Transportation Study
Hampton Roads Community-Based Outpatient Clinic
City of Chesapeake, Virginia

Prepared for:

U.S. General Services Administration
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TRANSPORTATION STUDY
FOR
HAMPTON ROADS COMMUNITY-BASED OUTPATIENT CLINIC
CITY OF CHESAPEAKE, VIRGINIA

Lead Agency: U.S. General Services Administration

Action Proponent: U.S. Department of Veterans Affairs

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
COVID-19	coronavirus disease
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HRT	Hampton Roads Transit
ITE	Institute of Transportation Engineers
LOS	level of service
MAX	Metro Area Express
mph	miles per hour
MUTCD	Manual on Uniform Traffic Control Devices
study	U.S. Department of Veterans Affairs Community-based Outpatient Clinic Transportation Study for Chesapeake, Virginia
TIP	Transportation Improvement Plan
TSM	Transportation Systems Management
TWSC	two-way, STOP-controlled (intersection)
VDOT	Virginia Department of Transportation
VTRANS	Virginia Department of Transportation Long Range Plan

EXECUTIVE SUMMARY

The U.S. General Services Administration (GSA) proposes to award a long-term lease to develop a new community-based outpatient clinic (CBOC) for the U.S. Department of Veterans Affairs (VA) in the Hampton Roads region of southeast Virginia. The project would be built on one of two sites currently under consideration. One Action Alternative, known as the Clearfield Avenue Alternative, would be built on the south side of Clearfield Avenue, approximately one-tenth of a mile east of Kempsville Road. There are two Action Alternatives at the second location, referred to as the Knells Ridge Boulevard Alternatives. These Alternatives are located on the north side of Knells Ridge Boulevard, approximately one-tenth of a mile west of Battlefield Boulevard. Two site plans are proposed for the Knells Ridge Boulevard Alternatives, and one site plan is proposed for the Clearfield Avenue Alternative. The Alternatives are located in the City of Chesapeake. The purpose of this Transportation Study (study) is to evaluate the potential future impacts of each project Alternative on traffic operations, transit, pedestrians, and bicyclists.

Methodology

The methodology used for traffic analysis incorporates the Virginia Department of Transportation (VDOT) *Administrative Guidelines for Traffic Impact Analysis Regulation*.

The following analysis conditions are considered in the study:

- 2020 Existing Condition. The existing condition assessment provides the baseline for the evaluation of future year conditions.
- 2024 No Action Alternative. The No Action Alternative is analyzed for 2024 and assesses the future impact on the transportation system if the project is not built.
- 2024 with Clearfield Avenue Alternative. The Clearfield Avenue Alternative is analyzed for 2024, the year the project would be complete and open for veterans. This scenario assesses the future impact on the transportation system if the project is built on a site with access from Clearfield Avenue.
- 2024 with Knells Ridge Boulevard Alternatives. The Knells Ridge Boulevard Alternatives are analyzed for 2024, the year the project would be complete and open for veterans. This scenario assesses the future impact on the transportation system if the project is built on a site with access from Knells Ridge Boulevard. Two design Alternatives for the Knells Ridge Boulevard Alternatives are under consideration. Both site plan concepts would have similar access configurations. Pedestrian and bicycle patterns and transit and vehicle operations are expected to be similar for either Alternative, thus a single traffic and multimodal assessment was performed for this study.

Each transportation mode—traffic, pedestrian, bicycle, and transit—has its own general study area. The traffic study area includes ten existing intersections—of which one would serve as a CBOC driveway—and one new driveway. The pedestrian and bicycle network study areas consist of a 1-mile radius from each Action Alternative, representing a typical distance that a visitor might be willing to walk or bicycle to the Action Alternative. The transit study area consists of a 0.25-mile radius from each Alternative, which represents a typical walking distance between an Action Alternative and its nearest bus stop.

The coronavirus disease (COVID-19) pandemic prohibited the collection of new data; therefore, baseline traffic volumes for 2020 existing conditions were established using data from previously approved studies in 2015 and 2019 and then adjusting as necessary to reasonably estimate 2020 volumes. The 2020 volumes were developed by growing the raw volumes for all the study intersections at an annual rate of 1.8 percent per year and adding vehicle trips that would be generated by nearby planned land use development projects that were built and occupied prior to 2020. Volumes for future conditions under the No Action Alternative were estimated by growing the baseline 2020 volumes for all the study intersections at an annual rate of 1.8 percent per year and adding vehicle trips that would be generated by other nearby planned land use development projects. To develop volumes for future conditions under the Action Alternatives, the number of trips generated by the proposed project were estimated based on a review of information provided by the VA regarding expected VA staffing levels and patient turnover. These trips were then distributed and added to the roadway network based on existing travel patterns and the connection of proximate roadways to the Action Alternatives.

Traffic Assessment

The *Chesapeake 2035 Comprehensive Plan* sets the level of service (LOS) standard for non-residential developments at LOS E. Under the existing condition, four study intersections have LOS that are worse than LOS E. Specifically, Battlefield Boulevard/Volvo Parkway (Intersection #2) operates at LOS F in the AM and PM peak hours; Battlefield Boulevard/Hollywood Drive/Oak Grove Road (Intersection #4) operates at LOS F in the AM and PM peak hours; Battlefield Boulevard/Battlefield Boulevard/Gainsborough Square Drive (Intersection #7) operates at LOS F in the PM peak hour; and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) operates at LOS F in the AM and PM peak hours. An analysis of 95th percentile queues indicates that seven of the ten existing intersections have lane groups with queue lengths that exceed their available storage.

Under the No Action Alternative, seven of the ten existing study intersections would operate within the LOS standard, but Battlefield Boulevard/Wal-Mart Way (Intersection #1), Battlefield Boulevard/Volvo Parkway (Intersection #2), and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) would each operate at LOS F during either the AM or PM peak hours. The CBOC under any of the Action Alternatives would generate 401 AM peak hour trips and 446 PM peak hour trips. With the addition of these new trips to the roadway

network, vehicle delays at the mentioned three intersections would generally increase under the Action Alternatives relative to the No Action Alternative. In addition, the northbound approach of Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would operate with a LOS F during the PM peak hour under the Clearfield Avenue Alternative. The remaining study intersections would operate with LOS E or better, within the standard for non-residential developments in the City of Chesapeake. Because vehicle delays of the failing intersections would increase from the No Action Alternative under the Action Alternatives, mitigation measures are proposed as options to improve vehicle delays. The proposed measures include modifying the intersection traffic signal cycle length, traffic signal phasings and timing splits, the intersection roadway geometry, and limiting the number of patient appointments close to peak hours. In addition, Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would meet the peak hour warrant for signalization. Signalization of this intersection is proposed as a mitigation measure. Should an action alternative be selected for implementation, the developer, in consultation with VDOT and the City of Chesapeake, would determine final, reasonable mitigation measures.

Multimodal Assessment

The multimodal assessment compares the No Action Alternative and Action Alternative conditions for parking and the pedestrian, bicycle, and transit networks. The project would provide new pedestrian facilities, including sidewalks surrounding the CBOC that connect to adjacent commercial properties. Additional bus stops may also be available in front of the CBOC.

The Action Alternatives would not affect pedestrian, bicycle, transit, or parking resources in the study area.

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Appendix A: Synchro™ Analysis Worksheets

1.0 INTRODUCTION

This Transportation Study (study) assesses the potential transportation impacts of opening a new Veterans Affairs (VA) community-based outpatient clinic (CBOC) in the Hampton Roads region of southeast Virginia. Three Action Alternatives—two design options on one site and one design option on a second site—have been proposed in the City of Chesapeake.

The study presents several conditions to assess the potential impact of the project on pedestrians, bicycles, transit, parking, and traffic during construction and after completion. Specifically, the study assesses the following conditions:

- 2020 Existing Condition
- 2024 No Action Alternative
- 2024 with Clearfield Avenue Alternative
- 2024 with Knells Ridge Boulevard Alternatives

2.0 BACKGROUND

Section 2.1 outlines the purpose of the study and need for the project. Section 2.2 describes the purpose of the report. Section 2.3 describes the current land use surrounding the project area, and Section 2.4 reviews the most relevant plans covering the affected environment, including broad bicycle and master plans and specific sector plans.

2.1 Project Purpose and Need

The purpose of the Proposed Action is to develop a new CBOC in the Hampton Roads region to allow the VA to expand primary care, mental health, and eye clinic services and to provide specialty care and advanced imaging services to veterans in a right-sized, state-of-the-art, energy efficient health care facility. The Proposed Action would promote further accessibility to VA-provided health services for veterans who currently commute to the existing CBOC site in Virginia Beach.

The Proposed Action is needed because the Virginia Beach CBOC cannot meet the growing needs and services of the veteran population within the existing 13,000-square-foot facility. While the Virginia Beach site would continue to operate under the Proposed Action, expansion of the site is not feasible because of physical constraints.

2.2 Report Purpose

The purpose of this study is to assess the transportation impacts of opening a CBOC. Each travel mode—pedestrian, bicycle, transit, and traffic—is assessed by comparing the condition of the study area transportation facilities if the CBOC is not constructed to the conditions if a new CBOC were constructed at two potential locations, both in Chesapeake, Virginia.

2.3 Existing Land Use

The Clearfield Avenue Alternative is located on Clearfield Avenue with the closest major cross street being Kempsville Road (VA 190); the site is zoned A-1 (Agricultural district), with a planned unit development to the east, residential to the north and O-I (Office-institutional), various residential districts, and conservation to the west and south.

The Knells Ridge Boulevard Alternatives are located on Knells Ridge Road with the closest major cross street being Battlefield Boulevard (VA 168); the site is zoned O-I with several parcels to the south bounding the site also zoned O-1. Various residential uses exist to the west, while several business districts including B-1, B-2, and B-4 can be found north of the Alternative along Battlefield Boulevard. Figure 2-1 depicts the locations of the Alternatives and the major zoning districts.

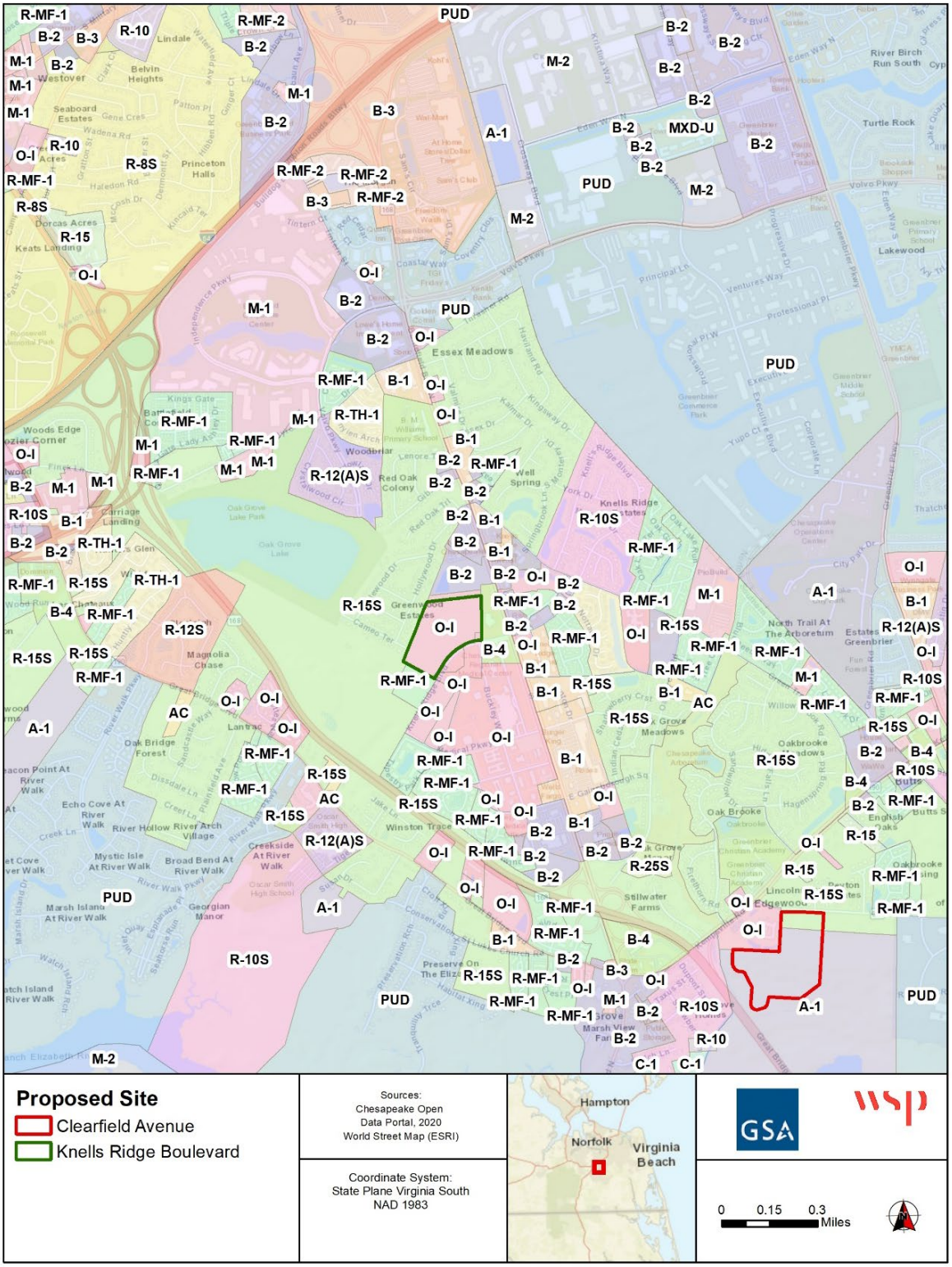


Figure 2-1. Major Zoning Districts

2.4 Planning Context

2.4.1 Hampton Roads Transportation Planning Organization Long-Range Plan

The *2040 Long-Range Transportation Plan* presents a vision for developing a new balanced transportation system that prioritizes quality of life while enhancing the unique character of Hampton Roads. It identifies economic resources and new opportunities in the region. The plan aims to enhance the region's transportation infrastructure and increase the safety of the system for all users, specifically non-motorized modes, while understanding the impact of the transportation system on the environment. Compatibility between transportation investment and planned land use and economic development patterns is promoted for equitability and to reduce urban sprawl. The plan emphasizes protecting the environment, energy conservation, and quality of life and increasing accessibility and mobility of people and goods by providing a variety of transportation options. Finally, the plan identifies dedicated and sustainable revenue sources for transportation to close funding gaps (HRTPO 2016).

2.4.2 Virginia Commonwealth Transportation Board's VTRANS: Virginia's Transportation Plan

The Virginia VTRANS Long-Range Plan includes both mid- and long-term planning, and the Commonwealth Transportation Board is currently in the process of updating the long-term transportation needs. The latest update from 2019 describes mid-term transportation needs and needs specifically related to the Hampton Roads Construction District. The plan has an established vision and guiding principles that have been carried over from previous updates. The VTRANS vision focuses on advancing a transportation system that prioritizes Virginia businesses; attracts a new and evolving workforce; and promotes healthy, equitable communities. The guiding principles set a framework for the plan. These seven principles include:

- Optimize return on investments
- Ensure safety, security, and resilience
- Efficiently deliver programs
- Consider operational improvements and demand management strategies
- Ensure transparency and accountability and promote performance management best practices
- Improve coordination between transportation and land use
- Ensure efficient intermodal connections

These principles are supplemented by five goals, including investing in infrastructure that supports a strong, diverse economy; increasing access to people and places; providing a safe system for all users; maintaining and optimizing existing systems; and supporting the health and well-being of both people and cultural resources (CTB 2019).

2.4.3 Portsmouth-Chesapeake Joint Land Use Study

The joint land use study for the Hampton Roads region was initiated in 2004 as part of the Department of Defense's nationwide joint land use study program. The study addresses land use and zoning compatibility among the cities of Norfolk, Virginia Beach, and Chesapeake. These jurisdictions surround three U.S. Navy airfields in the region: Naval Station Norfolk, Naval Air Station Oceana, and Naval Auxiliary Landing Field Fentress. The study provides recommendations for cohesively melding the Navy's air mission in the region and appropriate land development policy. Major study priorities are as follows:

- Community impact relating to noise and potential accidents resulting from aircraft operations
- Land uses in each jurisdiction that adversely impact air operations
- Height restrictions that adversely impact air operations
- Operational measures to mitigate community impacts
- Collaborating with local governments to create land use and development policy that would reduce the impacts of air operations.

These priorities balance long term compatibility between military operation and economic and social growth in the area (HRPDC 2019).

2.4.4 Chesapeake Plan 2035

The *Chesapeake 2035 Comprehensive Plan* is an update that builds on the existing policies from the *2026 Comprehensive Plan*. The plan continues to use the urban, suburban, and rural overlay designations to plan for future growth as well as a growth management strategy that requires a Planning and Land Use Level of Service Policy that emphasizes timing of development and a utility extension strategy to accommodate development. The update adds economic development goals, and gateway and community design guidelines. Land use goals include infill development at higher densities in the urban area with targeted areas adjacent to future mass transit corridors (City of Chesapeake 2014).

3.0 2020 EXISTING CONDITION

This section describes the primary study area and summarizes the existing transportation conditions as of August 2020. This section covers the following modes of transportation: pedestrian, bicycle, public transit, and traffic (vehicular).

3.1 Study Area Description

A general study area is proposed for each transportation mode. The pedestrian and bicycle network study area consists of a 1-mile radius from each Action Alternative to represent a typical distance that a visitor might be willing to walk or use a bicycle to travel to the Action Alternative. The transit study area consists of a 0.25-mile radius from each Alternative to represent a typical walking distance between the Alternative and the nearest bus stop. The traffic study area includes 10 existing intersections—of which one intersection would serve as the CBOC driveway—and one new driveway (11 total intersections). The intersections considered are: (1) Battlefield Boulevard at Wal-Mart Way; (2) Battlefield Boulevard at Volvo Parkway; (3) Battlefield Boulevard at Lenore Trail; (4) Battlefield Boulevard at Hollywood Drive/Oak Grove Road; (5) Battlefield Boulevard at Knells Ridge Boulevard; (6) Battlefield Boulevard at Medical Parkway; (7) Battlefield Boulevard at Gainsborough Square; (8) Battlefield Boulevard at Kempsville Road/Great Bridge Boulevard; (9) Kempsville Road at Clearfield Avenue; and (10) Clearfield Avenue at Clydes Way. The Clearfield Avenue Alternative would share access from Clydes Way at Clearfield Avenue. The new driveway is the proposed driveway associated with the Knells Ridge Boulevard Alternatives, which would be accessed from Knells Ridge Boulevard. These intersections and the driveway represent the locations where the highest concentration of new vehicle trips would be generated by each Action Alternative. The pedestrian network covers the same network as the traffic study area. Figure 3-1 shows the study area intersections.

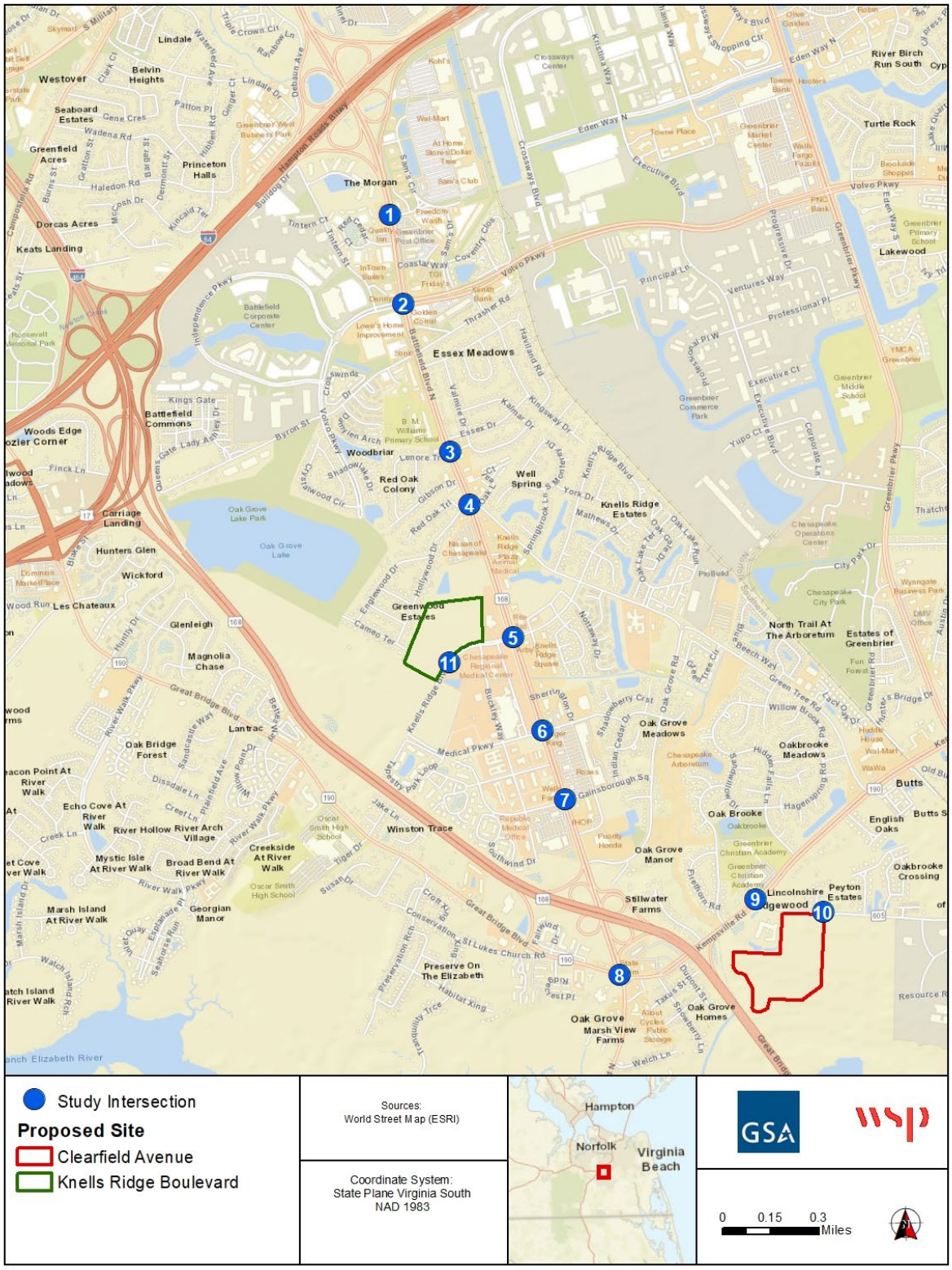


Figure 3-1. Study Area

3.2 Roadway Descriptions

The following section describes the roadways in the study area, including the Virginia Department of Transportation (VDOT) roadway functional classification, the number of lanes in each direction, and any noteworthy characteristics such as the roadway's role within the transportation network. The information was collected from the VDOT 2014 Approved Functional Classification Map (VDOT 2014) and aerial imagery.

- **Battlefield Boulevard** is a predominately north-south oriented roadway that VDOT classifies as other principal arterial (VDOT 2014). It is a six-lane divided highway with three travel lanes in each direction. The posted speed limit is 45 miles per hour (mph).
- **Volvo Parkway** is classified as a minor arterial (VDOT 2014). It is a four-lane divided highway with two travel lanes in each direction. The posted speed limit is 45 mph. No on-street bicycle facilities are located on the roadway, but a multi-use path runs parallel to the parkway from Battlefield Boulevard east to Greenbriar Parkway.
- **Oak Grove Road** is classified as a major collector (VDOT 2014). It is a two-lane road with one travel lane in each direction. Passing is allowed at certain stretches, and the posted speed limit is 35 mph.
- **Knells Ridge Boulevard** is classified as a major collector (VDOT 2014). The roadway runs from Medical Parkway to Battlefield Boulevard. It is a two-lane roadway with one lane in each direction starting at Medical Parkway. Approaching Battlefield Boulevard, the northbound direction becomes two lanes and is separated by a median from the southbound lane. The posted speed limit is 25 mph.
- **Kempsville Road** is classified as a minor arterial (VDOT 2014). It is a five-lane divided highway with two lanes in the northbound direction and three southbound lanes. The posted speed limit is 45 mph except on school days from 7:30 AM to 9:00 AM and 2:30 PM to 3:45 PM where the speed limit lowers to 25 mph in the school zone. No on-street bicycle facilities are located on the roadway, but a multi-use path runs parallel to the roadway from Battlefield Boulevard east to the city limits.
- **Great Bridge Boulevard** is classified as a minor arterial (VDOT 2014). It is a four-lane highway with two lanes in the eastbound direction, one lane in the westbound direction, and a center turn lane. The posted speed limit is 45 mph.
- **Medical Parkway** is unclassified (VDOT 2014). The posted speed limit is 35 mph.
- **Clearfield Avenue** is unclassified (VDOT 2014). The posted speed limit is 35 mph.
- **Wal-Mart Way** is unclassified (VDOT 2014). The posted speed limit is 25 mph.
- **Lenore Trail** is unclassified (VDOT 2014). The posted speed limit is 35 mph.

- **Hollywood Drive** is unclassified (VDOT 2014). The posted speed limit is 35 mph.
- **Gainsborough Square** is unclassified (VDOT 2014). The posted speed limit is 35 mph.

3.3 Data Collection

Due to restrictions related to COVID-19, intersection turning movement volumes were obtained from data collected in 2015 and 2019 from previously approved studies (City of Chesapeake 2020; EPRPC 2019) because the pandemic affected travel behaviors such that counts acquired during 2020 are unrepresentative of prior year travel. The sudden shift to telework, changes in unemployment, and restrictions on gathering reduced travel in 2020. The counts used in the study are based on AM and PM peak weekday commuter hours. The peak hours would occur during the 8:00 to 9:00 AM hour and the 4:00 to 5:00 PM hour, based on clinic hours and the anticipated peak arrival and departure times of staff and patients. The study calibrated the turning movement count data to a year 2020 baseline to represent existing conditions, roadway volume growth and land use developments that opened prior to 2020. In addition, traffic volumes between adjacent intersections were balanced. Based on a review of historic VDOT average daily traffic volume data, an annual growth rate of 1.8 percent was considered for the turning movements at each intersection. For intersections with counts from 2015, this growth rate was applied to all turning movements and compounded annually for five years; for counts from 2019, the growth rate was applied to all turning movements for one year. The northbound and southbound through-movement volumes along Battlefield Boulevard were then increased at varying intersections to improve the volume balancing between adjacent intersections.

Two nearby land use developments, the Evans Family Day Care (a day care center for eight children in a house on Old Oak Grove Road between Indian Cedar Drive and Gainsborough Square East); and The Crossings at Chesapeake (a 100-unit continuing care retirement community adjacent to the Clearfield Avenue Alternative to the west) were built and occupied prior to 2020 and were included in the 2020 baseline volumes. Trip generation calculations for the two developments were performed to estimate the additional vehicular traffic to the public roadway network. The vehicle trip generation assumptions for the planned developments are based on the rates or regression equations published in the Institute of Transportation Engineers (ITE) *10th Edition Trip Generation Manual*. The planned developments would generate a combined total of 20 new AM peak hour and 22 new PM peak hour vehicle trips to the roadway network based on the estimates shown in Table 3-1. Trips associated with the two developments were distributed and assigned to the roadway network based on a review of the existing travel patterns of the intersection and each development's proximity to key roadways. Table 3-2 presents the trip distributions of the developments for the local roadways in the study area. Percentages for a specific development may not total 100 percent if the development is either outside or on the periphery of the study area. In that case, the development is expected to generate vehicle trips on roadways that are not captured in any of the study intersections.

Figure 3-2 presents the baseline 2020 AM and PM peak hour intersection turning movement volumes for each study intersection. The intersection lane use geometry and traffic controls were determined by studying aerial imagery. Based on this information, the existing lane geometry and traffic control type (signalized or unsignalized) are shown in Figure 3-3.

Table 3-1. 2020 Baseline Planned Development Trip Generation Summary

Project and Land Use	Size	Units	AM Peak Hour IN Trips	AM Peak Hour OUT Trips	AM Peak Hour TOTAL Trips	PM Peak Hour IN Trips	PM Peak Hour OUT Trips	PM Peak Hour TOTAL Trips
Evans Family Child Care (Day Care Center)	8	children	3	3	6	3	3	6
The Crossings at Chesapeake (Continuing Care Retirement)	100	DU	9	5	14	6	10	16
Total Vehicle Trips (All Projects)			**12**	**8**	**20**	**9**	**13**	**22**

Notes:
Trip generation estimates are based on the ITE *10th Edition Trip Generation Manual*.
DU = dwelling unit

Table 3-2. 2020 Baseline Planned Development Trip Distributions

Roadway and Direction	Percentage of Evans Family Child Care Trips	Percentage of The Crossings at Chesapeake Trips
North on Battlefield Boulevard	33%	25%
South on Battlefield Boulevard	67%	20%
East on Kempsville Road	--	35%

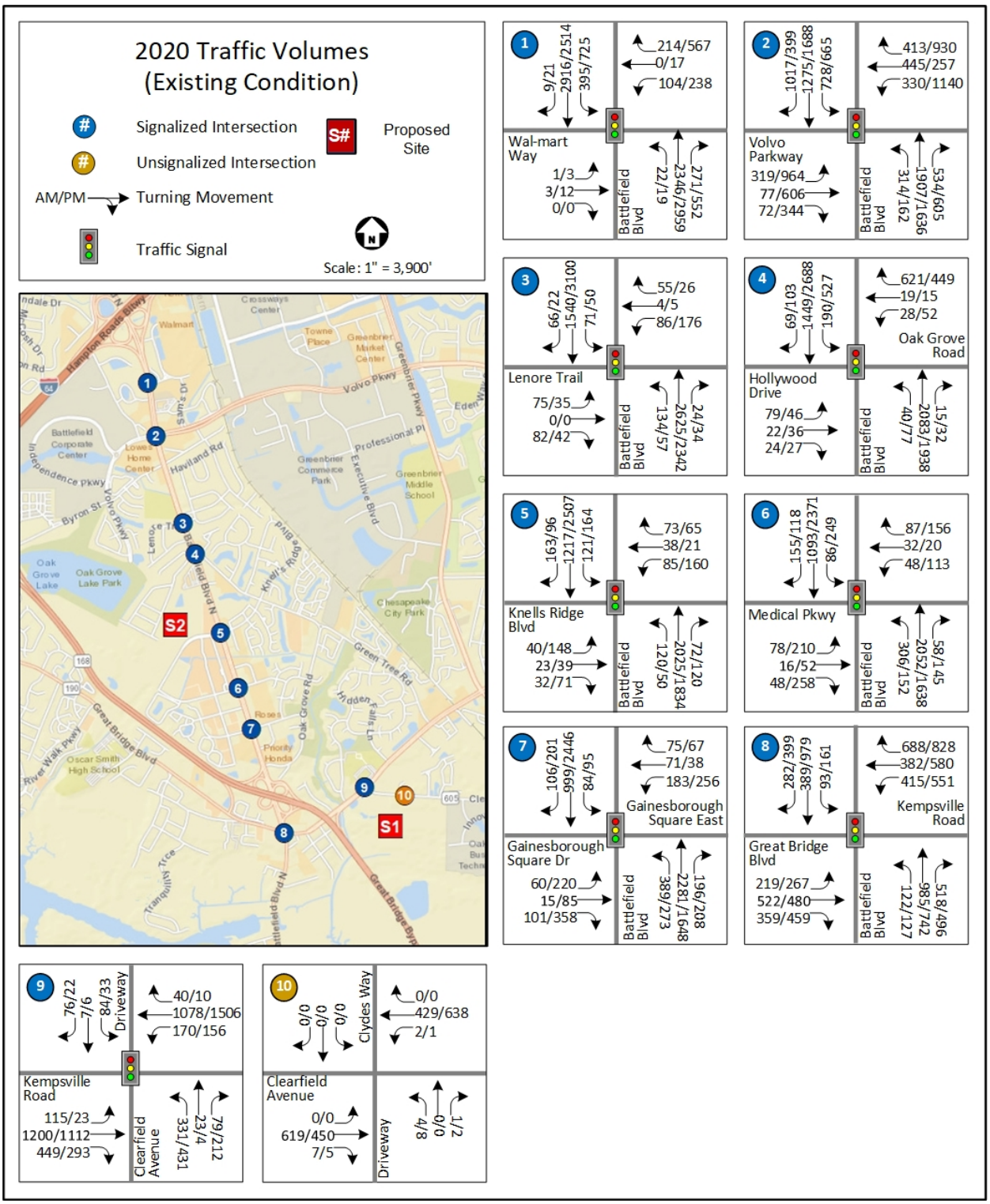


Figure 3-2. 2020 Existing AM and PM Peak Hour Turning Movement Volumes

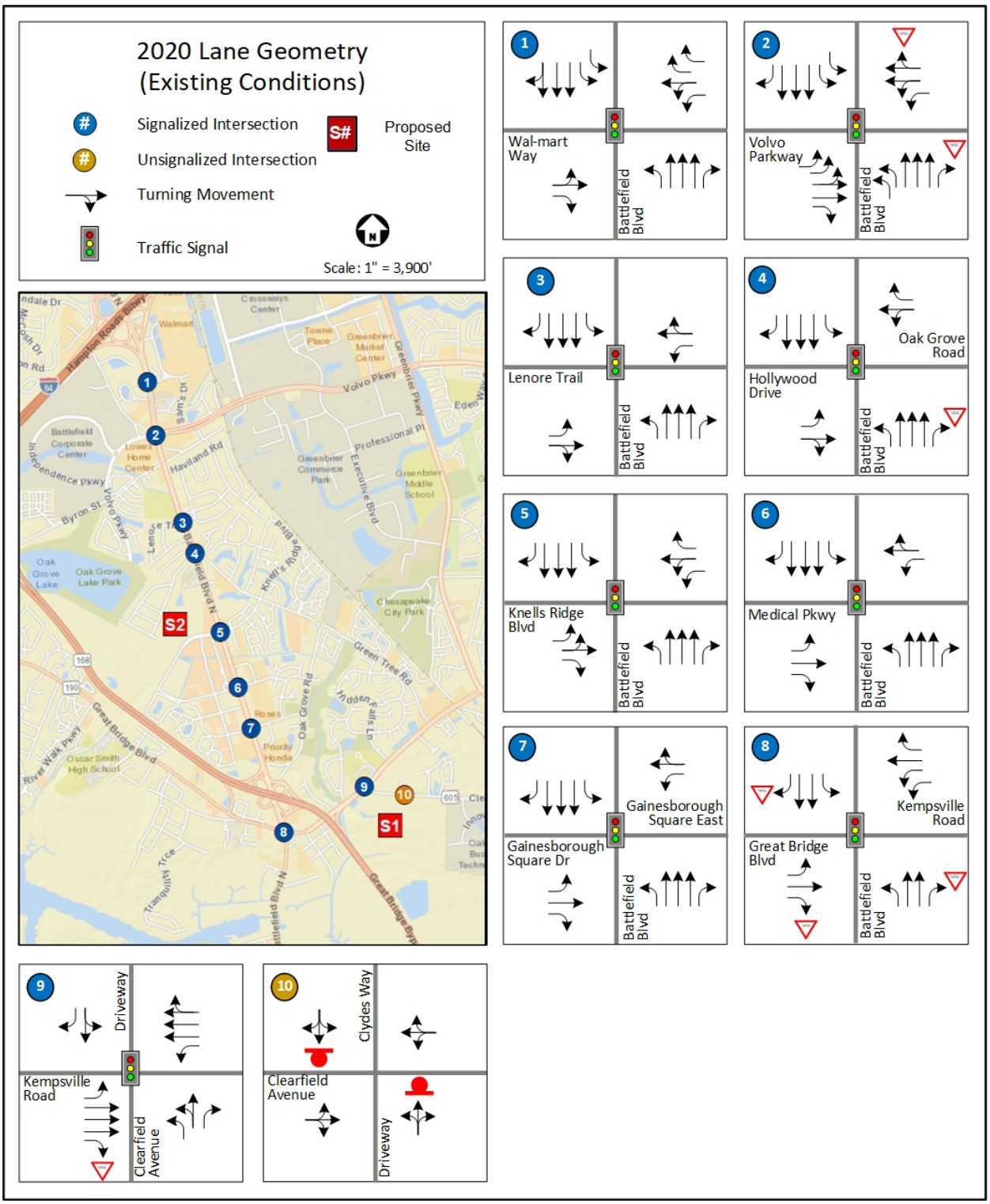


Figure 3-3. Existing Roadway Lane Geometry

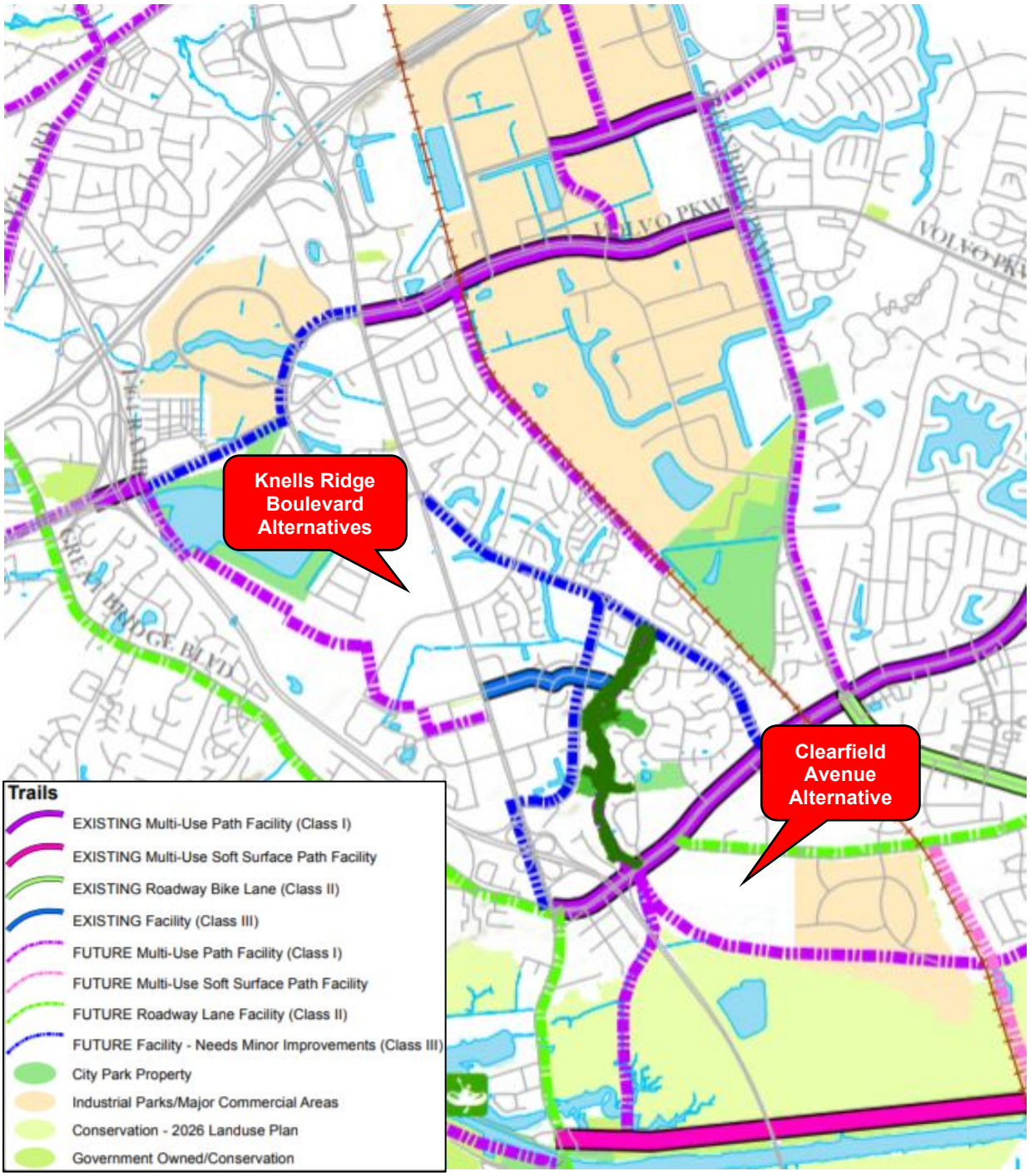
3.4 Pedestrian Network

Sidewalks in the pedestrian network study area range from approximately 5-feet wide through more than 7-feet wide in some locations. Federal Highway Administration (FHWA) guidelines state that sidewalks should have a minimum of 5 feet of clear space (FHWA 2016). Any width less than 5 feet must be 3-feet wide with 5-feet-wide turn-around locations every 200 feet to meet the minimum requirements for people with disabilities (DOJ 2010). Based on a review of aerial imagery, most locations with sidewalks available in the pedestrian network study area adhere to the minimum 5-foot-wide sidewalk requirement.

Knells Ridge Boulevard lacks sidewalks and crosswalks in either direction west of Kingsborough Square in the direction of the study area. However, appropriate sidewalks and crosswalks are located on Battlefield Boulevard with full connectivity. Sidewalks are intermittent adjacent to the study area on Clearfield Avenue.

3.5 Bicycle Network

Existing bicycle facilities within a 1-mile radius from the Action Alternatives were identified from the City of Chesapeake *2050 Trails Plan* and aerial imagery. The *2050 Trails Plan* labels four types of facilities throughout the city based on classes. Class I are multi-use paths where bicycles are separated from vehicles and pedestrian traffic. Class II are on-street bike lanes defined by a painted stripe. Class III are bike routes represented by posted route signs. Finally, there is also a multi-use soft surface path facility, but it does not fall into any of these classes. The sidewalk on Volvo Parkway from Battlefield Boulevard to Greenbriar Parkway in the eastbound direction and the sidewalks on Kempsville Road from Battlefield Boulevard to the city boundary at Bishopstoke Drive and Plantation Lakes Circle are classified as a Class I Multi-Use Path Facility. However, there is no clear indication of where the separation between bicycles and pedestrians occur. Additionally, Medical Parkway has a Class II bicycle route from Battlefield Boulevard to Old Oak Grove Road (City of Chesapeake 2016). Figure 3-4 presents a map of the existing bicycle facilities.



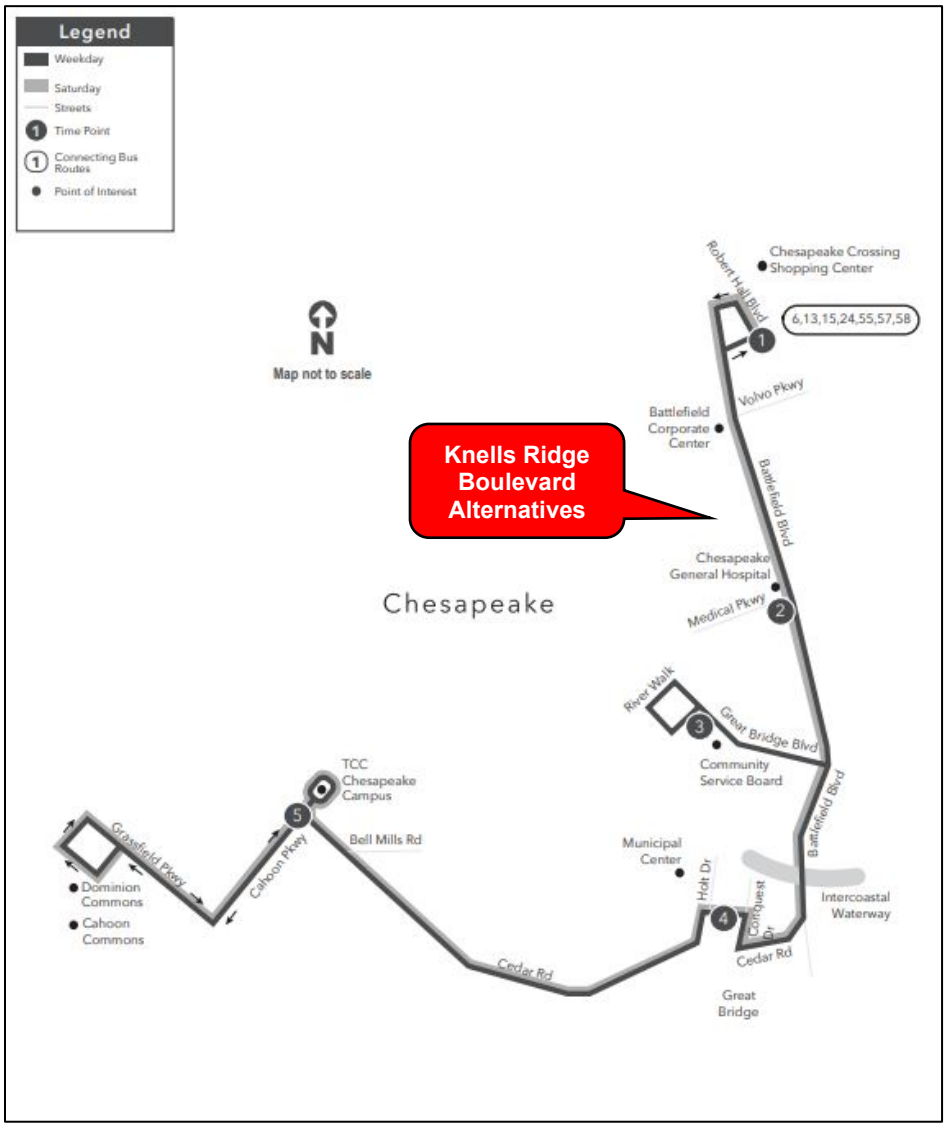
Source: City of Chesapeake, 2016

Figure 3-4. Existing Bicycle Network

3.6 Transit Network

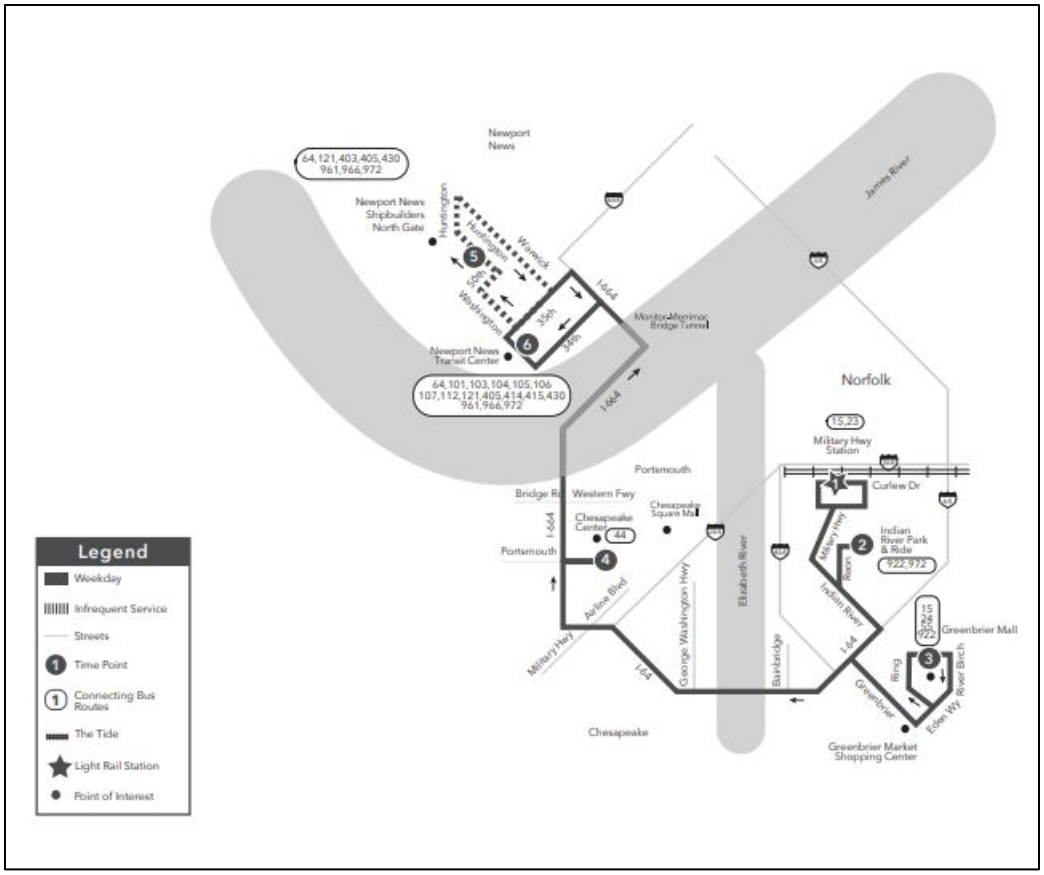
Hampton Roads Transit (HRT) runs two bus routes within the study area: one local bus (14) and one commuter bus (967) (HRT 2020). Route 14 runs from Robert Hall Boulevard south on

Battlefield Boulevard to Tidewater Community College Chesapeake with headways of 60 minutes. Two bus stops are located on Battlefield Boulevard in front of the Chesapeake Regional Medical Center. The next closest bus stop is on Great Bridge Boulevard. Updated service changes in November 2020 discontinue service along Great Bridge Boulevard on Saturday. The stops along this route have been significantly reduced beginning in April 2020. Route 967 Metro Area Express (MAX) provides service through Virginia Beach, Chesapeake, and Newport News along Interstate-64 with headways of 20 to 35 minutes during the AM and PM peak hours. The MAX is a regional express service connecting commuters to cities across Hampton Roads. It does not operate on weekends. Parking is available at any of the Park and Ride facilities throughout the region. Figures 3-5 and 3-6 shows bus routes 967 and 14.



Source: HRT, 2020

Figure 3-5. Bus Route 14



Source: HRT, 2020

Figure 3-6. Bus Route 967

3.7 Parking

No on-street parking is available on Knells Ridge Boulevard or Clearfield Avenue. Off-street parking is available on Battlefield Boulevard for individual commercial uses along the corridor.

3.8 Traffic

This section explains the concepts and definitions for analyzing the traffic operations, the process used to analyze the ten existing traffic study area intersections and one new driveway, and the results.

3.8.1 Analysis Tools

The study analyzed the traffic study area intersections using Synchro™ Traffic Signal Coordination Software Version 10.3 (Build 122, Revision 0). Two analyses were performed for traffic using the Synchro™ software tool, including an intersection capacity analysis and an intersection queueing analysis. The intersection capacity analysis used the Synchro™ software tool and various input values as described in the following sections to determine a driver's perception of an intersection's operation. The intersection capacity analysis results are presented

in Section 3.8.4. The intersection queuing analysis used the Synchro™ tool to determine different levels of queuing or the length that vehicles may back up at an intersection. The intersection queuing analysis process is described more in Section 3.8.5, and the traffic study area results of the queuing analysis are also presented in Section 3.8.5.

3.8.2 Intersection Operations Analysis Method

Level of Service (LOS) is the primary measure of traffic operations for both signalized and unsignalized intersections. LOS is a standard performance measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. LOS provides a scale that is intended to match motorists' perception of how a transportation facility operates and to provide a scale to compare different facilities. Detailed LOS descriptions are presented in Figure 3-7.

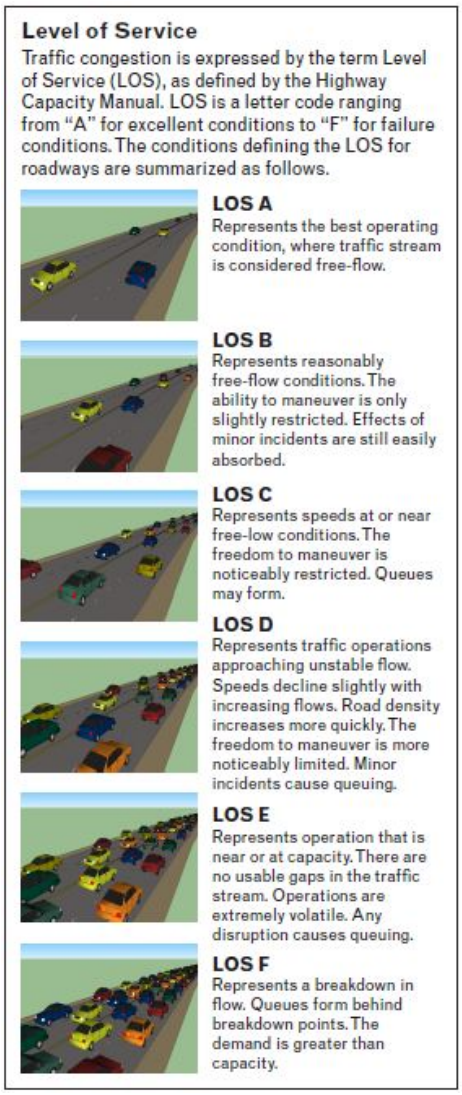


Figure 3-7. Level of Service Diagram

3.8.3 Signalized Intersection Level of Service

In accordance with the VDOT Administrative Guidelines for Traffic Impact Analysis Regulations (VDOT 2018), the LOS for signalized intersections is based on the Highway Capacity Manual (HCM) 2010 Edition method; however, in some instances the LOS for signalized intersections is based on HCM 2000 methods because of HCM 2010 method limitations regarding signal phase numbers that do not follow the National Electrical Manufacturer Association requirements. For example, the National Electrical Manufacturer Association requires that the phase that serves the northbound approach of an intersection be assigned a phase number of two and southbound approach be assigned a phase number of six. To determine an accurate LOS, primary inputs include:

- vehicular volumes
- pedestrian volumes
- traffic signal timings
- roadway geometry
- speed limits
- truck percentages
- peak hour factor (measure of vehicle 15-minute flow rate)

The average vehicle control delay, measured in seconds per vehicle, is calculated using the parameters described above with the Synchro™ procedures. The average vehicle control delay represents the average extra delay in seconds per vehicle caused by the presence of a traffic control device or traffic signal and includes the time required to decelerate, stop, and accelerate. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to a traffic signal control. It is also a surrogate measure for driver discomfort and fuel consumption (TRB 2010). Signalized intersections or approaches that exceed a delay of 55 seconds have LOS E, and those that exceed a delay of 80 seconds have LOS F. Table 3-3 shows the average control delay and corresponding LOS for signalized intersections.

Table 3-3. Signalized Intersection Control Delay and LOS Thresholds—HCM 2010 Edition Method

LOS	Average Control Delay (seconds/vehicle)	Description
A	Less than or equal to 10	Stable conditions
B	>10-20	Stable conditions
C	>20-35	Stable conditions
D	>35-55	Stable conditions
E	>55-80	Unstable conditions
F	More than 80	Above capacity and unstable conditions

Source: (TRB 2010)

To determine the LOS of an intersection, the critical input values were entered into the analysis software (Synchro™), and the average vehicle delay (seconds per vehicle) was calculated. Based on the average vehicle delay, the overall LOS was determined for each intersection.

3.8.4 Existing Condition Intersection Operations Analysis

Synchro™ was used to calculate the vehicle delay and LOS operation based on the HCM 2010 Edition method. The *Chesapeake 2035 Comprehensive Plan* sets the LOS standard for non-residential developments at LOS E (City of Chesapeake 2014).

Based on the Synchro™ analysis, six of the ten existing study intersections operate within the LOS E standard. The four intersections that operate beyond the LOS standard include Battlefield Boulevard/Volvo Parkway (Intersection #2), which operates at LOS F in the AM and PM peak hours; Battlefield Boulevard/Hollywood Drive/Oak Grove Road (Intersection #4), which operates at LOS F in the AM and PM peak hours; Battlefield Boulevard/Battlefield Boulevard/Gainsborough Square Drive (Intersection #7), which operates at LOS F in the PM peak hour; and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8), which operates at LOS F in the AM and PM peak hours.

The overall intersection LOS grades are depicted in Figure 3-8 for the AM and PM peak hours. Table 3-4 shows the results of the LOS capacity analysis and the intersection vehicle delay for the existing condition during the AM and PM peak hours. The Synchro™ analysis worksheets are provided in Appendix A.

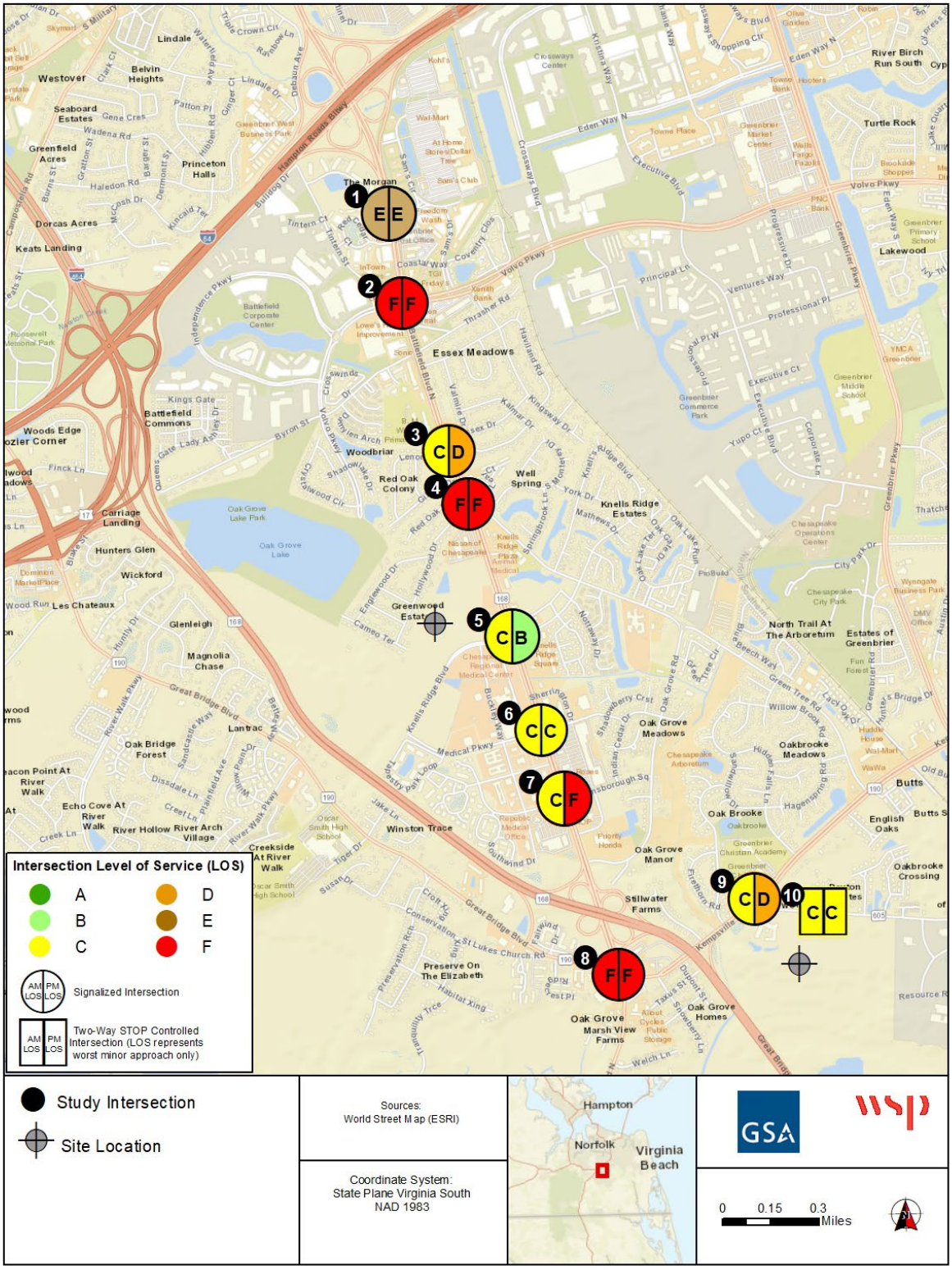


Figure 3-8. 2020 Existing Condition AM and PM Peak Hour LOS by Intersection

Table 3-4. 2020 Existing Condition Operations Analyses

Intersection Number and Name	Control	Existing AM Peak Hour HCM Delay (sec/ veh)	Existing AM Peak Hour HCM LOS	Existing PM Peak Hour HCM Delay (sec/ veh)	Existing PM Peak Hour HCM LOS
1. Battlefield Boulevard/Wal-Mart Way[a]	Signal	61.4	E	76.3	E
2. Battlefield Boulevard/Volvo Parkway[a]	Signal	136.2	F	237.6	F
3. Battlefield Boulevard/Lenore Trail	Signal	20.2	C	35.1	D
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road	Signal	96.7	F	81.0	F
5. Battlefield Boulevard/Knells Ridge Boulevard[a]	Signal	21.2	C	19.5	B
6. Battlefield Boulevard/Medical Parkway	Signal	23.8	C	23.6	C
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East	Signal	32.1	C	105.4	F
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road	Signal	189.8	F	160.4	F
9. Clearfield Avenue/Kempsville Road[a]	Signal	34.5	C	40.9	D
10. Clearfield Avenue/Clydes Way/Driveway[b]	TWSC	20.1	C	20.8	C

Notes:
LOS = Level of Service
TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)
Delay is measured in seconds per vehicle.
Red cells denote intersections operating at unacceptable conditions.
[a] HCM Manual 2000 results are used because of HCM 2010 limitations for evaluating this intersection.
[b] For TWSC intersections, the reported delay corresponds to the worst performing lane group.

3.8.5 Existing Condition Intersection Queuing Analysis

In addition to analyzing the vehicle delay, the vehicle queue lengths were calculated for the approaches of each study intersection. The 95th percentile queue length is the worst-case scenario, calculated as the queue that has a 5 percent probability of being exceeded. A failing queue length is determined by a queue length exceeding the intersection approach storage capacity. Because the available storage for each intersection approach differs, these values reflect whether the existing storage provides enough space for vehicles waiting to pass through the intersection without blocking another lane or another intersection. The study used Synchro™ to calculate the 95th percentile queue lengths for the ten study intersections.

Based on the Synchro™ signalized intersection analysis results, seven of the ten intersections (listed below) experience queuing lengths that exceed the available storage capacity. The remaining signalized intersections in the traffic study area provide sufficient storage for the existing demand. The lane groups in each approach that are operating with queues that exceed the available storage are noted in parentheses. Table 3-5 contains the queuing results; lane groups with queues that exceed the available storage are highlighted in red. Note that the 95th percentile values are expressed in feet, and a car occupies about 25 linear feet of roadway, including the space between cars.

- Battlefield Boulevard and Wal-Mart Way (Intersection #1)
  - Southbound (left turn) of Battlefield Boulevard in the PM peak hour
- Battlefield Boulevard and Volvo Parkway (Intersection #2)
  - Eastbound (left turn) of Volvo Parkway in the AM and PM peak hours
  - Westbound (left turn) of Volvo Parkway in the PM peak hour
  - Westbound (shared left turn, through movement, and right turn) of Volvo Parkway in the AM and PM peak hours
  - Southbound (through movement) of Battlefield Boulevard in the PM peak hour
- Battlefield Boulevard and Lenore Trail (Intersection #3)
  - Eastbound (left turn) of Lenore Trail in the AM peak hour
  - Westbound (left turn) of Lenore Trail in the PM peak hour
  - Northbound (through movement) of Battlefield Boulevard in the PM peak hour
- Battlefield Boulevard and Hollywood Drive/Oak Grove Road (Intersection #4)
  - Eastbound (left turn) of Hollywood Drive in the AM and PM peak hours
  - Southbound (left turn) of Battlefield Boulevard in the PM peak hour

- Battlefield Boulevard and Knells Ridge Boulevard (Intersection #5)
  - Eastbound (shared through movement and left turn) of Knells Ridge Boulevard in the PM peak hour
- Battlefield Boulevard and Gainsborough Square Drive/Gainsborough Square East (Intersection #7)
  - Westbound (shared through movement and right turn) of Gainsborough Square East in the AM and PM peak hours
- Battlefield Boulevard and Great Bridge Boulevard/Kempsville Road (Intersection #8)
  - Eastbound (left turn) of Great Bridge Boulevard in the PM peak hour
  - Westbound (left turn) of Kempsville Road in the AM and PM peak hours
  - Northbound (right turn) of Battlefield Boulevard in the AM and PM peak hours

The remaining intersections in the traffic study area provide sufficient storage for the existing demand. The Synchro™ analysis worksheets are provided in Appendix A.

Table 3-5. 2020 Existing Condition Queue Analyses

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	AM Peak Hour 95th Percentile (feet)	PM Peak Hour 95th Percentile (feet)
1. Battlefield Boulevard/Wal-Mart Way					
EB (Driveway)	EB	LT	70	16	39
EB (Driveway)	EB	R	40	0	0
WB (Wal-Mart Way)	WB	L	460	95	258
WB (Wal-Mart Way)	WB	LT	430	92	305
WB (Wal-Mart Way)	WB	R	350	26	211
NB (Battlefield Boulevard)	NB	L	225	19	11
NB (Battlefield Boulevard)	NB	T	1,340	213	647
NB (Battlefield Boulevard)	NB	R	250	1	24
SB (Battlefield Boulevard)	SB	L	410	241	500
SB (Battlefield Boulevard)	SB	TR	4,070	1178	676
2. Battlefield Boulevard/Volvo Parkway					
EB (Volvo Parkway)	EB	L	225	261	915
EB (Volvo Parkway)	EB	T	1,000	66	447
EB (Volvo Parkway)	EB	R	360	0	339
WB (Volvo Parkway)	WB	L	400	171	1110
WB (Volvo Parkway)	WB	LTR	620	712	1056
NB (Battlefield Boulevard)	NB	L	475	270	110
NB (Battlefield Boulevard)	NB	T	2,400	825	875
NB (Battlefield Boulevard)	NB	R	540	245	497
SB (Battlefield Boulevard)	SB	L	900	438	570
SB (Battlefield Boulevard)	SB	T	730	128	785
SB (Battlefield Boulevard)	SB	R	800	796	57

Table 3-5. 2020 Existing Condition Queue Analyses (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	AM Peak Hour 95th Percentile (feet)	PM Peak Hour 95th Percentile (feet)
3. Battlefield Boulevard/Lenore Trail					
EB (Lenore Trail)	EB	L	100	116	64
EB (Lenore Trail)	EB	TR	100	4	0
WB (Lenore Trail)	WB	L	250	130	282
WB (Lenore Trail)	WB	TR	250	45	35
NB (Battlefield Boulevard)	NB	L	330	40	24
NB (Battlefield Boulevard)	NB	T	790	178	919
NB (Battlefield Boulevard)	NB	R	330	0	0
SB (Battlefield Boulevard)	SB	L	310	57	8
SB (Battlefield Boulevard)	SB	T	2,410	432	563
SB (Battlefield Boulevard)	SB	R	230	8	0
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road					
EB (Hollywood Drive)	EB	L	80	117	84
EB (Hollywood Drive)	EB	TR	150	53	87
WB (Oak Grove Road)	WB	LT	1,000	76	114
WB (Oak Grove Road)	WB	R	3,980	851	118
NB (Battlefield Boulevard)	NB	L	310	12	30
NB (Battlefield Boulevard)	NB	T	2,130	170	676
NB (Battlefield Boulevard)	NB	R	700	0	2
SB (Battlefield Boulevard)	SB	L	310	219	342
SB (Battlefield Boulevard)	SB	T	770	41	84
SB (Battlefield Boulevard)	SB	R	160	0	0

Table 3-5. 2020 Existing Condition Queue Analyses (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	AM Peak Hour 95th Percentile (feet)	PM Peak Hour 95th Percentile (feet)
5. Battlefield Boulevard/Knells Ridge Boulevard					
EB (Knells Ridge Boulevard)	EB	L	200	64	169
EB (Knells Ridge Boulevard)	EB	LT	180	64	181
EB (Knells Ridge Boulevard)	EB	R	200	0	3
WB (Knells Ridge Boulevard)	WB	L	1,380	140	317
WB (Knells Ridge Boulevard)	WB	LT	1,380	72	50
WB (Knells Ridge Boulevard)	WB	R	210	0	0
NB (Battlefield Boulevard)	NB	L	400	49	19
NB (Battlefield Boulevard)	NB	T	1,460	705	210
NB (Battlefield Boulevard)	NB	R	890	5	2
SB (Battlefield Boulevard)	SB	L	380	96	124
SB (Battlefield Boulevard)	SB	T	2,130	203	465
SB (Battlefield Boulevard)	SB	R	380	54	1
6. Battlefield Boulevard/Medical Parkway					
EB (Medical Parkway)	EB	L	570	111	304
EB (Medical Parkway)	EB	T	570	34	78
EB (Medical Parkway)	EB	R	275	1	143
WB (Medical Parkway)	WB	L	1,290	87	222
WB (Medical Parkway)	WB	TR	150	108	87
NB (Battlefield Boulevard)	NB	L	450	247	179
NB (Battlefield Boulevard)	NB	T	1,050	121	182
NB (Battlefield Boulevard)	NB	R	360	0	1
SB (Battlefield Boulevard)	SB	L	425	71	269
SB (Battlefield Boulevard)	SB	T	1,480	299	609
SB (Battlefield Boulevard)	SB	R	430	62	3

Table 3-5. 2020 Existing Condition Queue Analyses (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	AM Peak Hour 95th Percentile (feet)	PM Peak Hour 95th Percentile (feet)
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East					
EB (Gainsborough Square Drive)	EB	L	560	84	278
EB (Gainsborough Square Drive)	EB	T	560	37	155
EB (Gainsborough Square Drive)	EB	R	300	10	284
WB (Gainsborough Square East)	WB	L	1,370	221	327
WB (Gainsborough Square East)	WB	TR	85	177	133
NB (Battlefield Boulevard)	NB	L	370	325	192
NB (Battlefield Boulevard)	NB	T	1,360	523	295
NB (Battlefield Boulevard)	NB	R	520	8	7
SB (Battlefield Boulevard)	SB	L	380	104	21
SB (Battlefield Boulevard)	SB	T	1,060	317	1019
SB (Battlefield Boulevard)	SB	R	370	25	8
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road					
EB (Great Bridge Boulevard)	EB	L	470	426	496
EB (Great Bridge Boulevard)	EB	T	1,500	762	661
EB (Great Bridge Boulevard)	EB	R	1,600	107	454
WB (Kempsville Road)	WB	L	210	418	480
WB (Kempsville Road)	WB	T	2,530	534	847
WB (Kempsville Road)	WB	R	2,540	1053	798
NB (Battlefield Boulevard)	NB	L	350	254	285
NB (Battlefield Boulevard)	NB	T	2,780	503	407
NB (Battlefield Boulevard)	NB	R	265	366	275
SB (Battlefield Boulevard)	SB	L	360	174	147
SB (Battlefield Boulevard)	SB	T	2,900	156	305
SB (Battlefield Boulevard)	SB	R	2,880	137	26

Table 3-5. 2020 Existing Condition Queue Analyses (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	AM Peak Hour 95th Percentile (feet)	PM Peak Hour 95th Percentile (feet)
9. Kempsville Road/Clearfield Avenue					
EB (Kempsville Road)	EB	L	220	60	14
EB (Kempsville Road)	EB	T	2,570	416	380
EB (Kempsville Road)	EB	R	330	28	51
WB (Kempsville Road)	WB	L	200	167	128
WB (Kempsville Road)	WB	TR	2,420	327	505
NB (Clearfield Avenue)	NB	L	300	230	292
NB (Clearfield Avenue)	NB	LT	4,600	234	296
NB (Clearfield Avenue)	NB	R	225	0	66
SB (Driveway)	SB	LT	300	138	79
SB (Driveway)	SB	R	300	0	0
10. Clearfield Avenue/Clydes Way/Driveway[a]					
WB (Kempsville Road)	WB	LT	760	0	0
NB (Clydes Way/Driveway)	NB	LR	100	3	3

Notes:
95th percentile queues exceeding the available storage are denoted in red cells.
EB = eastbound, WB = westbound, NB= northbound, SB = southbound
LTR = left / through / right lanes
[a] HCM 2010 methodology queue values for TWSC- and AWSC-controlled intersections are reported in units of vehicles, but an average vehicle length of 25 feet is assumed to convert the queue value into units of feet.

3.9 Safety Conditions

VDOT crash data revealed several major crashes along Battlefield Boulevard and Kempsville Road from the intersection of Wal-Mart Way and Battlefield Boulevard to the intersection of Kempsville Road and Clearfield Avenue. Battlefield Boulevard and Kempsville Road had 335 accidents from 2017 to 2019. Most crashes involved vehicles only. One crash involved a pedestrian; no crashes with bicycles were reported. Of the 335 crashes, 164 resulted in injury. The remaining 171 crashes reported property damage only. VDOT classifies three categories of injuries: severe, visible, and non-visible. Six crashes reported severe injuries, 138 reported visible injuries, and 20 reported non-visible injuries. Intersections with a higher rate of crashes were all located on Battlefield Boulevard. Battlefield Boulevard and Kempsville Road/Great Bridge Boulevard had 35 crashes. Battlefield Boulevard at Gainsborough Square and Medical Parkway had 24 crashes each. Volvo Parkway had 37 crashes, and Wal-Mart Way had 25. Of the total crashes, 111 were rear-end collisions. According to VDOT data, the two most common reasons for a crash included “Did not have right-of-way” and “Following too close” (VDOT n.d.).

4.0 FUTURE CONDITIONS

4.1 Introduction

This section describes the future transportation conditions under the No Action Alternative and the Action Alternatives. The study describes the future transportation condition covering pedestrian, bicycle, transit, and traffic and provides an impact assessment.

4.2 No Action Alternative

This section describes the No Action Alternative, which provides the baseline for examining impacts. Analysis of the No Action condition assumes the addition of trips to the roadway network from planned background developments and annual growth through 2024, the year in which the CBOC is expected to open.

Under the No Action Alternative, no changes are proposed in the project area. Therefore, this section only describes changes that are planned or reasonably foreseeable outside the project area but within the various modal study areas covered in Section 3.0.

4.2.1 Planned Development

The following sections describe the reasonably foreseeable planned developments estimated to be completed by 2024. Based on information provided by the City of Chesapeake, three planned developments were considered in this study and are reasonably foreseen to be completed by 2024. The development programs were derived from staff reports of each development and were used to estimate the number of vehicle trips expected to be added to the roadway network. Figure 4-1 presents the locations of each planned development in relation to the study area.

Trip generation calculations of each planned development form the basis for estimating additional vehicular traffic to the public roadway network. The vehicle trip generation assumptions for the three planned developments included in this study are based on the rates or regression equations published in the ITE *10th Edition Trip Generation Manual*. The planned developments would generate a combined total of 55 new AM peak hour and 70 new PM peak hour vehicle trips to the roadway network, based on the estimates shown in Table 4-1.

Trip distribution represents the origin-destination pattern by percentage for vehicle trips generated by each planned development to and from points beyond the traffic study area boundary. In some cases, planned developments would be located just outside the traffic study area; therefore, the only vehicle trips included are trips that would travel through the traffic study area intersections. Trip assignments are the process of route selection and turning movements through specific roadways and intersections as drivers enter/exit a development. For the three planned developments whose vehicle trips were forecasted in the study, trip distribution and assignment patterns were based on a review of the existing travel patterns, particularly for intersections closest to each development, and the proximity of each development to key roadways.

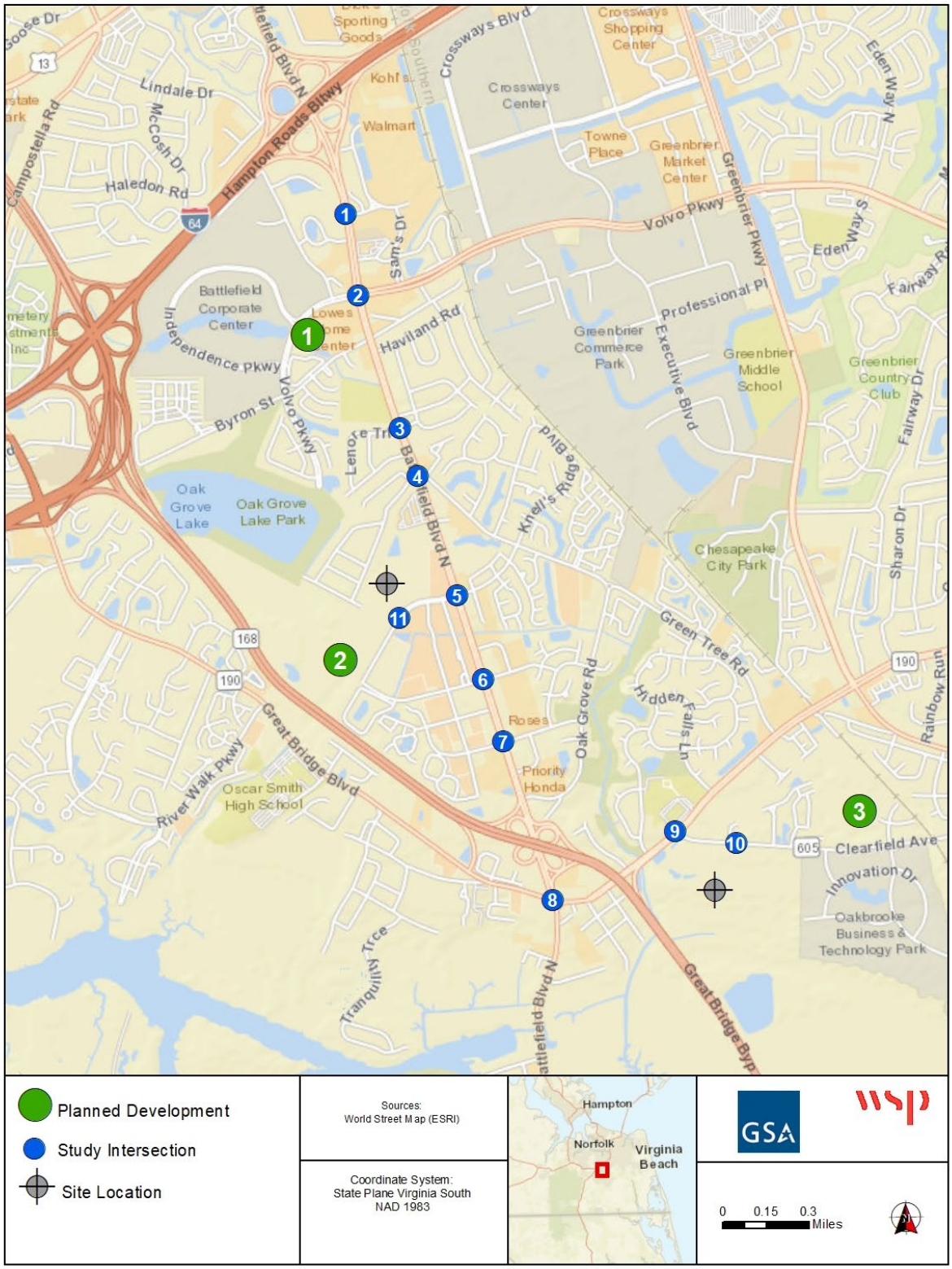


Figure 4-1. Planned Development Location

Table 4-1. Planned Development Trip Generation Summary

Project and Lane Use	Size	Units	AM Peak Hour IN Trips	AM Peak Hour OUT Trips	AM Peak Hour TOTAL Trips	PM Peak Hour IN Trips	PM Peak Hour OUT Trips	PM Peak Hour TOTAL Trips
1. Ocean Storage (Mini warehouse)	105,000	SF	6	6	12	11	9	20
2. Cypress Landing (Multifamily Housing)	50	DU	5	18	23	16	10	26
3. Everton Estates (Single-Family Detached)	22	DU	5	15	20	15	9	24
Total Vehicle Trips (All Projects)			**16**	**39**	**55**	**42**	**28**	**70**

Notes:
Trip generation estimates are based on the ITE *10th Edition Trip Generation Manual*.
DU = dwelling unit
SF = square feet

Table 4-2 presents the trip distributions for the local roadways in the study area. Percentages for a specific development may not add to a total of 100 percent because some projects are either outside or on the periphery of the study area and are expected to generate vehicle trips on roadways that are not captured in any of the study intersections.

Table 4-2. Planned Development Trip Distributions

Roadway and Direction	Percentage of Ocean Storage Trips	Percentage of Cypress Landing Trips	Percentage of Everton Estates Trips
North on Battlefield Boulevard	30%	60%	25%
South on Battlefield Boulevard	30%	40%	20%
East on Volvo Parkway	40%	--	--
East on Kempsville Road	--	--	35%

4.2.2 Planned Roadway Improvements

Two planned roadway improvements in the traffic study area, currently in the design phase, are identified as having potential to be constructed by 2024 (the project construction year) (City of Chesapeake 2018). The improvements pertain to the intersection of Battlefield Boulevard/Volvo Parkway (Intersection #2) and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8). At the Battlefield Boulevard/Volvo Parkway intersection, the eastbound approach would be striped with three left turn lanes, two through lanes, and one right turn lane. At the Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road intersection, the planned improvement would include an additional eastbound turn lane; however, the specific turning movement is not known at this time. Because existing peak hour volumes for the eastbound approach indicate that approximately 60 percent of trips complete a right turn and the other 40 percent complete a left turn, this study assumes that the improvement would include an additional right turn lane.

The traffic signal timing splits and offsets for the study intersections were optimized during the No Action Alternative, reflecting an assumption that the planned roadway improvements would catalyze a need to retime the intersections in response to the change in roadway capacity. An additional eastbound right turn lane at Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) would result in dual right turns, which would necessitate changing the signal phasing to consist of a protected eastbound right turn phase at this intersection.

4.2.3 Background Growth Rate

Background growth was added to the roadway network to account for new vehicle trips originating outside the traffic study area that would travel through the study area. These trips are attributable to land use changes beyond the study area. Based on a review of historic VDOT average daily traffic volume data, a 1.8 percent annual growth rate for each turning movement of the study intersections was assumed for the No Action Alternative.

4.2.4 No Action Alternative Turning Movement Volumes

The No Action Alternative AM and PM peak hour traffic volumes—which are the sum of the existing AM and PM peak hour traffic volumes, the additional traffic from the planned developments, and the addition of traffic due to background growth—are presented in Figure 4-2.

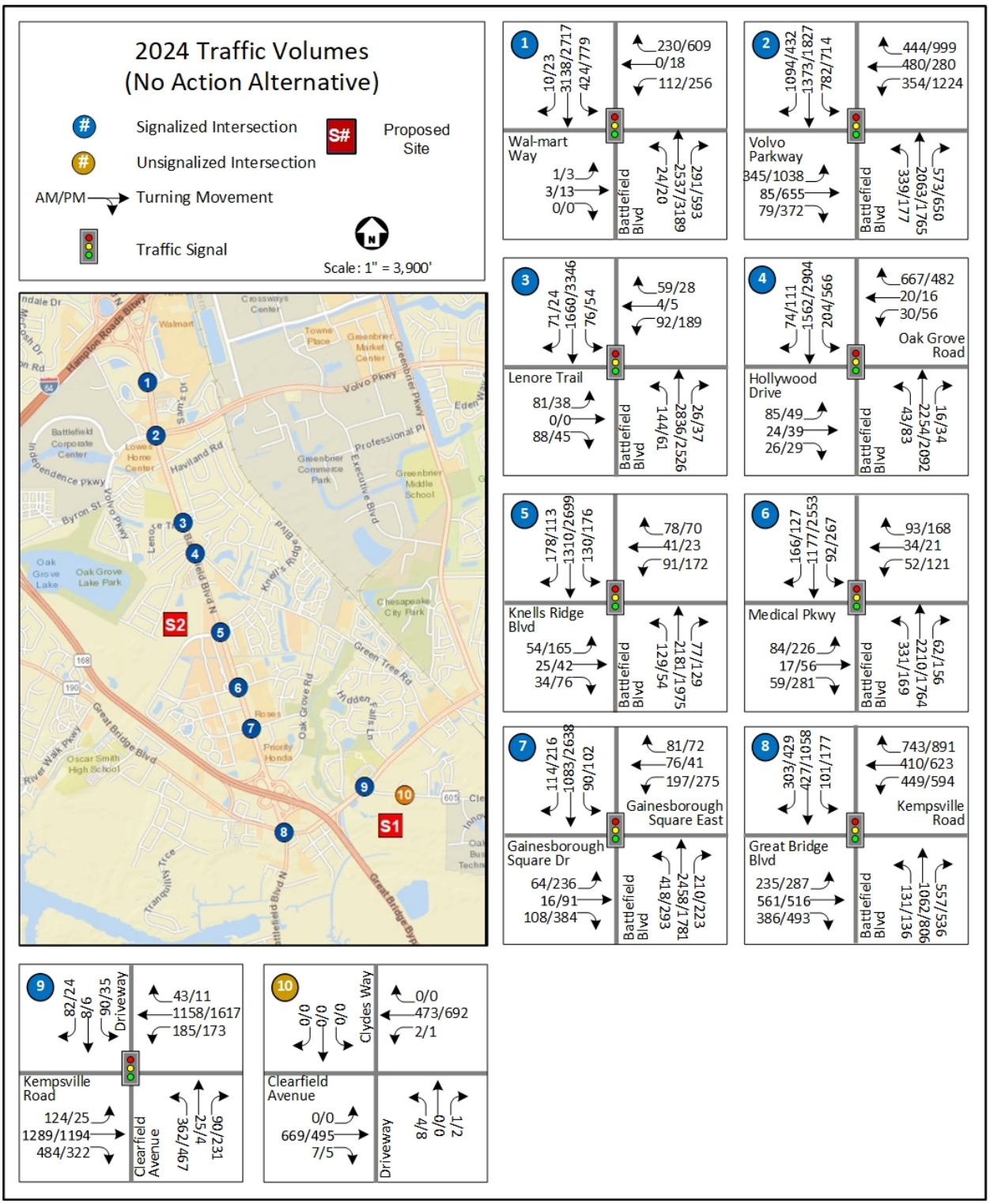


Figure 4-2. No Action Alternative AM and PM Peak Hour Traffic Volumes

4.3 Clearfield Avenue Alternative

This section describes the Clearfield Avenue Alternative—construction of a new CBOC on Clearfield Avenue near the intersection of Kempsville Road (VA 190) in the City of Chesapeake, Virginia. Analysis of the Clearfield Avenue Alternative assumes the addition of trips to the roadway network from the No Action Alternative plus the new trips generated by the proposed CBOC.

4.3.1 Trip Generation

The estimated number of CBOC trips that would be generated under the Clearfield Avenue Alternative is based on information provided by the VA that includes the anticipated number of staff at the facility and patient appointment patterns. The following paragraphs describe the process for estimating the trip generation.

A maximum of 400 staff, including medical and non-medical disciplines, would be employed at the facility. However, only an estimated 86 percent of staff, or 344 people, would be at the facility each day, either because of illness or injury, personal matters, or some other reason. Based on data from the Bureau of Labor Statistics, approximately 4 percent of staff in the medical field are not in work on a given day due to illness or injury (BLS 2020). In addition, it is assumed that 10 percent of staff would not report to work because of time off related to vacation time. Thus, the 4 percent of staff out of work due to medical reasons plus the 10 percent out of work for vacation time make up the 14 percent of staff who would not report to work each day.

All 344 staff are expected to arrive at the facility prior to the AM peak hour and depart after the last patient appointment after the PM peak hour. However, to be more conservative, 10 percent of the 344 staff are assumed to arrive late to the facility during the AM peak hour and leave earlier during the PM peak hour. In summary, 34 staff would arrive during the AM peak hour and 34 staff would leave during the PM peak hour.

The CBOC would also attract an estimated 3,000 patients per day. Over the course of an 8-hour day from 8:00 AM to 5:00 PM, about 375 patients would arrive at the facility each hour. In general, patients are expected to spend an hour at the clinic and typically prefer appointments earlier in the day. To provide a more conservative analysis, it is assumed that 400 patients would have appointments during the AM peak hour. Because patients are expected to spend an hour at the clinic, it is assumed that all 400 patients would arrive to the CBOC during the AM peak hour beginning at 8:00 AM, while none would leave before 9:00 AM. During the PM peak hour, 300 patients would depart following their appointment between 4:00 and 5:00 PM, and 150 patients would arrive between 4:00 and 4:30 PM because the last appointment would be scheduled at 4:30 PM.

When combining the total number of patients and staff: 434 people would arrive during the AM peak hour; and 150 persons would arrive while 334 persons would leave during the PM hour.

4.3.2 Modal Split

The Census Transportation Planning Products database was referenced to develop assumptions regarding the modal split, or the share of people who travel by a mode of transportation other than a private vehicle, for the Clearfield Avenue Alternative. The data show that 0.4 percent of people travel by transit, and 1.4 percent of people travel by walking in the Action Alternative vicinity (CTPP 2020a). A new bus stop would service the proposed CBOC, and it is expected to increase transit usage. Therefore, the rounded modal share for transit is assumed to be 2 percent, and the share for walking is assumed to be 1 percent, for a total of 3 percent of people who would travel to the Clearfield Avenue Alternative site by a mode other than a private vehicle.

This modal split does not account for telehealth. The VA would provide home and video telehealth services to patients, and these services could further reduce the number of vehicle trips added to the roadway network. It is estimated that 5 percent of patients would use these telehealth services.

Table 4-3 summarizes the trip generation estimates for the patient and staff travel patterns and includes the 3 percent modal split for all users and a further 5 percent reduction for patients using telehealth services. The Clearfield Avenue Alternative is estimated to generate 401 AM peak hour trips and 446 PM peak hour trips.

Table 4-3. Clearfield Avenue Alternative Trip Generation Summary

Units	AM Peak Hour IN Trips	AM Peak Hour OUT Trips	AM Peak Hour TOTAL Trips	PM Peak Hour IN Trips	PM Peak Hour OUT Trips	PM Peak Hour TOTAL Trips
Total Staff Trips	34	0	34	0	34	34
Modal Split (3%)	*-1*	*0*	*-1*	*0*	*-1*	*-1*
Subtotal of Staff Vehicle Trips	**33**	**0**	**33**	**0**	**33**	**33**
Total Patients Trips	400	0	400	150	300	450
Modal Split (3%)	*-12*	*0*	-12	*-5*	*-9*	*-14*
Telehealth (5%)	*-20*	*0*	-20	*-8*	*-15*	*-23*
Subtotal of Patient Vehicle Trips	**368**	**0**	**368**	**137**	**276**	**413**
Total Site Vehicle Trips	**401**	**0**	**401**	**137**	**309**	**446**

4.3.3 Trip Distribution

Trip distributions for the Clearfield Avenue Alternative were developed from a review of residential population data provided by the U.S. Census Bureau (CTPP 2020b). For Census Tracts within a 10-mile radius of the Action Alternative sites, the population of a tract as a percentage of the total population within the circular area was factored. Table 4-4 summarizes the trip distributions as they would affect the roadways in the study.

Table 4-4. Clearfield Avenue Alternative Trip Distribution Summary

Roadway and Direction	Percentage of Trips
To/From North via Battlefield Boulevard	66%
To/From South via Battlefield Boulevard	5%
To/From East via Clearfield Avenue	12%
To/From East via Kempsville Road	15%
To/From West via Great Bridge Boulevard	2%

4.3.4 Turning Movement Volumes

The forecasts for 2024 conditions under the Clearfield Avenue Alternative were developed by assigning site trips to the roadway network based on the distributions in Table 4-4 and adding the volumes to the No Action Alternative volumes previously shown in Figure 4-2. The Clearfield Avenue Alternative AM and PM peak hour traffic volumes are shown in Figure 4-3.

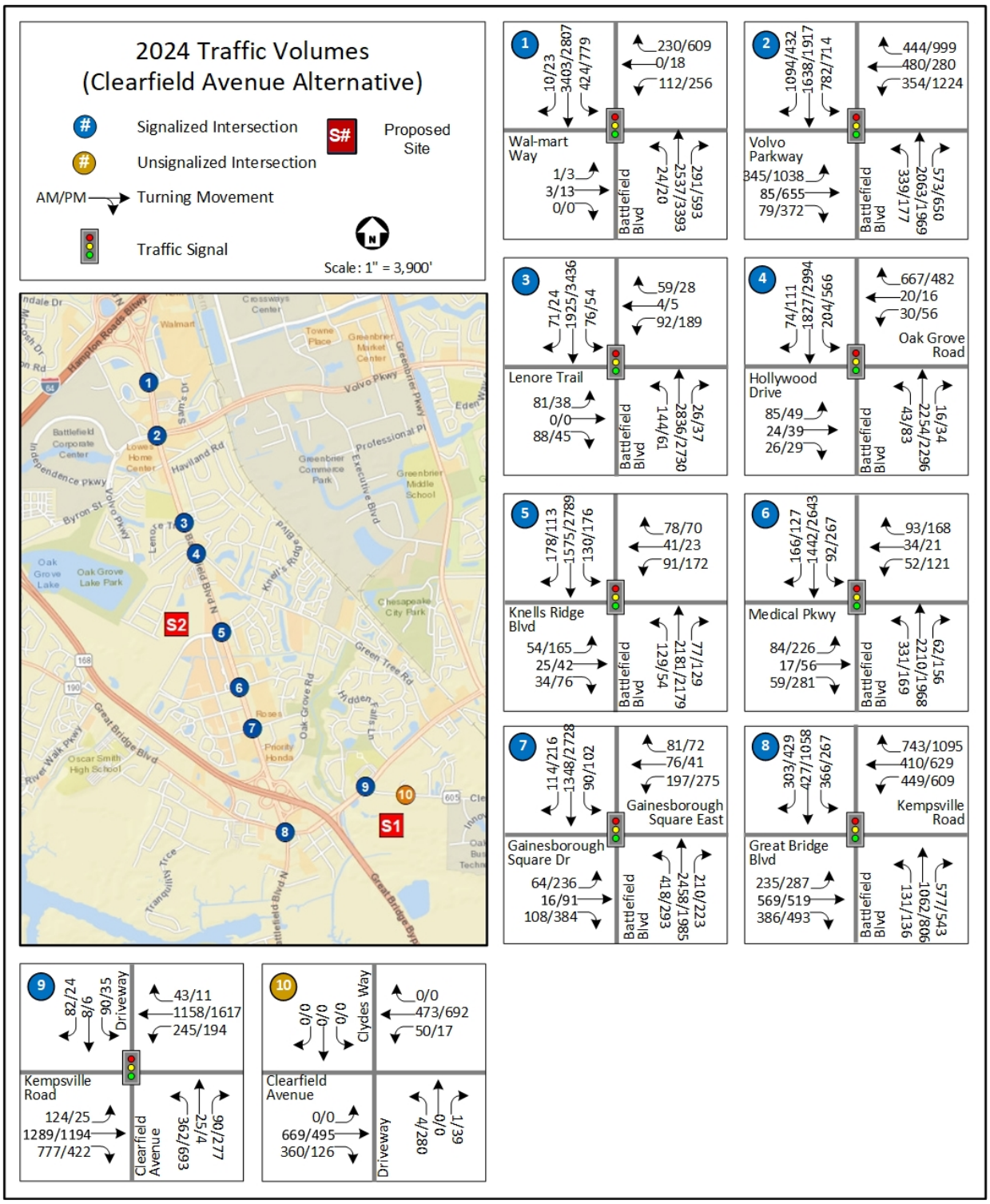


Figure 4-3. Clearfield Avenue Alternative Turning Movement Volumes

4.4 Knells Ridge Boulevard Alternatives

This section describes the Knells Ridge Boulevard Alternatives—construction of a new CBOC on Knells Ridge Boulevard near the intersection with VA 168 (North Battlefield Boulevard) in the City of Chesapeake, Virginia. Two design Alternatives for the Knells Ridge Boulevard Alternatives are under consideration. Both site plan concepts would have similar access configurations. Pedestrian and bicycle patterns and transit and vehicle operations are expected to be similar for either Alternative, thus a single traffic and multimodal assessment was performed for this study. Analysis of the Knells Ridge Boulevard Alternative assumes the addition of trips to the roadway network from the No Action Alternative plus the new trips generated by the proposed CBOC.

4.4.1 Trip Generation

The number of trips that would be generated by the Knells Ridge Boulevard Alternatives was calculated using the same procedure used to estimate site trips for the Clearfield Avenue Alternative. Therefore, as previously shown in Table 4-3, the Knells Ridge Boulevard Alternatives would generate 401 AM peak hour trips and 446 PM peak hour trips.

4.4.2 Modal Split

Consistent with the methodology used for the Clearfield Avenue Alternative, 3 percent of people would travel to the CBOC by a mode other than a private vehicle under the Knells Ridge Boulevard Alternatives. Also as described for the Clearfield Avenue Alternative, the VA would provide telehealth services to patients for the Knells Ridge Boulevard Alternatives, which could further reduce the number of vehicle trips added to the roadway network. An estimated 5 percent of patients are expected to use these telehealth services under the Knells Ridge Boulevard Alternatives, consistent with the percentage assumed for the Clearfield Avenue Alternative.

4.4.3 Trip Distribution

Trip distributions for the Knells Ridge Boulevard Alternatives were developed following the methodology used to determine distributions for the Clearfield Avenue Alternative, with some variation based on the location of the Knells Ridge Boulevard Alternatives and their proximity to other roadways. Table 4-5 provides a summary of the trip distributions as they would affect the roadways in the study area.

Table 4-5. Knells Ridge Boulevard Alternatives Trip Distribution Summary

Roadway and Direction	Percentage of Trips
To/From North via Battlefield Boulevard	65%
To/From South via Battlefield Boulevard	8%
To/From East via Volvo Parkway	5%
To/From East via Kempsville Road	21%
To/From West via Great Bridge Boulevard	1%

4.4.4 Turning Movement Volumes

The forecasts for 2024 conditions under the Knells Ridge Boulevard Alternatives were developed by assigning site trips to the roadway network based on the distributions in Table 4-5 and adding the volumes to the No Action Alternative volumes previously shown in Figure 4-2. The Knells Ridge Boulevard Alternatives' AM and PM peak hour traffic volumes are shown in Figure 4-4.

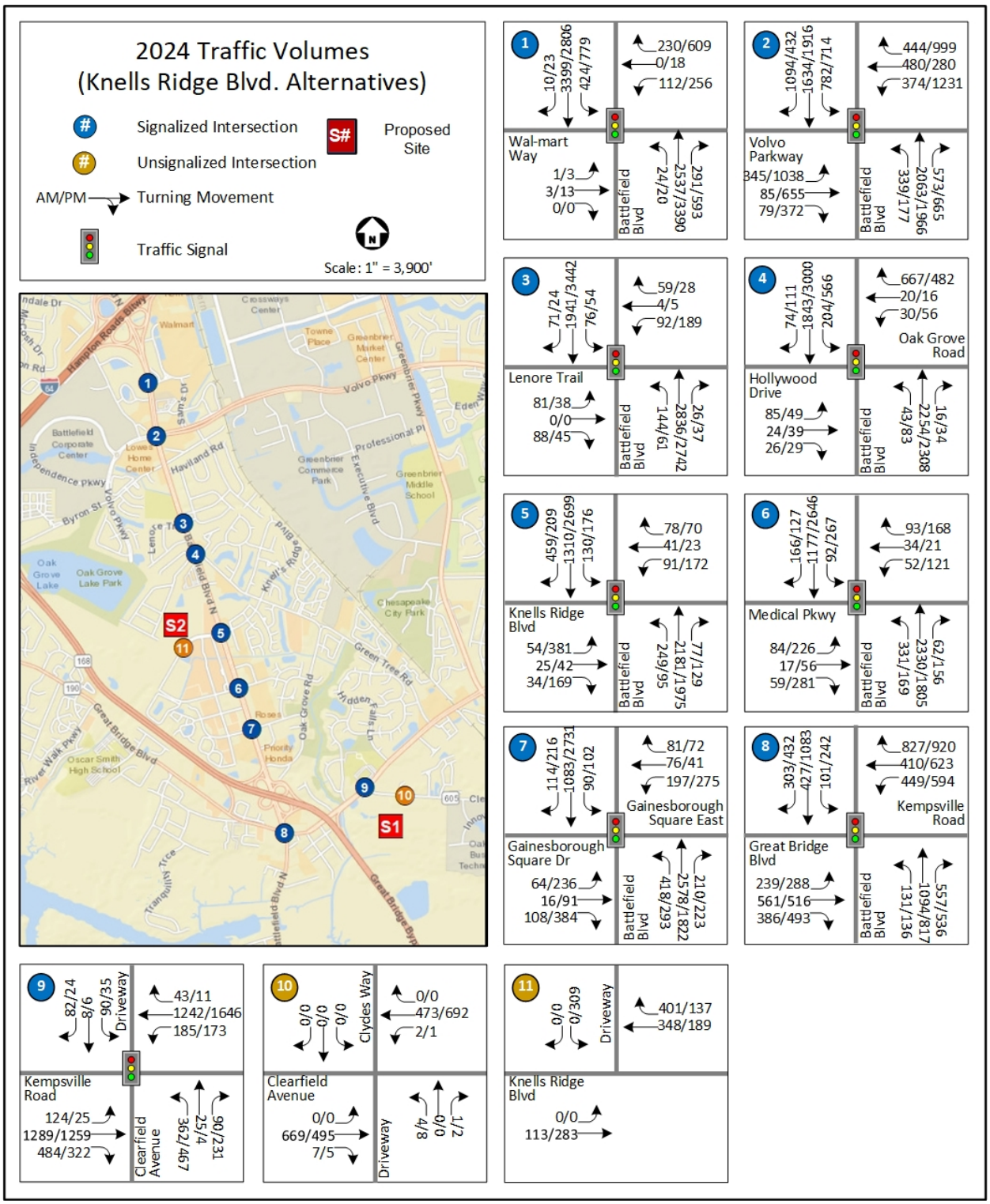


Figure 4-4. Knells Ridge Boulevard Alternatives Turning Movement Volumes

4.5 Pedestrian Network Comparison – Clearfield Avenue Alternative and Knells Ridge Boulevard Alternatives

Under the No Action Alternative, three development projects, described in Section 4.2.1, are reasonably foreseeable to be completed by 2024, the full build out year. These projects may include replacing existing sidewalks damaged during construction or improving sidewalks to adhere to the requirements of the Americans with Disabilities Act (ADA) or the City of Chesapeake development and land use ordinances (City of Chesapeake n.d.).

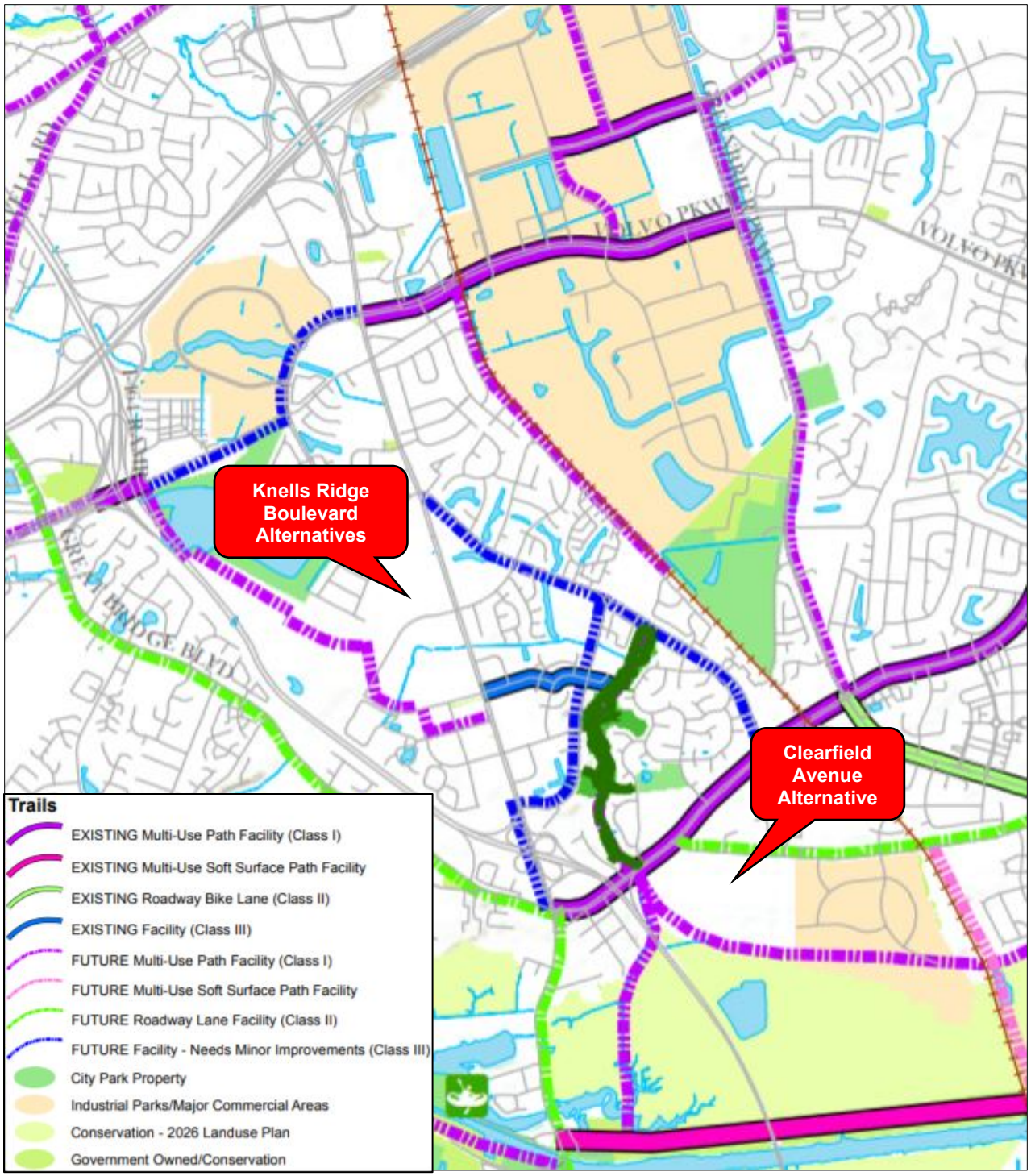
Under the Clearfield Avenue Alternative, the CBOC would have sidewalks and crosswalks from the proposed parking lots to the facility. Additionally, the facility would have a pedestrian path that connects various public spaces.

Under the Knells Ridge Boulevard Alternatives, sidewalks and crosswalks would be available from the proposed parking lots to the facility. Additionally, crosswalks would be located at all entrances.

4.6 Bicycle Network Comparison – Clearfield Avenue Alternative and Knells Ridge Boulevard Alternatives

Under the No Action Alternative, the City of Chesapeake *2050 Trails Plan* identifies several proposed facilities throughout the study area, including two Class I paths, one beginning at the intersection of Byron Street and Queens Gate and traveling south past Oak Grove Lake to Knells Ridge Boulevard, and one path following the railroad tracks south of Volvo Parkway. Two Class II lanes are proposed along Great Bridge Boulevard and Clearfield Avenue. Four Class III lanes are proposed: one along Volvo Parkway west of Battlefield Boulevard to Byron Street that connects to a proposed Class I facility north of Oak Grove Lake; a second on Old Oak Grove Road from Battlefield Boulevard to Kempsville Road; a third that begins at Battlefield Boulevard and Oak Grove Road and connects to the proposed facility on Old Oak Grove; and a final facility on Battlefield Boulevard between Oak Grove Road and Great Bridge Boulevard (City of Chesapeake 2016). See Figure 4-5 for the proposed bicycle facilities.

Under both Action Alternatives, no bicycle infrastructure would be incorporated into the site plan.



Source: City of Chesapeake, 2016

Figure 4-5. Proposed Bicycle Network

4.7 Transit Network Comparison – Clearfield Avenue Alternative and Knells Ridge Boulevard Alternatives

Under the No Action Alternative, one transit initiative would affect the network. As part of the *Hampton Roads Regional Transit Vision Plan*, Harbor Park to Great Bridge via Battlefield Boulevard was identified as an express and enhanced bus corridor that could be implemented in the short term (by 2025). An enhanced bus would provide smaller headways through improved operations such as priority at traffic signals, real-time arrival information, and additional station stop amenities. Express buses would be similar to the HRT MAX service that serves regional commuter trips, which use high-occupancy vehicle lanes when available. Express bus service typically connects a Park and Ride facility in a suburban or outlying area to a high demand destination, such as a city center business district or employment center (HRT 2011). It is also assumed that once COVID-19 is no longer affecting public transit operations and ridership, previous routes and stops will be resumed.

Under the Clearfield Avenue Alternative, a bus stop would be planned on-site. The developer would need to work with HRT to ascertain which bus route(s) would serve this stop.

Under the Knells Ridge Boulevard Alternatives, no transit routes or stops have been identified at this time, although a new bus stop is part of the proposed CBOC.

4.8 Parking Comparison – Clearfield Avenue Alternative and Knells Ridge Boulevard Alternatives

The planned developments described under the No Action Alternative will be required to provide new parking spaces to serve users based on their site plans and the City of Chesapeake development and land use ordinances (City of Chesapeake n.d.).

Both Action Alternatives would include a minimum requirement of 1,050 parking spaces.

4.9 Comparison of Traffic – Clearfield Avenue Alternative and Knells Ridge Boulevard Alternatives

4.9.1 No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Intersection Operation Comparison

Based on the Synchro™ analysis, seven of the ten study intersections would operate within the LOS E standard under the No Action Alternative. The three intersections that would operate beyond the LOS standard are Battlefield Boulevard/Wal-Mart Way (Intersection #1), Battlefield Boulevard/Volvo Parkway (Intersection #2), and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8). Battlefield Boulevard/Wal-Mart Way (Intersection #1) would operate with a LOS F in the PM peak hour, and Battlefield Boulevard/Volvo Parkway (Intersection #2) and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) would operate at LOS F in both the AM and PM peak hours.

Under the Action Alternatives, the same intersections would continue operating with a LOS F during the defined peak hours, but delays would be generally longer compared to those under the No Action Alternative. Under the Clearfield Avenue Alternative, the northbound approach of Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would operate with a LOS F during the PM peak hour. The Knells Ridge Boulevard Alternatives driveway from Knells Ridge Boulevard is expected to operate at an acceptable LOS.

The overall AM and PM peak hour intersection LOS grades are shown in Figure 4-6 for the No Action Alternative, Figure 4-7 for the Clearfield Avenue Alternative, and Figure 4-8 for the Knells Ridge Boulevard Alternatives. Table 4-6 shows the results of the LOS capacity analysis and the intersection vehicle delay for the No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives during the AM and PM peak hours. The Synchro™ analysis worksheets are provided in Appendix A.

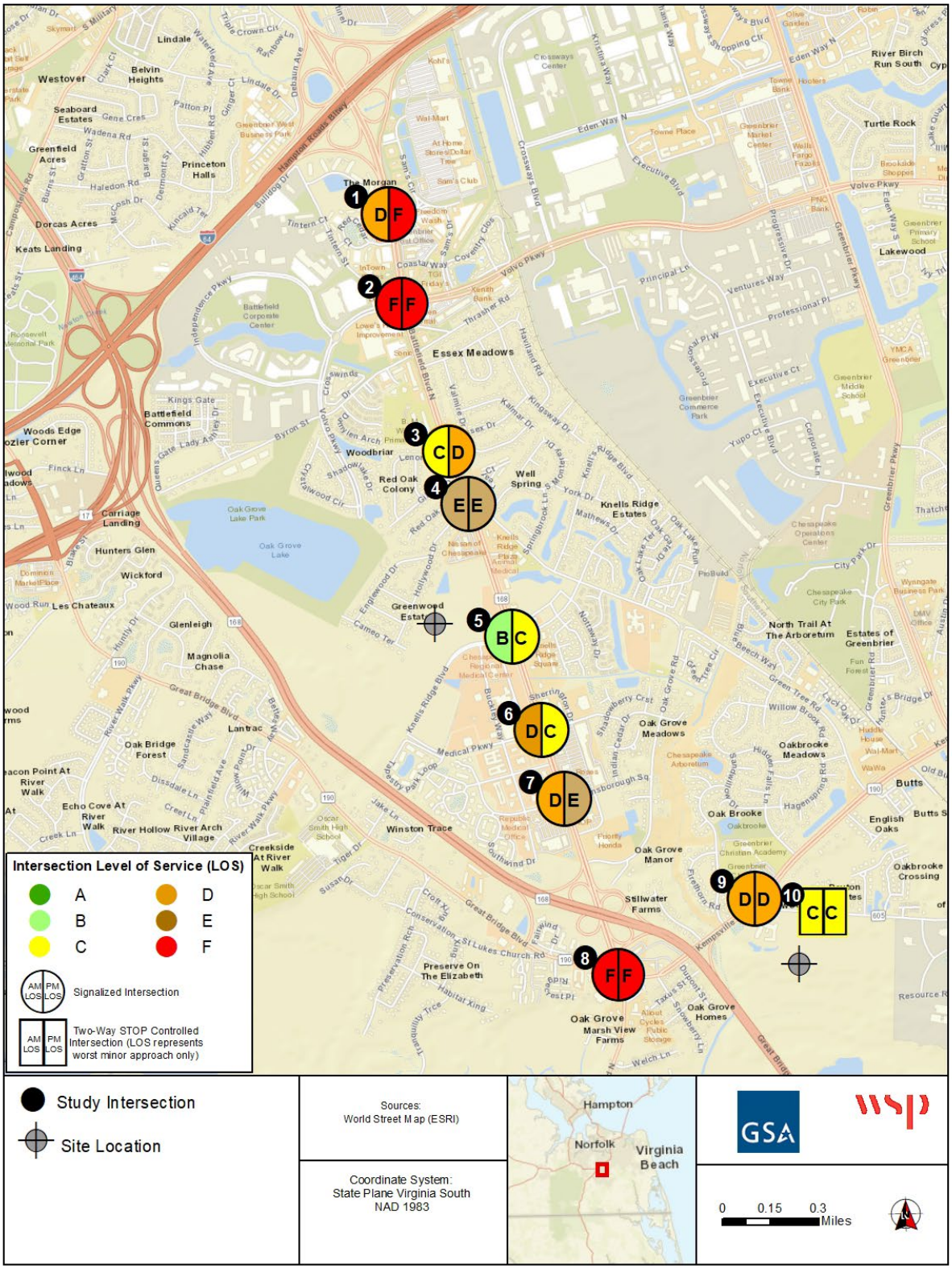


Figure 4-6. No Action Alternative AM and PM Peak Hour LOS by Intersection

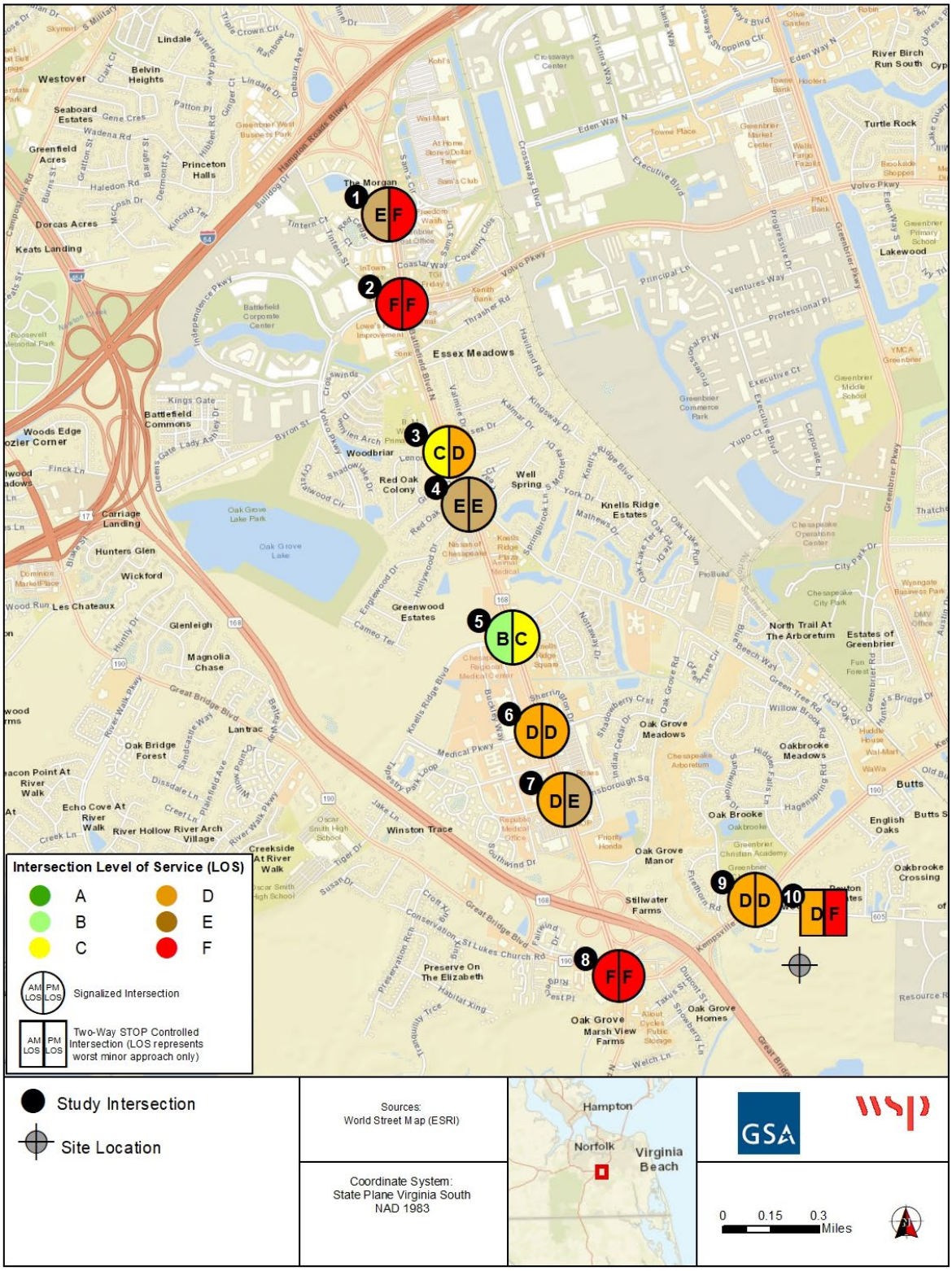


Figure 4-7. Clearfield Avenue Alternative AM and PM Peak Hour LOS by Intersection

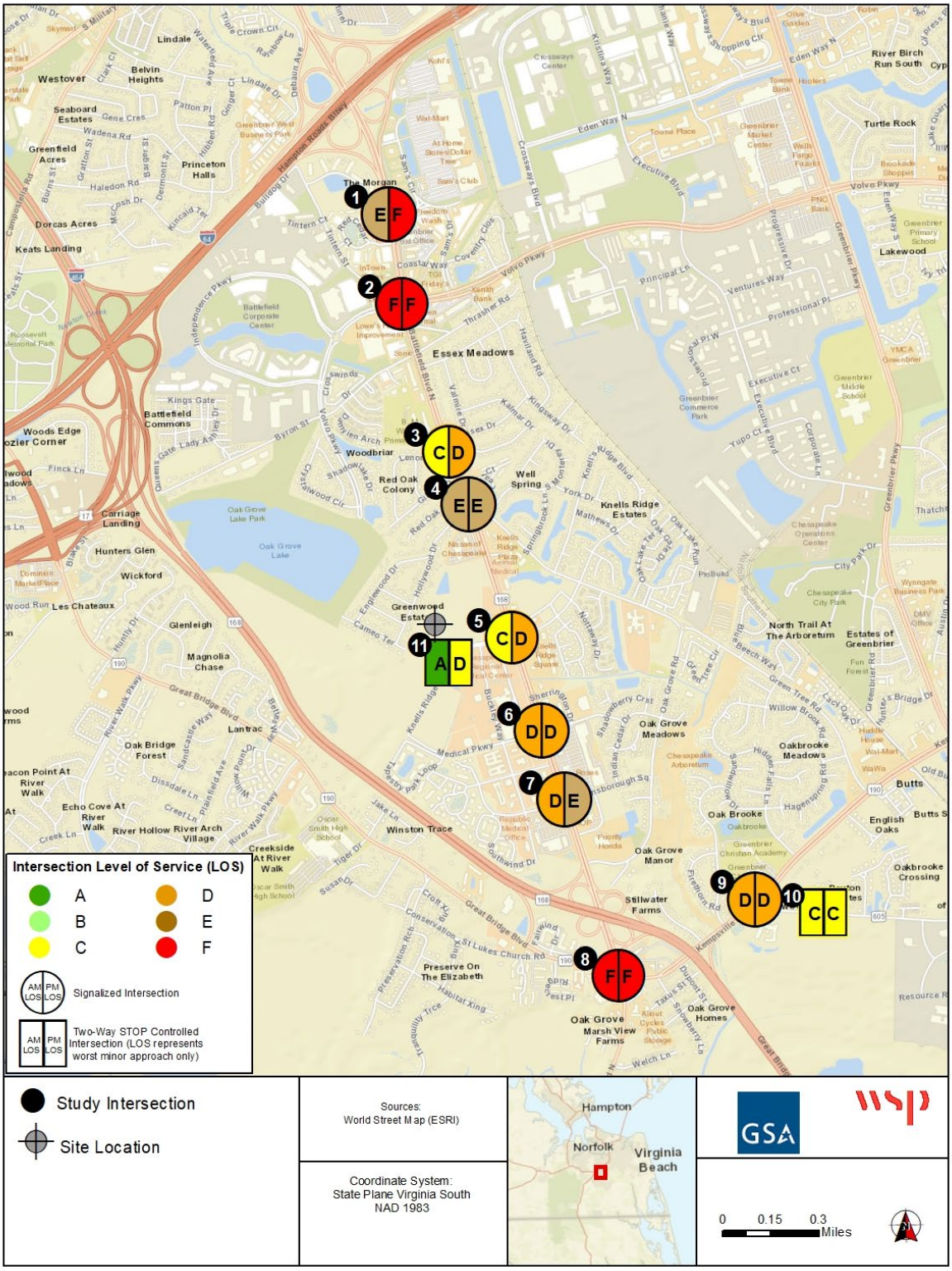


Figure 4-8. Knells Ridge Boulevard Alternatives AM and PM Peak Hour LOS by Intersection

Table 4-6. Intersection Operation Comparison: No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives

Intersection Number and Name	Control	No Action Alternative AM Peak Hour HCM Delay (sec/ veh)	No Action Alternative AM Peak Hour HCM LOS	No Action Alternative PM Peak Hour HCM Delay (sec/ veh)	No Action Alternative PM Peak Hour HCM LOS	Clearfield Avenue Alternative AM Peak Hour HCM Delay (sec/ veh)	Clearfield Avenue Alternative AM Peak Hour HCM LOS	Clearfield Avenue Alternative PM Peak Hour HCM Delay (sec/ veh)	Clearfield Avenue Alternative PM Peak Hour HCM LOS	Knells Ridge Boulevard Alternatives AM Peak Hour HCM Delay (sec/ veh)	Knells Ridge Boulevard Alternatives AM Peak Hour HCM LOS	Knells Ridge Boulevard Alternatives PM Peak Hour HCM Delay (sec/ veh)	Knells Ridge Boulevard Alternatives PM Peak Hour HCM LOS
1. Battlefield Boulevard/Wal-Mart Way[a]	Signal	45.7	D	81.5	F	65.6	E	95.4	F	65.4	E	95.1	F
2. Battlefield Boulevard/Volvo Parkway[a]	Signal	119.7	F	177.2	F	116.3	F	193.9	F	116.2	F	194.2	F
3. Battlefield Boulevard/Lenore Trail	Signal	20.3	C	35.9	D	20.6	C	41.6	D	20.6	C	42.0	D
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road	Signal	73.3	E	73.0	E	72.4	E	78.8	E	72.4	E	79.3	E
5. Battlefield Boulevard/Knells Ridge Boulevard[a]	Signal	16.6	B	23.3	C	19.6	C	25.6	D	27.9	C	49.3	D
6. Battlefield Boulevard/Medical Parkway	Signal	40.5	D	28.5	C	42.4	D	36.5	D	41.2	D	36.8	D
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East	Signal	36.0	D	68.1	E	37.6	D	72.5	E	37.8	D	73.4	E
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road	Signal	109.2	F	141.8	F	176.5	F	189.6	F	127.4	F	156.3	F
9. Clearfield Avenue/Kempsville Road[a]	Signal	43.0	D	41.2	D	39.9	D	50.0	D	43.0	D	41.1	D
10. Clearfield Avenue/Clydes Way/Driveway[b]	TWSC	22.3	C	23.4	C	34.4	C	561.1	F	22.3	C	23.4	C
11. Knells Ridge Boulevard/Driveway[b]	TWSC	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0	A	29.5	D

Notes:
LOS = level of service
TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)
Delay is measured in seconds per vehicle.
Red cells denote intersections operating at unacceptable conditions.
[a] Highway Capacity Manual 2000 results are used because of HCM 2010 limitations for evaluating this intersection.
[b] For TWSC intersections, the reported delay corresponds to the worst performing lane group.

4.9.2 No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives Queuing Comparison

Based on the Synchro™ signalized intersection analysis results shown in Table 4-7, eight of the ten study intersections have lane groups with queues that would exceed the available storage capacity under the No Action Alternative and the Action Alternatives.

The list below indicates the lane groups with queues that would exceed the available storage under the Action Alternatives and compares them with the No Action Alternative:

- Battlefield Boulevard and Wal-Mart Way (Intersection #1)
  - Under the Action Alternatives, the southbound left turn of Battlefield Boulevard would exceed the storage in the PM peak hour with no change in queue length compared to No Action Alternative.
- Battlefield Boulevard and Volvo Parkway (Intersection #2)
  - Under the Action Alternatives, the eastbound left turn of Volvo Parkway would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative.
  - Under the Action Alternatives, the eastbound right turn of Volvo Parkway would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the westbound left turn of Volvo Parkway would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the westbound left turn of Volvo Parkway would exceed the storage in the PM peak hour with an increase of 9 feet compared to the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the westbound shared left-through-right turn lane group of Volvo Parkway would exceed the storage in the AM and PM peak hours with no change in either the AM or the PM peak hour compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the westbound shared left-through-right turn lane group of Volvo Parkway would exceed the storage in the AM and PM peak hours with no change in the AM peak hour and an increase of 1 foot in the PM peak hour compared to the No Action Alternative.

- Under the Clearfield Avenue Alternative, the southbound through movement of Battlefield Boulevard would exceed the storage in the PM peak hour with an increase of 42 feet compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the southbound through movement of Battlefield Boulevard would exceed the storage in the PM peak hour with an increase of 61 feet compared to the No Action Alternative.
- Under the Clearfield Avenue Alternative, the southbound right turn of Battlefield Boulevard would exceed the storage in the AM peak hour with a decrease of 146 feet compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the southbound right turn of Battlefield Boulevard would exceed the storage in the AM peak hour with a decrease of 143 feet compared to the No Action Alternative.

- Battlefield Boulevard and Lenore Trail (Intersection #3)
  - Under the Action Alternatives, the eastbound left turn of Lenore Trail would exceed the storage in the AM peak hour with no change in queue length compared to the No Action Alternative.
  - Under the Action Alternatives, the westbound left turn of Lenore Trail would exceed the storage in the PM peak hour, with no change in queue length compared to the No Action Alternative.
- Battlefield Boulevard and Hollywood Drive/Oak Grove Road (Intersection #4)
  - Under the Action Alternatives, the eastbound left turn of Hollywood Drive would exceed the storage in the AM and PM peak hours with no change in queue length compared to the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the southbound left turn of Battlefield Boulevard would exceed the storage in the AM and PM peak hours with an increase of 1 foot in the AM peak hour and a decrease of 19 feet in the PM peak hour compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the southbound left turn of Battlefield Boulevard would exceed the storage in the AM and PM peak hours with no change in queue length in the AM peak hour and a decrease of 21 feet in the PM peak hour compared to the No Action Alternative.
- Battlefield Boulevard and Knells Ridge Boulevard (Intersection #5)
  - Under the Clearfield Avenue Alternative, the eastbound left turn of Knells Ridge Boulevard would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the eastbound left turn of Knells Ridge Boulevard would exceed the

storage in the PM peak hour with an increase of 340 feet compared to the No Action Alternative.

- Under the Clearfield Avenue Alternative, the eastbound shared left-through turn lane group of Knells Ridge Boulevard would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the eastbound shared left-through turn lane group of Knells Ridge Boulevard would exceed the storage in the PM peak hour with an increase of 218 feet compared to the No Action Alternative.

- Battlefield Boulevard and Gainsborough Square Drive/Gainsborough Square East (Intersection #7)
  - Under the Action Alternatives, the eastbound right turn of Gainsborough Square Drive would exceed the storage in the PM peak hour, with no change in queue length compared to the No Action Alternative.
  - Under the Action Alternatives, the westbound shared through-right turn lane group of Gainsborough Square East would exceed the storage in the AM and PM peak hours with no change in queue length compared to the No Action Alternative.
  - Under the Action Alternatives, the southbound through movement of Battlefield Boulevard would exceed the storage in the PM peak hour with an increase of 62 feet compared to the No Action Alternative.
- Battlefield Boulevard and Great Bridge Boulevard/Kempsville Road (Intersection #8)
  - Under the Clearfield Avenue Alternative, the eastbound left turn lane of Great Bridge Boulevard would exceed the storage in the PM peak hour with an increase of 3 feet compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the eastbound left turn lane of Great Bridge Boulevard would exceed the storage in the PM peak hour with an increase of 2 feet compared to the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the westbound left turn lane of Kempsville Road would exceed the storage in the AM and PM peak hours with no change in queue length during the AM peak hour and a decrease of 3 feet during the PM peak hour compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the westbound left turn lane of Kempsville Road would exceed the storage in the AM and PM peak hours with an increase of 1 foot during the AM peak hour and no change in queue length during the PM peak hour compared to the No Action Alternative.

  - Under the Clearfield Avenue Alternative, the northbound right turn lane of Battlefield Boulevard would exceed the storage in the AM and PM peak hours with an increase of 73 feet during the AM peak hour and an increase of 63 feet during the PM peak hour compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the northbound right turn lane of Battlefield Boulevard would exceed the storage in the AM and PM peak hours with no change in queue length during the AM peak hour and an increase of 24 feet during the PM peak hour compared to the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the southbound left turn lane of Battlefield Boulevard would exceed the storage in the AM peak hour, compared to adequately stored queues under the No Action Alternative.
- Clearfield Avenue and Kempsville Road (Intersection #9)
  - Under the Clearfield Avenue Alternative, the westbound left turn lane of Kempsville Road would exceed the storage during the AM peak hour, compared to adequately stored queues under the No Action Alternative.
  - Under the Clearfield Avenue Alternative, the northbound left turn lane of Clearfield Avenue would exceed the storage in the PM peak hour with an increase of 130 feet compared to the No Action Alternative. Under the Knells Ridge Boulevard Alternatives, the northbound left turn lane of Clearfield Avenue would exceed the storage in the PM peak hour with no change in queue length compared to the No Action Alternative.
- Clearfield Avenue and Clydes Way/Driveway (Intersection #10)
  - Under the Clearfield Avenue Alternative, the northbound approach of the Clearfield Avenue Alternative Driveway would exceed the available storage in the PM peak hour, compared with adequately stored queues in the No Action Alternative.
- Knells Ridge Boulevard and Driveway (Intersection #11)
  - Under the Knells Ridge Boulevard Alternatives, the southbound approach of the Knells Ridge Boulevard Alternatives Driveway from Knells Ridge would have queues during the PM peak hour that could potentially block an internal driveway but would not affect the public roadway network.

The remaining intersections in the traffic study area would provide sufficient storage for the future demand. The Synchro™ analysis worksheets are provided in Appendix A.

Table 4-7. Queueing Comparison: No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	No Action Alternative AM Peak Hour 95th Percentile (feet)	No Action Alternative PM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative AM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative PM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives AM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives PM Peak Hour 95th Percentile (feet)
1. Battlefield Boulevard/Wal-Mart Way									
EB (Driveway)	EB	LT	70	15	40	15	40	15	40
EB (Driveway)	EB	R	40	0	0	0	0	0	0
WB (Wal-Mart Way)	WB	L	460	103	282	103	282	103	282
WB (Wal-Mart Way)	WB	LT	430	100	329	100	329	100	329
WB (Wal-Mart Way)	WB	R	350	35	261	35	261	35	261
NB (Battlefield Boulevard)	NB	L	225	16	12	16	11	16	11
NB (Battlefield Boulevard)	NB	T	1,340	177	402	177	378	177	379
NB (Battlefield Boulevard)	NB	R	250	4	84	4	70	4	70
SB (Battlefield Boulevard)	SB	L	410	310	617	310	617	310	617
SB (Battlefield Boulevard)	SB	TR	4,070	1267	801	1448	863	1446	862
2. Battlefield Boulevard/Volvo Parkway									
EB (Volvo Parkway)	EB	L	225	187	574	187	574	187	574
EB (Volvo Parkway)	EB	T	1,000	68	548	68	548	68	548
EB (Volvo Parkway)	EB	R	360	0	530	0	530	0	530
WB (Volvo Parkway)	WB	L	400	236	1123	236	1123	249	1132
WB (Volvo Parkway)	WB	LTR	620	738	1069	738	1069	738	1070
NB (Battlefield Boulevard)	NB	L	475	250	111	250	103	250	102
NB (Battlefield Boulevard)	NB	T	2,400	914	926	914	1080	914	1078
NB (Battlefield Boulevard)	NB	R	540	100	223	100	209	100	242
SB (Battlefield Boulevard)	SB	L	900	422	580	368	552	369	553
SB (Battlefield Boulevard)	SB	T	730	135	824	160	886	159	885
SB (Battlefield Boulevard)	SB	R	800	1069	158	923	132	926	133
3. Battlefield Boulevard/Lenore Trail									
EB (Lenore Trail)	EB	L	100	127	72	127	72	127	72
EB (Lenore Trail)	EB	TR	100	17	0	26	0	26	0
WB (Lenore Trail)	WB	L	250	157	370	157	370	157	370
WB (Lenore Trail)	WB	TR	250	47	38	47	38	47	38
NB (Battlefield Boulevard)	NB	L	330	47	25	73	22	73	20
NB (Battlefield Boulevard)	NB	T	790	157	105	157	100	157	100
NB (Battlefield Boulevard)	NB	R	330	0	0	0	0	0	0
SB (Battlefield Boulevard)	SB	L	310	71	6	56	5	56	5
SB (Battlefield Boulevard)	SB	T	2,410	311	749	329	763	386	760
SB (Battlefield Boulevard)	SB	R	230	7	0	3	0	4	0

Table 4-7. Queueing Comparison: No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	No Action Alternative AM Peak Hour 95th Percentile (feet)	No Action Alternative PM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative AM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative PM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives AM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives PM Peak Hour 95th Percentile (feet)
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road									
EB (Hollywood Drive)	EB	L	80	97	86	97	86	97	86
EB (Hollywood Drive)	EB	TR	150	44	89	44	89	44	89
WB (Oak Grove Road)	WB	LT	1,000	62	116	62	116	62	116
WB (Oak Grove Road)	WB	R	3,980	824	196	824	198	824	198
NB (Battlefield Boulevard)	NB	L	310	22	46	22	31	22	37
NB (Battlefield Boulevard)	NB	T	2,130	889	759	889	932	890	646
NB (Battlefield Boulevard)	NB	R	700	0	3	0	2	0	1
SB (Battlefield Boulevard)	SB	L	310	317	428	318	409	317	407
SB (Battlefield Boulevard)	SB	T	770	367	58	408	57	407	57
SB (Battlefield Boulevard)	SB	R	160	0	0	1	0	1	0
5. Battlefield Boulevard/Knells Ridge Boulevard									
EB (Knells Ridge Boulevard)	EB	L	200	83	218	83	218	83	558
EB (Knells Ridge Boulevard)	EB	LT	180	74	233	74	233	74	451
EB (Knells Ridge Boulevard)	EB	R	200	0	9	0	9	0	154
WB (Knells Ridge Boulevard)	WB	L	1,380	147	335	147	335	147	335
WB (Knells Ridge Boulevard)	WB	LT	1,380	77	53	77	53	77	53
WB (Knells Ridge Boulevard)	WB	R	210	0	2	0	2	0	2
NB (Battlefield Boulevard)	NB	L	400	63	24	90	25	291	55
NB (Battlefield Boulevard)	NB	T	1,460	346	261	346	336	334	271
NB (Battlefield Boulevard)	NB	R	890	1	9	1	13	0	11
SB (Battlefield Boulevard)	SB	L	380	81	130	76	125	76	125
SB (Battlefield Boulevard)	SB	T	2,130	195	786	283	1106	241	717
SB (Battlefield Boulevard)	SB	R	380	50	5	54	4	145	8
6. Battlefield Boulevard/Medical Parkway									
EB (Medical Parkway)	EB	L	570	115	336	115	336	115	336
EB (Medical Parkway)	EB	T	570	34	83	34	83	34	83
EB (Medical Parkway)	EB	R	275	13	233	13	233	13	233
WB (Medical Parkway)	WB	L	1,290	92	252	92	252	92	252
WB (Medical Parkway)	WB	TR	150	113	102	113	102	113	102
NB (Battlefield Boulevard)	NB	L	450	151	258	225	228	132	258
NB (Battlefield Boulevard)	NB	T	1,050	44	368	44	413	44	380
NB (Battlefield Boulevard)	NB	R	360	0	5	0	3	0	4
SB (Battlefield Boulevard)	SB	L	425	66	231	77	223	77	235
SB (Battlefield Boulevard)	SB	T	1,480	438	297	535	322	438	588
SB (Battlefield Boulevard)	SB	R	430	61	2	74	2	78	2

Table 4-7. Queueing Comparison: No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	No Action Alternative AM Peak Hour 95th Percentile (feet)	No Action Alternative PM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative AM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative PM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives AM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives PM Peak Hour 95th Percentile (feet)
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East									
EB (Gainsborough Square Drive)	EB	L	560	90	322	90	322	90	322
EB (Gainsborough Square Drive)	EB	T	560	38	144	38	144	38	144
EB (Gainsborough Square Drive)	EB	R	300	38	435	38	435	38	435
WB (Gainsborough Square East)	WB	L	1,370	243	399	243	399	243	399
WB (Gainsborough Square East)	WB	TR	85	223	144	223	144	223	144
NB (Battlefield Boulevard)	NB	L	370	252	243	252	210	240	237
NB (Battlefield Boulevard)	NB	T	1,360	334	253	334	284	345	257
NB (Battlefield Boulevard)	NB	R	520	0	0	0	0	0	0
SB (Battlefield Boulevard)	SB	L	380	132	42	107	51	132	43
SB (Battlefield Boulevard)	SB	T	1,060	432	1110	533	1172	432	1172
SB (Battlefield Boulevard)	SB	R	370	127	1	85	1	127	1
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road									
EB (Great Bridge Boulevard)	EB	L	470	434	516	434	519	444	518
EB (Great Bridge Boulevard)	EB	T	1,500	723	690	737	693	723	690
EB (Great Bridge Boulevard)	EB	R	1,600	47	164	47	164	47	164
WB (Kempsville Road)	WB	L	210	339	431	339	428	340	431
WB (Kempsville Road)	WB	T	2,530	432	824	432	805	435	827
WB (Kempsville Road)	WB	R	2,540	912	631	912	1742	1082	685
NB (Battlefield Boulevard)	NB	L	350	187	304	187	304	187	304
NB (Battlefield Boulevard)	NB	T	2,780	752	585	752	585	785	596
NB (Battlefield Boulevard)	NB	R	265	429	314	502	377	429	338
SB (Battlefield Boulevard)	SB	L	360	166	171	723	333	166	289
SB (Battlefield Boulevard)	SB	T	2,900	266	602	231	574	266	598
SB (Battlefield Boulevard)	SB	R	2,880	255	124	216	116	255	120
9. Clearfield Avenue/Kempsville Road									
EB (Kempsville Road)	EB	L	220	84	15	62	16	84	14
EB (Kempsville Road)	EB	T	2,570	450	396	309	417	450	405
EB (Kempsville Road)	EB	R	330	118	53	40	59	118	40
WB (Kempsville Road)	WB	L	200	189	168	299	212	189	179
WB (Kempsville Road)	WB	TR	2,420	357	544	357	606	390	558
NB (Clearfield Avenue)	NB	L	300	245	317	245	447	245	317
NB (Clearfield Avenue)	NB	LT	890	249	323	249	454	249	323
NB (Clearfield Avenue)	NB	R	225	10	69	10	72	10	69
SB (Driveway)	SB	LT	300	149	82	149	82	149	82
SB (Driveway)	SB	R	300	2	0	2	0	2	0

Table 4-7. Queueing Comparison: No Action Alternative, Clearfield Avenue Alternative, and Knells Ridge Boulevard Alternatives (Continued)

Intersection Number and Name	Direction	Lane Group	Turning Bay/Link Length (feet)	No Action Alternative AM Peak Hour 95th Percentile (feet)	No Action Alternative PM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative AM Peak Hour 95th Percentile (feet)	Clearfield Avenue Alternative PM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives AM Peak Hour 95th Percentile (feet)	Knells Ridge Boulevard Alternatives PM Peak Hour 95th Percentile (feet)
10. Clearfield Avenue/Clydes Way/Driveway[a]									
WB (Kempsville Road)	WB	LT	760	0	0	8	3	0	0
NB (Clydes Way/Driveway)	NB	LR	100	3	5	3	688	3	5
11. Knells Ridge Boulevard/Driveway[a]									
EB (Knells Ridge Boulevard)	EB	L	750	n/a	n/a	n/a	n/a	0	0
SB (Driveway)	SB	LR	125	n/a	n/a	n/a	n/a	0	140

Notes:
95th percentile queues exceeding the available storage are denoted in red cells.
EB = eastbound, WB = westbound, NB = northbound, SB = southbound
LTR = left / through / right lanes
[a] HCM 2010 methodology queue values for TWSC- and AWSC-controlled intersections are reported in units of vehicles, but an average vehicle length of 25 feet is assumed to convert the queue value into units of feet.

5.0 MITIGATION AND RECOMMENDATIONS

This section describes proposed mitigation that could be implemented to address the potential transportation impacts. Should an action alternative be selected for implementation, the developer, in consultation with VDOT and the City of Chesapeake, would determine final, reasonable mitigation measures.

5.1 Clearfield Avenue Alternative

5.1.1 Multimodal

Mitigation measures related to transit, bicycles, and pedestrians address gaps between the Clearfield Avenue Alternative and existing condition. This includes analyzing the distance to the closest transit stops, which includes bus, and could include rail and ferry, as well as existing bicycle infrastructure and pedestrian amenities. The following multimodal improvements are recommended for the Clearfield Avenue Alternative:

- Connect the sidewalks from the front of the CBOC to the multi-use bicycle and pedestrian path on Kempsville Road.
- Coordinate with HRT to ascertain which route should serve the new bus stop for the CBOC and at what frequency.

5.1.2 Traffic

Mitigation measures related to traffic operations are discussed for conditions in which an intersection would either degrade from LOS E under the No Action Alternative to LOS F under the Clearfield Avenue Alternative; or if an intersection would operate at LOS F under both the No Action Alternative and the Clearfield Avenue Alternative, but in which delays would be worse under the Clearfield Avenue Alternative. Mitigation would be achieved when the intersection either improves to LOS E, or the overall intersection delay is less than under the No Action Alternative. As previously shown in Table 4-6, four study intersections would either operate at LOS F under the No Action Alternative, but with worse delays under the Clearfield Avenue Alternative, or would worsen to LOS F under the Clearfield Avenue Alternative compared to acceptable operations under the No Action Alternative. These include Battlefield Boulevard/Wal-Mart Way (Intersection #1) during the PM peak hour, Battlefield Boulevard/Volvo Parkway (Intersection #2) during the PM peak hour, Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) during the AM and PM peak hours, and Clearfield Avenue/Clydes Way/Driveway (Intersection #10) during the PM peak hour.

Mitigation measures can include a variety of strategies, e.g., modifying the intersection roadway geometry, retiming or rephasing traffic signals, enhancing non-automotive facilities to encourage other modes of travel, or site-specific measures such as staggering appointment hours. In general, the three intersections requiring mitigation as a result of adding the CBOC trips are located in a highly developed corridor on either side of Battlefield Boulevard, which limits the ability for further widening of this roadway to allow more travel lanes. The proposed mitigation measures are based on what would be necessary from a geometric or signalization perspective to improve each intersection to a delay that is better than the No Action Alternative; these measures are not the only solutions that could be implemented. For instance, mitigation measures such as improving non-automotive facilities or staggering appointments hours are not easily quantified in terms of vehicle delay for this study but are expected to improve vehicle delays. The mitigation measures that are proposed in this study are intended as options for further evaluation and discussion. VDOT and the project development team would determine final mitigation approaches that the developer would agree to implement.

The following intersection design changes—through roadway geometry or signal timings—are proposed as potential mitigation measures:

- Set a 180-second cycle length during the PM peak hour at all signalized intersections along Battlefield Boulevard and a 90-second cycle length at Clearfield Avenue/Kempsville Road (Intersection #9), then optimize the signal timing offsets and splits.
- At Battlefield Boulevard/Volvo Parkway (Intersection #2), create a third westbound exclusive left turn lane using median space to the south and restripe the shared through-left to a through lane. For the traffic signal phasing, remove eastbound and westbound split phasing; operate the eastbound and westbound left turn lanes with protected phasing; operate the westbound left turn as a leading phase and the eastbound left turn as a lagging phase; operate the eastbound and southbound right turns with a permitted overlap; then retime the signal timing splits.
- While the Battlefield Boulevard/Hollywood Drive/Oak Grove Road (Intersection #4) would not require mitigation as a result of the Clearfield Avenue Alternative, it would require mitigation as a result of improving the other three intersections. As part of the remediation, the intersection would operate the westbound right turn lane with a permitted overlap and retimed signal timing splits to alleviate the inadvertent impact of the cycle length change.

- At Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8), establish a permitted overlap phase for right turns on the westbound approach; replace the northbound channelized right turn with dual right turns with a protected overlap phase, and then retime the traffic signal timing splits. The development of dual northbound right turns may require the acquisition of property on the southeast quadrant of the intersection.
- Signalize Clearfield Avenue/Clydes Way/Driveway (Intersection #10) if warrants for signalization are met. The signal would have a cycle length of 65 seconds during the AM peak hour and 90 seconds during the PM peak hour.

Staggering appointment hours at the proposed CBOC could also be pursued as a mitigation method to limit new vehicle trips on the roadway network without significantly altering the intersection roadway geometry. Reducing the number of patients traveling to and from the proposed CBOC during the AM and PM peak house by approximately 30 percent would obviate the proposal for dual northbound right turns on Battlefield Boulevard at Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8). By reducing the number of patients traveling to and from the proposed CBOC during the AM and PM peak hours by about 80 percent, the northbound approach of Clydes Way at Clearfield Avenue (Intersection #10) would operate at LOS E, obviating a review for signalization of that intersection.

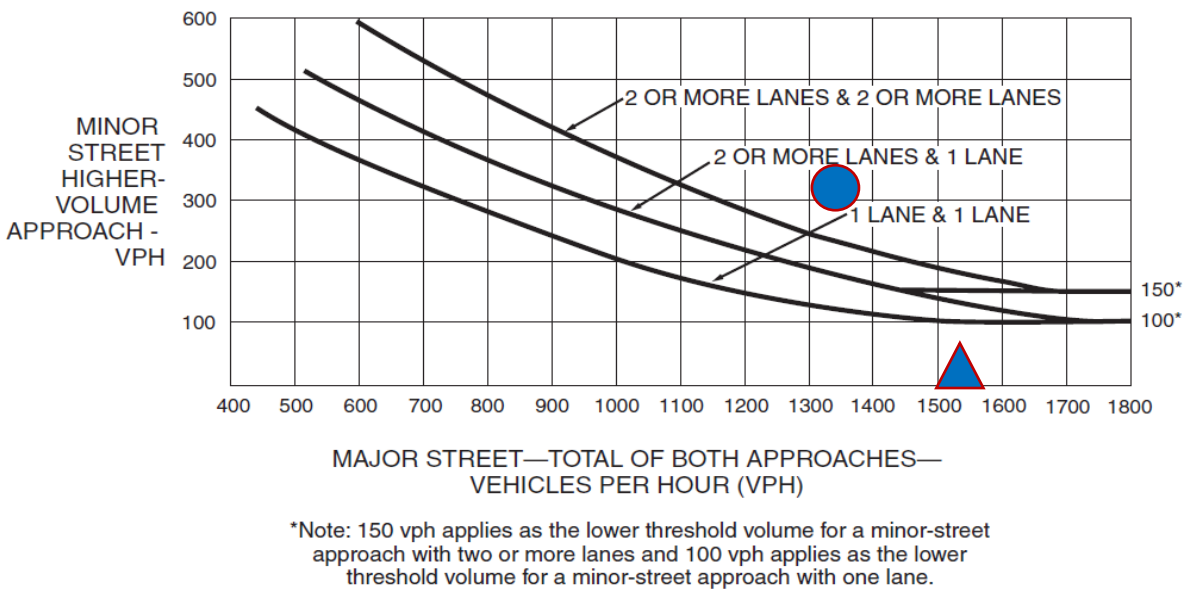
The northbound approach of Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would operate with LOS F, which could be mitigated by signalization of the intersection. A signal warrant analysis, defined as a quantitative assessment based on traffic volumes and established standards to determine if installing a traffic signal at a specific intersection is justified or warranted, would be needed. A signal warrant analysis for the intersection was conducted following the guidelines of the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) (FHWA 2012). A peak hour warrant (Warrant 3) following the MUTCD requires two categorial tests (Warrants 3A and 3B). If either Warrants 3A or 3B pass, then the intersection meets the warrant for signalization. Warrant 3A includes three subtests: (1) a calculation of the stopped time delay of one minor street approach controlled by a stop sign, (2) exceeding the threshold for volume of the same minor street approach, and (3) exceeding the threshold for the total intersection volume. Warrant 3B is based on a plotted chart published in the MUTCD (Figure 4C-3; FHWA 2012). The plotted point in the chart indicates the highest minor street approach volume versus the total major street approach volume. If the plotted point is situated higher than the appropriate curve (based on the number of lanes for major and minor approaches), the peak hour warrant is met.

Table 5-1 summarizes the peak hour warrant (Warrant 3) analysis results for the intersection, and Figure 5-1 presents the MUTCD plotted graph (Warrant 3B) with the volumes of the intersection point plotted. Based on the peak hour warrant analysis, the intersection would meet the warrant for signalization.

Table 5-1. Peak Hour Warrant Analysis Summary

Warrant	AM Peak Hour Forecasted Values	PM Peak Hour Forecasted Values	Warrant Threshold	Category Check
Warrant 3A.1 - Stopped Time Delay	0 veh-hrs	50 veh-hrs	4 veh-hrs	Yes
Warrant 3A.2 - Minor Street Volume	5	319	100	Yes
Warrant 3A.3 - Total Intersection Volume	1557	1649	650	Yes
Warrant 3B - Plotted Point on Curve	See Figure 5-1	See Figure 5-1	See Figure 5-1	Yes

Veh-hrs = vehicles hours



Note: Triangular symbol indicates AM peak hour volumes; Circular symbol indicates PM peak hour volumes
Source: FHWA, 2012

Figure 5-1. MUTCD Warrant 3B – Peak Hour Warrant with Intersection Point Plotted for Clearfield Avenue/Clydes Way/Driveway

Figure 5-2 shows the intersection lane geometry for the Clearfield Avenue Alternative with mitigation. Table 5-2 presents a Synchro™ analysis summary of the comparative vehicle delays between the No Action Alternative and the Clearfield Avenue Alternative with the proposed mitigation measures, demonstrating the improvement in vehicle delays. The results indicate that the mitigation measures would improve vehicle delays of failing intersections to delays that are better than in the No Action Alternative. The overall AM and PM peak hour intersection LOS grades are shown in Figure 5-3 for the Clearfield Avenue Alternative with mitigation. Synchro™ analysis worksheets with LOS and queue results under mitigation are provided in Appendix A.

Table 5-2. Comparison between No Action Alternative and Clearfield Avenue Alternative with Mitigation Measures for Intersection Operation

Intersection Number and Name	Control	No Action Alternative AM Peak Hour HCM Delay (sec/ veh)	No Action Alternative AM Peak Hour HCM LOS	No Action Alternative PM Peak Hour HCM Delay (sec/ veh)	No Action Alternative PM Peak Hour HCM LOS	Clearfield Avenue Alternative with Mitigation AM Peak Hour HCM Delay (sec/ veh)	Clearfield Avenue Alternative with Mitigation AM Peak Hour HCM LOS	Clearfield Avenue Alternative with Mitigation PM Peak Hour HCM Delay (sec/ veh)	Clearfield Avenue Alternative with Mitigation PM Peak Hour HCM LOS
1. Battlefield Boulevard/Wal-Mart Way[a]	Signal	45.7	D	81.5	F	64.3	E	74.7	E
2. Battlefield Boulevard/Volvo Parkway[a]	Signal	119.7	F	177.2	F	100.3	F	153.2	F
3. Battlefield Boulevard/Lenore Trail	Signal	20.3	C	35.9	D	20.6	C	35.5	D
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road	Signal	73.3	E	73.0	E	56.1	E	31.6	C
5. Battlefield Boulevard/Knells Ridge Boulevard[a]	Signal	16.6	B	23.3	C	19.4	B	28.7	C
6. Battlefield Boulevard/Medical Parkway	Signal	40.5	D	28.5	C	42.4	D	23.4	C
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East	Signal	36.0	D	68.1	E	37.6	D	73.7	E
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road	Signal	109.2	F	141.8	F	109.1	F	134.8	F
9. Clearfield Avenue/Kempsville Road[a]	Signal	43.0	D	41.2	D	44.5	D	43.8	D
10. Clearfield Avenue/Clydes Way/Driveway[b]	TWSC/Signal[c]	22.3	C	23.4	C	19.0	B	19.0	B

Notes:
LOS = Level of Service
TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)
Delay is measured in seconds per vehicle.
Red cells denote intersections operating at unacceptable conditions.
[a] HCM 2000 results are used because of HCM 2010 limitations for evaluating this intersection.
[b] For TWSC intersections, the reported delay corresponds to the worst performing lane group.
[c] This intersection would operate as a two-way STOP-control under the No Action Alternative and a signal under the Action Alternative with Mitigation

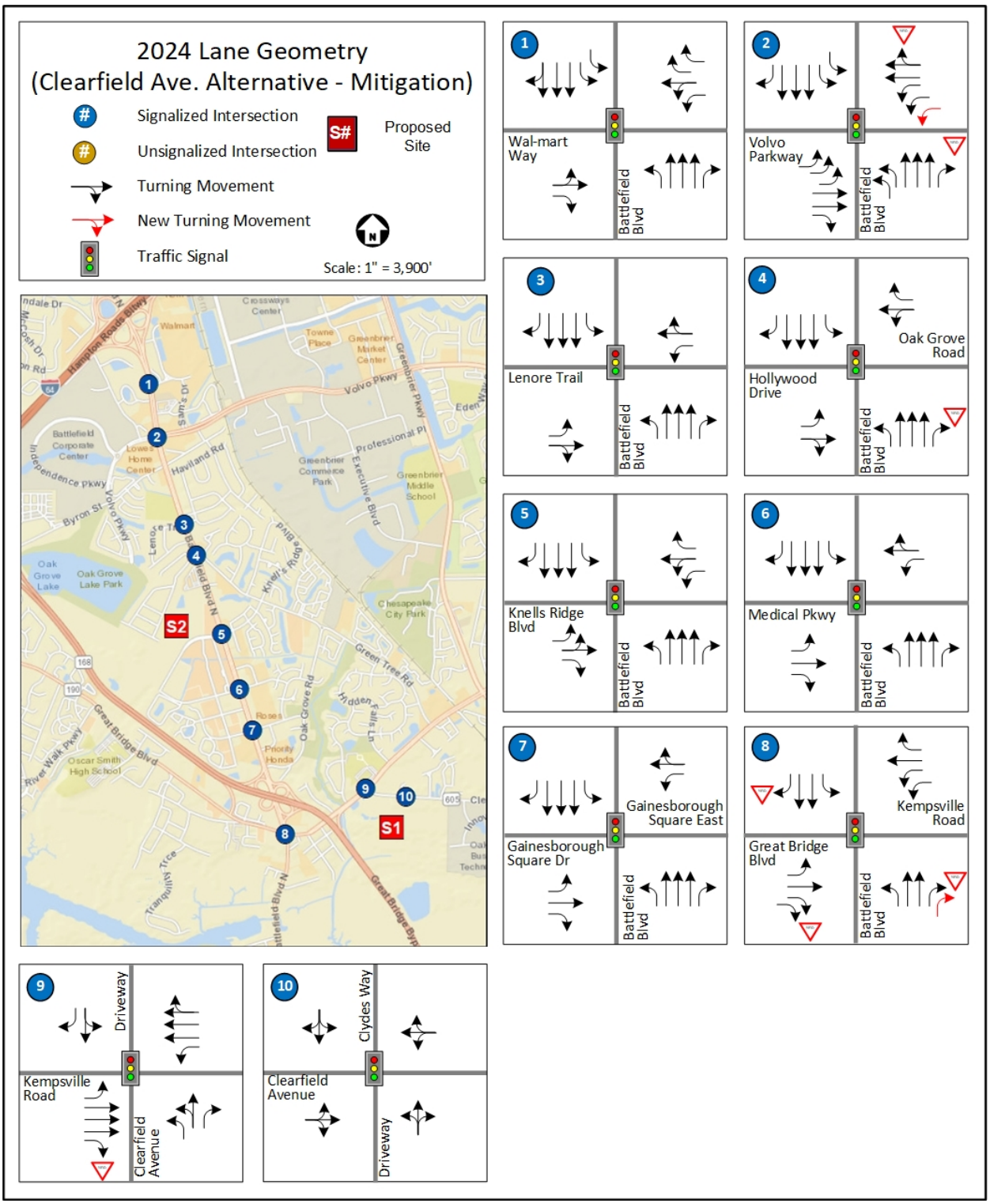


Figure 5-2. Clearfield Avenue Alternative with Mitigation: Roadway Lane Geometry

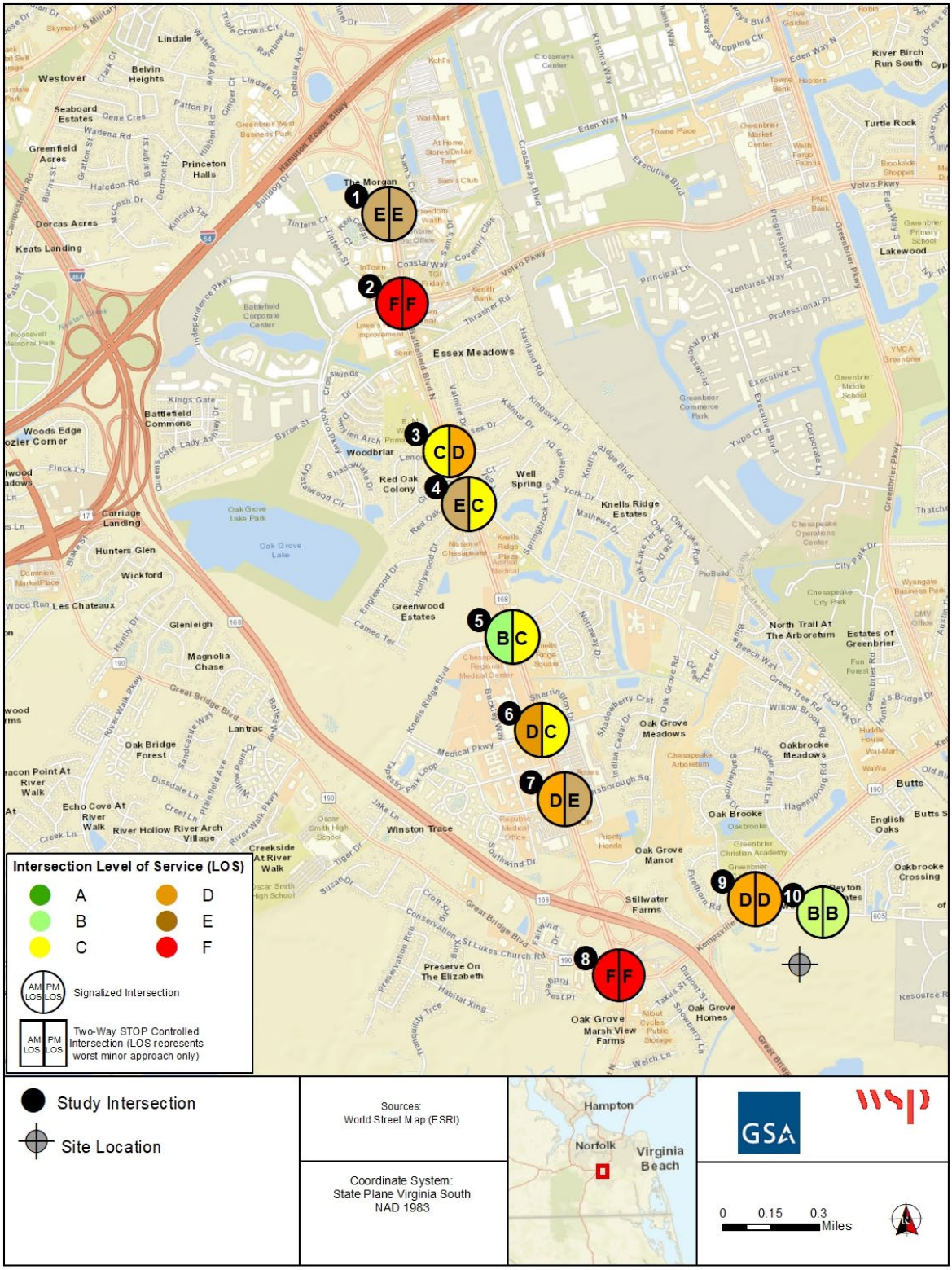


Figure 5-3. Clearfield Avenue Alternative with Mitigation: AM and PM Peak Hour LOS by Intersection

5.2 Knells Ridge Boulevard Alternatives

5.2.1 Multimodal

Mitigation measures related to transit, bicycles, and pedestrians follow the guidance in Section 5.1. The following multimodal improvements are recommended:

- Coordinate with HRT to add a stop to Route 14 serving the CBOC and determine at what frequency the stop would be served. The closest existing stop is more than 0.25 miles away, which is beyond the general acceptable walking distance for transit stops.
- Connect sidewalks from the CBOC to Knells Ridge Road and east to Battlefield Boulevard to increase pedestrian connectivity to amenities.

5.2.2 Traffic

Mitigation measures related to traffic operations for the Knells Ridge Boulevard Alternatives follow the procedure used in Section 5.1 regarding mitigation for the Clearfield Avenue Alternative. As previously shown in Table 4-6, three study intersections would operate at LOS F under the No Action Alternative but would have worse delays under the Knells Ridge Boulevard Alternatives. These include Battlefield Boulevard/Wal-Mart Way (Intersection #1) during the PM peak hour, Battlefield Boulevard/Volvo Parkway (Intersection #2) during the PM peak hour, and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) during the AM and PM peak hours. The mitigation measures that are proposed in this study are intended as options for further evaluation and discussion. VDOT and the project development team would determine final mitigation approaches that the developer would agree to implement.

The following intersection design changes—through roadway geometry or signal timings—are proposed as potential mitigation measures:

- Set a 180-second cycle length during the PM peak hour at all signalized intersections along Battlefield Boulevard and a 90-second cycle length at Clearfield Avenue/Kempsville Road (Intersection #9), then optimize the signal timing offsets and splits.
- At Battlefield Boulevard/Volvo Parkway (Intersection #2), create a third westbound exclusive left turn lane using median space to the south and restripe the shared through-left to a through lane. For the traffic signal phasing, remove eastbound and westbound split phasing; operate the eastbound and westbound left turn lanes with protected phasing; operate the westbound left turn as a leading phase and the eastbound left turn as a lagging phase; then retime the signal timing splits.

- While the Battlefield Boulevard/Hollywood Drive/Oak Grove Road (Intersection #4) would not require mitigation as a result of the Knells Ridge Alternatives, it would require mitigation as a result of improving the other three intersections. As part of the remediation, the intersection would operate the westbound right turn lane with a permitted overlap and retimed signal timing splits to alleviate the inadvertent impact of the cycle length change.
- At Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8), establish a permitted overlap phase for right turns on the westbound approach, then retime the traffic signal timing splits.

Staggering appointment hours at the proposed CBOC could also be pursued as a mitigation method to limit new vehicle trips on the roadway network. For context, Battlefield Boulevard within the study area provides primary access to several medical clinics, so efficient movement of medical transportation is paramount for patient care. Reducing the number of new trips on the network during the AM and PM peak hour could assist with the movement of patients to and from medical facilities other than the proposed CBOC. This reduction could be accomplished by limiting the number of patients who can book appointments overlapping the AM and PM peak hours, with more appointments scheduled between 9:00 AM and 4:00 PM.

Figure 5-4 presents the intersection lane geometry for the Knells Ridge Boulevard Alternatives with mitigation. Table 5-3 presents a Synchro™ analysis summary of the comparative vehicle delays between the No Action Alternative and the Knells Ridge Boulevard Alternatives with the proposed mitigation measures to demonstrate the improvement in vehicle delays. The results indicate that the mitigation measures would improve vehicle delays of failing intersections to delays that are better than in the No Action Alternative. The overall AM and PM peak hour intersection LOS grades are shown in Figure 5-5 for the Knells Ridge Boulevard Alternatives with mitigation. Synchro™ analysis worksheets with LOS and queue results with mitigation measures are provided in Appendix A.

Table 5-3. Comparison between No Action Alternative and Knells Ridge Boulevard Alternatives with Mitigation Measures for Intersection Operation

Intersection Number and Name	Control	No Action Alternative AM Peak Hour HCM Delay (sec/ veh)	No Action Alternative AM Peak Hour HCM LOS	No Action Alternative PM Peak Hour HCM Delay (sec/ veh)	No Action Alternative PM Peak Hour HCM LOS	Knells Ridge Boulevard Alternatives with Mitigation AM Peak Hour HCM Delay (sec/ veh)	Knells Ridge Boulevard Alternatives with Mitigation AM Peak Hour HCM LOS	Knells Ridge Boulevard Alternatives with Mitigation PM Peak Hour HCM Delay (sec/ veh)	Knells Ridge Boulevard Alternatives with Mitigation PM Peak Hour HCM LOS
1. Battlefield Boulevard/Wal-Mart Way[a]	Signal	45.7	D	81.5	F	65.1	E	80.3	F
2. Battlefield Boulevard/Volvo Parkway[a]	Signal	119.7	F	177.2	F	105.7	F	156.4	F
3. Battlefield Boulevard/Lenore Trail	Signal	20.3	C	35.9	D	20.6	C	35.8	D
4. Battlefield Boulevard/Hollywood Drive/Oak Grove Road	Signal	73.3	E	73.0	E	56.2	E	33.6	C
5. Battlefield Boulevard/Knells Ridge Boulevard[a]	Signal	16.6	B	23.3	C	27.7	C	41.2	D
6. Battlefield Boulevard/Medical Parkway	Signal	40.5	D	28.5	C	41.2	D	24.9	C
7. Battlefield Boulevard/Gainsborough Square Drive/Gainsborough Square East	Signal	36.0	D	68.1	E	37.8	D	74.0	E
8. Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road	Signal	109.2	F	141.8	F	106.7	F	118.2	F
9. Clearfield Avenue/Kempsville Road[a]	Signal	43.0	D	41.2	D	43.0	D	38.1	D
10. Clearfield Avenue/Clydes Way/Driveway[b]	TWSC	22.3	C	23.4	C	22.3	C	23.4	C
11. Knells Ridge Boulevard/Driveway[b]	TWSC	n/a	n/a	n/a	n/a	0.0	A	29.5	D

Notes:
LOS = Level of Service
TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)
Delay is measured in seconds per vehicle.
Red cells denote intersections operating at unacceptable conditions.
[a] HCM 2000 results are used because of HCM 2010 limitations for evaluating this intersection.
[b] For TWSC intersections, the reported delay corresponds to the worst performing lane group.
[c] This intersection would operate as a two-way STOP-control under the No Action Alternative and a signal under the Action Alternative with Mitigation.

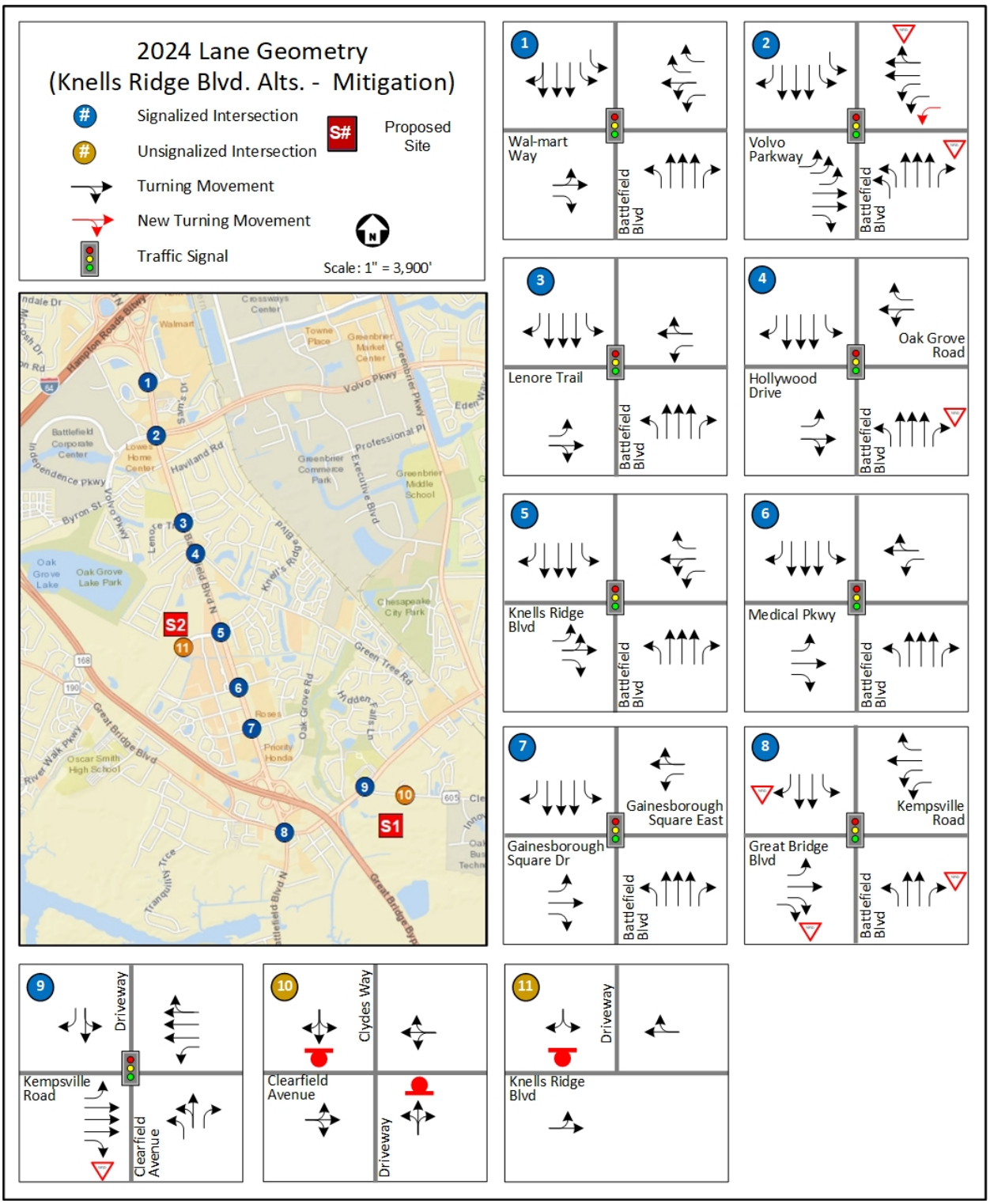


Figure 5-4. Knells Ridge Boulevard Alternatives with Mitigation: Roadway Lane Geometry

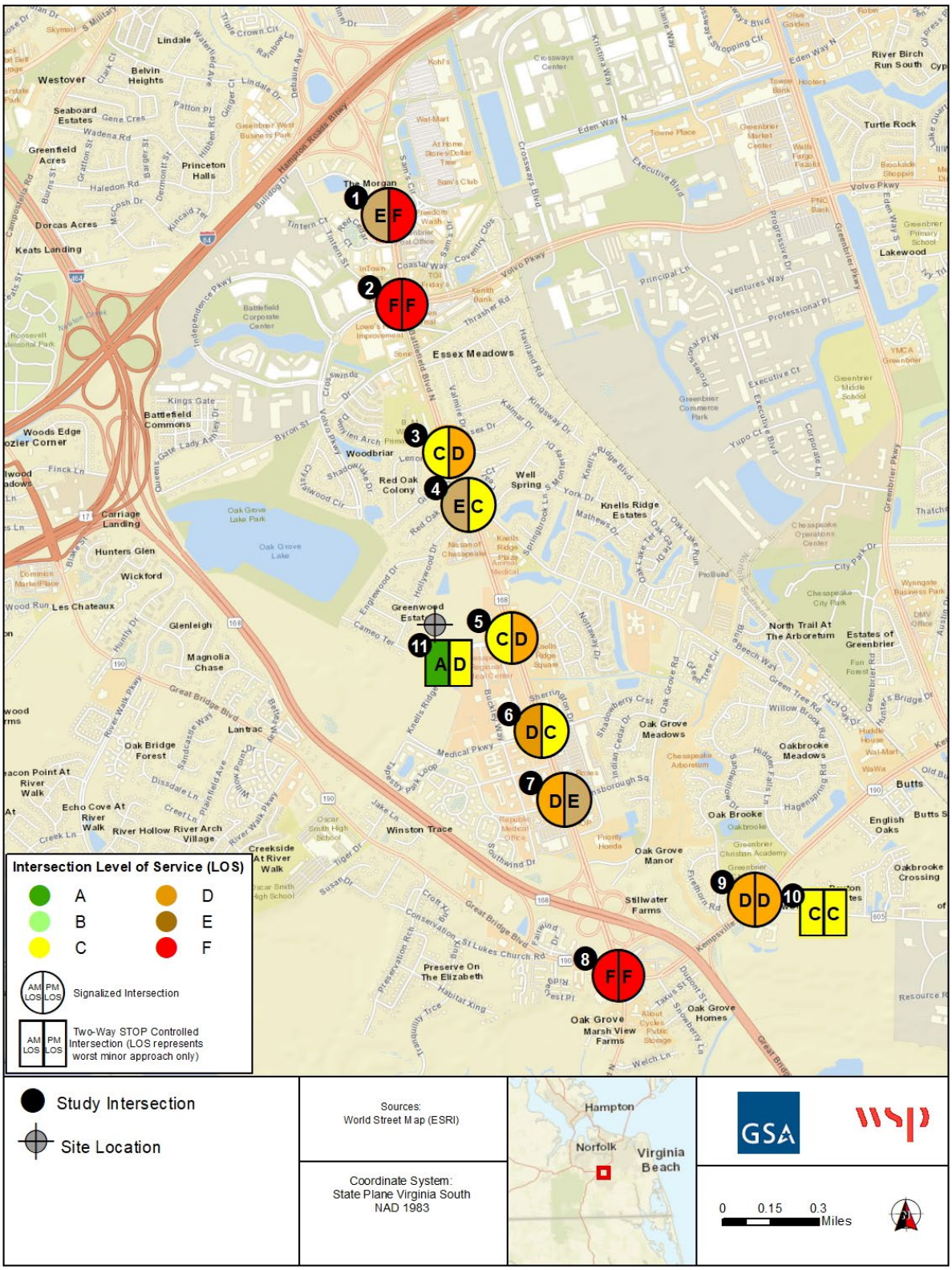


Figure 5-5. Knells Ridge Boulevard Alternatives with Mitigation: AM and PM Peak Hour LOS by Intersection

6.0 SUMMARY

Key findings of this transportation study for the proposed Hampton Roads CBOC are as follows:

1. Under existing condition, six of the ten existing study intersections operate within the LOS standard, but Battlefield Boulevard/Volvo Parkway (Intersection #2), Battlefield Boulevard/Hollywood Drive/Oak Grove Road (Intersection #4), Battlefield Boulevard/Battlefield Boulevard/Gainsborough Square Drive (Intersection #7), and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) operate at LOS F during either the AM or PM peak hours.

2. Seven of the ten existing study intersections have at least one lane group with queues exceeding the available storage during either the AM or PM peak hours under existing conditions.

3. Three planned developments anticipated to be built and occupied by 2024 would generate a combined total of 55 new AM peak hour and 70 new PM peak hour vehicle trips that would be added to the public roadway network.

4. The Hampton Roads CBOC is proposed to be built on one of two sites, each of which is estimated to generate 401 AM peak hour trips and 446 PM peak hour trips.

5. Under the No Action Alternative and the Action Alternatives, seven of the ten existing study intersections would operate within the LOS standard, but Battlefield Boulevard/Wal-Mart Way (Intersection #1), Battlefield Boulevard/Volvo Parkway (Intersection #2), and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8) would each operate at LOS F during either the AM or PM peak hours. Vehicle delays at these intersections would generally increase under the Action Alternatives relative to the No Action Alternative. In addition, the northbound approach of Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would operate with a LOS F during the PM peak hour under the Clearfield Avenue Alternative.

6. Mitigation measures are proposed for the Knells Ridge Boulevard Alternatives to improve the vehicle delays at Battlefield Boulevard/Wal-Mart Way (Intersection #1), Battlefield Boulevard/Volvo Parkway (Intersection #2), and Battlefield Boulevard/Great Bridge Boulevard/Kempsville Road (Intersection #8). Mitigation measures include modifying the traffic signal cycle length, traffic signal phasings and timing splits, the roadway geometry, and limiting the number of patient appointments close to peak hours.

7. Mitigation measures are proposed for the Clearfield Avenue Alternative to improve the vehicle delays at Battlefield Boulevard/Wal-Mart Way (Intersection #1), Battlefield Boulevard/Volvo Parkway (Intersection #2), Battlefield Boulevard/Great Bridge

Boulevard/Kempsville Road (Intersection #8), Clearfield Avenue/Clydes Way/Driveway (Intersection #10). Mitigation measures include modifying the traffic signal cycle length, traffic signal phasings and timing splits, the roadway geometry, and limiting the number of patient appointments close to peak hours. In addition, Clearfield Avenue/Clydes Way/Driveway (Intersection #10) would meet the peak hour warrant for signalization. Signalization of this intersection is proposed as a mitigation measure.

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APPENDIX A: SYNCHRO™ ANALYSIS WORKSHEET

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	104	0	214	22	2346	271	395	2916	9
Future Volume (vph)	1	3	0	104	0	214	22	2346	271	395	2916	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1844		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1	4	0	122	0	252	26	2760	319	465	3431	11
RTOR Reduction (vph)	0	0	0	0	0	182	0	0	98	0	0	0
Lane Group Flow (vph)	0	5	0	62	60	70	26	2760	221	465	3442	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		13.0	13.0	34.0	10.0	65.0	78.0	21.0	76.0	
Effective Green, g (s)		11.0		14.0	14.0	36.0	11.0	67.0	80.0	22.0	78.0	
Actuated g/C Ratio		0.08		0.11	0.11	0.28	0.08	0.52	0.62	0.17	0.60	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		156		181	181	857	149	2620	974	580	3049	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.14	c0.68	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.34	0.33	0.08	0.17	1.05	0.23	0.80	1.13	
Uniform Delay, d1		54.6		53.7	53.7	34.8	55.3	31.5	11.2	51.9	26.0	
Progression Factor		1.00		1.00	1.00	1.00	0.65	0.36	0.13	1.00	1.00	
Incremental Delay, d2		0.4		5.1	4.9	0.2	0.2	25.2	0.0	11.2	62.7	
Delay (s)		55.0		58.8	58.5	35.0	36.0	36.6	1.5	63.1	88.7	
Level of Service		D		E	E	C	D	D	A	E	F	
Approach Delay (s)		55.0			42.7			33.0			85.7	
Approach LOS		D			D			C			F	

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	77	72	330	445	413	314	1907	534	728	1275	1017
Future Volume (vph)	319	77	72	330	445	413	314	1907	534	728	1275	1017
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.86	0.86	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.72	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3044	3204	1137	3044	2938		3433	5085	1556	3433	5085	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3044	3204	1137	3044	2938		3433	5085	1556	3433	5085	1562
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	367	89	83	379	511	475	361	2192	614	837	1466	1169
RTOR Reduction (vph)	0	0	72	0	129	0	0	0	251	0	0	214
Lane Group Flow (vph)	367	89	11	379	857	0	361	2192	363	837	1466	955
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	16.7	16.7	16.7	20.7	20.7		8.7	48.7	48.7	18.7	58.7	58.7
Effective Green, g (s)	17.7	17.7	17.7	21.7	21.7		9.7	50.7	50.7	19.7	60.7	60.7
Actuated g/C Ratio	0.14	0.14	0.14	0.17	0.17		0.07	0.39	0.39	0.15	0.47	0.47
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	414	436	154	508	490		256	1983	606	520	2374	729
v/s Ratio Prot	c0.12	0.03		0.12	c0.29		0.11	c0.43		c0.24	0.29	
v/s Ratio Perm			0.01						0.23			c0.61
v/c Ratio	0.89	0.20	0.07	0.75	1.75		1.41	1.11	0.60	1.61	0.62	1.31
Uniform Delay, d1	55.2	49.9	49.0	51.5	54.1		60.1	39.6	31.6	55.1	26.0	34.6
Progression Factor	1.00	1.00	1.00	0.73	0.66		1.05	0.58	0.71	0.67	0.41	0.41
Incremental Delay, d2	23.3	1.1	0.9	9.1	344.8		198.2	52.6	2.6	275.1	0.1	140.3
Delay (s)	78.5	50.9	49.9	46.7	380.3		261.1	75.8	25.1	312.4	10.8	154.4
Level of Service	E	D	D	D	F		F	E	C	F	B	F
Approach Delay (s)		69.5			287.7			87.1			131.9	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	136.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	0	82	86	4	55	134	2625	24	71	1540	66
Future Volume (veh/h)	75	0	82	86	4	55	134	2625	24	71	1540	66
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	82	0	89	93	4	60	146	2853	26	77	1674	72
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	0	256	200	16	242	360	3364	1047	197	3169	987
Arrive On Green	0.16	0.00	0.15	0.16	0.16	0.15	0.11	0.66	0.66	0.07	0.62	0.62
Sat Flow, veh/h	1332	0	1583	1303	100	1498	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	82	0	89	93	0	64	146	2853	26	77	1674	72
Grp Sat Flow(s),veh/h/ln	1332	0	1583	1303	0	1598	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	7.4	0.0	6.5	8.9	0.0	4.6	3.2	56.2	0.7	2.0	24.0	2.3
Cycle Q Clear(g_c), s	12.0	0.0	6.5	15.4	0.0	4.6	3.2	56.2	0.7	2.0	24.0	2.3
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	0	256	200	0	258	360	3364	1047	197	3169	987
V/C Ratio(X)	0.37	0.00	0.35	0.46	0.00	0.25	0.41	0.85	0.02	0.39	0.53	0.07
Avail Cap(c_a), veh/h	224	0	256	200	0	258	360	3364	1047	197	3169	987
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	52.9	0.0	48.9	55.3	0.0	48.0	11.0	17.0	7.6	27.6	13.8	9.7
Incr Delay (d2), s/veh	4.6	0.0	3.7	7.5	0.0	2.3	3.4	2.9	0.0	5.8	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	3.1	3.6	0.0	2.2	2.5	26.8	0.3	2.0	11.3	1.1
LnGrp Delay(d),s/veh	57.5	0.0	52.6	62.8	0.0	50.3	14.4	19.8	7.6	33.4	14.4	9.8
LnGrp LOS	E		D	E		D	B	B	A	C	B	A
Approach Vol, veh/h		171			157			3025			1823	
Approach Delay, s/veh		54.9			57.7			19.5			15.0	
Approach LOS		D			E			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	15.0	90.0		25.0	20.0	85.0		25.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	84.0		20.0	15.0	79.0		20.0
Max Q Clear Time (g_c+I1), s	14.0	58.2		17.4	5.2	26.0		14.0
Green Ext Time (p_c), s	0.1	19.8		0.1	0.3	12.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	22	24	28	19	621	40	2083	15	190	1449	69
Future Volume (veh/h)	79	22	24	28	19	621	40	2083	15	190	1449	69
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	87	24	26	31	21	682	44	2289	0	209	1592	76
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	154	166	191	119	297	250	2829	881	374	3250	1012
Arrive On Green	0.19	0.19	0.18	0.19	0.19	0.19	0.14	1.00	0.00	0.14	0.64	0.64
Sat Flow, veh/h	740	817	886	785	633	1578	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	87	0	50	52	0	682	44	2289	0	209	1592	76
Grp Sat Flow(s),veh/h/ln	740	0	1703	1418	0	1578	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	15.1	0.0	3.3	2.2	0.0	25.0	1.6	0.0	0.0	5.0	21.9	2.4
Cycle Q Clear(g_c), s	20.6	0.0	3.3	5.5	0.0	25.0	1.6	0.0	0.0	5.0	21.9	2.4
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	163	0	320	310	0	297	250	2829	881	374	3250	1012
V/C Ratio(X)	0.54	0.00	0.16	0.17	0.00	2.30	0.18	0.81	0.00	0.56	0.49	0.08
Avail Cap(c_a), veh/h	163	0	320	310	0	297	250	2829	881	374	3250	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	0.0	45.4	46.1	0.0	54.0	17.9	0.0	0.0	40.8	12.6	9.1
Incr Delay (d2), s/veh	12.0	0.0	1.0	1.2	0.0	595.0	1.5	2.6	0.0	5.9	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	1.6	1.7	0.0	59.9	0.9	0.7	0.0	7.5	10.3	1.1
LnGrp Delay(d),s/veh	66.9	0.0	46.4	47.3	0.0	649.0	19.4	2.6	0.0	46.7	13.1	9.2
LnGrp LOS	E		D	D		F	B	A		D	B	A
Approach Vol, veh/h		137			734			2333			1877	
Approach Delay, s/veh		59.5			606.4			2.9			16.7	
Approach LOS		E			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.0	78.0		29.0	15.0	89.0		29.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	20.0	* 72		24.0	10.0	80.0		24.0
Max Q Clear Time (g_c+I1), s	17.6	2.0		27.0	3.6	23.9		22.6
Green Ext Time (p_c), s	0.6	21.7		0.0	0.0	11.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	96.7
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	23	32	85	38	73	120	2025	72	121	1217	163
Future Volume (vph)	40	23	32	85	38	73	120	2025	72	121	1217	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.99	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1746	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.99	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1746	1583	1681	1770	1583	199	5085	1583	138	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	25	35	92	41	79	130	2201	78	132	1323	177
RTOR Reduction (vph)	0	0	31	0	0	70	0	0	36	0	0	82
Lane Group Flow (vph)	34	34	4	92	41	9	130	2201	42	132	1323	95
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	13.0	13.0	13.0	13.0	13.0	13.0	68.0	68.0	68.0	69.0	68.0	68.0
Effective Green, g (s)	14.0	14.0	14.0	14.0	14.0	14.0	67.0	70.0	70.0	68.0	70.0	70.0
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.11	0.11	0.52	0.54	0.54	0.52	0.54	0.54
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	181	188	170	181	190	170	271	2738	852	247	2738	852
v/s Ratio Prot	c0.02	0.02		c0.05	0.02		0.05	c0.43		0.06	c0.26	
v/s Ratio Perm			0.00			0.01	0.20		0.03	0.22		0.06
v/c Ratio	0.19	0.18	0.02	0.51	0.22	0.05	0.48	0.80	0.05	0.53	0.48	0.11
Uniform Delay, d1	52.8	52.8	51.9	54.8	53.0	52.0	20.0	24.4	14.2	39.9	18.7	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.62	0.58	0.79	0.92	2.20
Incremental Delay, d2	2.3	2.1	0.2	9.8	2.6	0.6	3.9	1.7	0.1	7.2	0.5	0.2
Delay (s)	55.1	54.9	52.1	64.6	55.6	52.6	18.8	16.8	8.3	38.6	17.7	32.6
Level of Service	E	D	D	E	E	D	B	B	A	D	B	C
Approach Delay (s)		54.0			58.4			16.6			21.0	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	16	48	48	32	87	306	2052	58	86	1093	155
Future Volume (veh/h)	78	16	48	48	32	87	306	2052	58	86	1093	155
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	19	56	56	38	102	360	2414	68	101	1286	182
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	364	298	163	37	99	496	3212	1000	248	2485	774
Arrive On Green	0.08	0.20	0.19	0.08	0.08	0.08	0.41	1.00	1.00	0.03	0.16	0.16
Sat Flow, veh/h	1774	1863	1583	1319	448	1203	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	19	56	56	0	140	360	2414	68	101	1286	182
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1319	0	1651	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	6.1	1.1	4.0	5.4	0.0	11.0	9.8	0.0	0.0	4.5	30.8	13.3
Cycle Q Clear(g_c), s	6.1	1.1	4.0	5.4	0.0	11.0	9.8	0.0	0.0	4.5	30.8	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	364	298	163	0	137	496	3212	1000	248	2485	774
V/C Ratio(X)	0.46	0.05	0.19	0.34	0.00	1.03	0.73	0.75	0.07	0.41	0.52	0.24
Avail Cap(c_a), veh/h	201	364	298	163	0	137	496	3212	1000	248	2485	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	49.3	43.5	45.5	58.4	0.0	61.4	29.1	0.0	0.0	22.6	41.4	34.1
Incr Delay (d2), s/veh	7.4	0.3	1.4	5.6	0.0	84.0	9.0	1.7	0.1	4.9	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.6	1.8	2.2	0.0	8.2	10.9	0.5	0.0	2.5	14.6	6.0
LnGrp Delay(d),s/veh	56.7	43.8	46.9	64.1	0.0	145.7	38.1	1.7	0.1	27.5	42.2	34.8
LnGrp LOS	E	D	D	E		F	D	A	A	C	D	C
Approach Vol, veh/h		167			196			2842			1569	
Approach Delay, s/veh		51.9			122.3			6.2			40.4	
Approach LOS		D			F			A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	88.0	15.0	15.0	34.0	69.0		30.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	79.0	12.0	10.0	28.0	* 63		25.0
Max Q Clear Time (g_c+I1), s	6.5	2.0	8.1	13.0	11.8	32.8		6.0
Green Ext Time (p_c), s	0.1	26.2	0.1	0.0	1.2	8.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	23.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	15	101	183	71	75	389	2281	196	84	999	106
Future Volume (veh/h)	60	15	101	183	71	75	389	2281	196	84	999	106
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	65	16	110	199	77	82	423	2479	213	91	1086	115
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	171	145	358	107	114	479	2911	906	191	2290	713
Arrive On Green	0.08	0.09	0.09	0.12	0.13	0.12	0.20	0.57	0.57	0.07	0.45	0.45
Sat Flow, veh/h	1774	1863	1583	1774	827	881	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	65	16	110	199	0	159	423	2479	213	91	1086	115
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1707	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.2	1.0	8.9	13.0	0.0	11.7	20.5	53.3	4.4	1.2	19.6	5.6
Cycle Q Clear(g_c), s	4.2	1.0	8.9	13.0	0.0	11.7	20.5	53.3	4.4	1.2	19.6	5.6
Prop In Lane	1.00		1.00	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	171	145	358	0	222	479	2911	906	191	2290	713
V/C Ratio(X)	0.28	0.09	0.76	0.56	0.00	0.72	0.88	0.85	0.23	0.48	0.47	0.16
Avail Cap(c_a), veh/h	235	171	145	358	0	222	479	2911	906	191	2290	713
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	54.5	58.1	45.7	0.0	55.0	26.5	23.4	3.5	55.5	25.2	21.3
Incr Delay (d2), s/veh	2.9	1.1	30.4	6.1	0.0	18.1	20.3	3.4	0.6	8.2	0.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.6	5.1	6.9	0.0	6.6	17.4	25.7	3.4	3.5	9.3	2.6
LnGrp Delay(d),s/veh	51.0	55.6	88.5	51.8	0.0	73.0	46.8	26.7	4.1	63.7	25.9	21.8
LnGrp LOS	D	E	F	D		E	D	C	A	E	C	C
Approach Vol, veh/h		191			358			3115			1292	
Approach Delay, s/veh		73.0			61.2			27.9			28.2	
Approach LOS		E			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	79.0	20.0	16.0	32.0	63.0	15.0	21.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 73	17.0	11.0	27.0	56.0	12.0	16.0
Max Q Clear Time (g_c+I1), s	13.2	55.3	15.0	10.9	22.5	21.6	6.2	13.7
Green Ext Time (p_c), s	0.1	13.3	0.1	0.0	0.7	6.2	0.1	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	522	359	415	382	688	122	985	518	93	389	282
Future Volume (veh/h)	219	522	359	415	382	688	122	985	518	93	389	282
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	252	600	0	477	439	791	140	1132	0	107	447	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	555	471	257	483	410	132	1408	630	132	1408	630
Arrive On Green	0.11	0.30	0.00	0.07	0.26	0.26	0.07	0.40	0.00	0.07	0.40	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	252	600	0	477	439	791	140	1132	0	107	447	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	14.7	38.7	0.0	9.7	29.7	33.7	9.7	36.8	0.0	7.7	11.3	0.0
Cycle Q Clear(g_c), s	14.7	38.7	0.0	9.7	29.7	33.7	9.7	36.8	0.0	7.7	11.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	555	471	257	483	410	132	1408	630	132	1408	630
V/C Ratio(X)	1.26	1.08	0.00	1.86	0.91	1.93	1.06	0.80	0.00	0.81	0.32	0.00
Avail Cap(c_a), veh/h	201	555	471	257	483	410	132	1408	630	132	1408	630
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.7	45.7	0.0	60.1	46.7	48.2	60.2	34.7	0.0	59.2	27.0	0.0
Incr Delay (d2), s/veh	149.3	62.3	0.0	400.5	23.6	426.1	94.5	5.0	0.0	39.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	29.5	0.0	18.9	18.4	63.3	8.2	18.9	0.0	5.2	5.6	0.0
LnGrp Delay(d),s/veh	206.9	107.9	0.0	460.6	70.3	474.3	154.7	39.6	0.0	98.6	27.6	0.0
LnGrp LOS	F	F		F	E	F	F	D		F	C	
Approach Vol, veh/h		852			1707			1272			554	
Approach Delay, s/veh		137.2			366.6			52.3			41.3	
Approach LOS		F			F			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	15.0	44.0	15.0	56.0	20.0	39.0	15.0	56.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 8.7	* 38	* 8.7	* 50	* 14	* 33	* 8.7	* 50
Max Q Clear Time (g_c+I1), s	11.7	40.7	11.7	13.3	16.7	35.7	9.7	38.8
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	0.0	0.0	4.2

Intersection Summary	
HCM 2010 Ctrl Delay	189.8
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	1200	449	170	1078	40	331	23	79	84	7	76
Future Volume (vph)	115	1200	449	170	1078	40	331	23	79	84	7	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5058		1681	1696	1583		1781	1583
Flt Permitted	0.16	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	290	5085	1583	156	5058		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	125	1304	488	185	1172	43	360	25	86	91	8	83
RTOR Reduction (vph)	0	0	308	0	3	0	0	0	66	0	0	73
Lane Group Flow (vph)	125	1304	180	185	1212	0	191	194	20	0	99	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	58.0	46.0	46.0	70.0	53.0		29.0	29.0	29.0		15.0	15.0
Effective Green, g (s)	60.0	48.0	48.0	71.0	55.0		30.0	30.0	30.0		16.0	16.0
Actuated g/C Ratio	0.46	0.37	0.37	0.55	0.42		0.23	0.23	0.23		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	281	1877	584	333	2139		387	391	365		219	194
v/s Ratio Prot	0.04	c0.26		c0.09	0.24		0.11	c0.11			c0.06	
v/s Ratio Perm	0.16		0.11	0.22					0.01			0.01
v/c Ratio	0.44	0.69	0.31	0.56	0.57		0.49	0.50	0.05		0.45	0.05
Uniform Delay, d1	21.3	34.8	29.2	25.5	28.5		43.4	43.4	39.0		52.9	50.3
Progression Factor	1.09	0.97	0.90	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.0	1.7	1.1	6.5	1.1		4.4	4.4	0.3		6.6	0.5
Delay (s)	27.2	35.6	27.4	32.1	29.6		47.9	47.9	39.2		59.5	50.8
Level of Service	C	D	C	C	C		D	D	D		E	D
Approach Delay (s)		33.0			29.9			46.3			55.6	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	619	7	2	429	4	1
Future Vol, veh/h	619	7	2	429	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	673	8	2	466	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	681	0	1147	677
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	470	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	912	-	220	453
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	912	-	219	453
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	244	-	-	912	-
HCM Lane V/C Ratio	0.022	-	-	0.002	-
HCM Control Delay (s)	20.1	-	-	9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	5	62	60	252	26	2760	319	465	3442
v/c Ratio	0.03	0.34	0.33	0.24	0.17	1.05	0.29	0.80	1.13
Control Delay	55.2	59.5	59.2	4.4	36.3	39.0	0.2	63.4	88.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	59.5	59.2	4.4	36.3	39.0	0.2	63.4	88.9
Queue Length 50th (ft)	4	51	50	0	20	~957	0	196	~1232
Queue Length 95th (ft)	16	95	92	26	m19	m213	m1	241	#1178
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	156	181	181	1032	149	2620	1082	580	3051
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.34	0.33	0.24	0.17	1.05	0.29	0.80	1.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	367	89	83	379	986	361	2192	614	837	1466	1169
v/c Ratio	0.89	0.20	0.26	0.75	1.59	1.41	1.11	0.72	1.61	0.62	1.24
Control Delay	78.6	51.3	2.0	47.0	298.5	242.1	76.9	10.6	303.6	10.9	123.4
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	78.6	51.6	2.0	47.0	298.5	242.1	76.9	10.9	303.6	10.9	123.4
Queue Length 50th (ft)	179	39	0	122	~626	~208	~786	123	~518	157	~1076
Queue Length 95th (ft)	#261	66	0	171	#712	m#270	#825	245	m#438	m128	m#796
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	414	436	315	508	619	256	1983	858	520	2374	943
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	114	0	0	0	0	0	33	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.28	0.26	0.75	1.59	1.41	1.11	0.74	1.61	0.62	1.24

Intersection Summary

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Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	89	93	64	146	2853	26	77	1674	72
v/c Ratio	0.38	0.23	0.48	0.21	0.49	0.85	0.02	0.43	0.53	0.07
Control Delay	54.6	2.0	58.9	14.5	19.1	4.7	0.0	37.1	15.6	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	2.0	58.9	14.5	19.1	4.7	0.0	37.1	15.6	2.0
Queue Length 50th (ft)	62	0	72	3	37	188	0	17	372	3
Queue Length 95th (ft)	116	4	130	45	m40	m178	m0	m57	432	m8
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	215	379	193	308	301	3363	1067	180	3168	1013
Starvation Cap Reductn	0	0	0	0	0	14	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.23	0.48	0.21	0.49	0.85	0.02	0.43	0.53	0.07

Intersection Summary

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	50	52	682	44	2289	16	209	1592	76
v/c Ratio	0.34	0.14	0.17	1.41	0.22	0.79	0.02	0.66	0.50	0.07
Control Delay	49.6	26.1	45.8	221.4	11.5	7.2	0.1	42.4	2.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	26.1	45.8	221.4	11.5	7.2	0.1	42.4	2.8	0.1
Queue Length 50th (ft)	64	17	37	~611	5	75	0	136	37	0
Queue Length 95th (ft)	117	53	76	#851	m12	170	m0	219	41	0
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	259	348	298	485	202	2894	929	315	3207	1025
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.14	0.17	1.41	0.22	0.79	0.02	0.66	0.50	0.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	34	34	35	92	41	79	130	2201	78	132	1323	177
v/c Ratio	0.19	0.18	0.11	0.51	0.22	0.25	0.48	0.80	0.09	0.53	0.48	0.19
Control Delay	55.7	55.5	0.7	65.4	56.2	1.9	16.3	17.0	0.7	40.2	17.8	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	55.5	0.7	65.4	56.2	1.9	16.3	17.0	0.7	40.2	17.8	5.0
Queue Length 50th (ft)	28	28	0	77	33	0	27	668	3	44	145	13
Queue Length 95th (ft)	64	64	0	140	72	0	m49	705	m5	96	203	54
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	181	188	312	181	190	312	273	2738	902	247	2738	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.18	0.11	0.51	0.22	0.25	0.48	0.80	0.09	0.53	0.48	0.19

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	19	56	56	140	360	2414	68	101	1286	182
v/c Ratio	0.43	0.05	0.15	0.48	0.65	0.70	0.76	0.07	0.48	0.51	0.21
Control Delay	50.5	42.6	1.5	71.0	40.8	26.8	6.5	0.1	25.0	15.6	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	42.6	1.5	71.0	40.8	26.8	6.5	0.1	25.0	15.6	5.4
Queue Length 50th (ft)	66	13	0	46	48	169	184	0	30	203	21
Queue Length 95th (ft)	111	34	1	87	108	m247	121	m0	71	299	62
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	216	372	386	117	214	513	3168	1011	210	2542	882
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.05	0.15	0.48	0.65	0.70	0.76	0.07	0.48	0.51	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	65	16	110	199	159	423	2479	213	91	1086	115
v/c Ratio	0.27	0.09	0.37	0.59	0.63	0.96	0.85	0.21	0.51	0.48	0.15
Control Delay	41.9	55.5	4.8	49.5	53.6	56.4	24.0	1.6	37.5	10.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	55.5	4.8	49.5	53.6	56.4	24.0	1.6	37.5	10.9	2.1
Queue Length 50th (ft)	43	13	0	143	101	253	667	3	52	320	15
Queue Length 95th (ft)	84	37	10	221	177	m#325	m523	m8	104	317	25
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	240	171	298	340	254	440	2933	1003	179	2268	769
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.09	0.37	0.59	0.63	0.96	0.85	0.21	0.51	0.48	0.15

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	252	600	413	477	439	791	140	1132	595	107	447	324
v/c Ratio	1.26	1.08	0.61	1.86	0.91	1.50	1.06	0.80	0.75	0.81	0.32	0.39
Control Delay	195.3	101.5	14.1	434.0	69.8	265.9	151.8	40.1	24.3	115.2	17.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	195.3	101.5	14.1	434.0	69.8	265.9	151.8	40.1	24.3	115.2	17.3	5.8
Queue Length 50th (ft)	~272	~573	70	~324	393	~855	~130	440	242	79	133	87
Queue Length 95th (ft)	#426	#762	107	#418	#534	#1053	#254	503	366	#174	156	137
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	200	554	681	256	482	527	132	1407	793	132	1407	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.26	1.08	0.61	1.86	0.91	1.50	1.06	0.80	0.75	0.81	0.32	0.39

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	125	1304	488	185	1215	191	194	86	99	83
v/c Ratio	0.44	0.69	0.55	0.55	0.57	0.49	0.50	0.18	0.45	0.25
Control Delay	20.4	35.8	4.2	30.1	29.6	48.5	48.6	0.8	60.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	35.8	4.2	30.1	29.6	48.5	48.6	0.8	60.2	1.9
Queue Length 50th (ft)	44	379	15	86	279	148	150	0	79	0
Queue Length 95th (ft)	m60	m416	m28	167	327	230	234	0	138	0
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	284	1877	892	334	2143	387	391	481	219	327
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.69	0.55	0.55	0.57	0.49	0.50	0.18	0.45	0.25

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	12	0	238	17	567	19	2959	552	725	2514	21
Future Volume (vph)	3	12	0	238	17	567	19	2959	552	725	2514	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1845		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1845		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	13	0	251	18	597	20	3115	581	763	2646	22
RTOR Reduction (vph)	0	0	0	0	0	176	0	0	96	0	1	0
Lane Group Flow (vph)	0	16	0	125	144	421	20	3115	485	763	2667	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		10.0	10.0	40.0	10.0	69.0	79.0	30.0	89.0	
Effective Green, g (s)		11.0		11.0	11.0	42.0	11.0	71.0	81.0	31.0	91.0	
Actuated g/C Ratio		0.08		0.08	0.08	0.30	0.08	0.51	0.58	0.22	0.65	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		144		132	133	915	139	2578	915	760	3301	
v/s Ratio Prot		c0.01		0.07	c0.08	0.10	0.01	c0.61	0.04	c0.22	0.53	
v/s Ratio Perm						0.05			0.26			
v/c Ratio		0.11		0.95	1.08	0.46	0.14	1.21	0.53	1.00	0.81	
Uniform Delay, d1		60.0		64.2	64.5	39.8	60.1	34.5	17.9	54.5	18.1	
Progression Factor		1.00		1.00	1.00	1.00	1.08	1.12	1.02	1.00	1.00	
Incremental Delay, d2		1.6		65.2	101.9	1.7	0.2	94.1	0.2	33.6	2.2	
Delay (s)		61.5		129.4	166.4	41.5	65.0	132.8	18.4	88.1	20.3	
Level of Service		E		F	F	D	E	F	B	F	C	
Approach Delay (s)		61.5			74.9			114.5			35.4	
Approach LOS		E			E			F			D	

Intersection Summary			
HCM 2000 Control Delay	76.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	964	606	344	1140	257	930	162	1636	605	665	1688	399
Future Volume (vph)	964	606	344	1140	257	930	162	1636	605	665	1688	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.86	0.86	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.80		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3044	3204	1583	3044	2269		3433	5085	1534	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3044	3204	1583	3044	2269		3433	5085	1534	3433	5085	1583
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	1134	713	405	1341	302	1094	191	1925	712	782	1986	469
RTOR Reduction (vph)	0	0	107	0	195	0	0	0	319	0	0	312
Lane Group Flow (vph)	1134	713	298	1341	1201	0	191	1925	393	782	1986	157
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	33.0	33.0	33.0	34.0	34.0		11.0	35.0	35.0	21.0	45.0	45.0
Effective Green, g (s)	34.0	34.0	34.0	35.0	35.0		12.0	37.0	37.0	22.0	47.0	47.0
Actuated g/C Ratio	0.24	0.24	0.24	0.25	0.25		0.09	0.26	0.26	0.16	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Grp Cap (vph)	739	778	384	761	567		294	1343	405	539	1707	531
v/s Ratio Prot	c0.37	0.22		0.44	c0.53		0.06	c0.38		c0.23	0.39	
v/s Ratio Perm			0.19						0.26			0.10
v/c Ratio	1.53	0.92	0.78	1.76	2.26dr		0.65	1.43	0.97	1.45	1.16	0.30
Uniform Delay, d1	53.0	51.6	49.5	52.5	52.5		62.0	51.5	50.9	59.0	46.5	34.3
Progression Factor	1.00	1.00	1.00	0.65	0.47		1.19	0.78	0.62	0.82	0.77	0.79
Incremental Delay, d2	247.3	17.4	14.3	346.0	506.6		7.6	198.1	30.8	209.7	78.2	0.9
Delay (s)	300.3	69.0	63.7	380.3	531.4		81.1	238.1	62.5	257.8	113.8	27.9
Level of Service	F	E	E	F	F		F	F	E	F	F	C
Approach Delay (s)		184.5			457.4			183.3			136.1	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	237.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	124.5%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	42	176	5	26	57	2342	34	50	3100	22
Future Volume (veh/h)	35	0	42	176	5	26	57	2342	34	50	3100	22
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	0	46	191	5	28	62	2546	37	54	3370	24
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	0	294	270	46	255	191	3305	1029	199	3305	1029
Arrive On Green	0.19	0.00	0.18	0.19	0.19	0.18	0.08	0.65	0.65	0.06	0.65	0.65
Sat Flow, veh/h	1370	0	1583	1354	245	1375	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	38	0	46	191	0	33	62	2546	37	54	3370	24
Grp Sat Flow(s),veh/h/ln	1370	0	1583	1354	0	1620	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	3.3	0.0	3.4	19.3	0.0	2.4	1.5	49.1	1.2	1.3	91.0	0.8
Cycle Q Clear(g_c), s	5.7	0.0	3.4	22.7	0.0	2.4	1.5	49.1	1.2	1.3	91.0	0.8
Prop In Lane	1.00		1.00	1.00		0.85	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	0	294	270	0	301	191	3305	1029	199	3305	1029
V/C Ratio(X)	0.13	0.00	0.16	0.71	0.00	0.11	0.32	0.77	0.04	0.27	1.02	0.02
Avail Cap(c_a), veh/h	283	0	294	270	0	301	191	3305	1029	199	3305	1029
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	49.8	0.0	48.2	57.3	0.0	47.7	33.9	17.2	8.8	22.4	24.5	8.7
Incr Delay (d2), s/veh	1.0	0.0	1.1	14.6	0.0	0.7	4.5	1.8	0.1	3.3	20.8	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(50%),veh/ln	1.3	0.0	1.6	8.3	0.0	1.1	1.8	23.4	0.5	1.5	48.6	0.3
LnGrp Delay(d),s/veh	50.7	0.0	49.4	71.9	0.0	48.5	38.4	19.0	8.8	25.8	45.3	8.7
LnGrp LOS	D		D	E		D	D	B	A	C	F	A
Approach Vol, veh/h		84			224			2645			3448	
Approach Delay, s/veh		50.0			68.5			19.3			44.7	
Approach LOS		D			E			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	95.0		30.0	15.0	95.0		30.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	89.0		25.0	12.0	89.0		25.0
Max Q Clear Time (g_c+I1), s	3.3	51.1		24.7	3.5	93.0		7.7
Green Ext Time (p_c), s	0.0	22.3		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	36	27	52	15	449	77	1938	32	527	2688	103
Future Volume (veh/h)	46	36	27	52	15	449	77	1938	32	527	2688	103
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	38	28	54	16	468	80	2019	0	549	2800	107
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	112	82	129	33	177	191	2311	720	648	3698	1152
Arrive On Green	0.11	0.11	0.10	0.11	0.11	0.11	0.06	0.45	0.00	0.66	1.00	1.00
Sat Flow, veh/h	908	998	735	752	292	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	48	0	66	70	0	468	80	2019	0	549	2800	107
Grp Sat Flow(s),veh/h/ln	908	0	1733	1044	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.9	0.0	5.0	6.0	0.0	16.0	4.0	51.4	0.0	26.1	0.0	0.0
Cycle Q Clear(g_c), s	16.0	0.0	5.0	11.1	0.0	16.0	4.0	51.4	0.0	26.1	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	0	194	161	0	177	191	2311	720	648	3698	1152
V/C Ratio(X)	0.59	0.00	0.34	0.43	0.00	2.64	0.42	0.87	0.00	0.85	0.76	0.09
Avail Cap(c_a), veh/h	82	0	194	161	0	177	191	2311	720	648	3698	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.9	0.0	58.8	62.9	0.0	63.5	26.6	35.3	0.0	19.3	0.0	0.0
Incr Delay (d2), s/veh	27.3	0.0	4.7	8.3	0.0	754.8	6.7	4.9	0.0	13.0	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.7	3.1	0.0	44.1	2.3	25.0	0.0	17.1	0.5	0.1
LnGrp Delay(d),s/veh	97.2	0.0	63.5	71.2	0.0	818.3	33.3	40.2	0.0	32.3	1.5	0.2
LnGrp LOS	F		E	E		F	C	D		C	A	A
Approach Vol, veh/h		114			538			2099			3456	
Approach Delay, s/veh		77.7			721.1			40.0			6.3	
Approach LOS		E			F			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	54.0	69.0		20.0	15.0	108.0		20.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	48.0	* 63		15.0	10.0	99.0		15.0
Max Q Clear Time (g_c+I1), s	18.1	53.4		18.0	6.0	2.0		18.0
Green Ext Time (p_c), s	2.2	6.6		0.0	0.1	43.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	81.0
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	39	71	160	21	65	50	1834	120	164	2507	96
Future Volume (vph)	148	39	71	160	21	65	50	1834	120	164	2507	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1770	1583	128	5085	1583	135	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	42	77	174	23	71	54	1993	130	178	2725	104
RTOR Reduction (vph)	0	0	70	0	0	63	0	0	66	0	0	42
Lane Group Flow (vph)	98	105	7	174	23	8	54	1993	64	178	2725	62
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	12.0	12.0	12.0	15.0	15.0	15.0	70.0	67.0	67.0	82.0	82.0	82.0
Effective Green, g (s)	13.0	13.0	13.0	16.0	16.0	16.0	69.0	69.0	69.0	81.0	84.0	84.0
Actuated g/C Ratio	0.09	0.09	0.09	0.11	0.11	0.11	0.49	0.49	0.49	0.58	0.60	0.60
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	156	159	146	192	202	180	192	2506	780	381	3051	949
v/s Ratio Prot	0.06	c0.06		c0.10	0.01		0.02	c0.39		0.09	c0.54	
v/s Ratio Perm			0.00			0.01	0.12		0.04	0.18		0.04
v/c Ratio	0.63	0.66	0.05	0.91	0.11	0.05	0.28	0.80	0.08	0.47	0.89	0.07
Uniform Delay, d1	61.2	61.4	57.9	61.3	55.6	55.2	48.5	29.6	18.8	29.9	24.1	11.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.52	0.46	0.13	1.19	0.29	0.15
Incremental Delay, d2	17.6	19.5	0.6	44.2	1.1	0.5	2.3	1.8	0.1	2.8	3.1	0.1
Delay (s)	78.8	80.9	58.5	105.5	56.8	55.7	27.4	15.3	2.5	38.3	10.2	1.9
Level of Service	E	F	E	F	E	E	C	B	A	D	B	A
Approach Delay (s)		74.0			88.1			14.8			11.6	
Approach LOS		E			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	52	258	113	20	156	152	1638	145	249	2371	118
Future Volume (veh/h)	210	52	258	113	20	156	152	1638	145	249	2371	118
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	244	60	300	131	23	181	177	1905	169	290	2757	137
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	479	396	168	21	163	297	2579	803	414	2761	860
Arrive On Green	0.11	0.26	0.25	0.11	0.11	0.11	0.23	1.00	1.00	0.30	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1017	182	1429	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	244	60	300	131	0	204	177	1905	169	290	2757	137
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1017	0	1611	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	16.0	3.5	24.5	16.0	0.0	16.0	6.1	0.0	0.0	9.8	0.0	0.0
Cycle Q Clear(g_c), s	16.0	3.5	24.5	16.0	0.0	16.0	6.1	0.0	0.0	9.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	479	396	168	0	184	297	2579	803	414	2761	860
V/C Ratio(X)	0.96	0.13	0.76	0.78	0.00	1.11	0.60	0.74	0.21	0.70	1.00	0.16
Avail Cap(c_a), veh/h	254	479	396	168	0	184	297	2579	803	414	2761	860
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	50.1	39.9	48.6	62.9	0.0	62.4	17.0	0.0	0.0	11.5	0.0	0.0
Incr Delay (d2), s/veh	47.0	0.5	12.7	29.5	0.0	98.3	8.5	1.9	0.6	9.5	16.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	1.9	12.2	6.4	0.0	12.1	3.6	0.5	0.1	5.7	4.3	0.1
LnGrp Delay(d),s/veh	97.1	40.5	61.3	92.4	0.0	160.8	25.5	1.9	0.6	21.0	16.8	0.4
LnGrp LOS	F	D	E	F		F	C	A	A	C	B	A
Approach Vol, veh/h		604			335			2251			3184	
Approach Delay, s/veh		73.7			134.0			3.7			16.5	
Approach LOS		E			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	75.0	20.0	20.0	20.0	80.0		40.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	22.0	69.0	17.0	15.0	17.0	74.0		35.0
Max Q Clear Time (g_c+I1), s	11.8	2.0	18.0	18.0	8.1	2.0		26.5
Green Ext Time (p_c), s	0.7	16.4	0.0	0.0	0.4	36.3		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	85	358	256	38	67	273	1648	208	95	2446	201
Future Volume (veh/h)	220	85	358	256	38	67	273	1648	208	95	2446	201
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	239	92	389	278	41	73	297	1791	226	103	2659	218
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	145	124	330	47	84	378	2921	910	231	2416	752
Arrive On Green	0.15	0.08	0.08	0.15	0.08	0.07	0.18	0.57	0.57	0.13	0.95	0.95
Sat Flow, veh/h	1774	1863	1583	1774	602	1072	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	239	92	389	278	0	114	297	1791	226	103	2659	218
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1674	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	17.3	6.8	11.0	20.6	0.0	9.5	18.2	32.6	4.5	0.0	67.0	1.3
Cycle Q Clear(g_c), s	17.3	6.8	11.0	20.6	0.0	9.5	18.2	32.6	4.5	0.0	67.0	1.3
Prop In Lane	1.00		1.00	1.00		0.64	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	315	145	124	330	0	131	378	2921	910	231	2416	752
V/C Ratio(X)	0.76	0.63	3.15	0.84	0.00	0.87	0.79	0.61	0.25	0.45	1.10	0.29
Avail Cap(c_a), veh/h	315	145	124	330	0	131	378	2921	910	231	2416	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	50.8	63.0	65.0	52.0	0.0	64.6	41.6	19.7	3.0	43.3	3.5	1.9
Incr Delay (d2), s/veh	15.6	19.2	988.1	22.3	0.0	50.4	15.1	1.0	0.7	6.1	52.2	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(50%),veh/ln	9.8	4.2	38.7	12.1	0.0	6.2	12.6	15.5	3.9	3.9	34.3	0.6
LnGrp Delay(d),s/veh	66.4	82.2	1053.1	74.3	0.0	115.0	56.7	20.7	3.7	49.4	55.7	2.8
LnGrp LOS	E	F	F	E		F	E	C	A	D	F	A
Approach Vol, veh/h		720			392			2314			2980	
Approach Delay, s/veh		601.5			86.2			23.6			51.6	
Approach LOS		F			F			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	16.0	85.0	25.0	15.0	30.0	71.0	25.0	15.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 79	22.0	10.0	27.0	64.0	22.0	10.0
Max Q Clear Time (g_c+I1), s	12.3	34.6	22.6	13.0	20.2	69.0	19.3	11.5
Green Ext Time (p_c), s	0.2	14.3	0.0	0.0	0.6	0.0	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	105.4
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	480	459	551	580	828	127	742	496	161	979	399
Future Volume (veh/h)	267	480	459	551	580	828	127	742	496	161	979	399
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	287	516	0	592	624	890	137	798	0	173	1053	0
Adj No. of Lanes	1	1	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	581	494	435	581	494	123	1155	517	161	1231	551
Arrive On Green	0.13	0.31	0.00	0.13	0.31	0.31	0.07	0.33	0.00	0.09	0.35	0.00
Sat Flow, veh/h	1774	1863	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	287	516	0	592	624	890	137	798	0	173	1053	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	17.7	36.9	0.0	17.7	43.7	43.7	9.7	27.5	0.0	12.7	38.7	0.0
Cycle Q Clear(g_c), s	17.7	36.9	0.0	17.7	43.7	43.7	9.7	27.5	0.0	12.7	38.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	224	581	494	435	581	494	123	1155	517	161	1231	551
V/C Ratio(X)	1.28	0.89	0.00	1.36	1.07	1.80	1.11	0.69	0.00	1.07	0.86	0.00
Avail Cap(c_a), veh/h	224	581	494	435	581	494	123	1155	517	161	1231	551
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	61.1	45.8	0.0	61.1	48.2	48.2	65.2	41.0	0.0	63.7	42.4	0.0
Incr Delay (d2), s/veh	155.5	18.0	0.0	176.6	58.5	368.4	115.3	3.4	0.0	92.3	7.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.4	21.8	0.0	19.1	31.9	69.7	8.7	14.0	0.0	10.3	20.2	0.0
LnGrp Delay(d),s/veh	216.7	63.8	0.0	237.7	106.6	416.5	180.4	44.4	0.0	156.0	50.1	0.0
LnGrp LOS	F	E		F	F	F	F	D		F	D	
Approach Vol, veh/h		803			2106			935			1226	
Approach Delay, s/veh		118.5			274.4			64.3			65.0	
Approach LOS		F			F			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	23.0	49.0	15.0	53.0	23.0	49.0	18.0	50.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 43	* 8.7	* 47	* 17	* 43	* 12	* 44
Max Q Clear Time (g_c+I1), s	19.7	38.9	11.7	40.7	19.7	45.7	14.7	29.5
Green Ext Time (p_c), s	0.0	0.8	0.0	2.6	0.0	0.0	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	160.4
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1112	293	156	1506	10	431	4	212	33	6	22
Future Volume (vph)	23	1112	293	156	1506	10	431	4	212	33	6	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1687	1583		1788	1583
Flt Permitted	0.08	1.00	1.00	0.11	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	143	5085	1583	203	5080		1681	1687	1583		1788	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	1209	318	170	1637	11	468	4	230	36	7	24
RTOR Reduction (vph)	0	0	198	0	1	0	0	0	173	0	0	22
Lane Group Flow (vph)	25	1209	120	170	1647	0	234	238	58	0	43	2
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	66.0	51.0	51.0	80.0	60.0		34.0	34.0	34.0		10.0	10.0
Effective Green, g (s)	68.0	53.0	53.0	81.0	62.0		35.0	35.0	35.0		11.0	11.0
Actuated g/C Ratio	0.49	0.38	0.38	0.58	0.44		0.25	0.25	0.25		0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	255	1925	599	397	2249		420	421	395		140	124
v/s Ratio Prot	0.01	0.24		c0.08	c0.32		0.14	c0.14			c0.02	
v/s Ratio Perm	0.04		0.08	0.17					0.04			0.00
v/c Ratio	0.10	0.63	0.20	0.43	0.73		0.56	0.57	0.15		0.31	0.02
Uniform Delay, d1	21.5	35.5	29.3	18.7	32.2		45.7	45.9	40.9		60.9	59.5
Progression Factor	1.25	1.13	2.18	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	1.2	0.6	3.4	2.2		5.3	5.4	0.8		5.6	0.2
Delay (s)	27.5	41.3	64.3	22.0	34.3		51.0	51.3	41.6		66.5	59.7
Level of Service	C	D	E	C	C		D	D	D		E	E
Approach Delay (s)		45.8			33.2			48.0			64.1	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	450	5	1	638	8	2
Future Vol, veh/h	450	5	1	638	8	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	489	5	1	693	9	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	494	0	1187	492
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	695	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1070	-	208	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	495	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1070	-	208	577
Mov Cap-2 Maneuver	-	-	-	-	208	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	494	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	239	-	-	1070	-
HCM Lane V/C Ratio	0.045	-	-	0.001	-
HCM Control Delay (s)	20.8	-	-	8.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	125	144	597	20	3115	581	763	2668
v/c Ratio	0.11	0.95	1.08	0.55	0.14	1.21	0.57	1.00	0.81
Control Delay	62.0	128.5	160.3	23.6	65.6	129.1	6.1	87.5	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	128.5	160.3	23.6	65.6	129.1	6.1	87.5	20.6
Queue Length 50th (ft)	14	121	~153	145	18	~1263	62	~363	614
Queue Length 95th (ft)	39	#258	#305	211	m11	m647	m24	#500	676
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	145	132	133	1084	139	2578	1021	760	3302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.95	1.08	0.55	0.14	1.21	0.57	1.00	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1134	713	405	1341	1396	191	1925	712	782	1986	469
v/c Ratio	1.53	0.92	0.82	1.76	2.26dr	0.65	1.43	0.98	1.45	1.16	0.56
Control Delay	283.4	69.1	47.3	371.8	397.1	81.6	230.2	38.2	245.4	111.7	4.0
Queue Delay	0.0	56.0	0.0	0.0	0.0	0.0	0.0	34.1	0.0	0.0	0.0
Total Delay	283.4	125.1	47.3	371.8	397.1	81.6	230.2	72.4	245.4	111.7	4.0
Queue Length 50th (ft)	~839	370	239	~1045	~994	80	~856	155	~495	~774	2
Queue Length 95th (ft)	#915	#447	339	#1110	#1056	m110	#875	#497	m#570	m#785	m57
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	739	778	491	761	762	294	1343	724	539	1707	842
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	534	0	0	0	0	0	71	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	2.92	0.82	1.76	1.83	0.65	1.43	1.09	1.45	1.16	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	38	46	191	33	62	2546	37	54	3370	24
v/c Ratio	0.15	0.12	0.76	0.10	0.32	0.77	0.04	0.32	1.02	0.02
Control Delay	49.7	0.6	74.1	19.4	31.7	11.3	0.0	10.0	36.8	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0
Total Delay	49.7	0.6	74.1	19.4	31.7	15.6	0.0	10.0	36.8	1.6
Queue Length 50th (ft)	29	0	167	4	16	827	0	11	~1222	0
Queue Length 95th (ft)	64	0	#282	35	m24	919	m0	m8	m563	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	254	384	251	324	193	3305	1048	167	3305	1048
Starvation Cap Reductn	0	0	0	0	0	678	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.12	0.76	0.10	0.32	0.97	0.04	0.32	1.02	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	66	70	468	80	2019	33	549	2800	107
v/c Ratio	0.34	0.30	0.47	0.79	0.48	0.86	0.04	0.85	0.76	0.09
Control Delay	64.5	44.0	69.4	15.2	21.8	15.4	1.0	24.1	2.6	0.1
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.5	0.0	0.0	0.2	0.0
Total Delay	64.5	44.0	69.4	15.7	21.8	15.9	1.0	24.1	2.8	0.1
Queue Length 50th (ft)	41	38	61	0	19	646	1	344	87	0
Queue Length 95th (ft)	84	87	114	118	m30	676	m2	m342	m84	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	141	217	148	595	167	2360	768	647	3668	1161
Starvation Cap Reductn	0	0	0	0	0	0	0	0	244	0
Spillback Cap Reductn	0	0	0	13	0	89	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.30	0.47	0.80	0.48	0.89	0.04	0.85	0.82	0.09

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	98	105	77	174	23	71	54	1993	130	178	2725	104
v/c Ratio	0.63	0.66	0.29	0.91	0.11	0.24	0.28	0.80	0.15	0.46	0.89	0.10
Control Delay	79.5	81.4	3.0	105.1	57.3	1.9	21.6	15.4	0.6	31.1	10.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.5	81.4	3.0	105.1	57.3	1.9	21.6	15.4	0.6	31.1	10.4	0.5
Queue Length 50th (ft)	91	98	0	167	20	0	13	179	0	73	390	1
Queue Length 95th (ft)	#169	#181	3	#317	50	0	m19	210	m2	m124	465	m1
Internal Link Dist (ft)		641			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	156	159	266	192	202	297	192	2506	846	385	3051	991
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.66	0.29	0.91	0.11	0.24	0.28	0.80	0.15	0.46	0.89	0.10

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	244	60	300	131	204	177	1905	169	290	2757	137
v/c Ratio	0.93	0.13	0.54	0.86	0.59	0.69	0.74	0.19	0.90	1.00	0.15
Control Delay	87.3	40.9	17.6	104.2	18.8	60.1	14.1	0.5	81.1	27.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.3	40.9	17.6	104.2	18.8	60.1	14.1	0.5	81.1	27.8	0.6
Queue Length 50th (ft)	193	42	65	119	19	110	175	0	222	801	1
Queue Length 95th (ft)	#304	78	143	#222	87	m179	182	m1	m#269	609	m3
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	479	554	152	344	258	2578	886	321	2760	921
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.13	0.54	0.86	0.59	0.69	0.74	0.19	0.90	1.00	0.15

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	239	92	389	278	114	297	1791	226	103	2659	218
v/c Ratio	0.72	0.63	0.95	0.83	0.64	0.77	0.61	0.22	0.51	1.11	0.26
Control Delay	58.6	81.9	48.8	67.9	52.3	36.7	18.8	1.5	21.2	68.4	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	81.9	48.8	67.9	52.3	36.7	18.8	1.5	21.2	68.4	0.7
Queue Length 50th (ft)	188	83	75	224	57	165	428	4	19	~1005	7
Queue Length 95th (ft)	#278	#155	#284	#327	#133	m192	m295	m7	m21	m#1019	m8
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	330	146	408	334	178	384	2942	1011	201	2397	837
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.63	0.95	0.83	0.64	0.77	0.61	0.22	0.51	1.11	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	287	516	494	592	624	890	137	798	533	173	1053	429
v/c Ratio	1.29	0.89	0.81	1.36	1.07	1.37	1.12	0.69	0.70	1.08	0.86	0.56
Control Delay	200.8	61.3	37.1	211.7	87.9	192.9	175.0	44.8	17.7	116.2	30.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	200.8	61.3	37.1	211.7	87.9	192.9	175.0	44.8	17.7	116.2	30.1	3.5
Queue Length 50th (ft)	~340	479	287	~356	~607	~528	~143	332	132	~172	347	30
Queue Length 95th (ft)	m#496	#661	m454	#480	#847	#798	#285	407	275	m#147	m305	m26
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	223	581	613	434	581	652	122	1155	762	160	1231	769
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.29	0.89	0.81	1.36	1.07	1.37	1.12	0.69	0.70	1.08	0.86	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	25	1209	318	170	1648	234	238	230	43	24
v/c Ratio	0.10	0.63	0.40	0.43	0.73	0.56	0.57	0.40	0.31	0.09
Control Delay	17.0	41.6	7.7	19.3	34.5	51.7	52.0	7.2	67.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	41.6	7.7	19.3	34.5	51.7	52.0	7.2	67.2	0.7
Queue Length 50th (ft)	10	334	33	68	446	196	201	0	38	0
Queue Length 95th (ft)	m14	m380	m51	128	505	292	296	66	79	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	256	1925	796	398	2250	420	421	568	140	253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.63	0.40	0.43	0.73	0.56	0.57	0.40	0.31	0.09

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3138	10
Future Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3138	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	3	0	122	0	250	26	2758	316	461	3411	11
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	97	0	0	0
Lane Group Flow (vph)	0	4	0	62	60	58	26	2758	219	461	3422	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		11.0	11.0	28.0	10.0	71.0	82.0	17.0	78.0	
Effective Green, g (s)		11.0		12.0	12.0	30.0	11.0	73.0	84.0	18.0	80.0	
Actuated g/C Ratio		0.08		0.09	0.09	0.23	0.08	0.56	0.65	0.14	0.62	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		155		155	155	728	149	2855	1022	475	3128	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.13	c0.67	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.40	0.39	0.08	0.17	0.97	0.21	0.97	1.09	
Uniform Delay, d1		54.6		55.6	55.5	39.2	55.3	27.3	9.4	55.7	25.0	
Progression Factor		1.00		1.00	1.00	1.00	0.60	0.25	0.96	1.00	1.00	
Incremental Delay, d2		0.3		7.5	7.1	0.2	0.2	1.5	0.0	34.6	48.1	
Delay (s)		54.9		63.1	62.7	39.4	33.7	8.2	9.1	90.3	73.1	
Level of Service		D		E	E	D	C	A	A	F	E	
Approach Delay (s)		54.9			47.1			8.5			75.2	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1373	1094
Future Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1373	1094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	92	86	385	522	483	368	2242	623	850	1492	1189
RTOR Reduction (vph)	0	0	80	0	129	0	0	0	304	0	0	121
Lane Group Flow (vph)	375	92	6	385	876	0	368	2242	319	850	1492	1068
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	8.7	8.7	8.7	25.7	25.7		9.7	47.7	47.7	22.7	60.7	60.7
Effective Green, g (s)	9.7	9.7	9.7	26.7	26.7		10.7	49.7	49.7	23.7	62.7	62.7
Actuated g/C Ratio	0.07	0.07	0.07	0.21	0.21		0.08	0.38	0.38	0.18	0.48	0.48
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	372	264	77	625	604		282	1944	594	625	2452	753
v/s Ratio Prot	c0.08	0.03		0.13	c0.30		0.11	c0.44		0.25	0.29	
v/s Ratio Perm			0.01						0.21			c0.68
v/c Ratio	1.01	0.35	0.08	0.62	1.45		1.30	1.15	0.54	1.36	0.61	1.42
Uniform Delay, d1	60.1	57.1	56.0	47.0	51.6		59.6	40.1	31.2	53.1	24.7	33.6
Progression Factor	1.00	1.00	1.00	0.76	0.72		0.98	0.59	0.95	0.61	0.27	0.35
Incremental Delay, d2	48.7	3.6	2.1	4.3	211.6		149.2	72.2	1.7	163.0	0.1	188.9
Delay (s)	108.9	60.8	58.1	39.9	248.9		207.8	95.9	31.5	195.1	6.8	200.5
Level of Service	F	E	E	D	F		F	F	C	F	A	F
Approach Delay (s)		93.0			191.0			96.2			117.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	119.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1660	71
Future Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1660	71
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	0	96	100	4	64	157	3083	28	83	1804	77
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	0	219	162	13	208	328	3481	1084	191	3364	1047
Arrive On Green	0.14	0.00	0.13	0.14	0.14	0.13	0.09	0.68	0.68	0.07	0.66	0.66
Sat Flow, veh/h	1328	0	1583	1294	94	1503	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	88	0	96	100	0	68	157	3083	28	83	1804	77
Grp Sat Flow(s),veh/h/ln	1328	0	1583	1294	0	1597	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	7.3	10.0	0.0	5.0	3.4	63.1	0.7	1.9	24.2	2.2
Cycle Q Clear(g_c), s	13.3	0.0	7.3	17.3	0.0	5.0	3.4	63.1	0.7	1.9	24.2	2.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	0	219	162	0	221	328	3481	1084	191	3364	1047
V/C Ratio(X)	0.47	0.00	0.44	0.62	0.00	0.31	0.48	0.89	0.03	0.44	0.54	0.07
Avail Cap(c_a), veh/h	188	0	219	162	0	221	328	3481	1084	191	3364	1047
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	56.4	0.0	51.8	59.3	0.0	50.8	11.6	16.4	6.6	30.6	11.5	7.8
Incr Delay (d2), s/veh	8.1	0.0	6.2	16.3	0.0	3.6	4.9	3.7	0.0	7.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.6	4.3	0.0	2.4	3.4	30.3	0.3	2.3	11.4	1.0
LnGrp Delay(d),s/veh	64.5	0.0	58.1	75.6	0.0	54.4	16.6	20.2	6.6	37.7	12.2	8.0
LnGrp LOS	E		E	E		D	B	C	A	D	B	A
Approach Vol, veh/h		184			168			3268			1964	
Approach Delay, s/veh		61.2			67.0			19.9			13.1	
Approach LOS		E			E			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	15.0	93.0		22.0	18.0	90.0		22.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	87.0		17.0	13.0	84.0		17.0
Max Q Clear Time (g_c+I1), s	13.3	65.1		19.3	5.4	26.2		15.3
Green Ext Time (p_c), s	0.1	18.6		0.0	0.3	14.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1562	74
Future Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1562	74
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	26	28	33	22	725	47	2450	0	222	1698	80
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	284	306	337	215	547	189	2294	714	214	2447	762
Arrive On Green	0.35	0.35	0.34	0.35	0.35	0.35	0.09	0.60	0.00	0.09	0.48	0.48
Sat Flow, veh/h	711	821	884	850	621	1581	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	0	54	55	0	725	47	2450	0	222	1698	80
Grp Sat Flow(s),veh/h/ln	711	0	1705	1471	0	1581	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.6	0.0	2.9	1.7	0.0	46.0	2.1	60.0	0.0	12.0	34.6	3.7
Cycle Q Clear(g_c), s	18.2	0.0	2.9	4.6	0.0	46.0	2.1	60.0	0.0	12.0	34.6	3.7
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	590	552	0	547	189	2294	714	214	2447	762
V/C Ratio(X)	0.33	0.00	0.09	0.10	0.00	1.33	0.25	1.07	0.00	1.04	0.69	0.10
Avail Cap(c_a), veh/h	276	0	590	552	0	547	189	2294	714	214	2447	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	29.6	29.9	0.0	43.5	30.0	26.6	0.0	59.0	26.9	18.9
Incr Delay (d2), s/veh	3.2	0.0	0.3	0.4	0.0	159.1	3.1	40.0	0.0	71.3	1.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.4	1.4	0.0	44.2	1.2	36.2	0.0	12.1	16.6	1.7
LnGrp Delay(d),s/veh	39.4	0.0	29.9	30.3	0.0	202.6	33.2	66.6	0.0	130.4	28.5	19.1
LnGrp LOS	D		C	C		F	C	F		F	C	B
Approach Vol, veh/h		146			780			2497			2000	
Approach Delay, s/veh		35.9			190.5			66.0			39.4	
Approach LOS		D			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	64.0		50.0	15.0	68.0		50.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	13.0	* 58		45.0	10.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	14.6	62.0		48.0	4.1	36.6		20.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	9.8		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.3
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1310	178
Future Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1310	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1741	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1741	1583	1681	1770	1583	185	5085	1583	128	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	37	99	45	85	140	2371	84	141	1424	193
RTOR Reduction (vph)	0	0	34	0	0	75	0	0	37	0	0	83
Lane Group Flow (vph)	46	40	3	99	45	10	140	2371	47	141	1424	110
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	14.0	14.0	14.0	70.0	70.0	70.0	73.0	72.0	72.0
Effective Green, g (s)	11.0	11.0	11.0	15.0	15.0	15.0	69.0	72.0	72.0	72.0	74.0	74.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.53	0.55	0.55	0.55	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	142	147	133	193	204	182	244	2816	876	247	2894	901
v/s Ratio Prot	c0.03	0.02		c0.06	0.03		0.05	c0.47		0.06	c0.28	
v/s Ratio Perm			0.00			0.01	0.25		0.03	0.25		0.07
v/c Ratio	0.32	0.27	0.02	0.51	0.22	0.05	0.57	0.84	0.05	0.57	0.49	0.12
Uniform Delay, d1	56.0	55.7	54.6	54.1	52.2	51.2	19.7	24.2	13.3	41.6	16.8	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.10	0.30	0.13	0.70	0.85	2.09
Incremental Delay, d2	6.0	4.5	0.3	9.4	2.5	0.6	6.1	2.1	0.1	6.7	0.4	0.2
Delay (s)	62.0	60.3	54.9	63.5	54.7	51.7	27.7	9.4	1.7	35.8	14.6	27.3
Level of Service	E	E	D	E	D	D	C	A	A	D	B	C
Approach Delay (s)		59.3			57.4			10.2			17.7	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1177	166
Future Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1177	166
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	18	64	57	37	101	360	2402	67	100	1279	180
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	392	321	182	43	118	512	3135	976	201	2332	726
Arrive On Green	0.08	0.21	0.20	0.10	0.10	0.09	0.15	0.41	0.41	0.03	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1311	442	1207	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	91	18	64	57	0	138	360	2402	67	100	1279	180
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1311	0	1650	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	53.9	3.4	4.7	31.0	13.3
Cycle Q Clear(g_c), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	53.9	3.4	4.7	31.0	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
V/C Ratio(X)	0.45	0.05	0.20	0.31	0.00	0.86	0.70	0.77	0.07	0.50	0.55	0.25
Avail Cap(c_a), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	47.7	41.9	44.0	56.6	0.0	59.4	45.8	30.8	16.0	33.1	43.7	36.2
Incr Delay (d2), s/veh	7.2	0.2	1.4	4.4	0.0	40.7	7.9	1.8	0.1	8.6	0.9	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(50%),veh/ln	3.3	0.6	2.1	2.2	0.0	6.8	13.5	25.8	1.5	2.8	14.7	6.0
LnGrp Delay(d),s/veh	54.9	42.1	45.4	61.0	0.0	100.2	53.7	32.6	16.1	41.7	44.6	37.0
LnGrp LOS	D	D	D	E		F	D	C	B	D	D	D
Approach Vol, veh/h		173			195			2829			1559	
Approach Delay, s/veh		50.1			88.7			34.9			43.6	
Approach LOS		D			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	86.0	15.0	17.0	36.0	65.0		32.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	77.0	12.0	12.0	30.0	* 59		27.0
Max Q Clear Time (g_c+I1), s	6.7	55.9	7.9	13.0	17.8	33.0		6.5
Green Ext Time (p_c), s	0.1	14.1	0.1	0.0	1.1	7.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	40.5
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1083	114
Future Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1083	114
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	17	117	214	83	88	454	2672	228	98	1177	124
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	171	145	330	95	101	615	2989	931	186	1786	556
Arrive On Green	0.08	0.09	0.09	0.11	0.11	0.11	0.31	0.59	0.59	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	829	879	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	70	17	117	214	0	171	454	2672	228	98	1177	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1708	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	59.8	4.7	2.1	25.6	7.2
Cycle Q Clear(g_c), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	59.8	4.7	2.1	25.6	7.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	171	145	330	0	196	615	2989	931	186	1786	556
V/C Ratio(X)	0.34	0.10	0.81	0.65	0.00	0.87	0.74	0.89	0.24	0.53	0.66	0.22
Avail Cap(c_a), veh/h	205	171	145	330	0	196	615	2989	931	186	1786	556
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	54.5	58.4	48.0	0.0	57.3	29.9	23.5	3.5	56.5	35.9	29.9
Incr Delay (d2), s/veh	4.5	1.2	36.5	9.5	0.0	38.2	7.8	4.6	0.6	10.3	1.9	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(50%),veh/ln	2.5	0.6	5.6	1.3	0.0	8.2	15.7	29.0	3.5	3.9	12.3	3.3
LnGrp Delay(d),s/veh	53.0	55.7	94.8	57.5	0.0	95.6	37.6	28.1	4.1	66.9	37.8	30.8
LnGrp LOS	D	E	F	E		F	D	C	A	E	D	C
Approach Vol, veh/h		204			385			3354			1399	
Approach Delay, s/veh		77.2			74.4			27.7			39.2	
Approach LOS		E			E			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	16.0	81.0	18.0	16.0	47.0	50.0	15.0	19.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 75	15.0	11.0	42.0	43.0	12.0	14.0
Max Q Clear Time (g_c+I1), s	11.5	61.8	16.0	11.5	27.1	27.6	6.5	14.9
Green Ext Time (p_c), s	0.1	11.1	0.0	0.0	1.6	5.5	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.0
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	561	386	449	410	743	131	1062	557	101	427	303
Future Volume (veh/h)	235	561	386	449	410	743	131	1062	557	101	427	303
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	255	610	420	488	446	808	142	1154	0	110	464	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
Arrive On Green	0.12	0.36	0.36	0.14	0.37	0.37	0.14	0.27	0.00	0.07	0.21	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	255	610	420	488	446	808	142	1154	0	110	464	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Cycle Q Clear(g_c), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
V/C Ratio(X)	1.19	0.91	0.30	1.04	0.64	1.36	0.59	1.19	0.00	0.83	0.62	0.00
Avail Cap(c_a), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.2	39.7	6.5	56.2	33.4	40.6	52.7	47.1	0.0	59.3	46.3	0.0
Incr Delay (d2), s/veh	122.4	18.8	0.6	52.8	4.4	173.7	10.1	94.7	0.0	42.8	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.0	24.3	2.6	11.8	14.0	49.9	5.4	30.2	0.0	5.5	7.9	0.0
LnGrp Delay(d),s/veh	179.5	58.5	7.1	108.9	37.9	214.4	62.8	141.9	0.0	102.1	50.1	0.0
LnGrp LOS	F	E	A	F	D	F	E	F		F	D	
Approach Vol, veh/h		1285			1742			1296			574	
Approach Delay, s/veh		65.7			139.6			133.2			60.0	
Approach LOS		E			F			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	23.0	52.0	23.0	32.0	21.0	54.0	15.0	40.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 46	* 17	* 26	* 15	* 48	* 8.7	* 34
Max Q Clear Time (g_c+I1), s	19.7	42.6	11.8	17.4	17.7	50.7	10.0	37.7
Green Ext Time (p_c), s	0.0	1.6	0.2	1.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	109.2
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1289	484	185	1158	43	362	25	90	90	8	82
Future Volume (vph)	124	1289	484	185	1158	43	362	25	90	90	8	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5058		1681	1696	1583		1781	1583
Flt Permitted	0.13	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	249	5085	1583	149	5058		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	1401	526	201	1259	47	393	27	98	98	9	89
RTOR Reduction (vph)	0	0	336	0	3	0	0	0	74	0	0	79
Lane Group Flow (vph)	135	1401	190	201	1303	0	208	212	24	0	107	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	56.0	45.0	45.0	69.0	53.0		31.0	31.0	31.0		14.0	14.0
Effective Green, g (s)	58.0	47.0	47.0	70.0	55.0		32.0	32.0	32.0		15.0	15.0
Actuated g/C Ratio	0.45	0.36	0.36	0.54	0.42		0.25	0.25	0.25		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	251	1838	572	329	2139		413	417	389		205	182
v/s Ratio Prot	0.05	c0.28		c0.09	0.26		0.12	c0.13			c0.06	
v/s Ratio Perm	0.19		0.12	0.23					0.02			0.01
v/c Ratio	0.54	0.76	0.33	0.61	0.61		0.50	0.51	0.06		0.52	0.06
Uniform Delay, d1	23.0	36.6	30.1	29.6	29.1		42.2	42.2	37.5		54.1	51.2
Progression Factor	0.95	1.08	2.46	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.7	2.5	1.3	8.2	1.3		4.3	4.4	0.3		9.2	0.6
Delay (s)	28.4	41.9	75.4	37.8	30.4		46.5	46.6	37.8		63.3	51.8
Level of Service	C	D	E	D	C		D	D	D		E	D
Approach Delay (s)		49.6			31.4			44.9			58.1	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	669	7	2	473	4	1
Future Vol, veh/h	669	7	2	473	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	727	8	2	514	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	735	0	1249	731
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	191	422
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	190	422
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	596	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	870	-
HCM Lane V/C Ratio	0.026	-	-	0.002	-
HCM Control Delay (s)	22.3	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	62	60	250	26	2758	316	461	3422
v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.09
Control Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	73.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	73.6
Queue Length 50th (ft)	3	52	50	0	19	220	7	202	~1193
Queue Length 95th (ft)	15	103	100	35	m16	m177	m4	#310	#1267
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	155	155	155	913	149	2855	1130	475	3129
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	92	86	385	1005	368	2242	623	850	1492	1189
v/c Ratio	1.01	0.35	0.35	0.62	1.37	1.30	1.15	0.69	1.36	0.61	1.36
Control Delay	108.0	61.1	3.8	40.2	203.3	194.3	96.9	8.8	192.0	6.8	179.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	61.1	3.8	40.2	203.3	194.3	96.9	8.8	192.0	6.8	179.2
Queue Length 50th (ft)	~115	39	0	173	~587	~203	~839	157	~481	156	~1240
Queue Length 95th (ft)	#187	68	0	236	#738	m#250	#914	m100	m#422	m135	m#1069
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	372	264	249	625	732	282	1944	898	625	2452	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.35	0.35	0.62	1.37	1.30	1.15	0.69	1.36	0.61	1.36

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	96	100	68	157	3083	28	83	1804	77
v/c Ratio	0.49	0.28	0.64	0.25	0.59	0.89	0.03	0.46	0.54	0.07
Control Delay	62.0	4.3	72.5	15.4	23.2	5.5	0.0	37.6	10.0	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
Total Delay	62.0	4.3	72.5	15.4	23.2	6.7	0.0	37.6	10.0	1.2
Queue Length 50th (ft)	70	0	81	3	51	168	0	23	312	2
Queue Length 95th (ft)	127	17	#157	47	m47	m157	m0	m71	311	m7
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	179	339	156	276	267	3481	1102	180	3363	1073
Starvation Cap Reductn	0	0	0	0	0	207	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.28	0.64	0.25	0.59	0.94	0.03	0.46	0.54	0.07

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	54	55	725	47	2450	17	222	1698	80
v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.71	0.10
Control Delay	30.6	16.3	28.9	88.8	25.0	49.6	0.4	93.7	12.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.3	28.9	88.8	25.0	49.6	0.4	93.7	12.6	0.6
Queue Length 50th (ft)	54	14	31	~580	14	~794	0	~149	395	0
Queue Length 95th (ft)	97	44	62	#824	m22	#889	m0	#317	367	m0
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	475	621	557	672	180	2346	766	221	2386	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.71	0.10

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	40	37	99	45	85	140	2371	84	141	1424	193
v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.57	0.84	0.09	0.57	0.49	0.20
Control Delay	62.7	60.9	1.0	64.2	55.3	2.0	25.2	9.5	0.3	36.0	14.7	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	60.9	1.0	64.2	55.3	2.0	25.2	9.5	0.3	36.0	14.7	4.0
Queue Length 50th (ft)	38	33	0	84	36	0	23	379	0	40	127	8
Queue Length 95th (ft)	83	74	0	147	77	0	m63	346	m1	m81	195	m50
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	142	147	279	193	204	323	245	2816	925	248	2894	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.57	0.84	0.09	0.57	0.49	0.20

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	18	64	57	138	360	2402	67	100	1279	180
v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.78	0.07	0.48	0.54	0.21
Control Delay	48.8	40.9	3.0	64.5	33.5	16.9	2.2	0.1	22.2	18.3	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.9	3.0	64.5	33.5	16.9	2.2	0.1	22.2	18.3	5.4
Queue Length 50th (ft)	64	12	0	46	43	143	41	0	24	297	15
Queue Length 95th (ft)	115	34	13	92	113	m151	44	m0	66	438	61
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	214	401	408	139	241	526	3090	988	210	2386	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.78	0.07	0.48	0.54	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	17	117	214	171	454	2672	228	98	1177	124
v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.67	0.20
Control Delay	44.6	55.6	9.6	56.4	65.7	36.5	18.6	0.8	49.8	31.5	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	55.6	9.6	56.4	65.7	36.5	18.6	0.8	49.8	31.5	12.2
Queue Length 50th (ft)	48	13	0	159	115	252	368	0	82	384	70
Queue Length 95th (ft)	90	38	38	243	#223	m252	m334	m0	132	432	127
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	218	171	275	313	227	617	3011	1030	180	1760	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.67	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	255	610	420	488	446	808	142	1154	605	110	464	329
v/c Ratio	1.20	0.91	0.30	1.04	0.64	1.12	0.59	1.19	0.86	0.83	0.62	0.55
Control Delay	170.6	56.6	5.9	91.1	24.0	90.2	63.8	136.6	30.2	102.2	31.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	170.6	56.6	5.9	91.1	24.0	90.2	63.8	136.6	30.2	102.2	31.5	14.3
Queue Length 50th (ft)	~265	517	25	~223	292	~648	114	~615	206	74	206	177
Queue Length 95th (ft)	#434	#723	47	#339	432	#912	187	#752	#429	m#166	266	255
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	213	669	1421	467	697	722	240	971	704	132	754	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.91	0.30	1.04	0.64	1.12	0.59	1.19	0.86	0.83	0.62	0.55

Intersection Summary

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	135	1401	526	201	1306	208	212	98	107	89
v/c Ratio	0.53	0.76	0.58	0.61	0.61	0.50	0.51	0.19	0.52	0.28
Control Delay	22.9	42.2	8.4	34.9	30.5	47.2	47.3	1.9	64.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	42.2	8.4	34.9	30.5	47.2	47.3	1.9	64.0	2.5
Queue Length 50th (ft)	62	378	67	104	307	160	163	0	86	0
Queue Length 95th (ft)	m84	m450	m118	189	357	245	249	10	149	2
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	253	1838	908	330	2143	413	417	503	205	316
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.76	0.58	0.61	0.61	0.50	0.51	0.19	0.52	0.28

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	13	0	256	18	609	20	3189	593	779	2717	23
Future Volume (vph)	3	13	0	256	18	609	20	3189	593	779	2717	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	14	0	269	19	641	21	3357	624	820	2860	24
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	96	0	1	0
Lane Group Flow (vph)	0	17	0	134	154	468	21	3357	528	820	2883	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		10.0	10.0	35.0	10.0	74.0	84.0	25.0	89.0	
Effective Green, g (s)		11.0		11.0	11.0	37.0	11.0	76.0	86.0	26.0	91.0	
Actuated g/C Ratio		0.08		0.08	0.08	0.26	0.08	0.54	0.61	0.19	0.65	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		145		132	133	816	139	2760	972	637	3301	
v/s Ratio Prot		c0.01		0.08	c0.09	0.11	0.01	c0.66	0.04	c0.24	0.57	
v/s Ratio Perm						0.06			0.29			
v/c Ratio		0.12		1.02	1.16	0.57	0.15	1.22	0.54	1.29	0.87	
Uniform Delay, d1		60.0		64.5	64.5	44.7	60.1	32.0	15.6	57.0	19.8	
Progression Factor		1.00		1.00	1.00	1.00	0.74	0.48	1.41	1.00	1.00	
Incremental Delay, d2		1.6		82.4	126.7	2.9	0.2	97.7	0.2	140.9	3.5	
Delay (s)		61.6		146.9	191.2	47.6	44.8	113.2	22.2	197.9	23.4	
Level of Service		E		F	F	D	D	F	C	F	C	
Approach Delay (s)		61.6			85.7			98.6			62.0	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	81.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1038	655	372	1224	280	999	177	1765	650	714	1827	432
Future Volume (vph)	1038	655	372	1224	280	999	177	1765	650	714	1827	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.84		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1128	712	404	1330	304	1086	192	1918	707	776	1986	470
RTOR Reduction (vph)	0	0	105	0	209	0	0	0	390	0	0	228
Lane Group Flow (vph)	1128	712	299	1330	1181	0	192	1918	317	776	1986	242
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	22.0	22.0	22.0	42.0	42.0		11.0	37.0	37.0	22.0	48.0	48.0
Effective Green, g (s)	23.0	23.0	23.0	43.0	43.0		12.0	39.0	39.0	23.0	50.0	50.0
Actuated g/C Ratio	0.16	0.16	0.16	0.31	0.31		0.09	0.28	0.28	0.16	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Grp Cap (vph)	819	581	260	934	727		294	1416	427	563	1816	565
v/s Ratio Prot	c0.23	0.20		0.44	c0.50		0.06	c0.38		c0.23	0.39	
v/s Ratio Perm			0.19						0.21			0.15
v/c Ratio	1.38	1.23	1.15	1.42	1.88dr		0.65	1.35	0.74	1.38	1.09	0.43
Uniform Delay, d1	58.5	58.5	58.5	48.5	48.5		62.0	50.5	45.9	58.5	45.0	34.2
Progression Factor	1.00	1.00	1.00	0.66	0.62		0.97	0.53	1.18	0.74	0.66	0.84
Incremental Delay, d2	177.5	116.2	102.1	195.2	285.7		6.9	162.5	7.2	175.6	47.1	1.1
Delay (s)	236.0	174.7	160.6	227.3	316.0		67.1	189.1	61.5	218.8	76.6	29.7
Level of Service	F	F	F	F	F		E	F	E	F	E	C
Approach Delay (s)		202.9			272.6			148.8			103.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	177.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.4%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	45	189	5	28	61	2526	37	54	3346	24
Future Volume (veh/h)	38	0	45	189	5	28	61	2526	37	54	3346	24
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	0	49	205	5	30	66	2746	40	59	3637	26
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	0	226	207	33	198	191	3523	1097	196	3523	1097
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.08	0.69	0.69	0.06	0.69	0.69
Sat Flow, veh/h	1368	0	1583	1351	231	1387	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	41	0	49	205	0	35	66	2746	40	59	3637	26
Grp Sat Flow(s),veh/h/ln	1368	0	1583	1351	0	1618	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	3.8	0.0	3.9	16.1	0.0	2.7	1.4	50.5	1.1	1.3	97.0	0.7
Cycle Q Clear(g_c), s	6.5	0.0	3.9	20.0	0.0	2.7	1.4	50.5	1.1	1.3	97.0	0.7
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	0	226	207	0	231	191	3523	1097	196	3523	1097
V/C Ratio(X)	0.19	0.00	0.22	0.99	0.00	0.15	0.35	0.78	0.04	0.30	1.03	0.02
Avail Cap(c_a), veh/h	221	0	226	207	0	231	191	3523	1097	196	3523	1097
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	55.4	0.0	53.5	63.9	0.0	52.9	36.1	14.4	6.8	25.4	21.5	6.7
Incr Delay (d2), s/veh	1.9	0.0	2.2	59.9	0.0	1.4	4.9	1.8	0.1	3.9	24.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.8	11.4	0.0	1.3	2.0	24.0	0.5	1.8	52.6	0.3
LnGrp Delay(d),s/veh	57.3	0.0	55.7	123.8	0.0	54.3	41.0	16.1	6.8	29.3	45.8	6.8
LnGrp LOS	E		E	F		D	D	B	A	C	F	A
Approach Vol, veh/h		90			240			2852			3722	
Approach Delay, s/veh		56.4			113.7			16.6			45.2	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	101.0		24.0	15.0	101.0		24.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	95.0		19.0	12.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	3.3	52.5		22.0	3.4	99.0		8.5
Green Ext Time (p_c), s	0.1	26.9		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	29	56	16	482	83	2092	34	566	2904	111
Future Volume (veh/h)	49	39	29	56	16	482	83	2092	34	566	2904	111
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	51	41	30	58	17	502	86	2179	0	590	3025	116
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	140	102	158	41	221	184	2311	720	587	3556	1107
Arrive On Green	0.14	0.14	0.13	0.14	0.14	0.14	0.06	0.45	0.00	0.60	1.00	1.00
Sat Flow, veh/h	879	1001	732	807	291	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	51	0	71	75	0	502	86	2179	0	590	3025	116
Grp Sat Flow(s),veh/h/ln	879	0	1733	1098	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	5.3	6.4	0.0	20.0	4.3	58.5	0.0	43.0	0.0	0.0
Cycle Q Clear(g_c), s	19.9	0.0	5.3	11.6	0.0	20.0	4.3	58.5	0.0	43.0	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	242	198	0	221	184	2311	720	587	3556	1107
V/C Ratio(X)	0.50	0.00	0.29	0.38	0.00	2.27	0.47	0.94	0.00	1.01	0.85	0.10
Avail Cap(c_a), veh/h	102	0	242	198	0	221	184	2311	720	587	3556	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.3	0.0	55.4	59.5	0.0	61.5	28.8	37.2	0.0	26.5	0.0	0.0
Incr Delay (d2), s/veh	16.5	0.0	3.0	5.4	0.0	584.3	8.2	9.4	0.0	38.4	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.7	3.1	0.0	44.7	2.5	29.2	0.0	28.9	0.9	0.1
LnGrp Delay(d),s/veh	83.8	0.0	58.4	65.0	0.0	645.8	37.0	46.6	0.0	65.0	2.8	0.2
LnGrp LOS	F		E	E		F	D	D		F	A	A
Approach Vol, veh/h		122			577			2265			3731	
Approach Delay, s/veh		69.0			570.3			46.2			12.5	
Approach LOS		E			F			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	50.0	69.0		24.0	15.0	104.0		24.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	44.0	* 63		19.0	10.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	45.0	60.5		22.0	6.3	2.0		21.9
Green Ext Time (p_c), s	0.0	2.1		0.0	0.1	51.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.0
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	42	76	172	23	70	54	1975	129	176	2699	113
Future Volume (vph)	165	42	76	172	23	70	54	1975	129	176	2699	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1770	1583	115	5085	1583	120	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	46	83	187	25	76	59	2147	140	191	2934	123
RTOR Reduction (vph)	0	0	76	0	0	67	0	0	64	0	0	48
Lane Group Flow (vph)	109	116	7	187	25	9	59	2147	76	191	2934	75
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	16.0	16.0	16.0	77.0	74.0	74.0	83.0	83.0	83.0
Effective Green, g (s)	11.0	11.0	11.0	17.0	17.0	17.0	76.0	76.0	76.0	82.0	85.0	85.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.54	0.54	0.54	0.59	0.61	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	132	134	124	204	214	192	192	2760	859	306	3087	961
v/s Ratio Prot	0.06	c0.07		c0.11	0.01		0.02	c0.42		0.09	c0.58	
v/s Ratio Perm			0.00			0.01	0.14		0.05	0.28		0.05
v/c Ratio	0.83	0.87	0.05	0.92	0.12	0.05	0.31	0.78	0.09	0.62	0.95	0.08
Uniform Delay, d1	63.6	63.8	59.7	60.8	54.8	54.3	54.2	25.3	15.4	36.4	25.5	11.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.56	0.57	1.11	0.38	0.21
Incremental Delay, d2	42.1	48.2	0.8	44.4	1.1	0.5	2.5	1.4	0.1	5.3	5.1	0.1
Delay (s)	105.6	111.9	60.5	105.2	55.9	54.8	34.9	15.6	8.8	45.7	14.9	2.5
Level of Service	F	F	E	F	E	D	C	B	A	D	B	A
Approach Delay (s)		95.8			87.6			15.7			16.2	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	56	281	121	21	168	169	1764	156	267	2553	127
Future Volume (veh/h)	226	56	281	121	21	168	169	1764	156	267	2553	127
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	246	61	305	132	23	183	184	1917	170	290	2775	138
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	466	385	160	19	153	202	2506	780	444	2979	927
Arrive On Green	0.11	0.25	0.24	0.11	0.11	0.10	0.16	0.99	0.99	0.23	0.78	0.78
Sat Flow, veh/h	1774	1863	1583	1012	180	1431	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	246	61	305	132	0	206	184	1917	170	290	2775	138
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1012	0	1610	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	16.0	3.6	25.3	15.0	0.0	15.0	9.3	3.1	0.3	9.3	61.6	3.1
Cycle Q Clear(g_c), s	16.0	3.6	25.3	15.0	0.0	15.0	9.3	3.1	0.3	9.3	61.6	3.1
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	466	385	160	0	173	202	2506	780	444	2979	927
V/C Ratio(X)	0.97	0.13	0.79	0.83	0.00	1.19	0.91	0.76	0.22	0.65	0.93	0.15
Avail Cap(c_a), veh/h	254	466	385	160	0	173	202	2506	780	444	2979	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	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	51.0	40.7	49.7	63.8	0.0	62.9	34.9	0.5	0.5	14.9	13.2	6.7
Incr Delay (d2), s/veh	48.8	0.6	15.4	36.4	0.0	130.3	44.1	2.3	0.6	7.3	6.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	1.9	12.7	6.7	0.0	12.9	9.3	0.9	0.2	6.0	29.6	1.4
LnGrp Delay(d),s/veh	99.8	41.3	65.1	100.3	0.0	193.3	79.0	2.8	1.2	22.2	20.0	7.1
LnGrp LOS	F	D	E	F		F	E	A	A	C	B	A
Approach Vol, veh/h		612			338			2271			3203	
Approach Delay, s/veh		76.7			156.9			8.9			19.6	
Approach LOS		E			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	28.0	73.0	20.0	19.0	15.0	86.0		39.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	25.0	67.0	17.0	14.0	12.0	80.0		34.0
Max Q Clear Time (g_c+I1), s	11.3	5.1	18.0	17.0	11.3	63.6		27.3
Green Ext Time (p_c), s	0.9	16.4	0.0	0.0	0.0	13.5		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	91	384	275	41	72	293	1781	223	102	2638	216
Future Volume (veh/h)	236	91	384	275	41	72	293	1781	223	102	2638	216
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	99	417	299	45	78	318	1936	242	111	2867	235
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	251	213	265	52	90	305	2885	898	239	2741	853
Arrive On Green	0.13	0.13	0.13	0.09	0.09	0.08	0.13	0.57	0.57	0.16	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1774	613	1062	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	257	99	417	299	0	123	318	1936	242	111	2867	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1675	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	37.5	6.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	37.5	6.7	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	251	213	265	0	143	305	2885	898	239	2741	853
V/C Ratio(X)	0.89	0.39	1.95	1.13	0.00	0.86	1.04	0.67	0.27	0.47	1.05	0.28
Avail Cap(c_a), veh/h	290	251	213	265	0	143	305	2885	898	239	2741	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	50.7	55.7	61.0	60.2	0.0	64.0	39.6	21.3	5.7	46.3	0.0	0.0
Incr Delay (d2), s/veh	30.3	4.6	446.1	95.0	0.0	45.6	62.7	1.3	0.7	6.4	30.7	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(50%),veh/ln	11.5	3.8	34.7	11.4	0.0	6.6	17.2	17.7	4.2	4.1	7.8	0.2
LnGrp Delay(d),s/veh	81.0	60.3	507.1	155.2	0.0	109.6	102.4	22.6	6.5	52.7	30.7	0.8
LnGrp LOS	F	E	F	F		F	F	C	A	D	F	A
Approach Vol, veh/h		773			422			2496			3213	
Approach Delay, s/veh		308.2			141.9			31.2			29.3	
Approach LOS		F			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	84.0	16.0	23.0	22.0	80.0	23.0	16.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	12.0	* 78	13.0	18.0	19.0	73.0	20.0	11.0
Max Q Clear Time (g_c+I1), s	12.0	39.5	14.0	21.0	20.0	2.0	20.6	12.2
Green Ext Time (p_c), s	0.2	15.6	0.0	0.0	0.0	40.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	68.1
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	516	493	594	623	891	136	806	536	177	1058	429
Future Volume (veh/h)	287	516	493	594	623	891	136	806	536	177	1058	429
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	309	555	530	639	670	958	146	867	0	190	1138	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
Arrive On Green	0.15	0.34	0.34	0.18	0.38	0.38	0.07	0.23	0.00	0.10	0.26	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	309	555	530	639	670	958	146	867	0	190	1138	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	20.7	39.2	9.7	25.7	49.0	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Cycle Q Clear(g_c), s	20.7	39.2	9.7	25.7	49.0	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
V/C Ratio(X)	1.18	0.87	0.46	1.01	0.96	1.61	1.19	1.05	0.00	1.09	1.23	0.00
Avail Cap(c_a), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.6	43.3	30.1	57.1	42.5	43.7	65.2	53.7	0.0	63.2	51.7	0.0
Incr Delay (d2), s/veh	112.5	15.5	1.4	38.7	24.7	281.1	140.3	44.9	0.0	95.8	111.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	22.9	6.9	15.6	29.9	69.6	9.5	21.1	0.0	11.3	32.3	0.0
LnGrp Delay(d),s/veh	172.1	58.8	31.4	95.8	67.2	324.7	205.5	98.5	0.0	159.0	163.2	0.0
LnGrp LOS	F	E	C	F	E	F	F	F		F	F	
Approach Vol, veh/h		1394			2267			1013			1328	
Approach Delay, s/veh		73.5			184.1			113.9			162.6	
Approach LOS		E			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	31.0	53.0	15.0	41.0	26.0	58.0	19.0	37.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 25	* 47	* 8.7	* 35	* 20	* 52	* 13	* 31
Max Q Clear Time (g_c+I1), s	27.7	41.2	11.7	38.7	22.7	54.7	15.7	34.7
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	141.8
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1194	322	173	1617	11	467	4	231	35	6	24
Future Volume (vph)	25	1194	322	173	1617	11	467	4	231	35	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1687	1583		1787	1583
Flt Permitted	0.08	1.00	1.00	0.09	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	146	5085	1583	159	5080		1681	1687	1583		1787	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1298	350	188	1758	12	508	4	251	38	7	26
RTOR Reduction (vph)	0	0	220	0	1	0	0	0	188	0	0	24
Lane Group Flow (vph)	27	1298	130	188	1769	0	254	258	63	0	45	2
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	63.0	50.0	50.0	80.0	62.0		34.0	34.0	34.0		10.0	10.0
Effective Green, g (s)	65.0	52.0	52.0	81.0	64.0		35.0	35.0	35.0		11.0	11.0
Actuated g/C Ratio	0.46	0.37	0.37	0.58	0.46		0.25	0.25	0.25		0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	230	1888	587	391	2322		420	421	395		140	124
v/s Ratio Prot	0.01	0.26		c0.09	c0.35		0.15	c0.15			c0.03	
v/s Ratio Perm	0.04		0.08	0.19					0.04			0.00
v/c Ratio	0.12	0.69	0.22	0.48	0.76		0.60	0.61	0.16		0.32	0.02
Uniform Delay, d1	23.2	37.1	30.1	24.8	31.7		46.4	46.5	41.0		61.0	59.5
Progression Factor	1.31	1.09	1.95	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	1.5	0.6	4.2	2.4		6.3	6.5	0.9		6.0	0.2
Delay (s)	31.1	41.8	59.3	29.0	34.1		52.7	53.0	41.9		66.9	59.8
Level of Service	C	D	E	C	C		D	D	D		E	E
Approach Delay (s)		45.3			33.6			49.3			64.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	5	1	692	8	2
Future Vol, veh/h	495	5	1	692	8	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	538	5	1	752	9	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	543	0	1295	541
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	754	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1026	-	179	541
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1026	-	179	541
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	464	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	207	-	-	1026	-
HCM Lane V/C Ratio	0.053	-	-	0.001	-
HCM Control Delay (s)	23.4	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	134	154	641	21	3357	624	820	2884
v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.22	0.58	1.29	0.87
Control Delay	62.1	144.7	181.2	30.2	45.1	116.9	7.1	185.7	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	144.7	181.2	30.2	45.1	116.9	7.1	185.7	23.8
Queue Length 50th (ft)	15	~132	~173	186	17	~1350	142	~488	730
Queue Length 95th (ft)	40	#282	#329	261	m12	m402	m84	#617	801
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	145	132	133	982	139	2760	1078	637	3302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.22	0.58	1.29	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1128	712	404	1330	1390	192	1918	707	776	1986	470
v/c Ratio	1.38	1.23	1.11	1.42	1.88dr	0.65	1.35	0.87	1.38	1.09	0.59
Control Delay	220.2	164.0	115.3	223.6	244.8	67.5	188.6	21.1	210.3	76.6	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	220.2	164.0	115.3	223.6	244.8	67.5	188.6	21.1	210.3	76.6	8.9
Queue Length 50th (ft)	~481	~418	~317	~963	~912	81	~827	481	~485	~750	143
Queue Length 95th (ft)	#574	#548	#530	#1123	#1069	m111	#926	#223	m#580	m#824	m158
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	819	581	365	934	936	294	1416	817	563	1816	792
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.38	1.23	1.11	1.42	1.49	0.65	1.35	0.87	1.38	1.09	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	49	205	35	66	2746	40	59	3637	26
v/c Ratio	0.21	0.16	1.07	0.14	0.34	0.78	0.04	0.35	1.03	0.02
Control Delay	56.3	1.0	139.6	21.5	30.9	4.8	0.0	19.5	36.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0
Total Delay	56.3	1.0	139.6	21.5	30.9	7.1	0.0	19.5	36.8	0.3
Queue Length 50th (ft)	33	0	~205	4	19	94	0	7	~1293	0
Queue Length 95th (ft)	72	0	#370	38	m25	105	m0	m6	m749	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	195	315	192	257	194	3523	1113	168	3523	1113
Starvation Cap Reductn	0	0	0	0	0	617	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.16	1.07	0.14	0.34	0.94	0.04	0.35	1.03	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	71	75	502	86	2179	35	590	3025	116
v/c Ratio	0.29	0.26	0.39	0.82	0.51	0.92	0.05	0.99	0.86	0.10
Control Delay	58.6	40.4	61.3	19.7	25.9	20.7	1.6	37.3	2.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Total Delay	58.6	40.4	61.3	19.7	25.9	20.7	1.6	37.3	3.6	0.0
Queue Length 50th (ft)	42	40	63	40	24	705	1	455	61	0
Queue Length 95th (ft)	86	89	116	#196	m46	759	m3	m428	m58	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	177	268	191	614	167	2360	768	596	3523	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	211	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.26	0.39	0.82	0.51	0.92	0.05	0.99	0.91	0.10

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	109	116	83	187	25	76	59	2147	140	191	2934	123
v/c Ratio	0.83	0.87	0.34	0.92	0.12	0.25	0.31	0.78	0.15	0.62	0.95	0.12
Control Delay	105.3	111.4	5.1	104.8	56.4	2.0	24.0	15.8	1.6	38.4	15.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.3	111.4	5.1	104.8	56.4	2.0	24.0	15.8	1.6	38.4	15.5	0.6
Queue Length 50th (ft)	105	111	0	180	22	0	16	220	2	96	664	4
Queue Length 95th (ft)	#218	#233	9	#335	53	2	m24	261	m9	m130	786	m5
Internal Link Dist (ft)		641			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	132	134	246	204	214	308	192	2760	923	309	3087	1008
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.87	0.34	0.92	0.12	0.25	0.31	0.78	0.15	0.62	0.95	0.12

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	61	305	132	206	184	1917	170	290	2775	138
v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.76	0.20	0.81	0.93	0.14
Control Delay	89.7	41.8	29.6	118.4	19.7	89.7	16.0	0.5	67.2	10.7	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.7	41.8	29.6	118.4	19.7	89.7	16.0	0.5	67.2	10.7	0.4
Queue Length 50th (ft)	197	43	128	121	19	117	372	0	214	140	1
Queue Length 95th (ft)	#336	83	233	#252	102	m#258	368	m5	m231	297	m2
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	465	496	143	336	195	2506	866	358	2978	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.76	0.20	0.81	0.93	0.14

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	99	417	299	123	318	1936	242	111	2867	235
v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.67	0.24	0.54	1.05	0.25
Control Delay	72.3	60.4	80.8	144.3	53.7	115.2	15.5	1.0	28.8	43.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	60.4	80.8	144.3	53.7	115.2	15.5	1.0	28.8	43.4	0.4
Queue Length 50th (ft)	207	84	~223	~288	66	~285	286	0	32	~1041	1
Queue Length 95th (ft)	#322	144	#435	#399	#144	m#243	m253	m0	m42	#1110	m1
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	301	252	404	262	189	283	2905	1008	205	2724	939
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.67	0.24	0.54	1.05	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	555	530	639	670	958	146	867	576	190	1138	461
v/c Ratio	1.18	0.88	0.40	1.01	0.96	1.25	1.20	1.05	0.83	1.10	1.23	0.73
Control Delay	159.5	56.5	18.8	75.2	47.3	139.7	196.9	96.2	24.2	104.8	134.2	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.5	56.5	18.8	75.2	47.3	139.7	196.9	96.2	24.2	104.8	134.2	8.4
Queue Length 50th (ft)	~343	509	122	~317	526	~456	~160	~451	138	~193	~664	144
Queue Length 95th (ft)	m#516	#690	164	#431	#824	#631	#304	#585	#314	m#171	m#602	m124
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	261	634	1316	630	701	764	122	826	696	173	927	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.88	0.40	1.01	0.96	1.25	1.20	1.05	0.83	1.10	1.23	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	27	1298	350	188	1770	254	258	251	45	26
v/c Ratio	0.12	0.69	0.43	0.48	0.76	0.60	0.61	0.43	0.32	0.10
Control Delay	18.6	42.1	7.0	26.7	34.4	53.5	53.8	7.2	67.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	42.1	7.0	26.7	34.4	53.5	53.8	7.2	67.6	0.8
Queue Length 50th (ft)	11	368	36	89	483	216	220	0	39	0
Queue Length 95th (ft)	m15	m396	m53	168	544	317	323	69	82	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	230	1888	807	391	2322	420	421	584	140	253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.69	0.43	0.48	0.76	0.60	0.61	0.43	0.32	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3403	10
Future Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3403	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	3	0	122	0	250	26	2758	316	461	3699	11
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	97	0	0	0
Lane Group Flow (vph)	0	4	0	62	60	58	26	2758	219	461	3710	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		11.0	11.0	28.0	10.0	71.0	82.0	17.0	78.0	
Effective Green, g (s)		11.0		12.0	12.0	30.0	11.0	73.0	84.0	18.0	80.0	
Actuated g/C Ratio		0.08		0.09	0.09	0.23	0.08	0.56	0.65	0.14	0.62	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		155		155	155	728	149	2855	1022	475	3128	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.13	c0.73	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.40	0.39	0.08	0.17	0.97	0.21	0.97	1.19	
Uniform Delay, d1		54.6		55.6	55.5	39.2	55.3	27.3	9.4	55.7	25.0	
Progression Factor		1.00		1.00	1.00	1.00	0.60	0.25	0.96	1.00	1.00	
Incremental Delay, d2		0.3		7.5	7.1	0.2	0.2	1.5	0.0	34.6	87.2	
Delay (s)		54.9		63.1	62.7	39.4	33.7	8.2	9.1	90.3	112.2	
Level of Service		D		E	E	D	C	A	A	F	F	
Approach Delay (s)		54.9			47.1			8.5			109.8	
Approach LOS		D			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1638	1094
Future Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1638	1094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	92	86	385	522	483	368	2242	623	850	1780	1189
RTOR Reduction (vph)	0	0	80	0	129	0	0	0	304	0	0	121
Lane Group Flow (vph)	375	92	6	385	876	0	368	2242	319	850	1780	1068
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	8.7	8.7	8.7	25.7	25.7		9.7	47.7	47.7	22.7	60.7	60.7
Effective Green, g (s)	9.7	9.7	9.7	26.7	26.7		10.7	49.7	49.7	23.7	62.7	62.7
Actuated g/C Ratio	0.07	0.07	0.07	0.21	0.21		0.08	0.38	0.38	0.18	0.48	0.48
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	372	264	77	625	604		282	1944	594	625	2452	753
v/s Ratio Prot	c0.08	0.03		0.13	c0.30		0.11	c0.44		0.25	0.35	
v/s Ratio Perm			0.01						0.21			c0.68
v/c Ratio	1.01	0.35	0.08	0.62	1.45		1.30	1.15	0.54	1.36	0.73	1.42
Uniform Delay, d1	60.1	57.1	56.0	47.0	51.6		59.6	40.1	31.2	53.1	26.8	33.6
Progression Factor	1.00	1.00	1.00	0.76	0.72		0.98	0.59	0.95	0.61	0.29	0.33
Incremental Delay, d2	48.7	3.6	2.1	4.3	211.6		149.2	72.2	1.7	163.0	0.2	188.9
Delay (s)	108.9	60.8	58.1	39.9	248.9		207.8	95.9	31.5	195.3	7.9	200.1
Level of Service	F	E	E	D	F		F	F	C	F	A	F
Approach Delay (s)		93.0			191.0			96.2			109.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	116.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1925	71
Future Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1925	71
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	0	96	100	4	64	157	3083	28	83	2092	77
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	0	219	162	13	208	292	3481	1084	191	3364	1047
Arrive On Green	0.14	0.00	0.13	0.14	0.14	0.13	0.09	0.68	0.68	0.07	0.66	0.66
Sat Flow, veh/h	1328	0	1583	1294	94	1503	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	88	0	96	100	0	68	157	3083	28	83	2092	77
Grp Sat Flow(s),veh/h/ln	1328	0	1583	1294	0	1597	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	7.3	10.0	0.0	5.0	3.4	63.1	0.7	1.9	30.8	2.2
Cycle Q Clear(g_c), s	13.3	0.0	7.3	17.3	0.0	5.0	3.4	63.1	0.7	1.9	30.8	2.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	0	219	162	0	221	292	3481	1084	191	3364	1047
V/C Ratio(X)	0.47	0.00	0.44	0.62	0.00	0.31	0.54	0.89	0.03	0.44	0.62	0.07
Avail Cap(c_a), veh/h	188	0	219	162	0	221	292	3481	1084	191	3364	1047
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	56.4	0.0	51.8	59.3	0.0	50.8	19.5	16.4	6.6	30.6	12.7	7.8
Incr Delay (d2), s/veh	8.1	0.0	6.2	16.3	0.0	3.6	6.9	3.7	0.0	7.1	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.6	4.3	0.0	2.4	4.2	30.3	0.3	2.3	14.6	1.0
LnGrp Delay(d),s/veh	64.5	0.0	58.1	75.6	0.0	54.4	26.5	20.2	6.6	37.7	13.5	8.0
LnGrp LOS	E		E	E		D	C	C	A	D	B	A
Approach Vol, veh/h		184			168			3268			2252	
Approach Delay, s/veh		61.2			67.0			20.3			14.2	
Approach LOS		E			E			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	15.0	93.0		22.0	18.0	90.0		22.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	87.0		17.0	13.0	84.0		17.0
Max Q Clear Time (g_c+I1), s	13.3	65.1		19.3	5.4	32.8		15.3
Green Ext Time (p_c), s	0.1	18.6		0.0	0.3	18.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1827	74
Future Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1827	74
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	26	28	33	22	725	47	2450	0	222	1986	80
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	284	306	337	215	547	174	2294	714	214	2447	762
Arrive On Green	0.35	0.35	0.34	0.35	0.35	0.35	0.09	0.60	0.00	0.09	0.48	0.48
Sat Flow, veh/h	711	821	884	850	621	1581	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	0	54	55	0	725	47	2450	0	222	1986	80
Grp Sat Flow(s),veh/h/ln	711	0	1705	1471	0	1581	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.6	0.0	2.9	1.7	0.0	46.0	2.1	60.0	0.0	12.0	44.2	3.7
Cycle Q Clear(g_c), s	18.2	0.0	2.9	4.6	0.0	46.0	2.1	60.0	0.0	12.0	44.2	3.7
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	590	552	0	547	174	2294	714	214	2447	762
V/C Ratio(X)	0.33	0.00	0.09	0.10	0.00	1.33	0.27	1.07	0.00	1.04	0.81	0.10
Avail Cap(c_a), veh/h	276	0	590	552	0	547	174	2294	714	214	2447	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	29.6	29.9	0.0	43.5	31.2	26.6	0.0	59.0	29.4	18.9
Incr Delay (d2), s/veh	3.2	0.0	0.3	0.4	0.0	159.1	3.8	40.0	0.0	71.3	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.4	1.4	0.0	44.2	1.2	36.2	0.0	12.1	21.3	1.7
LnGrp Delay(d),s/veh	39.4	0.0	29.9	30.3	0.0	202.6	35.0	66.6	0.0	130.4	32.4	19.1
LnGrp LOS	D		C	C		F	C	F		F	C	B
Approach Vol, veh/h		146			780			2497			2288	
Approach Delay, s/veh		35.9			190.5			66.0			41.5	
Approach LOS		D			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	64.0		50.0	15.0	68.0		50.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	13.0	* 58		45.0	10.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	14.6	62.0		48.0	4.1	46.2		20.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	8.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	72.4
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1575	178
Future Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1575	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1741	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1741	1583	1681	1770	1583	131	5085	1583	128	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	37	99	45	85	140	2371	84	141	1712	193
RTOR Reduction (vph)	0	0	34	0	0	75	0	0	37	0	0	83
Lane Group Flow (vph)	46	40	3	99	45	10	140	2371	47	141	1712	110
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	14.0	14.0	14.0	70.0	70.0	70.0	73.0	72.0	72.0
Effective Green, g (s)	11.0	11.0	11.0	15.0	15.0	15.0	69.0	72.0	72.0	72.0	74.0	74.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.53	0.55	0.55	0.55	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	142	147	133	193	204	182	220	2816	876	247	2894	901
v/s Ratio Prot	c0.03	0.02		c0.06	0.03		0.06	c0.47		0.06	c0.34	
v/s Ratio Perm			0.00			0.01	0.28		0.03	0.25		0.07
v/c Ratio	0.32	0.27	0.02	0.51	0.22	0.05	0.64	0.84	0.05	0.57	0.59	0.12
Uniform Delay, d1	56.0	55.7	54.6	54.1	52.2	51.2	24.8	24.2	13.3	41.6	18.2	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.30	0.13	0.89	1.06	3.70
Incremental Delay, d2	6.0	4.5	0.3	9.4	2.5	0.6	8.6	2.1	0.1	5.3	0.5	0.2
Delay (s)	62.0	60.3	54.9	63.5	54.7	51.7	40.4	9.4	1.7	42.1	19.8	48.1
Level of Service	E	E	D	E	D	D	D	A	A	D	B	D
Approach Delay (s)		59.3			57.4			10.8			24.0	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1442	166
Future Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1442	166
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	18	64	57	37	101	360	2402	67	100	1567	180
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	392	321	182	43	118	479	3135	976	201	2332	726
Arrive On Green	0.08	0.21	0.20	0.10	0.10	0.09	0.15	0.41	0.41	0.03	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1311	442	1207	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	91	18	64	57	0	138	360	2402	67	100	1567	180
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1311	0	1650	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.9	1.0	4.5	5.5	0.0	11.0	18.7	53.9	3.4	4.7	38.7	13.3
Cycle Q Clear(g_c), s	5.9	1.0	4.5	5.5	0.0	11.0	18.7	53.9	3.4	4.7	38.7	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	392	321	182	0	161	479	3135	976	201	2332	726
V/C Ratio(X)	0.45	0.05	0.20	0.31	0.00	0.86	0.75	0.77	0.07	0.50	0.67	0.25
Avail Cap(c_a), veh/h	201	392	321	182	0	161	479	3135	976	201	2332	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	47.7	41.9	44.0	56.6	0.0	59.4	49.0	30.8	16.0	33.1	47.0	36.2
Incr Delay (d2), s/veh	7.2	0.2	1.4	4.4	0.0	40.7	10.4	1.8	0.1	8.6	1.6	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(50%),veh/ln	3.3	0.6	2.1	2.2	0.0	6.8	13.9	25.8	1.5	2.8	18.5	6.0
LnGrp Delay(d),s/veh	54.9	42.1	45.4	61.0	0.0	100.2	59.5	32.6	16.1	41.7	48.5	37.0
LnGrp LOS	D	D	D	E		F	E	C	B	D	D	D
Approach Vol, veh/h		173			195			2829			1847	
Approach Delay, s/veh		50.1			88.7			35.7			47.1	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	86.0	15.0	17.0	36.0	65.0		32.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	77.0	12.0	12.0	30.0	* 59		27.0
Max Q Clear Time (g_c+I1), s	16.7	55.9	7.9	13.0	20.7	40.7		6.5
Green Ext Time (p_c), s	0.1	14.1	0.1	0.0	0.9	8.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	42.4
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1348	114
Future Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1348	114
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	17	117	214	83	88	454	2672	228	98	1465	124
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	171	145	330	95	101	610	2989	931	186	1786	556
Arrive On Green	0.08	0.09	0.09	0.11	0.11	0.11	0.31	0.59	0.59	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	829	879	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	70	17	117	214	0	171	454	2672	228	98	1465	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1708	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.5	1.1	9.5	14.0	0.0	12.9	25.5	59.8	4.7	2.1	34.4	7.2
Cycle Q Clear(g_c), s	4.5	1.1	9.5	14.0	0.0	12.9	25.5	59.8	4.7	2.1	34.4	7.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	171	145	330	0	196	610	2989	931	186	1786	556
V/C Ratio(X)	0.34	0.10	0.81	0.65	0.00	0.87	0.74	0.89	0.24	0.53	0.82	0.22
Avail Cap(c_a), veh/h	205	171	145	330	0	196	610	2989	931	186	1786	556
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	54.5	58.4	48.0	0.0	57.3	30.7	23.5	3.5	56.5	38.7	29.9
Incr Delay (d2), s/veh	4.5	1.2	36.5	9.5	0.0	38.2	8.0	4.6	0.6	10.3	4.4	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(50%),veh/ln	2.5	0.6	5.6	1.3	0.0	8.2	15.9	29.0	3.5	3.9	16.7	3.3
LnGrp Delay(d),s/veh	53.0	55.7	94.8	57.5	0.0	95.6	38.8	28.1	4.1	66.9	43.1	30.8
LnGrp LOS	D	E	F	E		F	D	C	A	E	D	C
Approach Vol, veh/h		204			385			3354			1687	
Approach Delay, s/veh		77.2			74.4			27.9			43.6	
Approach LOS		E			E			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	16.0	81.0	18.0	16.0	47.0	50.0	15.0	19.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 75	15.0	11.0	42.0	43.0	12.0	14.0
Max Q Clear Time (g_c+I1), s	14.1	61.8	16.0	11.5	27.5	36.4	6.5	14.9
Green Ext Time (p_c), s	0.1	11.1	0.0	0.0	1.5	4.0	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	569	386	449	410	743	131	1062	577	366	427	303
Future Volume (veh/h)	235	569	386	449	410	743	131	1062	577	366	427	303
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	255	618	420	488	446	808	142	1154	0	398	464	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
Arrive On Green	0.12	0.36	0.36	0.14	0.37	0.37	0.14	0.27	0.00	0.07	0.21	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	255	618	420	488	446	808	142	1154	0	398	464	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	15.7	41.4	5.5	17.7	25.6	48.7	9.8	35.7	0.0	9.7	15.4	0.0
Cycle Q Clear(g_c), s	15.7	41.4	5.5	17.7	25.6	48.7	9.8	35.7	0.0	9.7	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
V/C Ratio(X)	1.19	0.92	0.30	1.04	0.64	1.36	0.59	1.19	0.00	3.01	0.62	0.00
Avail Cap(c_a), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.2	39.9	6.5	56.2	33.4	40.6	52.7	47.1	0.0	60.2	46.3	0.0
Incr Delay (d2), s/veh	122.4	20.4	0.6	52.8	4.4	173.7	10.1	94.7	0.0	922.9	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.0	25.1	2.6	11.8	14.0	49.9	5.4	30.2	0.0	38.7	7.9	0.0
LnGrp Delay(d),s/veh	179.5	60.3	7.1	108.9	37.9	214.4	62.8	141.9	0.0	983.1	50.1	0.0
LnGrp LOS	F	E	A	F	D	F	E	F		F	D	
Approach Vol, veh/h		1293			1742			1296			862	
Approach Delay, s/veh		66.6			139.6			133.2			480.9	
Approach LOS		E			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	23.0	52.0	23.0	32.0	21.0	54.0	15.0	40.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 46	* 17	* 26	* 15	* 48	* 8.7	* 34
Max Q Clear Time (g_c+I1), s	19.7	43.4	11.8	17.4	17.7	50.7	11.7	37.7
Green Ext Time (p_c), s	0.0	1.2	0.2	1.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	176.5
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1289	777	245	1158	43	362	25	90	90	8	82
Future Volume (vph)	124	1289	777	245	1158	43	362	25	90	90	8	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5058		1681	1696	1583		1781	1583
Flt Permitted	0.13	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	249	5085	1583	149	5058		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	1401	845	266	1259	47	393	27	98	98	9	89
RTOR Reduction (vph)	0	0	540	0	3	0	0	0	74	0	0	79
Lane Group Flow (vph)	135	1401	306	266	1303	0	208	212	24	0	107	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	56.0	45.0	45.0	69.0	53.0		31.0	31.0	31.0		14.0	14.0
Effective Green, g (s)	58.0	47.0	47.0	70.0	55.0		32.0	32.0	32.0		15.0	15.0
Actuated g/C Ratio	0.45	0.36	0.36	0.54	0.42		0.25	0.25	0.25		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	251	1838	572	329	2139		413	417	389		205	182
v/s Ratio Prot	0.05	0.28		c0.12	0.26		0.12	c0.13			c0.06	
v/s Ratio Perm	0.19		0.19	c0.31					0.02			0.01
v/c Ratio	0.54	0.76	0.53	0.81	0.61		0.50	0.51	0.06		0.52	0.06
Uniform Delay, d1	23.0	36.6	32.8	36.4	29.1		42.2	42.2	37.5		54.1	51.2
Progression Factor	0.97	0.94	1.59	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.8	0.9	18.9	1.3		4.3	4.4	0.3		9.2	0.6
Delay (s)	24.3	35.0	53.1	55.3	30.4		46.5	46.6	37.8		63.3	51.8
Level of Service	C	D	D	E	C		D	D	D		E	D
Approach Delay (s)		40.9			34.7			44.9			58.1	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	669	360	50	473	4	1
Future Vol, veh/h	669	360	50	473	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	727	391	54	514	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1118	0	1545	923
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	622	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	625	-	126	327
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	625	-	111	327
Mov Cap-2 Maneuver	-	-	-	-	111	-
Stage 1	-	-	-	-	387	-
Stage 2	-	-	-	-	470	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	34.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	128	-	-	625	-
HCM Lane V/C Ratio	0.042	-	-	0.087	-
HCM Control Delay (s)	34.4	-	-	11.3	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0.3	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	62	60	250	26	2758	316	461	3710
v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.19
Control Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	112.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	112.8
Queue Length 50th (ft)	3	52	50	0	19	220	7	202	~1381
Queue Length 95th (ft)	15	103	100	35	m16	m177	m4	#310	#1448
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	155	155	155	913	149	2855	1130	475	3129
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	92	86	385	1005	368	2242	623	850	1780	1189
v/c Ratio	1.01	0.35	0.35	0.62	1.37	1.30	1.15	0.69	1.36	0.73	1.36
Control Delay	108.0	61.1	3.8	40.2	203.3	194.3	96.9	8.8	192.1	7.9	179.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	61.1	3.8	40.2	203.3	194.3	96.9	8.8	192.1	7.9	179.0
Queue Length 50th (ft)	~115	39	0	173	~587	~203	~839	157	~480	221	~1239
Queue Length 95th (ft)	#187	68	0	236	#738	m#250	#914	m100	m#368	m160	m#923
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	372	264	249	625	732	282	1944	898	625	2452	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.35	0.35	0.62	1.37	1.30	1.15	0.69	1.36	0.73	1.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	96	100	68	157	3083	28	83	2092	77
v/c Ratio	0.49	0.29	0.64	0.25	0.68	0.89	0.03	0.46	0.62	0.07
Control Delay	62.0	5.6	72.5	15.4	34.4	5.5	0.0	37.5	9.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
Total Delay	62.0	5.6	72.5	15.4	34.4	6.7	0.0	37.5	9.9	0.8
Queue Length 50th (ft)	70	0	81	3	76	168	0	23	395	1
Queue Length 95th (ft)	127	26	#157	47	m73	m157	m0	m56	329	m3
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	179	330	156	276	230	3481	1102	180	3363	1073
Starvation Cap Reductn	0	0	0	0	0	207	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.29	0.64	0.25	0.68	0.94	0.03	0.46	0.62	0.07

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	54	55	725	47	2450	17	222	1986	80
v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.83	0.10
Control Delay	30.6	16.3	28.9	88.8	25.0	49.6	0.4	89.2	14.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.3	28.9	88.8	25.0	49.6	0.4	89.2	14.1	0.5
Queue Length 50th (ft)	54	14	31	~580	14	~794	0	~148	508	1
Queue Length 95th (ft)	97	44	62	#824	m22	#889	m0	#318	408	m1
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	475	621	557	672	180	2346	766	221	2386	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.83	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	40	37	99	45	85	140	2371	84	141	1712	193
v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.63	0.84	0.09	0.57	0.59	0.20
Control Delay	62.7	60.9	1.0	64.2	55.3	2.0	39.4	9.5	0.3	42.4	19.9	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	60.9	1.0	64.2	55.3	2.0	39.4	9.5	0.3	42.4	19.9	6.7
Queue Length 50th (ft)	38	33	0	84	36	0	48	379	0	52	212	27
Queue Length 95th (ft)	83	74	0	147	77	0	m90	346	m1	m76	283	m54
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	142	147	279	193	204	323	221	2816	925	248	2894	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.63	0.84	0.09	0.57	0.59	0.20

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	18	64	57	138	360	2402	67	100	1567	180
v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.76	0.78	0.07	0.48	0.66	0.21
Control Delay	48.8	40.9	3.0	64.5	33.5	24.9	2.2	0.1	23.2	25.6	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.9	3.0	64.5	33.5	24.9	2.2	0.1	23.2	25.6	7.3
Queue Length 50th (ft)	64	12	0	46	43	216	41	0	35	488	29
Queue Length 95th (ft)	115	34	13	92	113	m225	44	m0	77	535	74
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	214	401	408	139	241	474	3090	988	210	2386	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.76	0.78	0.07	0.48	0.66	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	17	117	214	171	454	2672	228	98	1465	124
v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.83	0.20
Control Delay	44.6	55.6	9.6	56.4	65.7	36.5	18.6	0.8	45.4	34.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	55.6	9.6	56.4	65.7	36.5	18.6	0.8	45.4	34.0	9.3
Queue Length 50th (ft)	48	13	0	159	115	252	368	0	72	483	52
Queue Length 95th (ft)	90	38	38	243	#223	m252	m334	m0	m107	533	m85
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	218	171	275	313	227	617	3011	1030	180	1760	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.83	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	255	618	420	488	446	808	142	1154	627	398	464	329
v/c Ratio	1.20	0.92	0.30	1.04	0.64	1.12	0.59	1.19	0.91	3.02	0.62	0.55
Control Delay	170.6	58.3	5.9	91.1	24.0	90.2	63.8	136.6	39.0	940.0	26.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	170.6	58.3	5.9	91.1	24.0	90.2	63.8	136.6	39.0	940.0	26.5	11.5
Queue Length 50th (ft)	~265	525	25	~223	292	~648	114	~615	258	~568	204	187
Queue Length 95th (ft)	#434	#737	47	#339	432	#912	187	#752	#502	m#723	m231	m216
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	213	669	1421	467	697	722	240	971	687	132	754	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.20	0.92	0.30	1.04	0.64	1.12	0.59	1.19	0.91	3.02	0.62	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	135	1401	845	266	1306	208	212	98	107	89
v/c Ratio	0.53	0.76	0.76	0.81	0.61	0.50	0.51	0.19	0.52	0.28
Control Delay	18.7	35.3	4.9	51.7	30.5	47.2	47.3	1.9	64.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	35.3	4.9	51.7	30.5	47.2	47.3	1.9	64.0	2.5
Queue Length 50th (ft)	55	316	58	164	307	160	163	0	86	0
Queue Length 95th (ft)	m62	m309	m40	#299	357	245	249	10	149	2
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	253	1838	1111	330	2143	413	417	503	205	316
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.76	0.76	0.81	0.61	0.50	0.51	0.19	0.52	0.28

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	13	0	256	18	609	20	3393	593	779	2807	23
Future Volume (vph)	3	13	0	256	18	609	20	3393	593	779	2807	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	14	0	269	19	641	21	3572	624	820	2955	24
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	96	0	1	0
Lane Group Flow (vph)	0	17	0	134	154	468	21	3572	528	820	2978	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		10.0	10.0	35.0	10.0	74.0	84.0	25.0	89.0	
Effective Green, g (s)		11.0		11.0	11.0	37.0	11.0	76.0	86.0	26.0	91.0	
Actuated g/C Ratio		0.08		0.08	0.08	0.26	0.08	0.54	0.61	0.19	0.65	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		145		132	133	816	139	2760	972	637	3301	
v/s Ratio Prot		c0.01		0.08	c0.09	0.11	0.01	c0.70	0.04	c0.24	0.59	
v/s Ratio Perm						0.06			0.29			
v/c Ratio		0.12		1.02	1.16	0.57	0.15	1.29	0.54	1.29	0.90	
Uniform Delay, d1		60.0		64.5	64.5	44.7	60.1	32.0	15.6	57.0	20.7	
Progression Factor		1.00		1.00	1.00	1.00	0.72	0.43	1.28	1.00	1.00	
Incremental Delay, d2		1.6		82.4	126.7	2.9	0.2	132.6	0.2	140.9	4.6	
Delay (s)		61.6		146.9	191.2	47.6	43.2	146.6	20.2	197.9	25.3	
Level of Service		E		F	F	D	D	F	C	F	C	
Approach Delay (s)		61.6			85.7			127.3			62.6	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	95.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1038	655	372	1224	280	999	177	1969	650	714	1917	432
Future Volume (vph)	1038	655	372	1224	280	999	177	1969	650	714	1917	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.84		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1128	712	404	1330	304	1086	192	2140	707	776	2084	470
RTOR Reduction (vph)	0	0	105	0	209	0	0	0	390	0	0	228
Lane Group Flow (vph)	1128	712	299	1330	1181	0	192	2140	317	776	2084	242
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	22.0	22.0	22.0	42.0	42.0		11.0	37.0	37.0	22.0	48.0	48.0
Effective Green, g (s)	23.0	23.0	23.0	43.0	43.0		12.0	39.0	39.0	23.0	50.0	50.0
Actuated g/C Ratio	0.16	0.16	0.16	0.31	0.31		0.09	0.28	0.28	0.16	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Grp Cap (vph)	819	581	260	934	727		294	1416	427	563	1816	565
v/s Ratio Prot	c0.23	0.20		0.44	c0.50		0.06	c0.42		c0.23	0.41	
v/s Ratio Perm			0.19						0.21			0.15
v/c Ratio	1.38	1.23	1.15	1.42	1.88dr		0.65	1.51	0.74	1.38	1.15	0.43
Uniform Delay, d1	58.5	58.5	58.5	48.5	48.5		62.0	50.5	45.9	58.5	45.0	34.2
Progression Factor	1.00	1.00	1.00	0.66	0.62		1.01	0.63	0.96	0.73	0.65	0.77
Incremental Delay, d2	177.5	116.2	102.1	195.2	285.7		6.0	232.1	6.2	175.2	69.6	1.0
Delay (s)	236.0	174.7	160.6	227.3	316.0		68.6	263.8	50.2	217.7	98.7	27.3
Level of Service	F	F	F	F	F		E	F	D	F	F	C
Approach Delay (s)		202.9			272.6			201.7			116.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	193.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	132.3%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	45	189	5	28	61	2730	37	54	3436	24
Future Volume (veh/h)	38	0	45	189	5	28	61	2730	37	54	3436	24
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	0	49	205	5	30	66	2967	40	59	3735	26
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	0	226	207	33	198	191	3523	1097	184	3523	1097
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.08	0.69	0.69	0.06	0.69	0.69
Sat Flow, veh/h	1368	0	1583	1351	231	1387	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	41	0	49	205	0	35	66	2967	40	59	3735	26
Grp Sat Flow(s),veh/h/ln	1368	0	1583	1351	0	1618	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	3.8	0.0	3.9	16.1	0.0	2.7	1.4	60.2	1.1	1.3	97.0	0.7
Cycle Q Clear(g_c), s	6.5	0.0	3.9	20.0	0.0	2.7	1.4	60.2	1.1	1.3	97.0	0.7
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	0	226	207	0	231	191	3523	1097	184	3523	1097
V/C Ratio(X)	0.19	0.00	0.22	0.99	0.00	0.15	0.35	0.84	0.04	0.32	1.06	0.02
Avail Cap(c_a), veh/h	221	0	226	207	0	231	191	3523	1097	184	3523	1097
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	55.4	0.0	53.5	63.9	0.0	52.9	36.1	15.9	6.8	31.2	21.5	6.7
Incr Delay (d2), s/veh	1.9	0.0	2.2	59.9	0.0	1.4	4.9	2.6	0.1	4.5	34.2	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(50%),veh/ln	1.5	0.0	1.8	11.4	0.0	1.3	2.0	28.6	0.5	1.8	55.8	0.3
LnGrp Delay(d),s/veh	57.3	0.0	55.7	123.8	0.0	54.3	41.0	18.5	6.8	35.7	55.7	6.8
LnGrp LOS	E		E	F		D	D	B	A	D	F	A
Approach Vol, veh/h		90			240			3073			3820	
Approach Delay, s/veh		56.4			113.7			18.8			55.0	
Approach LOS		E			F			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	101.0		24.0	15.0	101.0		24.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	95.0		19.0	12.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	13.3	62.2		22.0	3.4	99.0		8.5
Green Ext Time (p_c), s	0.1	25.0		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.6
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	29	56	16	482	83	2296	34	566	2994	111
Future Volume (veh/h)	49	39	29	56	16	482	83	2296	34	566	2994	111
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	51	41	30	58	17	502	86	2392	0	590	3119	116
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	140	102	158	41	221	182	2311	720	584	3556	1107
Arrive On Green	0.14	0.14	0.13	0.14	0.14	0.14	0.06	0.45	0.00	0.60	1.00	1.00
Sat Flow, veh/h	879	1001	732	807	291	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	51	0	71	75	0	502	86	2392	0	590	3119	116
Grp Sat Flow(s),veh/h/ln	879	0	1733	1098	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	5.3	6.4	0.0	20.0	4.3	65.0	0.0	43.0	0.0	0.0
Cycle Q Clear(g_c), s	19.9	0.0	5.3	11.6	0.0	20.0	4.3	65.0	0.0	43.0	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	242	198	0	221	182	2311	720	584	3556	1107
V/C Ratio(X)	0.50	0.00	0.29	0.38	0.00	2.27	0.47	1.03	0.00	1.01	0.88	0.10
Avail Cap(c_a), veh/h	102	0	242	198	0	221	182	2311	720	584	3556	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.3	0.0	55.4	59.5	0.0	61.5	29.4	39.0	0.0	26.6	0.0	0.0
Incr Delay (d2), s/veh	16.5	0.0	3.0	5.4	0.0	584.3	8.5	28.4	0.0	39.9	3.4	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(50%),veh/ln	2.5	0.0	2.7	3.1	0.0	44.7	2.5	36.5	0.0	29.0	1.1	0.1
LnGrp Delay(d),s/veh	83.8	0.0	58.4	65.0	0.0	645.8	37.9	67.4	0.0	66.6	3.4	0.2
LnGrp LOS	F		E	E		F	D	F		F	A	A
Approach Vol, veh/h		122			577			2478			3825	
Approach Delay, s/veh		69.0			570.3			66.4			13.0	
Approach LOS		E			F			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	50.0	69.0		24.0	15.0	104.0		24.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	44.0	* 63		19.0	10.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	45.0	67.0		22.0	6.3	2.0		21.9
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	55.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	78.8
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	42	76	172	23	70	54	2179	129	176	2789	113
Future Volume (vph)	165	42	76	172	23	70	54	2179	129	176	2789	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1770	1583	115	5085	1583	120	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	46	83	187	25	76	59	2368	140	191	3032	123
RTOR Reduction (vph)	0	0	76	0	0	67	0	0	64	0	0	46
Lane Group Flow (vph)	109	116	7	187	25	9	59	2368	76	191	3032	77
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	16.0	16.0	16.0	77.0	74.0	74.0	83.0	83.0	83.0
Effective Green, g (s)	11.0	11.0	11.0	17.0	17.0	17.0	76.0	76.0	76.0	82.0	85.0	85.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.54	0.54	0.54	0.59	0.61	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	132	134	124	204	214	192	192	2760	859	306	3087	961
v/s Ratio Prot	0.06	c0.07		c0.11	0.01		0.02	c0.47		0.09	c0.60	
v/s Ratio Perm			0.00			0.01	0.14		0.05	0.28		0.05
v/c Ratio	0.83	0.87	0.05	0.92	0.12	0.05	0.31	0.86	0.09	0.62	0.98	0.08
Uniform Delay, d1	63.6	63.8	59.7	60.8	54.8	54.3	57.4	27.4	15.4	37.5	26.8	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.58	1.17	1.13	0.38	0.18
Incremental Delay, d2	42.1	48.2	0.8	44.4	1.1	0.5	2.1	1.9	0.1	5.0	8.3	0.1
Delay (s)	105.6	111.9	60.5	105.2	55.9	54.8	40.8	17.7	18.1	47.4	18.4	2.2
Level of Service	F	F	E	F	E	D	D	B	B	D	B	A
Approach Delay (s)		95.8			87.6			18.2			19.4	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	56	281	121	21	168	169	1968	156	267	2643	127
Future Volume (veh/h)	226	56	281	121	21	168	169	1968	156	267	2643	127
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	246	61	305	132	23	183	184	2139	170	290	2873	138
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	466	385	160	19	153	193	2506	780	424	2979	927
Arrive On Green	0.11	0.25	0.24	0.11	0.11	0.10	0.16	0.99	0.99	0.17	0.59	0.59
Sat Flow, veh/h	1774	1863	1583	1012	180	1431	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	246	61	305	132	0	206	184	2139	170	290	2873	138
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1012	0	1610	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	16.0	3.6	25.3	15.0	0.0	15.0	10.1	5.3	0.3	11.3	75.3	5.5
Cycle Q Clear(g_c), s	16.0	3.6	25.3	15.0	0.0	15.0	10.1	5.3	0.3	11.3	75.3	5.5
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	466	385	160	0	173	193	2506	780	424	2979	927
V/C Ratio(X)	0.97	0.13	0.79	0.83	0.00	1.19	0.95	0.85	0.22	0.68	0.96	0.15
Avail Cap(c_a), veh/h	254	466	385	160	0	173	193	2506	780	424	2979	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	51.0	40.7	49.7	63.8	0.0	62.9	38.8	0.5	0.5	23.4	27.6	13.2
Incr Delay (d2), s/veh	48.8	0.6	15.4	36.4	0.0	130.3	53.8	3.9	0.6	8.7	10.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.9	12.7	6.7	0.0	12.9	9.8	1.3	0.2	11.2	37.9	2.5
LnGrp Delay(d),s/veh	99.8	41.3	65.1	100.3	0.0	193.3	92.6	4.5	1.2	32.0	37.7	13.5
LnGrp LOS	F	D	E	F		F	F	A	A	C	D	B
Approach Vol, veh/h		612			338			2493			3301	
Approach Delay, s/veh		76.7			156.9			10.8			36.2	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	28.0	73.0	20.0	19.0	15.0	86.0		39.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	25.0	67.0	17.0	14.0	12.0	80.0		34.0
Max Q Clear Time (g_c+I1), s	13.3	7.3	18.0	17.0	12.1	77.3		27.3
Green Ext Time (p_c), s	0.8	20.2	0.0	0.0	0.0	2.5		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	91	384	275	41	72	293	1985	223	102	2728	216
Future Volume (veh/h)	236	91	384	275	41	72	293	1985	223	102	2728	216
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	99	417	299	45	78	318	2158	242	111	2965	235
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	251	213	265	52	90	303	2885	898	221	2741	853
Arrive On Green	0.13	0.13	0.13	0.09	0.09	0.08	0.13	0.57	0.57	0.16	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1774	613	1062	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	257	99	417	299	0	123	318	2158	242	111	2965	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1675	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	45.0	6.7	1.0	0.0	0.0
Cycle Q Clear(g_c), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	45.0	6.7	1.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	251	213	265	0	143	303	2885	898	221	2741	853
V/C Ratio(X)	0.89	0.39	1.95	1.13	0.00	0.86	1.05	0.75	0.27	0.50	1.08	0.28
Avail Cap(c_a), veh/h	290	251	213	265	0	143	303	2885	898	221	2741	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	50.7	55.7	61.0	60.2	0.0	64.0	40.3	22.9	5.7	50.5	0.0	0.0
Incr Delay (d2), s/veh	30.3	4.6	446.1	95.0	0.0	45.6	65.6	1.8	0.7	7.9	44.0	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(50%),veh/ln	11.5	3.8	34.7	11.4	0.0	6.6	17.3	21.5	4.2	4.2	11.2	0.2
LnGrp Delay(d),s/veh	81.0	60.3	507.1	155.2	0.0	109.6	106.0	24.7	6.5	58.4	44.0	0.8
LnGrp LOS	F	E	F	F		F	F	C	A	E	F	A
Approach Vol, veh/h		773			422			2718			3311	
Approach Delay, s/veh		308.2			141.9			32.6			41.4	
Approach LOS		F			F			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	18.0	84.0	16.0	23.0	22.0	80.0	23.0	16.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	12.0	* 78	13.0	18.0	19.0	73.0	20.0	11.0
Max Q Clear Time (g_c+I1), s	13.0	47.0	14.0	21.0	20.0	2.0	20.6	12.2
Green Ext Time (p_c), s	0.2	16.7	0.0	0.0	0.0	43.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	72.5
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	519	493	609	629	1095	136	806	543	267	1058	429
Future Volume (veh/h)	287	519	493	609	629	1095	136	806	543	267	1058	429
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	309	558	530	655	676	1177	146	867	0	287	1138	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
Arrive On Green	0.15	0.34	0.34	0.18	0.38	0.38	0.07	0.23	0.00	0.10	0.26	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	309	558	530	655	676	1177	146	867	0	287	1138	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	20.7	39.5	9.7	25.7	49.7	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Cycle Q Clear(g_c), s	20.7	39.5	9.7	25.7	49.7	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
V/C Ratio(X)	1.18	0.88	0.46	1.04	0.96	1.97	1.19	1.05	0.00	1.65	1.23	0.00
Avail Cap(c_a), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.6	43.4	30.1	57.1	42.7	43.7	65.2	53.7	0.0	63.2	51.7	0.0
Incr Delay (d2), s/veh	112.5	16.0	1.4	45.7	26.3	444.7	140.3	44.9	0.0	318.2	111.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.3	23.1	6.9	16.2	30.7	96.7	9.5	21.1	0.0	22.0	32.3	0.0
LnGrp Delay(d),s/veh	172.1	59.4	31.4	102.8	69.0	488.3	205.5	98.5	0.0	381.3	163.2	0.0
LnGrp LOS	F	E	C	F	E	F	F	F		F	F	
Approach Vol, veh/h		1397			2508			1013			1425	
Approach Delay, s/veh		73.7			274.6			113.9			207.1	
Approach LOS		E			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	31.0	53.0	15.0	41.0	26.0	58.0	19.0	37.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 25	* 47	* 8.7	* 35	* 20	* 52	* 13	* 31
Max Q Clear Time (g_c+I1), s	27.7	41.5	11.7	38.7	22.7	54.7	15.7	34.7
Green Ext Time (p_c), s	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	189.6
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1194	422	194	1617	11	693	4	277	35	6	24
Future Volume (vph)	25	1194	422	194	1617	11	693	4	277	35	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1686	1583		1787	1583
Flt Permitted	0.09	1.00	1.00	0.08	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	169	5085	1583	155	5080		1681	1686	1583		1787	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1298	459	211	1758	12	753	4	301	38	7	26
RTOR Reduction (vph)	0	0	311	0	1	0	0	0	203	0	0	24
Lane Group Flow (vph)	27	1298	148	211	1769	0	376	381	98	0	45	2
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	55.0	43.0	43.0	71.0	54.0		43.0	43.0	43.0		10.0	10.0
Effective Green, g (s)	57.0	45.0	45.0	72.0	56.0		44.0	44.0	44.0		11.0	11.0
Actuated g/C Ratio	0.41	0.32	0.32	0.51	0.40		0.31	0.31	0.31		0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	217	1634	508	356	2032		528	529	497		140	124
v/s Ratio Prot	0.01	0.26		c0.10	c0.35		0.22	c0.23			c0.03	
v/s Ratio Perm	0.04		0.09	0.20					0.06			0.00
v/c Ratio	0.12	0.79	0.29	0.59	0.87		0.71	0.72	0.20		0.32	0.02
Uniform Delay, d1	28.9	43.3	35.6	32.3	38.7		42.4	42.5	35.1		61.0	59.5
Progression Factor	1.31	1.13	2.23	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	2.3	0.8	7.1	5.5		7.9	8.2	0.9		6.0	0.2
Delay (s)	38.5	51.3	80.2	39.4	44.1		50.4	50.8	36.0		66.9	59.8
Level of Service	D	D	F	D	D		D	D	D		E	E
Approach Delay (s)		58.5			43.6			46.4			64.3	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	108.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	126	17	692	280	39
Future Vol, veh/h	495	126	17	692	280	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	538	137	18	752	304	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	675	0	1395	607
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	788	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	916	-	~ 156	496
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	448	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	916	-	~ 151	496
Mov Cap-2 Maneuver	-	-	-	-	~ 151	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	433	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	$ 561.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	165	-	-	916	-
HCM Lane V/C Ratio	2.101	-	-	0.02	-
HCM Control Delay (s)	$ 561.1	-	-	9	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	27.5	-	-	0.1	-

Notes

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

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	134	154	641	21	3572	624	820	2979
v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.29	0.58	1.29	0.90
Control Delay	62.1	144.7	181.2	30.2	43.6	151.5	6.5	185.7	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	144.7	181.2	30.2	43.6	151.5	6.5	185.7	25.7
Queue Length 50th (ft)	15	~132	~173	186	16	~1496	129	~488	788
Queue Length 95th (ft)	40	#282	#329	261	m11	m378	m70	#617	863
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	145	132	133	982	139	2760	1078	637	3302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.29	0.58	1.29	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1128	712	404	1330	1390	192	2140	707	776	2084	470
v/c Ratio	1.38	1.23	1.11	1.42	1.88dr	0.65	1.51	0.87	1.38	1.15	0.59
Control Delay	220.2	164.0	115.3	223.6	244.8	68.9	259.4	17.8	209.5	98.4	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	220.2	164.0	115.3	223.6	244.8	68.9	259.4	17.8	209.5	98.4	8.2
Queue Length 50th (ft)	~481	~418	~317	~963	~912	83	~984	293	~485	~819	129
Queue Length 95th (ft)	#574	#548	#530	#1123	#1069	m103	#1080	#209	m#552	m#886	m132
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	819	581	365	934	936	294	1416	817	563	1816	792
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.38	1.23	1.11	1.42	1.49	0.65	1.51	0.87	1.38	1.15	0.59

Intersection Summary

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	49	205	35	66	2967	40	59	3735	26
v/c Ratio	0.21	0.16	1.07	0.14	0.34	0.84	0.04	0.35	1.06	0.02
Control Delay	56.3	1.0	139.6	21.5	30.2	6.2	0.0	20.0	49.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0	1.1	0.0
Total Delay	56.3	1.0	139.6	21.5	30.2	20.4	0.0	20.0	50.5	0.3
Queue Length 50th (ft)	33	0	~205	4	19	96	0	6	~1364	0
Queue Length 95th (ft)	72	0	#370	38	m22	m100	m0	m5	m763	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	195	315	192	257	194	3523	1113	168	3523	1113
Starvation Cap Reductn	0	0	0	0	0	616	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	9	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.16	1.07	0.14	0.34	1.02	0.04	0.35	1.06	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	71	75	502	86	2392	35	590	3119	116
v/c Ratio	0.29	0.26	0.39	0.82	0.51	1.01	0.05	0.99	0.89	0.10
Control Delay	58.6	40.4	61.3	19.9	22.2	34.7	1.5	37.1	3.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
Total Delay	58.6	40.4	61.3	19.9	22.2	34.7	1.5	37.1	4.3	0.0
Queue Length 50th (ft)	42	40	63	41	23	~848	1	455	61	0
Queue Length 95th (ft)	86	89	116	#198	m31	#932	m2	m409	m57	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	177	268	191	613	167	2360	768	596	3523	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	207	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.26	0.39	0.82	0.51	1.01	0.05	0.99	0.94	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	109	116	83	187	25	76	59	2368	140	191	3032	123
v/c Ratio	0.83	0.87	0.34	0.92	0.12	0.25	0.31	0.86	0.15	0.62	0.98	0.12
Control Delay	105.3	111.4	5.1	104.8	56.4	2.0	26.3	17.9	2.9	38.7	19.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.3	111.4	5.1	104.8	56.4	2.0	26.3	17.9	2.9	38.7	19.4	0.5
Queue Length 50th (ft)	105	111	0	180	22	0	16	237	3	95	764	4
Queue Length 95th (ft)	#218	#233	9	#335	53	2	m25	336	m13	m125	#1106	m4
Internal Link Dist (ft)		641			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	132	134	246	204	214	308	192	2760	923	309	3087	1007
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.87	0.34	0.92	0.12	0.25	0.31	0.86	0.15	0.62	0.98	0.12

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	61	305	132	206	184	2139	170	290	2873	138
v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.85	0.20	0.81	0.96	0.14
Control Delay	89.7	41.8	29.6	118.4	19.7	87.1	17.3	0.4	65.9	13.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.7	41.8	29.6	118.4	19.7	87.1	17.3	0.4	65.9	13.1	0.4
Queue Length 50th (ft)	197	43	128	121	19	117	445	0	215	156	1
Queue Length 95th (ft)	#336	83	233	#252	102	m#228	413	m3	m223	m322	m2
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	465	496	143	336	195	2506	865	358	2978	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.85	0.20	0.81	0.96	0.14

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	99	417	299	123	318	2158	242	111	2965	235
v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.74	0.24	0.58	1.09	0.25
Control Delay	72.3	60.4	80.8	144.3	53.7	106.7	18.1	1.5	32.0	57.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	60.4	80.8	144.3	53.7	106.7	18.1	1.5	32.0	57.9	0.4
Queue Length 50th (ft)	207	84	~223	~288	66	~286	353	3	43	~1101	1
Queue Length 95th (ft)	#322	144	#435	#399	#144	m210	m284	m0	m51	m#1172	m1
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	301	252	404	262	189	283	2905	1008	192	2724	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.74	0.24	0.58	1.09	0.25

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	558	530	655	676	1177	146	867	584	287	1138	461
v/c Ratio	1.18	0.88	0.40	1.04	0.96	1.54	1.20	1.05	0.85	1.66	1.23	0.73
Control Delay	159.5	57.0	18.8	81.0	48.6	267.1	196.9	96.2	27.3	333.8	133.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	159.5	57.0	18.8	81.0	48.6	267.1	196.9	96.2	27.3	333.8	133.9	8.4
Queue Length 50th (ft)	~341	513	122	~335	497	~834	~160	~451	161	~378	~664	145
Queue Length 95th (ft)	m#519	#693	164	m#428	m#805	#1742	#304	#585	#377	m#333	m#574	m116
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	261	634	1316	630	701	764	122	826	687	173	927	632
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.88	0.40	1.04	0.96	1.54	1.20	1.05	0.85	1.66	1.23	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	27	1298	459	211	1770	376	381	301	45	26
v/c Ratio	0.12	0.79	0.56	0.59	0.87	0.71	0.72	0.43	0.32	0.10
Control Delay	23.6	51.6	8.4	36.6	44.4	51.2	51.6	6.0	67.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	51.6	8.4	36.6	44.4	51.2	51.6	6.0	67.6	0.8
Queue Length 50th (ft)	12	418	54	123	538	318	324	3	39	0
Queue Length 95th (ft)	m16	m417	m59	212	606	447	454	72	82	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	219	1634	820	357	2032	528	529	700	140	253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.79	0.56	0.59	0.87	0.71	0.72	0.43	0.32	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3399	10
Future Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3399	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	3	0	122	0	250	26	2758	316	461	3695	11
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	97	0	0	0
Lane Group Flow (vph)	0	4	0	62	60	58	26	2758	219	461	3706	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		11.0	11.0	28.0	10.0	71.0	82.0	17.0	78.0	
Effective Green, g (s)		11.0		12.0	12.0	30.0	11.0	73.0	84.0	18.0	80.0	
Actuated g/C Ratio		0.08		0.09	0.09	0.23	0.08	0.56	0.65	0.14	0.62	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		155		155	155	728	149	2855	1022	475	3128	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.13	c0.73	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.40	0.39	0.08	0.17	0.97	0.21	0.97	1.18	
Uniform Delay, d1		54.6		55.6	55.5	39.2	55.3	27.3	9.4	55.7	25.0	
Progression Factor		1.00		1.00	1.00	1.00	0.60	0.25	0.96	1.00	1.00	
Incremental Delay, d2		0.3		7.5	7.1	0.2	0.2	1.5	0.0	34.6	86.6	
Delay (s)		54.9		63.1	62.7	39.4	33.7	8.2	9.1	90.3	111.6	
Level of Service		D		E	E	D	C	A	A	F	F	
Approach Delay (s)		54.9			47.1			8.5			109.3	
Approach LOS		D			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	65.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	85	79	374	480	444	339	2063	573	782	1634	1094
Future Volume (vph)	345	85	79	374	480	444	339	2063	573	782	1634	1094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.65	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1036	3044	2941		3433	5085	1556	3433	5085	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	92	86	407	522	483	368	2242	623	850	1776	1189
RTOR Reduction (vph)	0	0	80	0	129	0	0	0	304	0	0	121
Lane Group Flow (vph)	375	92	6	407	876	0	368	2242	319	850	1776	1068
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	8.7	8.7	8.7	25.7	25.7		9.7	47.7	47.7	22.7	60.7	60.7
Effective Green, g (s)	9.7	9.7	9.7	26.7	26.7		10.7	49.7	49.7	23.7	62.7	62.7
Actuated g/C Ratio	0.07	0.07	0.07	0.21	0.21		0.08	0.38	0.38	0.18	0.48	0.48
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	372	264	77	625	604		282	1944	594	625	2452	753
v/s Ratio Prot	c0.08	0.03		0.13	c0.30		0.11	c0.44		0.25	0.35	
v/s Ratio Perm			0.01						0.21			c0.68
v/c Ratio	1.01	0.35	0.08	0.65	1.45		1.30	1.15	0.54	1.36	0.72	1.42
Uniform Delay, d1	60.1	57.1	56.0	47.4	51.6		59.6	40.1	31.2	53.1	26.8	33.6
Progression Factor	1.00	1.00	1.00	0.76	0.72		0.98	0.59	0.95	0.61	0.29	0.33
Incremental Delay, d2	48.7	3.6	2.1	5.0	211.6		149.2	72.2	1.7	163.0	0.2	188.9
Delay (s)	108.9	60.8	58.1	41.1	248.8		207.8	95.9	31.5	195.3	7.9	200.1
Level of Service	F	E	E	D	F		F	F	C	F	A	F
Approach Delay (s)		93.0			188.9			96.2			109.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	116.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.39		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1941	71
Future Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1941	71
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	0	96	100	4	64	157	3083	28	83	2110	77
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	0	219	162	13	208	290	3481	1084	191	3364	1047
Arrive On Green	0.14	0.00	0.13	0.14	0.14	0.13	0.09	0.68	0.68	0.07	0.66	0.66
Sat Flow, veh/h	1328	0	1583	1294	94	1503	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	88	0	96	100	0	68	157	3083	28	83	2110	77
Grp Sat Flow(s),veh/h/ln	1328	0	1583	1294	0	1597	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	7.3	10.0	0.0	5.0	3.4	63.1	0.7	1.9	31.2	2.2
Cycle Q Clear(g_c), s	13.3	0.0	7.3	17.3	0.0	5.0	3.4	63.1	0.7	1.9	31.2	2.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	0	219	162	0	221	290	3481	1084	191	3364	1047
V/C Ratio(X)	0.47	0.00	0.44	0.62	0.00	0.31	0.54	0.89	0.03	0.44	0.63	0.07
Avail Cap(c_a), veh/h	188	0	219	162	0	221	290	3481	1084	191	3364	1047
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	56.4	0.0	51.8	59.3	0.0	50.8	19.9	16.4	6.6	30.6	12.7	7.8
Incr Delay (d2), s/veh	8.1	0.0	6.2	16.3	0.0	3.6	7.1	3.7	0.0	7.1	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.6	4.3	0.0	2.4	4.2	30.3	0.3	2.3	14.7	1.0
LnGrp Delay(d),s/veh	64.5	0.0	58.1	75.6	0.0	54.4	27.0	20.2	6.6	37.7	13.6	8.0
LnGrp LOS	E		E	E		D	C	C	A	D	B	A
Approach Vol, veh/h		184			168			3268			2270	
Approach Delay, s/veh		61.2			67.0			20.4			14.3	
Approach LOS		E			E			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	15.0	93.0		22.0	18.0	90.0		22.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	87.0		17.0	13.0	84.0		17.0
Max Q Clear Time (g_c+I1), s	13.3	65.1		19.3	5.4	33.2		15.3
Green Ext Time (p_c), s	0.1	18.6		0.0	0.3	18.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1843	74
Future Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1843	74
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	26	28	33	22	725	47	2450	0	222	2003	80
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	284	306	337	215	547	174	2294	714	214	2447	762
Arrive On Green	0.35	0.35	0.34	0.35	0.35	0.35	0.09	0.60	0.00	0.09	0.48	0.48
Sat Flow, veh/h	711	821	884	850	621	1581	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	0	54	55	0	725	47	2450	0	222	2003	80
Grp Sat Flow(s),veh/h/ln	711	0	1705	1471	0	1581	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.6	0.0	2.9	1.7	0.0	46.0	2.1	60.0	0.0	12.0	44.8	3.7
Cycle Q Clear(g_c), s	18.2	0.0	2.9	4.6	0.0	46.0	2.1	60.0	0.0	12.0	44.8	3.7
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	590	552	0	547	174	2294	714	214	2447	762
V/C Ratio(X)	0.33	0.00	0.09	0.10	0.00	1.33	0.27	1.07	0.00	1.04	0.82	0.10
Avail Cap(c_a), veh/h	276	0	590	552	0	547	174	2294	714	214	2447	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	29.6	29.9	0.0	43.5	31.2	26.6	0.0	59.0	29.5	18.9
Incr Delay (d2), s/veh	3.2	0.0	0.3	0.4	0.0	159.1	3.8	40.0	0.0	71.3	3.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.4	1.4	0.0	44.2	1.2	36.2	0.0	12.1	21.7	1.7
LnGrp Delay(d),s/veh	39.4	0.0	29.9	30.3	0.0	202.6	35.0	66.6	0.0	130.4	32.7	19.1
LnGrp LOS	D		C	C		F	C	F		F	C	B
Approach Vol, veh/h		146			780			2497			2305	
Approach Delay, s/veh		35.9			190.5			66.0			41.7	
Approach LOS		D			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	64.0		50.0	15.0	68.0		50.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	13.0	* 58		45.0	10.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	14.6	62.0		48.0	4.1	46.8		20.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	8.1		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	72.4
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	34	91	41	78	249	2181	77	130	1310	459
Future Volume (vph)	54	25	34	91	41	78	249	2181	77	130	1310	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1741	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1741	1583	1681	1770	1583	185	5085	1583	128	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	37	99	45	85	271	2371	84	141	1424	499
RTOR Reduction (vph)	0	0	34	0	0	75	0	0	37	0	0	215
Lane Group Flow (vph)	46	40	3	99	45	10	271	2371	47	141	1424	284
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	14.0	14.0	14.0	70.0	70.0	70.0	73.0	72.0	72.0
Effective Green, g (s)	11.0	11.0	11.0	15.0	15.0	15.0	69.0	72.0	72.0	72.0	74.0	74.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.53	0.55	0.55	0.55	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	142	147	133	193	204	182	244	2816	876	247	2894	901
v/s Ratio Prot	c0.03	0.02		c0.06	0.03		c0.10	0.47		0.06	c0.28	
v/s Ratio Perm			0.00			0.01	c0.49		0.03	0.25		0.18
v/c Ratio	0.32	0.27	0.02	0.51	0.22	0.05	1.11	0.84	0.05	0.57	0.49	0.32
Uniform Delay, d1	56.0	55.7	54.6	54.1	52.2	51.2	31.4	24.2	13.3	41.6	16.8	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.38	0.27	0.11	0.89	1.14	4.94
Incremental Delay, d2	6.0	4.5	0.3	9.4	2.5	0.6	77.3	1.9	0.1	5.2	0.3	0.5
Delay (s)	62.0	60.3	54.9	63.5	54.7	51.7	120.7	8.4	1.5	42.4	19.4	73.2
Level of Service	E	E	D	E	D	D	F	A	A	D	B	E
Approach Delay (s)		59.3			57.4			19.4			34.0	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	17	59	52	34	93	331	2330	62	92	1177	166
Future Volume (veh/h)	84	17	59	52	34	93	331	2330	62	92	1177	166
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	18	64	57	37	101	360	2533	67	100	1279	180
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	392	321	182	43	118	512	3135	976	201	2332	726
Arrive On Green	0.08	0.21	0.20	0.10	0.10	0.09	0.15	0.41	0.41	0.03	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1311	442	1207	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	91	18	64	57	0	138	360	2533	67	100	1279	180
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1311	0	1650	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	58.4	3.4	4.7	31.0	13.3
Cycle Q Clear(g_c), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	58.4	3.4	4.7	31.0	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
V/C Ratio(X)	0.45	0.05	0.20	0.31	0.00	0.86	0.70	0.81	0.07	0.50	0.55	0.25
Avail Cap(c_a), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	47.7	41.9	44.0	56.6	0.0	59.4	45.8	32.1	16.0	33.1	43.7	36.2
Incr Delay (d2), s/veh	7.2	0.2	1.4	4.4	0.0	40.7	7.9	2.4	0.1	8.6	0.9	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(50%),veh/ln	3.3	0.6	2.1	2.2	0.0	6.8	13.5	27.9	1.5	2.8	14.7	6.0
LnGrp Delay(d),s/veh	54.9	42.1	45.4	61.0	0.0	100.2	53.7	34.4	16.1	41.7	44.6	37.0
LnGrp LOS	D	D	D	E		F	D	C	B	D	D	D
Approach Vol, veh/h		173			195			2960			1559	
Approach Delay, s/veh		50.1			88.7			36.4			43.6	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	86.0	15.0	17.0	36.0	65.0		32.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	77.0	12.0	12.0	30.0	* 59		27.0
Max Q Clear Time (g_c+I1), s	16.7	60.4	7.9	13.0	17.8	33.0		6.5
Green Ext Time (p_c), s	0.1	12.5	0.1	0.0	1.1	7.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	41.2
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	16	108	197	76	81	418	2578	210	90	1083	114
Future Volume (veh/h)	64	16	108	197	76	81	418	2578	210	90	1083	114
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	17	117	214	83	88	454	2802	228	98	1177	124
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	171	145	330	95	101	615	2989	931	181	1786	556
Arrive On Green	0.08	0.09	0.09	0.11	0.11	0.11	0.31	0.59	0.59	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	829	879	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	70	17	117	214	0	171	454	2802	228	98	1177	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1708	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	66.3	4.7	2.5	25.6	7.2
Cycle Q Clear(g_c), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	66.3	4.7	2.5	25.6	7.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	171	145	330	0	196	615	2989	931	181	1786	556
V/C Ratio(X)	0.34	0.10	0.81	0.65	0.00	0.87	0.74	0.94	0.24	0.54	0.66	0.22
Avail Cap(c_a), veh/h	205	171	145	330	0	196	615	2989	931	181	1786	556
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	54.5	58.4	48.0	0.0	57.3	29.9	24.8	3.5	57.1	35.9	29.9
Incr Delay (d2), s/veh	4.5	1.2	36.5	9.5	0.0	38.2	7.8	7.2	0.6	11.2	1.9	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(50%),veh/ln	2.5	0.6	5.6	1.3	0.0	8.2	15.7	32.9	3.5	3.9	12.3	3.3
LnGrp Delay(d),s/veh	53.0	55.7	94.8	57.5	0.0	95.6	37.6	32.0	4.1	68.3	37.8	30.8
LnGrp LOS	D	E	F	E		F	D	C	A	E	D	C
Approach Vol, veh/h		204			385			3484			1399	
Approach Delay, s/veh		77.2			74.4			30.9			39.3	
Approach LOS		E			E			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	16.0	81.0	18.0	16.0	47.0	50.0	15.0	19.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 75	15.0	11.0	42.0	43.0	12.0	14.0
Max Q Clear Time (g_c+I1), s	11.5	68.3	16.0	11.5	27.1	27.6	6.5	14.9
Green Ext Time (p_c), s	0.1	6.1	0.0	0.0	1.6	5.5	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	561	386	449	410	827	131	1094	557	101	427	303
Future Volume (veh/h)	239	561	386	449	410	827	131	1094	557	101	427	303
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	610	420	488	446	899	142	1189	0	110	464	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
Arrive On Green	0.12	0.36	0.36	0.14	0.37	0.37	0.14	0.27	0.00	0.07	0.21	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	260	610	420	488	446	899	142	1189	0	110	464	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Cycle Q Clear(g_c), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
V/C Ratio(X)	1.21	0.91	0.30	1.04	0.64	1.52	0.59	1.22	0.00	0.83	0.62	0.00
Avail Cap(c_a), veh/h	214	669	1380	469	698	593	242	972	435	132	754	337
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.2	39.7	6.5	56.2	33.4	40.6	52.7	47.1	0.0	59.3	46.3	0.0
Incr Delay (d2), s/veh	131.1	18.8	0.6	52.8	4.4	240.6	10.1	109.8	0.0	42.8	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	24.3	2.6	11.8	14.0	61.0	5.4	32.2	0.0	5.5	7.9	0.0
LnGrp Delay(d),s/veh	188.2	58.5	7.1	108.9	37.9	281.3	62.8	156.9	0.0	102.1	50.1	0.0
LnGrp LOS	F	E	A	F	D	F	E	F		F	D	
Approach Vol, veh/h		1290			1833			1331			574	
Approach Delay, s/veh		67.9			176.2			146.9			60.0	
Approach LOS		E			F			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	23.0	52.0	23.0	32.0	21.0	54.0	15.0	40.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 46	* 17	* 26	* 15	* 48	* 8.7	* 34
Max Q Clear Time (g_c+I1), s	19.7	42.6	11.8	17.4	17.7	50.7	10.0	37.7
Green Ext Time (p_c), s	0.0	1.6	0.2	1.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	127.4
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1289	484	185	1242	43	362	25	90	90	8	82
Future Volume (vph)	124	1289	484	185	1242	43	362	25	90	90	8	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5060		1681	1696	1583		1781	1583
Flt Permitted	0.11	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	207	5085	1583	149	5060		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	1401	526	201	1350	47	393	27	98	98	9	89
RTOR Reduction (vph)	0	0	336	0	3	0	0	0	74	0	0	79
Lane Group Flow (vph)	135	1401	190	201	1394	0	208	212	24	0	107	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	56.0	45.0	45.0	69.0	53.0		31.0	31.0	31.0		14.0	14.0
Effective Green, g (s)	58.0	47.0	47.0	70.0	55.0		32.0	32.0	32.0		15.0	15.0
Actuated g/C Ratio	0.45	0.36	0.36	0.54	0.42		0.25	0.25	0.25		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	236	1838	572	329	2140		413	417	389		205	182
v/s Ratio Prot	0.05	c0.28		c0.09	0.28		0.12	c0.13			c0.06	
v/s Ratio Perm	0.20		0.12	0.23					0.02			0.01
v/c Ratio	0.57	0.76	0.33	0.61	0.65		0.50	0.51	0.06		0.52	0.06
Uniform Delay, d1	23.6	36.6	30.1	29.6	29.9		42.2	42.2	37.5		54.1	51.2
Progression Factor	0.84	1.08	2.46	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.1	2.5	1.3	8.2	1.6		4.3	4.4	0.3		9.2	0.6
Delay (s)	27.9	41.9	75.4	37.8	31.4		46.5	46.6	37.8		63.3	51.8
Level of Service	C	D	E	D	C		D	D	D		E	D
Approach Delay (s)		49.5			32.2			44.9			58.1	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	669	7	2	473	4	1
Future Vol, veh/h	669	7	2	473	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	727	8	2	514	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	735	0	1249	731
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	191	422
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	190	422
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	596	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	870	-
HCM Lane V/C Ratio	0.026	-	-	0.002	-
HCM Control Delay (s)	22.3	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	113	348	401	0	0
Future Vol, veh/h	0	113	348	401	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	123	378	436	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	814	0	-	0	719	596
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	123	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	813	-	-	-	395	504
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	813	-	-	-	395	504
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	902	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	813	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	62	60	250	26	2758	316	461	3706
v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.18
Control Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	112.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	63.9	63.4	5.2	34.0	9.3	0.8	90.2	112.2
Queue Length 50th (ft)	3	52	50	0	19	220	7	202	~1378
Queue Length 95th (ft)	15	103	100	35	m16	m177	m4	#310	#1446
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	155	155	155	913	149	2855	1130	475	3129
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	92	86	407	1005	368	2242	623	850	1776	1189
v/c Ratio	1.01	0.35	0.35	0.65	1.37	1.30	1.15	0.69	1.36	0.72	1.36
Control Delay	108.0	61.1	3.8	41.4	203.3	194.3	96.9	8.8	192.1	7.9	179.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	61.1	3.8	41.4	203.3	194.3	96.9	8.8	192.1	7.9	179.0
Queue Length 50th (ft)	~115	39	0	184	~587	~203	~839	157	~480	221	~1239
Queue Length 95th (ft)	#187	68	0	249	#738	m#250	#914	m100	m#369	m159	m#926
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	372	264	249	625	732	282	1944	898	625	2452	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.35	0.35	0.65	1.37	1.30	1.15	0.69	1.36	0.72	1.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	96	100	68	157	3083	28	83	2110	77
v/c Ratio	0.49	0.29	0.64	0.25	0.69	0.89	0.03	0.46	0.63	0.07
Control Delay	62.0	5.7	72.5	15.4	35.0	5.5	0.0	36.9	10.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
Total Delay	62.0	5.7	72.5	15.4	35.0	6.7	0.0	36.9	10.5	0.9
Queue Length 50th (ft)	70	0	81	3	77	168	0	23	416	2
Queue Length 95th (ft)	127	26	#157	47	m73	m157	m0	m56	386	m4
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	179	329	156	276	229	3481	1102	180	3363	1073
Starvation Cap Reductn	0	0	0	0	0	207	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.29	0.64	0.25	0.69	0.94	0.03	0.46	0.63	0.07

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	54	55	725	47	2450	17	222	2003	80
v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.84	0.10
Control Delay	30.6	16.3	28.9	88.8	24.9	49.8	0.4	88.9	14.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.3	28.9	88.8	24.9	49.8	0.4	88.9	14.2	0.5
Queue Length 50th (ft)	54	14	31	~580	14	~796	0	~148	518	1
Queue Length 95th (ft)	97	44	62	#824	m22	#890	m0	#317	407	m1
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	475	621	557	672	180	2346	766	221	2386	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.10	1.08	0.26	1.04	0.02	1.00	0.84	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	40	37	99	45	85	271	2371	84	141	1424	499
v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	1.11	0.84	0.09	0.57	0.49	0.45
Control Delay	62.7	60.9	1.0	64.2	55.3	2.0	110.6	8.5	0.2	42.7	19.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	60.9	1.0	64.2	55.3	2.0	110.6	8.5	0.2	42.7	19.5	6.5
Queue Length 50th (ft)	38	33	0	84	36	0	~181	313	0	53	179	74
Queue Length 95th (ft)	83	74	0	147	77	0	m#291	334	m0	m76	241	m145
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	142	147	279	193	204	323	245	2816	925	248	2894	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	1.11	0.84	0.09	0.57	0.49	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	18	64	57	138	360	2533	67	100	1279	180
v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.82	0.07	0.48	0.54	0.21
Control Delay	48.8	40.9	3.0	64.5	33.5	15.5	2.3	0.0	24.1	22.4	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.9	3.0	64.5	33.5	15.5	2.3	0.0	24.1	22.4	7.8
Queue Length 50th (ft)	64	12	0	46	43	125	41	0	34	330	30
Queue Length 95th (ft)	115	34	13	92	113	m132	44	m0	77	438	78
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	214	401	408	139	241	526	3090	988	210	2386	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.82	0.07	0.48	0.54	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	17	117	214	171	454	2802	228	98	1177	124
v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.93	0.22	0.54	0.67	0.20
Control Delay	44.6	55.6	9.6	56.4	65.7	35.7	21.3	0.9	49.7	31.4	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	55.6	9.6	56.4	65.7	35.7	21.3	0.9	49.7	31.4	12.2
Queue Length 50th (ft)	48	13	0	159	115	253	591	0	82	384	70
Queue Length 95th (ft)	90	38	38	243	#223	m240	m345	m0	132	432	127
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	218	171	275	313	227	617	3011	1030	180	1760	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.93	0.22	0.54	0.67	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	610	420	488	446	899	142	1189	605	110	464	329
v/c Ratio	1.22	0.91	0.30	1.04	0.64	1.25	0.59	1.22	0.86	0.83	0.62	0.55
Control Delay	178.6	56.6	5.9	90.1	23.2	142.5	63.8	150.7	30.2	102.1	31.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	178.6	56.6	5.9	90.1	23.2	142.5	63.8	150.7	30.2	102.1	31.5	14.3
Queue Length 50th (ft)	~274	517	25	~224	296	~813	114	~647	206	74	206	177
Queue Length 95th (ft)	#444	#723	47	#340	435	#1082	187	#785	#429	m#166	266	255
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	213	669	1421	467	697	721	240	971	704	132	754	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.91	0.30	1.04	0.64	1.25	0.59	1.22	0.86	0.83	0.62	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	135	1401	526	201	1397	208	212	98	107	89
v/c Ratio	0.57	0.76	0.58	0.61	0.65	0.50	0.51	0.19	0.52	0.28
Control Delay	24.5	42.2	8.4	34.9	31.5	47.2	47.3	1.9	64.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	42.2	8.4	34.9	31.5	47.2	47.3	1.9	64.0	2.5
Queue Length 50th (ft)	62	378	67	104	337	160	163	0	86	0
Queue Length 95th (ft)	m84	m450	m118	189	390	245	249	10	149	2
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	238	1838	908	330	2143	413	417	503	205	316
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.76	0.58	0.61	0.65	0.50	0.51	0.19	0.52	0.28

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	13	0	256	18	609	20	3390	593	779	2806	23
Future Volume (vph)	3	13	0	256	18	609	20	3390	593	779	2806	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	14	0	269	19	641	21	3568	624	820	2954	24
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	96	0	1	0
Lane Group Flow (vph)	0	17	0	134	154	468	21	3568	528	820	2977	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		10.0	10.0	35.0	10.0	74.0	84.0	25.0	89.0	
Effective Green, g (s)		11.0		11.0	11.0	37.0	11.0	76.0	86.0	26.0	91.0	
Actuated g/C Ratio		0.08		0.08	0.08	0.26	0.08	0.54	0.61	0.19	0.65	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		145		132	133	816	139	2760	972	637	3301	
v/s Ratio Prot		c0.01		0.08	c0.09	0.11	0.01	c0.70	0.04	c0.24	0.59	
v/s Ratio Perm						0.06			0.29			
v/c Ratio		0.12		1.02	1.16	0.57	0.15	1.29	0.54	1.29	0.90	
Uniform Delay, d1		60.0		64.5	64.5	44.7	60.1	32.0	15.6	57.0	20.7	
Progression Factor		1.00		1.00	1.00	1.00	0.71	0.43	1.28	1.00	1.00	
Incremental Delay, d2		1.6		82.4	126.7	2.9	0.2	132.0	0.2	140.9	4.5	
Delay (s)		61.6		146.9	191.2	47.6	43.2	145.9	20.2	197.9	25.3	
Level of Service		E		F	F	D	D	F	C	F	C	
Approach Delay (s)		61.6			85.7			126.8			62.5	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	95.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1038	655	372	1231	280	999	177	1966	665	714	1916	432
Future Volume (vph)	1038	655	372	1231	280	999	177	1966	665	714	1916	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.94	0.95	1.00	0.86	0.86		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.84		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	3044	2370		3433	5085	1536	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1128	712	404	1338	304	1086	192	2137	723	776	2083	470
RTOR Reduction (vph)	0	0	105	0	209	0	0	0	390	0	0	228
Lane Group Flow (vph)	1128	712	299	1338	1181	0	192	2137	333	776	2083	242
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Split	NA	Perm	Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	22.0	22.0	22.0	42.0	42.0		11.0	37.0	37.0	22.0	48.0	48.0
Effective Green, g (s)	23.0	23.0	23.0	43.0	43.0		12.0	39.0	39.0	23.0	50.0	50.0
Actuated g/C Ratio	0.16	0.16	0.16	0.31	0.31		0.09	0.28	0.28	0.16	0.36	0.36
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Grp Cap (vph)	819	581	260	934	727		294	1416	427	563	1816	565
v/s Ratio Prot	c0.23	0.20		0.44	c0.50		0.06	c0.42		c0.23	0.41	
v/s Ratio Perm			0.19						0.22			0.15
v/c Ratio	1.38	1.23	1.15	1.43	1.88dr		0.65	1.51	0.78	1.38	1.15	0.43
Uniform Delay, d1	58.5	58.5	58.5	48.5	48.5		62.0	50.5	46.6	58.5	45.0	34.2
Progression Factor	1.00	1.00	1.00	0.66	0.62		1.01	0.64	0.96	0.73	0.65	0.77
Incremental Delay, d2	177.5	116.2	102.1	199.0	285.7		5.9	231.1	7.4	175.2	69.4	1.0
Delay (s)	236.0	174.7	160.6	231.1	315.9		68.6	263.5	52.0	217.7	98.4	27.4
Level of Service	F	F	F	F	F		E	F	D	F	F	C
Approach Delay (s)		202.9			274.3			201.2			116.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	194.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	132.4%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	45	189	5	28	61	2742	37	54	3442	24
Future Volume (veh/h)	38	0	45	189	5	28	61	2742	37	54	3442	24
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	0	49	205	5	30	66	2980	40	59	3741	26
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	0	226	207	33	198	191	3523	1097	184	3523	1097
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.08	0.69	0.69	0.06	0.69	0.69
Sat Flow, veh/h	1368	0	1583	1351	231	1387	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	41	0	49	205	0	35	66	2980	40	59	3741	26
Grp Sat Flow(s),veh/h/ln	1368	0	1583	1351	0	1618	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	3.8	0.0	3.9	16.1	0.0	2.7	1.4	60.9	1.1	1.3	97.0	0.7
Cycle Q Clear(g_c), s	6.5	0.0	3.9	20.0	0.0	2.7	1.4	60.9	1.1	1.3	97.0	0.7
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	0	226	207	0	231	191	3523	1097	184	3523	1097
V/C Ratio(X)	0.19	0.00	0.22	0.99	0.00	0.15	0.35	0.85	0.04	0.32	1.06	0.02
Avail Cap(c_a), veh/h	221	0	226	207	0	231	191	3523	1097	184	3523	1097
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	55.4	0.0	53.5	63.9	0.0	52.9	36.1	16.0	6.8	31.5	21.5	6.7
Incr Delay (d2), s/veh	1.9	0.0	2.2	59.9	0.0	1.4	4.9	2.7	0.1	4.6	34.8	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(50%),veh/ln	1.5	0.0	1.8	11.4	0.0	1.3	2.0	29.0	0.5	1.8	56.0	0.3
LnGrp Delay(d),s/veh	57.3	0.0	55.7	123.8	0.0	54.3	41.0	18.6	6.8	36.0	56.3	6.8
LnGrp LOS	E		E	F		D	D	B	A	D	F	A
Approach Vol, veh/h		90			240			3086			3826	
Approach Delay, s/veh		56.4			113.7			19.0			55.7	
Approach LOS		E			F			B			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	101.0		24.0	15.0	101.0		24.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	95.0		19.0	12.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	13.3	62.9		22.0	3.4	99.0		8.5
Green Ext Time (p_c), s	0.1	24.7		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	42.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	29	56	16	482	83	2308	34	566	3000	111
Future Volume (veh/h)	49	39	29	56	16	482	83	2308	34	566	3000	111
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	51	41	30	58	17	502	86	2404	0	590	3125	116
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	140	102	158	41	221	182	2311	720	584	3556	1107
Arrive On Green	0.14	0.14	0.13	0.14	0.14	0.14	0.06	0.45	0.00	0.60	1.00	1.00
Sat Flow, veh/h	879	1001	732	807	291	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	51	0	71	75	0	502	86	2404	0	590	3125	116
Grp Sat Flow(s),veh/h/ln	879	0	1733	1098	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	5.3	6.4	0.0	20.0	4.3	65.0	0.0	43.0	0.0	0.0
Cycle Q Clear(g_c), s	19.9	0.0	5.3	11.6	0.0	20.0	4.3	65.0	0.0	43.0	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	242	198	0	221	182	2311	720	584	3556	1107
V/C Ratio(X)	0.50	0.00	0.29	0.38	0.00	2.27	0.47	1.04	0.00	1.01	0.88	0.10
Avail Cap(c_a), veh/h	102	0	242	198	0	221	182	2311	720	584	3556	1107
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.3	0.0	55.4	59.5	0.0	61.5	29.4	39.0	0.0	26.6	0.0	0.0
Incr Delay (d2), s/veh	16.5	0.0	3.0	5.4	0.0	584.3	8.5	30.1	0.0	39.9	3.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.7	3.1	0.0	44.7	2.5	36.8	0.0	29.0	1.1	0.1
LnGrp Delay(d),s/veh	83.8	0.0	58.4	65.0	0.0	645.8	37.9	69.1	0.0	66.6	3.5	0.2
LnGrp LOS	F		E	E		F	D	F		F	A	A
Approach Vol, veh/h		122			577			2490			3831	
Approach Delay, s/veh		69.0			570.3			68.0			13.1	
Approach LOS		E			F			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	50.0	69.0		24.0	15.0	104.0		24.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	44.0	* 63		19.0	10.0	95.0		19.0
Max Q Clear Time (g_c+I1), s	45.0	67.0		22.0	6.3	2.0		21.9
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	56.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	79.3
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	381	42	169	172	23	70	95	1975	129	176	2699	209
Future Volume (vph)	381	42	169	172	23	70	95	1975	129	176	2699	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1681	1770	1583	115	5085	1583	120	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	46	184	187	25	76	103	2147	140	191	2934	227
RTOR Reduction (vph)	0	0	122	0	0	67	0	0	64	0	0	88
Lane Group Flow (vph)	253	207	62	187	25	9	103	2147	76	191	2934	139
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	16.0	16.0	16.0	77.0	74.0	74.0	83.0	83.0	83.0
Effective Green, g (s)	11.0	11.0	11.0	17.0	17.0	17.0	76.0	76.0	76.0	82.0	85.0	85.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.54	0.54	0.54	0.59	0.61	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	132	133	124	204	214	192	192	2760	859	306	3087	961
v/s Ratio Prot	c0.15	0.12		c0.11	0.01		0.04	c0.42		0.09	c0.58	
v/s Ratio Perm			0.04			0.01	0.25		0.05	0.28		0.09
v/c Ratio	1.92	1.56	0.50	0.92	0.12	0.05	0.54	0.78	0.09	0.62	0.95	0.14
Uniform Delay, d1	64.5	64.5	61.9	60.8	54.8	54.3	54.9	25.3	15.4	36.4	25.5	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.64	0.57	0.67	1.13	0.36	0.25
Incremental Delay, d2	439.3	283.8	13.8	44.4	1.1	0.5	6.2	1.3	0.1	5.0	4.8	0.2
Delay (s)	503.8	348.3	75.7	105.2	55.9	54.8	41.4	15.8	10.4	46.1	14.1	3.2
Level of Service	F	F	E	F	E	D	D	B	B	D	B	A
Approach Delay (s)		331.5			87.6			16.6			15.1	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	56	281	121	21	168	169	1805	156	267	2646	127
Future Volume (veh/h)	226	56	281	121	21	168	169	1805	156	267	2646	127
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	246	61	305	132	23	183	184	1962	170	290	2876	138
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	466	385	160	19	153	193	2506	780	440	2979	927
Arrive On Green	0.11	0.25	0.24	0.11	0.11	0.10	0.16	0.99	0.99	0.17	0.59	0.59
Sat Flow, veh/h	1774	1863	1583	1012	180	1431	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	246	61	305	132	0	206	184	1962	170	290	2876	138
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1012	0	1610	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	16.0	3.6	25.3	15.0	0.0	15.0	10.1	3.4	0.3	9.9	75.5	5.5
Cycle Q Clear(g_c), s	16.0	3.6	25.3	15.0	0.0	15.0	10.1	3.4	0.3	9.9	75.5	5.5
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	254	466	385	160	0	173	193	2506	780	440	2979	927
V/C Ratio(X)	0.97	0.13	0.79	0.83	0.00	1.19	0.95	0.78	0.22	0.66	0.97	0.15
Avail Cap(c_a), veh/h	254	466	385	160	0	173	193	2506	780	440	2979	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	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	51.0	40.7	49.7	63.8	0.0	62.9	38.9	0.5	0.5	18.3	27.7	13.2
Incr Delay (d2), s/veh	48.8	0.6	15.4	36.4	0.0	130.3	53.9	2.5	0.6	7.6	10.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.9	12.7	6.7	0.0	12.9	9.8	0.9	0.2	11.0	38.0	2.5
LnGrp Delay(d),s/veh	99.8	41.3	65.1	100.3	0.0	193.3	92.8	3.1	1.2	25.8	37.9	13.5
LnGrp LOS	F	D	E	F		F	F	A	A	C	D	B
Approach Vol, veh/h		612			338			2316			3304	
Approach Delay, s/veh		76.7			156.9			10.0			35.8	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	28.0	73.0	20.0	19.0	15.0	86.0		39.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	25.0	67.0	17.0	14.0	12.0	80.0		34.0
Max Q Clear Time (g_c+I1), s	11.9	5.4	18.0	17.0	12.1	77.5		27.3
Green Ext Time (p_c), s	0.8	17.1	0.0	0.0	0.0	2.4		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	91	384	275	41	72	293	1822	223	102	2731	216
Future Volume (veh/h)	236	91	384	275	41	72	293	1822	223	102	2731	216
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	99	417	299	45	78	318	1980	242	111	2968	235
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	251	213	265	52	90	303	2885	898	235	2741	853
Arrive On Green	0.13	0.13	0.13	0.09	0.09	0.08	0.13	0.57	0.57	0.16	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1774	613	1062	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	257	99	417	299	0	123	318	1980	242	111	2968	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1675	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	38.9	6.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	18.6	6.8	19.0	12.0	0.0	10.2	18.0	38.9	6.7	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	251	213	265	0	143	303	2885	898	235	2741	853
V/C Ratio(X)	0.89	0.39	1.95	1.13	0.00	0.86	1.05	0.69	0.27	0.47	1.08	0.28
Avail Cap(c_a), veh/h	290	251	213	265	0	143	303	2885	898	235	2741	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	50.7	55.7	61.0	60.2	0.0	64.0	40.4	21.6	5.7	47.3	0.0	0.0
Incr Delay (d2), s/veh	30.3	4.6	446.1	95.0	0.0	45.6	65.7	1.4	0.7	6.7	44.5	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(50%),veh/ln	11.5	3.8	34.7	11.4	0.0	6.6	17.3	18.5	4.2	4.1	11.3	0.2
LnGrp Delay(d),s/veh	81.0	60.3	507.1	155.2	0.0	109.6	106.1	23.0	6.5	54.0	44.5	0.8
LnGrp LOS	F	E	F	F		F	F	C	A	D	F	A
Approach Vol, veh/h		773			422			2540			3314	
Approach Delay, s/veh		308.2			141.9			31.8			41.7	
Approach LOS		F			F			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	18.0	84.0	16.0	23.0	22.0	80.0	23.0	16.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	12.0	* 78	13.0	18.0	19.0	73.0	20.0	11.0
Max Q Clear Time (g_c+I1), s	12.0	40.9	14.0	21.0	20.0	2.0	20.6	12.2
Green Ext Time (p_c), s	0.2	16.0	0.0	0.0	0.0	43.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.4
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	516	493	594	623	920	136	817	536	242	1083	432
Future Volume (veh/h)	288	516	493	594	623	920	136	817	536	242	1083	432
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	310	555	530	639	670	989	146	878	0	260	1165	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
Arrive On Green	0.15	0.34	0.34	0.18	0.38	0.38	0.07	0.23	0.00	0.10	0.26	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	310	555	530	639	670	989	146	878	0	260	1165	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	20.7	39.2	9.7	25.7	49.0	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Cycle Q Clear(g_c), s	20.7	39.2	9.7	25.7	49.0	52.7	9.7	32.7	0.0	13.7	36.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
V/C Ratio(X)	1.18	0.87	0.46	1.01	0.96	1.66	1.19	1.06	0.00	1.50	1.26	0.00
Avail Cap(c_a), veh/h	262	635	1143	632	701	596	123	827	370	174	928	415
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.6	43.3	30.1	57.1	42.5	43.7	65.2	53.7	0.0	63.2	51.7	0.0
Incr Delay (d2), s/veh	113.9	15.5	1.4	38.7	24.7	304.1	140.3	49.1	0.0	251.7	123.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.4	22.9	6.9	15.6	29.9	73.4	9.5	21.6	0.0	18.8	33.9	0.0
LnGrp Delay(d),s/veh	173.5	58.8	31.4	95.8	67.2	347.8	205.5	102.8	0.0	314.9	175.6	0.0
LnGrp LOS	F	E	C	F	E	F	F	F		F	F	
Approach Vol, veh/h		1395			2298			1024			1425	
Approach Delay, s/veh		73.9			195.9			117.4			201.0	
Approach LOS		E			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	31.0	53.0	15.0	41.0	26.0	58.0	19.0	37.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 25	* 47	* 8.7	* 35	* 20	* 52	* 13	* 31
Max Q Clear Time (g_c+I1), s	27.7	41.2	11.7	38.7	22.7	54.7	15.7	34.7
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	156.3
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1259	322	173	1646	11	467	4	231	35	6	24
Future Volume (vph)	25	1259	322	173	1646	11	467	4	231	35	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1687	1583		1787	1583
Flt Permitted	0.08	1.00	1.00	0.07	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	146	5085	1583	135	5080		1681	1687	1583		1787	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1368	350	188	1789	12	508	4	251	38	7	26
RTOR Reduction (vph)	0	0	220	0	1	0	0	0	188	0	0	24
Lane Group Flow (vph)	27	1368	130	188	1800	0	254	258	63	0	45	2
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	63.0	50.0	50.0	80.0	62.0		34.0	34.0	34.0		10.0	10.0
Effective Green, g (s)	65.0	52.0	52.0	81.0	64.0		35.0	35.0	35.0		11.0	11.0
Actuated g/C Ratio	0.46	0.37	0.37	0.58	0.46		0.25	0.25	0.25		0.08	0.08
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	230	1888	587	381	2322		420	421	395		140	124
v/s Ratio Prot	0.01	0.27		c0.09	c0.35		0.15	c0.15			c0.03	
v/s Ratio Perm	0.04		0.08	0.19					0.04			0.00
v/c Ratio	0.12	0.72	0.22	0.49	0.78		0.60	0.61	0.16		0.32	0.02
Uniform Delay, d1	23.4	37.8	30.1	29.1	32.0		46.4	46.5	41.0		61.0	59.5
Progression Factor	1.32	1.06	1.76	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	1.5	0.5	4.5	2.6		6.3	6.5	0.9		6.0	0.2
Delay (s)	31.7	41.8	53.7	33.6	34.6		52.7	53.0	41.9		66.9	59.8
Level of Service	C	D	D	C	C		D	D	D		E	E
Approach Delay (s)		44.0			34.5			49.3			64.3	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	5	1	692	8	2
Future Vol, veh/h	495	5	1	692	8	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	538	5	1	752	9	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	543	0	1295	541
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	754	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1026	-	179	541
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1026	-	179	541
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	464	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	207	-	-	1026	-
HCM Lane V/C Ratio	0.053	-	-	0.001	-
HCM Control Delay (s)	23.4	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	283	189	137	309	0
Future Vol, veh/h	0	283	189	137	309	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	308	205	149	336	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	588	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1205	-	-	-	471	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1205	-	-	-	471	759
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	745	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1205	-	-	-	471
HCM Lane V/C Ratio	-	-	-	-	0.713
HCM Control Delay (s)	0	-	-	-	29.5
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	5.6

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	134	154	641	21	3568	624	820	2978
v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.29	0.58	1.29	0.90
Control Delay	62.1	144.7	181.2	30.2	43.6	150.8	6.5	185.7	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	144.7	181.2	30.2	43.6	150.8	6.5	185.7	25.7
Queue Length 50th (ft)	15	~132	~173	186	16	~1493	129	~488	787
Queue Length 95th (ft)	40	#282	#329	261	m11	m379	m70	#617	862
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	145	132	133	982	139	2760	1078	637	3302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	1.02	1.16	0.65	0.15	1.29	0.58	1.29	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1128	712	404	1338	1390	192	2137	723	776	2083	470
v/c Ratio	1.38	1.23	1.11	1.43	1.88dr	0.65	1.51	0.88	1.38	1.15	0.59
Control Delay	220.2	164.0	115.3	227.3	244.8	69.0	258.8	19.6	209.5	98.2	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	220.2	164.0	115.3	227.3	244.8	69.0	258.8	19.6	209.5	98.2	8.2
Queue Length 50th (ft)	~481	~418	~317	~973	~911	83	~982	329	~485	~818	129
Queue Length 95th (ft)	#574	#548	#530	#1132	#1070	m102	#1078	#242	m#553	m#885	m133
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	819	581	365	934	936	294	1416	817	563	1816	792
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.38	1.23	1.11	1.43	1.49	0.65	1.51	0.88	1.38	1.15	0.59

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	49	205	35	66	2980	40	59	3741	26
v/c Ratio	0.21	0.16	1.07	0.14	0.34	0.85	0.04	0.35	1.06	0.02
Control Delay	56.3	1.0	139.6	21.5	30.1	6.1	0.0	19.9	50.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	15.7	0.0	0.0	1.3	0.0
Total Delay	56.3	1.0	139.6	21.5	30.1	21.8	0.0	19.9	51.3	0.3
Queue Length 50th (ft)	33	0	~205	4	19	96	0	6	~1367	0
Queue Length 95th (ft)	72	0	#370	38	m20	m100	m0	m5	m760	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	195	315	192	257	194	3523	1113	168	3523	1113
Starvation Cap Reductn	0	0	0	0	0	616	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	10	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.16	1.07	0.14	0.34	1.03	0.04	0.35	1.06	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	71	75	502	86	2404	35	590	3125	116
v/c Ratio	0.29	0.26	0.39	0.82	0.51	1.02	0.05	0.99	0.89	0.10
Control Delay	58.6	40.4	61.3	19.9	24.4	31.4	1.3	37.1	3.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
Total Delay	58.6	40.4	61.3	19.9	24.4	31.4	1.3	37.1	4.4	0.0
Queue Length 50th (ft)	42	40	63	41	26	~736	1	454	61	0
Queue Length 95th (ft)	86	89	116	#198	m37	m646	m1	m407	m57	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	177	268	191	613	167	2360	768	596	3523	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	206	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.26	0.39	0.82	0.51	1.02	0.05	0.99	0.94	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	253	207	184	187	25	76	103	2147	140	191	2934	227
v/c Ratio	1.92	1.56	0.75	0.92	0.12	0.25	0.54	0.78	0.15	0.62	0.95	0.22
Control Delay	471.8	324.1	38.9	104.8	56.4	2.0	34.9	15.9	1.8	38.7	14.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	471.8	324.1	38.9	104.8	56.4	2.0	34.9	15.9	1.8	38.7	14.7	0.6
Queue Length 50th (ft)	~371	~278	46	180	22	0	34	219	2	95	659	7
Queue Length 95th (ft)	#558	#451	#154	#335	53	2	m55	271	m11	m125	717	m8
Internal Link Dist (ft)		615			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	132	133	246	204	214	308	192	2760	923	309	3087	1049
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.92	1.56	0.75	0.92	0.12	0.25	0.54	0.78	0.15	0.62	0.95	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	61	305	132	206	184	1962	170	290	2876	138
v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.78	0.20	0.81	0.97	0.14
Control Delay	89.7	41.8	29.6	118.4	19.7	89.3	16.2	0.5	65.8	14.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.7	41.8	29.6	118.4	19.7	89.3	16.2	0.5	65.8	14.8	0.4
Queue Length 50th (ft)	197	43	128	121	19	116	388	0	214	230	1
Queue Length 95th (ft)	#336	83	233	#252	102	m#258	380	m4	m235	#588	m2
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	465	496	143	336	195	2506	866	358	2978	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.13	0.61	0.92	0.61	0.94	0.78	0.20	0.81	0.97	0.14

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	99	417	299	123	318	1980	242	111	2968	235
v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.68	0.24	0.56	1.09	0.25
Control Delay	72.3	60.4	80.8	144.3	53.7	108.3	15.6	1.0	29.3	58.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	60.4	80.8	144.3	53.7	108.3	15.6	1.0	29.3	58.5	0.4
Queue Length 50th (ft)	207	84	~223	~288	66	~285	296	0	37	~1112	1
Queue Length 95th (ft)	#322	144	#435	#399	#144	m#237	m257	m0	m43	m#1172	m1
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	301	252	404	262	189	283	2905	1008	200	2724	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.39	1.03	1.14	0.65	1.12	0.68	0.24	0.56	1.09	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	310	555	530	639	670	989	146	878	576	260	1165	465
v/c Ratio	1.19	0.88	0.40	1.01	0.96	1.30	1.20	1.06	0.84	1.50	1.26	0.74
Control Delay	160.8	56.5	18.8	74.9	47.0	158.2	196.9	100.0	25.6	267.5	146.6	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	160.8	56.5	18.8	74.9	47.0	158.2	196.9	100.0	25.6	267.5	146.6	8.7
Queue Length 50th (ft)	~343	510	122	~317	500	~504	~160	~462	149	~326	~692	152
Queue Length 95th (ft)	m#518	#690	164	#431	#827	#685	#304	#596	#338	m#289	m#598	m120
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	261	634	1316	630	701	763	122	826	689	173	927	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.88	0.40	1.01	0.96	1.30	1.20	1.06	0.84	1.50	1.26	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	27	1368	350	188	1801	254	258	251	45	26
v/c Ratio	0.12	0.72	0.43	0.49	0.78	0.60	0.61	0.43	0.32	0.10
Control Delay	18.7	42.1	6.3	30.3	34.8	53.5	53.8	7.2	67.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.7	42.1	6.3	30.3	34.8	53.5	53.8	7.2	67.6	0.8
Queue Length 50th (ft)	10	396	31	99	496	216	220	0	39	0
Queue Length 95th (ft)	m14	m405	m40	179	558	317	323	69	82	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	230	1888	807	383	2322	420	421	584	140	253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.72	0.43	0.49	0.78	0.60	0.61	0.43	0.32	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3403	10
Future Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3403	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	3	0	122	0	250	26	2758	316	461	3699	11
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	97	0	0	0
Lane Group Flow (vph)	0	4	0	62	60	58	26	2758	219	461	3710	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		11.0	11.0	28.0	10.0	71.0	82.0	17.0	78.0	
Effective Green, g (s)		11.0		12.0	12.0	30.0	11.0	73.0	84.0	18.0	80.0	
Actuated g/C Ratio		0.08		0.09	0.09	0.23	0.08	0.56	0.65	0.14	0.62	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		155		155	155	728	149	2855	1022	475	3128	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.13	c0.73	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.40	0.39	0.08	0.17	0.97	0.21	0.97	1.19	
Uniform Delay, d1		54.6		55.6	55.5	39.2	55.3	27.3	9.4	55.7	25.0	
Progression Factor		1.00		1.00	1.00	1.00	0.58	0.15	0.04	1.00	1.00	
Incremental Delay, d2		0.3		7.5	7.1	0.2	0.2	1.5	0.0	34.6	87.2	
Delay (s)		54.9		63.1	62.7	39.4	32.0	5.5	0.4	90.3	112.2	
Level of Service		D		E	E	D	C	A	A	F	F	
Approach Delay (s)		54.9			47.1			5.2			109.8	
Approach LOS		D			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	64.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1638	1094
Future Volume (vph)	345	85	79	354	480	444	339	2063	573	782	1638	1094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.94	0.95	1.00	0.94	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.89	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1410	4990	3248		3433	5085	1556	3433	5085	1566
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1410	4990	3248		3433	5085	1556	3433	5085	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	92	86	385	522	483	368	2242	623	850	1780	1189
RTOR Reduction (vph)	0	0	66	0	129	0	0	0	191	0	0	56
Lane Group Flow (vph)	375	92	20	385	876	0	368	2242	432	850	1780	1133
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	8.7	18.7	28.4	13.7	23.7		9.7	48.7	48.7	23.7	62.7	71.4
Effective Green, g (s)	9.7	19.7	30.4	14.7	24.7		10.7	50.7	50.7	24.7	64.7	75.4
Actuated g/C Ratio	0.07	0.15	0.23	0.11	0.19		0.08	0.39	0.39	0.19	0.50	0.58
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	372	536	387	564	617		282	1983	606	652	2530	908
v/s Ratio Prot	0.08	0.03	0.00	0.08	c0.27		0.11	c0.44		0.25	0.35	c0.10
v/s Ratio Perm			0.01						0.28			0.62
v/c Ratio	1.01	0.17	0.05	0.68	1.42		1.30	1.13	0.71	1.30	0.70	1.25
Uniform Delay, d1	60.1	48.0	38.6	55.4	52.6		59.6	39.6	33.5	52.6	25.2	27.3
Progression Factor	1.00	1.00	1.00	0.79	0.72		0.98	0.60	0.68	0.59	0.24	0.70
Incremental Delay, d2	48.7	0.7	0.3	6.3	198.0		149.2	62.3	3.4	137.7	0.2	112.5
Delay (s)	108.9	48.7	38.9	50.0	235.9		207.8	86.0	26.3	169.0	6.2	131.4
Level of Service	F	D	D	D	F		F	F	C	F	A	F
Approach Delay (s)		88.0			184.4			88.4			81.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	100.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1925	71
Future Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1925	71
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	0	96	100	4	64	157	3083	28	83	2092	77
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	0	219	162	13	208	292	3481	1084	191	3364	1047
Arrive On Green	0.14	0.00	0.13	0.14	0.14	0.13	0.09	0.68	0.68	0.07	0.66	0.66
Sat Flow, veh/h	1328	0	1583	1294	94	1503	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	88	0	96	100	0	68	157	3083	28	83	2092	77
Grp Sat Flow(s),veh/h/ln	1328	0	1583	1294	0	1597	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	7.3	10.0	0.0	5.0	3.4	63.1	0.7	1.9	30.8	2.2
Cycle Q Clear(g_c), s	13.3	0.0	7.3	17.3	0.0	5.0	3.4	63.1	0.7	1.9	30.8	2.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	0	219	162	0	221	292	3481	1084	191	3364	1047
V/C Ratio(X)	0.47	0.00	0.44	0.62	0.00	0.31	0.54	0.89	0.03	0.44	0.62	0.07
Avail Cap(c_a), veh/h	188	0	219	162	0	221	292	3481	1084	191	3364	1047
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	56.4	0.0	51.8	59.3	0.0	50.8	19.5	16.4	6.6	30.6	12.7	7.8
Incr Delay (d2), s/veh	8.1	0.0	6.2	16.3	0.0	3.6	6.9	3.7	0.0	7.1	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.6	4.3	0.0	2.4	4.2	30.3	0.3	2.3	14.6	1.0
LnGrp Delay(d),s/veh	64.5	0.0	58.1	75.6	0.0	54.4	26.5	20.2	6.6	37.7	13.5	8.0
LnGrp LOS	E		E	E		D	C	C	A	D	B	A
Approach Vol, veh/h		184			168			3268			2252	
Approach Delay, s/veh		61.2			67.0			20.3			14.2	
Approach LOS		E			E			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	15.0	93.0		22.0	18.0	90.0		22.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	87.0		17.0	13.0	84.0		17.0
Max Q Clear Time (g_c+I1), s	3.9	65.1		19.3	5.4	32.8		15.3
Green Ext Time (p_c), s	0.1	18.6		0.0	0.3	18.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1827	74
Future Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1827	74
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	26	28	33	22	725	47	2450	0	222	1986	80
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	284	306	337	215	713	174	2294	714	214	2447	762
Arrive On Green	0.35	0.35	0.34	0.35	0.35	0.35	0.09	0.60	0.00	0.09	0.48	0.48
Sat Flow, veh/h	711	821	884	850	621	1581	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	0	54	55	0	725	47	2450	0	222	1986	80
Grp Sat Flow(s),veh/h/ln	711	0	1705	1471	0	1581	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.6	0.0	2.9	1.7	0.0	46.0	2.1	60.0	0.0	12.0	44.2	3.7
Cycle Q Clear(g_c), s	18.2	0.0	2.9	4.6	0.0	46.0	2.1	60.0	0.0	12.0	44.2	3.7
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	590	552	0	713	174	2294	714	214	2447	762
V/C Ratio(X)	0.33	0.00	0.09	0.10	0.00	1.02	0.27	1.07	0.00	1.04	0.81	0.10
Avail Cap(c_a), veh/h	276	0	590	552	0	713	174	2294	714	214	2447	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	29.6	29.9	0.0	36.5	31.2	26.6	0.0	59.0	29.4	18.9
Incr Delay (d2), s/veh	3.2	0.0	0.3	0.4	0.0	37.8	3.8	40.0	0.0	71.3	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.4	1.4	0.0	27.5	1.2	36.2	0.0	12.1	21.3	1.7
LnGrp Delay(d),s/veh	39.4	0.0	29.9	30.3	0.0	74.3	35.0	66.6	0.0	130.4	32.4	19.1
LnGrp LOS	D		C	C		F	C	F		F	C	B
Approach Vol, veh/h		146			780			2497			2288	
Approach Delay, s/veh		35.9			71.2			66.0			41.5	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	64.0		50.0	15.0	68.0		50.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	13.0	* 58		45.0	10.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	14.0	62.0		48.0	4.1	46.2		20.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	8.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.1
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1575	178
Future Volume (vph)	54	25	34	91	41	78	129	2181	77	130	1575	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1741	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1741	1583	1681	1770	1583	131	5085	1583	128	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	37	99	45	85	140	2371	84	141	1712	193
RTOR Reduction (vph)	0	0	34	0	0	75	0	0	37	0	0	83
Lane Group Flow (vph)	46	40	3	99	45	10	140	2371	47	141	1712	110
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	14.0	14.0	14.0	70.0	70.0	70.0	73.0	72.0	72.0
Effective Green, g (s)	11.0	11.0	11.0	15.0	15.0	15.0	69.0	72.0	72.0	72.0	74.0	74.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.53	0.55	0.55	0.55	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	142	147	133	193	204	182	220	2816	876	247	2894	901
v/s Ratio Prot	c0.03	0.02		c0.06	0.03		0.06	c0.47		0.06	c0.34	
v/s Ratio Perm			0.00			0.01	0.28		0.03	0.25		0.07
v/c Ratio	0.32	0.27	0.02	0.51	0.22	0.05	0.64	0.84	0.05	0.57	0.59	0.12
Uniform Delay, d1	56.0	55.7	54.6	54.1	52.2	51.2	24.8	24.2	13.3	41.6	18.2	13.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.29	0.12	0.88	1.05	3.66
Incremental Delay, d2	6.0	4.5	0.3	9.4	2.5	0.6	8.6	2.1	0.1	5.3	0.5	0.2
Delay (s)	62.0	60.3	54.9	63.5	54.7	51.7	40.4	9.2	1.7	42.1	19.7	47.6
Level of Service	E	E	D	E	D	D	D	A	A	D	B	D
Approach Delay (s)		59.3			57.4			10.7			23.8	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1442	166
Future Volume (veh/h)	84	17	59	52	34	93	331	2210	62	92	1442	166
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	18	64	57	37	101	360	2402	67	100	1567	180
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	392	321	182	43	118	479	3135	976	201	2332	726
Arrive On Green	0.08	0.21	0.20	0.10	0.10	0.09	0.15	0.41	0.41	0.03	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1311	442	1207	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	91	18	64	57	0	138	360	2402	67	100	1567	180
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1311	0	1650	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.9	1.0	4.5	5.5	0.0	11.0	18.7	53.9	3.4	4.7	38.7	13.3
Cycle Q Clear(g_c), s	5.9	1.0	4.5	5.5	0.0	11.0	18.7	53.9	3.4	4.7	38.7	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	392	321	182	0	161	479	3135	976	201	2332	726
V/C Ratio(X)	0.45	0.05	0.20	0.31	0.00	0.86	0.75	0.77	0.07	0.50	0.67	0.25
Avail Cap(c_a), veh/h	201	392	321	182	0	161	479	3135	976	201	2332	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	47.7	41.9	44.0	56.6	0.0	59.4	49.0	30.8	16.0	33.1	47.0	36.2
Incr Delay (d2), s/veh	7.2	0.2	1.4	4.4	0.0	40.7	10.4	1.8	0.1	8.6	1.6	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(50%),veh/ln	3.3	0.6	2.1	2.2	0.0	6.8	13.9	25.8	1.5	2.8	18.5	6.0
LnGrp Delay(d),s/veh	54.9	42.1	45.4	61.0	0.0	100.2	59.5	32.6	16.1	41.7	48.5	37.0
LnGrp LOS	D	D	D	E		F	E	C	B	D	D	D
Approach Vol, veh/h		173			195			2829			1847	
Approach Delay, s/veh		50.1			88.7			35.7			47.1	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	86.0	15.0	17.0	36.0	65.0		32.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	77.0	12.0	12.0	30.0	* 59		27.0
Max Q Clear Time (g_c+I1), s	6.7	55.9	7.9	13.0	20.7	40.7		6.5
Green Ext Time (p_c), s	0.1	14.1	0.1	0.0	0.9	8.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	42.4
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1348	114
Future Volume (veh/h)	64	16	108	197	76	81	418	2458	210	90	1348	114
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	17	117	214	83	88	454	2672	228	98	1465	124
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	171	145	330	95	101	610	2989	931	186	1786	556
Arrive On Green	0.08	0.09	0.09	0.11	0.11	0.11	0.31	0.59	0.59	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	829	879	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	70	17	117	214	0	171	454	2672	228	98	1465	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1708	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.5	1.1	9.5	14.0	0.0	12.9	25.5	59.8	4.7	2.1	34.4	7.2
Cycle Q Clear(g_c), s	4.5	1.1	9.5	14.0	0.0	12.9	25.5	59.8	4.7	2.1	34.4	7.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	171	145	330	0	196	610	2989	931	186	1786	556
V/C Ratio(X)	0.34	0.10	0.81	0.65	0.00	0.87	0.74	0.89	0.24	0.53	0.82	0.22
Avail Cap(c_a), veh/h	205	171	145	330	0	196	610	2989	931	186	1786	556
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	54.5	58.4	48.0	0.0	57.3	30.7	23.5	3.5	56.5	38.7	29.9
Incr Delay (d2), s/veh	4.5	1.2	36.5	9.5	0.0	38.2	8.0	4.6	0.6	10.3	4.4	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(50%),veh/ln	2.5	0.6	5.6	1.3	0.0	8.2	15.9	29.0	3.5	3.9	16.7	3.3
LnGrp Delay(d),s/veh	53.0	55.7	94.8	57.5	0.0	95.6	38.8	28.1	4.1	66.9	43.1	30.8
LnGrp LOS	D	E	F	E		F	D	C	A	E	D	C
Approach Vol, veh/h		204			385			3354			1687	
Approach Delay, s/veh		77.2			74.4			27.9			43.6	
Approach LOS		E			E			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	16.0	81.0	18.0	16.0	47.0	50.0	15.0	19.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 75	15.0	11.0	42.0	43.0	12.0	14.0
Max Q Clear Time (g_c+I1), s	4.1	61.8	16.0	11.5	27.5	36.4	6.5	14.9
Green Ext Time (p_c), s	0.1	11.1	0.0	0.0	1.5	4.0	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	569	386	449	410	743	131	1062	577	366	427	303
Future Volume (veh/h)	235	569	386	449	410	743	131	1062	577	366	427	303
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	255	618	420	488	446	808	142	1154	627	398	464	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	497	1123	469	483	687	242	945	1145	310	1081	484
Arrive On Green	0.14	0.27	0.27	0.14	0.26	0.26	0.14	0.27	0.27	0.17	0.31	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	2787	1774	3539	1583
Grp Volume(v), veh/h	255	618	420	488	446	808	142	1154	627	398	464	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1393	1774	1770	1583
Q Serve(g_s), s	18.7	34.7	0.0	17.7	30.3	33.7	9.8	34.7	7.5	22.7	13.6	0.0
Cycle Q Clear(g_c), s	18.7	34.7	0.0	17.7	30.3	33.7	9.8	34.7	7.5	22.7	13.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	255	497	1123	469	483	687	242	945	1145	310	1081	484
V/C Ratio(X)	1.00	1.24	0.37	1.04	0.92	1.18	0.59	1.22	0.55	1.28	0.43	0.00
Avail Cap(c_a), veh/h	255	497	1123	469	483	687	242	945	1145	310	1081	484
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	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	55.6	47.6	27.3	56.2	46.9	36.8	52.7	47.7	10.5	53.7	36.1	0.0
Incr Delay (d2), s/veh	56.2	125.5	1.0	52.8	25.8	94.1	10.1	109.3	1.9	150.5	1.2	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(50%),veh/ln	13.1	35.1	5.4	11.8	19.1	42.5	5.4	31.3	4.5	24.0	6.8	0.0
LnGrp Delay(d),s/veh	111.8	173.1	28.2	108.9	72.7	130.9	62.8	156.9	12.4	204.1	37.3	0.0
LnGrp LOS	F	F	C	F	E	F	E	F	B	F	D	
Approach Vol, veh/h		1293			1742			1923			862	
Approach Delay, s/veh		114.0			109.8			102.9			114.4	
Approach LOS		F			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	23.0	40.0	23.0	44.0	24.0	39.0	28.0	39.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 34	* 17	* 38	* 18	* 33	* 22	* 33
Max Q Clear Time (g_c+I1), s	19.7	36.7	11.8	15.6	20.7	35.7	24.7	36.7
Green Ext Time (p_c), s	0.0	0.0	0.2	1.9	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	109.1
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1289	777	245	1158	43	362	25	90	90	8	82
Future Volume (vph)	124	1289	777	245	1158	43	362	25	90	90	8	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5058		1681	1696	1583		1781	1583
Flt Permitted	0.13	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	249	5085	1583	149	5058		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	1401	845	266	1259	47	393	27	98	98	9	89
RTOR Reduction (vph)	0	0	540	0	3	0	0	0	74	0	0	79
Lane Group Flow (vph)	135	1401	306	266	1303	0	208	212	24	0	107	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	56.0	45.0	45.0	69.0	53.0		31.0	31.0	31.0		14.0	14.0
Effective Green, g (s)	58.0	47.0	47.0	70.0	55.0		32.0	32.0	32.0		15.0	15.0
Actuated g/C Ratio	0.45	0.36	0.36	0.54	0.42		0.25	0.25	0.25		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	251	1838	572	329	2139		413	417	389		205	182
v/s Ratio Prot	0.05	0.28		c0.12	0.26		0.12	c0.13			c0.06	
v/s Ratio Perm	0.19		0.19	c0.31					0.02			0.01
v/c Ratio	0.54	0.76	0.53	0.81	0.61		0.50	0.51	0.06		0.52	0.06
Uniform Delay, d1	23.0	36.6	32.8	36.4	29.1		42.2	42.2	37.5		54.1	51.2
Progression Factor	0.88	0.93	1.60	1.00	1.00		1.22	1.22	4.95		1.00	1.00
Incremental Delay, d2	5.9	2.2	2.6	18.9	1.3		3.0	3.0	0.2		9.2	0.6
Delay (s)	26.2	36.3	55.1	55.3	30.4		54.4	54.6	186.0		63.3	51.8
Level of Service	C	D	E	E	C		D	D	F		E	D
Approach Delay (s)		42.4			34.7			79.4			58.1	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	669	360	50	473	4	1
Future Volume (veh/h)	669	360	50	473	4	1
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		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	1863	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	727	391	54	514	4	1
Adj No. of Lanes	1	0	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	790	425	82	691	180	45
Arrive On Green	0.69	0.69	0.69	0.69	0.15	0.15
Sat Flow, veh/h	1141	614	31	999	1168	292
Grp Volume(v), veh/h	0	1118	568	0	6	0
Grp Sat Flow(s),veh/h/ln	0	1754	1030	0	1753	0
Q Serve(g_s), s	0.0	35.1	9.9	0.0	0.2	0.0
Cycle Q Clear(g_c), s	0.0	35.1	45.0	0.0	0.2	0.0
Prop In Lane		0.35	0.10		0.67	0.17
Lane Grp Cap(c), veh/h	0	1215	773	0	270	0
V/C Ratio(X)	0.00	0.92	0.73	0.00	0.02	0.00
Avail Cap(c_a), veh/h	0	1215	773	0	270	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	8.5	8.5	0.0	23.3	0.0
Incr Delay (d2), s/veh	0.0	12.7	6.1	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.7	5.7	0.0	0.1	0.0
LnGrp Delay(d),s/veh	0.0	21.1	14.6	0.0	23.5	0.0
LnGrp LOS		C	B		C	
Approach Vol, veh/h	1118			568	6	
Approach Delay, s/veh	21.1			14.6	23.5	
Approach LOS	C			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		15.0		50.0				50.0
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		10.0		45.0				45.0
Max Q Clear Time (g_c+I1), s		2.2		37.1				47.0
Green Ext Time (p_c), s		0.0		5.3				0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	62	60	250	26	2758	316	461	3710
v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.19
Control Delay	55.0	63.9	63.4	5.2	32.3	6.7	0.1	90.2	112.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	63.9	63.4	5.2	32.3	6.7	0.1	90.2	112.8
Queue Length 50th (ft)	3	52	50	0	19	126	0	202	~1381
Queue Length 95th (ft)	15	103	100	35	m17	m110	m0	#310	#1448
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	155	155	155	913	149	2855	1130	475	3129
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	92	86	385	1005	368	2242	623	850	1780	1189
v/c Ratio	1.01	0.17	0.20	0.68	1.35	1.30	1.13	0.78	1.30	0.70	1.23
Control Delay	108.0	49.0	2.3	50.2	193.4	194.3	87.1	15.4	166.8	6.3	124.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	49.0	2.3	50.2	193.4	194.3	87.1	15.4	166.8	6.3	124.7
Queue Length 50th (ft)	~115	35	0	112	~525	~203	~824	303	~468	190	~1058
Queue Length 95th (ft)	#187	63	10	150	#662	m#250	#901	m180	m#356	m136	m#919
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	372	536	431	564	745	282	1983	797	652	2530	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.17	0.20	0.68	1.35	1.30	1.13	0.78	1.30	0.70	1.23

Intersection Summary

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	96	100	68	157	3083	28	83	2092	77
v/c Ratio	0.49	0.29	0.64	0.25	0.68	0.89	0.03	0.46	0.62	0.07
Control Delay	62.0	5.6	72.5	15.4	36.6	7.5	0.0	39.3	1.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Total Delay	62.0	5.6	72.5	15.4	36.6	8.7	0.0	39.3	1.1	0.1
Queue Length 50th (ft)	70	0	81	3	81	219	0	20	8	0
Queue Length 95th (ft)	127	26	#157	47	m81	m191	m0	m56	10	m0
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	179	330	156	276	230	3481	1102	180	3363	1073
Starvation Cap Reductn	0	0	0	0	0	206	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.29	0.64	0.25	0.68	0.94	0.03	0.46	0.62	0.07

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	54	55	725	47	2450	17	222	1986	80
v/c Ratio	0.19	0.09	0.10	0.89	0.26	1.04	0.02	1.00	0.83	0.10
Control Delay	30.6	16.3	28.9	42.0	25.1	50.9	0.4	98.8	25.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.3	28.9	42.0	25.1	50.9	0.4	98.8	25.1	3.6
Queue Length 50th (ft)	54	14	31	501	14	~794	0	~141	496	3
Queue Length 95th (ft)	97	44	62	#768	m22	#890	m0	#316	575	m8
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	475	621	557	813	180	2346	766	221	2386	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.10	0.89	0.26	1.04	0.02	1.00	0.83	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	40	37	99	45	85	140	2371	84	141	1712	193
v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.63	0.84	0.09	0.57	0.59	0.20
Control Delay	62.7	60.9	1.0	64.2	55.3	2.0	39.4	9.3	0.3	42.3	19.8	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	60.9	1.0	64.2	55.3	2.0	39.4	9.3	0.3	42.3	19.8	6.6
Queue Length 50th (ft)	38	33	0	84	36	0	48	378	0	52	212	25
Queue Length 95th (ft)	83	74	0	147	77	0	m90	346	m1	m76	283	m54
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	142	147	279	193	204	323	221	2816	925	248	2894	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	0.63	0.84	0.09	0.57	0.59	0.20

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	18	64	57	138	360	2402	67	100	1567	180
v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.76	0.78	0.07	0.48	0.66	0.21
Control Delay	48.8	40.9	3.0	64.5	33.5	24.5	2.2	0.1	23.2	25.6	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.9	3.0	64.5	33.5	24.5	2.2	0.1	23.2	25.6	7.3
Queue Length 50th (ft)	64	12	0	46	43	197	41	0	35	488	29
Queue Length 95th (ft)	115	34	13	92	113	m225	44	m0	77	535	74
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	214	401	408	139	241	474	3090	988	210	2386	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.76	0.78	0.07	0.48	0.66	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	17	117	214	171	454	2672	228	98	1465	124
v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.83	0.20
Control Delay	44.6	55.6	9.6	56.4	65.7	42.8	18.9	0.7	45.4	34.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	55.6	9.6	56.4	65.7	42.8	18.9	0.7	45.4	34.0	9.3
Queue Length 50th (ft)	48	13	0	159	115	292	444	0	72	483	52
Queue Length 95th (ft)	90	38	38	243	#223	m306	m408	m0	m107	533	m85
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	218	171	275	313	227	617	3011	1030	180	1760	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.89	0.22	0.54	0.83	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	255	618	420	488	446	808	142	1154	627	398	464	329
v/c Ratio	1.00	1.24	0.32	1.04	0.93	0.98	0.59	1.22	0.51	1.29	0.43	0.46
Control Delay	104.4	163.9	13.0	90.2	55.4	59.8	63.8	150.5	12.9	179.3	13.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.4	163.9	13.0	90.2	55.4	59.8	63.8	150.5	12.9	179.3	13.2	1.5
Queue Length 50th (ft)	~198	~657	65	~223	329	683	114	~627	92	~408	38	1
Queue Length 95th (ft)	#390	#893	102	#339	#566	#909	187	#765	126	m#563	m60	m0
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	254	497	1333	467	482	821	240	944	1223	309	1080	711
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	1.24	0.32	1.04	0.93	0.98	0.59	1.22	0.51	1.29	0.43	0.46

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	135	1401	845	266	1306	208	212	98	107	89
v/c Ratio	0.53	0.76	0.76	0.81	0.61	0.50	0.51	0.19	0.52	0.28
Control Delay	21.0	36.5	7.2	51.7	30.5	55.2	55.4	5.9	64.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	36.5	7.2	51.7	30.5	55.2	55.4	5.9	64.0	2.5
Queue Length 50th (ft)	48	360	70	164	307	190	194	5	86	0
Queue Length 95th (ft)	m62	m347	m70	#299	357	m274	m278	m13	149	2
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	253	1838	1111	330	2143	413	417	503	205	316
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.76	0.76	0.81	0.61	0.50	0.51	0.19	0.52	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
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m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	1118	568	5
v/c Ratio	0.89	0.72	0.02
Control Delay	23.2	12.8	22.0
Queue Delay	0.0	0.0	0.0
Total Delay	23.2	12.8	22.0
Queue Length 50th (ft)	707	110	1
Queue Length 95th (ft)	#943	235	10
Internal Link Dist (ft)	728	215	133
Turn Bay Length (ft)			
Base Capacity (vph)	1258	789	269
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.72	0.02

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	13	0	256	18	609	20	3393	593	779	2807	23
Future Volume (vph)	3	13	0	256	18	609	20	3393	593	779	2807	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	14	0	269	19	641	21	3572	624	820	2955	24
RTOR Reduction (vph)	0	0	0	0	0	123	0	0	67	0	1	0
Lane Group Flow (vph)	0	17	0	134	154	518	21	3572	557	820	2978	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		12.0	12.0	42.0	10.0	107.0	119.0	30.0	127.0	
Effective Green, g (s)		11.0		13.0	13.0	44.0	11.0	109.0	121.0	31.0	129.0	
Actuated g/C Ratio		0.06		0.07	0.07	0.24	0.06	0.61	0.67	0.17	0.72	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		112		121	122	743	108	3079	1064	591	3639	
v/s Ratio Prot		c0.01		0.08	c0.09	0.12	0.01	c0.70	0.04	c0.24	0.59	
v/s Ratio Perm						0.07			0.31			
v/c Ratio		0.15		1.11	1.26	0.70	0.19	1.16	0.52	1.39	0.82	
Uniform Delay, d1		80.1		83.5	83.5	61.9	80.3	35.5	14.9	74.5	17.5	
Progression Factor		1.00		1.00	1.00	1.00	0.65	0.20	0.29	1.00	1.00	
Incremental Delay, d2		2.9		113.6	167.9	5.4	0.4	72.4	0.2	184.7	2.2	
Delay (s)		82.9		197.1	251.4	67.3	52.8	79.7	4.5	259.2	19.6	
Level of Service		F		F	F	E	D	E	A	F	B	
Approach Delay (s)		82.9			116.5			68.4			71.3	
Approach LOS		F			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1038	655	372	1224	280	999	177	1969	650	714	1917	432
Future Volume (vph)	1038	655	372	1224	280	999	177	1969	650	714	1917	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	2.0
Lane Util. Factor	0.94	0.95	1.00	0.94	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.85		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	4990	2641		3433	5085	1538	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	4990	2641		3433	5085	1538	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1128	712	404	1330	304	1086	192	2140	707	776	2084	470
RTOR Reduction (vph)	0	0	49	0	190	0	0	0	348	0	0	25
Lane Group Flow (vph)	1128	712	355	1330	1200	0	192	2140	359	776	2084	445
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Perm	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	27.0	36.0	47.0	48.0	57.0		11.0	52.0	52.0	27.0	68.0	95.0
Effective Green, g (s)	28.0	37.0	49.0	49.0	58.0		12.0	54.0	54.0	28.0	70.0	99.0
Actuated g/C Ratio	0.16	0.21	0.27	0.27	0.32		0.07	0.30	0.30	0.16	0.39	0.55
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	4.0
Lane Grp Cap (vph)	776	727	457	1358	850		228	1525	461	534	1977	870
v/s Ratio Prot	c0.23	0.20	0.05	0.27	c0.45		0.06	c0.42		c0.23	0.41	0.08
v/s Ratio Perm			0.17						0.23			0.20
v/c Ratio	1.45	0.98	0.78	0.98	1.75dr		0.84	1.40	0.78	1.45	1.05	0.51
Uniform Delay, d1	76.0	71.1	60.5	65.0	61.0		83.1	63.0	57.5	76.0	55.0	25.4
Progression Factor	1.00	1.00	1.00	0.67	0.50		0.91	0.63	1.21	0.85	0.79	0.38
Incremental Delay, d2	211.3	28.7	12.3	16.3	190.1		19.6	183.9	7.6	209.6	31.7	1.2
Delay (s)	287.3	99.8	72.7	60.0	220.9		94.8	223.6	77.2	274.1	74.9	10.9
Level of Service	F	F	E	E	F		F	F	E	F	E	B
Approach Delay (s)		189.2			142.2			181.4			112.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	153.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	137.6%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	45	189	5	28	61	2730	37	54	3436	24
Future Volume (veh/h)	38	0	45	189	5	28	61	2730	37	54	3436	24
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	0	49	205	5	30	66	2967	40	59	3735	26
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	0	229	198	33	200	148	3701	1152	155	3701	1152
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.06	0.73	0.73	0.05	0.73	0.73
Sat Flow, veh/h	1368	0	1583	1351	231	1387	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	41	0	49	205	0	35	66	2967	40	59	3735	26
Grp Sat Flow(s),veh/h/ln	1368	0	1583	1351	0	1618	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.9	0.0	4.9	21.1	0.0	3.4	2.3	68.6	1.3	1.5	131.0	0.8
Cycle Q Clear(g_c), s	8.3	0.0	4.9	26.0	0.0	3.4	2.3	68.6	1.3	1.5	131.0	0.8
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	0	229	198	0	234	148	3701	1152	155	3701	1152
V/C Ratio(X)	0.19	0.00	0.21	1.04	0.00	0.15	0.44	0.80	0.03	0.38	1.01	0.02
Avail Cap(c_a), veh/h	212	0	229	198	0	234	148	3701	1152	155	3701	1152
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	71.0	0.0	68.4	81.6	0.0	67.7	54.9	16.0	6.8	37.8	24.5	6.8
Incr Delay (d2), s/veh	2.0	0.0	2.1	73.5	0.0	1.4	9.4	1.9	0.1	7.0	17.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	2.3	13.9	0.0	1.6	3.5	32.5	0.6	2.4	66.5	0.4
LnGrp Delay(d),s/veh	73.0	0.0	70.6	155.2	0.0	69.1	64.2	17.9	6.9	44.8	41.6	6.8
LnGrp LOS	E		E	F		E	E	B	A	D	F	A
Approach Vol, veh/h		90			240			3073			3820	
Approach Delay, s/veh		71.7			142.7			18.8			41.4	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	135.0		30.0	15.0	135.0		30.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	129.0		25.0	12.0	129.0		25.0
Max Q Clear Time (g_c+I1), s	3.5	70.6		28.0	4.3	133.0		10.3
Green Ext Time (p_c), s	0.1	37.3		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	29	56	16	482	83	2296	34	566	2994	111
Future Volume (veh/h)	49	39	29	56	16	482	83	2296	34	566	2994	111
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	51	41	30	58	17	502	86	2392	0	590	3119	116
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	88	64	88	18	684	170	2529	787	635	3946	1229
Arrive On Green	0.09	0.09	0.08	0.09	0.09	0.09	0.06	0.50	0.00	0.67	1.00	1.00
Sat Flow, veh/h	879	1001	732	607	202	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	51	0	71	75	0	502	86	2392	0	590	3119	116
Grp Sat Flow(s),veh/h/ln	879	0	1733	809	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	7.1	8.9	0.0	0.0	5.0	81.7	0.0	47.2	0.0	0.0
Cycle Q Clear(g_c), s	16.0	0.0	7.1	16.0	0.0	0.0	5.0	81.7	0.0	47.2	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	0	152	106	0	684	170	2529	787	635	3946	1229
V/C Ratio(X)	1.30	0.00	0.47	0.71	0.00	0.73	0.51	0.95	0.00	0.93	0.79	0.09
Avail Cap(c_a), veh/h	39	0	152	106	0	684	170	2529	787	635	3946	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	91.5	0.0	79.7	87.0	0.0	43.3	32.7	43.7	0.0	26.4	0.0	0.0
Incr Delay (d2), s/veh	243.1	0.0	10.0	33.3	0.0	6.9	10.3	9.1	0.0	22.0	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	3.9	4.8	0.0	22.4	2.9	40.2	0.0	28.6	0.6	0.1
LnGrp Delay(d),s/veh	334.6	0.0	89.7	120.3	0.0	50.2	43.1	52.7	0.0	48.5	1.7	0.2
LnGrp LOS	F		F	F		D	D	D		D	A	A
Approach Vol, veh/h		122			577			2478			3825	
Approach Delay, s/veh		192.1			59.3			52.4			8.9	
Approach LOS		F			E			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	68.0	95.0		20.0	17.0	146.0		20.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	62.0	* 89		15.0	12.0	137.0		15.0
Max Q Clear Time (g_c+I1), s	49.2	83.7		18.0	7.0	2.0		18.0
Green Ext Time (p_c), s	2.1	4.5		0.0	0.1	66.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	42	76	172	23	70	54	2179	129	176	2789	113
Future Volume (vph)	165	42	76	172	23	70	54	2179	129	176	2789	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1718	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.97	1.00	0.95	1.00	1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1681	1718	1583	1681	1770	1583	85	5085	1583	88	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	46	83	187	25	76	59	2368	140	191	3032	123
RTOR Reduction (vph)	0	0	76	0	0	66	0	0	63	0	0	36
Lane Group Flow (vph)	109	116	7	187	25	10	59	2368	77	191	3032	87
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	15.0	15.0	15.0	23.0	23.0	23.0	100.0	97.0	97.0	111.0	111.0	111.0
Effective Green, g (s)	16.0	16.0	16.0	24.0	24.0	24.0	99.0	99.0	99.0	110.0	113.0	113.0
Actuated g/C Ratio	0.09	0.09	0.09	0.13	0.13	0.13	0.55	0.55	0.55	0.61	0.63	0.63
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	149	152	140	224	236	211	149	2796	870	287	3192	993
v/s Ratio Prot	0.06	c0.07		c0.11	0.01		0.02	c0.47		0.09	c0.60	
v/s Ratio Perm			0.00			0.01	0.19		0.05	0.32		0.06
v/c Ratio	0.73	0.76	0.05	0.83	0.11	0.05	0.40	0.85	0.09	0.67	0.95	0.09
Uniform Delay, d1	79.9	80.1	75.1	76.1	68.6	68.0	73.4	34.1	19.2	55.0	30.9	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.41	0.47	1.05	0.62	0.36
Incremental Delay, d2	26.9	29.8	0.7	29.2	0.9	0.4	4.3	1.9	0.1	7.6	5.5	0.1
Delay (s)	106.8	110.0	75.8	105.2	69.5	68.5	45.1	15.8	9.1	65.4	24.8	4.9
Level of Service	F	F	E	F	E	E	D	B	A	E	C	A
Approach Delay (s)		99.6			92.4			16.1			26.4	
Approach LOS		F			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	56	281	121	21	168	169	1968	156	267	2643	127
Future Volume (veh/h)	226	56	281	121	21	168	169	1968	156	267	2643	127
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	246	61	305	132	23	183	184	2139	170	290	2873	138
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	476	396	152	20	159	226	2599	809	414	3023	941
Arrive On Green	0.12	0.26	0.25	0.11	0.11	0.11	0.17	1.00	1.00	0.33	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1012	180	1431	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	246	61	305	132	0	206	184	2139	170	290	2873	138
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1012	0	1610	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	22.0	4.5	32.2	20.0	0.0	20.0	9.6	0.0	0.0	11.5	0.0	0.0
Cycle Q Clear(g_c), s	22.0	4.5	32.2	20.0	0.0	20.0	9.6	0.0	0.0	11.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	257	476	396	152	0	179	226	2599	809	414	3023	941
V/C Ratio(X)	0.96	0.13	0.77	0.87	0.00	1.15	0.81	0.82	0.21	0.70	0.95	0.15
Avail Cap(c_a), veh/h	257	476	396	152	0	179	226	2599	809	414	3023	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	62.7	51.6	62.7	81.5	0.0	80.4	28.9	0.0	0.0	15.6	0.0	0.0
Incr Delay (d2), s/veh	46.3	0.6	13.5	44.1	0.0	113.9	26.3	3.1	0.6	9.5	8.3	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(50%),veh/ln	4.8	2.4	15.5	8.4	0.0	14.6	10.2	0.7	0.1	7.0	2.3	0.1
LnGrp Delay(d),s/veh	109.0	52.1	76.2	125.6	0.0	194.3	55.1	3.1	0.6	25.2	8.3	0.3
LnGrp LOS	F	D	E	F		F	E	A	A	C	A	A
Approach Vol, veh/h		612			338			2493			3301	
Approach Delay, s/veh		87.0			167.5			6.8			9.5	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	34.0	96.0	26.0	24.0	19.0	111.0		50.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	31.0	90.0	23.0	19.0	16.0	105.0		45.0
Max Q Clear Time (g_c+I1), s	13.5	2.0	24.0	22.0	11.6	2.0		34.2
Green Ext Time (p_c), s	0.9	21.5	0.0	0.0	0.2	46.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	91	384	275	41	72	293	1985	223	102	2728	216
Future Volume (veh/h)	236	91	384	275	41	72	293	1985	223	102	2728	216
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	99	417	299	45	78	318	2158	242	111	2965	235
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	247	210	251	54	94	275	3062	953	218	2866	892
Arrive On Green	0.13	0.13	0.13	0.08	0.09	0.08	0.13	0.60	0.60	0.15	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1774	613	1062	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	257	99	417	299	0	123	318	2158	242	111	2965	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1675	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	23.0	8.8	24.0	15.0	0.0	13.1	24.0	53.1	8.1	1.5	102.0	0.0
Cycle Q Clear(g_c), s	23.0	8.8	24.0	15.0	0.0	13.1	24.0	53.1	8.1	1.5	102.0	0.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	247	210	251	0	148	275	3062	953	218	2866	892
V/C Ratio(X)	0.95	0.40	1.99	1.19	0.00	0.83	1.16	0.70	0.25	0.51	1.03	0.26
Avail Cap(c_a), veh/h	272	247	210	251	0	148	275	3062	953	218	2866	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	66.4	71.9	78.5	76.2	0.0	81.5	65.6	24.9	6.6	61.0	0.0	0.0
Incr Delay (d2), s/veh	42.4	4.8	460.4	118.5	0.0	39.3	103.3	1.4	0.6	8.2	26.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.9	37.3	8.3	0.0	7.7	21.6	25.2	4.9	5.3	7.1	0.2
LnGrp Delay(d),s/veh	108.7	76.7	538.9	194.7	0.0	120.8	168.9	26.3	7.2	69.2	26.6	0.7
LnGrp LOS	F	E	F	F		F	F	C	A	E	F	A
Approach Vol, veh/h		773			422			2718			3311	
Approach Delay, s/veh		336.7			173.2			41.3			26.2	
Approach LOS		F			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	113.0	19.0	28.0	28.0	106.0	27.0	20.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	15.0	* 1.1E2	16.0	23.0	25.0	99.0	24.0	15.0
Max Q Clear Time (g_c+I1), s	3.5	55.1	17.0	26.0	26.0	104.0	25.0	15.1
Green Ext Time (p_c), s	0.2	20.7	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	73.7
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	519	493	609	629	1095	136	806	543	267	1058	429
Future Volume (veh/h)	287	519	493	609	629	1095	136	806	543	267	1058	429
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	309	558	530	655	676	1177	146	867	584	287	1138	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	2	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	556	1090	511	576	874	165	702	982	431	1233	552
Arrive On Green	0.14	0.30	0.30	0.15	0.31	0.31	0.09	0.20	0.20	0.24	0.35	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	2787	1774	3539	1583
Grp Volume(v), veh/h	309	558	530	655	676	1177	146	867	584	287	1138	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1393	1774	1770	1583
Q Serve(g_s), s	24.7	53.7	9.0	26.7	55.7	55.7	14.6	35.7	12.5	26.3	55.6	0.0
Cycle Q Clear(g_c), s	24.7	53.7	9.0	26.7	55.7	55.7	14.6	35.7	12.5	26.3	55.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	556	1090	511	576	874	165	702	982	431	1233	552
V/C Ratio(X)	1.27	1.00	0.49	1.28	1.17	1.35	0.89	1.24	0.59	0.67	0.92	0.00
Avail Cap(c_a), veh/h	243	556	1090	511	576	874	165	702	982	431	1233	552
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	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	77.7	63.1	41.2	76.7	62.1	40.3	80.7	72.2	19.2	61.6	56.3	0.0
Incr Delay (d2), s/veh	149.5	39.2	1.6	141.7	95.1	163.4	45.4	117.9	2.7	7.9	12.8	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(50%),veh/ln	22.2	33.7	9.4	22.7	43.9	83.1	9.3	28.9	6.1	13.9	29.4	0.0
LnGrp Delay(d),s/veh	227.1	102.4	42.8	218.4	157.2	203.7	126.1	190.1	21.8	69.5	69.1	0.0
LnGrp LOS	F	F	D	F	F	F	F	F	C	E	E	
Approach Vol, veh/h		1397			2508			1597			1425	
Approach Delay, s/veh		107.3			195.0			122.7			69.2	
Approach LOS		F			F			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	32.0	59.0	22.0	67.0	30.0	61.0	49.0	40.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 26	* 53	* 16	* 61	* 24	* 55	* 43	* 34
Max Q Clear Time (g_c+I1), s	28.7	55.7	16.6	57.6	26.7	57.7	28.3	37.7
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.0	0.9	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	134.8
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1194	422	194	1617	11	693	4	277	35	6	24
Future Volume (vph)	25	1194	422	194	1617	11	693	4	277	35	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1686	1583		1787	1583
Flt Permitted	0.13	1.00	1.00	0.13	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	248	5085	1583	248	5080		1681	1686	1583		1787	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1298	459	211	1758	12	753	4	301	38	7	26
RTOR Reduction (vph)	0	0	301	0	1	0	0	0	231	0	0	23
Lane Group Flow (vph)	27	1298	158	211	1769	0	376	381	70	0	45	3
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	39.0	29.0	29.0	39.0	29.0		20.0	20.0	20.0		10.0	10.0
Effective Green, g (s)	41.0	31.0	31.0	41.0	31.0		21.0	21.0	21.0		11.0	11.0
Actuated g/C Ratio	0.46	0.34	0.34	0.46	0.34		0.23	0.23	0.23		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	299	1751	545	299	1749		392	393	369		218	193
v/s Ratio Prot	0.01	0.26		c0.09	c0.35		0.22	c0.23			c0.03	
v/s Ratio Perm	0.03		0.10	0.23					0.04			0.00
v/c Ratio	0.09	0.74	0.29	0.71	1.01		0.96	0.97	0.19		0.21	0.02
Uniform Delay, d1	17.4	26.0	21.5	17.7	29.5		34.1	34.2	27.7		35.6	34.7
Progression Factor	0.77	0.92	2.23	1.00	1.00		0.88	0.88	0.84		1.00	1.00
Incremental Delay, d2	0.5	2.4	1.1	13.1	24.4		29.4	31.4	0.8		2.1	0.2
Delay (s)	13.9	26.2	49.0	30.9	53.9		59.2	61.3	24.2		37.7	34.9
Level of Service	B	C	D	C	D		E	E	C		D	C
Approach Delay (s)		31.9			51.5			50.0			36.7	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	495	126	17	692	280	39
Future Volume (veh/h)	495	126	17	692	280	39
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		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	1863	1900	1900	1863	1863	1900
Adj Flow Rate, veh/h	538	137	18	752	304	42
Adj No. of Lanes	1	0	0	1	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	860	219	52	1090	443	61
Arrive On Green	0.60	0.60	0.60	0.60	0.29	0.29
Sat Flow, veh/h	1433	365	19	1817	1532	212
Grp Volume(v), veh/h	0	675	770	0	347	0
Grp Sat Flow(s),veh/h/ln	0	1798	1836	0	1749	0
Q Serve(g_s), s	0.0	21.6	0.0	0.0	15.8	0.0
Cycle Q Clear(g_c), s	0.0	21.6	25.4	0.0	15.8	0.0
Prop In Lane		0.20	0.02		0.88	0.12
Lane Grp Cap(c), veh/h	0	1079	1142	0	505	0
V/C Ratio(X)	0.00	0.63	0.67	0.00	0.69	0.00
Avail Cap(c_a), veh/h	0	1079	1142	0	505	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	11.5	12.3	0.0	28.4	0.0
Incr Delay (d2), s/veh	0.0	2.7	3.2	0.0	7.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.5	13.8	0.0	8.7	0.0
LnGrp Delay(d),s/veh	0.0	14.3	15.5	0.0	35.8	0.0
LnGrp LOS		B	B		D	
Approach Vol, veh/h	675			770	347	
Approach Delay, s/veh	14.3			15.5	35.8	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		31.0		59.0				59.0
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		26.0		54.0				54.0
Max Q Clear Time (g_c+I1), s		17.8		23.6				27.4
Green Ext Time (p_c), s		0.7		5.4				6.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	134	154	641	21	3572	624	820	2979
v/c Ratio	0.15	1.11	1.26	0.74	0.19	1.16	0.55	1.39	0.82
Control Delay	83.5	184.4	229.1	50.4	53.2	85.0	1.7	235.4	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	184.4	229.1	50.4	53.2	85.0	1.7	235.4	19.9
Queue Length 50th (ft)	19	~188	~238	303	23	~1846	50	~660	824
Queue Length 95th (ft)	49	#350	#411	388	m16	m224	m19	#796	868
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	112	121	122	862	108	3079	1138	591	3641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	1.11	1.26	0.74	0.19	1.16	0.55	1.39	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1128	712	404	1330	1390	192	2140	707	776	2084	470
v/c Ratio	1.45	0.98	0.80	0.98	1.75dr	0.84	1.40	0.87	1.45	1.05	0.52
Control Delay	260.1	98.5	62.2	60.1	179.5	94.1	216.3	28.6	253.0	73.4	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7	14.8	0.0	0.0
Total Delay	260.1	98.5	62.2	60.1	179.6	94.1	216.3	48.3	267.8	73.4	6.9
Queue Length 50th (ft)	~641	446	380	532	~1002	113	~1260	626	~646	~984	126
Queue Length 95th (ft)	#736	#583	527	#648	#1123	m#157	#1312	#798	m#760	m#1039	m154
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	776	727	504	1358	1041	228	1525	809	534	1977	903
Starvation Cap Reductn	0	0	0	0	9	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	116	373	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.98	0.80	0.98	1.35	0.84	1.40	1.02	4.82	1.05	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	49	205	35	66	2967	40	59	3735	26
v/c Ratio	0.21	0.17	1.07	0.14	0.44	0.80	0.03	0.45	1.01	0.02
Control Delay	71.1	3.9	153.0	25.2	49.6	5.1	0.0	34.6	41.0	1.2
Queue Delay	0.0	0.0	11.6	0.0	0.0	1.8	0.0	0.0	0.8	0.0
Total Delay	71.1	3.9	164.6	25.2	49.6	6.9	0.0	34.6	41.8	1.2
Queue Length 50th (ft)	43	0	~266	5	31	157	0	14	~1722	0
Queue Length 95th (ft)	86	11	#447	43	m40	182	m0	m15	m1639	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	197	296	192	259	150	3700	1163	130	3700	1163
Starvation Cap Reductn	0	0	0	0	0	539	0	0	0	0
Spillback Cap Reductn	0	9	7	0	0	0	0	0	10	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.17	1.11	0.14	0.44	0.94	0.03	0.45	1.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	71	75	502	86	2392	35	590	3119	116
v/c Ratio	0.54	0.42	0.76	0.66	0.57	0.93	0.04	0.92	0.79	0.09
Control Delay	100.4	68.0	120.3	38.9	34.7	40.0	4.1	45.2	2.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.8	0.0
Total Delay	100.4	68.0	120.3	38.9	34.7	40.5	4.1	45.2	4.4	0.0
Queue Length 50th (ft)	59	62	88	418	39	1093	2	667	135	0
Queue Length 95th (ft)	113	122	#184	559	m63	1132	m5	m654	m126	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	94	169	99	755	150	2570	824	641	3926	1237
Starvation Cap Reductn	0	0	0	0	0	0	0	0	606	0
Spillback Cap Reductn	0	0	0	0	0	33	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.42	0.76	0.66	0.57	0.94	0.04	0.92	0.94	0.09

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	109	116	83	187	25	76	59	2368	140	191	3032	123
v/c Ratio	0.73	0.76	0.35	0.83	0.11	0.25	0.40	0.85	0.15	0.66	0.95	0.12
Control Delay	106.5	109.3	10.2	104.7	70.0	6.2	33.6	16.0	1.4	56.7	25.1	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.5	109.3	10.2	104.7	70.0	6.2	33.6	16.0	1.4	56.7	25.1	1.5
Queue Length 50th (ft)	134	144	0	230	27	0	15	219	0	153	1217	13
Queue Length 95th (ft)	#237	#256	36	#377	63	24	m28	334	m7	m215	1314	m17
Internal Link Dist (ft)		641			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	149	152	234	224	236	300	149	2796	933	288	3192	1029
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.76	0.35	0.83	0.11	0.25	0.40	0.85	0.15	0.66	0.95	0.12

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	61	305	132	206	184	2139	170	290	2873	138
v/c Ratio	0.94	0.13	0.60	0.89	0.61	0.97	0.82	0.19	0.86	0.95	0.14
Control Delay	100.5	52.6	35.0	126.6	22.4	124.4	23.5	0.9	88.8	11.3	0.3
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	21.5	0.0
Total Delay	100.5	52.6	35.1	126.6	22.4	124.4	23.5	0.9	88.8	32.9	0.3
Queue Length 50th (ft)	254	56	165	157	29	173	857	8	278	208	0
Queue Length 95th (ft)	#418	100	278	#295	123	m#332	918	m12	m302	661	m1
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	476	507	148	338	190	2599	876	337	3022	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	7	0	0	0	0	0	0	276	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.13	0.61	0.89	0.61	0.97	0.82	0.19	0.86	1.05	0.14

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	99	417	299	123	318	2158	242	111	2965	235
v/c Ratio	0.94	0.40	1.06	1.14	0.67	1.14	0.70	0.23	0.59	1.04	0.25
Control Delay	102.7	76.8	94.6	155.7	72.7	129.1	20.3	0.5	41.9	39.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0
Total Delay	102.7	76.8	94.6	155.7	72.7	129.1	20.3	0.5	41.9	42.0	0.6
Queue Length 50th (ft)	274	109	~306	~380	99	~385	580	0	59	~1368	0
Queue Length 95th (ft)	#435	176	#536	#474	#180	m282	m345	m0	m71	#1423	m1
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	272	248	395	262	184	278	3079	1054	188	2853	956
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	16	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.40	1.06	1.14	0.67	1.14	0.70	0.23	0.59	1.05	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	558	530	655	676	1177	146	867	584	287	1138	461
v/c Ratio	1.28	1.01	0.43	1.29	1.17	1.23	0.89	1.24	0.50	0.67	0.92	0.64
Control Delay	200.6	78.3	13.1	182.0	126.4	143.5	124.9	175.0	13.0	48.9	35.2	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	200.6	78.3	13.1	182.0	126.4	143.5	124.9	175.0	13.0	48.9	35.2	6.9
Queue Length 50th (ft)	~464	~572	81	~505	~949	~1489	174	~664	78	279	621	150
Queue Length 95th (ft)	#662	#914	108	m#509	m#954	m#1498	#318	#804	113	m261	m566	m133
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	242	555	1227	509	576	960	164	701	1162	429	1232	720
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.28	1.01	0.43	1.29	1.17	1.23	0.89	1.24	0.50	0.67	0.92	0.64

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	27	1298	459	211	1770	376	381	301	45	26
v/c Ratio	0.09	0.74	0.54	0.70	1.01	0.96	0.97	0.50	0.21	0.08
Control Delay	9.0	26.3	5.6	30.1	54.7	61.8	64.0	5.4	38.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	26.3	5.6	30.1	54.7	61.8	64.0	5.4	38.2	0.5
Queue Length 50th (ft)	7	282	49	63	~373	232	234	23	23	0
Queue Length 95th (ft)	m11	m293	m76	#157	#489	#406	#412	m43	56	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	301	1751	846	301	1750	392	393	600	218	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.74	0.54	0.70	1.01	0.96	0.97	0.50	0.21	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	675	770	346
v/c Ratio	0.62	0.70	0.68
Control Delay	6.0	16.9	35.3
Queue Delay	0.0	0.0	0.0
Total Delay	6.0	16.9	35.3
Queue Length 50th (ft)	82	278	169
Queue Length 95th (ft)	89	415	266
Internal Link Dist (ft)	779	215	133
Turn Bay Length (ft)			
Base Capacity (vph)	1097	1096	512
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.70	0.68

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3399	10
Future Volume (vph)	1	3	0	112	0	230	24	2537	291	424	3399	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Flt Permitted		0.99		0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1840		1681	1681	2787	1770	5085	1583	3433	5083	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	3	0	122	0	250	26	2758	316	461	3695	11
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	97	0	0	0
Lane Group Flow (vph)	0	4	0	62	60	58	26	2758	219	461	3706	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		11.0	11.0	28.0	10.0	71.0	82.0	17.0	78.0	
Effective Green, g (s)		11.0		12.0	12.0	30.0	11.0	73.0	84.0	18.0	80.0	
Actuated g/C Ratio		0.08		0.09	0.09	0.23	0.08	0.56	0.65	0.14	0.62	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		155		155	155	728	149	2855	1022	475	3128	
v/s Ratio Prot		c0.00		c0.04	0.04	0.01	0.01	c0.54	0.02	0.13	c0.73	
v/s Ratio Perm						0.01			0.12			
v/c Ratio		0.03		0.40	0.39	0.08	0.17	0.97	0.21	0.97	1.18	
Uniform Delay, d1		54.6		55.6	55.5	39.2	55.3	27.3	9.4	55.7	25.0	
Progression Factor		1.00		1.00	1.00	1.00	0.61	0.22	1.06	1.00	1.00	
Incremental Delay, d2		0.3		7.5	7.1	0.2	0.2	1.5	0.0	34.6	86.6	
Delay (s)		54.9		63.1	62.7	39.4	33.8	7.4	10.0	90.3	111.6	
Level of Service		D		E	E	D	C	A	B	F	F	
Approach Delay (s)		54.9			47.1			7.9			109.3	
Approach LOS		D			D			A			F	

Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	345	85	79	374	480	444	339	2063	573	782	1634	1094
Future Volume (vph)	345	85	79	374	480	444	339	2063	573	782	1634	1094
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3	5.3	5.3	5.3		5.3	4.3	4.3	5.3	4.3	4.3
Lane Util. Factor	0.94	0.95	1.00	0.94	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.75	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1180	4990	3248		3433	5085	1556	3433	5085	1562
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1180	4990	3248		3433	5085	1556	3433	5085	1562
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	375	92	86	407	522	483	368	2242	623	850	1776	1189
RTOR Reduction (vph)	0	0	73	0	129	0	0	0	191	0	0	139
Lane Group Flow (vph)	375	92	13	407	876	0	368	2242	432	850	1776	1050
Confl. Peds. (#/hr)	7		125	125		7	2		7	7		2
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	8.7	18.7	18.7	13.7	23.7		9.7	48.7	48.7	23.7	62.7	62.7
Effective Green, g (s)	9.7	19.7	19.7	14.7	24.7		10.7	50.7	50.7	24.7	64.7	64.7
Actuated g/C Ratio	0.07	0.15	0.15	0.11	0.19		0.08	0.39	0.39	0.19	0.50	0.50
Clearance Time (s)	6.3	6.3	6.3	6.3	6.3		6.3	6.3	6.3	6.3	6.3	6.3
Lane Grp Cap (vph)	372	536	178	564	617		282	1983	606	652	2530	777
v/s Ratio Prot	c0.08	0.03		0.08	c0.27		0.11	c0.44		0.25	0.35	
v/s Ratio Perm			0.01						0.28			c0.67
v/c Ratio	1.01	0.17	0.07	0.72	1.42		1.30	1.13	0.71	1.30	0.70	1.35
Uniform Delay, d1	60.1	48.0	47.3	55.7	52.6		59.6	39.6	33.5	52.6	25.2	32.6
Progression Factor	1.00	1.00	1.00	0.80	0.73		0.98	0.60	0.68	0.59	0.24	0.39
Incremental Delay, d2	48.7	0.7	0.8	7.4	198.0		149.2	62.3	3.4	137.7	0.2	158.8
Delay (s)	108.9	48.7	48.1	51.8	236.3		207.8	86.0	26.3	169.0	6.2	171.6
Level of Service	F	D	D	D	F		F	F	C	F	A	F
Approach Delay (s)		89.4			183.1			88.4			94.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	105.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1941	71
Future Volume (veh/h)	81	0	88	92	4	59	144	2836	26	76	1941	71
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	88	0	96	100	4	64	157	3083	28	83	2110	77
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	0	219	162	13	208	290	3481	1084	191	3364	1047
Arrive On Green	0.14	0.00	0.13	0.14	0.14	0.13	0.09	0.68	0.68	0.07	0.66	0.66
Sat Flow, veh/h	1328	0	1583	1294	94	1503	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	88	0	96	100	0	68	157	3083	28	83	2110	77
Grp Sat Flow(s),veh/h/ln	1328	0	1583	1294	0	1597	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.3	0.0	7.3	10.0	0.0	5.0	3.4	63.1	0.7	1.9	31.2	2.2
Cycle Q Clear(g_c), s	13.3	0.0	7.3	17.3	0.0	5.0	3.4	63.1	0.7	1.9	31.2	2.2
Prop In Lane	1.00		1.00	1.00		0.94	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	0	219	162	0	221	290	3481	1084	191	3364	1047
V/C Ratio(X)	0.47	0.00	0.44	0.62	0.00	0.31	0.54	0.89	0.03	0.44	0.63	0.07
Avail Cap(c_a), veh/h	188	0	219	162	0	221	290	3481	1084	191	3364	1047
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	56.4	0.0	51.8	59.3	0.0	50.8	19.9	16.4	6.6	30.6	12.7	7.8
Incr Delay (d2), s/veh	8.1	0.0	6.2	16.3	0.0	3.6	7.1	3.7	0.0	7.1	0.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	3.6	4.3	0.0	2.4	4.2	30.3	0.3	2.3	14.7	1.0
LnGrp Delay(d),s/veh	64.5	0.0	58.1	75.6	0.0	54.4	27.0	20.2	6.6	37.7	13.6	8.0
LnGrp LOS	E		E	E		D	C	C	A	D	B	A
Approach Vol, veh/h		184			168			3268			2270	
Approach Delay, s/veh		61.2			67.0			20.4			14.3	
Approach LOS		E			E			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	15.0	93.0		22.0	18.0	90.0		22.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	87.0		17.0	13.0	84.0		17.0
Max Q Clear Time (g_c+I1), s	13.3	65.1		19.3	5.4	33.2		15.3
Green Ext Time (p_c), s	0.1	18.6		0.0	0.3	18.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1843	74
Future Volume (veh/h)	85	24	26	30	20	667	43	2254	16	204	1843	74
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	92	26	28	33	22	725	47	2450	0	222	2003	80
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	284	306	337	215	713	174	2294	714	214	2447	762
Arrive On Green	0.35	0.35	0.34	0.35	0.35	0.35	0.09	0.60	0.00	0.09	0.48	0.48
Sat Flow, veh/h	711	821	884	850	621	1581	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	92	0	54	55	0	725	47	2450	0	222	2003	80
Grp Sat Flow(s),veh/h/ln	711	0	1705	1471	0	1581	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.6	0.0	2.9	1.7	0.0	46.0	2.1	60.0	0.0	12.0	44.8	3.7
Cycle Q Clear(g_c), s	18.2	0.0	2.9	4.6	0.0	46.0	2.1	60.0	0.0	12.0	44.8	3.7
Prop In Lane	1.00		0.52	0.60		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	0	590	552	0	713	174	2294	714	214	2447	762
V/C Ratio(X)	0.33	0.00	0.09	0.10	0.00	1.02	0.27	1.07	0.00	1.04	0.82	0.10
Avail Cap(c_a), veh/h	276	0	590	552	0	713	174	2294	714	214	2447	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	29.6	29.9	0.0	36.5	31.2	26.6	0.0	59.0	29.5	18.9
Incr Delay (d2), s/veh	3.2	0.0	0.3	0.4	0.0	37.8	3.8	40.0	0.0	71.3	3.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.4	1.4	0.0	27.5	1.2	36.2	0.0	12.1	21.7	1.7
LnGrp Delay(d),s/veh	39.4	0.0	29.9	30.3	0.0	74.3	35.0	66.6	0.0	130.4	32.7	19.1
LnGrp LOS	D		C	C		F	C	F		F	C	B
Approach Vol, veh/h		146			780			2497			2305	
Approach Delay, s/veh		35.9			71.2			66.0			41.7	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	64.0		50.0	15.0	68.0		50.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	13.0	* 58		45.0	10.0	59.0		45.0
Max Q Clear Time (g_c+I1), s	14.6	62.0		48.0	4.1	46.8		20.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	8.1		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.2
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	25	34	91	41	78	249	2181	77	130	1310	459
Future Volume (vph)	54	25	34	91	41	78	249	2181	77	130	1310	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1741	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.98	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1681	1741	1583	1681	1770	1583	185	5085	1583	128	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	27	37	99	45	85	271	2371	84	141	1424	499
RTOR Reduction (vph)	0	0	34	0	0	75	0	0	37	0	0	215
Lane Group Flow (vph)	46	40	3	99	45	10	271	2371	47	141	1424	284
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	10.0	10.0	10.0	14.0	14.0	14.0	70.0	70.0	70.0	73.0	72.0	72.0
Effective Green, g (s)	11.0	11.0	11.0	15.0	15.0	15.0	69.0	72.0	72.0	72.0	74.0	74.0
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.53	0.55	0.55	0.55	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Grp Cap (vph)	142	147	133	193	204	182	244	2816	876	247	2894	901
v/s Ratio Prot	c0.03	0.02		c0.06	0.03		c0.10	0.47		0.06	c0.28	
v/s Ratio Perm			0.00			0.01	c0.49		0.03	0.25		0.18
v/c Ratio	0.32	0.27	0.02	0.51	0.22	0.05	1.11	0.84	0.05	0.57	0.49	0.32
Uniform Delay, d1	56.0	55.7	54.6	54.1	52.2	51.2	31.4	24.2	13.3	41.6	16.8	14.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.38	0.27	0.11	0.89	1.13	4.88
Incremental Delay, d2	6.0	4.5	0.3	9.4	2.5	0.6	77.3	1.9	0.1	5.2	0.3	0.5
Delay (s)	62.0	60.3	54.9	63.5	54.7	51.7	120.8	8.4	1.5	42.3	19.3	72.2
Level of Service	E	E	D	E	D	D	F	A	A	D	B	E
Approach Delay (s)		59.3			57.4			19.3			33.7	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	17	59	52	34	93	331	2330	62	92	1177	166
Future Volume (veh/h)	84	17	59	52	34	93	331	2330	62	92	1177	166
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	91	18	64	57	37	101	360	2533	67	100	1279	180
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	392	321	182	43	118	512	3135	976	201	2332	726
Arrive On Green	0.08	0.21	0.20	0.10	0.10	0.09	0.15	0.41	0.41	0.03	0.15	0.15
Sat Flow, veh/h	1774	1863	1583	1311	442	1207	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	91	18	64	57	0	138	360	2533	67	100	1279	180
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1311	0	1650	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	58.4	3.4	4.7	31.0	13.3
Cycle Q Clear(g_c), s	5.9	1.0	4.5	5.5	0.0	11.0	15.8	58.4	3.4	4.7	31.0	13.3
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
V/C Ratio(X)	0.45	0.05	0.20	0.31	0.00	0.86	0.70	0.81	0.07	0.50	0.55	0.25
Avail Cap(c_a), veh/h	201	392	321	182	0	161	512	3135	976	201	2332	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	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	47.7	41.9	44.0	56.6	0.0	59.4	45.8	32.1	16.0	33.1	43.7	36.2
Incr Delay (d2), s/veh	7.2	0.2	1.4	4.4	0.0	40.7	7.9	2.4	0.1	8.6	0.9	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(50%),veh/ln	3.3	0.6	2.1	2.2	0.0	6.8	13.5	27.9	1.5	2.8	14.7	6.0
LnGrp Delay(d),s/veh	54.9	42.1	45.4	61.0	0.0	100.2	53.7	34.4	16.1	41.7	44.6	37.0
LnGrp LOS	D	D	D	E		F	D	C	B	D	D	D
Approach Vol, veh/h		173			195			2960			1559	
Approach Delay, s/veh		50.1			88.7			36.4			43.6	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	86.0	15.0	17.0	36.0	65.0		32.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	12.0	77.0	12.0	12.0	30.0	* 59		27.0
Max Q Clear Time (g_c+I1), s	16.7	60.4	7.9	13.0	17.8	33.0		6.5
Green Ext Time (p_c), s	0.1	12.5	0.1	0.0	1.1	7.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	41.2
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	16	108	197	76	81	418	2578	210	90	1083	114
Future Volume (veh/h)	64	16	108	197	76	81	418	2578	210	90	1083	114
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	70	17	117	214	83	88	454	2802	228	98	1177	124
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	171	145	330	95	101	615	2989	931	181	1786	556
Arrive On Green	0.08	0.09	0.09	0.11	0.11	0.11	0.31	0.59	0.59	0.07	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	1774	829	879	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	70	17	117	214	0	171	454	2802	228	98	1177	124
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1708	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	66.3	4.7	2.5	25.6	7.2
Cycle Q Clear(g_c), s	4.5	1.1	9.5	14.0	0.0	12.9	25.1	66.3	4.7	2.5	25.6	7.2
Prop In Lane	1.00		1.00	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	171	145	330	0	196	615	2989	931	181	1786	556
V/C Ratio(X)	0.34	0.10	0.81	0.65	0.00	0.87	0.74	0.94	0.24	0.54	0.66	0.22
Avail Cap(c_a), veh/h	205	171	145	330	0	196	615	2989	931	181	1786	556
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	54.5	58.4	48.0	0.0	57.3	29.9	24.8	3.5	57.1	35.9	29.9
Incr Delay (d2), s/veh	4.5	1.2	36.5	9.5	0.0	38.2	7.8	7.2	0.6	11.2	1.9	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(50%),veh/ln	2.5	0.6	5.6	1.3	0.0	8.2	15.7	32.9	3.5	3.9	12.3	3.3
LnGrp Delay(d),s/veh	53.0	55.7	94.8	57.5	0.0	95.6	37.6	32.0	4.1	68.3	37.8	30.8
LnGrp LOS	D	E	F	E		F	D	C	A	E	D	C
Approach Vol, veh/h		204			385			3484			1399	
Approach Delay, s/veh		77.2			74.4			30.9			39.3	
Approach LOS		E			E			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	16.0	81.0	18.0	16.0	47.0	50.0	15.0	19.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	5.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	10.0	* 75	15.0	11.0	42.0	43.0	12.0	14.0
Max Q Clear Time (g_c+I1), s	14.5	68.3	16.0	11.5	27.1	27.6	6.5	14.9
Green Ext Time (p_c), s	0.1	6.1	0.0	0.0	1.6	5.5	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	561	386	449	410	827	131	1094	557	101	427	303
Future Volume (veh/h)	239	561	386	449	410	827	131	1094	557	101	427	303
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	260	610	420	488	446	899	142	1189	0	110	464	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	669	1380	469	698	711	242	972	435	132	754	337
Arrive On Green	0.12	0.36	0.36	0.14	0.37	0.37	0.14	0.27	0.00	0.07	0.21	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	260	610	420	488	446	899	142	1189	0	110	464	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Cycle Q Clear(g_c), s	15.7	40.6	5.5	17.7	25.6	48.7	9.8	35.7	0.0	8.0	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	669	1380	469	698	711	242	972	435	132	754	337
V/C Ratio(X)	1.21	0.91	0.30	1.04	0.64	1.26	0.59	1.22	0.00	0.83	0.62	0.00
Avail Cap(c_a), veh/h	214	669	1380	469	698	711	242	972	435	132	754	337
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.2	39.7	6.5	56.2	33.4	35.8	52.7	47.1	0.0	59.3	46.3	0.0
Incr Delay (d2), s/veh	131.1	18.8	0.6	52.8	4.4	129.8	10.1	109.8	0.0	42.8	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	24.3	2.6	11.8	14.0	51.1	5.4	32.2	0.0	5.5	7.9	0.0
LnGrp Delay(d),s/veh	188.2	58.5	7.1	108.9	37.9	165.6	62.8	156.9	0.0	102.1	50.1	0.0
LnGrp LOS	F	E	A	F	D	F	E	F		F	D	
Approach Vol, veh/h		1290			1833			1331			574	
Approach Delay, s/veh		67.9			119.5			146.9			60.0	
Approach LOS		E			F			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	23.0	52.0	23.0	32.0	21.0	54.0	15.0	40.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 17	* 46	* 17	* 26	* 15	* 48	* 8.7	* 34
Max Q Clear Time (g_c+I1), s	19.7	42.6	11.8	17.4	17.7	50.7	10.0	37.7
Green Ext Time (p_c), s	0.0	1.6	0.2	1.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	106.7
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	1289	484	185	1242	43	362	25	90	90	8	82
Future Volume (vph)	124	1289	484	185	1242	43	362	25	90	90	8	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5060		1681	1696	1583		1781	1583
Flt Permitted	0.11	1.00	1.00	0.08	1.00		0.95	0.96	1.00		0.96	1.00
Satd. Flow (perm)	207	5085	1583	149	5060		1681	1696	1583		1781	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	135	1401	526	201	1350	47	393	27	98	98	9	89
RTOR Reduction (vph)	0	0	336	0	3	0	0	0	74	0	0	79
Lane Group Flow (vph)	135	1401	190	201	1394	0	208	212	24	0	107	10
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	56.0	45.0	45.0	69.0	53.0		31.0	31.0	31.0		14.0	14.0
Effective Green, g (s)	58.0	47.0	47.0	70.0	55.0		32.0	32.0	32.0		15.0	15.0
Actuated g/C Ratio	0.45	0.36	0.36	0.54	0.42		0.25	0.25	0.25		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	236	1838	572	329	2140		413	417	389		205	182
v/s Ratio Prot	0.05	c0.28		c0.09	0.28		0.12	c0.13			c0.06	
v/s Ratio Perm	0.20		0.12	0.23					0.02			0.01
v/c Ratio	0.57	0.76	0.33	0.61	0.65		0.50	0.51	0.06		0.52	0.06
Uniform Delay, d1	23.6	36.6	30.1	29.6	29.9		42.2	42.2	37.5		54.1	51.2
Progression Factor	0.84	1.08	2.46	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.1	2.5	1.3	8.2	1.6		4.3	4.4	0.3		9.2	0.6
Delay (s)	27.9	41.9	75.4	37.8	31.4		46.5	46.6	37.8		63.3	51.8
Level of Service	C	D	E	D	C		D	D	D		E	D
Approach Delay (s)		49.5			32.2			44.9			58.1	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	669	7	2	473	4	1
Future Vol, veh/h	669	7	2	473	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	727	8	2	514	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	735	0	1249	731
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	518	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	191	422
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	190	422
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	596	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	213	-	-	870	-
HCM Lane V/C Ratio	0.026	-	-	0.002	-
HCM Control Delay (s)	22.3	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	113	348	401	0	0
Future Vol, veh/h	0	113	348	401	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	123	378	436	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	814	0	-	0	719	596
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	123	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	813	-	-	-	395	504
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	813	-	-	-	395	504
Mov Cap-2 Maneuver	-	-	-	-	395	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	902	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	813	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	4	62	60	250	26	2758	316	461	3706
v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.18
Control Delay	55.0	63.9	63.4	5.2	34.2	8.5	0.9	90.2	112.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	63.9	63.4	5.2	34.2	8.5	0.9	90.2	112.2
Queue Length 50th (ft)	3	52	50	0	19	226	8	202	~1378
Queue Length 95th (ft)	15	103	100	35	m17	m184	m5	#310	#1446
Internal Link Dist (ft)	154		520			1383			1304
Turn Bay Length (ft)				350	225		250	410	
Base Capacity (vph)	155	155	155	913	149	2855	1130	475	3129
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.40	0.39	0.27	0.17	0.97	0.28	0.97	1.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	375	92	86	407	1005	368	2242	623	850	1776	1189
v/c Ratio	1.01	0.17	0.26	0.72	1.35	1.30	1.13	0.78	1.30	0.70	1.30
Control Delay	108.0	49.0	1.8	52.0	193.5	194.3	87.1	15.4	166.8	6.3	150.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	108.0	49.0	1.8	52.0	193.5	194.3	87.1	15.4	166.8	6.3	150.8
Queue Length 50th (ft)	~115	35	0	119	~525	~203	~824	303	~469	190	~1190
Queue Length 95th (ft)	#187	63	0	157	#662	m#250	#901	m180	m#357	m136	m#837
Internal Link Dist (ft)		729			669		2468			1383	
Turn Bay Length (ft)	225		360	400		475		540	900		800
Base Capacity (vph)	372	536	336	564	745	282	1983	797	652	2530	916
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.17	0.26	0.72	1.35	1.30	1.13	0.78	1.30	0.70	1.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	96	100	68	157	3083	28	83	2110	77
v/c Ratio	0.49	0.29	0.64	0.25	0.69	0.89	0.03	0.46	0.63	0.07
Control Delay	62.0	5.7	72.5	15.4	37.2	7.5	0.0	35.6	12.3	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Total Delay	62.0	5.7	72.5	15.4	37.2	8.7	0.0	35.6	12.3	1.8
Queue Length 50th (ft)	70	0	81	3	82	219	0	23	450	3
Queue Length 95th (ft)	127	26	#157	47	m82	m191	m0	m57	521	m6
Internal Link Dist (ft)		690		274		899			2468	
Turn Bay Length (ft)					330		330	310		230
Base Capacity (vph)	179	329	156	276	229	3481	1102	180	3363	1073
Starvation Cap Reductn	0	0	0	0	0	206	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.29	0.64	0.25	0.69	0.94	0.03	0.46	0.63	0.07

Intersection Summary

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	54	55	725	47	2450	17	222	2003	80
v/c Ratio	0.19	0.09	0.10	0.89	0.26	1.04	0.02	1.00	0.84	0.10
Control Delay	30.6	16.3	28.9	42.0	24.9	49.7	0.4	86.5	11.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	16.3	28.9	42.0	24.9	49.7	0.4	86.5	11.5	0.5
Queue Length 50th (ft)	54	14	31	501	14	~795	0	~142	421	0
Queue Length 95th (ft)	97	44	62	#768	m22	#890	m0	#315	316	m1
Internal Link Dist (ft)		590	1127			2165			899	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	475	621	557	813	180	2346	766	221	2386	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.09	0.10	0.89	0.26	1.04	0.02	1.00	0.84	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	40	37	99	45	85	271	2371	84	141	1424	499
v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	1.11	0.84	0.09	0.57	0.49	0.45
Control Delay	62.7	60.9	1.0	64.2	55.3	2.0	110.7	8.5	0.2	42.6	19.4	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	60.9	1.0	64.2	55.3	2.0	110.7	8.5	0.2	42.6	19.4	6.4
Queue Length 50th (ft)	38	33	0	84	36	0	~181	313	0	53	179	71
Queue Length 95th (ft)	83	74	0	147	77	0	m#291	335	m0	m76	241	m145
Internal Link Dist (ft)		654			1405			1538			2165	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	142	147	279	193	204	323	245	2816	925	248	2894	1116
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.27	0.13	0.51	0.22	0.26	1.11	0.84	0.09	0.57	0.49	0.45

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	91	18	64	57	138	360	2533	67	100	1279	180
v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.82	0.07	0.48	0.54	0.21
Control Delay	48.8	40.9	3.0	64.5	33.5	15.5	2.3	0.0	24.1	22.4	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	40.9	3.0	64.5	33.5	15.5	2.3	0.0	24.1	22.4	7.8
Queue Length 50th (ft)	64	12	0	46	43	125	41	0	34	330	30
Queue Length 95th (ft)	115	34	13	92	113	m132	44	m0	77	438	78
Internal Link Dist (ft)		1244			840		1133			1538	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	214	401	408	139	241	526	3090	988	210	2386	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.04	0.16	0.41	0.57	0.68	0.82	0.07	0.48	0.54	0.21

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	70	17	117	214	171	454	2802	228	98	1177	124
v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.93	0.22	0.54	0.67	0.20
Control Delay	44.6	55.6	9.6	56.4	65.7	34.6	21.4	0.6	49.7	31.4	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	55.6	9.6	56.4	65.7	34.6	21.4	0.6	49.7	31.4	12.2
Queue Length 50th (ft)	48	13	0	159	115	251	671	0	82	384	70
Queue Length 95th (ft)	90	38	38	243	#223	m249	m386	m0	132	432	127
Internal Link Dist (ft)		1075			1373		1876			1133	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	218	171	275	313	227	617	3011	1030	180	1760	629
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.10	0.43	0.68	0.75	0.74	0.93	0.22	0.54	0.67	0.20

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	260	610	420	488	446	899	142	1189	605	110	464	329
v/c Ratio	1.22	0.91	0.30	1.04	0.64	1.07	0.59	1.22	0.86	0.83	0.62	0.55
Control Delay	178.6	56.6	5.9	90.1	23.2	71.7	63.8	150.7	30.2	102.1	31.5	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	178.6	56.6	5.9	90.1	23.2	71.7	63.8	150.7	30.2	102.1	31.5	14.3
Queue Length 50th (ft)	~274	517	25	~224	296	~796	114	~647	206	74	206	177
Queue Length 95th (ft)	#444	#723	47	#340	435	#1055	187	#785	#429	m#166	266	255
Internal Link Dist (ft)		1583			2584			1372			1039	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	213	669	1421	467	697	843	240	971	704	132	754	596
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.91	0.30	1.04	0.64	1.07	0.59	1.22	0.86	0.83	0.62	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	135	1401	526	201	1397	208	212	98	107	89
v/c Ratio	0.57	0.76	0.58	0.61	0.65	0.50	0.51	0.19	0.52	0.28
Control Delay	24.5	42.2	8.4	34.9	31.5	47.2	47.3	1.9	64.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	42.2	8.4	34.9	31.5	47.2	47.3	1.9	64.0	2.5
Queue Length 50th (ft)	62	378	67	104	337	160	163	0	86	0
Queue Length 95th (ft)	m84	m450	m118	189	390	245	249	10	149	2
Internal Link Dist (ft)		2584			468		728		167	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	238	1838	908	330	2143	413	417	503	205	316
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.76	0.58	0.61	0.65	0.50	0.51	0.19	0.52	0.28

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	13	0	256	18	609	20	3390	593	779	2806	23
Future Volume (vph)	3	13	0	256	18	609	20	3390	593	779	2806	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00		0.95	0.95	0.88	1.00	0.91	1.00	0.97	0.91	
Frt		1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1846		1681	1695	2787	1770	5085	1583	3433	5079	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	14	0	269	19	641	21	3568	624	820	2954	24
RTOR Reduction (vph)	0	0	0	0	0	123	0	0	66	0	1	0
Lane Group Flow (vph)	0	17	0	134	154	518	21	3568	558	820	2977	0
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		3	3	1	5	2	3	1	6	
Permitted Phases			4			3			2			
Actuated Green, G (s)		10.0		12.0	12.0	45.0	10.0	104.0	116.0	33.0	127.0	
Effective Green, g (s)		11.0		13.0	13.0	47.0	11.0	106.0	118.0	34.0	129.0	
Actuated g/C Ratio		0.06		0.07	0.07	0.26	0.06	0.59	0.66	0.19	0.72	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	
Lane Grp Cap (vph)		112		121	122	789	108	2994	1037	648	3639	
v/s Ratio Prot		c0.01		0.08	c0.09	0.12	0.01	c0.70	0.04	c0.24	0.59	
v/s Ratio Perm						0.06			0.31			
v/c Ratio		0.15		1.11	1.26	0.66	0.19	1.19	0.54	1.27	0.82	
Uniform Delay, d1		80.1		83.5	83.5	59.3	80.3	37.0	16.5	73.0	17.5	
Progression Factor		1.00		1.00	1.00	1.00	0.77	0.47	1.33	1.00	1.00	
Incremental Delay, d2		2.9		113.6	167.9	4.2	0.4	86.6	0.2	131.5	2.2	
Delay (s)		82.9		197.1	251.4	63.5	62.1	103.8	22.2	204.5	19.6	
Level of Service		F		F	F	E	E	F	C	F	B	
Approach Delay (s)		82.9			113.9			91.5			59.5	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	80.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	112.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1038	655	372	1231	280	999	177	1966	665	714	1916	432
Future Volume (vph)	1038	655	372	1231	280	999	177	1966	665	714	1916	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.94	0.95	1.00	0.94	0.95		0.97	0.91	1.00	0.97	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.83		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	4990	2598		3433	5085	1538	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	4990	2598		3433	5085	1538	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1128	712	404	1338	304	1086	192	2137	723	776	2083	470
RTOR Reduction (vph)	0	0	78	0	203	0	0	0	334	0	0	228
Lane Group Flow (vph)	1128	712	326	1338	1187	0	192	2137	389	776	2083	242
Confl. Peds. (#/hr)	204					204			17	17		
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	29.0	35.0	35.0	46.0	52.0		11.0	53.0	53.0	29.0	71.0	71.0
Effective Green, g (s)	30.0	36.0	36.0	47.0	53.0		12.0	55.0	55.0	30.0	73.0	73.0
Actuated g/C Ratio	0.17	0.20	0.20	0.26	0.29		0.07	0.31	0.31	0.17	0.41	0.41
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Grp Cap (vph)	831	707	316	1302	764		228	1553	469	572	2062	641
v/s Ratio Prot	c0.23	0.20		0.27	c0.46		0.06	c0.42		c0.23	0.41	
v/s Ratio Perm			c0.21						0.25			0.15
v/c Ratio	1.36	1.01	1.03	1.03	1.84dr		0.84	1.38	0.83	1.36	1.01	0.38
Uniform Delay, d1	75.0	72.0	72.0	66.5	63.5		83.1	62.5	58.1	75.0	53.5	37.5
Progression Factor	1.00	1.00	1.00	0.71	0.62		0.88	0.65	1.21	0.87	0.81	1.47
Incremental Delay, d2	168.7	35.6	58.7	28.5	253.7		19.5	171.7	9.7	166.7	17.1	0.9
Delay (s)	243.7	107.6	130.7	76.1	292.9		92.9	212.6	80.3	232.1	60.7	56.0
Level of Service	F	F	F	E	F		F	F	F	F	E	E
Approach Delay (s)		180.2			186.6			173.7			100.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	156.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	137.6%	ICU Level of Service	H
Analysis Period (min)	15		

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	0	45	189	5	28	61	2742	37	54	3442	24
Future Volume (veh/h)	38	0	45	189	5	28	61	2742	37	54	3442	24
Number	3	8	18	7	4	14	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	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	41	0	49	205	5	30	66	2980	40	59	3741	26
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	0	229	198	33	200	148	3701	1152	154	3701	1152
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.06	0.73	0.73	0.05	0.73	0.73
Sat Flow, veh/h	1368	0	1583	1351	231	1387	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	41	0	49	205	0	35	66	2980	40	59	3741	26
Grp Sat Flow(s),veh/h/ln	1368	0	1583	1351	0	1618	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	4.9	0.0	4.9	21.1	0.0	3.4	2.3	69.4	1.3	1.5	131.0	0.8
Cycle Q Clear(g_c), s	8.3	0.0	4.9	26.0	0.0	3.4	2.3	69.4	1.3	1.5	131.0	0.8
Prop In Lane	1.00		1.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	0	229	198	0	234	148	3701	1152	154	3701	1152
V/C Ratio(X)	0.19	0.00	0.21	1.04	0.00	0.15	0.44	0.81	0.03	0.38	1.01	0.02
Avail Cap(c_a), veh/h	212	0	229	198	0	234	148	3701	1152	154	3701	1152
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	71.0	0.0	68.4	81.6	0.0	67.7	54.9	16.1	6.8	38.3	24.5	6.8
Incr Delay (d2), s/veh	2.0	0.0	2.1	73.5	0.0	1.4	9.4	2.0	0.1	7.1	17.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	2.3	13.9	0.0	1.6	3.5	32.7	0.6	2.4	66.7	0.4
LnGrp Delay(d),s/veh	73.0	0.0	70.6	155.2	0.0	69.1	64.2	18.1	6.9	45.4	42.0	6.8
LnGrp LOS	E		E	F		E	E	B	A	D	F	A
Approach Vol, veh/h		90			240			3086			3826	
Approach Delay, s/veh		71.7			142.7			18.9			41.8	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	135.0		30.0	15.0	135.0		30.0
Change Period (Y+Rc), s	5.0	6.0		5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	10.0	129.0		25.0	12.0	129.0		25.0
Max Q Clear Time (g_c+I1), s	3.5	71.4		28.0	4.3	133.0		10.3
Green Ext Time (p_c), s	0.1	37.3		0.0	0.1	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	35.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	39	29	56	16	482	83	2308	34	566	3000	111
Future Volume (veh/h)	49	39	29	56	16	482	83	2308	34	566	3000	111
Number	3	8	18	7	4	14	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	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	51	41	30	58	17	502	86	2404	0	590	3125	116
Adj No. of Lanes	1	1	0	0	1	1	1	3	1	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	88	64	88	18	684	170	2529	787	634	3946	1229
Arrive On Green	0.09	0.09	0.08	0.09	0.09	0.09	0.06	0.50	0.00	0.44	1.00	1.00
Sat Flow, veh/h	879	1001	732	607	202	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	51	0	71	75	0	502	86	2404	0	590	3125	116
Grp Sat Flow(s),veh/h/ln	879	0	1733	809	0	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	0.0	0.0	7.1	8.9	0.0	0.0	5.0	82.5	0.0	52.8	0.0	0.0
Cycle Q Clear(g_c), s	16.0	0.0	7.1	16.0	0.0	0.0	5.0	82.5	0.0	52.8	0.0	0.0
Prop In Lane	1.00		0.42	0.77		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	0	152	106	0	684	170	2529	787	634	3946	1229
V/C Ratio(X)	1.30	0.00	0.47	0.71	0.00	0.73	0.51	0.95	0.00	0.93	0.79	0.09
Avail Cap(c_a), veh/h	39	0	152	106	0	684	170	2529	787	634	3946	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	91.5	0.0	79.7	87.0	0.0	43.3	32.8	43.9	0.0	46.7	0.0	0.0
Incr Delay (d2), s/veh	243.1	0.0	10.0	33.3	0.0	6.9	10.4	9.6	0.0	22.2	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	3.9	4.8	0.0	22.4	2.9	40.8	0.0	31.9	0.6	0.1
LnGrp Delay(d),s/veh	334.6	0.0	89.7	120.3	0.0	50.2	43.2	53.4	0.0	68.9	1.7	0.2
LnGrp LOS	F		F	F		D	D	D		E	A	A
Approach Vol, veh/h		122			577			2490			3831	
Approach Delay, s/veh		192.1			59.3			53.1			12.0	
Approach LOS		F			E			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	68.0	95.0		20.0	17.0	146.0		20.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	62.0	* 89		15.0	12.0	137.0		15.0
Max Q Clear Time (g_c+I1), s	54.8	84.5		18.0	7.0	2.0		18.0
Green Ext Time (p_c), s	1.6	3.9		0.0	0.1	67.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	381	42	169	172	23	70	95	1975	129	176	2699	209
Future Volume (vph)	381	42	169	172	23	70	95	1975	129	176	2699	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1681	1770	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00	1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1681	1770	1583	94	5085	1583	98	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	46	184	187	25	76	103	2147	140	191	2934	227
RTOR Reduction (vph)	0	0	87	0	0	67	0	0	70	0	0	68
Lane Group Flow (vph)	253	207	97	187	25	9	103	2147	70	191	2934	159
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		5	2		1	6	
Permitted Phases			3			4	2		2	6		6
Actuated Green, G (s)	27.0	27.0	27.0	20.0	20.0	20.0	91.0	88.0	88.0	102.0	102.0	102.0
Effective Green, g (s)	28.0	28.0	28.0	21.0	21.0	21.0	90.0	90.0	90.0	101.0	104.0	104.0
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.12	0.12	0.50	0.50	0.50	0.56	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	3.0	6.0	6.0	3.0	6.0	6.0
Lane Grp Cap (vph)	261	264	246	196	206	184	149	2542	791	287	2938	914
v/s Ratio Prot	c0.15	0.12		c0.11	0.01		0.04	c0.42		0.09	c0.58	
v/s Ratio Perm			0.06			0.01	0.30		0.04	0.28		0.10
v/c Ratio	0.97	0.78	0.39	0.95	0.12	0.05	0.69	0.84	0.09	0.67	1.00	0.17
Uniform Delay, d1	75.6	73.1	68.4	79.0	71.2	70.6	79.1	38.9	23.5	53.5	37.9	17.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.59	0.43	0.48	0.97	0.71	0.62
Incremental Delay, d2	48.4	20.5	4.7	53.3	1.2	0.5	13.6	2.1	0.1	7.5	12.9	0.3
Delay (s)	124.0	93.5	73.1	132.3	72.4	71.1	60.4	19.0	11.4	59.1	39.8	11.3
Level of Service	F	F	E	F	E	E	E	B	B	E	D	B
Approach Delay (s)		99.6			111.0			20.3			38.9	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	56	281	121	21	168	169	1805	156	267	2646	127
Future Volume (veh/h)	226	56	281	121	21	168	169	1805	156	267	2646	127
Number	3	8	18	7	4	14	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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	246	61	305	132	23	183	184	1962	170	290	2876	138
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	476	396	152	20	159	223	2401	748	473	3023	941
Arrive On Green	0.12	0.26	0.25	0.11	0.11	0.11	0.17	0.94	0.94	0.41	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1012	180	1431	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	246	61	305	132	0	206	184	1962	170	290	2876	138
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1012	0	1610	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	22.0	4.5	32.2	20.0	0.0	20.0	10.0	16.9	1.4	10.6	0.0	0.0
Cycle Q Clear(g_c), s	22.0	4.5	32.2	20.0	0.0	20.0	10.0	16.9	1.4	10.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	257	476	396	152	0	179	223	2401	748	473	3023	941
V/C Ratio(X)	0.96	0.13	0.77	0.87	0.00	1.15	0.82	0.82	0.23	0.61	0.95	0.15
Avail Cap(c_a), veh/h	257	476	396	152	0	179	223	2401	748	473	3023	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	62.7	51.6	62.7	81.5	0.0	80.4	28.9	3.1	2.7	15.3	0.0	0.0
Incr Delay (d2), s/veh	46.3	0.6	13.5	44.1	0.0	113.9	27.9	3.2	0.7	5.8	8.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	2.4	15.5	8.4	0.0	14.6	10.3	7.3	0.7	5.8	2.4	0.1
LnGrp Delay(d),s/veh	109.0	52.1	76.2	125.6	0.0	194.3	56.8	6.3	3.4	21.2	8.4	0.3
LnGrp LOS	F	D	E	F		F	E	A	A	C	A	A
Approach Vol, veh/h		612			338			2316			3304	
Approach Delay, s/veh		87.0			167.5			10.1			9.2	
Approach LOS		F			F			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	41.0	89.0	26.0	24.0	19.0	111.0		50.0
Change Period (Y+Rc), s	3.0	6.0	3.0	5.0	3.0	6.0		5.0
Max Green Setting (Gmax), s	38.0	83.0	23.0	19.0	16.0	105.0		45.0
Max Q Clear Time (g_c+I1), s	12.6	18.9	24.0	22.0	12.0	2.0		34.2
Green Ext Time (p_c), s	1.0	17.2	0.0	0.0	0.2	46.6		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	91	384	275	41	72	293	1822	223	102	2731	216
Future Volume (veh/h)	236	91	384	275	41	72	293	1822	223	102	2731	216
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	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	257	99	417	299	45	78	318	1980	242	111	2968	235
Adj No. of Lanes	1	1	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	247	210	251	54	94	275	3119	971	217	2866	892
Arrive On Green	0.13	0.13	0.13	0.08	0.09	0.08	0.13	0.61	0.61	0.13	1.00	1.00
Sat Flow, veh/h	1774	1863	1583	1774	613	1062	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	257	99	417	299	0	123	318	1980	242	111	2968	235
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	0	1675	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	23.0	8.8	24.0	15.0	0.0	13.1	24.0	44.6	7.8	0.0	102.0	0.0
Cycle Q Clear(g_c), s	23.0	8.8	24.0	15.0	0.0	13.1	24.0	44.6	7.8	0.0	102.0	0.0
Prop In Lane	1.00		1.00	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	247	210	251	0	148	275	3119	971	217	2866	892
V/C Ratio(X)	0.95	0.40	1.99	1.19	0.00	0.83	1.16	0.63	0.25	0.51	1.04	0.26
Avail Cap(c_a), veh/h	272	247	210	251	0	148	275	3119	971	217	2866	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	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	66.4	71.9	78.5	76.2	0.0	81.5	65.9	22.2	6.0	56.6	0.0	0.0
Incr Delay (d2), s/veh	42.4	4.8	460.4	118.5	0.0	39.3	103.3	1.0	0.6	8.4	26.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.9	37.3	8.3	0.0	7.7	21.6	21.0	4.8	5.3	7.1	0.2
LnGrp Delay(d),s/veh	108.7	76.7	538.9	194.7	0.0	120.8	169.2	23.2	6.6	65.0	26.9	0.7
LnGrp LOS	F	E	F	F		F	F	C	A	E	F	A
Approach Vol, veh/h		773			422			2540			3314	
Approach Delay, s/veh		336.7			173.2			39.9			26.3	
Approach LOS		F			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	115.0	19.0	28.0	28.0	106.0	27.0	20.0
Change Period (Y+Rc), s	6.0	* 6	3.0	5.0	3.0	6.0	3.0	5.0
Max Green Setting (Gmax), s	13.0	* 1.1E2	16.0	23.0	25.0	99.0	24.0	15.0
Max Q Clear Time (g_c+I1), s	12.0	46.6	17.0	26.0	26.0	104.0	25.0	15.1
Green Ext Time (p_c), s	0.2	18.4	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	74.0
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	516	493	594	623	920	136	817	536	242	1083	432
Future Volume (veh/h)	288	516	493	594	623	920	136	817	536	242	1083	432
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	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	310	555	530	639	670	989	146	878	0	260	1165	0
Adj No. of Lanes	1	1	2	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	253	576	1090	587	628	848	145	741	332	352	1154	516
Arrive On Green	0.14	0.31	0.31	0.17	0.34	0.34	0.08	0.21	0.00	0.20	0.33	0.00
Sat Flow, veh/h	1774	1863	2787	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	310	555	530	639	670	989	146	878	0	260	1165	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1393	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	25.7	52.8	11.0	30.7	60.7	60.7	14.7	37.7	0.0	24.8	58.7	0.0
Cycle Q Clear(g_c), s	25.7	52.8	11.0	30.7	60.7	60.7	14.7	37.7	0.0	24.8	58.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	253	576	1090	587	628	848	145	741	332	352	1154	516
V/C Ratio(X)	1.22	0.96	0.49	1.09	1.07	1.17	1.01	1.18	0.00	0.74	1.01	0.00
Avail Cap(c_a), veh/h	253	576	1090	587	628	848	145	741	332	352	1154	516
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	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	77.1	61.1	41.2	74.6	59.6	41.8	82.7	71.2	0.0	67.8	60.7	0.0
Incr Delay (d2), s/veh	130.7	29.4	1.6	63.5	55.0	87.6	76.8	96.4	0.0	13.0	28.8	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(50%),veh/ln	21.8	31.8	9.3	19.8	40.8	62.7	10.3	28.4	0.0	13.4	33.3	0.0
LnGrp Delay(d),s/veh	207.8	90.5	42.8	138.2	114.6	129.4	159.5	167.6	0.0	80.8	89.5	0.0
LnGrp LOS	F	F	D	F	F	F	F	F		F	F	
Approach Vol, veh/h		1395			2298			1024			1425	
Approach Delay, s/veh		98.4			127.5			166.4			87.9	
Approach LOS		F			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	36.0	61.0	20.0	63.0	31.0	66.0	41.0	42.0
Change Period (Y+Rc), s	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3	* 6.3
Max Green Setting (Gmax), s	* 36	* 55	* 14	* 57	* 25	* 60	* 35	* 36
Max Q Clear Time (g_c+I1), s	32.7	54.8	16.7	60.7	27.7	62.7	26.8	39.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	118.2
HCM 2010 LOS	F

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	1259	322	173	1646	11	467	4	231	35	6	24
Future Volume (vph)	25	1259	322	173	1646	11	467	4	231	35	6	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5080		1681	1687	1583		1787	1583
Flt Permitted	0.13	1.00	1.00	0.12	1.00		0.95	0.95	1.00		0.96	1.00
Satd. Flow (perm)	248	5085	1583	226	5080		1681	1687	1583		1787	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	1368	350	188	1789	12	508	4	251	38	7	26
RTOR Reduction (vph)	0	0	229	0	1	0	0	0	201	0	0	23
Lane Group Flow (vph)	27	1368	121	188	1800	0	254	258	50	0	45	3
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	39.0	29.0	29.0	45.0	32.0		17.0	17.0	17.0		10.0	10.0
Effective Green, g (s)	41.0	31.0	31.0	47.0	34.0		18.0	18.0	18.0		11.0	11.0
Actuated g/C Ratio	0.46	0.34	0.34	0.52	0.38		0.20	0.20	0.20		0.12	0.12
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0		5.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	299	1751	545	358	1919		336	337	316		218	193
v/s Ratio Prot	0.01	0.27		c0.08	c0.35		0.15	c0.15			c0.03	
v/s Ratio Perm	0.03		0.08	0.19					0.03			0.00
v/c Ratio	0.09	0.78	0.22	0.53	0.94		0.76	0.77	0.16		0.21	0.02
Uniform Delay, d1	17.2	26.5	20.9	15.2	27.0		33.9	34.0	29.7		35.6	34.7
Progression Factor	1.30	1.16	2.95	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.4	2.4	0.6	5.4	10.4		14.6	15.2	1.1		2.1	0.2
Delay (s)	22.7	33.0	62.4	20.6	37.4		48.6	49.2	30.8		37.7	34.9
Level of Service	C	C	E	C	D		D	D	C		D	C
Approach Delay (s)		38.8			35.8			43.0			36.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	5	1	692	8	2
Future Vol, veh/h	495	5	1	692	8	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	538	5	1	752	9	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	543	0	1295	541
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	754	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1026	-	179	541
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1026	-	179	541
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	464	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	207	-	-	1026	-
HCM Lane V/C Ratio	0.053	-	-	0.001	-
HCM Control Delay (s)	23.4	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	283	189	137	309	0
Future Vol, veh/h	0	283	189	137	309	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	308	205	149	336	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	588	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1205	-	-	-	471	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1205	-	-	-	471	759
Mov Cap-2 Maneuver	-	-	-	-	471	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	745	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1205	-	-	-	471
HCM Lane V/C Ratio	-	-	-	-	0.713
HCM Control Delay (s)	0	-	-	-	29.5
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	5.6

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	17	134	154	641	21	3568	624	820	2978
v/c Ratio	0.15	1.11	1.26	0.71	0.19	1.19	0.56	1.27	0.82
Control Delay	83.5	184.4	229.1	46.8	62.5	106.9	8.4	187.0	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	184.4	229.1	46.8	62.5	106.9	8.4	187.0	19.9
Queue Length 50th (ft)	19	~188	~238	293	24	~1865	200	~624	824
Queue Length 95th (ft)	49	#350	#411	376	m18	m518	m117	#760	867
Internal Link Dist (ft)	154		513			1380			1996
Turn Bay Length (ft)				350	225		250	400	
Base Capacity (vph)	112	121	122	909	108	2994	1111	648	3641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	1.11	1.26	0.71	0.19	1.19	0.56	1.27	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1128	712	404	1338	1390	192	2137	723	776	2083	470
v/c Ratio	1.36	1.01	1.02	1.03	1.84dr	0.84	1.38	0.90	1.36	1.01	0.54
Control Delay	221.0	105.5	102.6	75.0	226.5	92.3	205.2	33.1	213.9	60.1	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	221.0	105.5	102.6	75.0	226.5	92.3	205.2	33.1	213.9	60.1	12.0
Queue Length 50th (ft)	~617	~453	~407	~602	~1047	113	~1239	644	~626	~953	207
Queue Length 95th (ft)	#712	#595	#637	#695	#1187	m#156	#1298	#860	m#740	m#1009	m269
Internal Link Dist (ft)		696			665		2491			1380	
Turn Bay Length (ft)	235		360	400		475		550	900		760
Base Capacity (vph)	831	707	395	1302	968	228	1553	803	572	2062	870
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.36	1.01	1.02	1.03	1.44	0.84	1.38	0.90	1.36	1.01	0.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	49	205	35	66	2980	40	59	3741	26
v/c Ratio	0.21	0.17	1.07	0.14	0.44	0.81	0.03	0.45	1.01	0.02
Control Delay	71.1	3.9	153.0	25.2	49.7	5.1	0.0	28.2	27.8	0.9
Queue Delay	0.0	0.0	11.6	0.0	0.0	2.0	0.0	0.0	0.8	0.0
Total Delay	71.1	3.9	164.6	25.2	49.7	7.1	0.0	28.2	28.6	0.9
Queue Length 50th (ft)	43	0	~266	5	32	157	0	15	~1118	0
Queue Length 95th (ft)	86	11	#447	43	m40	182	m0	m14	m1064	m0
Internal Link Dist (ft)		678		268		842			2491	
Turn Bay Length (ft)					330		330	230		310
Base Capacity (vph)	197	296	192	259	150	3700	1163	130	3700	1163
Starvation Cap Reductn	0	0	0	0	0	539	0	0	0	0
Spillback Cap Reductn	0	9	7	0	0	0	0	0	9	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.17	1.11	0.14	0.44	0.94	0.03	0.45	1.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	51	71	75	502	86	2404	35	590	3125	116
v/c Ratio	0.54	0.42	0.76	0.66	0.57	0.94	0.04	0.92	0.80	0.09
Control Delay	100.4	68.0	120.3	38.9	37.8	29.3	2.6	44.7	2.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.8	0.0
Total Delay	100.4	68.0	120.3	38.9	37.8	29.9	2.6	44.7	4.5	0.0
Queue Length 50th (ft)	59	62	88	418	40	1054	2	665	135	0
Queue Length 95th (ft)	113	122	#184	559	m62	m1093	m5	m653	m126	m0
Internal Link Dist (ft)		601	1130			2203			842	
Turn Bay Length (ft)					310		700	310		160
Base Capacity (vph)	94	169	99	755	150	2570	824	641	3926	1237
Starvation Cap Reductn	0	0	0	0	0	0	0	0	605	0
Spillback Cap Reductn	0	0	0	0	0	35	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.42	0.76	0.66	0.57	0.95	0.04	0.92	0.94	0.09

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	253	207	184	187	25	76	103	2147	140	191	2934	227
v/c Ratio	0.97	0.78	0.55	0.95	0.12	0.28	0.69	0.84	0.16	0.66	1.00	0.23
Control Delay	121.8	93.3	37.1	129.9	73.0	6.8	52.6	19.1	1.8	51.3	39.9	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.8	93.3	37.1	129.9	73.0	6.8	52.6	19.1	1.8	51.3	39.9	3.6
Queue Length 50th (ft)	317	251	88	235	28	0	58	213	1	154	1323	44
Queue Length 95th (ft)	#521	#384	180	#414	64	25	m89	322	m10	m214	#1389	m58
Internal Link Dist (ft)		615			1421			1546			2203	
Turn Bay Length (ft)	200		200			210	400		890	380		380
Base Capacity (vph)	261	265	333	196	206	275	149	2542	861	289	2938	983
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.78	0.55	0.95	0.12	0.28	0.69	0.84	0.16	0.66	1.00	0.23

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	246	61	305	132	206	184	1962	170	290	2876	138
v/c Ratio	0.94	0.13	0.60	0.89	0.61	0.97	0.82	0.21	0.71	0.95	0.14
Control Delay	100.5	52.6	35.0	126.6	22.4	124.4	28.8	1.2	78.8	11.3	0.4
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	21.9	0.0
Total Delay	100.5	52.6	35.1	126.6	22.4	124.4	28.8	1.2	78.8	33.2	0.4
Queue Length 50th (ft)	254	56	165	157	29	172	792	11	277	217	1
Queue Length 95th (ft)	#418	100	278	#295	123	m#331	854	m16	m285	m252	m2
Internal Link Dist (ft)		1227			810		1111			1546	
Turn Bay Length (ft)			275			450		360	425		430
Base Capacity (vph)	261	476	507	148	338	190	2401	820	407	3022	988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	7	0	0	0	0	0	0	276	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.13	0.61	0.89	0.61	0.97	0.82	0.21	0.71	1.05	0.14

Intersection Summary

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	257	99	417	299	123	318	1980	242	111	2968	235
v/c Ratio	0.94	0.40	1.06	1.14	0.67	1.14	0.63	0.23	0.58	1.04	0.25
Control Delay	102.7	76.8	94.6	155.7	72.7	134.7	17.1	0.4	33.0	38.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0
Total Delay	102.7	76.8	94.6	155.7	72.7	134.7	17.1	0.4	33.0	40.7	0.4
Queue Length 50th (ft)	274	109	~306	~380	99	~375	421	0	34	~1371	0
Queue Length 95th (ft)	#435	176	#536	#474	#180	m#334	m311	m0	m45	#1425	m1
Internal Link Dist (ft)		1064			1392		1915			1111	
Turn Bay Length (ft)			300			370		520	380		370
Base Capacity (vph)	272	248	395	262	184	279	3135	1068	190	2853	956
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	16	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.40	1.06	1.14	0.67	1.14	0.63	0.23	0.58	1.05	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	310	555	530	639	670	989	146	878	576	260	1165	465
v/c Ratio	1.23	0.96	0.43	1.09	1.07	1.06	1.01	1.18	0.93	0.74	1.01	0.68
Control Delay	182.6	66.8	13.1	110.5	88.7	75.5	156.5	155.0	47.0	58.0	48.1	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	182.6	66.8	13.1	110.5	88.7	75.5	156.5	155.0	47.0	58.0	48.1	8.4
Queue Length 50th (ft)	~455	565	80	~426	~852	~1263	~178	~653	289	272	~714	175
Queue Length 95th (ft)	#650	#879	108	m#499	m#996	m#1456	#342	#792	#539	m256	m636	m155
Internal Link Dist (ft)		1573			2587			1373			991	
Turn Bay Length (ft)	470			210			350		265	360		
Base Capacity (vph)	252	576	1227	585	628	936	144	741	620	351	1154	683
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.96	0.43	1.09	1.07	1.06	1.01	1.18	0.93	0.74	1.01	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	27	1368	350	188	1801	254	258	251	45	26
v/c Ratio	0.09	0.78	0.45	0.52	0.94	0.76	0.77	0.49	0.21	0.08
Control Delay	13.2	33.2	6.6	18.8	38.1	49.9	50.6	7.8	38.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	33.2	6.6	18.8	38.1	49.9	50.6	7.8	38.2	0.5
Queue Length 50th (ft)	10	250	43	51	354	144	147	0	23	0
Queue Length 95th (ft)	m13	m279	m60	110	#464	#264	#269	61	56	0
Internal Link Dist (ft)		2587			481		779		118	
Turn Bay Length (ft)	220		330	200		300		225		
Base Capacity (vph)	301	1751	774	360	1919	336	337	517	218	332
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.78	0.45	0.52	0.94	0.76	0.77	0.49	0.21	0.08

Intersection Summary

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

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