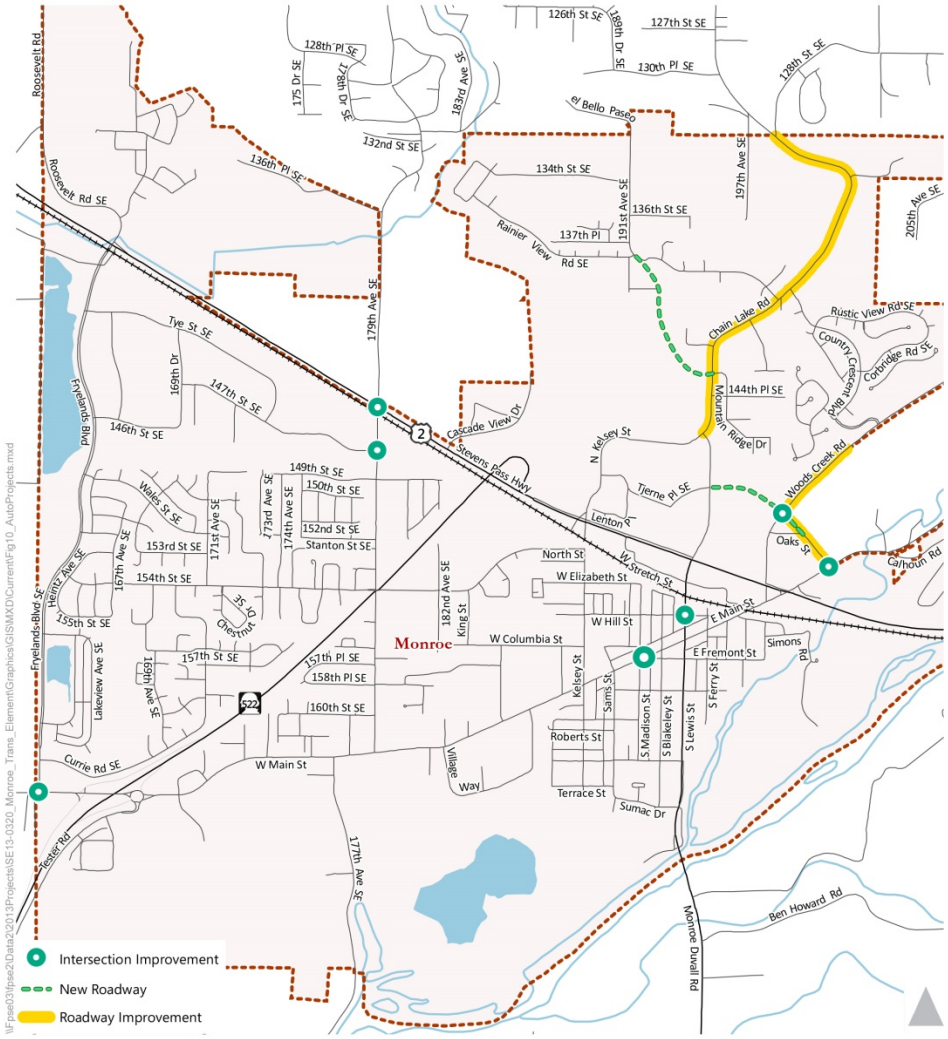
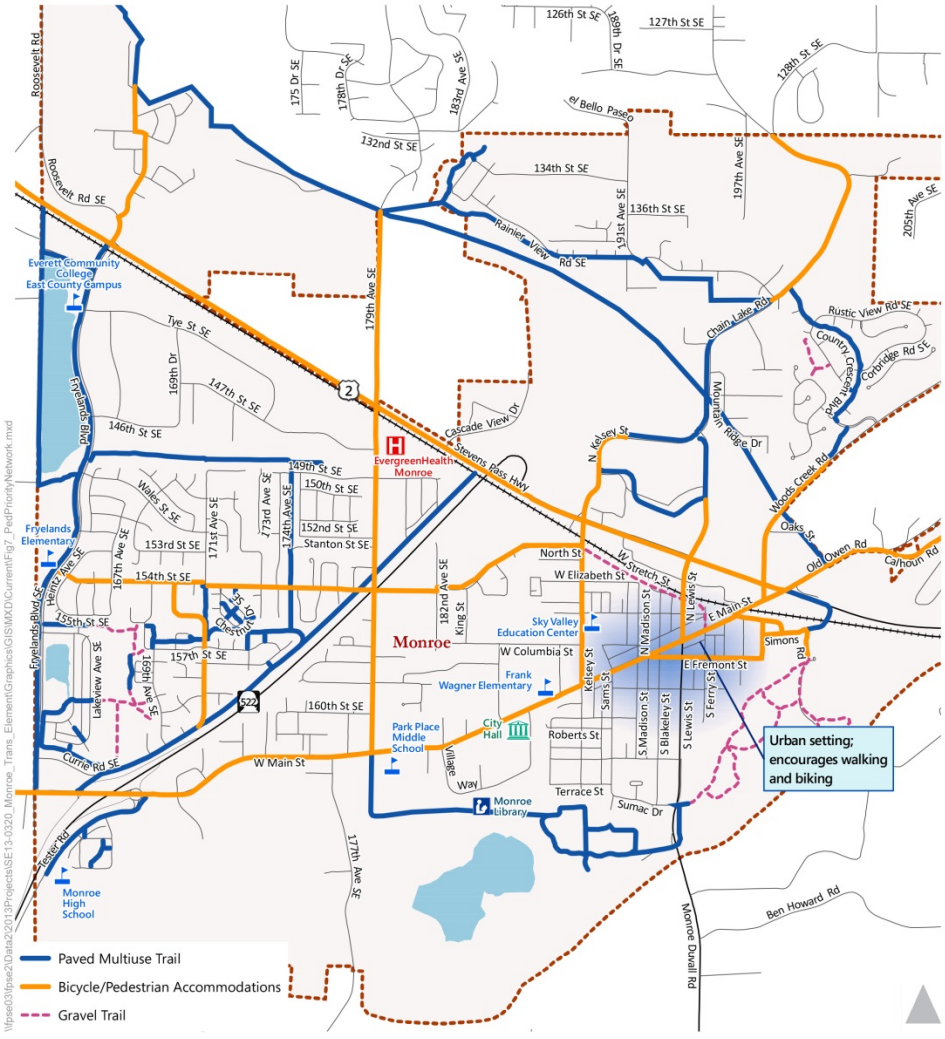


Figure 17: Walking and Biking Priority Network



CHAPTER 6: IMPLEMENTING THE TRANSPORTATION ELEMENT

The recommended projects and programs of the Transportation Element were developed by travel mode, as described in previous chapters. Implementing the Transportation Element will require close coordination among the City departments, citizens, businesses, and other agencies within the region.

In order to guide the City's implementation of the plan, priority should be assigned to assist in assembling an updated six-year Capital Improvement Program (CIP), working toward the 2035 planning horizon. This chapter summarizes the recommended plan and documents the criteria used to prioritize projects.

The Transportation Element is a living document and serves as the blueprint for transportation in Monroe over the next several years. Realistically, the plan is most useful over the next five years, at which point it should be updated. Several implementation steps should be initiated over the next couple of years to determine if changes are needed, or to reaffirm a particular strategy.

OVERVIEW OF COSTS AND REVENUES

A key GMA planning requirement is the concept of fiscal restraint in transportation planning. A fiscally constrained Transportation Element must first allow for operation and maintenance of existing facilities, and then capital improvements. To introduce fiscal constraint into the plan, an inventory of revenues and costs was undertaken to identify funds that are likely to be available for capital construction and operations.

The proposed Transportation Element for the City of Monroe contains a variety of projects that would likely cost the City between $33 and $38 million over 20 years. **Table 8** summarizes the costs of the major types of transportation investments by type. The Transportation Element focuses on capital projects that will help the city achieve its mobility goals. The plan also includes ongoing pavement maintenance to ensure that the roadway network is kept in good condition.

Table 8: Costs of Monroe Transportation Element (20+ years)

Project Type	*Description*	*Total Cost**
Intersections	High priority projects related to traffic signals, roundabouts, and pedestrian safety	$2.6M
Streets	High priority street extensions and widenings	$15.5M
Maintenance	Overlay and pavement repair, lighting, signal operations, snow removal	$15 – 20M
	Total	**$33 – 38M**
Contingency Projects	Projects that would be pursued only if funding becomes available	$22.8M

*Costs denoted in millions.

It is worthwhile to note that average annual funding for transportation (including maintenance) in the City of Monroe has averaged $1-2 million in recent years. Revenues include those from outside sources and grants, general city funds, real estate excise taxes, impact fees, and gas tax receipts. If the city were able to maintain this level of revenue, the City could afford between $20 and $40 million in transportation projects over the next 20 years.

The comparison of revenues to costs indicates that the city will need to carefully prioritize its projects, since not all of the transportation needs are likely to be affordable with existing revenue sources during the 20-year period. If this occurs, the City has several options:

- Increase the amount of revenue from existing sources, including impact fees, real estate excise taxes, transportation benefit district, or increased general fund revenues.
- Adopt new sources of revenue (see text box on following page).
- Lower the level of service standard, and therefore reduce the need for some transportation improvements.

WHAT ARE POTENTIAL NEW REVENUE SOURCES?

- Proceeds from General Obligation Bonds
- Creation of Local Improvement Districts
- Reciprocal impact fees with adjacent jurisdictions
- Business license fee per employee

The city can explore the feasibility and likely revenue amounts from these or other sources as the plan is implemented over the next several years.

Note that the city could also weigh changing the land use element to reduce the amount of development planned (and thus reduce the need for additional public facilities).

SETTING PRIORITIES

Project prioritization is needed to help identify when best to fund and implement the projects since funding is limited. Criteria were established to help prioritize the projects and implementation. These criteria, not listed in any priority order, are identified in the text box below.

CRITERIA FOR PROJECT PRIORITIZATION

1. Forwards City goals that related to transportation:
   - **Goal 1:** Establish and maintain a safe, secure environment in Monroe for residents, businesses, and visitors.
   - **Goal 4:** Provide for and appropriately locate the types, quality, and quantities of development in Monroe to assure land use compatibility, enhance neighborhood character, and facilitate the City's long-term sustainability.
   - **Goal 6:** Provide and promote both utility and transportation infrastructures that coincide with need, growth, and long-term objectives.
   - **Goal 8:** Establish downtown Monroe as a thriving commercial, civic, and residential area.
2. Provides tangible benefits to Monroe residents
3. Leverages non-city (federal, state, private) funds freeing up city revenues for additional projects

Using these criteria, the recommended projects will need to be evaluated and ranked based on how well each could meet the criteria. Since one of the criteria relates to funding availability, priorities may shift over time as fund sources change.

High priority projects for Monroe are those that meet multiple criteria in terms of effectiveness, benefit to the community, and ability to be implemented. These

attributes will allow the City to take advantage of a variety of public and private funding sources to complete key projects.

MONITORING AND EVALUATION

The Transportation Element is a long-range plan that enables the City to plan for its current and future transportation needs. Nonetheless, the transportation network is dynamic, constantly changing due to circumstances beyond the scope and influence of this plan. Hence, regular updates are necessary to ensure the plan remains current and relevant. The following actions to monitor and evaluate the progress of implementing the plan are recommended.

BI-ANNUAL MOBILITY REPORT CARD

A bi-annual mobility report card could document progress towards plan implementation and monitor the transportation system performance. The City could use this information to inform the public regarding the City's actions, and results, related to the Transportation Element. The report card could also provide a basis for future updates of the Transportation Element.

The report card is expected to report on the following topics:

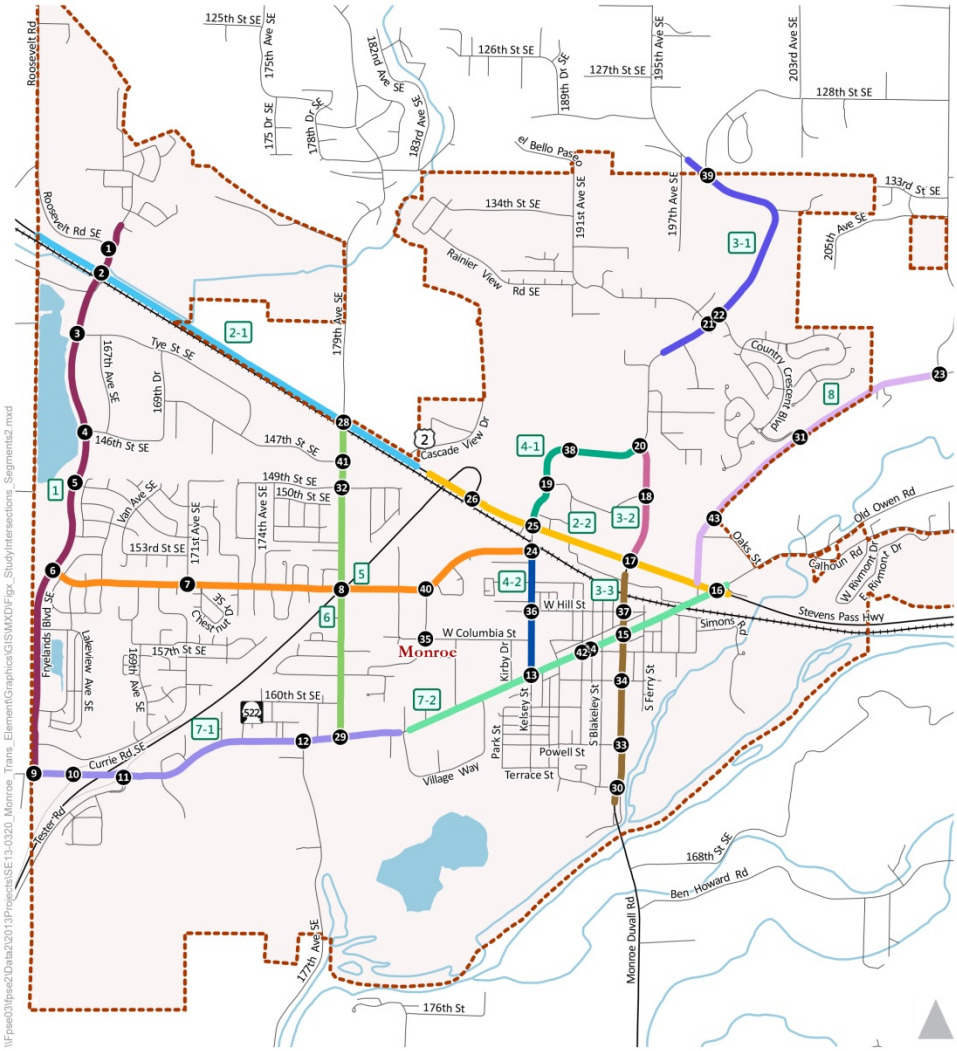
- Land Use and Transportation Trends – These data will describe general land use and transportation trends within Monroe. Information could include:
    - Current population and employment levels and growth rates,
    - Summary of yearly development activity, and
    - Summary of growth in traffic volumes, transit service and other trends
- Transportation Performance – These data focus on documenting the current performance of the transportation system, by mode. Information could include:
    - Transit route ridership (from Community Transit)
    - Park-and-ride lot utilization
    - On-street parking utilization in downtown and other retail locations
    - Traffic volumes
    - Collisions
    - Traffic level of service (along LOS corridors)
    - Pedestrian and bicycle volumes
    - Pavement Maintenance Ratings
- Project Implementation Status – These data will summarize the city's progress towards implementing the priority network improvements recommended in the Transportation Element. Information would ideally include:
    - Auto/truck facilities constructed
    - Pedestrian facilities constructed
    - Bicycle facilities constructed
    - Miles of Pavement overlays

The report card could provide the necessary information to help the city adjust transportation priorities and to facilitate updates to the Transportation Element every few years.

Appendix A: Traffic Operations Level of Service

This appendix provides detailed traffic operations results for roadway within the City of Monroe under three scenarios analyzed for the Transportation Master Plan – 2014 Existing conditions, year 2035 Preferred Alternative conditions, and year 2035 Preferred Alternative with Capital Plan conditions. The 2014 Existing condition calculations are based on counts collected in spring 2014.The Preferred Alternative 2035 LOS calculations assume no changes are made to the City's existing transportation system. The Preferred Alternative with Capital Plan LOS calculations assume the improvements recommended in Chapter 5 of this plan are in place

In total, 43 intersections were analyzed with nearly all intersections grouped into one of 13 roadway corridors (see figure to right). As described in Chapter 4, the 2015 Comprehensive Plan updates the City's measurement of automobile LOS to consider corridors rather than individual intersections. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. For this reason, average delay along the corridor is a more meaningful level of service standard than the experience at a single intersection.



The City's LOS policy sets a standard of D or better for all City corridors. The figure below shows the locations of these corridors and the individual intersections taken into account for the calculation of average delay/LOS. It should be noted that the intersection of W Columbia Street and King Street is not included in a LOS corridor since there are no other major intersections located along W Columbia Street. As such, this intersection can be assigned an individual standard of LOS D or better.

Intersection delay and LOS calculations were performed using Synchro traffic analysis software. Synchro results for the three analysis scenarios and corridor averages for delay and LOS are summarized in the table on the following page. Detailed calculation reports from the Synchro software are provided following the table. It should be noted that detailed reports from the 2035 Preferred Alternative with Capital Plan scenario are only provided for intersections with improvements specified by the Capital Plan.

Corridor/ Subarea	Intersection	Weekday PM Peak Hour Traffic Operations								
		Existing (2014)			Preferred Alternative (2035)			Preferred Alternative (2035) with Capital Plan		
		TEV[1]	Delay	LOS[2]	TEV[1]	Delay	LOS	TEV[1]	Delay	LOS
1	**Fryelands Blvd SE**									
1	Foothills Rd & Roosevelt Rd	379	11	B	715	16	C	715	16	C
2	SR 2 & Fryelands Blvd	2,583	35	D	3,263	41	D	3,263	41	D
3	Fryelands Blvd & Tye St	952	20	C	1,174	34	D	1,174	34	D
4	Fryelands Blvd & 146th St SE	812	17	C	1,001	28	D	1,001	28	D
5	Fryelands Blvd & Wales St	761	9	A	989	10	A	989	10	A
6	Fryelands Blvd & 154th St SE	910	13	B	1,167	15	B	1,167	15	B
9	W Main St & Fryelands Blvd	1,150	19	C	1,736	47	E	1,736	14	B
	Weighted Average		**22**	**C**		**32**	**C**		**26**	**C**
2-1	**US 2 West**									
2	SR 2 & Fryelands Blvd	2,583	35	D	3,263	41	D	3,263	41	D
28	SR 2 & 179th Ave SE	2,615	44	D	3,671	141	F	3,671	33	C
	Weighted Average		**39**	**D**		**94**	**F**		**36**	**D**
2-2	**US 2 East**									
26	SR 522 off and on ramps to US 2	2,713	17	B	4,302	40	D	4,302	40	D
25	SR 2 & Kelsey St	4,178	22	C	6,274	54	D	6,274	54	D
17	N Lewis St & SR 2	3,602	53	D	5,355	58	E	5,355	58	E
16	SR 2 & E Main St	2,587	27	C	3,981	31	C	3,981	31	C
	Weighted Average		**30**	**C**		**47**	**D**		**47**	**D**
3-1	**Chain Lake Rd North**									
39	Chain Lake Rd & Brown Rd	576	13	B	822	18	C	822	18	C
22	Chain Lake Rd & Country Crescent Blvd	738	15	B	1,095	25	C	1,095	25	C
21	Chain Lake Rd & Rainier View Rd	886	21	B	1,478	67	F	1,478	29	D
	Weighted Average		**17**	**B**		**41**	**D**		**25**	**C**
3-2	**Chain Lake Rd South**									
20	N Kelsey St & Chain Lake Rd[3]	1,037	13	B	2,120	21	C	2,120	21	C
18	Chain Lake Rd & Tjerne Pl SE	1,127	28	C	2,798	39	D	2,798	39	D
17	N Lewis St & SR 2	3,602	53	D	5,355	58	E	5,355	58	E
	Weighted Average		**41**	**D**		**45**	**D**		**45**	**D**
3-3	**S Lewis St**									
37	Hill St & Lewis St	1,246	29	D	2,127	168	F	2,127	24	C
15	Main St & Lewis St	1,870	27	C	2,285	115	F	2,285	115	F
34	S Lewis St & McDougall St	1,222	26	D	1,552	50	E	1,552	50	E
33	S Lewis St & Powell St	1,208	13	B	1,460	19	C	1,460	19	C
30	S Lewis St & Sumac Dr	1,357	15	B	1,702	23	C	1,702	23	C

Corridor/ Subarea	Intersection	Weekday PM Peak Hour Traffic Operations								
		Existing (2014)			Preferred Alternative (2035)			Preferred Alternative (2035) with Capital Plan		
		TEV[1]	Delay	LOS[2]	TEV[1]	Delay	LOS	TEV[1]	Delay	LOS
	Weighted Average		**22**	**C**		**84**	**F**		**50**	**D**
4-1	**N Kelsey St North**									
20	N Kelsey St & Chain Lake Rd[3]	1,037	13	B	2,120	21	C	2,120	21	C
38	N Kelsey St & Galaxy Way	719	13	B	1,403	27	D	1,403	27	D
19	Tjerne Pl SE & N Kelsey St	1,401	8	A	2,447	10	B	2,447	10	B
25	SR 2 & Kelsey St	4,178	22	C	6,274	54	D	6,274	54	D
	Weighted Average		**17**	**B**		**36**	**D**		**36**	**D**
4-2	**N Kelsey St South**									
24	Blueberry Ln & N Kelsey	1,086	26	D	1,342	61	F	1,342	61	F
36	N Kelsey St & W Hill St	777	14	B	952	17	C	952	17	C
13	W Main St & Kelsey St	1,562	9	A	2,405	20	B	2,405	20	B
	Weighted Average		**15**	**B**		**31**	**C**		**31**	**C**
5	**154th St SE**									
6	Fryelands Blvd & 154th St SE	910	13	B	1,167	15	B	1,167	15	B
7	154th St SE & Currie St	479	12	B	538	13	B	538	13	B
8	154th St SE & 179th Ave SE	1,184	16	C	1,614	39	E	1,614	39	E
40	King St & 154th St/Blueberry Ln	528	12	B	605	13	B	605	13	B
24	Blueberry Ln & N Kelsey	1,086	26	D	1,342	61	F	1,342	61	F
	Weighted Average		**17**	**B**		**33**	**C**		**33**	**C**
6	**179th Ave SE**									
28	SR 2 & 179th Ave SE	2,615	44	D	3,671	141	F	3,671	33	C
41	179th Ave SE & 147th St SE	965	31	D	1,346	309	F	1,346	9	A
32	179th Ave SE & 149th St SE	752	18	C	1,241	49	E	1,241	49	E
8	154th St SE & 179th Ave SE	1,184	16	C	1,614	39	E	1,614	39	E
29	W Main St & 179th Ave SE	1,425	13	B	2,476	44	D	2,476	44	D
	Weighted Average		**28**	**C**		**113**	**F**		**35**	**C**
7-1	**W Main St West**									
9	W Main St & Fryelands Blvd	1,150	19	C	1,736	47	E	1,736	14	B
10	W Main St on and off ramp from 522[3]	1,322	28	D	2,157	13	B	2,157	13	B
11	W Main St roundabout at NB SR 522	1,743	15	B	3,048	94	F	3,048	94	F
12	W Main St & 177th Ave SE	1,138	17	C	2,133	60	F	2,133	60	E
29	W Main St & 179th Ave SE	1,425	13	B	2,476	44	D	2,476	44	D
	Weighted Average		**18**	**B**		**55**	**D**		**50**	**D**
7-2	**W Main St East**									
13	W Main St & Kelsey St	1,562	9	A	2,405	20	B	2,405	20	B
42	W Main St & S Madison St[4]	971	19	C	1,654	72	F	1,654	24	C

Corridor/ Subarea	Intersection	Weekday PM Peak Hour Traffic Operations								
		Existing (2014)			Preferred Alternative (2035)			Preferred Alternative (2035) with Capital Plan		
		TEV[1]	Delay	LOS[2]	TEV[1]	Delay	LOS	TEV[1]	Delay	LOS
14	W Main St & Fremont St[4]	966	17	C	1,609	96	F	1,609	24	C
15	Main St & Lewis St	1,870	27	C	2,285	115	F	2,285	115	F
16	SR 2 & E Main St	2,587	27	C	3,981	31	C	3,981	31	C
	Weighted Average		**21**	**C**		**59**	**E**		**43**	**D**
8	**Woods Creek Rd**									
23	Woods Creek Rd & Ingraham Rd	628	9	A	1,177	39	E	1,177	39	E
31	Woods Creek Rd & Country Crescent Blvd	732	13	B	1,323	40	E	1,323	40	E
43	Woods Creek Rd & Tjerne Pl SE[5]	-	-	-	1,499	22	C	1,499	22	C
	Weighted Average		**11**	**B**		**33**	**C**		**33**	**C**
INT	**Intersections Not Part of a Corridor**									
35	Columbia Street & King Street	210	10	B	274	10	B	274	10	B

1 TEV = Total Entering Volume (PM peak hour)
2 LOS = Level of Service
3 Currently being converted to roundabout
4 Mitigation assumes conversion to roundabout as part of Main Street Gateway project. Alternately, the final redesign of these intersections could also include the installation of a traffic signal. A traffic signal would operate at LOS A/B for each intersection.
5 New signalized intersection with Tjerne Pl SE extension from Chain Lake Rd to Woods Creek Rd

Appendix 1: Level of Service Reports

This appendix shows level of service (LOS) calculations at 42 intersections for year 2014 Existing conditions, year 2035 Preferred Alternative conditions, and year 2035 Preferred Alternative with Capital Plan conditions. The Synchro analysis sheets are also included. The 2014 volumes represent counts collected in spring 2014. Intersections are grouped into corridors and sub areas in order to give a more accurate presentation of the LOS values. Though a single intersection on these corridors may experience longer delays than indicated by the standard, the overall concern for residents and travelers on these roadways is to get through multiple intersections in a reasonable amount of time. For this reason, average delay along the corridor is a more meaningful level of service standard than the experience at a single intersection.

The Preferred Alternative 2035 LOS calculations assume no changes are made to the City's existing transportation system. The Preferred Alternative with Capital Plan LOS calculations assume the improvements recommended as a part of this plan are in place.

		Weekday PM Peak Hour Traffic Operations								
		Existing (2014)			Preferred Alternative (2035)			Preferred Alternative (2035) with Capital Plan		
Corridor/ Subarea	Intersection	TEV[1]	Delay	LOS	TEV[1]	Delay	LOS	TEV[1]	Delay	LOS
1	**Fryelands Blvd SE**									
1	Foothills Rd & Roosevelt Rd	379	11	B	715	16	C	715	16	C
2	SR 2 & Fryelands Blvd	2,583	35	D	3,263	41	D	3,263	41	D
3	Fryelands Blvd & Tye St	952	20	C	1,174	34	D	1,174	34	D
4	Fryelands Blvd & 146th St SE	812	17	C	1,001	28	D	1,001	28	D
5	Fryelands Blvd & Wales St	761	9	A	989	10	A	989	10	A
6	Fryelands Blvd & 154th St SE	910	13	B	1,167	15	B	1,167	15	B
9	W Main St & Fryelands Blvd	1,150	19	C	1,736	47	E	1,736	14	B
	Weighted Average		**22**	**C**		**32**	**C**		**26**	**C**
2-1	**US 2 West**									
2	SR 2 & Fryelands Blvd	2,583	35	D	3,263	41	D	3,263	41	D
28	SR 2 & 179th Ave SE	2,615	44	D	3,671	141	F	3,671	33	C
	Weighted Average		**39**	**D**		**94**	**F**		**36**	**D**
2-2	**US 2 East**									
26	SR 522 off and on ramps to US 2	2,713	17	B	4,302	40	D	4,302	40	D
25	SR 2 & Kelsey St	4,178	22	C	6,274	54	D	6,274	54	D
17	N Lewis St & SR 2	3,602	53	D	5,355	58	E	5,355	58	E
16	SR 2 & E Main St	2,587	27	C	3,981	31	C	3,981	31	C
	Weighted Average		**30**	**C**		**47**	**D**		**47**	**D**
3-1	**Chain Lake Rd North**									
39	Chain Lake Rd & Brown Rd	576	13	B	822	18	C	822	18	C
22	Chain Lake Rd & Country Crescent Blvd	738	15	B	1,095	25	C	1,095	25	C
21	Chain Lake Rd & Rainier View Rd	886	21	B	1,478	67	F	1,478	29	D
	Weighted Average		**17**	**B**		**41**	**D**		**25**	**C**
3-2	**Chain Lake Rd South**									
20	N Kelsey St & Chain Lake Rd[1]	1,037	13	B	2,120	21	C	2,120	21	C
18	Chain Lake Rd & Tjerne Pl SE	1,127	28	C	2,798	39	D	2,798	39	D
17	N Lewis St & SR 2	3,602	53	D	5,355	58	E	5,355	58	E
	Weighted Average		**41**	**D**		**45**	**D**		**45**	**D**
3-3	**S Lewis St**									
37	Hill St & Lewis St	1,246	29	D	2,127	168	F	2,127	24	C
15	Main St & Lewis St	1,870	27	C	2,285	115	F	2,285	115	F
34	S Lewis St & McDougall St	1,222	26	D	1,552	50	E	1,552	50	E
33	S Lewis St & Powell St	1,208	13	B	1,460	19	C	1,460	19	C
30	S Lewis St & Sumac Dr	1,357	15	B	1,702	23	C	1,702	23	C
	Weighted Average		**22**	**C**		**84**	**F**		**50**	**D**
4-1	**N Kelsey St North**									
20	N Kelsey St & Chain Lake Rd[1]	1,037	13	B	2,120	21	C	2,120	21	C
38	N Kelsey St & Galaxy Way	719	13	B	1,403	27	D	1,403	27	D
19	Tjerne Pl SE & N Kelsey St	1,401	8	A	2,447	10	B	2,447	10	B
25	SR 2 & Kelsey St	4,178	22	C	6,274	54	D	6,274	54	D
	Weighted Average		**17**	**B**		**36**	**D**		**36**	**D**
4-2	**N Kelsey St South**									
24	Blueberry Ln & N Kelsey	1,086	26	D	1,342	61	F	1,342	61	F
36	N Kelsey St & W Hill St	777	14	B	952	17	C	952	17	C
13	W Main St & Kelsey St	1,562	9	A	2,405	20	B	2,405	20	B
	Weighted Average		**15**	**B**		**31**	**C**		**31**	**C**
5	**154th St SE**									
6	Fryelands Blvd & 154th St SE	910	13	B	1,167	15	B	1,167	15	B
7	154th St SE & Currie St	479	12	B	538	13	B	538	13	B
8	154th St SE & 179th Ave SE	1,184	16	C	1,614	39	E	1,614	39	E
40	King St & 154th St/Blueberry Ln	528	12	B	605	13	B	605	13	B
24	Blueberry Ln & N Kelsey	1,086	26	D	1,342	61	F	1,342	61	F
	Weighted Average		**17**	**B**		**33**	**C**		**33**	**C**
6	**179th Ave SE**									
28	SR 2 & 179th Ave SE	2,615	44	D	3,671	141	F	3,671	33	C
41	179th Ave SE & 147th St SE	965	31	D	1,346	309	F	1,346	9	A
32	179th Ave SE & 149th St SE	752	18	C	1,241	49	E	1,241	49	E
8	154th St SE & 179th Ave SE	1,184	16	C	1,614	39	E	1,614	39	E
29	W Main St & 179th Ave SE	1,425	13	B	2,476	44	D	2,476	44	D
	Weighted Average		**28**	**C**		**113**	**F**		**35**	**C**

Corridor/ Subarea		Intersection	Existing (2014) TEV[1]	Existing (2014) Delay	Existing (2014) LOS	Preferred Alternative (2035) TEV[1]	Preferred Alternative (2035) Delay	Preferred Alternative (2035) LOS	Preferred Alternative (2035) with Capital Plan TEV[1]	Preferred Alternative (2035) with Capital Plan Delay	Preferred Alternative (2035) with Capital Plan LOS
7-1		**W Main St West**									
	9	W Main St & Fryelands Blvd	1,150	19	C	1,736	47	E	1,736	14	B
	10	W Main St on and off ramp from 522[1]	1,322	28	D	2,157	13	B	2,157	13	B
	11	W Main St roundabout at NB SR 522	1,743	15	B	3,048	94	F	3,048	94	F
	12	W Main St & 177th Ave SE	1,138	17	C	2,133	60	F	2,133	60	E
	29	W Main St & 179th Ave SE	1,425	13	B	2,476	44	D	2,476	44	D
		Weighted Average		**18**	**B**		**55**	**D**		**50**	**D**
7-2		**W Main St East**									
	13	W Main St & Kelsey St	1,562	9	A	2,405	20	B	2,405	20	B
	42	W Main St & S Madison St[2]	971	19	C	1,654	72	F	1,654	24	C
	14	W Main St & Fremont St[2]	966	17	C	1,609	96	F	1,609	24	C
	15	Main St & Lewis St	1,870	27	C	2,285	115	F	2,285	115	F
	16	SR 2 & E Main St	2,587	27	C	3,981	31	C	3,981	31	C
		Weighted Average		**21**	**C**		**59**	**E**		**43**	**D**
8		**Woods Creek Rd**									
	23	Woods Creek Rd & Ingraham Rd	628	9	A	1,177	39	B	1,177	39	B
	31	Woods Creek Rd & Country Crescent Blvd	732	13	B	1,323	40	E	1,323	40	E
	43	Woods Creek Rd & Oaks St	-	-	-	-	-	-	1,499	22	C
		Weighted Average		**11**	**B**		**40**	**D**		**33**	**C**
INT		**Intersections Not Part of a Corridor**									
	35	Columbia St & King St	210	10	B	274	10	B	274	10	B

1 Currently being converted to roundabout

2 Mitigation proposes a 4 legged roundabout, with Fremont St. blocked off from Main St.

Existing Condition Synchro Output

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	50	2	142	88	2	95
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	180	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	1	4	4
Mvmt Flow	57	2	163	101	2	109

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	328	214	0	0	264	0
Stage 1	214	-	-	-	-	-
Stage 2	114	-	-	-	-	-
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	671	831	-	-	1289	-
Stage 1	826	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	669	831	-	-	1289	-
Mov Cap-2 Maneuver	669	-	-	-	-	-
Stage 1	826	-	-	-	-	-
Stage 2	914	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	674	1289	-
HCM Lane V/C Ratio	-	-	0.089	0.002	-
HCM Control Delay (s)	-	-	10.9	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	720	207	98	696	76	314	133	146	58	64	53
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		1.00	1.00		1.00	0.99		0.96	1.00		0.96
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	1863	1827	1827	1827	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	20	783	225	107	757	83	341	145	159	63	70	58
Adj No. of Lanes	1	1	1	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, %	2	2	2	4	4	4	1	1	1	0	0	0
Cap, veh/h	317	1101	936	300	1133	962	310	205	225	163	241	199
Arrive On Green	0.02	0.59	0.59	0.05	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	1863	1583	1740	1827	1552	1258	805	883	1089	945	783
Grp Volume(v), veh/h	20	783	225	107	757	83	341	0	304	63	0	128
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1740	1827	1552	1258	0	1687	1089	0	1728
Q Serve(g_s), s	0.5	33.1	7.6	2.7	30.0	2.4	21.8	0.0	18.3	6.2	0.0	6.7
Cycle Q Clear(g_c), s	0.5	33.1	7.6	2.7	30.0	2.4	28.4	0.0	18.3	24.6	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.52	1.00		0.45
Lane Grp Cap(c), veh/h	317	1101	936	300	1133	962	310	0	430	163	0	440
V/C Ratio(X)	0.06	0.71	0.24	0.36	0.67	0.09	1.10	0.00	0.71	0.39	0.00	0.29
Avail Cap(c_a), veh/h	540	1101	936	468	1133	962	310	0	430	237	0	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	16.1	10.9	14.4	13.8	8.5	47.2	0.0	38.1	49.0	0.0	33.7
Incr Delay (d2), s/veh	0.0	3.9	0.6	0.3	3.1	0.2	81.1	0.0	6.6	1.1	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(-26165%),veh/ln	0.3	18.2	3.5	1.3	15.9	1.1	16.4	0.0	9.3	1.9	0.0	3.2
LnGrp Delay(d),s/veh	12.5	20.0	11.5	14.7	16.9	8.7	128.3	0.0	44.7	50.1	0.0	33.9
LnGrp LOS	B	B	B	B	B	A	F		D	D		C
Approach Vol, veh/h		1028			947			645			191	
Approach Delay, s/veh		18.0			15.9			88.9			39.3	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.2	70.0		32.4	6.0	73.2		32.4
Change Period (Y+Rc), s	4.6	6.0		5.0	4.6	6.0		5.0
Max Green Setting (Gmax), s	15.4	64.0		35.0	15.4	64.0		25.0
Max Q Clear Time (g_c+I1), s	4.7	35.1		26.6	2.5	32.0		30.4
Green Ext Time (p_c), s	0.1	18.1		0.9	0.0	19.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.0
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	32	6	32	40	9	186	23	314	34	43	206	27
Conflicting Peds, #/hr	0	0	0	0	0	0	13	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	0	-	-	80	-	-	125	-	-	125	-	-
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, %	0	0	0	1	1	1	2	2	2	6	6	2
Mvmt Flow	36	7	36	45	10	209	26	353	38	48	231	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	576	786	144	640	782	196	262	0	0	391	0	0
Stage 1	343	343	-	424	424	-	-	-	-	-	-	-
Stage 2	233	443	-	216	358	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.52	6.52	6.92	4.14	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.22	-	-	2.26	-	-
Pot Cap-1 Maneuver	405	326	884	362	326	815	1299	-	-	1136	-	-
Stage 1	651	641	-	581	588	-	-	-	-	-	-	-
Stage 2	755	579	-	769	629	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	280	306	874	322	306	815	1285	-	-	1136	-	-
Mov Cap-2 Maneuver	280	306	-	322	306	-	-	-	-	-	-	-
Stage 1	638	614	-	569	576	-	-	-	-	-	-	-
Stage 2	540	567	-	691	602	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	12.8	0.5	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1285	-	-	280	676	322	757	1136	-	-
HCM Lane V/C Ratio	0.02	-	-	0.128	0.063	0.14	0.289	0.043	-	-
HCM Control Delay (s)	7.9	-	-	19.7	10.7	18	11.7	8.3	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.2	0.5	1.2	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	143	65	289	45	40	230
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	175	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	157	71	318	49	44	253

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	557	186	0	0	368	0
Stage 1	343	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.14	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.22	-
Pot Cap-1 Maneuver	465	831	-	-	1187	-
Stage 1	696	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	447	830	-	-	1186	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	695	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	447	830	1186	-
HCM Lane V/C Ratio	-	-	0.352	0.086	0.037	-
HCM Control Delay (s)	-	-	17.4	9.7	8.2	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.6	0.3	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	1	5	8	0	20	3	307	33	60	307	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	8	1	5	9	0	22	3	337	36	66	337	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	2	2	2
Cap, veh/h	732	110	551	749	0	645	525	1291	137	510	1399	46
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1410	276	1379	1430	0	1613	1026	3228	342	1003	3498	114
Grp Volume(v), veh/h	8	0	6	9	0	22	3	184	189	66	170	178
Grp Sat Flow(s),veh/h/ln	1410	0	1654	1430	0	1613	1026	1770	1800	1003	1770	1842
Q Serve(g_s), s	0.1	0.0	0.1	0.2	0.0	0.3	0.1	2.8	2.8	1.9	2.6	2.6
Cycle Q Clear(g_c), s	0.5	0.0	0.1	0.2	0.0	0.3	2.6	2.8	2.8	4.7	2.6	2.6
Prop In Lane	1.00		0.83	1.00		1.00	1.00		0.19	1.00		0.06
Lane Grp Cap(c), veh/h	732	0	662	749	0	645	525	708	720	510	708	737
V/C Ratio(X)	0.01	0.00	0.01	0.01	0.00	0.03	0.01	0.26	0.26	0.13	0.24	0.24
Avail Cap(c_a), veh/h	732	0	662	749	0	645	525	708	720	510	708	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.4	0.0	7.2	7.3	0.0	7.3	8.8	8.0	8.0	9.6	8.0	8.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.9	0.5	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	0.0	0.0	0.1	0.0	0.2	0.0	1.5	1.5	0.6	1.4	1.4
LnGrp Delay(d),s/veh	7.5	0.0	7.3	7.3	0.0	7.4	8.9	8.9	8.9	10.1	8.8	8.7
LnGrp LOS	A		A	A		A	A	A	A	B	A	A
Approach Vol, veh/h		14			31			376			414	
Approach Delay, s/veh		7.4			7.4			8.9			9.0	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		4.8		2.5		6.7		2.3
Green Ext Time (p_c), s		2.6		0.1		2.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	36	12	30	12	55	9	305	59	91	287	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1792	1792	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	14	45	15	38	15	69	11	381	74	114	359	4
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	6	6	6	3	3	3	3	3	3
Cap, veh/h	505	426	142	518	88	405	572	995	191	540	1278	14
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.08	0.34	0.34	0.10	0.36	0.36
Sat Flow, veh/h	1287	1331	444	1264	275	1265	1757	2926	563	1757	3550	40
Grp Volume(v), veh/h	14	0	60	38	0	84	11	227	228	114	177	186
Grp Sat Flow(s),veh/h/ln	1287	0	1774	1264	0	1539	1757	1752	1736	1757	1752	1837
Q Serve(g_s), s	0.4	0.0	1.2	1.1	0.0	2.0	0.2	4.9	5.0	1.9	3.6	3.6
Cycle Q Clear(g_c), s	2.4	0.0	1.2	2.3	0.0	2.0	0.2	4.9	5.0	1.9	3.6	3.6
Prop In Lane	1.00		0.25	1.00		0.82	1.00		0.32	1.00		0.02
Lane Grp Cap(c), veh/h	505	0	568	518	0	493	572	596	590	540	631	661
V/C Ratio(X)	0.03	0.00	0.11	0.07	0.00	0.17	0.02	0.38	0.39	0.21	0.28	0.28
Avail Cap(c_a), veh/h	505	0	568	518	0	493	572	596	590	540	631	661
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	12.0	12.8	0.0	12.2	8.5	12.5	12.5	8.7	11.4	11.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.3	0.0	0.7	0.1	1.8	1.9	0.9	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	0.0	0.6	0.4	0.0	0.9	0.1	2.6	2.7	1.0	1.9	2.0
LnGrp Delay(d),s/veh	13.2	0.0	12.3	13.0	0.0	13.0	8.6	14.3	14.4	9.6	12.5	12.5
LnGrp LOS	B		B	B		B	A	B	B	A	B	B
Approach Vol, veh/h		74			122			466			477	
Approach Delay, s/veh		12.5			13.0			14.3			11.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	21.0		20.0	8.0	22.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.0	17.0		16.0	4.0	18.0		16.0
Max Q Clear Time (g_c+I1), s	3.9	7.0		4.4	2.2	5.6		4.3
Green Ext Time (p_c), s	0.0	2.4		0.6	0.0	2.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	187	133	64	65	13
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	19	208	148	71	72	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	219	0	-	0	429	183
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1362	-	-	-	587	865
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	800	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1362	-	-	-	578	865
Mov Cap-2 Maneuver	-	-	-	-	578	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1362	-	-	-	612
HCM Lane V/C Ratio	0.014	-	-	-	0.142
HCM Control Delay (s)	7.7	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	40	150	47	0	49	133	91	0	89	243	65
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	1	1	1	2	0	0	0	2	1	1	1
Mvmt Flow	0	44	165	52	0	54	146	100	0	98	267	71
Number of Lanes	0	0	1	1	0	0	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	15.3	14.3	19.8
HCM LOS	C	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	21%	0%	27%	0%	100%	0%
Vol Thru, %	0%	79%	79%	0%	73%	0%	0%	83%
Vol Right, %	0%	21%	0%	100%	0%	100%	0%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	308	190	47	182	91	85	192
LT Vol	89	0	40	0	49	0	85	0
Through Vol	0	243	150	0	133	0	0	160
RT Vol	0	65	0	47	0	91	0	32
Lane Flow Rate	98	338	209	52	200	100	93	211
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.207	0.653	0.446	0.098	0.424	0.188	0.204	0.424
Departure Headway (Hd)	7.611	6.948	7.684	6.856	7.634	6.777	7.87	7.237
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	518	468	522	470	528	456	496
Service Time	5.365	4.702	5.442	4.613	5.393	4.535	5.629	4.996
HCM Lane V/C Ratio	0.208	0.653	0.447	0.1	0.426	0.189	0.204	0.425
HCM Control Delay	12.4	21.9	16.5	10.4	15.9	11.1	12.6	15.3
HCM Lane LOS	B	C	C	B	C	B	B	C
HCM 95th-tile Q	0.8	4.7	2.3	0.3	2.1	0.7	0.8	2.1

Intersection	
Intersection Delay, s/veh	18.7
Intersection LOS	C

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	30	130	0	198	466	0	281	45
Peak Hour Factor	0.92	0.89	0.89	0.92	0.89	0.89	0.92	0.89	0.89
Heavy Vehicles, %	2	1	1	2	2	2	2	2	2
Mvmt Flow	0	34	146	0	222	524	0	316	51
Number of Lanes	0	0	1	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	12	20.4	18.4
HCM LOS	B	C	C

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	0%	0%	86%
Vol Thru, %	81%	100%	0%	0%
Vol Right, %	0%	0%	100%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	198	466	326
LT Vol	30	0	0	281
Through Vol	130	198	0	0
RT Vol	0	0	466	45
Lane Flow Rate	180	222	524	366
Geometry Grp	5	7	7	2
Degree of Util (X)	0.308	0.372	0.772	0.617
Departure Headway (Hd)	6.164	6.015	5.305	6.063
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	581	596	681	593
Service Time	4.222	3.763	3.052	4.105
HCM Lane V/C Ratio	0.31	0.372	0.769	0.617
HCM Control Delay	12	12.3	23.8	18.4
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	1.3	1.7	7.3	4.2

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	216	195	217	594	0	0	0	0	30	0	70
Conflicting Peds, #/hr	3	0	0	0	0	3	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	-	-	-	-	-	-	-	-	-	-	-	75
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	0	0	0	1	1	1
Mvmt Flow	0	235	212	236	646	0	0	0	0	33	0	76

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	646	0	0	447	0	0	1458	1564	649
Stage 1	-	-	-	-	-	-	1117	1117	-
Stage 2	-	-	-	-	-	-	341	447	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	939	-	-	1113	-	-	143	112	472
Stage 1	-	-	-	-	-	-	314	284	-
Stage 2	-	-	-	-	-	-	722	575	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	937	-	-	1110	-	-	96	0	471
Mov Cap-2 Maneuver	-	-	-	-	-	-	96	0	-
Stage 1	-	-	-	-	-	-	210	0	-
Stage 2	-	-	-	-	-	-	722	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.4	28.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	937	-	-	1110	-	-	96	471
HCM Lane V/C Ratio	-	-	-	0.212	-	-	0.34	0.162
HCM Control Delay (s)	0	-	-	9.1	0	-	60.7	14.1
HCM Lane LOS	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.8	-	-	1.3	0.6

MOVEMENT SUMMARY

Site: #11 Existing SR 522 RAB

Roundabout with 5 legs, and 1-lane approaches and circulating road

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tester Rd											
3	L	192	3.0	0.786	26.6	LOS D	5.0	126.9	0.77	1.11	20.2
8	T	109	3.0	0.786	26.6	LOS D	5.0	126.9	0.77	0.97	20.9
18	R	214	3.0	0.786	26.6	LOS D	5.0	126.9	0.77	1.00	20.7
Approach		515	3.0	0.786	26.6	LOS D	5.0	126.9	0.77	1.03	20.6
East: 164th St SE											
1	L	66	3.0	0.475	13.6	LOS B	2.2	56.2	0.66	1.04	24.6
6	T	465	2.0	0.475	13.6	LOS B	2.2	56.3	0.66	0.81	26.5
16	R	41	3.0	0.475	13.6	LOS B	2.2	56.3	0.66	0.91	26.0
Approach		573	2.2	0.475	13.6	LOS B	2.2	56.3	0.66	0.84	26.2
West: 164th St SE											
5	L	36	3.0	0.130	4.7	LOS A	0.5	12.3	0.18	0.83	28.5
2	T	174	2.0	0.130	4.7	LOS A	0.5	12.3	0.18	0.33	32.2
12	R	58	3.0	0.130	4.7	LOS A	0.5	12.3	0.18	0.46	31.2
Approach		267	2.3	0.130	4.7	LOS A	0.5	12.3	0.18	0.42	31.4
South West: SR 522 NB Off Ramp											
5X	L	225	2.0	0.312	7.7	LOS A	1.0	26.1	0.39	0.82	26.2
2X	T	287	2.0	0.312	7.6	LOS A	1.0	26.1	0.38	0.53	30.1
12X	R	27	3.0	0.312	7.6	LOS A	1.0	24.7	0.37	0.71	29.1
Approach		539	2.1	0.312	7.6	LOS A	1.0	26.1	0.38	0.66	28.1
All Vehicles		1895	2.4	0.786	14.2	LOS B	5.0	126.9	0.54	0.78	25.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Model used. Geometric Delay not included.

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	534	16	16	443	65	64
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	1	1	4	4
Mvmt Flow	580	17	17	482	71	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	598	0	1105	590
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	-	-	4.11	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.209	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	984	-	231	504
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	983	-	227	504
Mov Cap-2 Maneuver	-	-	-	-	362	-
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	584	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	362	504	-	-	983	-
HCM Lane V/C Ratio	0.195	0.138	-	-	0.018	-
HCM Control Delay (s)	17.3	13.3	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.5	-	-	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	143	458	58	18	362	97	90	100	15	64	66	91
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1845	1845	1845	1900	1863	1900	1900	1881	1900
Adj Flow Rate, veh/h	152	487	62	19	385	103	96	106	16	68	70	97
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	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, %	1	1	1	3	3	3	2	2	2	1	1	1
Cap, veh/h	525	811	103	432	916	773	274	227	29	205	148	160
Arrive On Green	0.50	0.50	0.50	0.50	0.50	0.50	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	911	1635	208	844	1845	1557	572	965	122	341	632	684
Grp Volume(v), veh/h	152	0	549	19	385	103	218	0	0	235	0	0
Grp Sat Flow(s),veh/h/ln	911	0	1843	844	1845	1557	1659	0	0	1656	0	0
Q Serve(g_s), s	4.7	0.0	7.9	0.6	4.9	1.3	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	9.7	0.0	7.9	8.6	4.9	1.3	3.9	0.0	0.0	4.4	0.0	0.0
Prop In Lane	1.00		0.11	1.00		1.00	0.44		0.07	0.29		0.41
Lane Grp Cap(c), veh/h	525	0	915	432	916	773	529	0	0	514	0	0
V/C Ratio(X)	0.29	0.00	0.60	0.04	0.42	0.13	0.41	0.00	0.00	0.46	0.00	0.00
Avail Cap(c_a), veh/h	1052	0	1982	921	1984	1675	1381	0	0	1401	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	6.7	9.8	6.0	5.1	12.4	0.0	0.0	12.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.0	0.3	0.1	0.5	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	0.0	4.1	0.1	2.5	0.6	2.0	0.0	0.0	2.2	0.0	0.0
LnGrp Delay(d),s/veh	9.3	0.0	7.4	9.8	6.3	5.1	12.9	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	A		A	A	A	A	B			B		
Approach Vol, veh/h		701			507			218			235	
Approach Delay, s/veh		7.8			6.2			12.9			13.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		13.7		23.5		13.7		23.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		30.0		40.0		30.0		40.0
Max Q Clear Time (g_c+I1), s		5.9		11.7		6.4		10.6
Green Ext Time (p_c), s		2.0		6.8		2.0		6.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	49	8	409	131	3	366
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	-	-	30	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	52	8	431	138	3	385

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	823	437	0	0	431	0
Stage 1	431	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	343	620	-	-	1134	-
Stage 1	655	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	340	617	-	-	1128	-
Mov Cap-2 Maneuver	340	-	-	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	363	1128	-
HCM Lane V/C Ratio	-	-	0.165	0.003	-
HCM Control Delay (s)	-	-	16.9	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	361	34	2	247	46	80	427	169	75	344	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.85	1.00	1.00	0.85
Adj Sat Flow, veh/h/ln	1710	1710	1710	1710	1660	1710	1660	1660	1710	1660	1660	1710
Adj Flow Rate, veh/h	13	372	35	2	255	47	82	440	174	77	355	74
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	45	459	320	38	305	56	444	538	213	271	625	130
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.26	0.05	0.56	0.55	0.04	0.55	0.54
Sat Flow, veh/h	25	1667	1164	2	1109	203	1581	962	380	1581	1132	236
Grp Volume(v), veh/h	385	0	35	304	0	0	82	0	614	77	0	429
Grp Sat Flow(s),veh/h/ln	1692	0	1164	1315	0	0	1581	0	1342	1581	0	1368
Q Serve(g_s), s	0.0	0.0	2.2	0.6	0.0	0.0	2.1	0.0	36.0	2.0	0.0	19.8
Cycle Q Clear(g_c), s	20.5	0.0	2.2	21.1	0.0	0.0	2.1	0.0	36.0	2.0	0.0	19.8
Prop In Lane	0.03		1.00	0.01		0.15	1.00		0.28	1.00		0.17
Lane Grp Cap(c), veh/h	504	0	320	399	0	0	444	0	750	271	0	755
V/C Ratio(X)	0.76	0.00	0.11	0.76	0.00	0.00	0.18	0.00	0.82	0.28	0.00	0.57
Avail Cap(c_a), veh/h	650	0	422	514	0	0	481	0	750	271	0	755
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.8	0.0	26.2	33.0	0.0	0.0	10.5	0.0	17.5	15.8	0.0	14.2
Incr Delay (d2), s/veh	4.0	0.0	0.1	4.9	0.0	0.0	0.1	0.0	9.7	0.2	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	10.2	0.0	0.7	8.2	0.0	0.0	0.9	0.0	15.2	0.9	0.0	8.1
LnGrp Delay(d),s/veh	36.8	0.0	26.3	37.9	0.0	0.0	10.6	0.0	27.1	16.0	0.0	17.3
LnGrp LOS	D		C	D			B		C	B		B
Approach Vol, veh/h		420			304			696			506	
Approach Delay, s/veh		35.9			37.9			25.2			17.1	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	58.0		30.6	8.7	57.3		30.6
Change Period (Y+Rc), s	5.0	5.3		5.0	5.0	5.3		5.0
Max Green Setting (Gmax), s	3.0	52.7		34.0	6.0	49.7		34.0
Max Q Clear Time (g_c+I1), s	4.0	38.0		22.5	4.1	21.8		23.1
Green Ext Time (p_c), s	0.0	5.3		2.6	0.0	6.8		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	219	647	12	84	509	30	205	207	203	131	157	183
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1863	1863	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	231	681	0	88	536	0	216	218	214	138	165	193
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	2	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, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	576	1992	0	470	1828	0	310	366	298	288	282	250
Arrive On Green	0.08	0.56	0.00	0.04	0.52	0.00	0.12	0.19	0.19	0.08	0.16	0.15
Sat Flow, veh/h	1792	3668	0	1774	3632	0	1792	1881	1589	1792	1787	1586
Grp Volume(v), veh/h	231	681	0	88	536	0	216	218	214	138	165	193
Grp Sat Flow(s),veh/h/ln	1792	1787	0	1774	1770	0	1792	1881	1589	1792	1787	1586
Q Serve(g_s), s	7.5	13.5	0.0	3.0	11.2	0.0	12.6	13.7	16.4	8.3	11.1	15.2
Cycle Q Clear(g_c), s	7.5	13.5	0.0	3.0	11.2	0.0	12.6	13.7	16.4	8.3	11.1	15.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	576	1992	0	470	1828	0	310	366	298	288	282	250
V/C Ratio(X)	0.40	0.34	0.00	0.19	0.29	0.00	0.70	0.60	0.72	0.48	0.58	0.77
Avail Cap(c_a), veh/h	745	1992	0	505	1828	0	398	521	429	304	357	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	15.7	0.0	13.8	17.9	0.0	38.6	47.7	49.6	41.2	50.8	52.9
Incr Delay (d2), s/veh	0.5	0.5	0.0	0.2	0.1	0.0	3.0	1.6	3.2	0.9	1.9	8.6
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(-26165%),veh/ln	3.7	6.8	0.0	1.5	5.5	0.0	6.4	7.3	7.5	4.1	5.7	7.3
LnGrp Delay(d),s/veh	12.6	16.2	0.0	14.0	18.0	0.0	41.6	49.3	52.8	42.1	52.7	61.5
LnGrp LOS	B	B		B	B		D	D	D	D	D	E
Approach Vol, veh/h		912			624			648			496	
Approach Delay, s/veh		15.3			17.5			47.9			53.2	
Approach LOS		B			B			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	9.5	76.4	14.8	29.3	14.8	71.1	19.6	24.5
Change Period (Y+Rc), s	4.6	5.0	4.6	4.9	4.6	5.0	4.6	4.9
Max Green Setting (Gmax), s	7.4	57.0	11.4	35.1	22.4	42.0	21.4	25.1
Max Q Clear Time (g_c+I1), s	5.0	15.5	10.3	18.4	9.5	13.2	14.6	17.2
Green Ext Time (p_c), s	0.0	8.7	0.0	3.3	0.7	8.1	0.4	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	215	1119	269	162	815	95	221	210	88	206	141	61
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.96
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	1881	1863	1863	1863	1845	1845	1900	1881	1881	1881
Adj Flow Rate, veh/h	222	1154	0	167	840	0	228	216	91	212	145	63
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	1	1	1
Cap, veh/h	169	1726	748	125	1626	703	292	453	184	245	324	246
Arrive On Green	0.03	0.16	0.00	0.07	0.46	0.00	0.09	0.19	0.19	0.07	0.17	0.16
Sat Flow, veh/h	1792	3574	1599	1774	3539	1583	3408	2416	980	3476	1881	1534
Grp Volume(v), veh/h	222	1154	0	167	840	0	228	154	153	212	145	63
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1774	1770	1583	1704	1752	1643	1738	1881	1534
Q Serve(g_s), s	8.0	25.8	0.0	6.0	14.3	0.0	5.6	6.7	7.1	5.1	5.9	2.4
Cycle Q Clear(g_c), s	8.0	25.8	0.0	6.0	14.3	0.0	5.6	6.7	7.1	5.1	5.9	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.60	1.00		1.00
Lane Grp Cap(c), veh/h	169	1726	748	125	1626	703	292	329	308	245	324	246
V/C Ratio(X)	1.32	0.67	0.00	1.33	0.52	0.00	0.78	0.47	0.49	0.86	0.45	0.26
Avail Cap(c_a), veh/h	169	1726	748	125	1626	703	292	577	541	245	620	487
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	29.3	0.0	39.5	16.3	0.0	38.1	30.8	30.9	39.1	31.5	19.5
Incr Delay (d2), s/veh	168.2	1.4	0.0	194.5	0.3	0.0	11.6	0.4	0.5	24.9	0.4	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(-26165%),veh/ln	11.8	13.1	0.0	9.7	7.1	0.0	3.1	3.3	3.3	3.3	3.1	1.0
LnGrp Delay(d),s/veh	209.4	30.8	0.0	234.0	16.6	0.0	49.7	31.1	31.4	64.0	31.9	19.7
LnGrp LOS	F	C		F	B		D	C	C	E	C	B
Approach Vol, veh/h		1376			1007			535			420	
Approach Delay, s/veh		59.6			52.7			39.1			46.3	
Approach LOS		E			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	10.0	45.1	10.0	19.9	12.0	43.1	11.3	18.7
Change Period (Y+Rc), s	4.6	5.3	4.6	5.0	4.6	5.3	4.6	5.0
Max Green Setting (Gmax), s	5.4	27.7	5.4	27.0	7.4	25.7	5.4	27.0
Max Q Clear Time (g_c+I1), s	8.0	27.8	7.1	9.1	10.0	16.3	7.6	7.9
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6	0.0	7.0	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	12	335	15	5	2	186	253	36	2	226	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1900	1900	1900	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	38	12	345	8	3	1	96	130	19	2	233	19
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	478	14	413	483	364	121	292	427	62	372	462	38
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1792	54	1550	1810	1363	454	1128	1603	234	1250	1732	141
Grp Volume(v), veh/h	38	0	357	8	0	4	96	0	149	2	0	252
Grp Sat Flow(s),veh/h/ln	1792	0	1604	1810	0	1818	1128	0	1837	1250	0	1873
Q Serve(g_s), s	1.0	0.0	12.6	0.2	0.0	0.1	4.7	0.0	3.9	0.1	0.0	6.8
Cycle Q Clear(g_c), s	1.0	0.0	12.6	0.2	0.0	0.1	11.6	0.0	3.9	4.0	0.0	6.8
Prop In Lane	1.00		0.97	1.00		0.25	1.00		0.13	1.00		0.08
Lane Grp Cap(c), veh/h	478	0	428	483	0	485	292	0	490	372	0	500
V/C Ratio(X)	0.08	0.00	0.83	0.02	0.00	0.01	0.33	0.00	0.30	0.01	0.00	0.50
Avail Cap(c_a), veh/h	478	0	428	483	0	485	292	0	490	372	0	500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	20.8	16.2	0.0	16.2	23.5	0.0	17.6	19.1	0.0	18.6
Incr Delay (d2), s/veh	0.3	0.0	17.3	0.1	0.0	0.0	3.0	0.0	1.6	0.0	0.0	3.6
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(-26165%),veh/ln	0.5	0.0	7.6	0.1	0.0	0.1	1.7	0.0	2.2	0.0	0.0	4.0
LnGrp Delay(d),s/veh	16.8	0.0	38.0	16.3	0.0	16.2	26.5	0.0	19.2	19.2	0.0	22.2
LnGrp LOS	B		D	B		B	C		B	B		C
Approach Vol, veh/h		395			12			245			254	
Approach Delay, s/veh		36.0			16.2			22.0			22.2	
Approach LOS		D			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		13.6		14.6		8.8		2.2
Green Ext Time (p_c), s		0.6		0.4		1.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	88	70	100	65	19	238	340	102	74	249	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	43	93	74	105	68	20	251	358	107	78	262	16
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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	1	1	1
Cap, veh/h	443	233	185	374	335	98	768	1547	456	642	1926	117
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	1326	980	779	1235	1410	415	1117	2750	811	932	3423	208
Grp Volume(v), veh/h	43	0	167	105	0	88	251	233	232	78	136	142
Grp Sat Flow(s),veh/h/ln	1326	0	1759	1235	0	1825	1117	1805	1755	932	1787	1844
Q Serve(g_s), s	1.1	0.0	3.2	3.1	0.0	1.5	5.5	2.6	2.7	1.8	1.4	1.5
Cycle Q Clear(g_c), s	2.6	0.0	3.2	6.3	0.0	1.5	6.9	2.6	2.7	4.5	1.4	1.5
Prop In Lane	1.00		0.44	1.00		0.23	1.00		0.46	1.00		0.11
Lane Grp Cap(c), veh/h	443	0	418	374	0	433	768	1016	988	642	1006	1038
V/C Ratio(X)	0.10	0.00	0.40	0.28	0.00	0.20	0.33	0.23	0.23	0.12	0.14	0.14
Avail Cap(c_a), veh/h	659	0	704	575	0	730	768	1016	988	642	1006	1038
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	12.9	15.5	0.0	12.2	5.8	4.4	4.4	5.5	4.1	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.6	0.4	0.0	0.2	1.1	0.5	0.6	0.4	0.3	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(-26165%),veh/ln	0.4	0.0	1.6	1.1	0.0	0.8	1.9	1.4	1.4	0.5	0.8	0.8
LnGrp Delay(d),s/veh	13.4	0.0	13.5	15.9	0.0	12.5	6.9	4.9	5.0	5.9	4.4	4.4
LnGrp LOS	B		B	B		B	A	A	A	A	A	A
Approach Vol, veh/h		210			193			716			356	
Approach Delay, s/veh		13.5			14.3			5.6			4.8	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		26.5		13.5		26.5		13.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		8.9		5.2		6.5		8.3
Green Ext Time (p_c), s		2.9		1.3		3.6		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	374	83	112	200	39	229
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	199	44	119	213	41	244

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	201	0	546	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	345	-
Critical Hdwy	-	-	4.12	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.218	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1371	-	483	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1371	-	440	838
Mov Cap-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	741	-	-	1371	-
HCM Lane V/C Ratio	0.385	-	-	0.087	-
HCM Control Delay (s)	12.9	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.8	-	-	0.3	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	7	68	125	443	235	8
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	8	75	137	487	258	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1026	265	268	0	-	0
Stage 1	264	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	261	776	1302	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	233	775	1301	-	-	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	414	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1301	-	233	775	-	-
HCM Lane V/C Ratio	0.106	-	0.033	0.096	-	-
HCM Control Delay (s)	8.1	-	21	10.1	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	0.3	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	79	25	315	134	15	170
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	130	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	0	0
Mvmt Flow	83	26	332	141	16	179

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	613	402	0	0	473	0
Stage 1	402	-	-	-	-	-
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	459	653	-	-	1099	-
Stage 1	680	-	-	-	-	-
Stage 2	829	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	452	653	-	-	1099	-
Mov Cap-2 Maneuver	452	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	817	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	452	653	1099	-
HCM Lane V/C Ratio	-	-	0.184	0.04	0.014	-
HCM Control Delay (s)	-	-	14.8	10.7	8.3	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	0	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	52	369	184	2	0	21
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	94	94	94	94	94	94
Heavy Vehicles, %	3	3	2	2	0	0
Mvmt Flow	55	393	196	2	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	198	0	-	0	700	197
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	503	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1369	-	-	-	409	849
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	612	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1369	-	-	-	388	849
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1369	-	-	-	849
HCM Lane V/C Ratio	0.04	-	-	-	0.026
HCM Control Delay (s)	7.7	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	126	89	103	316	239	213
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	315	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	135	96	111	340	275	245

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	836	277	275	0	-	0
Stage 1	275	-	-	-	-	-
Stage 2	561	-	-	-	-	-
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	340	767	1294	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	304	766	1292	-	-	-
Mov Cap-2 Maneuver	304	-	-	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	514	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1292	-	304	766	-	-
HCM Lane V/C Ratio	0.086	-	0.446	0.125	-	-
HCM Control Delay (s)	8	0	26	10.4	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	0.3	-	2.2	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	520	1388	87	165	880	65	124	205	126	136	241	241
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		0.99	1.00		0.99	0.97		0.97	0.80		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1845	1845	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	531	1416	89	168	898	66	127	209	129	139	246	0
Adj No. of Lanes	2	3	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	0	0	0
Cap, veh/h	799	2335	147	295	1426	105	234	336	278	252	353	293
Arrive On Green	0.11	0.47	0.46	0.07	0.43	0.42	0.08	0.18	0.18	0.09	0.19	0.00
Sat Flow, veh/h	3476	4937	310	1757	3309	243	1810	1900	1568	1810	1900	1615
Grp Volume(v), veh/h	531	982	523	168	476	488	127	209	129	139	246	0
Grp Sat Flow(s),veh/h/ln	1738	1712	1824	1757	1752	1800	1810	1900	1568	1810	1900	1615
Q Serve(g_s), s	6.8	18.0	18.1	4.6	18.0	18.0	5.5	8.6	4.8	1.6	10.3	0.0
Cycle Q Clear(g_c), s	6.8	18.0	18.1	4.6	18.0	18.0	5.5	8.6	4.8	1.6	10.3	0.0
Prop In Lane	1.00		0.17	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	799	1619	862	295	755	776	234	336	278	252	353	293
V/C Ratio(X)	0.66	0.61	0.61	0.57	0.63	0.63	0.54	0.62	0.46	0.55	0.70	0.00
Avail Cap(c_a), veh/h	817	1619	862	295	755	776	234	581	480	252	559	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.2	16.6	16.7	14.5	18.9	19.0	33.3	32.3	18.7	35.6	32.3	0.0
Incr Delay (d2), s/veh	1.6	1.7	3.2	1.1	1.4	1.4	1.5	1.4	0.9	1.5	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	3.4	8.8	9.8	2.2	9.0	9.3	2.8	4.7	2.1	3.2	5.6	0.0
LnGrp Delay(d),s/veh	15.8	18.3	19.8	15.6	20.3	20.4	34.8	33.7	19.6	37.1	34.2	0.0
LnGrp LOS	B	B	B	B	C	C	C	C	B	D	C	
Approach Vol, veh/h		2036			1132			465			385	
Approach Delay, s/veh		18.0			19.6			30.1			35.3	
Approach LOS		B			B			C			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	10.0	44.2	11.0	19.8	13.6	40.6	11.8	19.0
Change Period (Y+Rc), s	4.6	5.3	4.6	5.0	4.6	5.3	5.0	* 5
Max Green Setting (Gmax), s	5.4	29.7	6.4	24.0	9.4	25.7	5.4	* 25
Max Q Clear Time (g_c+I1), s	6.6	20.1	7.5	12.3	8.8	20.0	3.6	10.6
Green Ext Time (p_c), s	0.0	8.8	0.0	0.5	0.1	5.3	0.2	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	49	1089	876	418	202	79
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	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	1845	1845	1881	1900
Adj Flow Rate, veh/h	52	1159	932	445	150	154
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	3	3	1	0
Cap, veh/h	81	1772	1363	605	620	534
Arrive On Green	0.05	0.50	0.39	0.39	0.35	0.33
Sat Flow, veh/h	1792	3668	3597	1556	1792	1615
Grp Volume(v), veh/h	52	1159	932	445	150	154
Grp Sat Flow(s),veh/h/ln	1792	1787	1752	1556	1792	1615
Q Serve(g_s), s	1.9	15.7	14.4	15.9	3.9	4.6
Cycle Q Clear(g_c), s	1.9	15.7	14.4	15.9	3.9	4.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	81	1772	1363	605	620	534
V/C Ratio(X)	0.64	0.65	0.68	0.74	0.24	0.29
Avail Cap(c_a), veh/h	138	1897	1375	610	620	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	12.2	16.5	17.0	15.2	16.1
Incr Delay (d2), s/veh	2.5	0.7	1.6	5.0	0.9	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.0	7.9	7.2	7.6	2.1	2.2
LnGrp Delay(d),s/veh	33.0	12.9	18.1	22.0	16.1	17.4
LnGrp LOS	C	B	B	C	B	B
Approach Vol, veh/h		1211	1377		304	
Approach Delay, s/veh		13.8	19.3		16.8	
Approach LOS		B	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		36.2			6.9	29.3		26.5
Change Period (Y+Rc), s		5.5			4.6	5.5		5.0
Max Green Setting (Gmax), s		33.0			4.4	24.0		21.5
Max Q Clear Time (g_c+I1), s		17.7			3.9	17.9		6.6
Green Ext Time (p_c), s		13.0			0.0	5.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	842	88	130	734	113	158	56	321	80	35	32
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1845	1845	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	27	886	93	137	773	119	166	59	338	84	37	0
Adj No. of Lanes	1	2	0	1	1	0	1	1	0	1	1	1
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, %	2	2	2	3	3	3	1	1	1	1	1	1
Cap, veh/h	198	1756	184	370	911	140	439	54	312	142	403	338
Arrive On Green	0.03	0.54	0.53	0.07	0.58	0.57	0.07	0.23	0.22	0.05	0.21	0.00
Sat Flow, veh/h	1774	3232	339	1757	1561	240	1792	237	1356	1792	1881	1599
Grp Volume(v), veh/h	27	485	494	137	0	892	166	0	397	84	37	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1802	1757	0	1802	1792	0	1593	1792	1881	1599
Q Serve(g_s), s	1.0	25.5	25.6	4.8	0.0	60.6	10.0	0.0	34.0	5.4	2.3	0.0
Cycle Q Clear(g_c), s	1.0	25.5	25.6	4.8	0.0	60.6	10.0	0.0	34.0	5.4	2.3	0.0
Prop In Lane	1.00		0.19	1.00		0.13	1.00		0.85	1.00		1.00
Lane Grp Cap(c), veh/h	198	962	979	370	0	1051	439	0	366	142	403	338
V/C Ratio(X)	0.14	0.50	0.50	0.37	0.00	0.85	0.38	0.00	1.09	0.59	0.09	0.00
Avail Cap(c_a), veh/h	223	962	979	431	0	1051	439	0	366	145	407	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.67	0.00	0.67	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.1	21.3	21.4	15.4	0.0	25.6	42.4	0.0	57.4	45.4	46.6	0.0
Incr Delay (d2), s/veh	0.1	1.9	1.9	0.2	0.0	6.0	0.2	0.0	71.7	8.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	12.9	13.2	2.3	0.0	31.7	0.6	0.0	22.2	3.0	1.2	0.0
LnGrp Delay(d),s/veh	25.2	23.1	23.3	15.5	0.0	31.5	42.6	0.0	129.2	53.6	46.8	0.0
LnGrp LOS	C	C	C	B		C	D		F	D	D	
Approach Vol, veh/h		1006			1029			563			121	
Approach Delay, s/veh		23.3			29.4			103.6			51.5	
Approach LOS		C			C			F			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	84.4	11.7	38.0	8.0	90.3	14.0	35.7
Change Period (Y+Rc), s	4.6	6.0	4.6	5.0	4.6	6.0	4.6	5.0
Max Green Setting (Gmax), s	14.4	73.0	7.4	33.0	5.4	82.0	9.4	31.0
Max Q Clear Time (g_c+I1), s	6.8	27.6	7.4	36.0	3.0	62.6	12.0	4.3
Green Ext Time (p_c), s	0.1	24.7	0.0	0.0	0.0	14.2	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	410	2	4	366	169	14	29	32	130	5	97
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.98	0.99		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	1863	1863	1900	1845	1845	1900	1900	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	178	436	2	4	389	180	15	31	34	138	5	103
Adj No. of Lanes	1	1	0	1	1	0	0	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	3	3	3	0	0	0	2	2	2
Cap, veh/h	443	987	5	506	535	248	107	145	127	386	13	265
Arrive On Green	0.09	0.53	0.53	0.00	0.45	0.45	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1774	1852	8	1757	1193	552	151	820	717	1313	73	1496
Grp Volume(v), veh/h	178	0	438	4	0	569	80	0	0	138	0	108
Grp Sat Flow(s),veh/h/ln	1774	0	1861	1757	0	1744	1688	0	0	1313	0	1568
Q Serve(g_s), s	2.5	0.0	7.6	0.1	0.0	14.2	0.0	0.0	0.0	2.3	0.0	3.2
Cycle Q Clear(g_c), s	2.5	0.0	7.6	0.1	0.0	14.2	2.1	0.0	0.0	4.4	0.0	3.2
Prop In Lane	1.00		0.00	1.00		0.32	0.19		0.42	1.00		0.95
Lane Grp Cap(c), veh/h	443	0	992	506	0	783	380	0	0	386	0	278
V/C Ratio(X)	0.40	0.00	0.44	0.01	0.00	0.73	0.21	0.00	0.00	0.36	0.00	0.39
Avail Cap(c_a), veh/h	1137	0	1392	1341	0	1305	1152	0	0	1011	0	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	7.6	8.1	0.0	12.0	18.8	0.0	0.0	19.6	0.0	19.3
Incr Delay (d2), s/veh	0.6	0.0	0.3	0.0	0.0	1.3	0.3	0.0	0.0	0.6	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.3	0.0	4.0	0.0	0.0	7.1	1.0	0.0	0.0	1.9	0.0	1.4
LnGrp Delay(d),s/veh	9.1	0.0	7.9	8.1	0.0	13.3	19.1	0.0	0.0	20.2	0.0	20.2
LnGrp LOS	A		A	A		B	B			C		C
Approach Vol, veh/h		616			573			80			246	
Approach Delay, s/veh		8.2			13.2			19.1			20.2	
Approach LOS		A			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.2	29.1		14.7	4.8	33.6		14.7
Change Period (Y+Rc), s	4.6	5.3		5.3	4.6	5.3		5.3
Max Green Setting (Gmax), s	25.4	39.7		34.7	25.4	39.7		34.7
Max Q Clear Time (g_c+I1), s	4.5	16.2		4.1	2.1	9.6		6.4
Green Ext Time (p_c), s	0.5	7.6		1.5	0.0	8.2		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	42	166	681	458	7
Conflicting Peds, #/hr	0	0	1	0	0	1
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, %	2	2	3	3	5	5
Mvmt Flow	3	45	177	724	487	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1569	492	495	0	-	0
Stage 1	491	-	-	-	-	-
Stage 2	1078	-	-	-	-	-
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	122	577	1064	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	88	577	1063	-	-	-
Mov Cap-2 Maneuver	88	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	236	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1063	-	421	-	-
HCM Lane V/C Ratio	0.166	-	0.114	-	-
HCM Control Delay (s)	9.1	0	14.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.6	-	0.4	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	23	36	86	405	174	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	25	39	93	440	189	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	820	193	198	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	341	841	1381	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	527	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	318	841	1381	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	492	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1381	-	512	-	-
HCM Lane V/C Ratio	0.068	-	0.125	-	-
HCM Control Delay (s)	7.8	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	1	6	26	1	23	11	280	28	23	293	30
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	100	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	8	8	8	2	2	2	3	3	3	3	3	3
Mvmt Flow	32	1	6	28	1	24	12	298	30	24	312	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	730	732	331	720	733	316	346	0	0	330	0	0
Stage 1	379	379	-	338	338	-	-	-	-	-	-	-
Stage 2	351	353	-	382	395	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.12	6.52	6.22	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.518	4.018	3.318	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	330	341	697	343	348	724	1207	-	-	1224	-	-
Stage 1	631	604	-	676	641	-	-	-	-	-	-	-
Stage 2	653	620	-	640	605	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	310	330	695	331	337	722	1206	-	-	1223	-	-
Mov Cap-2 Maneuver	310	330	-	331	337	-	-	-	-	-	-	-
Stage 1	624	591	-	668	634	-	-	-	-	-	-	-
Stage 2	623	613	-	620	592	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.6	13.8	0.3	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1206	-	-	310	600	331	689	1223	-	-
HCM Lane V/C Ratio	0.01	-	-	0.103	0.012	0.084	0.037	0.02	-	-
HCM Control Delay (s)	8	-	-	17.9	11.1	16.9	10.4	8	-	-
HCM Lane LOS	A	-	-	C	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0.3	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	18	31	723	422	12
Conflicting Peds, #/hr	0	0	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	3	3	4	4
Mvmt Flow	2	19	32	753	440	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1264	449	452	0	-	0
Stage 1	446	-	-	-	-	-
Stage 2	818	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	189	614	1103	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	180	612	1100	-	-	-
Mov Cap-2 Maneuver	180	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	415	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.6	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1100	-	494	-	-
HCM Lane V/C Ratio	0.029	-	0.042	-	-
HCM Control Delay (s)	8.4	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	2	4	18	4	15	12	630	56	24	441	12
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	5	5	5	3	3	3	4	4	4
Mvmt Flow	4	2	4	18	4	15	12	643	57	24	450	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1211	1229	459	1204	1207	674	462	0	0	700	0	0
Stage 1	505	505	-	696	696	-	-	-	-	-	-	-
Stage 2	706	724	-	508	511	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.13	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.227	-	-	2.236	-	-
Pot Cap-1 Maneuver	161	179	606	159	181	449	1094	-	-	888	-	-
Stage 1	553	544	-	427	439	-	-	-	-	-	-	-
Stage 2	430	433	-	542	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	147	171	604	151	173	448	1091	-	-	886	-	-
Mov Cap-2 Maneuver	147	171	-	151	173	-	-	-	-	-	-	-
Stage 1	543	529	-	419	431	-	-	-	-	-	-	-
Stage 2	403	425	-	520	518	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.2	25.9	0.1	0.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1091	-	-	220	210	886	-	-
HCM Lane V/C Ratio	0.011	-	-	0.046	0.18	0.028	-	-
HCM Control Delay (s)	8.3	0	-	22.2	25.9	9.2	-	-
HCM Lane LOS	A	A	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	42	73	66	26	0
Conflicting Peds, #/hr	3	0	0	3	4	10
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	86	86	86	86	86	86
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	3	49	85	77	30	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	189	136
Stage 1	-	-	-	-	133	-
Stage 2	-	-	-	-	56	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1405	-	-	-	805	918
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	972	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1401	-	-	-	790	908
Mov Cap-2 Maneuver	-	-	-	-	790	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	962	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1401	-	-	-	790
HCM Lane V/C Ratio	0.002	-	-	-	0.038
HCM Control Delay (s)	7.6	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	26	101	301	24	114	211
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	89	89	91	91
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	29	111	338	27	125	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	834	355	0	0	365	0
Stage 1	352	-	-	-	-	-
Stage 2	482	-	-	-	-	-
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	341	693	-	-	1199	-
Stage 1	716	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	299	691	-	-	1196	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	2.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	545	1196	-
HCM Lane V/C Ratio	-	-	0.256	0.105	-
HCM Control Delay (s)	-	-	13.9	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0.4	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	95	15	62	4	7	46	33	435	13	27	412	97
Conflicting Peds, #/hr	1	0	0	0	0	1	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	165	-	-	125	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	5	5	5	3	3	3	3	3	3
Mvmt Flow	104	16	68	4	8	51	36	478	14	30	453	107

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1154	1132	510	1168	1179	489	560	0	0	493	0	0
Stage 1	566	566	-	559	559	-	-	-	-	-	-	-
Stage 2	588	566	-	609	620	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.15	6.55	6.25	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.545	4.045	3.345	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	175	204	565	168	188	573	1006	-	-	1065	-	-
Stage 1	511	509	-	508	506	-	-	-	-	-	-	-
Stage 2	497	509	-	477	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	191	563	134	176	571	1003	-	-	1062	-	-
Mov Cap-2 Maneuver	268	304	-	247	287	-	-	-	-	-	-	-
Stage 1	492	494	-	489	487	-	-	-	-	-	-	-
Stage 2	429	490	-	393	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.8	13.8	0.6	0.4
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1003	-	-	335	471	1062	-	-
HCM Lane V/C Ratio	0.036	-	-	0.564	0.133	0.028	-	-
HCM Control Delay (s)	8.7	-	-	28.8	13.8	8.5	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.3	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	394	9	12	233	5	6	0	27	9	0	21
Conflicting Peds, #/hr	0	0	2	2	0	0	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	125	-	-	50	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	410	9	12	243	5	6	0	28	9	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	421	0	0	569	696	213	483	698	127
Stage 1	-	-	-	-	-	-	422	422	-	271	271	-
Stage 2	-	-	-	-	-	-	147	274	-	212	427	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1328	-	-	1149	-	-	409	368	798	471	367	906
Stage 1	-	-	-	-	-	-	585	592	-	717	689	-
Stage 2	-	-	-	-	-	-	847	687	-	776	589	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	1147	-	-	394	362	796	449	361	904
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	362	-	449	361	-
Stage 1	-	-	-	-	-	-	583	590	-	715	681	-
Stage 2	-	-	-	-	-	-	816	679	-	746	587	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	10.7	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	671	1326	-	-	1147	-	-	449	904
HCM Lane V/C Ratio	0.051	0.002	-	-	0.011	-	-	0.021	0.024
HCM Control Delay (s)	10.7	7.7	-	-	8.2	-	-	13.2	9.1
HCM Lane LOS	B	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	9	115	202	122	61	67
Conflicting Peds, #/hr	0	0	0	0	0	1
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	86	86	86	86	80	80
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	10	134	235	142	76	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	378	0	-	0	462	307
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	155	-
Critical Hdwy	4.11	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1186	-	-	-	562	738
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1186	-	-	-	556	737
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	869	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1186	-	-	-	638
HCM Lane V/C Ratio	0.009	-	-	-	0.251
HCM Control Delay (s)	8.1	0	-	-	12.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	219	22	14	224	25	24
Conflicting Peds, #/hr	0	4	4	0	3	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	96	96	89	89	64	64
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	228	23	16	252	39	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	254	0	526	247
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	283	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1317	-	514	794
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1313	-	504	789
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	612	-	-	1313	-
HCM Lane V/C Ratio	0.125	-	-	0.012	-
HCM Control Delay (s)	11.7	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	170	2	119	2	2	21	76	303	1	10	185	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	75	75	75	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	5	5	5
Mvmt Flow	202	2	142	3	3	28	84	337	1	12	215	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	577	745	220	816	744	174	215	0	0	338	0	0
Stage 1	238	238	-	506	506	-	-	-	-	-	-	-
Stage 2	339	507	-	310	238	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.3	6.5	6.9	4.12	-	-	4.2	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.5	4	3.3	2.218	-	-	2.25	-	-
Pot Cap-1 Maneuver	413	342	819	285	345	846	1355	-	-	1197	-	-
Stage 1	765	708	-	522	543	-	-	-	-	-	-	-
Stage 2	650	538	-	705	712	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	368	312	816	217	315	842	1349	-	-	1192	-	-
Mov Cap-2 Maneuver	368	312	-	217	315	-	-	-	-	-	-	-
Stage 1	706	700	-	482	501	-	-	-	-	-	-	-
Stage 2	575	497	-	571	703	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.6	11.2	1.7	0.3
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1349	-	-	474	617	1192	-	-
HCM Lane V/C Ratio	0.063	-	-	0.731	0.054	0.01	-	-
HCM Control Delay (s)	7.8	0.2	-	30.6	11.2	8.1	0	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	5.9	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	536	5	10	395	10	2	1	2	2	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	30	-	-	30	-	-	-	-	-	-
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	5	583	5	11	429	11	2	1	2	2	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	429	0	0	583	0	0	1046	1044	583	1046	1044	429
Stage 1	-	-	-	-	-	-	593	593	-	451	451	-
Stage 2	-	-	-	-	-	-	453	451	-	595	593	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1130	-	-	991	-	-	206	229	512	206	229	626
Stage 1	-	-	-	-	-	-	492	493	-	588	571	-
Stage 2	-	-	-	-	-	-	586	571	-	491	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1130	-	-	991	-	-	201	224	512	201	224	626
Mov Cap-2 Maneuver	-	-	-	-	-	-	201	224	-	201	224	-
Stage 1	-	-	-	-	-	-	489	490	-	584	562	-
Stage 2	-	-	-	-	-	-	574	562	-	484	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	18.5	17.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	273	1130	-	-	991	-	-	284
HCM Lane V/C Ratio	0.02	0.005	-	-	0.011	-	-	0.019
HCM Control Delay (s)	18.5	8.2	0	-	8.7	0	-	17.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Preferred Alternative Synchro Output

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	93	2	300	225	2	160
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	180	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	1	1	4	4
Mvmt Flow	107	2	345	259	2	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	663	474	0	0	603	0
Stage 1	474	-	-	-	-	-
Stage 2	189	-	-	-	-	-
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	429	595	-	-	965	-
Stage 1	630	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	428	595	-	-	965	-
Mov Cap-2 Maneuver	428	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	431	965	-
HCM Lane V/C Ratio	-	-	0.253	0.002	-
HCM Control Delay (s)	-	-	16.2	8.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	758	200	109	845	240	310	286	181	107	100	56
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		1.00	1.00		1.00	0.99		0.97	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	1863	1863	1863	1827	1827	1827	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	25	824	217	118	918	261	337	311	197	116	109	61
Adj No. of Lanes	1	1	1	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, %	2	2	2	4	4	4	1	1	1	0	0	0
Cap, veh/h	117	923	784	196	960	815	400	367	233	133	391	219
Arrive On Green	0.02	0.50	0.50	0.05	0.53	0.53	0.35	0.35	0.34	0.35	0.35	0.34
Sat Flow, veh/h	1774	1863	1582	1740	1827	1551	1215	1063	674	906	1131	633
Grp Volume(v), veh/h	25	824	217	118	918	261	337	0	508	116	0	170
Grp Sat Flow(s),veh/h/ln	1774	1863	1582	1740	1827	1551	1215	0	1737	906	0	1764
Q Serve(g_s), s	0.8	44.0	8.8	3.6	52.7	10.6	30.3	0.0	29.8	8.2	0.0	7.7
Cycle Q Clear(g_c), s	0.8	44.0	8.8	3.6	52.7	10.6	38.0	0.0	29.8	38.0	0.0	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.36
Lane Grp Cap(c), veh/h	117	923	784	196	960	815	400	0	600	133	0	609
V/C Ratio(X)	0.21	0.89	0.28	0.60	0.96	0.32	0.84	0.00	0.85	0.87	0.00	0.28
Avail Cap(c_a), veh/h	178	923	784	196	960	815	400	0	600	133	0	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	25.1	16.2	24.0	24.9	14.9	40.0	0.0	33.5	52.6	0.0	26.2
Incr Delay (d2), s/veh	0.3	12.8	0.9	3.6	20.2	1.0	16.2	0.0	11.8	42.0	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(-26165%),veh/ln	0.4	25.7	4.0	2.0	31.9	4.7	12.0	0.0	16.2	5.1	0.0	3.8
LnGrp Delay(d),s/veh	25.9	37.9	17.1	27.6	45.1	15.9	56.2	0.0	45.3	94.6	0.0	26.4
LnGrp LOS	C	D	B	C	D	B	E		D	F		C
Approach Vol, veh/h		1066			1297			845			286	
Approach Delay, s/veh		33.4			37.7			49.6			54.1	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	58.5		42.0	6.2	61.8		42.0
Change Period (Y+Rc), s	4.6	6.0		5.0	4.6	6.0		5.0
Max Green Setting (Gmax), s	4.9	52.5		37.0	5.4	52.0		37.0
Max Q Clear Time (g_c+I1), s	5.6	46.0		40.0	2.8	54.7		40.0
Green Ext Time (p_c), s	0.0	5.9		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.6
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	35	9	35	43	12	275	26	425	37	48	260	50
Conflicting Peds, #/hr	0	0	0	0	0	0	13	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	0	-	-	80	-	-	125	-	-	125	-	-
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, %	0	0	0	1	1	1	2	2	2	6	6	2
Mvmt Flow	39	10	39	48	13	309	29	478	42	54	292	56

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	732	1006	187	816	1013	260	348	0	0	519	0	0
Stage 1	428	428	-	557	557	-	-	-	-	-	-	-
Stage 2	304	578	-	259	456	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.52	6.52	6.92	4.14	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.52	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.51	4.01	3.31	2.22	-	-	2.26	-	-
Pot Cap-1 Maneuver	313	243	830	270	239	742	1208	-	-	1016	-	-
Stage 1	581	588	-	485	513	-	-	-	-	-	-	-
Stage 2	686	504	-	726	569	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	225	821	231	221	742	1195	-	-	1016	-	-
Mov Cap-2 Maneuver	164	225	-	231	221	-	-	-	-	-	-	-
Stage 1	567	557	-	473	501	-	-	-	-	-	-	-
Stage 2	380	492	-	636	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.9	16.4	0.4	1.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1195	-	-	164	532	231	675	1016	-	-
HCM Lane V/C Ratio	0.024	-	-	0.24	0.093	0.209	0.478	0.053	-	-
HCM Control Delay (s)	8.1	-	-	33.7	12.5	24.7	15.1	8.7	-	-
HCM Lane LOS	A	-	-	D	B	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.3	0.8	2.6	0.2	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	183	68	400	63	43	271
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	175	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	201	75	440	69	47	298

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	718	256	0	0	510	0
Stage 1	475	-	-	-	-	-
Stage 2	243	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.14	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.22	-
Pot Cap-1 Maneuver	368	749	-	-	1051	-
Stage 1	597	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	351	748	-	-	1050	-
Mov Cap-2 Maneuver	351	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	745	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.4	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	351	748	1050	-
HCM Lane V/C Ratio	-	-	0.573	0.1	0.045	-
HCM Control Delay (s)	-	-	28.2	10.3	8.6	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	3.4	0.3	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	9	15	15	5	22	6	422	36	64	374	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	18	10	16	16	5	24	7	464	40	70	411	18
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	2	2	2	2	2	2
Cap, veh/h	725	263	421	729	114	548	484	1319	113	448	1382	60
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1401	659	1054	1405	285	1370	953	3297	283	889	3454	151
Grp Volume(v), veh/h	18	0	26	16	0	29	7	248	256	70	210	219
Grp Sat Flow(s),veh/h/ln	1401	0	1712	1405	0	1656	953	1770	1811	889	1770	1835
Q Serve(g_s), s	0.3	0.0	0.4	0.3	0.0	0.4	0.2	3.9	3.9	2.4	3.2	3.3
Cycle Q Clear(g_c), s	0.7	0.0	0.4	0.7	0.0	0.4	3.5	3.9	3.9	6.3	3.2	3.3
Prop In Lane	1.00		0.62	1.00		0.83	1.00		0.16	1.00		0.08
Lane Grp Cap(c), veh/h	725	0	685	729	0	662	484	708	724	448	708	734
V/C Ratio(X)	0.02	0.00	0.04	0.02	0.00	0.04	0.01	0.35	0.35	0.16	0.30	0.30
Avail Cap(c_a), veh/h	725	0	685	729	0	662	484	708	724	448	708	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.6	0.0	7.3	7.5	0.0	7.3	9.4	8.4	8.4	10.6	8.2	8.2
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.1	0.1	1.4	1.3	0.7	1.1	1.0
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(-26165%),veh/ln	0.1	0.0	0.2	0.1	0.0	0.2	0.1	2.1	2.2	0.7	1.8	1.9
LnGrp Delay(d),s/veh	7.6	0.0	7.4	7.6	0.0	7.5	9.4	9.7	9.7	11.3	9.2	9.2
LnGrp LOS	A		A	A		A	A	A	A	B	A	A
Approach Vol, veh/h		44			45			511			499	
Approach Delay, s/veh		7.5			7.5			9.7			9.5	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.0		20.0		20.0		20.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		5.9		2.7		8.3		2.7
Green Ext Time (p_c), s		3.3		0.2		2.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	37	18	40	13	58	18	422	84	94	363	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1792	1792	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	18	46	22	50	16	72	22	528	105	118	454	8
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	6	6	6	3	3	3	3	3	3
Cap, veh/h	502	379	181	511	90	403	526	931	184	486	1268	22
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.08	0.32	0.32	0.12	0.36	0.36
Sat Flow, veh/h	1282	1183	566	1256	280	1260	1757	2910	576	1757	3523	62
Grp Volume(v), veh/h	18	0	68	50	0	88	22	317	316	118	226	236
Grp Sat Flow(s),veh/h/ln	1282	0	1749	1256	0	1540	1757	1752	1733	1757	1752	1833
Q Serve(g_s), s	0.5	0.0	1.4	1.5	0.0	2.1	0.4	7.5	7.6	2.0	4.7	4.7
Cycle Q Clear(g_c), s	2.6	0.0	1.4	2.8	0.0	2.1	0.4	7.5	7.6	2.0	4.7	4.7
Prop In Lane	1.00		0.32	1.00		0.82	1.00		0.33	1.00		0.03
Lane Grp Cap(c), veh/h	502	0	560	511	0	493	526	561	555	486	631	660
V/C Ratio(X)	0.04	0.00	0.12	0.10	0.00	0.18	0.04	0.57	0.57	0.24	0.36	0.36
Avail Cap(c_a), veh/h	502	0	560	511	0	493	526	561	555	486	631	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	12.0	13.0	0.0	12.3	9.2	14.1	14.1	9.1	11.8	11.8
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.4	0.0	0.8	0.1	4.1	4.2	1.2	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	0.0	0.7	0.6	0.0	1.0	0.2	4.2	4.2	1.1	2.5	2.6
LnGrp Delay(d),s/veh	13.3	0.0	12.5	13.4	0.0	13.1	9.3	18.2	18.3	10.3	13.3	13.3
LnGrp LOS	B		B	B		B	A	B	B	B	B	B
Approach Vol, veh/h		86			138			655			580	
Approach Delay, s/veh		12.6			13.2			18.0			12.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	20.0		20.0	8.0	22.0		20.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	6.0	16.0		16.0	4.0	18.0		16.0
Max Q Clear Time (g_c+I1), s	4.0	9.6		4.6	2.4	6.7		4.8
Green Ext Time (p_c), s	0.1	2.6		0.7	0.0	3.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	22	203	149	75	76	13
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	24	226	166	83	84	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	249	0	-	0	481	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	274	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1328	-	-	-	548	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1328	-	-	-	536	839
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	761	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1328	-	-	-	566
HCM Lane V/C Ratio	0.018	-	-	-	0.175
HCM Control Delay (s)	7.8	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Intersection Delay, s/veh	38.7
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	56	167	53	0	52	145	115	0	96	422	74
Peak Hour Factor	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.92	0.91	0.91	0.91
Heavy Vehicles, %	2	1	1	1	2	0	0	0	2	1	1	1
Mvmt Flow	0	62	184	58	0	57	159	126	0	105	464	81
Number of Lanes	0	0	1	1	0	0	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	2
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	2	2	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	2	2	2
HCM Control Delay	22.3	18.7	62.4
HCM LOS	C	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	25%	0%	26%	0%	100%	0%
Vol Thru, %	0%	85%	75%	0%	74%	0%	0%	84%
Vol Right, %	0%	15%	0%	100%	0%	100%	0%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	496	223	53	197	115	114	320
LT Vol	96	0	56	0	52	0	114	0
Through Vol	0	422	167	0	145	0	0	270
RT Vol	0	74	0	53	0	115	0	50
Lane Flow Rate	105	545	245	58	216	126	125	352
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.257	1	0.609	0.131	0.536	0.284	0.307	0.802
Departure Headway (Hd)	8.773	8.146	8.949	8.125	8.907	8.077	8.817	8.207
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	409	447	404	442	405	446	408	443
Service Time	6.531	5.905	6.689	5.865	6.645	5.815	6.558	5.948
HCM Lane V/C Ratio	0.257	1.219	0.606	0.131	0.533	0.283	0.306	0.795
HCM Control Delay	14.6	71.7	24.7	12.1	21.5	14	15.4	36.8
HCM Lane LOS	B	F	C	B	C	B	C	E
HCM 95th-tile Q	1	12.8	3.9	0.4	3.1	1.2	1.3	7.3

Intersection	
Intersection Delay, s/veh	46.7
Intersection LOS	E

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Vol, veh/h	0	65	237	0	386	629	0	372	71
Peak Hour Factor	0.92	0.89	0.89	0.92	0.89	0.89	0.92	0.89	0.89
Heavy Vehicles, %	2	1	1	2	2	2	2	2	2
Mvmt Flow	0	73	266	0	434	707	0	418	80
Number of Lanes	0	0	1	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	22.4	54	46.6
HCM LOS	C	F	E

Lane	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	22%	0%	0%	84%
Vol Thru, %	78%	100%	0%	0%
Vol Right, %	0%	0%	100%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	302	386	629	443
LT Vol	65	0	0	372
Through Vol	237	386	0	0
RT Vol	0	0	629	71
Lane Flow Rate	339	434	707	498
Geometry Grp	5	7	7	2
Degree of Util (X)	0.658	0.859	1	0.916
Departure Headway (Hd)	6.986	7.133	6.415	6.624
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	519	512	572	548
Service Time	4.986	4.845	4.127	4.688
HCM Lane V/C Ratio	0.653	0.848	1.236	0.909
HCM Control Delay	22.4	39.5	62.9	46.6
HCM Lane LOS	C	E	F	E
HCM 95th-tile Q	4.7	9.1	14.5	11.1

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	310	299	498	898	0	0	0	0	35	0	117
Conflicting Peds, #/hr	3	0	0	0	0	3	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	-	-	-	-	-	-	-	-	-	-	-	75
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	0	0	0	1	1	1
Mvmt Flow	0	337	325	541	976	0	0	0	0	38	0	127

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	976	0	0	662	0	0	2558	2721	979
Stage 1	-	-	-	-	-	-	2059	2059	-
Stage 2	-	-	-	-	-	-	499	662	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.509	4.009	3.309
Pot Cap-1 Maneuver	707	-	-	927	-	-	~ 29	21	305
Stage 1	-	-	-	-	-	-	108	98	-
Stage 2	-	-	-	-	-	-	612	461	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	705	-	-	925	-	-	~ 29	0	304
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 29	0	-
Stage 1	-	-	-	-	-	-	108	0	-
Stage 2	-	-	-	-	-	-	612	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.1	129.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	705	-	-	925	-	-	29	304
HCM Lane V/C Ratio	-	-	-	0.585	-	-	1.312	0.418
HCM Control Delay (s)	0	-	-	14.2	0	-	$ 479	25.1
HCM Lane LOS	A	-	-	B	A	-	F	D
HCM 95th %tile Q(veh)	0	-	-	3.9	-	-	4.4	2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

MOVEMENT SUMMARY

Site: #11 Alt 1 SR 522 RAB

Roundabout with 5 legs, and 1-lane approaches and circulating road

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tester Rd											
3	L	228	3.0	1.726	366.1	LOS F	82.3	2107.0	1.00	4.81	3.7
8	T	120	3.0	1.726	366.1	LOS F	82.3	2107.0	1.00	4.81	3.4
18	R	229	3.0	1.726	366.1	LOS F	82.3	2107.0	1.00	4.81	3.4
Approach		577	3.0	1.726	366.1	LOS F	82.3	2107.0	1.00	4.81	3.5
East: 164th St SE											
1	L	80	3.0	0.928	51.9	LOS F	10.6	269.2	0.94	1.44	15.4
6	T	823	2.0	0.928	51.9	LOS F	10.6	269.3	0.94	1.40	15.3
16	R	49	3.0	0.928	51.9	LOS F	10.6	269.3	0.94	1.42	15.2
Approach		952	2.1	0.928	51.9	LOS F	10.6	269.3	0.94	1.41	15.3
West: 164th St SE											
5	L	60	3.0	0.182	5.2	LOS A	0.7	18.2	0.21	0.81	28.2
2	T	243	2.0	0.182	5.2	LOS A	0.7	18.2	0.21	0.34	31.8
12	R	67	3.0	0.182	5.2	LOS A	0.7	18.2	0.21	0.48	30.9
Approach		371	2.3	0.182	5.2	LOS A	0.7	18.2	0.21	0.44	30.9
South West: SR 522 NB Off Ramp											
5X	L	474	2.0	0.892	34.1	LOS D	10.1	256.3	0.92	1.21	18.4
2X	T	886	2.0	0.892	33.7	LOS D	10.1	256.3	0.91	1.14	19.1
12X	R	53	3.0	0.892	33.6	LOS D	9.7	246.4	0.90	1.17	19.0
Approach		1413	2.0	0.892	33.8	LOS D	10.1	256.3	0.91	1.17	18.8
All Vehicles		3313	2.3	1.726	93.7	LOS F	82.3	2107.0	0.86	1.79	10.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Model used. Geometric Delay not included.

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

Intersection	
Int Delay, s/veh	18

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1071	46	66	756	92	119
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	1	1	4	4
Mvmt Flow	1164	50	72	822	100	129

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1214	0	2154	1190
Stage 1	-	-	-	-	1189	-
Stage 2	-	-	-	-	965	-
Critical Hdwy	-	-	4.11	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.209	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	578	-	~ 52	226
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	578	-	~ 45	226
Mov Cap-2 Maneuver	-	-	-	-	159	-
Stage 1	-	-	-	-	286	-
Stage 2	-	-	-	-	321	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	179.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	578	-
HCM Lane V/C Ratio	1.201	-	-	0.124	-
HCM Control Delay (s)	179.6	-	-	12.1	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	12	-	-	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	146	833	143	27	624	125	126	107	23	86	69	96
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1845	1845	1845	1900	1863	1900	1900	1881	1900
Adj Flow Rate, veh/h	155	886	152	29	664	133	134	114	24	91	73	102
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	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, %	1	1	1	3	3	3	2	2	2	1	1	1
Cap, veh/h	378	985	169	167	1162	982	211	156	29	164	126	144
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	685	1564	268	536	1845	1559	586	630	118	423	511	581
Grp Volume(v), veh/h	155	0	1038	29	664	133	272	0	0	266	0	0
Grp Sat Flow(s),veh/h/ln	685	0	1832	536	1845	1559	1334	0	0	1516	0	0
Q Serve(g_s), s	13.8	0.0	39.4	4.0	16.9	2.8	3.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	30.7	0.0	39.4	43.4	16.9	2.8	16.1	0.0	0.0	12.9	0.0	0.0
Prop In Lane	1.00		0.15	1.00		1.00	0.49		0.09	0.34		0.38
Lane Grp Cap(c), veh/h	378	0	1154	167	1162	982	396	0	0	434	0	0
V/C Ratio(X)	0.41	0.00	0.90	0.17	0.57	0.14	0.69	0.00	0.00	0.61	0.00	0.00
Avail Cap(c_a), veh/h	392	0	1193	178	1201	1015	518	0	0	562	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.6	0.0	12.9	31.4	8.7	6.1	29.1	0.0	0.0	27.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	9.2	0.5	0.6	0.1	2.5	0.0	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	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	2.7	0.0	22.6	0.6	8.7	1.2	6.1	0.0	0.0	5.6	0.0	0.0
LnGrp Delay(d),s/veh	18.3	0.0	22.1	31.8	9.3	6.2	31.6	0.0	0.0	29.1	0.0	0.0
LnGrp LOS	B		C	C	A	A	C			C		
Approach Vol, veh/h		1193			826			272			266	
Approach Delay, s/veh		21.6			9.6			31.6			29.1	
Approach LOS		C			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		25.1		56.3		25.1		56.3
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		27.0		53.0		27.0		53.0
Max Q Clear Time (g_c+I1), s		18.1		41.4		14.9		45.4
Green Ext Time (p_c), s		1.7		8.4		2.0		5.9

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	11.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	182	8	609	300	3	512
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	-	-	30	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	192	8	641	316	3	539

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1186	647	0	0	641	0
Stage 1	641	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	208	471	-	-	948	-
Stage 1	525	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	206	469	-	-	943	-
Mov Cap-2 Maneuver	206	-	-	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	96.4	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	211	943	-
HCM Lane V/C Ratio	-	-	0.948	0.003	-
HCM Control Delay (s)	-	-	96.4	8.8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	8	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	505	37	5	370	55	83	437	192	83	358	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.85	1.00	1.00	0.85
Adj Sat Flow, veh/h/ln	1710	1710	1710	1710	1660	1710	1660	1660	1710	1660	1660	1710
Adj Flow Rate, veh/h	67	521	38	5	381	57	86	451	198	86	369	98
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	62	357	516	28	356	53	221	407	179	104	471	125
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.43	0.03	0.44	0.43	0.03	0.44	0.43
Sat Flow, veh/h	71	814	1177	0	812	120	1581	929	408	1581	1074	285
Grp Volume(v), veh/h	588	0	38	443	0	0	86	0	649	86	0	467
Grp Sat Flow(s),veh/h/ln	886	0	1177	932	0	0	1581	0	1336	1581	0	1359
Q Serve(g_s), s	0.0	0.0	2.4	0.0	0.0	0.0	4.0	0.0	57.0	4.0	0.0	38.3
Cycle Q Clear(g_c), s	57.0	0.0	2.4	57.0	0.0	0.0	4.0	0.0	57.0	4.0	0.0	38.3
Prop In Lane	0.11		1.00	0.01		0.13	1.00		0.31	1.00		0.21
Lane Grp Cap(c), veh/h	419	0	516	437	0	0	221	0	586	104	0	596
V/C Ratio(X)	1.40	0.00	0.07	1.01	0.00	0.00	0.39	0.00	1.11	0.83	0.00	0.78
Avail Cap(c_a), veh/h	419	0	516	437	0	0	221	0	586	104	0	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	21.2	39.2	0.0	0.0	25.8	0.0	36.7	31.9	0.0	31.4
Incr Delay (d2), s/veh	195.0	0.0	0.1	46.8	0.0	0.0	0.4	0.0	70.2	37.8	0.0	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	37.7	0.0	0.8	20.3	0.0	0.0	1.7	0.0	32.4	2.8	0.0	15.9
LnGrp Delay(d),s/veh	229.8	0.0	21.2	86.0	0.0	0.0	26.2	0.0	106.9	69.7	0.0	41.3
LnGrp LOS	F		C	F			C		F	E		D
Approach Vol, veh/h		626			443			735			553	
Approach Delay, s/veh		217.2			86.0			97.5			45.7	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	61.0		61.0	8.0	61.0		61.0
Change Period (Y+Rc), s	5.0	5.3		5.0	5.0	5.3		5.0
Max Green Setting (Gmax), s	3.0	55.7		56.0	3.0	55.7		56.0
Max Q Clear Time (g_c+I1), s	6.0	59.0		59.0	6.0	40.3		59.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	6.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	115.0
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	235	1083	126	89	799	156	250	312	211	201	206	313
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1863	1863	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	247	1140	0	94	841	0	263	328	222	212	217	329
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	2	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, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	382	1529	0	255	1357	0	291	449	364	324	427	380
Arrive On Green	0.10	0.43	0.00	0.06	0.38	0.00	0.10	0.24	0.23	0.10	0.24	0.23
Sat Flow, veh/h	1792	3668	0	1774	3632	0	1792	1881	1591	1792	1787	1591
Grp Volume(v), veh/h	247	1140	0	94	841	0	263	328	222	212	217	329
Grp Sat Flow(s),veh/h/ln	1792	1787	0	1774	1770	0	1792	1881	1591	1792	1787	1591
Q Serve(g_s), s	7.2	24.1	0.0	2.8	17.3	0.0	9.0	14.5	11.3	8.0	9.5	17.9
Cycle Q Clear(g_c), s	7.2	24.1	0.0	2.8	17.3	0.0	9.0	14.5	11.3	8.0	9.5	17.9
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	382	1529	0	255	1357	0	291	449	364	324	427	380
V/C Ratio(X)	0.65	0.75	0.00	0.37	0.62	0.00	0.90	0.73	0.61	0.66	0.51	0.87
Avail Cap(c_a), veh/h	382	1529	0	275	1357	0	291	460	373	324	437	389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	21.6	0.0	18.0	22.4	0.0	27.3	31.6	31.1	24.1	29.7	33.3
Incr Delay (d2), s/veh	3.8	3.4	0.0	0.9	0.9	0.0	29.2	5.7	2.8	4.3	0.9	17.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	3.8	12.6	0.0	1.4	8.6	0.0	7.3	8.2	5.2	4.3	4.8	9.8
LnGrp Delay(d),s/veh	20.1	25.0	0.0	18.9	23.4	0.0	56.5	37.3	33.9	28.4	30.6	51.2
LnGrp LOS	C	C		B	C		E	D	C	C	C	D
Approach Vol, veh/h		1387			935			813			758	
Approach Delay, s/veh		24.1			22.9			42.6			38.9	
Approach LOS		C			C			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	9.0	42.5	13.0	25.5	13.0	38.5	13.0	25.5
Change Period (Y+Rc), s	4.6	5.0	4.6	4.9	4.6	5.0	4.6	4.9
Max Green Setting (Gmax), s	5.4	36.0	8.4	21.1	8.4	33.0	8.4	21.1
Max Q Clear Time (g_c+I1), s	4.8	26.1	10.0	16.5	9.2	19.3	11.0	19.9
Green Ext Time (p_c), s	0.0	7.3	0.0	2.2	0.0	9.4	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	616	1321	415	108	916	89	373	627	35	173	423	259
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.98	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	1881	1881	1881	1863	1863	1863	1845	1845	1900	1881	1881	1881
Adj Flow Rate, veh/h	635	1362	0	111	944	0	385	646	36	178	436	267
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	1	1	1
Cap, veh/h	561	1772	774	226	954	409	362	768	43	482	458	364
Arrive On Green	0.28	0.50	0.00	0.05	0.27	0.00	0.07	0.23	0.23	0.09	0.24	0.23
Sat Flow, veh/h	1792	3574	1599	1774	3539	1583	3408	3372	188	3476	1881	1548
Grp Volume(v), veh/h	635	1362	0	111	944	0	385	335	347	178	436	267
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1774	1770	1583	1704	1752	1807	1738	1881	1548
Q Serve(g_s), s	32.0	35.7	0.0	5.3	30.6	0.0	8.0	21.0	21.1	0.0	26.2	15.2
Cycle Q Clear(g_c), s	32.0	35.7	0.0	5.3	30.6	0.0	8.0	21.0	21.1	0.0	26.2	15.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	561	1772	774	226	954	409	362	399	412	482	458	364
V/C Ratio(X)	1.13	0.77	0.00	0.49	0.99	0.00	1.06	0.84	0.84	0.37	0.95	0.73
Avail Cap(c_a), veh/h	561	1772	774	226	954	409	362	457	471	482	458	364
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)	0.09	0.09	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	23.6	0.0	29.3	41.8	0.0	52.1	42.4	42.4	47.3	42.8	28.0
Incr Delay (d2), s/veh	61.6	0.3	0.0	0.6	26.5	0.0	64.8	10.6	10.4	0.2	29.8	6.6
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(-26165%),veh/ln	27.4	17.7	0.0	2.6	18.5	0.0	9.0	11.3	11.7	2.6	17.4	7.2
LnGrp Delay(d),s/veh	95.7	23.9	0.0	29.9	68.3	0.0	116.9	53.0	52.9	47.5	72.7	34.6
LnGrp LOS	F	C		C	E		F	D	D	D	E	C
Approach Vol, veh/h		1997			1055			1067			881	
Approach Delay, s/veh		46.7			64.3			76.0			56.0	
Approach LOS		D			E			E			E	

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	10.0	61.0	13.8	30.2	36.0	35.0	12.0	32.0
Change Period (Y+Rc), s	4.6	5.3	4.6	5.0	4.6	5.3	4.6	5.0
Max Green Setting (Gmax), s	5.4	55.7	5.4	29.0	31.4	29.7	7.4	27.0
Max Q Clear Time (g_c+I1), s	7.3	37.7	2.0	23.1	34.0	32.6	10.0	28.2
Green Ext Time (p_c), s	0.0	13.2	0.6	1.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	58.3
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	116	341	312	68	98	197	458	645	106	380	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1900	1900	1900	1881	1881	1900	1900	1900	1900
Adj Flow Rate, veh/h	53	120	352	161	35	51	102	236	332	109	392	27
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	478	113	331	225	87	126	366	304	427	230	756	52
Arrive On Green	0.27	0.27	0.27	0.12	0.12	0.12	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1792	422	1238	1810	696	1015	972	706	993	857	1757	121
Grp Volume(v), veh/h	53	0	472	161	0	86	102	0	568	109	0	419
Grp Sat Flow(s),veh/h/ln	1792	0	1660	1810	0	1711	972	0	1699	857	0	1878
Q Serve(g_s), s	1.5	0.0	18.0	5.8	0.0	3.1	5.8	0.0	19.3	8.4	0.0	11.0
Cycle Q Clear(g_c), s	1.5	0.0	18.0	5.8	0.0	3.1	16.8	0.0	19.3	27.7	0.0	11.0
Prop In Lane	1.00		0.75	1.00		0.59	1.00		0.58	1.00		0.06
Lane Grp Cap(c), veh/h	478	0	443	225	0	213	366	0	731	230	0	808
V/C Ratio(X)	0.11	0.00	1.06	0.71	0.00	0.40	0.28	0.00	0.78	0.47	0.00	0.52
Avail Cap(c_a), veh/h	478	0	443	430	0	406	366	0	731	230	0	808
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	24.7	28.3	0.0	27.2	20.2	0.0	16.4	28.3	0.0	14.1
Incr Delay (d2), s/veh	0.1	0.0	61.1	4.2	0.0	1.2	1.9	0.0	7.9	6.8	0.0	2.4
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(-26165%),veh/ln	0.7	0.0	15.6	3.1	0.0	1.6	1.8	0.0	10.6	2.4	0.0	6.2
LnGrp Delay(d),s/veh	18.8	0.0	85.8	32.5	0.0	28.4	22.1	0.0	24.4	35.1	0.0	16.5
LnGrp LOS	B		F	C		C	C		C	D		B
Approach Vol, veh/h		525			247			670			528	
Approach Delay, s/veh		79.0			31.1			24.0			20.3	
Approach LOS		E			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		33.0		22.0		33.0		12.4
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		29.0		18.0		29.0		16.0
Max Q Clear Time (g_c+I1), s		21.3		20.0		29.7		7.8
Green Ext Time (p_c), s		3.7		0.0		0.0		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	38.6
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	57	124	80	113	84	68	248	825	124	135	562	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	60	131	84	119	88	72	261	868	131	142	592	28
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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	1	1	1
Cap, veh/h	350	272	174	306	243	199	557	1898	286	387	2097	99
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.60	0.60	0.60	0.60	0.60	0.60
Sat Flow, veh/h	1243	1081	693	1182	966	791	816	3146	475	567	3475	164
Grp Volume(v), veh/h	60	0	215	119	0	160	261	498	501	142	304	316
Grp Sat Flow(s),veh/h/ln	1243	0	1775	1182	0	1757	816	1805	1815	567	1787	1852
Q Serve(g_s), s	2.3	0.0	5.7	5.2	0.0	4.1	12.4	8.3	8.3	10.1	4.5	4.5
Cycle Q Clear(g_c), s	6.4	0.0	5.7	10.9	0.0	4.1	16.9	8.3	8.3	18.4	4.5	4.5
Prop In Lane	1.00		0.39	1.00		0.45	1.00		0.26	1.00		0.09
Lane Grp Cap(c), veh/h	350	0	446	306	0	441	557	1089	1095	387	1078	1117
V/C Ratio(X)	0.17	0.00	0.48	0.39	0.00	0.36	0.47	0.46	0.46	0.37	0.28	0.28
Avail Cap(c_a), veh/h	399	0	516	353	0	511	557	1089	1095	387	1078	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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	17.5	22.2	0.0	17.0	9.2	6.0	6.0	11.0	5.2	5.2
Incr Delay (d2), s/veh	0.2	0.0	0.8	0.8	0.0	0.5	2.8	1.4	1.4	2.7	0.7	0.6
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(-26165%),veh/ln	0.8	0.0	2.8	1.8	0.0	2.1	3.2	4.4	4.5	1.8	2.4	2.5
LnGrp Delay(d),s/veh	19.8	0.0	18.4	23.0	0.0	17.5	12.1	7.4	7.4	13.7	5.9	5.8
LnGrp LOS	B		B	C		B	B	A	A	B	A	A
Approach Vol, veh/h		275			279			1260			762	
Approach Delay, s/veh		18.7			19.8			8.3			7.3	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		37.2		17.8		37.2		17.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		31.0		16.0		31.0		16.0
Max Q Clear Time (g_c+I1), s		18.9		8.4		20.4		12.9
Green Ext Time (p_c), s		8.1		1.5		7.4		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	95

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	725	156	288	383	102	466
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	386	83	306	407	109	496

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	388	0	1204	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	816	-
Critical Hdwy	-	-	4.12	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	-	-	2.218	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1170	-	190	659
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	396	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1170	-	140	658
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	292	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	276.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	-	-	1170	-
HCM Lane V/C Ratio	1.53	-	-	0.262	-
HCM Control Delay (s)	276.4	-	-	9.2	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	33	-	-	1.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	150	285	666	353	14
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	11	165	313	732	388	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1755	398	404	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	1358	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	94	654	1160	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	69	653	1159	-	-	-
Mov Cap-2 Maneuver	69	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	175	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	2.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1159	-	69	653	-	-
HCM Lane V/C Ratio	0.27	-	0.159	0.252	-	-
HCM Control Delay (s)	9.3	-	66.8	12.4	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	1.1	-	0.5	1	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	92	28	526	150	18	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	50	0	-	-	130	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	1	0	0
Mvmt Flow	97	29	554	158	19	296

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	967	633	0	0	712	0
Stage 1	633	-	-	-	-	-
Stage 2	334	-	-	-	-	-
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	284	483	-	-	897	-
Stage 1	533	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	278	483	-	-	897	-
Mov Cap-2 Maneuver	278	-	-	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.9	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	278	483	897	-
HCM Lane V/C Ratio	-	-	0.348	0.061	0.021	-
HCM Control Delay (s)	-	-	24.7	12.9	9.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	67	692	380	6	3	29
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	94	94	94	94	94	94
Heavy Vehicles, %	3	3	2	2	0	0
Mvmt Flow	71	736	404	6	3	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	411	0	-	0	1286	407
Stage 1	-	-	-	-	407	-
Stage 2	-	-	-	-	879	-
Critical Hdwy	4.13	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.227	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1142	-	-	-	183	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	409	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1142	-	-	-	164	648
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	366	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1142	-	-	-	508
HCM Lane V/C Ratio	0.062	-	-	-	0.067
HCM Control Delay (s)	8.4	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.2

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	141	113	136	408	305	250
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	315	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	87	87
Heavy Vehicles, %	0	0	1	1	1	1
Mvmt Flow	152	122	146	439	351	287

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1082	353	351	0	-	0
Stage 1	351	-	-	-	-	-
Stage 2	731	-	-	-	-	-
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	243	695	1213	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	204	694	1211	-	-	-
Mov Cap-2 Maneuver	204	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	404	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.9	2.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1211	-	204	694	-	-
HCM Lane V/C Ratio	0.121	-	0.743	0.175	-	-
HCM Control Delay (s)	8.4	0	61	11.3	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	4.9	0.6	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	967	2185	148	169	1371	26	193	231	125	86	278	495
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		0.99	1.00		0.99	0.98		0.97	0.94		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1845	1845	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	987	2230	151	172	1399	27	197	236	128	88	284	0
Adj No. of Lanes	2	3	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	3	3	3	0	0	0	0	0	0
Cap, veh/h	919	2836	190	212	1492	29	174	296	243	208	321	268
Arrive On Green	0.23	0.58	0.57	0.07	0.42	0.42	0.07	0.16	0.16	0.08	0.17	0.00
Sat Flow, veh/h	3476	4915	330	1757	3517	68	1810	1900	1562	1810	1900	1615
Grp Volume(v), veh/h	987	1547	834	172	697	729	197	236	128	88	284	0
Grp Sat Flow(s),veh/h/ln	1738	1712	1821	1757	1752	1832	1810	1900	1562	1810	1900	1615
Q Serve(g_s), s	33.0	50.6	51.9	8.0	55.1	55.2	10.0	17.4	9.1	1.4	21.2	0.0
Cycle Q Clear(g_c), s	33.0	50.6	51.9	8.0	55.1	55.2	10.0	17.4	9.1	1.4	21.2	0.0
Prop In Lane	1.00		0.18	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	919	1976	1051	212	744	777	174	296	243	208	321	268
V/C Ratio(X)	1.07	0.78	0.79	0.81	0.94	0.94	1.13	0.80	0.53	0.42	0.89	0.00
Avail Cap(c_a), veh/h	919	1976	1051	432	744	777	174	380	312	208	328	274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.24	0.24	0.24	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.8	23.7	24.0	30.5	39.9	39.9	61.6	59.0	38.7	61.4	58.9	0.0
Incr Delay (d2), s/veh	51.8	3.2	6.2	0.7	6.4	6.2	107.1	8.0	1.3	0.5	23.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	25.0	24.7	27.8	3.9	27.8	29.3	7.2	9.8	4.0	3.3	13.2	0.0
LnGrp Delay(d),s/veh	98.5	26.9	30.2	31.2	46.2	46.2	168.8	67.0	40.1	61.9	82.1	0.0
LnGrp LOS	F	C	C	C	D	D	F	E	D	E	F	
Approach Vol, veh/h		3368			1598			561			372	
Approach Delay, s/veh		48.7			44.6			96.6			77.4	
Approach LOS		D			D			F			E	

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	14.9	87.7	14.0	28.5	37.0	65.5	15.9	26.6
Change Period (Y+Rc), s	4.6	5.3	4.6	5.0	4.6	5.3	5.0	* 5
Max Green Setting (Gmax), s	28.4	63.7	9.4	24.0	32.4	59.7	5.4	* 28
Max Q Clear Time (g_c+I1), s	10.0	53.9	12.0	23.2	35.0	57.2	3.4	19.4
Green Ext Time (p_c), s	0.3	9.7	0.0	0.1	0.0	0.9	0.2	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	53.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	91	1387	1304	786	562	172
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	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	1845	1845	1881	1900
Adj Flow Rate, veh/h	97	1476	1387	836	390	405
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	3	3	1	0
Cap, veh/h	138	2086	1589	706	549	474
Arrive On Green	0.08	0.58	0.45	0.45	0.31	0.29
Sat Flow, veh/h	1792	3668	3597	1558	1792	1615
Grp Volume(v), veh/h	97	1476	1387	836	390	405
Grp Sat Flow(s),veh/h/ln	1792	1787	1752	1558	1792	1615
Q Serve(g_s), s	4.0	22.0	26.9	34.0	14.5	17.7
Cycle Q Clear(g_c), s	4.0	22.0	26.9	34.0	14.5	17.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	138	2086	1589	706	549	474
V/C Ratio(X)	0.70	0.71	0.87	1.18	0.71	0.85
Avail Cap(c_a), veh/h	143	2097	1589	706	549	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	11.1	18.5	20.5	23.0	25.0
Incr Delay (d2), s/veh	5.7	0.6	5.8	96.8	7.6	17.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	2.2	10.8	14.2	33.5	8.3	10.2
LnGrp Delay(d),s/veh	39.5	11.7	24.4	117.3	30.6	42.6
LnGrp LOS	D	B	C	F	C	D
Approach Vol, veh/h		1573	2223		795	
Approach Delay, s/veh		13.4	59.3		36.7	
Approach LOS		B	E		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		47.8			9.8	38.0		27.0
Change Period (Y+Rc), s		5.5			4.6	5.5		5.0
Max Green Setting (Gmax), s		42.5			5.4	32.5		22.0
Max Q Clear Time (g_c+I1), s		24.0			6.0	36.0		19.7
Green Ext Time (p_c), s		17.9			0.0	0.0		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.7
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	917	142	202	1028	255	224	146	422	171	82	42
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1845	1845	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	42	965	149	213	1082	268	236	154	444	180	86	0
Adj No. of Lanes	1	2	0	1	1	0	1	1	0	1	1	1
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, %	2	2	2	3	3	3	1	1	1	1	1	1
Cap, veh/h	110	1482	229	325	769	190	462	105	302	167	390	327
Arrive On Green	0.03	0.48	0.47	0.09	0.54	0.52	0.11	0.25	0.24	0.06	0.21	0.00
Sat Flow, veh/h	1774	3073	474	1757	1428	354	1792	419	1207	1792	1881	1599
Grp Volume(v), veh/h	42	555	559	213	0	1350	236	0	598	180	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1757	0	1781	1792	0	1626	1792	1881	1599
Q Serve(g_s), s	1.7	33.2	33.3	8.2	0.0	75.4	14.3	0.0	35.0	9.0	5.3	0.0
Cycle Q Clear(g_c), s	1.7	33.2	33.3	8.2	0.0	75.4	14.3	0.0	35.0	9.0	5.3	0.0
Prop In Lane	1.00		0.27	1.00		0.20	1.00		0.74	1.00		1.00
Lane Grp Cap(c), veh/h	110	854	858	325	0	959	462	0	406	167	390	327
V/C Ratio(X)	0.38	0.65	0.65	0.66	0.00	1.41	0.51	0.00	1.47	1.08	0.22	0.00
Avail Cap(c_a), veh/h	127	854	858	444	0	959	462	0	406	167	390	327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.36	0.00	0.36	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.2	27.3	27.6	22.1	0.0	32.5	36.9	0.0	52.9	47.1	46.1	0.0
Incr Delay (d2), s/veh	0.8	3.8	3.8	0.3	0.0	185.7	0.4	0.0	225.2	92.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.8	17.1	17.2	3.9	0.0	86.5	7.1	0.0	41.1	9.4	2.8	0.0
LnGrp Delay(d),s/veh	34.0	31.2	31.4	22.4	0.0	218.2	37.3	0.0	278.0	139.9	46.6	0.0
LnGrp LOS	C	C	C	C		F	D		F	F	D	
Approach Vol, veh/h		1156			1563			834			266	
Approach Delay, s/veh		31.4			191.5			209.9			109.7	
Approach LOS		C			F			F			F	

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	16.5	71.5	13.0	39.0	8.6	79.4	19.0	33.0
Change Period (Y+Rc), s	4.6	6.0	4.6	5.0	4.6	6.0	4.6	5.0
Max Green Setting (Gmax), s	21.4	56.0	8.4	34.0	5.4	72.0	14.4	28.0
Max Q Clear Time (g_c+I1), s	10.2	35.3	11.0	37.0	3.7	77.4	16.3	7.3
Green Ext Time (p_c), s	0.3	19.0	0.0	0.0	0.0	0.0	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	141.4
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	330	845	15	23	631	175	17	61	67	138	23	174
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1845	1845	1900	1900	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	351	899	16	24	671	186	18	65	71	147	24	185
Adj No. of Lanes	1	1	0	1	1	0	0	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	3	3	3	0	0	0	2	2	2
Cap, veh/h	347	1143	20	252	675	187	57	163	155	259	39	303
Arrive On Green	0.16	0.63	0.63	0.01	0.49	0.49	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	1824	32	1757	1390	385	86	756	720	1238	183	1408
Grp Volume(v), veh/h	351	0	915	24	0	857	154	0	0	147	0	209
Grp Sat Flow(s),veh/h/ln	1774	0	1856	1757	0	1775	1562	0	0	1238	0	1591
Q Serve(g_s), s	16.4	0.0	38.3	0.7	0.0	50.7	0.2	0.0	0.0	5.8	0.0	12.5
Cycle Q Clear(g_c), s	16.4	0.0	38.3	0.7	0.0	50.7	12.7	0.0	0.0	18.5	0.0	12.5
Prop In Lane	1.00		0.02	1.00		0.22	0.12		0.46	1.00		0.89
Lane Grp Cap(c), veh/h	347	0	1163	252	0	862	374	0	0	259	0	342
V/C Ratio(X)	1.01	0.00	0.79	0.10	0.00	0.99	0.41	0.00	0.00	0.57	0.00	0.61
Avail Cap(c_a), veh/h	347	0	1163	283	0	862	442	0	0	310	0	408
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.5	0.0	14.5	16.1	0.0	27.0	35.7	0.0	0.0	41.3	0.0	37.5
Incr Delay (d2), s/veh	51.1	0.0	3.7	0.2	0.0	29.1	0.7	0.0	0.0	2.0	0.0	1.9
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	15.0	0.0	20.5	0.4	0.0	31.7	3.9	0.0	0.0	4.3	0.0	5.7
LnGrp Delay(d),s/veh	86.7	0.0	18.2	16.3	0.0	56.1	36.4	0.0	0.0	43.3	0.0	39.4
LnGrp LOS	F		B	B		E	D			D		D
Approach Vol, veh/h		1266			881			154			356	
Approach Delay, s/veh		37.2			55.0			36.4			41.0	
Approach LOS		D			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	56.6		28.0	6.1	71.5		28.0
Change Period (Y+Rc), s	4.6	5.3		5.3	4.6	5.3		5.3
Max Green Setting (Gmax), s	16.4	51.3		27.1	3.4	64.3		27.1
Max Q Clear Time (g_c+I1), s	18.4	52.7		14.7	2.7	40.3		20.5
Green Ext Time (p_c), s	0.0	0.0		1.9	0.0	15.7		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	43.6
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	122	193	729	643	10
Conflicting Peds, #/hr	0	0	1	0	0	1
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, %	2	2	3	3	5	5
Mvmt Flow	5	130	205	776	684	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1875	690	695	0	-	0
Stage 1	689	-	-	-	-	-
Stage 2	1186	-	-	-	-	-
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	79	445	896	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	290	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	47	445	895	-	-	-
Mov Cap-2 Maneuver	47	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	173	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.9	2.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	895	-	334	-	-
HCM Lane V/C Ratio	0.229	-	0.405	-	-
HCM Control Delay (s)	10.2	0	22.9	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0.9	-	1.9	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	49	39	101	738	365	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	150	-	-	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	53	42	110	802	397	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1419	397	397	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	148	646	1167	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	134	646	1167	-	-	-
Mov Cap-2 Maneuver	134	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	311	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.9	1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1167	-	134	646	-	-
HCM Lane V/C Ratio	0.094	-	0.397	0.066	-	-
HCM Control Delay (s)	8.4	-	48.6	11	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.7	0.2	-	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	3	9	66	3	93	14	429	80	91	391	32
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	100	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	8	8	8	2	2	2	3	3	3	3	3	3
Mvmt Flow	35	3	10	70	3	99	15	456	85	97	416	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1211	1202	436	1166	1177	502	452	0	0	543	0	0
Stage 1	629	629	-	531	531	-	-	-	-	-	-	-
Stage 2	582	573	-	635	646	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.12	6.52	6.22	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.518	4.018	3.318	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	155	180	608	171	191	569	1103	-	-	1021	-	-
Stage 1	460	466	-	532	526	-	-	-	-	-	-	-
Stage 2	489	494	-	467	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	116	160	606	152	170	568	1102	-	-	1020	-	-
Mov Cap-2 Maneuver	116	160	-	152	170	-	-	-	-	-	-	-
Stage 1	453	421	-	524	518	-	-	-	-	-	-	-
Stage 2	396	486	-	412	422	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.1	27.3	0.2	1.6
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1102	-	-	116	357	152	529	1020	-	-
HCM Lane V/C Ratio	0.014	-	-	0.303	0.036	0.462	0.193	0.095	-	-
HCM Control Delay (s)	8.3	-	-	49	15.5	47.5	13.4	8.9	-	-
HCM Lane LOS	A	-	-	E	C	E	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.2	0.1	2.1	0.7	0.3	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	6	20	33	774	611	16
Conflicting Peds, #/hr	0	0	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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	3	3	4	4
Mvmt Flow	6	21	34	806	636	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1520	648	653	0	-	0
Stage 1	645	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	132	474	929	-	-	-
Stage 1	526	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	123	473	927	-	-	-
Mov Cap-2 Maneuver	123	-	-	-	-	-
Stage 1	526	-	-	-	-	-
Stage 2	384	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	927	-	286	-	-
HCM Lane V/C Ratio	0.037	-	0.095	-	-
HCM Control Delay (s)	9	0	18.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	14	14	10	22	11	26	16	678	59	33	628	41
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	3	3	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	5	5	5	3	3	3	4	4	4
Mvmt Flow	14	14	10	22	11	27	16	692	60	34	641	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1502	1514	665	1496	1505	725	683	0	0	752	0	0
Stage 1	729	729	-	755	755	-	-	-	-	-	-	-
Stage 2	773	785	-	741	750	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	4.13	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	2.227	-	-	2.236	-	-
Pot Cap-1 Maneuver	101	121	464	99	119	420	905	-	-	849	-	-
Stage 1	417	431	-	396	412	-	-	-	-	-	-	-
Stage 2	395	407	-	403	414	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	113	463	83	111	419	903	-	-	847	-	-
Mov Cap-2 Maneuver	82	113	-	83	111	-	-	-	-	-	-	-
Stage 1	404	414	-	384	399	-	-	-	-	-	-	-
Stage 2	348	394	-	364	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.7	49.9	0.2	0.4
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	903	-	-	120	138	847	-	-
HCM Lane V/C Ratio	0.018	-	-	0.323	0.436	0.04	-	-
HCM Control Delay (s)	9.1	0	-	48.7	49.9	9.4	-	-
HCM Lane LOS	A	A	-	E	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	1.9	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	70	98	70	30	0
Conflicting Peds, #/hr	3	0	0	3	4	10
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	86	86	86	86	86	86
Heavy Vehicles, %	2	2	1	1	0	0
Mvmt Flow	7	81	114	81	35	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	205	0	-	0	260	168
Stage 1	-	-	-	-	165	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1366	-	-	-	733	881
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1363	-	-	-	717	871
Mov Cap-2 Maneuver	-	-	-	-	717	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	922	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1363	-	-	-	717
HCM Lane V/C Ratio	0.005	-	-	-	0.049
HCM Control Delay (s)	7.7	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	29	190	313	26	170	224
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	89	89	91	91
Heavy Vehicles, %	0	0	0	0	1	1
Mvmt Flow	32	209	352	29	187	246

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	986	369	0	0	381	0
Stage 1	366	-	-	-	-	-
Stage 2	620	-	-	-	-	-
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	277	681	-	-	1183	-
Stage 1	706	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	225	679	-	-	1180	-
Mov Cap-2 Maneuver	225	-	-	-	-	-
Stage 1	706	-	-	-	-	-
Stage 2	440	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.1	0	3.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	536	1180	-
HCM Lane V/C Ratio	-	-	0.449	0.158	-
HCM Control Delay (s)	-	-	17.1	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.3	0.6	-

Intersection	
Int Delay, s/veh	26.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	169	43	75	7	46	260	45	558	13	211	545	155
Conflicting Peds, #/hr	1	0	0	0	0	1	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	165	-	-	125	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	5	5	5	3	3	3	3	3	3
Mvmt Flow	186	47	82	8	51	286	49	613	14	232	599	170

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2037	1876	688	1934	1954	624	770	0	0	628	0	0
Stage 1	1149	1149	-	720	720	-	-	-	-	-	-	-
Stage 2	888	727	-	1214	1234	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.51	6.21	7.15	6.55	6.25	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.11	5.51	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.51	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4.009	3.309	3.545	4.045	3.345	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	~ 42	72	448	49	63	480	840	-	-	949	-	-
Stage 1	243	274	-	414	428	-	-	-	-	-	-	-
Stage 2	340	431	-	219	245	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	51	447	21	~ 45	478	838	-	-	947	-	-
Mov Cap-2 Maneuver	~ -270	109	-	48	107	-	-	-	-	-	-	-
Stage 1	229	207	-	389	403	-	-	-	-	-	-	-
Stage 2	~ 112	405	-	104	185	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	168	0.7	2.3
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	838	-	-	+	280	947	-	-
HCM Lane V/C Ratio	0.059	-	-	-	1.228	0.245	-	-
HCM Control Delay (s)	9.6	-	-	4.3	168	10	-	-
HCM Lane LOS	A	-	-	A	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	16	1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	785	12	12	460	30	6	0	27	41	0	24
Conflicting Peds, #/hr	0	0	2	2	0	0	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	125	-	-	50	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	818	12	12	479	31	6	0	28	43	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	511	0	0	831	0	0	1103	1373	418	943	1365	258
Stage 1	-	-	-	-	-	-	837	837	-	521	521	-
Stage 2	-	-	-	-	-	-	266	536	-	422	844	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1065	-	-	810	-	-	168	147	589	220	149	747
Stage 1	-	-	-	-	-	-	332	385	-	512	535	-
Stage 2	-	-	-	-	-	-	722	527	-	585	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1063	-	-	809	-	-	159	144	588	206	146	745
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	144	-	206	146	-
Stage 1	-	-	-	-	-	-	330	383	-	509	526	-
Stage 2	-	-	-	-	-	-	685	518	-	553	380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	15	20.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	394	1063	-	-	809	-	-	206	745
HCM Lane V/C Ratio	0.087	0.006	-	-	0.015	-	-	0.207	0.034
HCM Control Delay (s)	15	8.4	-	-	9.5	-	-	27	10
HCM Lane LOS	C	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.8	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	12	183	335	143	75	74
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	80	80
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	14	213	390	166	94	92

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	557	0	-	0	715	474
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.11	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1019	-	-	-	400	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1019	-	-	-	393	595
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	473
HCM Lane V/C Ratio	0.014	-	-	-	0.394
HCM Control Delay (s)	8.6	0	-	-	17.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1.9

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	250	25	18	256	28	28
Conflicting Peds, #/hr	0	4	4	0	3	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	96	96	89	89	64	64
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	260	26	20	288	44	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	289	0	604	280
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1279	-	463	761
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	732	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1275	-	452	757
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	716	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	566	-	-	1275	-
HCM Lane V/C Ratio	0.155	-	-	0.016	-
HCM Control Delay (s)	12.5	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	85.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	223	2	146	2	2	40	106	448	1	15	311	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	75	75	75	90	90	90	86	86	86
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	5	5	5
Mvmt Flow	265	2	174	3	3	53	118	498	1	17	362	116

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	883	1131	367	1219	1131	254	362	0	0	499	0	0
Stage 1	397	397	-	734	734	-	-	-	-	-	-	-
Stage 2	486	734	-	485	397	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.3	6.5	6.9	4.12	-	-	4.2	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.5	4	3.3	2.218	-	-	2.25	-	-
Pot Cap-1 Maneuver	~ 253	203	677	148	205	752	1197	-	-	1041	-	-
Stage 1	628	603	-	382	429	-	-	-	-	-	-	-
Stage 2	532	425	-	567	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 203	171	674	95	173	749	1192	-	-	1037	-	-
Mov Cap-2 Maneuver	~ 203	171	-	95	173	-	-	-	-	-	-	-
Stage 1	542	589	-	330	370	-	-	-	-	-	-	-
Stage 2	422	367	-	408	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 309	12.9	1.9	0.3
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	280	512	1037	-	-
HCM Lane V/C Ratio	0.099	-	-	1.577	0.115	0.017	-	-
HCM Control Delay (s)	8.4	0.4	-	$ 309	12.9	8.5	0	-
HCM Lane LOS	A	A	-	F	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	26.5	0.4	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	896	8	13	665	16	5	15	5	8	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	30	-	-	30	-	-	-	-	-	-
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	8	974	9	14	723	17	5	16	5	9	13	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	723	0	0	974	0	0	1749	1740	974	1751	1740	723
Stage 1	-	-	-	-	-	-	989	989	-	751	751	-
Stage 2	-	-	-	-	-	-	760	751	-	1000	989	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	879	-	-	708	-	-	67	87	306	67	87	426
Stage 1	-	-	-	-	-	-	297	325	-	403	418	-
Stage 2	-	-	-	-	-	-	398	418	-	293	325	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	879	-	-	708	-	-	56	82	306	54	82	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	56	82	-	54	82	-
Stage 1	-	-	-	-	-	-	291	319	-	395	404	-
Stage 2	-	-	-	-	-	-	368	404	-	268	319	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	64.2	71.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	87	879	-	-	708	-	-	79
HCM Lane V/C Ratio	0.312	0.009	-	-	0.02	-	-	0.33
HCM Control Delay (s)	64.2	9.1	0	-	10.2	0	-	71.6
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	1.2

Preferred Alternative with Capital Plan Synchro Output

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	65	237	386	629	372	71
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	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	1863	1863	1863	1900
Adj Flow Rate, veh/h	73	266	434	0	418	80
Adj No. of Lanes	0	1	1	1	0	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	204	453	681	579	536	103
Arrive On Green	0.37	0.37	0.37	0.00	0.37	0.37
Sat Flow, veh/h	159	1238	1863	1583	1456	279
Grp Volume(v), veh/h	339	0	434	0	499	0
Grp Sat Flow(s),veh/h/ln	1397	0	1863	1583	1738	0
Q Serve(g_s), s	1.0	0.0	5.8	0.0	7.6	0.0
Cycle Q Clear(g_c), s	6.7	0.0	5.8	0.0	7.6	0.0
Prop In Lane	0.22			1.00	0.84	0.16
Lane Grp Cap(c), veh/h	656	0	681	579	639	0
V/C Ratio(X)	0.52	0.00	0.64	0.00	0.78	0.00
Avail Cap(c_a), veh/h	917	0	993	844	927	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	7.9	0.0	8.4	0.0
Incr Delay (d2), s/veh	0.6	0.0	1.0	0.0	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	2.5	0.0	3.1	0.0	4.1	0.0
LnGrp Delay(d),s/veh	8.2	0.0	8.9	0.0	11.1	0.0
LnGrp LOS	A		A		B	
Approach Vol, veh/h		339	434		499	
Approach Delay, s/veh		8.2	8.9		11.1	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				15.0		15.0		15.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s				8.7		9.6		7.8
Green Ext Time (p_c), s				2.2		1.3		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	150	285	666	353	14
Conflicting Peds, #/hr	1	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	11	165	313	732	388	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1755	398	404	0	-	0
Stage 1	397	-	-	-	-	-
Stage 2	1358	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.11	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.209	-	-	-
Pot Cap-1 Maneuver	94	654	1160	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	240	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	51	653	1159	-	-	-
Mov Cap-2 Maneuver	51	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	131	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.5	2.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1159	-	51	653	-	-
HCM Lane V/C Ratio	0.27	-	0.215	0.252	-	-
HCM Control Delay (s)	9.3	0	94	12.4	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	1.1	-	0.7	1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	917	142	202	1028	255	224	146	422	171	82	42
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1845	1845	1900	1881	1881	1900	1881	1881	1881
Adj Flow Rate, veh/h	42	965	149	213	1082	0	236	154	0	180	86	0
Adj No. of Lanes	1	2	1	1	1	0	1	1	0	1	1	1
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, %	2	2	2	3	3	3	1	1	1	1	1	1
Cap, veh/h	201	1767	766	548	1223	0	290	236	0	221	155	127
Arrive On Green	0.03	0.50	0.48	0.20	0.66	0.00	0.11	0.13	0.00	0.06	0.08	0.00
Sat Flow, veh/h	1774	3539	1580	1757	1845	0	1792	1881	0	1792	1881	1599
Grp Volume(v), veh/h	42	965	149	213	1082	0	236	154	0	180	86	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1580	1757	1845	0	1792	1881	0	1792	1881	1599
Q Serve(g_s), s	1.6	26.3	7.5	5.8	66.9	0.0	15.0	10.9	0.0	9.0	6.2	0.0
Cycle Q Clear(g_c), s	1.6	26.3	7.5	5.8	66.9	0.0	15.0	10.9	0.0	9.0	6.2	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	1767	766	548	1223	0	290	236	0	221	155	127
V/C Ratio(X)	0.21	0.55	0.19	0.39	0.88	0.00	0.81	0.65	0.00	0.81	0.55	0.00
Avail Cap(c_a), veh/h	218	1767	766	548	1223	0	290	470	0	221	390	327
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.36	0.36	0.00	0.81	0.81	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.9	24.1	20.5	12.1	19.2	0.0	52.7	58.3	0.0	59.0	61.7	0.0
Incr Delay (d2), s/veh	0.2	1.2	0.6	0.1	3.8	0.0	12.5	2.5	0.0	21.7	5.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.8	13.2	3.4	2.8	34.9	0.0	9.2	5.9	0.0	3.8	3.4	0.0
LnGrp Delay(d),s/veh	24.1	25.4	21.1	12.2	23.0	0.0	65.2	60.8	0.0	80.7	67.0	0.0
LnGrp LOS	C	C	C	B	C		E	E		F	E	
Approach Vol, veh/h		1156			1295			390			266	
Approach Delay, s/veh		24.8			21.2			63.5			76.3	
Approach LOS		C			C			E			E	

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	31.6	73.9	13.0	21.6	8.6	96.8	19.0	15.6
Change Period (Y+Rc), s	4.6	6.0	4.6	5.0	4.6	6.0	4.6	5.0
Max Green Setting (Gmax), s	24.4	53.0	8.4	34.0	5.4	72.0	14.4	28.0
Max Q Clear Time (g_c+I1), s	17.8	28.3	11.0	12.9	3.6	68.9	17.0	8.2
Green Ext Time (p_c), s	0.4	20.0	0.0	1.1	0.0	2.9	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	169	43	75	7	46	260	45	558	13	211	545	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1900	1810	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	186	47	82	8	51	286	49	613	14	232	599	170
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	5	5	5	3	3	3	3	3	3
Cap, veh/h	332	187	326	60	78	396	226	741	17	370	658	187
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.04	0.41	0.41	0.10	0.48	0.48
Sat Flow, veh/h	1049	616	1074	12	257	1303	1757	1796	41	1757	1382	392
Grp Volume(v), veh/h	186	0	129	345	0	0	49	0	627	232	0	769
Grp Sat Flow(s),veh/h/ln	1049	0	1690	1572	0	0	1757	0	1837	1757	0	1774
Q Serve(g_s), s	4.4	0.0	3.8	0.0	0.0	0.0	1.0	0.0	19.8	4.5	0.0	26.2
Cycle Q Clear(g_c), s	17.2	0.0	3.8	12.7	0.0	0.0	1.0	0.0	19.8	4.5	0.0	26.2
Prop In Lane	1.00		0.64	0.02		0.83	1.00		0.02	1.00		0.22
Lane Grp Cap(c), veh/h	332	0	513	534	0	0	226	0	758	370	0	845
V/C Ratio(X)	0.56	0.00	0.25	0.65	0.00	0.00	0.22	0.00	0.83	0.63	0.00	0.91
Avail Cap(c_a), veh/h	351	0	544	562	0	0	270	0	845	384	0	897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	0.0	17.1	20.2	0.0	0.0	14.2	0.0	17.1	13.0	0.0	15.8
Incr Delay (d2), s/veh	1.8	0.0	0.3	2.4	0.0	0.0	0.5	0.0	6.2	3.0	0.0	12.8
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(-26165%),veh/ln	3.4	0.0	1.8	5.8	0.0	0.0	0.5	0.0	11.2	2.4	0.0	15.6
LnGrp Delay(d),s/veh	24.8	0.0	17.4	22.6	0.0	0.0	14.7	0.0	23.3	16.0	0.0	28.6
LnGrp LOS	C		B	C			B		C	B		C
Approach Vol, veh/h		315			345			676			1001	
Approach Delay, s/veh		21.7			22.6			22.7			25.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.5	30.9		23.8	6.4	35.1		23.8
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	7.0	30.0		21.0	4.0	33.0		21.0
Max Q Clear Time (g_c+I1), s	6.5	21.8		19.2	3.0	28.2		14.7
Green Ext Time (p_c), s	0.0	4.3		0.7	0.0	2.9		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	223	2	146	2	2	40	106	448	1	15	311	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1900	1900	1900	1863	1900	1900	1810	1810
Adj Flow Rate, veh/h	265	2	174	3	3	53	118	498	1	17	362	116
Adj No. of Lanes	0	1	0	0	1	0	0	2	0	0	1	1
Peak Hour Factor	0.84	0.84	0.84	0.75	0.75	0.75	0.90	0.90	0.90	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	0	0	0	2	2	2	5	5	5
Cap, veh/h	476	25	210	125	53	538	270	1000	2	127	674	589
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	810	68	572	21	145	1465	299	2596	5	28	1751	1528
Grp Volume(v), veh/h	441	0	0	59	0	0	301	0	316	379	0	116
Grp Sat Flow(s),veh/h/ln	1450	0	0	1630	0	0	1206	0	1694	1779	0	1528
Q Serve(g_s), s	8.1	0.0	0.0	0.0	0.0	0.0	2.0	0.0	4.6	0.0	0.0	1.6
Cycle Q Clear(g_c), s	8.9	0.0	0.0	0.8	0.0	0.0	7.3	0.0	4.6	5.3	0.0	1.6
Prop In Lane	0.60		0.39	0.05		0.90	0.39		0.00	0.04		1.00
Lane Grp Cap(c), veh/h	711	0	0	716	0	0	619	0	653	802	0	589
V/C Ratio(X)	0.62	0.00	0.00	0.08	0.00	0.00	0.49	0.00	0.48	0.47	0.00	0.20
Avail Cap(c_a), veh/h	894	0	0	920	0	0	765	0	839	991	0	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	6.7	0.0	0.0	7.8	0.0	7.5	7.7	0.0	6.6
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.6	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(-26165%),veh/ln	3.6	0.0	0.0	0.4	0.0	0.0	2.3	0.0	2.2	2.6	0.0	0.7
LnGrp Delay(d),s/veh	10.1	0.0	0.0	6.8	0.0	0.0	8.4	0.0	8.1	8.2	0.0	6.8
LnGrp LOS	B			A			A		A	A		A
Approach Vol, veh/h		441			59			617			495	
Approach Delay, s/veh		10.1			6.8			8.2			7.8	
Approach LOS		B			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.5		15.9		16.5		15.9
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0
Max Q Clear Time (g_c+I1), s		9.3		10.9		7.3		2.8
Green Ext Time (p_c), s		3.0		1.1		3.6		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

MOVEMENT SUMMARY

Site: 14/42 - W Main & Madison

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: RoadName											
3	L	5	3.0	0.051	7.3	LOS A	0.1	3.2	0.52	0.96	26.6
8	T	16	3.0	0.051	7.3	LOS A	0.1	3.2	0.52	0.72	29.1
18	R	5	3.0	0.051	7.3	LOS A	0.1	3.2	0.52	0.77	28.8
Approach		27	3.0	0.051	7.3	LOS A	0.1	3.2	0.52	0.78	28.5
East: RoadName											
1	L	14	3.0	0.702	14.4	LOS B	4.9	124.2	0.21	0.87	23.4
6	T	723	3.0	0.702	14.4	LOS B	4.9	124.2	0.21	0.42	25.5
16	R	17	3.0	0.702	14.4	LOS B	4.9	124.2	0.21	0.51	25.1
Approach		754	3.0	0.702	14.4	LOS B	4.9	124.2	0.21	0.43	25.5
North: RoadName											
7	L	9	3.0	0.050	7.6	LOS A	0.2	4.0	0.56	0.93	26.4
4	T	13	0.0	0.050	7.6	LOS A	0.2	4.0	0.56	0.72	28.9
14	R	4	3.0	0.050	7.6	LOS A	0.2	4.0	0.56	0.77	28.5
Approach		26	1.5	0.050	7.6	LOS A	0.2	4.0	0.56	0.80	27.9
West: RoadName											
5	L	8	3.0	0.926	32.3	LOS D	17.2	440.3	0.63	0.64	18.5
2	T	974	3.0	0.926	32.3	LOS D	17.2	440.3	0.63	0.43	19.1
12	R	9	3.0	0.926	32.3	LOS D	17.2	440.3	0.63	0.47	19.0
Approach		990	3.0	0.926	32.3	LOS D	17.2	440.3	0.63	0.43	19.1
All Vehicles		1798	3.0	0.926	24.0	LOS C	17.2	440.3	0.45	0.44	21.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Model used. Geometric Delay not included.

Copyright © 2000-2011 Akcelik and Associates Pty Ltd
www.sidrasolutions.com

HCM 2010 Signalized Intersection Summary
43: Woods Creek Rd & Oaks St

3/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	727	57	33	3	49	27	42	85	72	77	57	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1879	1900	1863	1881	1900	1881	1881	1863
Adj Flow Rate, veh/h	790	62	36	4	53	37	46	94	80	92	68	293
Adj No. of Lanes	1	1	0	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.73	0.92	0.73	0.92	0.90	0.90	0.84	0.84	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	1	1	1	1	2
Cap, veh/h	918	690	401	68	643	429	342	253	216	325	507	427
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1301	1107	643	28	1030	687	1016	940	800	1218	1881	1583
Grp Volume(v), veh/h	790	0	98	94	0	0	46	0	174	92	68	293
Grp Sat Flow(s),veh/h/ln	1301	0	1749	1745	0	0	1016	0	1740	1218	1881	1583
Q Serve(g_s), s	40.5	0.0	1.7	0.0	0.0	0.0	2.7	0.0	6.1	5.0	2.1	12.4
Cycle Q Clear(g_c), s	42.1	0.0	1.7	1.6	0.0	0.0	4.7	0.0	6.1	11.1	2.1	12.4
Prop In Lane	1.00		0.37	0.04		0.39	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	918	0	1091	1139	0	0	342	0	469	325	507	427
V/C Ratio(X)	0.86	0.00	0.09	0.08	0.00	0.00	0.13	0.00	0.37	0.28	0.13	0.69
Avail Cap(c_a), veh/h	991	0	1190	1236	0	0	342	0	469	325	507	427
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.0	0.0	5.6	5.6	0.0	0.0	22.6	0.0	22.2	26.7	20.8	24.6
Incr Delay (d2), s/veh	7.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	2.2	2.2	0.5	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	16.8	0.0	0.8	0.8	0.0	0.0	0.8	0.0	3.2	1.9	1.1	6.5
LnGrp Delay(d),s/veh	20.3	0.0	5.7	5.6	0.0	0.0	23.4	0.0	24.5	28.9	21.3	33.3
LnGrp LOS	C		A	A			C		C	C	C	C
Approach Vol, veh/h		888			94			220			453	
Approach Delay, s/veh		18.7			5.6			24.3			30.6	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		24.2		50.8		24.2		50.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		16.0		51.0		16.0		51.0
Max Q Clear Time (g_c+I1), s		8.1		44.1		14.4		3.6
Green Ext Time (p_c), s		1.8		2.7		0.5		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C