Appendix 2

Draft Transportation Impact Analysis

Federal Way City Center

Draft Transportation Impact Analysis

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Draft Transportation Impact Analysis

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Appendix

This appendix includes the intersection geometries, existing intersection traffic counts, future turning movement forecasts, and level of service (LOS) summaries

Introduction

This study describes the transportation impacts associated with the development under the proposed planned action designation in the Federal Way City Center (FWCC) project located in Federal Way, WA. This study assesses the expected impact of the proposed land use changes in the City Center planning area on the City's transportation systems, including roadway intersections, transit, bicycles, and pedestrian facilities, and identifies actions and improvements to mitigate the impacts. The study follows the City of Federal Way Public Works Department *Guidelines for the Preparation of Transportation Impact Analyses* (September 9, 2014). Individual development projects proposed within the Federal Way City Center planning area may be required to provide additional analysis of the specific impact of their project on the transportation system as directed by the Director of Public Works.

Project Description

The proposed Federal Way City Center will develop an urbanized central core within Federal Way containing a mix of land uses including housing, retail, and civic uses. The City's Comprehensive Plan describes the principal purposes of the Federal Way City Center as to:

- Create an identifiable downtown that is the social and economic focus of the City;
- Strengthen the City as a whole by providing for long-term growth in employment and housing;
- Promote housing opportunities close to employment;
- Support development of an extensive regional transportation system;
- Reduce dependency on automobiles;
- Consume less land with urban development;
- Maximize the benefit of public investment in infrastructure and services;
- Reduce costs of and time required for permitting;
- Provide a central gathering place for the community; and
- Improve the quality of urban design for all developments.

This vision will be carried out by encouraging a compact form of development that will mix retail, commercial, and residential land uses. The FWCC transit center and the FWCC Park & Ride will be a key component of the planning area, supported by a high level of non-motorized facilities, amenities, and transit services that will reduce dependency on the automobile and provide transportation choices.

This report summarizes the analysis of the following alternatives:

- **2015 Existing Conditions**.
- **2025 No Action Alternative** includes an increase in land use in the City Center area. It assumes the funded Transportation Improvement Projects would be completed in the study area.
- **2025 Action Alternative** includes an increase in land use over the No Action Alternative for Federal Way's City Center and the same funded Transportation Improvement Project projects.

The primary difference between the future No Action and Action alternatives is the land use mix. The Action Alternative provides an increase in the amount of office space, residential, and hotel space. Table 1 displays the land use mix by alternative.

Table 1. Land Use Mix by Alternative

	Retail	Office	Residential (units)	Hotel (rooms)
Existing	1,833,189	67,045	254	230
No Action	2,505,379	329,427	2,179	230
Action	2,452,689	393,545	2,654	830

Affected Environment

This section summarizes the selection of the study area, existing roadway network, the project area and existing land use. This section also summarizes the findings of the traffic operations of existing intersections and collisions analysis. The existing transit, pedestrian, and bicycle facilities are also described.

Study Area

This section summarizes the approach for analyzing 2015 Existing Conditions for intersections and corridors in the study area; the City of Federal Way's *Guidelines for the Preparation of Transportation Impact Analyses* (September 9, 2014), was used to guide the analysis approach and provides greater detail.

The study area was developed by using the city's travel demand model to calculate the anticipated vehicle volume increase at intersections. Study intersections were identified for analysis if they met the following conditions:

- PM peak hour: Intersection is signalized and outside the City Center with an increase of 30 or more vehicle trips and a volume-to-capacity (v/c) ratio over 0.7. All intersections surrounding the City Center area were included in the study area provided they met the City's threshold
- AM and Saturday mid-day peak hours: Intersection is anticipated to experience an increase of 100 or more vehicle trips. All intersections surrounding the City Center that were included in the PM analysis were included in AM and Saturday analysis.

The study area intersections are presented in Table 2. Figure 1 presents the PM distribution along with the study intersections. A percentage of total trips generated from the City Center area was used to determine the intersections potentially impacted by the development. More intersections were analyzed during the PM peak hour because vehicle volumes were greater compared to the AM and Saturday Midday peak hours. Also, this provided a more conservative analysis of the overall study area.

Figure 1. PM Peak Hour Distribution and Study Intersections

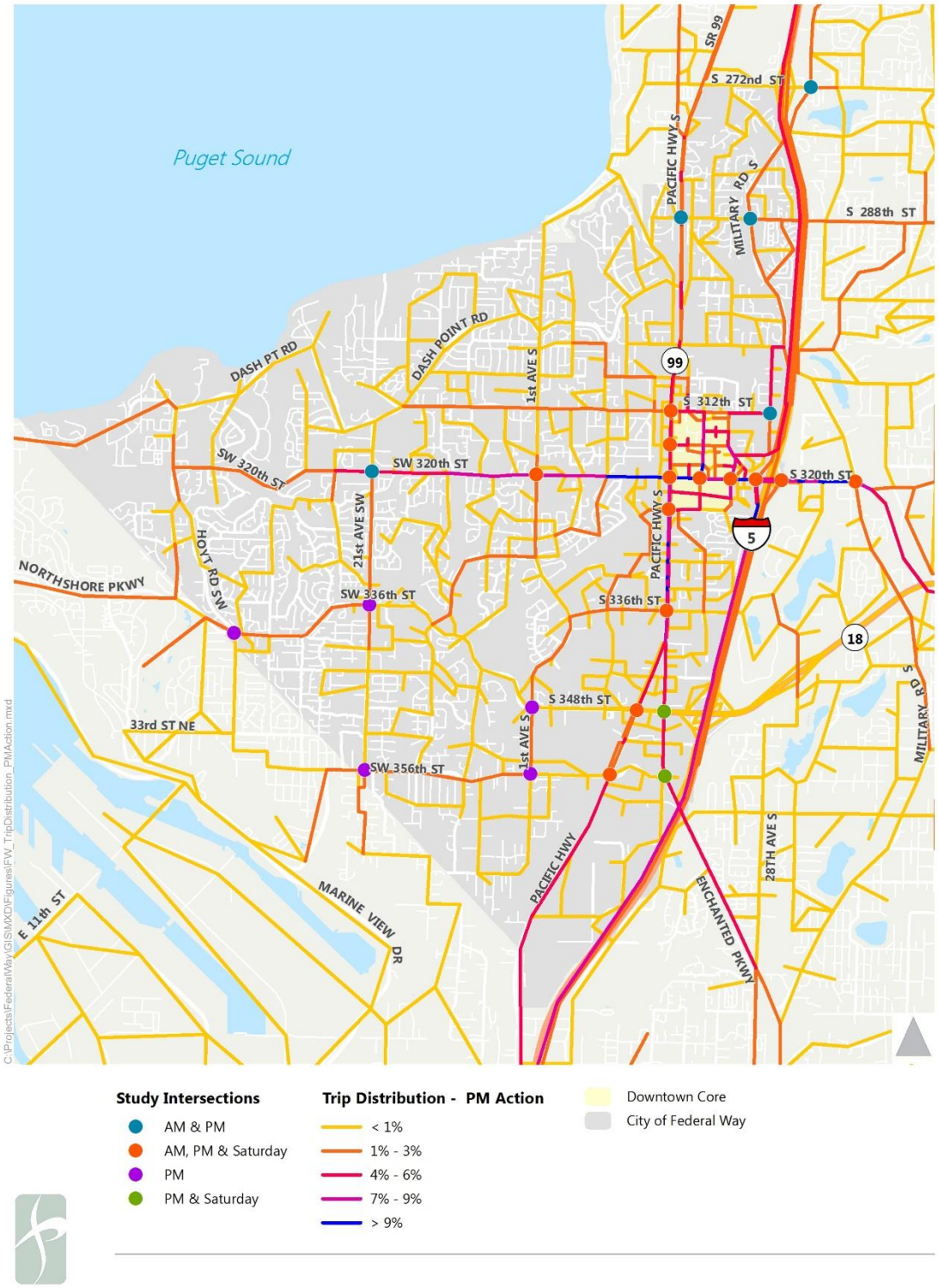


Table 2. Study Intersections Included in Analyses

Intersection	PM	AM	Saturday
*S 272 Street & Military Road S	X	X	
S 288th Street & Pacific Hwy S	X	X	
S 288th Street & Military Road S	X	X	
SW 320 Street & 21 Avenue SW	X	X	
S 320 Street & 1 Avenue S	X	X	X
S 320 Street & I-5 SB Ramp	X	X	X
S 320 Street & I-5 NB Ramp	X	X	X
S 320 Street & Military Road S	X	X	X
SW 336 Street & 21 Avenue SW	X		
S 336 Street & Pacific Hwy S	X	X	X
SW 340 Street & Hoyt Road SW	X		
SW Campus Drive & 1 Avenue S	X		
S 348 Street & Pacific Hwy S	X	X	X
S 348 Street & SR 161	X		X
SW 356 Street & 21 Avenue SW	X		
S 356 Street & 1 Avenue S	X		
S 356 Street & Pacific Hwy S	X	X	X
S 356 Street & Enchanted Parkway S	X		X
**S 312 Street & 28 Avenue S	X	X	
S 316 Street & Pacific Hwy S	X - CC	X - CC	X - CC
S 312 Street & Pacific Hwy S	X - CC	X - CC	X - CC
S 320 Street & Pacific Hwy S	X - CC	X - CC	X - CC
S 320 Street & 20 Avenue S	X - CC	X - CC	X - CC
S 320 Street & 23 Avenue S	X - CC	X - CC	X - CC
S 324 Street & Pacific Hwy S	X - CC	X - CC	X - CC
Number of Intersections Analyzed	**25**	**18**	**15**

X: Study area intersection included in analysis
X-CC: denotes City Center intersection included in analysis
* Intersection is located outside of City of Federal Way limits
** Unsignalized Intersection

Existing Roadway Network

The existing street network around the City Center is mostly grid-like with four legged intersections. Interstate-5 (I-5), Pacific Highway / State Route 99 (SR 99), and State Route 161 (SR 161) are in the study area and provide regional access to the north and south. Access ramps to I-5 are provided at 272nd Street, 320th Street, and 348th Street.

I-5 is a limited access facility that provides four general purpose lanes and a high occupancy vehicle lane in each direction. The posted speed limit is 60 miles per hour. Pacific Highway South (SR 99) is a Principal Arterial with five to seven travel lanes, including HOV lanes and turning lanes at intersections. The posted speed limit on SR 99 is 40 mph south of S 304th Street and 45 mph north of S 304th Street. SR99 provides access to Seattle and SeaTac International Airport to the north and the city of Tacoma

to the south. SR 161 provides access to the City of Puyallup. It is a five lane arterial with a posted speed limit ranging from 40 mph to 45 mph.

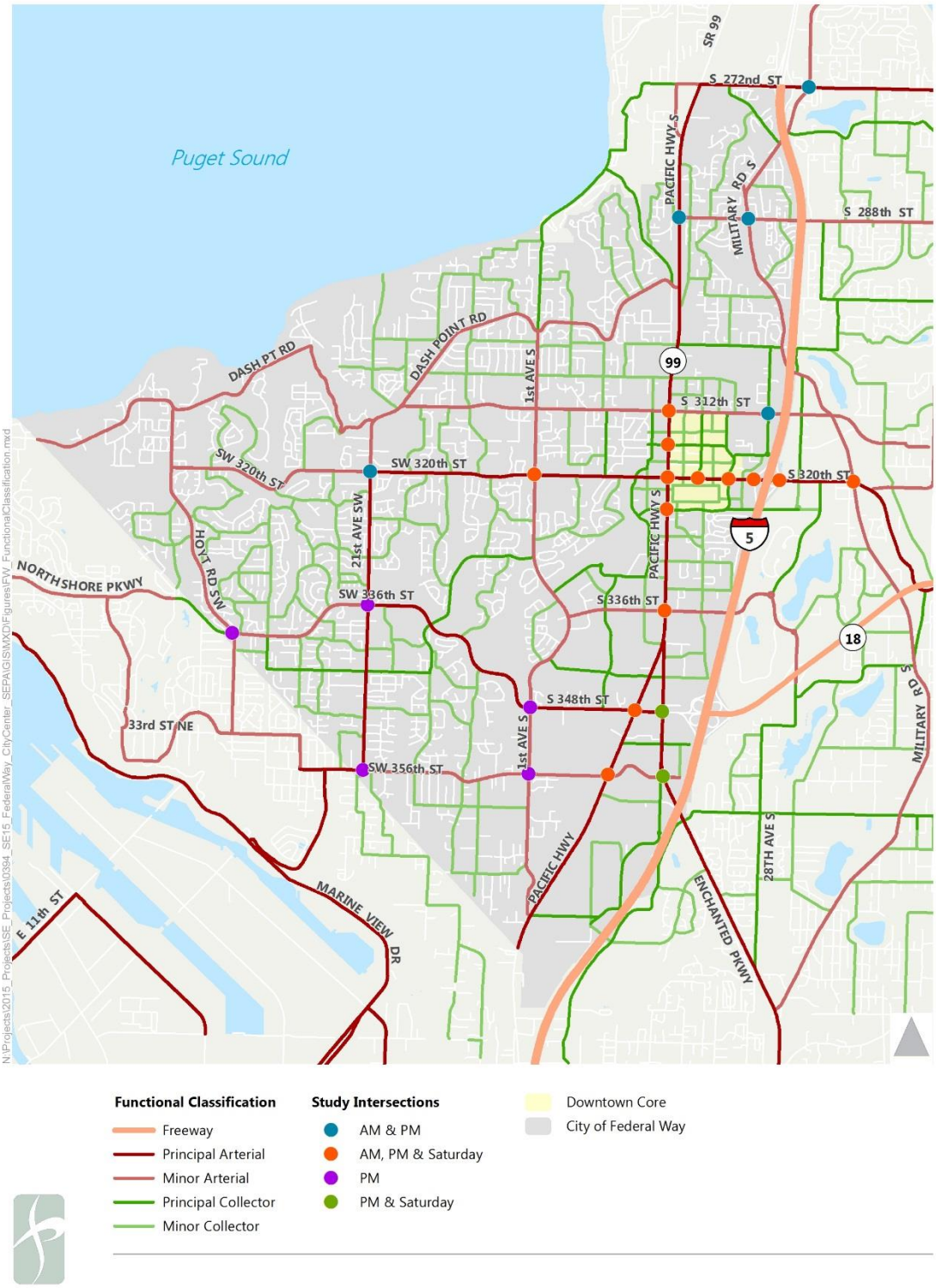
S 272nd Street is a Principal Arterial that runs east-west and provides the City Limits to the north. S 272nd Street provides access to SR 99 at a signalized intersection, as well as ramps to access I-5 northbound and southbound. The roadway has four travel lanes with additional turn lanes.

S 320th Street is a Principal Arterial that runs east-west. The roadway has seven travel lanes in the City Center and five travel lanes outside of the City Center with additional turning lanes at intersections. The roadway provides access to SR 99 at a signalized intersection and access ramps to I-5 northbound and southbound. S 320th Street between SR 99 and I-5 carries over 35,000 vehicles per day.

S 348th Street is a Principal Arterial that runs east-west; it becomes SW Campus Drive west of 1st Avenue S and SR 18 east of Pacific Highway S. S 348th Street has five travel lanes. SR 18 is a state owned divided highway with two to four lanes in each direction. The roadway provides regional access continuing east through Auburn and northeast to I-90 in Snoqualmie.

The functional classification of Federal Way's roadway network is shown in Figure 2.

Figure 2. Functional Classification



Project Area and Existing Land Use

The City Center project area is bounded by S 324th Street to the south, 23rd Avenue South to the east, S 312th Street to the north, and SR 99 to the west. Figure 3 shows the Federal Way City Center project area. The City Center area is a mix of retail, office, senior housing, multi-family households, and hotels. This area provides the greatest concentration of shopping and businesses in the city of Federal Way. There are also businesses located on the west side of SR 99 and the area outside of the City Center is mostly residential. The square footage of the City Center is summarized in Table 3.

Table 3. Existing Land Use

	Retail (sq ft)	Office (sq ft)	Residential (units)	Hotel (rooms)
2015 Existing Conditions	1,833,189	67,045	254	230

Figure 3. Project Location

Project Location

City Center

Corridor Right-of-Way

The Federal Way Revised Code (FWRC) 1.05.020 describes right-of-way as *"… land owned, dedicated or conveyed to the public or a unit of government, used primarily for the movement of vehicles or pedestrians and providing for access to adjacent parcels, with the secondary purpose of providing space for utility lines and appurtenances and other devices and facilities benefiting the public. "Right-of-way" includes, but is not limited to, any street, easement, sidewalk, or portion thereof under the jurisdiction of the city."*

The City of Federal Way's Comprehensive Plan provides a network of "City Center" roadways that meet the higher level of amenities for the Federal Way City Center planning area (Figure 3). The need for wider sidewalks, bicycle lanes, street lighting, and street trees resulted in the City designating specific standards for Federal Way City Center roadways. Table 4 summarizes the required and the typical amounts of right-of-way found on major roadways within the Federal Way City Center planning area.

Table 4. Right-of-Way for Major Area Streets

Roadway	Required City Center right-of-way	Existing right-of-way
Pacific Highway S (SR 99)	120 feet	100-140 feet
S 324th Street	96 feet	66 feet
S 320th Street	100 feet	100-140 feet
S 316th Street	74 feet	60 feet
S 312th Street	85 feet	60-85 feet
20th Avenue S	60 feet	60 feet
23rd Avenue S	85 feet	80-82 feet

Source: King County Assessor 2003

As summarized in Table 3, Pacific Highway S, S 324th Street, S 316th Street, S 312th Street and 23rd Avenue S all have inadequate right-of-way. In addition, the City Center plan calls for a number of internal roadways to create smaller blocks that will improve the grid network and improve the access for pedestrians and vehicles. These internal grid roads require 70 feet of right-of-way with two vehicle lanes, 12 feet of sidewalks, and on-street parking. Right-of-way dedication and street improvements shall be a component of the development submittal phase of a proposed project within the Federal Way City Center. Additional information on ultimate roadway cross-sections can be found in Map III-4 of the Transportation Element.

Existing Traffic Operations

Traffic counts were collected in Fall 2014 or July 8, 2015 between 4:00 pm and 6:00 pm and Wednesday July 8, 2015 between 6:00 am and 8:00 am. Saturday traffic counts were collected July 11, 2015 between 11:00 am and 1:00 pm. The analysis of intersections was completed for the highest hour of vehicle traffic for the AM, PM, and Saturday midday peak hours.

In 2015, the city of Federal Way revised their level of service (LOS) standard for intersections. This standard is used to determine whether an intersection is operating at an acceptable condition. The standard provides a volume-to-capacity (v/c) ratio compared to the previous intersection average vehicle delay (also known as level of service or LOS). The current standard states that signalized intersections should have a volume-to-capacity (v/c) ratio less than 1.2 outside of the City Center or less than 1.0 at any unsignalized intersection. Signalized intersections inside of the City Center should

experience an average volume-to-capacity (v/c) ratio of 1.1 or less. An intersection with a volume-to-capacity ratio greater than the standard is considered deficient and would require mitigation to bring the intersection into acceptable conditions.

The traffic analysis software Synchro 8 was used to calculate the volume-to-capacity ratios by reporting results using the Highway Capacity Manual 2000 outputs. The volume-to-capacity ratio is determined for intersections using Highway Capacity Manual 2000 methodology because it provides an overall volume-to-capacity (v/c) ratio for signalized intersections. The unsignalized intersection of S 312 Street and 28th Avenue S was analyzed using Highway Capacity Manual 2010 methodology, and the approach movement with the highest volume-to-capacity (v/c) ratio is reported.

Table 5 and Figure 4 through Figure 6 summarize the results of the intersection operations analysis including intersection level of service (LOS), average intersection vehicle delay, and volume-to-capacity (v/c) ratio. None of the intersections were found to be deficient.

The intersection geometries, existing intersection traffic counts, future turning movement forecasts, and level of service (LOS) summaries are found in the Appendix to this report.

Table 5. Existing Conditions Intersection Analysis Results

	PM Peak Hour			AM Peak Hour			Saturday Midday Peak Hour		
Study Intersections	**LOS**	**Delay**	**v/c ratio**	**LOS**	**Delay**	**v/c ratio**	**LOS**	**Delay**	**v/c ratio**
*S 272 Street & Military Road S	D	48.9	0.83	D	44.7	0.73			
S 288th Street & Military Road S	D	51.7	0.74	D	39.8	0.51			
S 288th Street & Pacific Highway S	D	43.3	0.73	C	24.6	0.48			
**S 312 Street & 28 Avenue S	D	32.3	0.93	A	8.8	0.29			
S 320 Street & 1 Avenue S	D	54.2	0.83	C	32.9	0.62	C	33.9	0.63
S 320 Street & I-5 NB Ramp	C	21.6	0.66	B	11.5	0.48	B	14.6	0.58
S 320 Street & I-5 SB Ramp	C	30.2	0.70	B	11.9	0.56	B	18.4	0.69
S 320 Street & Military Road S	D	53.2	0.79	C	29.9	0.69	D	48.5	0.67
S 336 Street & Pacific Highway S	D	53.3	0.86	D	44.4	0.50	C	21.7	0.51
S 348 Street & Pacific Highway S	E	64.4	0.86	C	34.1	0.70	D	52.9	0.89
S 348 Street & SR 161	E	72.6	0.97				E	78.5	1.08
S 356 Street & 1 Avenue S	D	44.9	0.91						
S 356 Street & Enchanted Parkway S	D	43.6	0.84				C	25.7	0.62
S 356 Street & Pacific Highway S	D	53.6	0.87	D	37.8	0.47	D	53.2	0.80
SW 320 Street & 21 Avenue SW	D	41.6	0.80	C	31.4	0.52			
SW 336 Street & 21 Avenue SW	D	49.3	0.72						
SW 340 Street & Hoyt Road SW	C	34.6	0.76						
SW 356 Street & 21 Avenue SW	E	55.1	0.79						
SW Campus Drive & 1 Avenue S	D	42.5	0.64						
S 312 Street & Pacific Highway S	D	54.9	0.73	C	20.3	0.39	D	42.3	0.58
S 316 Street & Pacific Highway S	D	54.7	0.69	A	7.8	0.22	C	28.8	0.59
S 320 Street & 20 Avenue S	C	34.6	0.74	A	7.7	0.32	D	36.1	0.67
S 320 Street & 23 Avenue S	D	48.3	0.81	C	25.3	0.53	C	30.1	0.66
S 320 Street & Pacific Highway S	E	57.1	0.75	C	23.1	0.47	D	37.2	0.74
S 324 Street & Pacific Highway S	D	48.0	0.82	B	18.1	0.32	D	35.6	0.71
Average v/c City Center			**0.76**			**0.40**			**0.67**

* Intersection is located outside of City of Federal Way limits
**Unsignalized Intersection

Figure 4. Existing Conditions V/C Ratio AM Peak Hour

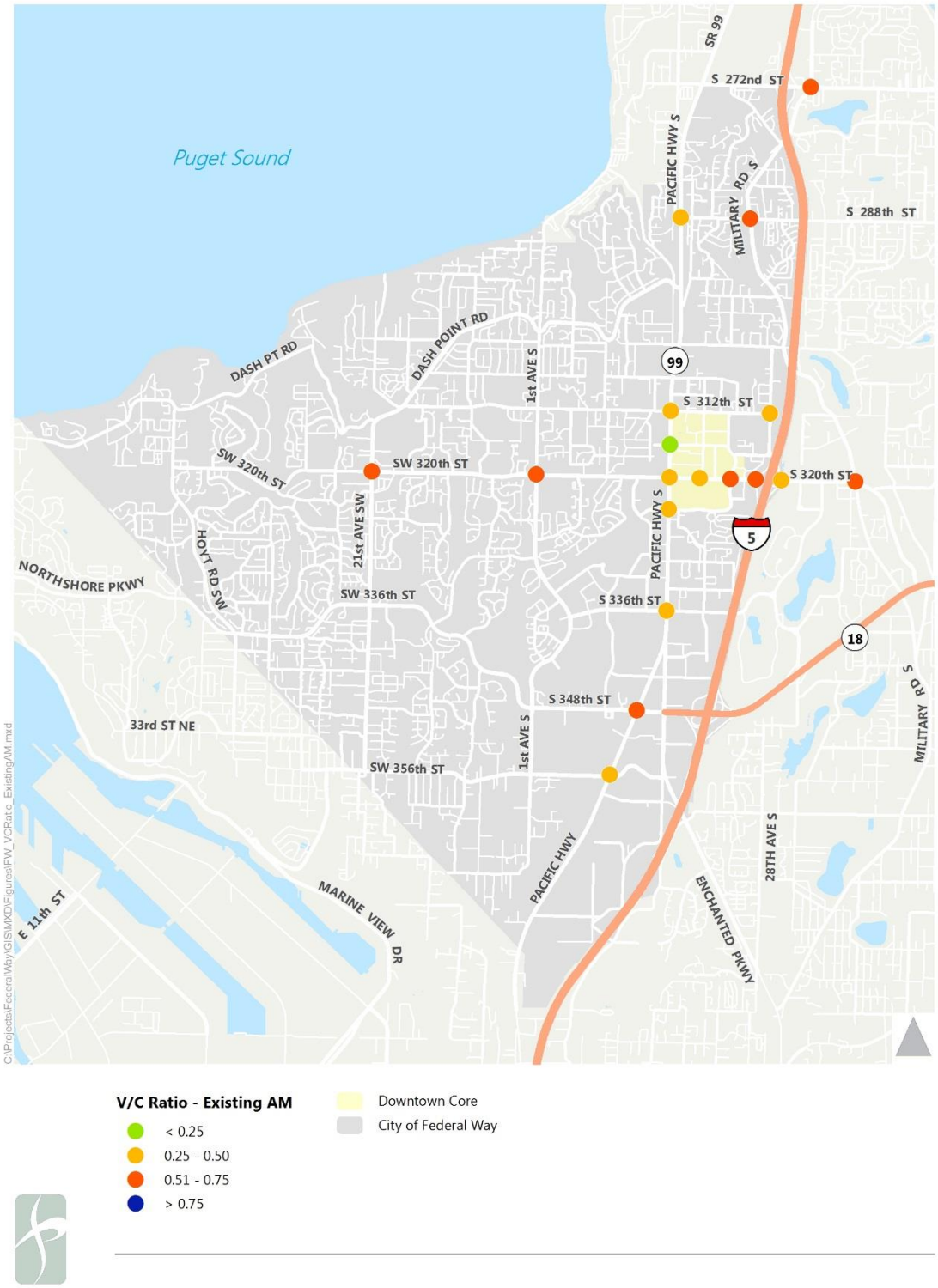


Figure 5. Existing Conditions V/C Ratio PM Peak Hour

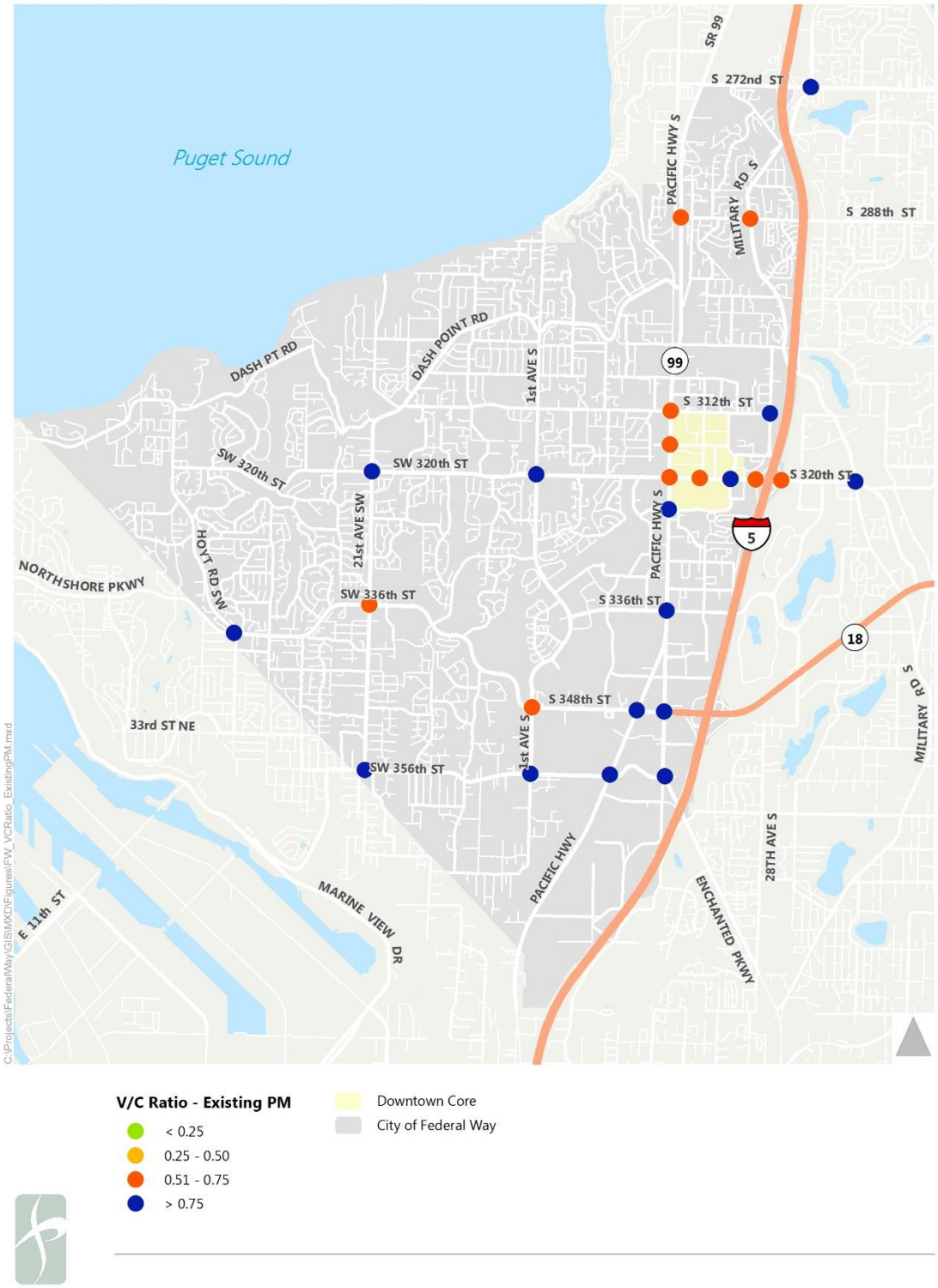
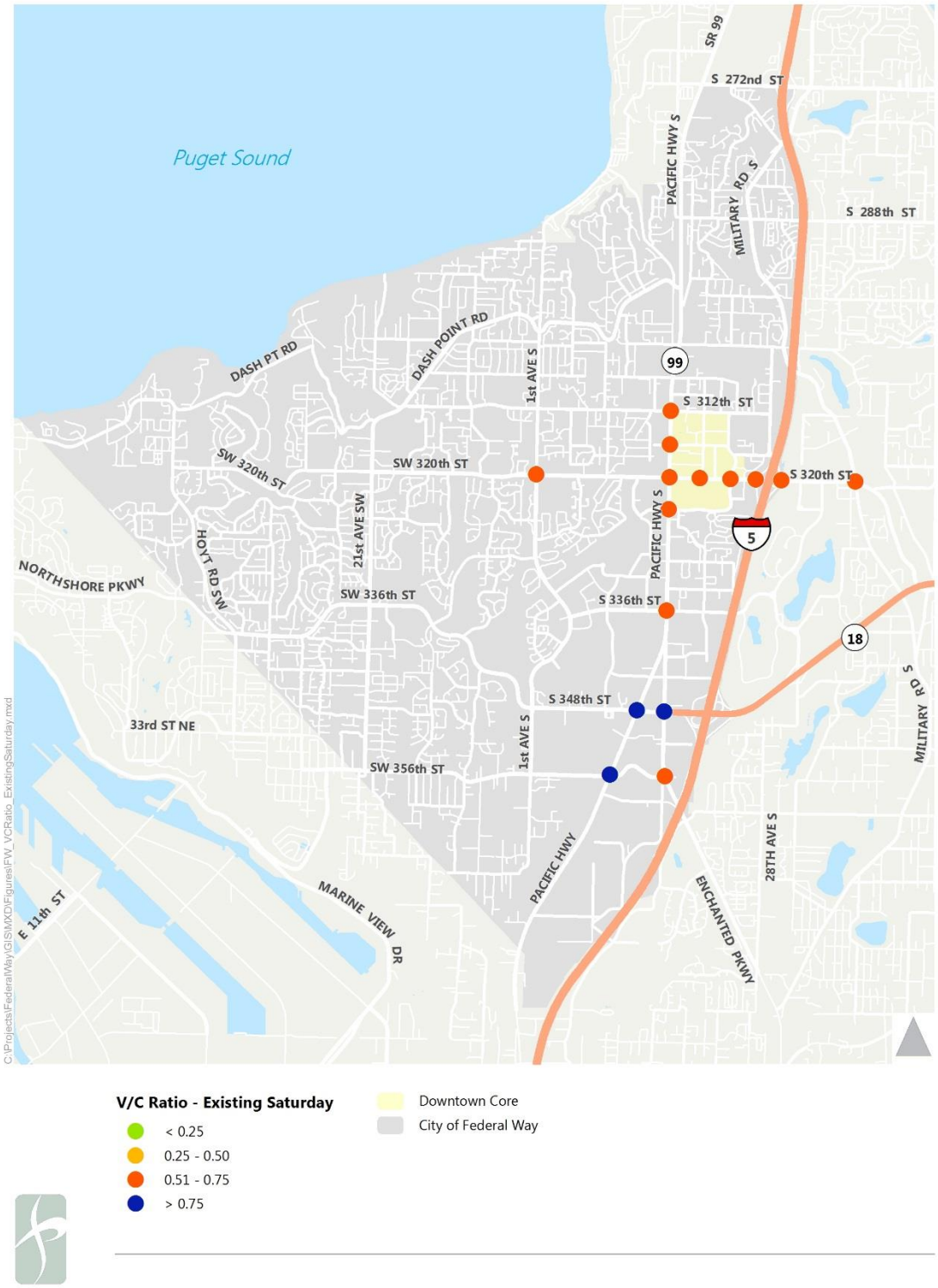


Figure 6. Existing Conditions V/C Ratio Saturday Midday Peak Hour



Parking

The existing number of parking stalls in the Federal Way City Center area reflects the more auto-orientated development pattern of current land uses. Table 6 summarizes the number of parking spaces required by City Code for each existing land use.

Table 6. Existing Parking Requirements

	Retail (sq ft)	Office (sq ft)	Residential (units)	Hotel (rooms)	Total Spaces Per Code
City Code	1 per 300 sq ft	1 per 300 sq ft	1.7 per unit	1 per room	
Existing Square Footage	1,833,189	67,045	254	230	
Existing Parking Requirement per Code	6,111	223	432	230	6.996

Data provided by the City estimates that there are approximately 8,960 parking stalls provided in the Federal Way City Center area. As summarizes in Table 5, nearly 2,000 additional parking stalls are provided above what existing code requires.

Collision Analysis

Review of historical collision data provides an indication of the location and severity of incidents at intersections and along corridors. Historical analysis is useful in understanding the typical types of collisions that occur at a particular location; however, the data may not be indicative of future collision rates or causes. A number of factors can contribute to collisions including:

- Traffic congestion (ability to maneuver)
- Driver skills (driver age and experience)
- Driver behavior (speeding, aggressiveness, driving while intoxicated)
- Roadway geometrics (sight distance)
- Weather conditions (rain, glare, snow)
- Nature (animals, fallen trees)
- Vehicle condition, equipment and maintenance (brakes, tires)
- Roadway condition (pavement condition)

Five years of collision data, 2010 through 2014, were analyzed to identify collision trends in the study area. The City requires the identification of high collision intersections and roadway corridors defined as follows:

- A collision rate of more than 1.0 collision per million entering vehicles (MEV) at an intersection.
- A collision rate of more than 10.0 collisions per million vehicle miles (MVM) on a roadway segment. Roadway segments are defined as arterials and principal collectors between and including intersections of collectors and arterials.

Table 7 provides the calculated collision rates for the study intersections and roadway segments. Results indicate that three of the 23 intersections and one of the 15 roadway segments could be considered to have high collision rates. The City has either improved or planned to improve these locations to address high collision rates.

Table 7. Five-year Collision Rates (2010 – 2014)

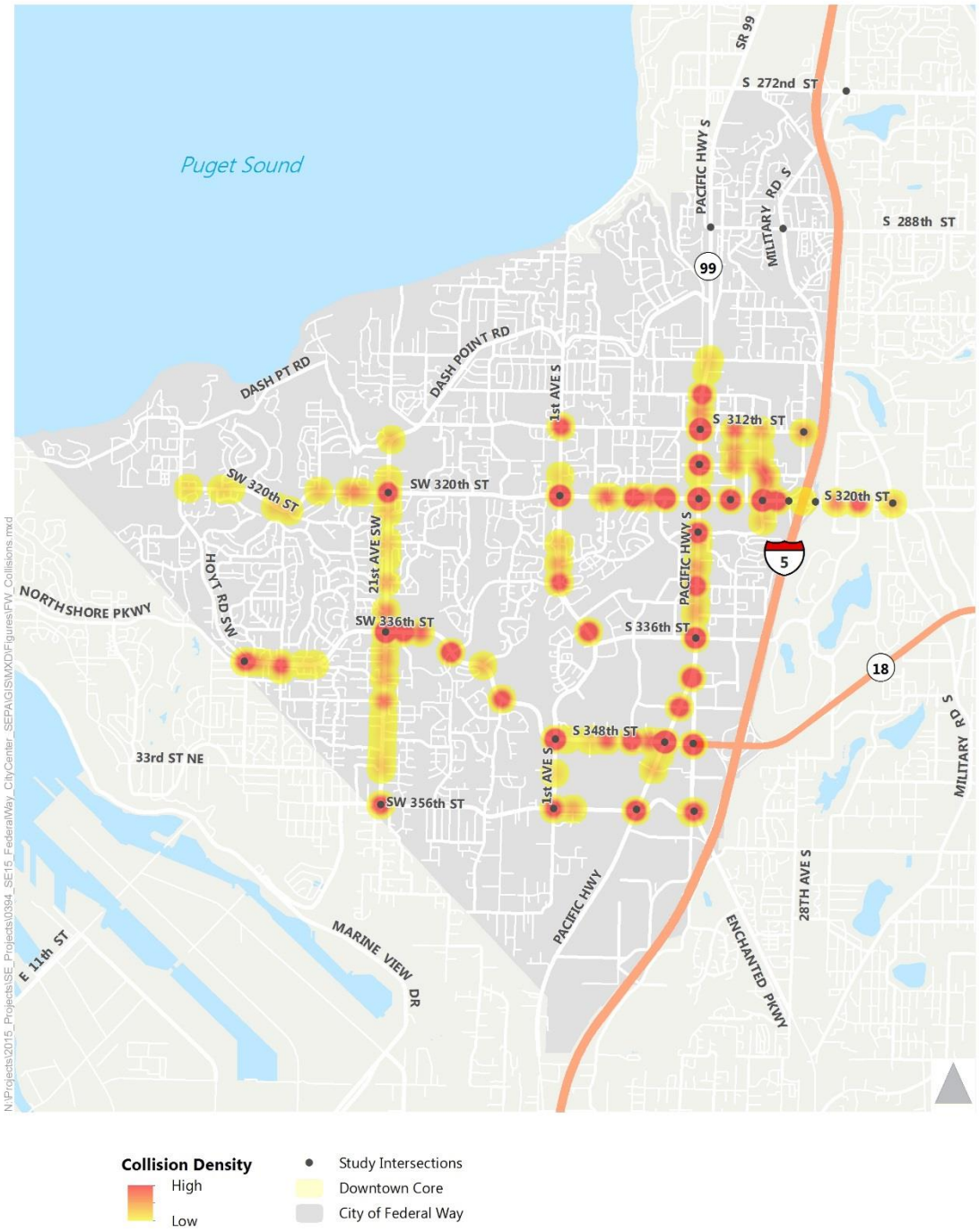
Intersection[1]	Total Collisions	Collision Rate (MEV)[2]
S 288th Street & Military Road S	60	0.99
S 288th Street & Pacific Highway S	47	0.55
S 312 Street & 28 Avenue S	10	0.45
S 320 Street & 1 Avenue S	65	0.89
S 320 Street & I-5 NB Ramp	7	0.09
S 320 Street & I-5 SB Ramp	25	0.29
S 336 Street & Pacific Highway S	62	0.68
S 348 Street & Pacific Highway S	36	0.32
S 348 Street & SR 161	82	0.58
S 356 Street & 1 Avenue S	21	0.38
S 356 Street & Enchanted Parkway S	24	0.39
S 356 Street & Pacific Highway S	37	0.44
SW 320 Street & 21 Avenue SW	45	0.66
SW 336 Street & 21 Avenue SW	79	**1.12**
SW 340 Street & Hoyt Road SW	28	0.65
SW 356 Street & 21 Avenue SW	25	0.43
SW Campus Drive & 1 Avenue S	38	0.56
S 312 Street & Pacific Highway S	106	**1.36**
S 316 Street & Pacific Highway S	57	0.86
S 320 Street & 20 Avenue S	45	0.61
S 320 Street & 23 Avenue S	73	0.81
S 320 Street & Pacific Highway S	125	**1.09**
S 324 Street & Pacific Highway S	43	0.57
Roadway Segment	**Total Collisions**	**Collision Rate (MVM)[2]**
21st Avenue SW from SR 509 to S 356 St	233	3.03
1st Avenue S from S 312 Street to S 356 St	191	3.73
SR 99 from S 272 Street to S 356 Street	1006	3.87
20th Avenue S from S 312 Street to S 320 Street	50	8.94
23rd Avenue S from S 312 Street to S 322 Street	88	8.52
28th Avenue S from S 312 Street to S 317 Street	8	2.93
S 312th Street from SR 99 to 28th Avenue S	131	9.76
S 316th Street from SR 99 to 23rd Avenue S	50	**11.85**
S 317th Street between 23rd Avenue S and 28th Avenue S	8	2.85

S 320th Street from 1st Avenue S to Military Rd	555	4.81
SW 320th Street from Hoyt Road to 1st Avenue S	125	1.34
S 348th Street from 1st Avenue S to I-5	182	3.12
SW Campus Drive from 21st Avenue SW to 1st Avenue S	173	2.71
SW 340th/336th Street from Hoyt Road to 21st Avenue SW	165	4.66
S 356th Street from 1st Avenue S to 16th Avenue S/Enchanted Pkwy	102	4.29

Note: Bold values indicate high collision locations, as defined by City standards.
[1] The City does not maintain data for the study intersections at S 272 Street & Military Road S and S 320 Street & Military Road S
[2] MEV = million entering vehicles; MVM = million vehicle miles
Source: City of Federal Way Collision Database

The City of Federal Way, in general, attributes the majority of collisions to congestion at roadways and intersections. The congestion related delay at intersections can result in driver risk-taking by attempting to reduce wait times. Improving mobility and access to all modes, reducing conflict points, and reducing travel delay may reduce some types of collision along the corridor. The City traffic engineering department monitors collision data and corrects roadway and intersection issues that could contribute to higher collision rates at specific locations. Figure 7 provides a collision density 'heat map' for the analyzed intersections and roadway segments.

Figure 7. Collision Density Heat Map

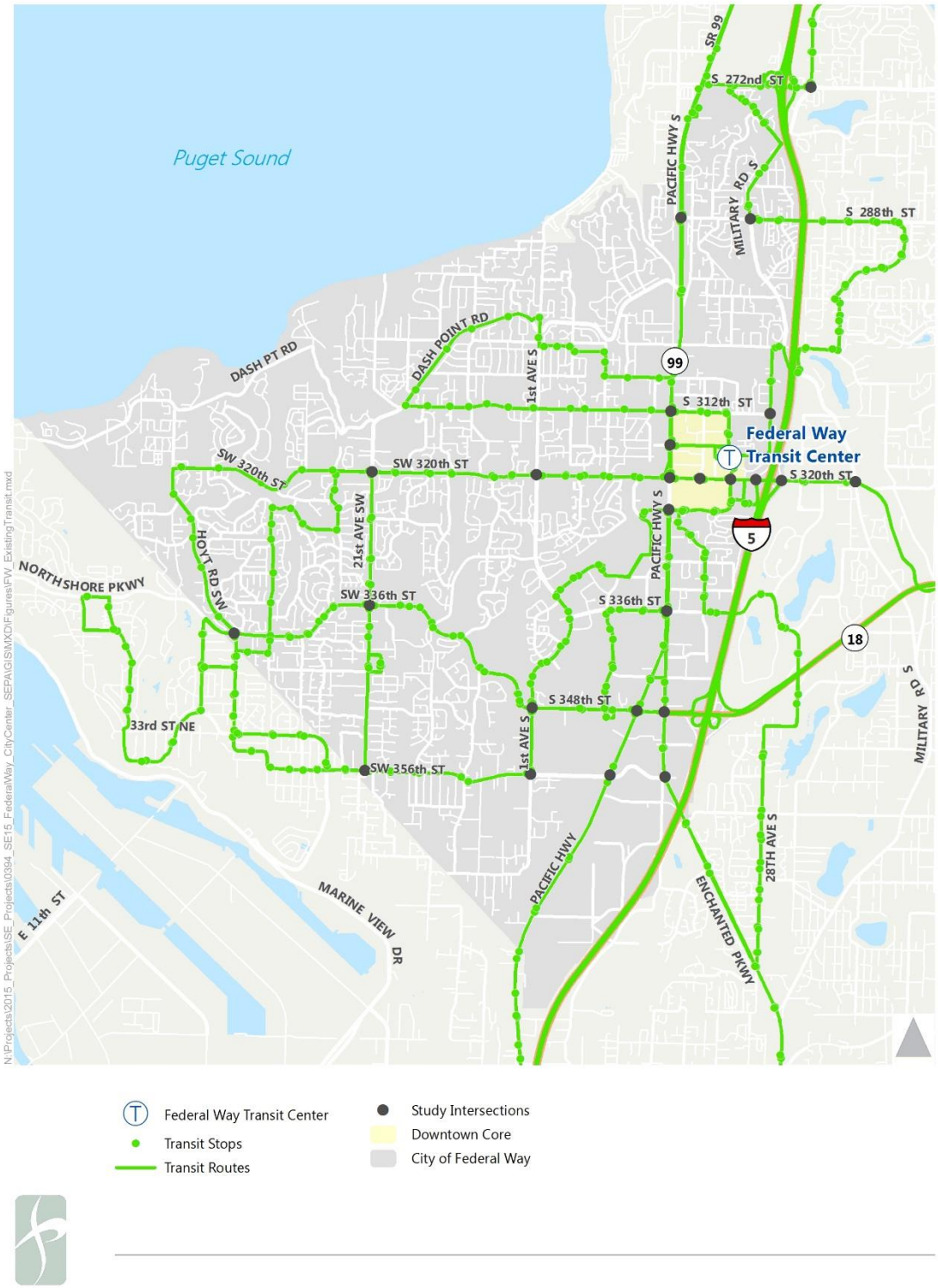


Transit Services

Federal Way Transit Center is located within the City Center on S 317th Street between 21st Avenue S and 23rd Avenue S. Within the study area, S 324th Street, S 320th Street, and S 312th Street are used to access the Transit Center. The Transit Center is served by Sound Transit routes 574, 577, and 578, King County Metro routes Rapid Ride A, 179, 181, 182, 183, 187, 193, and 197, and Pierce Transit routes 402, 500, and 501. Bicycle lockers and 1,190 vehicle parking spaces are provided at the Transit Center. The parking lot is heavily used during the weekday. The Transit Center provides direct access to high-occupancy vehicle (HOV) lanes on I-5.

Several bus routes stop in Federal Way with 3,000 to 3,500 person trips made by public transit service each day. About three percent of peak hour trips within Federal Way are transit trips. Figure 8 summarizes transit facilities in the study area, including King County Metro, Sound Transit, and Pierce Transit service.

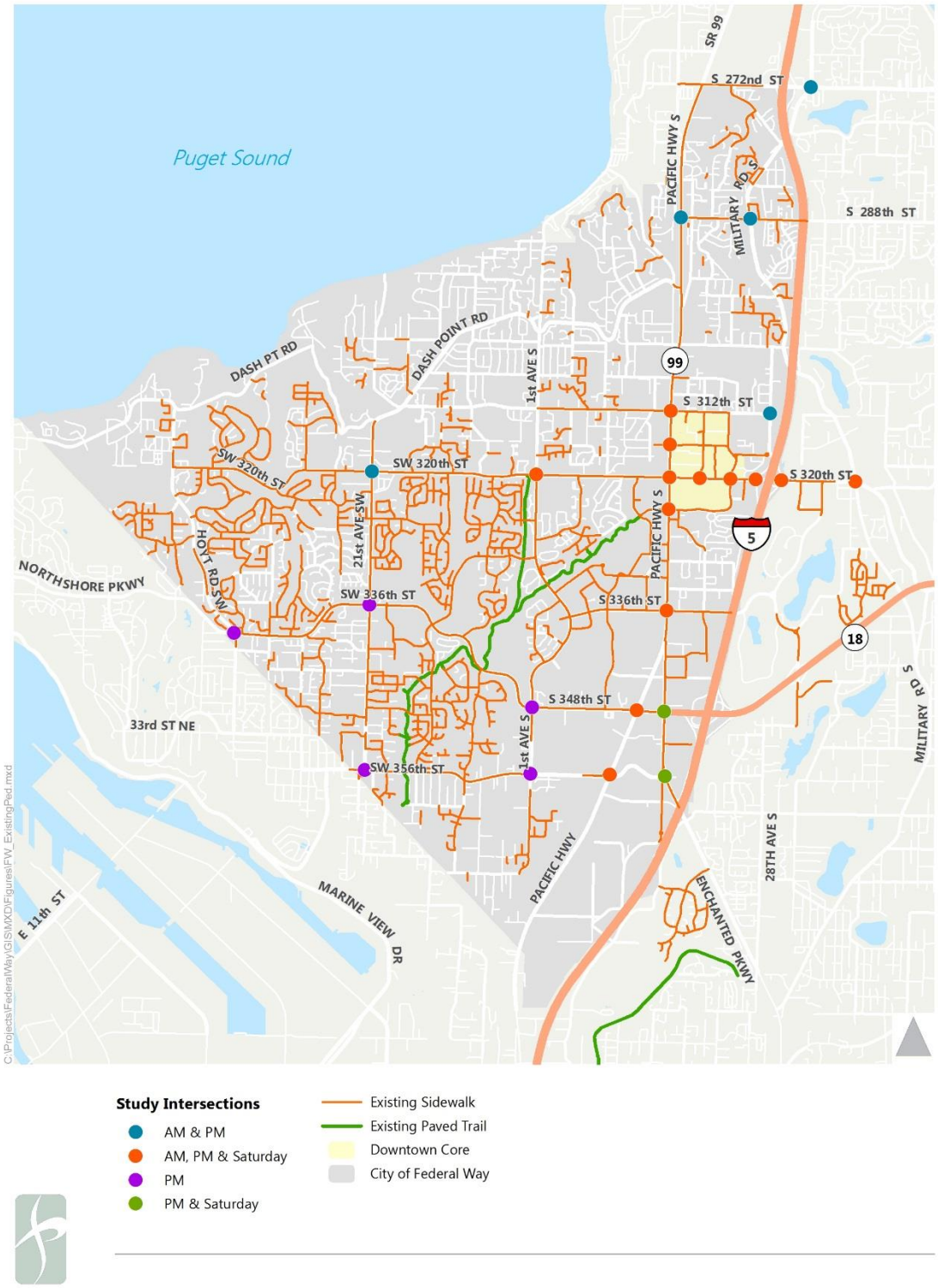
Figure 8. Transit Facilities



Pedestrian Facilities

The City of Federal Way has pedestrian connectivity with sidewalks on many streets in the study area. The Bonneville Power Administration (BPA) Trail is a paved pedestrian trail that connects residential areas to parks. Although there are sidewalks connecting the residential area with the City Center, walking is not a popular mode choice to shopping because of the high volume and high speed of vehicles on the roadway network and the relatively long distance between destinations. Figure 9 summarizes existing pedestrian facilities in the City of Federal Way.

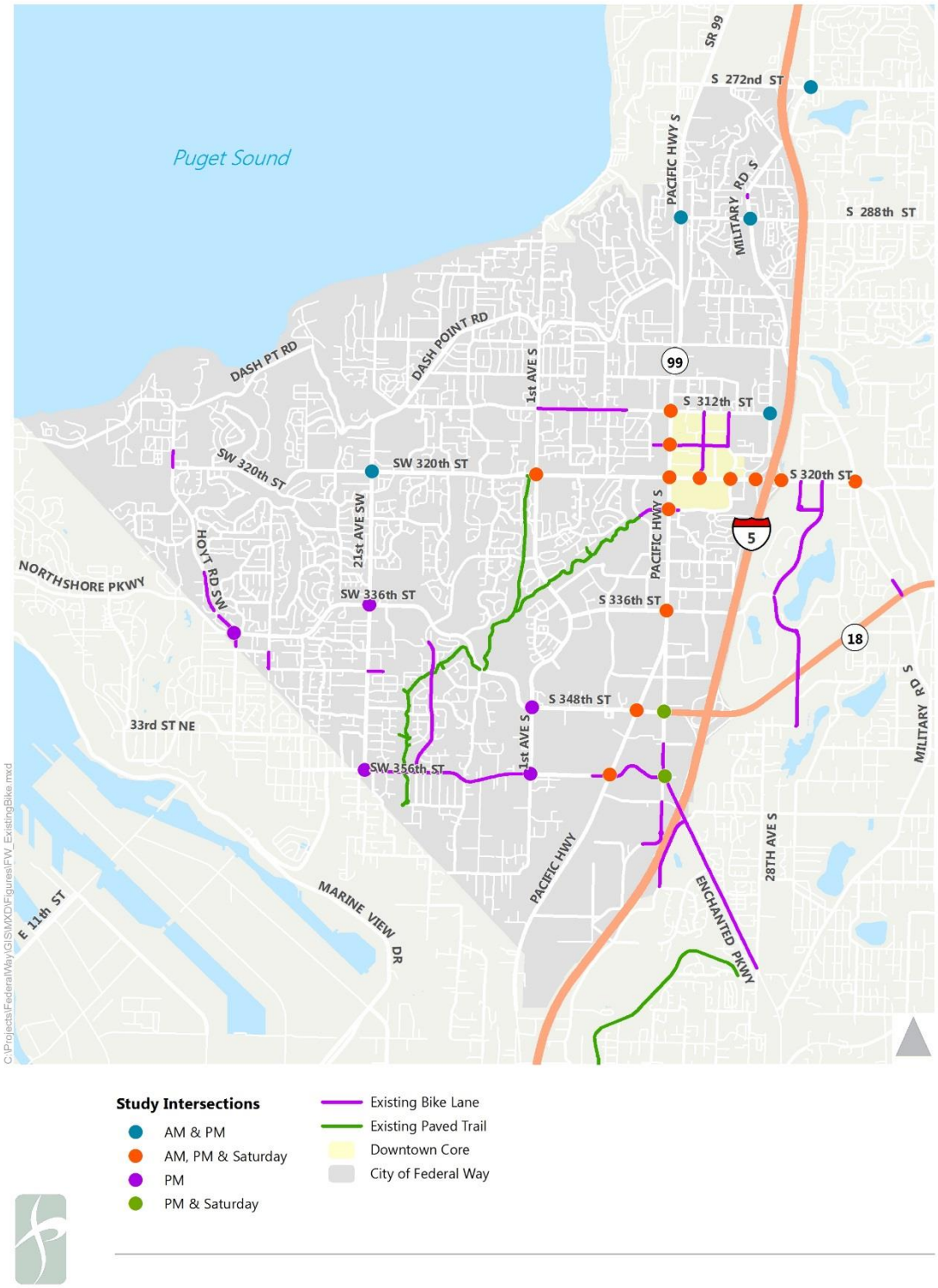
Figure 9. Pedestrian Facilities



Bicycle Facilities

The city's bicycle network consists of a range of facilities including bike lanes, wide shoulders, and the BPA Trail. The BPA Trail provides a connection for cyclists to the City Center. However, cyclists must cross SR 99, which may be a deterrent. Within the City of Federal Way, cyclists can bike on the sidewalk, except in the City Center where it is prohibited by ordinance. When surveyed as part of the Comprehensive Plan, residents cited a lack of bicycle infrastructure as the main cycling deterrent. Figure 10 summarizes existing bicycle facilities in the City.

Figure 10. Bicycle Facilities



Future Conditions

This section summarizes the transportation effects within the study area and at the City Center. It includes a summary of the land use assumed for the alternatives and roadway improvement assumptions.

Future Year Land Use

The Action Alternative proposes a mixed use development, which would provide the variety of land uses to create an urban center within Federal Way. The difference between the No Action and Action Alternatives is the land use assumptions in the City Center; the Action Alternative assumes an increase over the No Action alternative. Table 8 summarizes the land use quantities for the alternatives. The land use in the rest of the City and the greater Puget Sound Region is the same for both alternatives.

Table 8. City Center Land Use Future No Action and Action Alternatives

	Retail (sq ft)	Office (sq ft)	Residential (units)	Hotel (rooms)
Existing	1,833,189	67,045	254	230
No Action	2,505,379	329,427	1,925	230
Action	2,452,689	393,545	2,654	830

Roadway Improvements Assumptions

The city's *Transportation Improvement Plan (TIP)* highlights funded projects through the year 2040. Ten of the study intersections are expected to have funded planned projects between 2015 and 2025. Table 9 and Figure 11 summarize the projects assumed to be constructed by 2025 for both alternatives. Table 11 summarizes the specific improvements planned for study intersections.

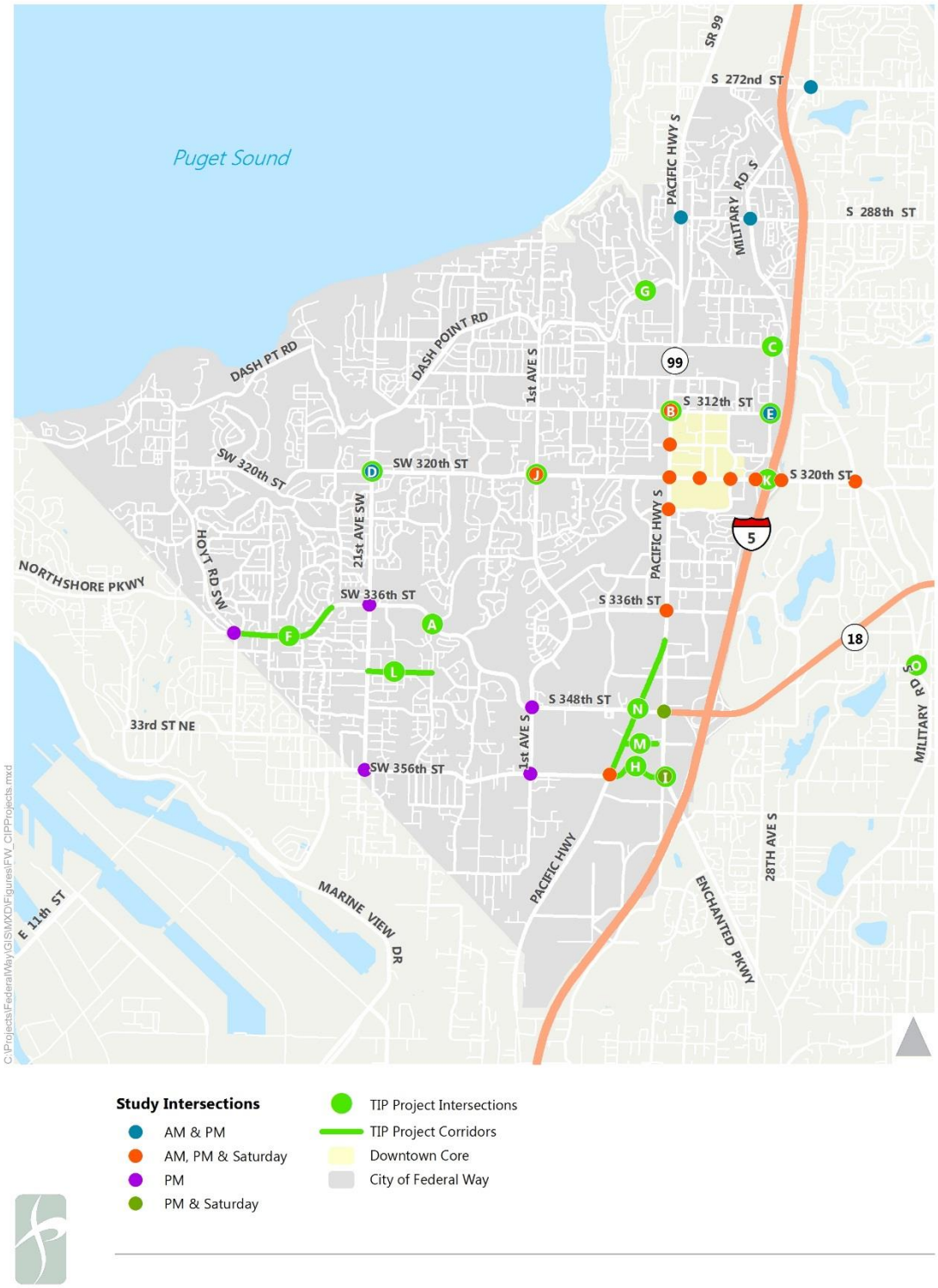
Table 9. Transportation Improvement Projects through 2025

Project	Location	Description
A	10th Avenue SW @ SW Campus Drive	Add SB right-turn lane
B	SR 99 @ S 312th Street	Add 2nd left-turn lane NB
C	S 304th Street @ 28th Avenue S	Add NB right-turn lane, signal
D	SW 320th Street @ 21st Avenue SW	Add 2nd WB left-turn lane, Interconnect to 26th Ave SW
E	S 312th Street @ 28th Avenue S	Add SB right-turn lane
F	SW 336th Way/SW 340th Street (26th Pl SW to Hoyt Road SW)	Widen to 5 lanes, add signal at 26th Pl SW
G	SE 509 @ 11th Place S	Add EB left-turn lane
H	S 356th Street (SR 99 to SR 161)	Widen to 5 lanes
I	S 356th Street @ SR 161	Add 2nd NB left to SR 161
J	S 320th Street @ 1 Avenue South	Add EBL, WBL, WBR, NBT, SBR; widen to 5 lanes N to 316 or Alternative Measure
K	S 320th Street @ I-5 Bridge Widening	Add HOV lanes, realign ramps in SE quadrant
L	SW 344th Street (12th Avenue SW to 21st Avenue SW)	Extend 3 lane principal collector
M	S 352nd Street (SR 99 to SR 161)	Extend 3 lane principal collector
N	SR 99: S 340th Street to S 356th Street	Construct Arterial HOV lanes, both directions
O	Military Rd @ S 342nd Street	Add northbound left-turn lane at the intersection and a two way left turn lane between S. 340th Street and S. 342nd Street.
P	SR 99 @ S 348th Street	Add 2nd southbound left turn lane

Table 10. Changes to Study Intersection from TIP

Intersection	Improvement Description
SR 99 @ S 312th Street	Add 2nd left-turn lane NB
SW 320th Street @ 21st Avenue SW	Add 2nd WB left-turn lane
S 312th Street @ 28th Avenue S	Add SB right-turn lane
SW 340th Street @ Hoyt Road SW	Add WB lane, separate through and left lane.
S 356th Street @ SR 161	Add 2nd NB left to SR 161
S 320th Street @ 1 Avenue South	Restrict left turns on all approaches
S 320th Street @ I-5 SB	Add through lane on S 320th Street both directions
S 320th Street @ I-5 NB	Add through lane on S 320th Street both directions
SR 99 @ S 356th Street	Add northbound through lane
SR 99 @ S 348th Street	Add 2nd southbound left turn lane

Figure 11. Transportation Improvement Project Map



Trip Generation

Trip generation rates for the alternatives were developed using a travel demand forecasting model and Fehr & Peers MainStreet tool. A travel demand forecasting model is a computer model developed to project traffic volumes and patterns based upon land use and the characteristics of the transportation system. The roadway network under study, as well as the land use that generates traffic on that network, is coded into the model. The model projects traffic on the roadway system based on observed traffic data and statistical data that associates typical travelers' tendencies with land use. A model of existing conditions is first created, and calibrated according to observed existing traffic volumes and patterns. Once a calibrated model is completed, it can be used to project the traffic volumes and patterns of future land use and transportation network scenarios. The traffic demand model for this study was created using EMME software. Separate Federal Way travel demand model runs were developed for the 2025 No Action and 2025 Action Alternatives to reflect how their land use assumptions would influence travel behavior in the future. The model assumed the same future roadway improvements for both alternatives.

The MainStreet tool was developed to more accurately predict trip generation in mixed use suburban centers such as Federal Way's City Center. MainStreet evaluates whether a reduction rate in new vehicle trips from the Institute of Traffic Engineers (ITE) *Trip Generation Manual* could be applied. This method supplements the travel demand model by recognizing how built environment variables including density, diversity of land uses, destinations (accessibility), development scale, pedestrian and bicycle design, distance to transit services, and demographics affect travel. Places with higher densities, a rich variety of land uses close to one another, and high quality pedestrian, bicycle, and transit environments have lower vehicle trip generation rates. People have more choices in terms of both the travel mode as well as how far they must travel to reach various destinations.

The level of vehicle trip reduction applied to the City Center districts varied among the two alternatives, based on the land uses assumed. This approach is consistent with best practices in transportation analysis, as documented by the National Cooperative Highway Research Program (Report 684). Table 11 summarizes the trip generation for the two alternatives.

Table 11. Trip Generation by Alternative

		2015 Existing	2025 No Action Alternative	2025 Action Alternative	Change from 2025 No Action to Action Alternative
AM Peak Hour	Retail	1450	1817	1789	-28
	Office	87	388	466	+78
	Hotel	100	93	334	+241
	Residential	88	742	1028	+286
	Total	**1,725**	**3,040**	**3,617**	**+577**
PM Peak Hour	Retail	4347	5542	4923	-619
	Office	81	371	401	+30
	Hotel	112	105	341	+236
	Residential	105	901	1127	+226
	Total	**4,645**	**6,919**	**6,792**	**-127**

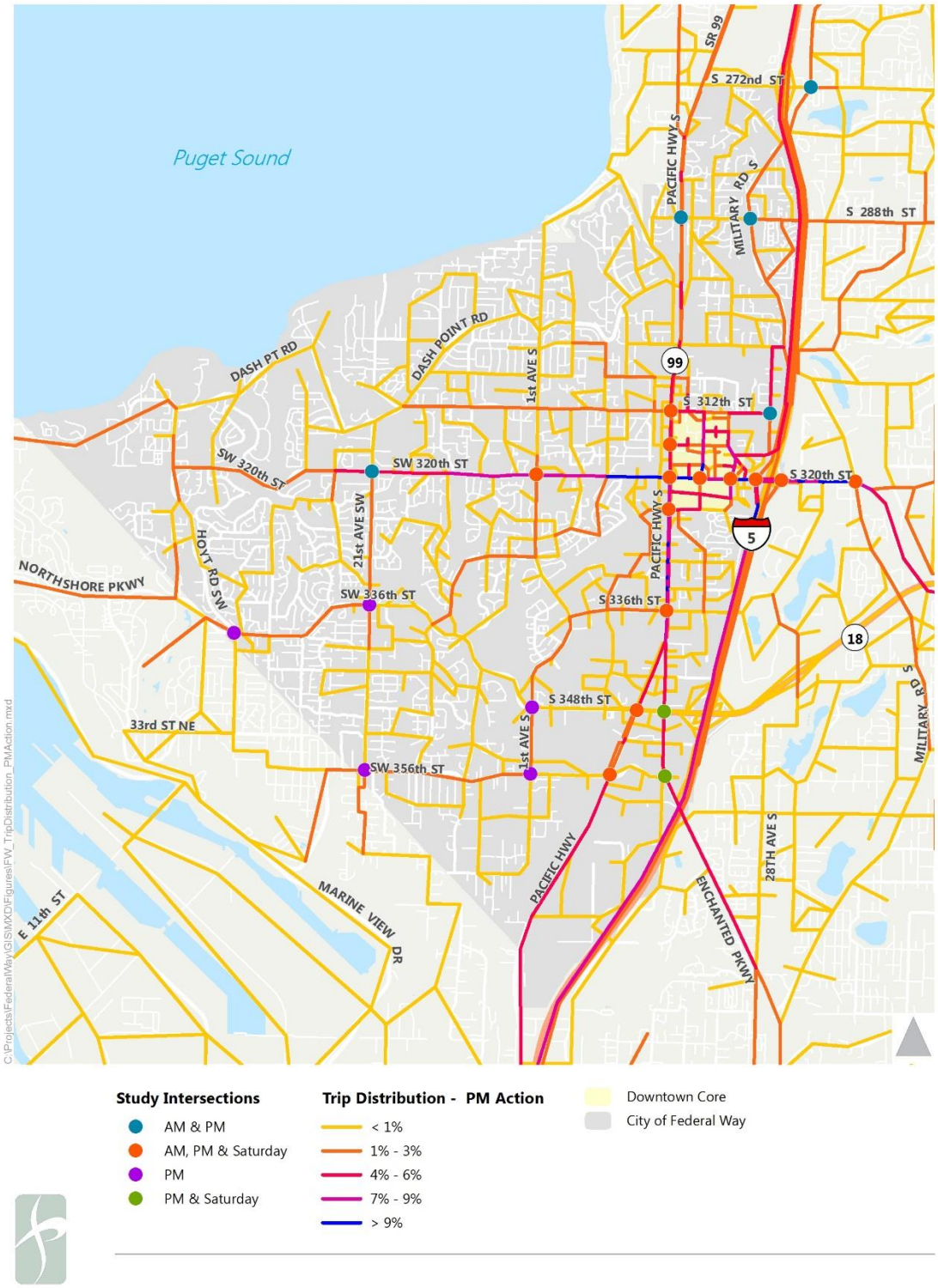
Trip Generation Differences Explained

The 2025 Action Alternative is anticipated to have more trips than the No Action Alternative in the AM peak hour (approximately 580 trips), but fewer trips (approximately 130 trips) in the PM peak hour. The increase in AM peak hour trips results from the increase in land use and lower number of trips occurring within the City Center. The decrease in PM peak hour trips is because more trips occur within the City Center area, which is referred to as the internal capture rate. It indicates that more people choose to walk, bike, or drive between land uses that are within the City Center.

Trip Distribution and Assignment

The trip distribution was based on the EMME Federal Way travel demand model; trip distribution provides an assessment of the number of people traveling to and from the site. The Saturday midday peak hour trip distribution was assumed to be the same as the PM peak hour trip distribution. The trip distribution was similar between the No Action and Action alternatives. Figure 12 summarizes the trip distribution for the Action Alternative PM peak hour.

Figure 12. Trip Distribution



Impacts

This section summarizes the transportation effects within the study area. It describes the project's impact on traffic operations, safety, transit service, and pedestrian and bicycle mobility.

Traffic Operations Impact

Common to All Alternatives

For the analysis, each of the signalized study intersections was analyzed using a 140 second cycle length in the PM peak hour and Saturday midday peak hour and a 120 second cycle length for the AM peak hour. This is consistent with the City of Federal Way's *Guidelines for the Preparation of Transportation Impact Analyses* (September 9, 2014).

No Action Alternative

Table 12 and Figures 13 through 15 provide the operations analysis for the No Action Alternative. As summarized in Table 12, none of the intersections are anticipated to be deficient based on the City of Federal Way's traffic operations standards.

Table 12. 2025 No Action Alternatives Operations Analysis

Study Intersection	PM Peak Hour			AM Peak Hour			Saturday Midday Peak Hour		
	LOS	Delay	v/c ratio	LOS	Delay	v/c ratio	LOS	Delay	v/c ratio
*S 272 Street & Military Road S	F	91.0	1.11	D	49.9	0.90			
S 288th Street & Military Road S	E	65.4	0.99	C	27.2	0.66			
S 288th Street & Pacific Highway S	F	124.4	1.01	F	112.4	0.94			
**S 312 Street & 28 Avenue S	E	47.1	0.97	C	18.3	0.74			
S 320 Street & 1 Avenue S	C	27.3	0.69	C	28.9	0.72	C	22.4	0.61
S 320 Street & I-5 NB Ramp	B	16.9	0.61	C	22.5	0.78	B	14.8	0.52
S 320 Street & I-5 SB Ramp	D	42.3	0.78	C	31.1	0.55	C	30.8	0.75
S 320 Street & Military Road S	E	65.4	0.97	D	49.8	0.83	D	41.2	0.70
S 336 Street & Pacific Highway S	E	59.0	1.06	D	42.3	0.73	C	28.7	0.63
S 348 Street & Pacific Highway S	F	91.5	1.09	E	70.4	0.77	F	93.6	1.13
S 348 Street & SR 161	F	87.8	1.08				F	95.4	1.14
S 356 Street & 1 Avenue S	E	76.7	1.09						
S 356 Street & Enchanted Parkway S	D	49.0	0.87				C	34.7	0.76
S 356 Street & Pacific Highway S	E	67.8	1.07	E	69.8	0.61	D	52.7	0.87
SW 320 Street & 21 Avenue SW	E	59.0	0.94	D	52.5	0.95			
SW 336 Street & 21 Avenue SW	E	64.4	0.96						
SW 340 Street & Hoyt Road SW	D	44.2	0.82						
SW 356 Street & 21 Avenue SW	F	85.4	0.96						
SW Campus Drive & 1 Avenue S	D	54.5	0.83						
S 312 Street & Pacific Highway S	D	51.4	0.86	D	39.1	0.72	D	36.4	0.74
S 316 Street & Pacific Highway S	C	31.0	0.79	B	14.4	0.42	C	36.6	0.72
S 320 Street & 20 Avenue S	C	32.7	0.81	B	19.2	0.46	D	36.5	0.80
S 320 Street & 23 Avenue S	E	60.3	1.00	D	39.1	0.80	E	59.1	0.93
S 320 Street & Pacific Highway S	E	61.7	0.94	E	55.2	0.80	E	63.7	0.94
S 324 Street & Pacific Highway S	E	65.1	1.01	C	25.3	0.68	D	50.8	0.90
Average v/c City Center			**0.91**		**0.68**				**0.85**

* Intersection is located outside of City of Federal Way limits
**Unsignalized Intersection

Figure 13. No Action Alternative V/C Ratio AM Peak Hour

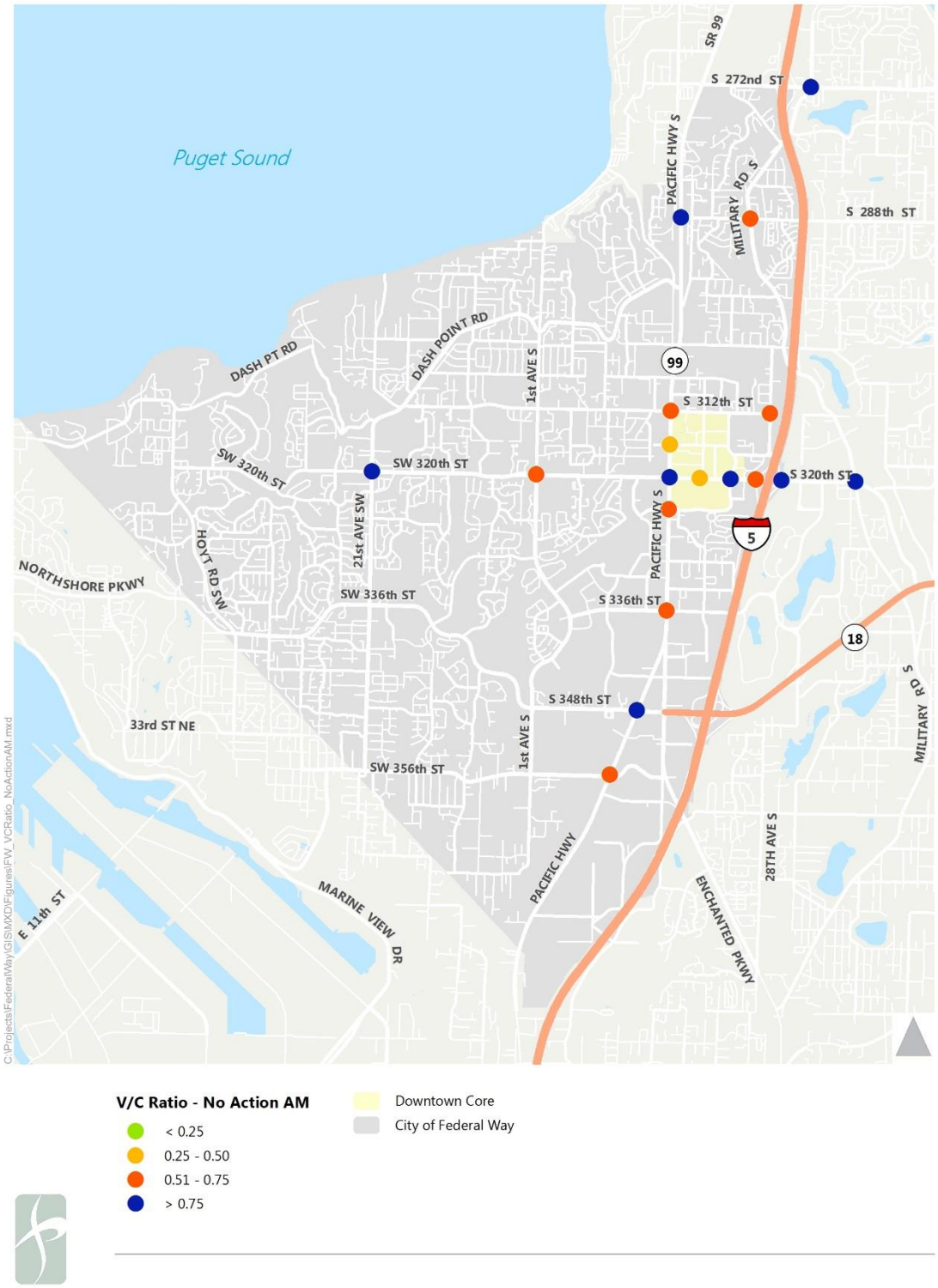


Figure 14. No Action V/C Ratio PM Peak Hour

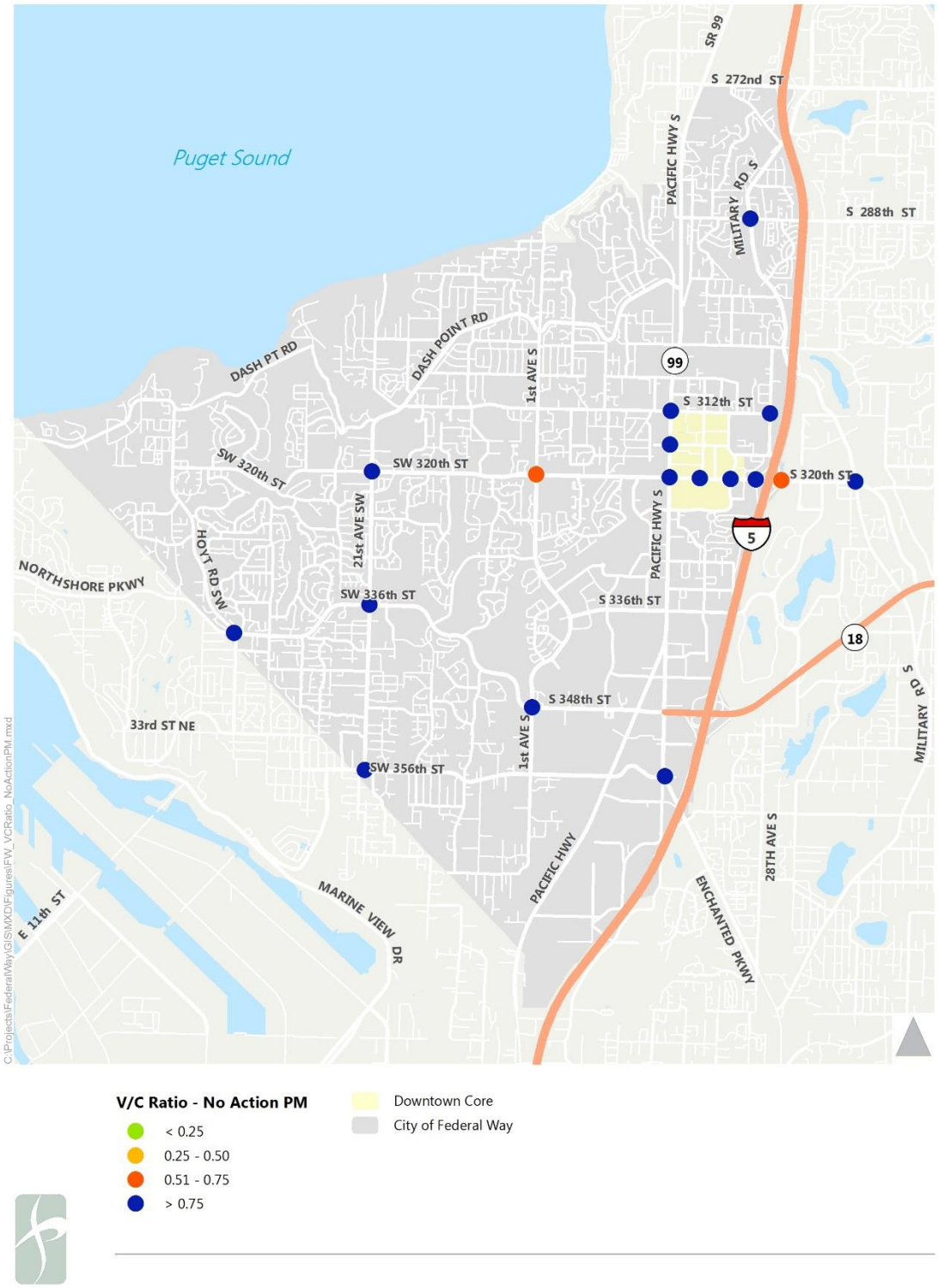
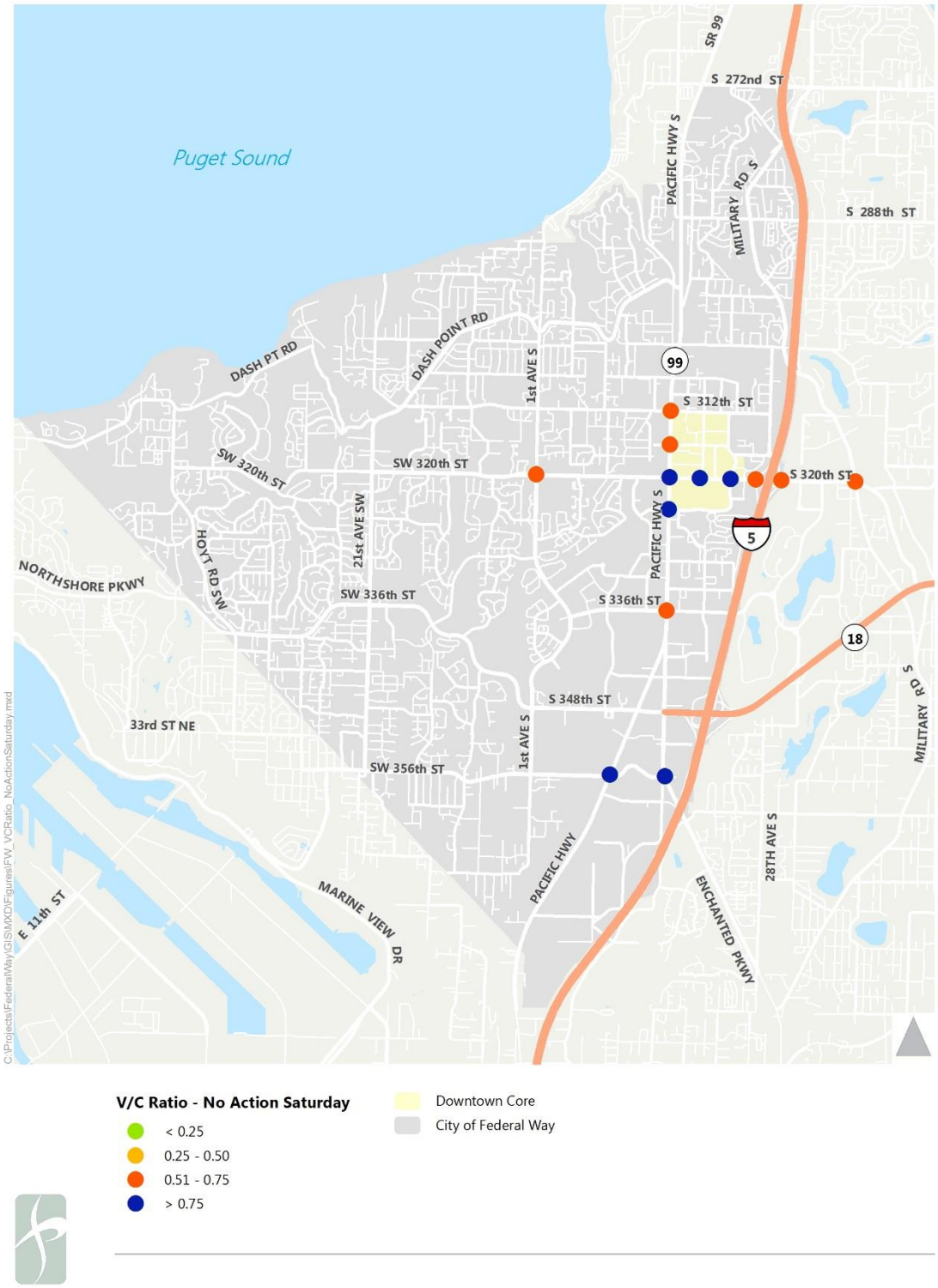


Figure 15. No Action V/C Ratio Saturday Midday Peak Hour



Action Alternative

Table 13 and Figures 16 through 18 provide the operations analysis for the Action Alternative. None of the intersections are anticipated to be deficient in the Action Alternative based on Federal Way's traffic operations standards.

Table 13. 2025 Action Alternative Operations Analysis

Study Intersection	PM Peak Hour			AM Peak Hour			Saturday Midday Peak Hour		
	LOS	Delay	v/c ratio	LOS	Delay	v/c ratio	LOS	Delay	v/c ratio
*S 272 Street & Military Road S	F	90.6	1.11	D	50.1	0.91			
S 288th Street & Military Road S	E	64.4	0.99	C	27.6	0.67			
S 288th Street & Pacific Highway S	F	121.3	1.00	F	121.2	0.96			
**S 312 Street & 28 Avenue S	E	47.4	0.97	C	18.7	0.72			
S 320 Street & 1 Avenue S	C	27.2	0.69	C	29.0	0.73	C	24.7	0.61
S 320 Street & I-5 NB Ramp	B	17.6	0.60	C	22.4	0.79	B	15.0	0.52
S 320 Street & I-5 SB Ramp	C	33.1	0.79	C	31.4	0.57	D	46.6	0.79
S 320 Street & Military Road S	E	65.8	0.97	D	50.1	0.86	D	45.4	0.70
S 336 Street & Pacific Highway S	E	57.4	1.03	D	45.3	0.75	C	31.4	0.62
S 348 Street & Pacific Highway S	F	95.0	1.09	E	66.9	0.78	E	66.7	0.94
S 348 Street & SR 161	F	88.8	1.08				F	96.4	1.14
S 356 Street & 1 Avenue S	E	77.1	1.10						
S 356 Street & Enchanted Parkway S	D	46.7	0.86				D	41.2	0.75
S 356 Street & Pacific Highway S	E	66.7	1.06	E	62.7	0.60	D	52.5	0.87
SW 320 Street & 21 Avenue SW	E	57.2	0.92	D	54.8	0.99			
SW 336 Street & 21 Avenue SW	E	64.3	0.96						
SW 340 Street & Hoyt Road SW	D	43.7	0.81						
SW 356 Street & 21 Avenue SW	F	83.5	0.95						
SW Campus Drive & 1 Avenue S	D	53.7	0.85						
S 312 Street & Pacific Highway S	D	53.5	0.88	D	38.5	0.75	D	48.2	0.76
S 316 Street & Pacific Highway S	C	33.7	0.81	B	16.2	0.44	D	35.7	0.73
S 320 Street & 20 Avenue S	C	32.1	0.82	C	22.1	0.48	D	36.4	0.81
S 320 Street & 23 Avenue S	E	61.4	1.00	D	41.8	0.83	E	59.2	0.95
S 320 Street & Pacific Highway S	E	60.5	0.95	E	60.8	0.83	E	59.0	0.93
S 324 Street & Pacific Highway S	E	59.3	1.00	C	24.8	0.68	D	50.1	0.89
Average v/c City Center			**0.92**			**0.70**			**0.86**

* Intersection is located outside of City of Federal Way limits
**Unsignalized Intersection

Figure 16. Action V/C Ratio AM Peak Hour

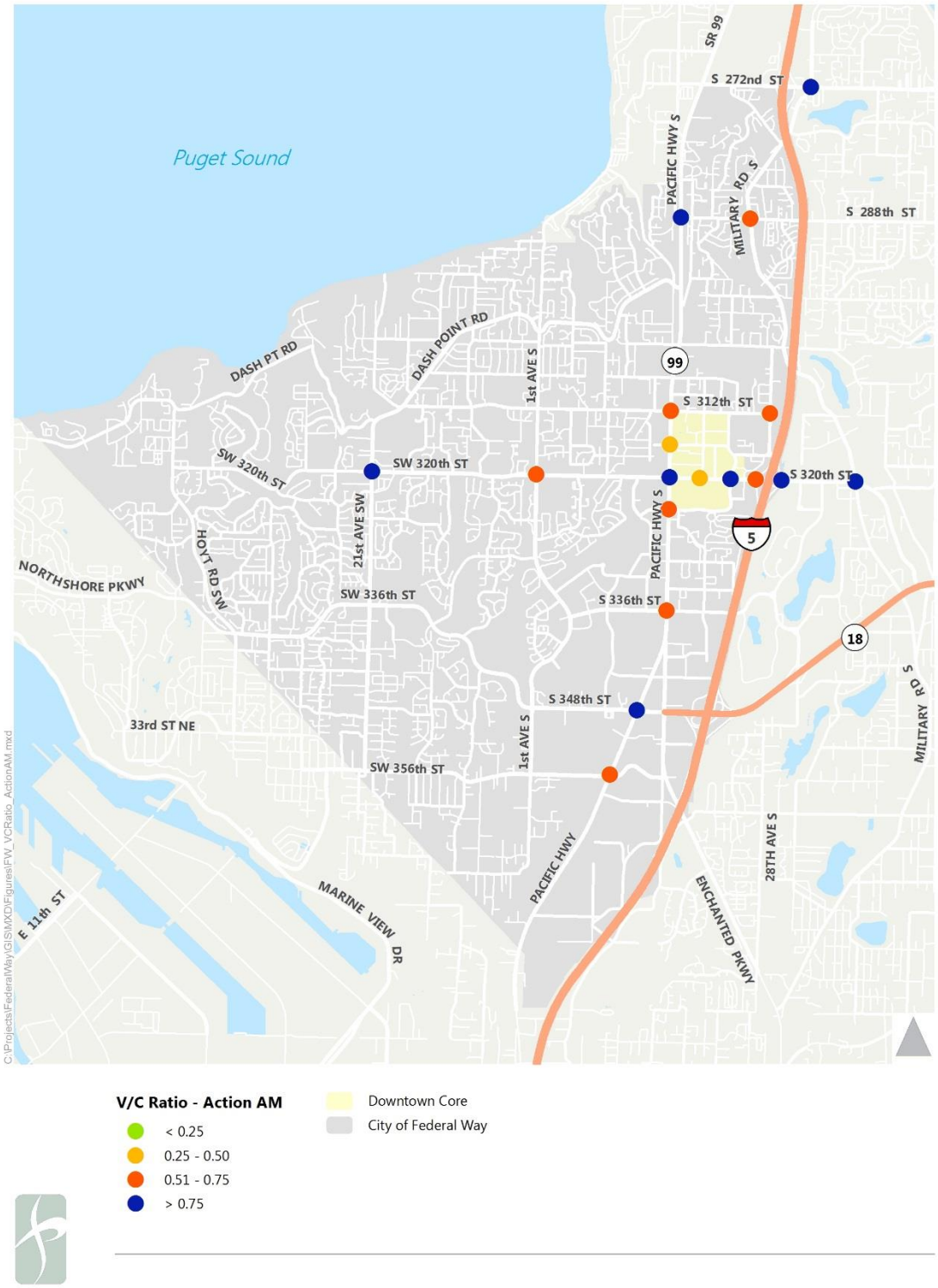


Figure 17. Action V/C Ratio PM Peak Hour

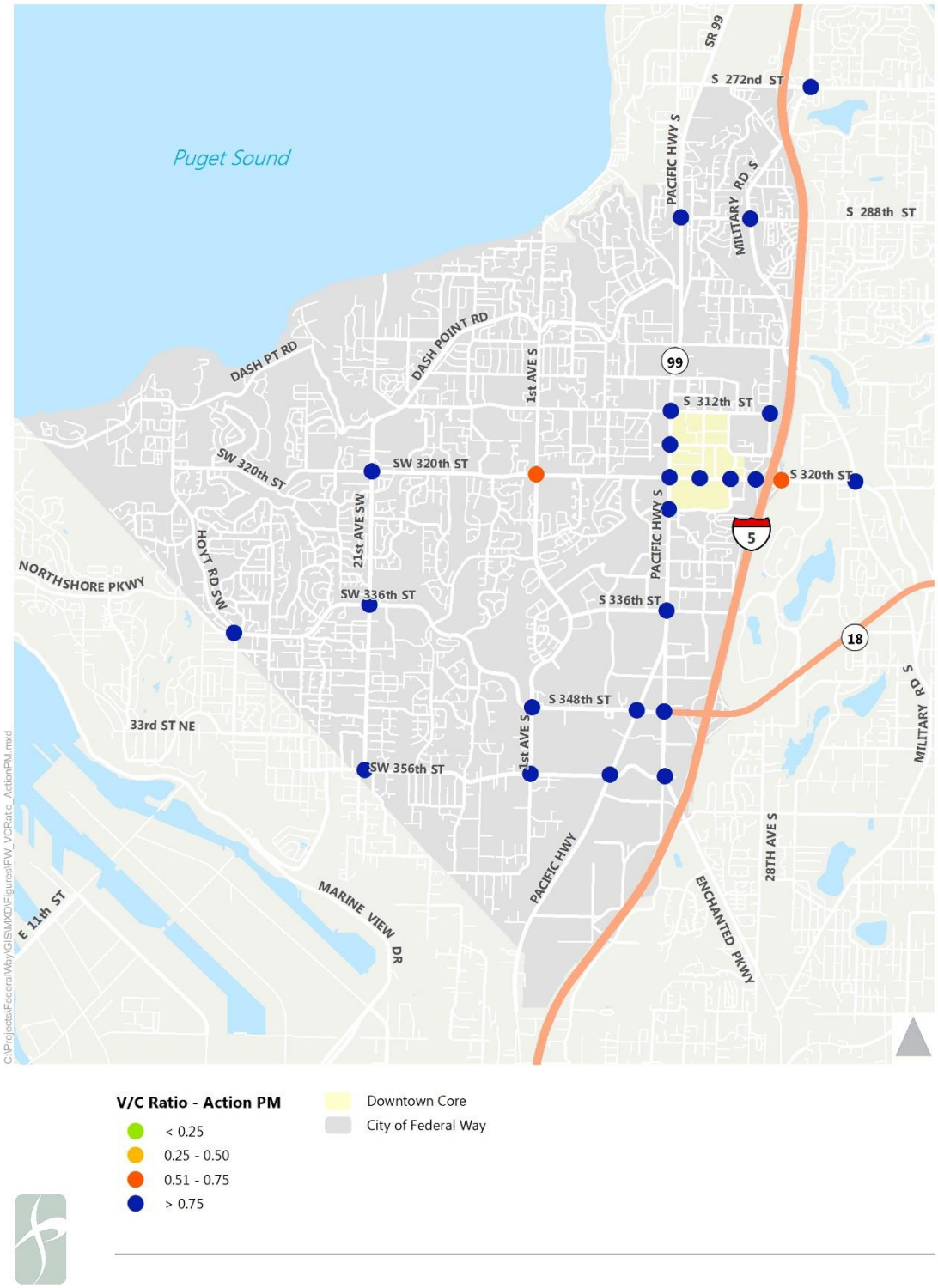
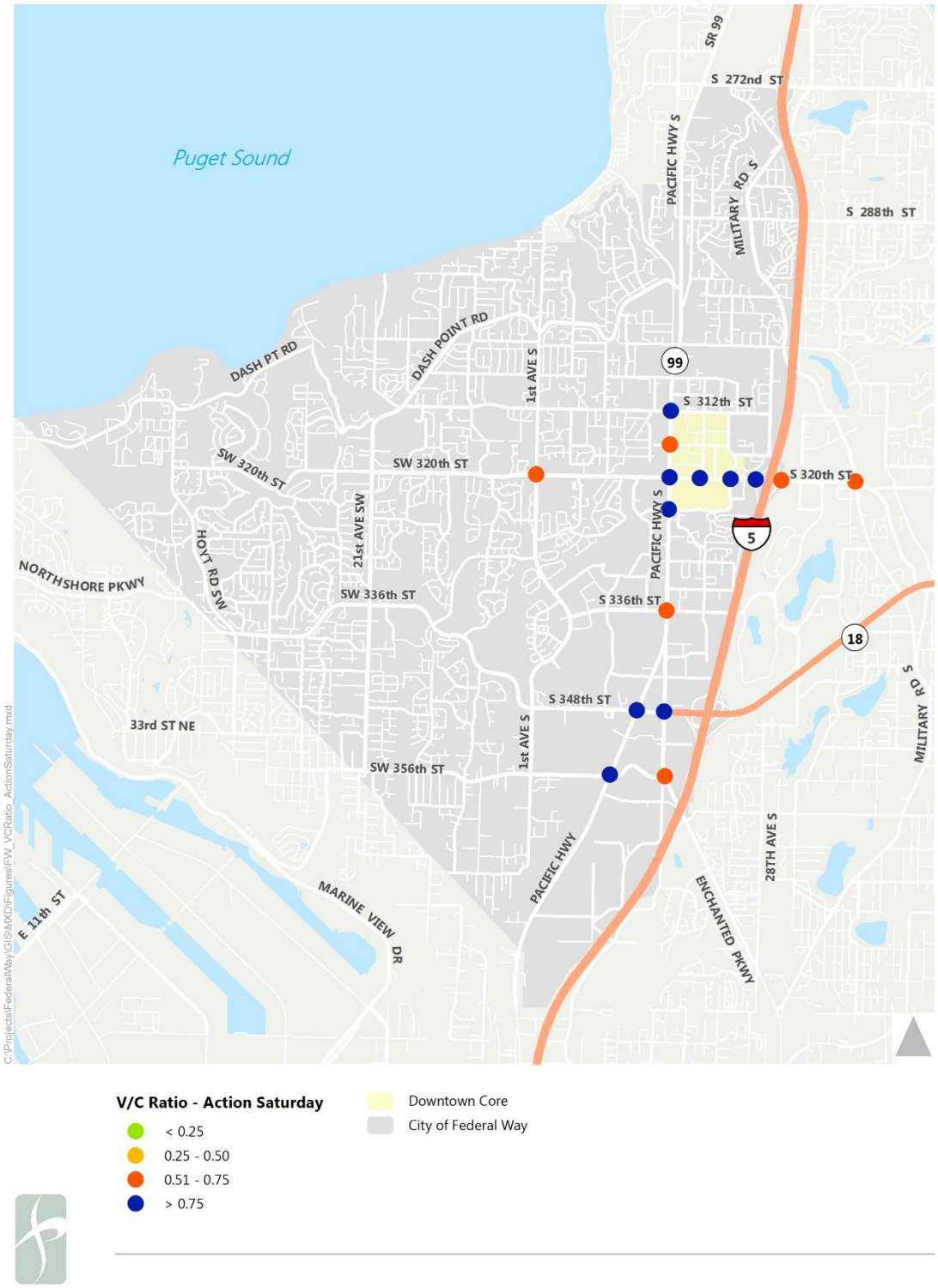


Figure 18. Action V/C Ratio Saturday Midday Peak Hour



The operations analysis shows that the Future No Action and Future Action result in very similar impact on the study intersections.

Future Parking Requirements

Common to All Alternatives

As summarized in Table 14, both the No Action and Action Alternatives would require an increase in parking requirements above the existing parking requirements (see Table X). These increases assume full development of the City Center. Almost 15,000 parking spaces would be required to meet the proposed Action Alternative. The number of parking spaces represents the City's Parking Code requirements.

Table 14. Future Parking Requirements

	Retail (sq ft)	Office (sq ft)	Residential (units)	Hotel (rooms)	Total Parking Spaces per Code
City Code Requirement	1 per 300 sq ft	1 per 300 sq ft	1.7 per unit	1 per room	
Action Land Use	2,452,689	393,545	2,654	830	
Action Parking Spaces Needed	8,176	1,312	4,512	830	14,830
No Action Land use	2,505,379	329,427	1,925	230	
No Action Parking Spaces Needed	8,351	1,098	3,273	230	12,952

Traffic Safety Impact

Common to All Alternatives

The *City of Federal Way Comprehensive Plan* identifies that congestion is a common contributing factor to vehicle collisions. As the amount of traffic increases increase within the area, the probability of traffic collisions would be expected to increase as well. Congestion is a primary factor in collision rates.

Both the Action and No Action Alternatives would increase the total vehicle volume of vehicles at the high collision locations identified in Table 4. Compared to the No Action Alternative, the Action Alternative would result in fewer added trips during the PM peak hour, the period of highest traffic congestion during a typical day. The Alternatives also make up only a small portion of the entering trips for the surrounding intersections. In addition, roadway improvements designed to reduce congestion may lower congestion associated collisions.

Transit Service Impact

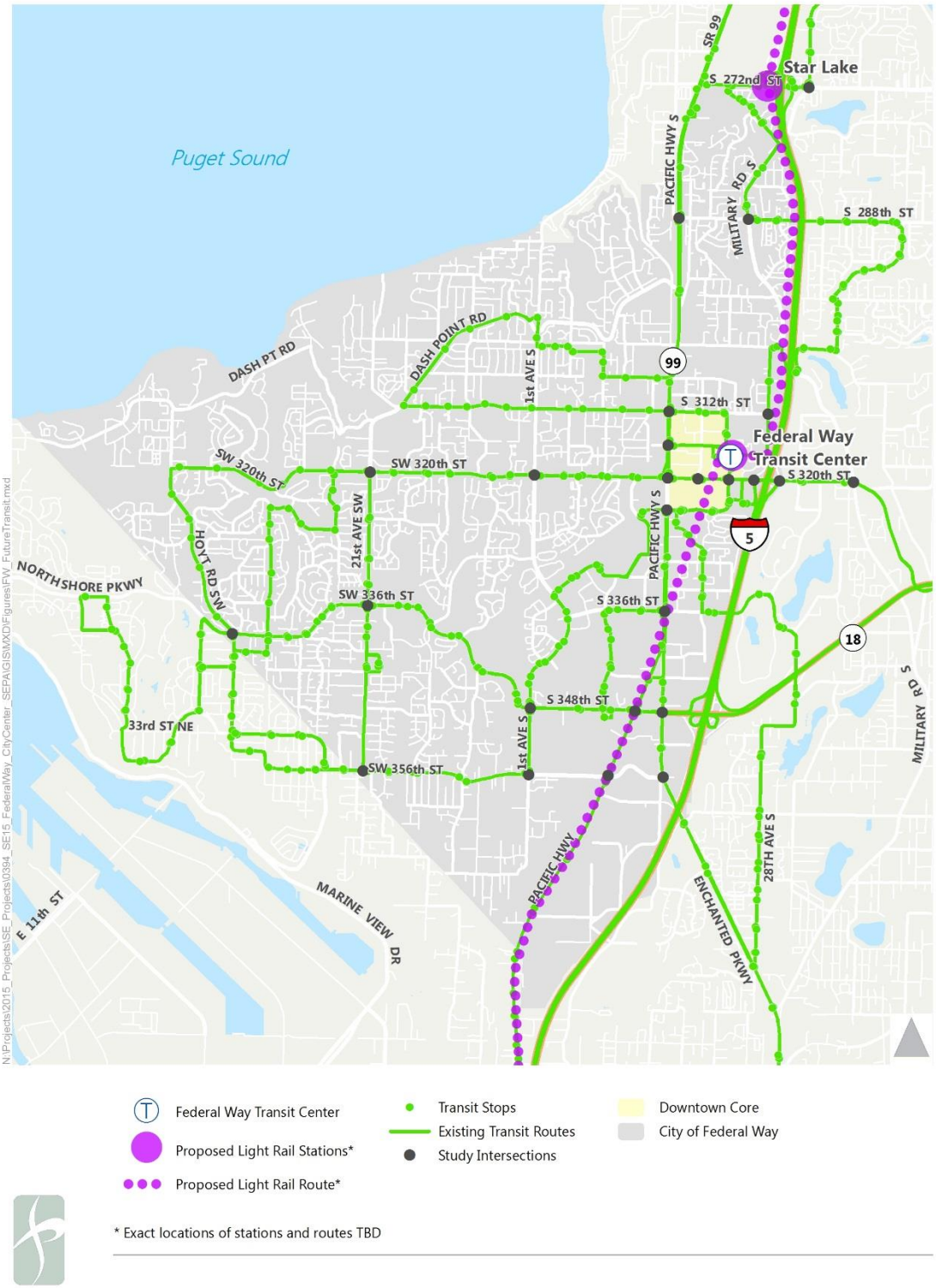
Common to All Alternatives

In the next ten years, demand for transit service in the City Center is expected to increase with the increase in jobs and households. Transit demand is to be addressed as part of the City's Comprehensive Plan. Figure 19 displays the future transit service network, including the proposed Light Rail alignment, anticipated to be opened in 2035. The City has identified SR 99 and S 320th Street along with 21st Avenue SW and 16 Avenue S as transit priority corridors.

Action Alternative

For this alternative the increase in households and office space compared to the No Action Alternative is anticipated to increase demand for transit service in the City Center.

Figure 19. Future Transit Network



Pedestrian and Bicycle Mobility Impact

Common to All Alternatives

The land use mix for the No Action and Action alternatives encourages walking and bicycling in and around the City Center. The City's *Bicycle and Pedestrian Master Plan* adopted in March 2012 highlights planned bicycle and pedestrian facilities in the City. All roads within the City Center either have an existing sidewalk or have been identified as a location for proposed sidewalks.

Some roads around the City Center, including S 324th Street, S 308th Street, and 11th Place S, have been identified as locations for future bicycle facilities.

The alternatives along with the proposed bicycle and pedestrian facilities highlighted in the *Bicycle and Pedestrian Master Plan* will increase safety and encourage walking and bicycling as a mode of transportation in and around the City Center.

Figure 20 and Figure 21 display the planned pedestrian and bicycle future networks, respectively.

Figure 20. Planned Pedestrian Network

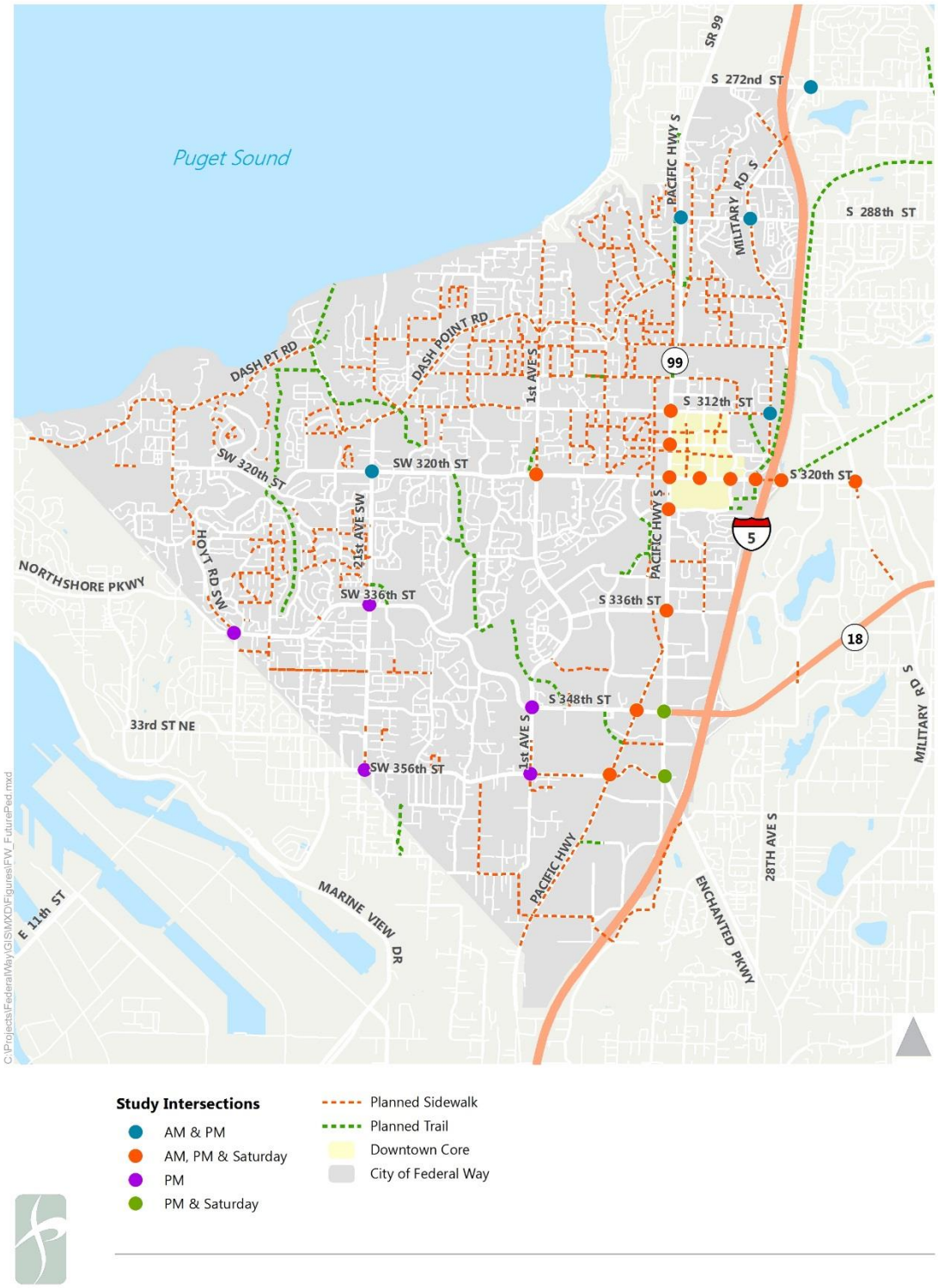
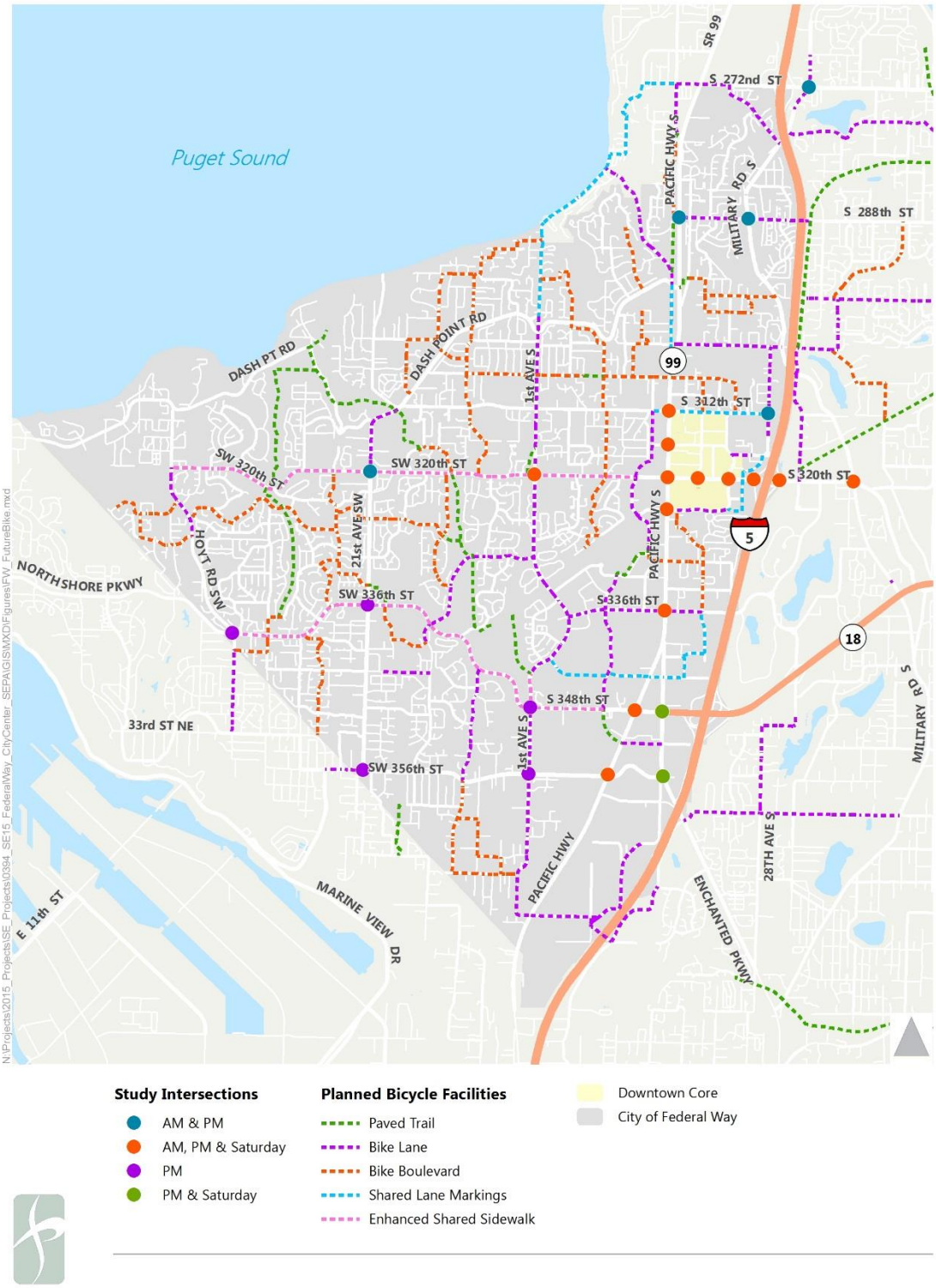


Figure 21. Planned Bicycle Network



Mitigation

This section summarizes the proposed mitigation anticipated to be required beyond the roadway improvements assumed to be constructed by 2025.

Existing Roadway Network

Both the No Action and Action Alternatives would increase the density and activity within the Federal Way City Center area. The increased density could increase traffic congestion; however, these increases may be offset by reduced vehicle travel demand resulting from mixed-use development, improvements to pedestrian facilities, and improved transit services. Based on the level of service (LOS) analysis, no additional roadway capacity improvements are needed.

Parking

Additional parking spaces will be required on site for both the No Action and Action Alternatives. These spaces may be provided on the site or as part of parking garages assumed as part of the Federal Way City Center development. The number of parking spaces required could be reduced through shared parking arrangements or transportation demand management programs. This reduction could vary from 10 percent to 20 percent based on the effectiveness and robustness of the programs implemented.

Additional Mitigation

The mitigation identified in this section is focused on additional improvements that could be required to meet the expected travel demand on area roadways associated with the proposed development in the project area.

Development will need to meet the requirements of applicable codes at the time of application. Such requirements might include the dedication of right-of-way, installing curbs gutters and sidewalks, drainage improvements, and other requirements of the City. Additional mitigation may be required for individual development applications within the project area to reduce area traffic impacts or improve on-site circulation and to meet City and State requirements for Commute Trip Reduction and Transportation Demand Management.

Actions to be considered include:

On-site improvements – Driveway and circulation actions to minimize impact on area roadways. Actions may include management of access points, traffic control measures, construction of internal roadways, pedestrian and bicycle improvements, and connections to adjacent developments.

Non-Motorized mode improvements – Mitigation may be required per site specific and land use development proposals to address pedestrian, bicycle, and transit improvements to support the plans, policies, and goals as noted within the City of Federal Way *Transportation Element*.

Grid Roadway Development – Part of the City Center Plan is to develop a number of internal roadways to create smaller blocks that will improve the grid network and improve the access for pedestrians and vehicles. Right-of-way dedication and street improvements shall be a component of the development submittal phase of a proposed project within the project area. Roadways within the project area must

meet specific "City Center" design standards as specified in the Transportation Element (Chapter 3) of the City of Federal Way Comprehensive Plan.

Right-of-way Dedication – Right-of-way dedication and frontage improvements may be required in conjunction with proposed developments. Roadways within the project area must meet specific "City Center" design standards as specified in the Transportation Element (Chapter 3) of the City of Federal Way Comprehensive Plan.

Transportation Demand Management (TDM) – TDM actions can be used to reduce the impact of the project and as a mitigation action. These actions may include provision of transit passes to tenants and employees, ridesharing programs, priority carpool parking, and guaranteed ride home programs. TDM actions are designed to primarily address commute trips and may not be applicable as mitigation for all developments. The City of Federal Way Comprehensive Plan summarizes TDM alternatives by their functional grouping and potential effectiveness, implementation difficulties, and expected cost effectiveness. These strategies include: Telecommuting, Parking Management and Pricing, Flexible Work Schedule, Rideshare programs, Traveler Information, Public Relations, and Marketing.

The following are a list of recommended mitigation measures that can be considered in conjunction with individual development projects within the project area:

1. Encourage voluntary expansion of the CTR Program to employers of less than 100 employees. The encouragement by employers may be as diverse as subsidized bus passes, car pool space priority, bike racks, shower facilities, van pools, car pool information access, telecommuting, variable work hours, etc.
2. Encourage the formation and expansion of area-wide ride-sharing programs. Such programs operate with little direct cost to the City and are highly cost effective.
3. Support the enhancement of Park and Ride facilities and transit centers to supplement the regional system, either directly through physical development or enhancements or indirectly through development conditions where employer vans are required to shuttle employees to Park and Ride facilities or transit centers.
4. Facilitate enhancements to the HOV system. This may include the dedication of property for HOV lanes, construction of arterial HOV lanes within existing City ROW, and priority treatments for buses at traffic signals. At the very least, where feasible, opportunities to enhance access to the State system of HOV lanes should be considered.
5. Achieve increased densities and mix of uses to support public transportation, decrease trip generation and parking impacts.
6. Encourage facilities (shelters, loading spaces, etc.) to accommodate City Center shuttle service in association with development projects, together with enhanced pedestrian and bicycle access and security.
7. Improve pedestrian and bicycle access to bus routes and transit centers. This can be a requirement of subdivision, development, and redevelopment. The City may need to acquire easements and construct trail connections. Development incentives could be granted for providing such amenities that are pedestrian, bike, and transit friendly. While bicycle, pedestrian, and bus transit services and facilities may be desirable for other reasons; they should not be looked on as highly cost-effective strategies to the exclusion of those actions listed above.

Neighborhood Traffic Control – Development within the project area may be required to include actions to reduce the impact of cut through traffic on residential areas. Examples of neighborhood traffic control actions include: turn restrictions, speed controls, traffic enforcement, and parking restrictions.

Parking – Mitigation actions that reduce the parking requirements within the project area should be encouraged. Examples include shared parking, employee parking programs, parking time restrictions, paid parking programs. Shared parking strategies focus on looking at opportunities where adjacent uses have parking demand profiles that can support the sharing of a smaller amount of parking spaces. For example, an office building with an 8 AM to 5 PM demand could share its parking with evening dominated uses such as restaurants, or a cinema. A parking demand study, which shows the hourly parking demand profiles for adjacent uses and the potential for joint parking opportunities within a mixed-use development, can be used to reduce the number of parking spaces.

In addition, contained in the above TDM mitigation are strategies that overlap with parking mitigation plans for development. A development may propose a plan and management system to the City for approval upon submittal of the development permit. Those items may contain the following in support of the City of Federal Way and state Commute Trip Reduction (CTR) requirements:

ALTERNATIVE MODE SUPPORT MEASURES

Public education and promotion may increase the effectiveness of these other strategies up to 3%.

Area-wide Ride matching Services – May result in a 0.1-3.6% reduction in vehicle miles traveled (VMT) and an up to 2.5% VMT reduction in transit services. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Vanpool Service – May result in an up to 8.3% in commute VMT, as well as a reduction in transit and vanpool fares up to 2.5%. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Non-Motorized Modes plan and implementation – May result in an up to 0-2% regional VMT reduction. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

HOV Facilities – May result in an up to 1.5% VMT reduction and 0.2% vehicle trip reduction. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

On site development of Park and Ride program – May result in up to 0-0.5% VMT reduction. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

EMPLOYER-BASED TDM MEASURES

Parking mitigation -- Monetary incentives may result in an up to 8-18% trip reduction at site. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Alternative Work Schedules – May result in as much as a 1% regional VMT reduction. Reductions in parking required may be calculated on the basis of these lower trip generation rates.

Commute Support Programs – May result in up to 0.1-2.0% regional VMT reduction. Reductions in parking required may be calculated on the basis of these lower trip generation rates.

Parking Management – May result in up to a 20 to 30% reduction in SOV trips to/from the site. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Telecommuting – Up to 10% commute VMT reduction. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

OTHER STRATEGIES

Parking Tax – May result in up to a 1 to 5% reduction in regional VMT and trip generation, but requires City Council and/or legislative action. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Development Parking Impact Mitigation – Requires Council approval to allow for payment of parking-mitigation funds towards long term investments in structured parking solutions in lieu of full parking requirement. Reductions in parking required may be calculated on the basis of these lower trip-generation rates.

Mixed Land Use/Jobs Housing Balance – May result in VMT reductions up to 10%. Parking stall credit is given based on overlapping shared usage of mixed facility, per City Code provisions.

Transit-Oriented and Pedestrian-Friendly Design – Site and building design that encourages transit usage and/or walking may reduce overall parking requirement. Requires design review and staff approval.

Employment Center Density - Achievement of sufficient density within the City Center to constitute a regional employment center may reduce SOV work trips to individual development projects by up to 50%. Parking stall reductions may also apply to developments.

Other Parking Management Plans – May mitigate 1 to 5% region-wide VMT, provided enforcement issues are addressed in the mitigation plan.

Appendix A

Existing Geometries, Traffic Counts, and LOS Analysis Results

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S/Pacific Hwy S & S 312 St

7/29/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	248	284	39	31	107	41	3	36	540	9	30	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%				0%			0%
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	0.91		1.00	0.91
Frpb, ped/bikes	1.00	0.99		1.00	0.97			1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.97	1.00		0.99	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.96			1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1681	3454		1729	3262			1759	5078		1755	5058
Flt Permitted	0.65	1.00		0.46	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	1155	3454		832	3262			1759	5078		1755	5058
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)	261	299	41	33	113	43	3	38	568	9	32	352
RTOR Reduction (vph)	0	12	0	0	39	0	0	0	1	0	0	0
Lane Group Flow (vph)	261	328	0	33	117	0	0	41	576	0	32	352
Confl. Peds. (#/hr)	45		35	22		74				29		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	2	4
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases	8			4								
Actuated Green, G (s)	31.0	27.0		31.0	12.3			4.9	53.2		7.8	56.1
Effective Green, g (s)	29.0	26.0		29.0	11.3			4.9	53.2		7.8	56.1
Actuated g/C Ratio	0.26	0.24		0.26	0.10			0.04	0.48		0.07	0.51
Clearance Time (s)	4.0	4.0		4.0	4.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	389	816		243	335			78	2455		124	2579
v/s Ratio Prot	c0.11	0.09		0.00	0.04			c0.02	c0.11		c0.02	0.07
v/s Ratio Perm	c0.07			0.03								
v/c Ratio	0.67	0.40		0.14	0.35			0.53	0.23		0.26	0.14
Uniform Delay, d1	35.3	35.4		30.5	45.9			51.4	16.5		48.4	14.2
Progression Factor	0.80	0.78		0.98	0.99			1.04	0.34		0.88	0.87
Incremental Delay, d2	3.5	0.1		0.1	0.2			2.9	0.2		0.4	0.1
Delay (s)	31.8	27.7		30.1	45.9			56.2	5.8		43.2	12.5
Level of Service	C	C		C	D			E	A		D	B
Approach Delay (s)		29.4			43.1				9.1			13.5
Approach LOS		C			D				A			B

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	50
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.97
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1516
Flt Permitted	1.00
Satd. Flow (perm)	1516
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	53
RTOR Reduction (vph)	18
Lane Group Flow (vph)	35
Confl. Peds. (#/hr)	13
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	4
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Actuated Green, G (s)	74.8
Effective Green, g (s)	72.8
Actuated g/C Ratio	0.66
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	1003
v/s Ratio Prot	0.01
v/s Ratio Perm	0.02
v/c Ratio	0.03
Uniform Delay, d1	6.4
Progression Factor	0.27
Incremental Delay, d2	0.0
Delay (s)	1.7
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	6	5	3	30	8	37	8	15	584	48	4	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00	1.00			1.00
Flpb, ped/bikes	0.99	1.00		0.98	1.00			1.00	1.00			1.00
Frt	1.00	0.94		1.00	0.88			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1779	1749		1727	1605			1769	4995			1749
Flt Permitted	0.72	1.00		0.75	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1357	1749		1368	1605			1769	4995			1749
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	7	5	3	33	9	41	9	16	642	53	4	34
RTOR Reduction (vph)	0	3	0	0	38	0	0	0	5	0	0	0
Lane Group Flow (vph)	7	5	0	33	12	0	0	25	690	0	0	38
Confl. Peds. (#/hr)	7		17	17		7		12		9		9
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	3%	3%
Bus Blockages (#/hr)	2	3	2	2	0	2	2	0	2	3	2	3
Turn Type	pm+pt	NA		pm+pt	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	4			8								
Actuated Green, G (s)	8.2	7.0		13.8	9.8			6.0	76.2			4.8
Effective Green, g (s)	6.2	6.0		11.8	8.8			6.0	76.2			4.8
Actuated g/C Ratio	0.06	0.05		0.11	0.08			0.05	0.69			0.04
Clearance Time (s)	4.0	4.0		4.0	4.0			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	77	95		156	128			96	3460			76
v/s Ratio Prot	0.00	0.00		c0.01	0.01			0.01	c0.14			c0.02
v/s Ratio Perm	0.00			c0.02								
v/c Ratio	0.09	0.05		0.21	0.10			0.26	0.20			0.50
Uniform Delay, d1	49.2	49.3		44.9	46.9			49.9	6.0			51.4
Progression Factor	1.00	1.00		1.00	1.27			0.55	0.23			0.81
Incremental Delay, d2	0.2	0.1		0.2	0.1			0.5	0.1			1.9
Delay (s)	49.4	49.4		45.0	59.6			27.7	1.5			43.3
Level of Service	D	D		D	E			C	A			D
Approach Delay (s)		49.4			53.8				2.4			
Approach LOS		D			D				A			

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	367	6
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	5055	
Flt Permitted	1.00	
Satd. Flow (perm)	5055	
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	403	7
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	409	0
Confl. Peds. (#/hr)		12
Heavy Vehicles (%)	3%	3%
Bus Blockages (#/hr)	2	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	75.0	
Effective Green, g (s)	75.0	
Actuated g/C Ratio	0.68	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	3446	
v/s Ratio Prot	0.08	
v/s Ratio Perm		
v/c Ratio	0.12	
Uniform Delay, d1	6.1	
Progression Factor	0.49	
Incremental Delay, d2	0.1	
Delay (s)	3.0	
Level of Service	A	
Approach Delay (s)	6.5	
Approach LOS	A	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	2	185	997	41	1	108	405	87	73	391	55	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%			2%		
Total Lost time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0		5.0
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00	0.97	0.91		0.97
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.99	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
Frt		1.00	0.99			1.00	1.00	0.85	1.00	0.98		1.00
Flt Protected		0.95	1.00			0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (prot)		3311	5266			3433	4887	1476	3377	4864		3406
Flt Permitted		0.95	1.00			0.95	1.00	1.00	0.95	1.00		0.95
Satd. Flow (perm)		3311	5266			3433	4887	1476	3377	4864		3406
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)	2	201	1084	45	1	117	440	95	79	425	60	105
RTOR Reduction (vph)	0	0	3	0	0	0	0	49	0	19	0	0
Lane Group Flow (vph)	0	203	1126	0	0	118	440	46	79	466	0	105
Confl. Peds. (#/hr)		1						1	4		7	7
Heavy Vehicles (%)	2%	9%	0%	8%	1%	2%	5%	8%	1%	3%	6%	3%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	8	0	4	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	NA		Prot
Protected Phases	7	7	4		3	3	8		5	2		1
Permitted Phases								8				
Actuated Green, G (s)		10.0	55.7			7.9	53.6	53.6	5.9	17.7		8.7
Effective Green, g (s)		10.0	55.7			7.9	53.6	53.6	5.9	17.7		8.7
Actuated g/C Ratio		0.09	0.51			0.07	0.49	0.49	0.05	0.16		0.08
Clearance Time (s)		5.0	5.0			5.0	5.0	5.0	5.0	5.0		5.0
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		301	2666			246	2381	719	181	782		269
v/s Ratio Prot		c0.06	c0.21			c0.03	0.09		0.02	c0.10		c0.03
v/s Ratio Perm								0.03				
v/c Ratio		0.67	0.42			0.48	0.18	0.06	0.44	0.60		0.39
Uniform Delay, d1		48.4	17.0			49.1	15.9	14.9	50.4	42.8		48.1
Progression Factor		0.76	0.59			0.92	0.60	1.00	1.37	0.86		0.77
Incremental Delay, d2		3.9	0.4			0.5	0.2	0.2	0.6	0.8		0.3
Delay (s)		40.8	10.5			45.6	9.7	15.1	69.9	37.5		37.6
Level of Service		D	B			D	A	B	E	D		D
Approach Delay (s)			15.1				16.9			42.1		
Approach LOS			B				B			D		

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	229	71
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.0	5.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	4989	1399
Flt Permitted	1.00	1.00
Satd. Flow (perm)	4989	1399
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	249	77
RTOR Reduction (vph)	0	63
Lane Group Flow (vph)	249	14
Confl. Peds. (#/hr)		4
Heavy Vehicles (%)	5%	11%
Bus Blockages (#/hr)	0	8
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	20.5	20.5
Effective Green, g (s)	20.5	20.5
Actuated g/C Ratio	0.19	0.19
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	929	260
v/s Ratio Prot	0.05	
v/s Ratio Perm		0.01
v/c Ratio	0.27	0.06
Uniform Delay, d1	38.3	36.8
Progression Factor	0.74	1.00
Incremental Delay, d2	0.1	0.0
Delay (s)	28.3	36.8
Level of Service	C	D
Approach Delay (s)	32.1	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	37	1073	17	11	8	599	42	8	4	2	37	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%				2%			-1%			-3%
Total Lost time (s)	5.0	5.0			5.0	5.0		5.0	5.0		5.0	5.0
Lane Util. Factor	0.97	0.91			0.97	0.91		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	0.99
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00			1.00	0.99		1.00	0.95		1.00	0.90
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3554	5172			3333	4825		1679	1814		1639	1655
Flt Permitted	0.95	1.00			0.95	1.00		0.78	1.00		0.75	1.00
Satd. Flow (perm)	3554	5172			3333	4825		1386	1814		1300	1655
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)	39	1129	18	12	8	631	44	8	4	2	39	11
RTOR Reduction (vph)	0	1	0	0	0	4	0	0	2	0	0	19
Lane Group Flow (vph)	39	1146	0	0	20	671	0	8	4	0	39	13
Confl. Peds. (#/hr)	1		1		1		1	3				
Heavy Vehicles (%)	0%	1%	0%	2%	7%	5%	0%	6%	0%	0%	10%	0%
Bus Blockages (#/hr)	0	4	0	4	0	4	0	4	0	4	4	0
Turn Type	Prot	NA		Prot	Prot	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2		1	1	6		7	4		3	8
Permitted Phases								4			8	
Actuated Green, G (s)	3.7	77.1			4.0	77.4		6.6	5.6		13.2	8.9
Effective Green, g (s)	3.7	77.1			4.0	77.4		5.6	5.1		12.2	8.4
Actuated g/C Ratio	0.03	0.70			0.04	0.70		0.05	0.05		0.11	0.08
Clearance Time (s)	5.0	5.0			5.0	5.0		4.5	4.5		4.5	4.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	119	3625			121	3395		71	84		155	126
v/s Ratio Prot	0.01	c0.22			0.01	c0.14		0.00	0.00		c0.01	0.01
v/s Ratio Perm								0.01			c0.02	
v/c Ratio	0.33	0.32			0.17	0.20		0.11	0.05		0.25	0.10
Uniform Delay, d1	51.9	6.3			51.4	5.6		49.8	50.1		44.8	47.3
Progression Factor	0.86	0.77			0.80	0.60		1.00	1.00		1.06	1.10
Incremental Delay, d2	0.5	0.2			0.2	0.1		0.3	0.1		0.3	0.1
Delay (s)	45.3	5.1			41.5	3.5		50.1	50.2		47.8	52.1
Level of Service	D	A			D	A		D	D		D	D
Approach Delay (s)		6.4				4.6			50.1			49.7
Approach LOS		A				A			D			D

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	20
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	21
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	6%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	885	22	131	707	149	14	88	105	297	86	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			1%			0%	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3148	4948		3483	4995		1767	1361	1537	3392	1545	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3148	4948		3483	4995		1767	1361	1537	3392	1545	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	115	1029	26	152	822	173	16	102	122	345	100	63
RTOR Reduction (vph)	0	2	0	0	25	0	0	0	90	0	22	0
Lane Group Flow (vph)	115	1053	0	152	970	0	16	102	32	345	141	0
Confl. Peds. (#/hr)	2		1	1		2	1		4	4		1
Heavy Vehicles (%)	5%	1%	0%	1%	3%	2%	0%	30%	1%	2%	11%	10%
Bus Blockages (#/hr)	16	6	10	10	4	16	4	16	6	6	10	4
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases									2			
Actuated Green, G (s)	10.0	51.3		8.7	50.0		2.6	14.1	22.8	16.9	28.4	
Effective Green, g (s)	10.0	51.3		8.7	50.0		2.1	13.6	22.8	16.4	27.9	
Actuated g/C Ratio	0.09	0.47		0.08	0.45		0.02	0.12	0.21	0.15	0.25	
Clearance Time (s)	5.0	5.0		5.0	5.0		4.5	4.5	5.0	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	286	2307		275	2270		33	168	318	505	391	
v/s Ratio Prot	0.04	c0.21		c0.04	0.19		0.01	c0.07	0.01	c0.10	0.09	
v/s Ratio Perm									0.01			
v/c Ratio	0.40	0.46		0.55	0.43		0.48	0.61	0.10	0.68	0.36	
Uniform Delay, d1	47.2	19.9		48.8	20.3		53.4	45.7	35.3	44.3	33.7	
Progression Factor	0.77	0.48		1.37	0.95		1.00	1.00	1.00	1.01	1.05	
Incremental Delay, d2	0.3	0.6		1.1	0.5		4.0	4.2	0.1	3.0	0.2	
Delay (s)	36.4	10.2		68.1	19.7		57.5	49.9	35.3	47.8	35.6	
Level of Service	D	B		E	B		E	D	D	D	D	
Approach Delay (s)		12.8			26.2			43.0			43.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	18	65	24	80	44	6	26	43	525	117	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.97			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1564	1760	1494	3217	1671			1751	4832			1684
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1564	1760	1494	3217	1671			1751	4832			1684
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	21	77	29	95	52	7	31	51	625	139	1	12
RTOR Reduction (vph)	0	0	26	0	5	0	0	0	21	0	0	0
Lane Group Flow (vph)	21	77	3	95	54	0	0	82	743	0	0	13
Confl. Peds. (#/hr)	2					2		3		1		1
Heavy Vehicles (%)	16%	5%	6%	7%	8%	25%	1%	3%	4%	4%	1%	4%
Bus Blockages (#/hr)	0	8	6	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	3.0	10.5	10.5	9.3	16.8			8.3	67.2			4.0
Effective Green, g (s)	2.5	10.0	10.0	8.8	16.3			8.3	67.2			4.0
Actuated g/C Ratio	0.02	0.09	0.09	0.08	0.15			0.08	0.61			0.04
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	35	160	135	257	247			132	2951			61
v/s Ratio Prot	0.01	c0.04		c0.03	0.03			c0.05	c0.15			0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.60	0.48	0.02	0.37	0.22			0.62	0.25			0.21
Uniform Delay, d1	53.3	47.5	45.5	48.0	41.2			49.3	9.8			51.5
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.81	0.98			0.79
Incremental Delay, d2	17.1	0.8	0.0	0.3	0.2			6.3	0.2			0.6
Delay (s)	70.3	48.4	45.6	48.3	41.4			46.1	9.9			41.3
Level of Service	E	D	D	D	D			D	A			D
Approach Delay (s)		51.4			45.7				13.4			
Approach LOS		D			D				B			

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	347	28
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4897	
Flt Permitted	1.00	
Satd. Flow (perm)	4897	
Peak-hour factor, PHF	0.84	0.84
Adj. Flow (vph)	413	33
RTOR Reduction (vph)	6	0
Lane Group Flow (vph)	440	0
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	4%	0%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	62.9	
Effective Green, g (s)	62.9	
Actuated g/C Ratio	0.57	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2800	
v/s Ratio Prot	c0.09	
v/s Ratio Perm		
v/c Ratio	0.16	
Uniform Delay, d1	11.1	
Progression Factor	0.65	
Incremental Delay, d2	0.1	
Delay (s)	7.3	
Level of Service	A	
Approach Delay (s)	8.3	
Approach LOS	A	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
60: Military Rd S & S 272 St

7/29/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	399	225	78	438	5	224	153	82	62	154	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			-3%	
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00		1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	3578	1489	1770	3502		3406	1855	1501	1782	1745	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1789	3578	1489	1770	3502		3406	1855	1501	1782	1745	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	83	416	234	81	456	5	233	159	85	65	160	108
RTOR Reduction (vph)	0	0	126	0	1	0	0	0	66	0	22	0
Lane Group Flow (vph)	83	416	108	81	460	0	233	159	19	65	246	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	1	2	0	0	4	1	4	1	2	2	0	4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	16.9	56.6	56.6	8.7	48.4		12.5	27.0	27.0	7.7	22.2	
Effective Green, g (s)	16.9	56.6	55.6	8.7	48.4		12.5	27.0	27.0	7.7	22.2	
Actuated g/C Ratio	0.14	0.47	0.46	0.07	0.40		0.10	0.22	0.22	0.06	0.18	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	251	1687	689	128	1412		354	417	337	114	322	
v/s Ratio Prot	c0.05	0.12		c0.05	c0.13		c0.07	c0.09		0.04	c0.14	
v/s Ratio Perm			0.07						0.01			
v/c Ratio	0.33	0.25	0.16	0.63	0.33		0.66	0.38	0.06	0.57	0.76	
Uniform Delay, d1	46.5	19.0	18.6	54.1	24.6		51.7	39.4	36.5	54.5	46.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.3	0.5	7.3	0.6		3.4	0.2	0.0	4.2	9.3	
Delay (s)	46.7	19.3	19.1	61.4	25.2		55.0	39.6	36.5	58.8	55.7	
Level of Service	D	B	B	E	C		E	D	D	E	E	
Approach Delay (s)		22.4			30.6			46.6			56.3	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
670: S Peasley Cyn Rd

8/5/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	284	374	381	513	645	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.31	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1129	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	284	374	381	513	645	222
RTOR Reduction (vph)	0	64	0	0	0	133
Lane Group Flow (vph)	284	310	381	513	645	89
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	9.2	9.2	12.8	12.8	12.8	12.8
Effective Green, g (s)	9.2	9.2	12.8	12.8	12.8	12.8
Actuated g/C Ratio	0.29	0.29	0.40	0.40	0.40	0.40
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	986	455	451	745	745	633
v/s Ratio Prot	0.08			0.28	c0.35	
v/s Ratio Perm		c0.20	0.34			0.06
v/c Ratio	0.29	0.68	0.84	0.69	0.87	0.14
Uniform Delay, d1	8.9	10.1	8.7	7.9	8.8	6.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	3.3	17.4	5.2	12.9	0.5
Delay (s)	8.9	13.4	26.1	13.1	21.7	6.6
Level of Service	A	B	C	B	C	A
Approach Delay (s)	11.5			18.6	17.8	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	32.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	857	79	173	744	120	81	218	227	110	187	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1742	3408		1778	3409		1738	1891	1557	1748	3400	
Flt Permitted	0.95	1.00		0.95	1.00		0.44	1.00	1.00	0.27	1.00	
Satd. Flow (perm)	1742	3408		1778	3409		812	1891	1557	492	3400	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	78	884	81	178	767	124	84	225	234	113	193	71
RTOR Reduction (vph)	0	4	0	0	7	0	0	0	68	0	29	0
Lane Group Flow (vph)	78	961	0	178	884	0	84	225	166	113	235	0
Confl. Peds. (#/hr)			4			5	1		8	5		1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	15.0	71.2		18.3	74.5		30.7	21.0	39.3	30.3	20.8	
Effective Green, g (s)	15.0	71.2		18.3	74.5		30.7	21.0	39.3	30.3	20.8	
Actuated g/C Ratio	0.11	0.51		0.13	0.53		0.22	0.15	0.28	0.22	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	186	1733		232	1814		242	283	492	191	505	
v/s Ratio Prot	0.04	c0.28		c0.10	0.26		0.02	c0.12	0.04	c0.04	0.07	
v/s Ratio Perm							0.05		0.06	0.09		
v/c Ratio	0.42	0.55		0.77	0.49		0.35	0.80	0.34	0.59	0.47	
Uniform Delay, d1	58.4	23.5		58.8	20.7		44.9	57.4	40.0	46.5	54.5	
Progression Factor	1.00	1.00		0.79	0.75		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.3		11.5	0.8		0.3	13.4	0.1	3.2	0.2	
Delay (s)	59.0	24.8		58.1	16.4		45.3	70.8	40.2	49.7	54.8	
Level of Service	E	C		E	B		D	E	D	D	D	
Approach Delay (s)		27.4			23.3			53.6			53.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
Description:			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3057: I-5 SB Ramp/ I-5 SB Ramp & S 320 St/S 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1381	465	149	1197	0	0	0	0	136	0	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	0.95
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3507	1484	1741	3525					1651	1664	3378
Flt Permitted		1.00	1.00	0.12	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3507	1484	217	3525					1651	1664	3378
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1439	484	155	1247	0	0	0	0	142	0	750
RTOR Reduction (vph)	0	0	159	0	0	0	0	0	0	0	0	189
Lane Group Flow (vph)	0	1439	325	155	1247	0	0	0	0	71	71	561
Confl. Peds. (#/hr)			6	5								8
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	2	0	2
Turn Type		NA	Perm	D.P+P	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2	2						4		4
Actuated Green, G (s)		89.1	89.1	97.6	102.6					27.4	27.4	27.4
Effective Green, g (s)		89.1	89.1	97.6	102.6					27.4	27.4	27.4
Actuated g/C Ratio		0.64	0.64	0.70	0.73					0.20	0.20	0.20
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	2.0
Lane Grp Cap (vph)		2231	944	243	2583					323	325	661
v/s Ratio Prot		c0.41		c0.04	0.35							
v/s Ratio Perm			0.22	0.41						0.04	0.04	c0.17
v/c Ratio		0.65	0.34	0.64	0.48					0.22	0.22	0.85
Uniform Delay, d1		15.7	11.9	13.8	7.7					47.3	47.3	54.3
Progression Factor		0.40	0.02	1.31	0.79					1.00	1.00	1.00
Incremental Delay, d2		1.2	0.9	3.5	0.6					0.1	0.1	9.5
Delay (s)		7.6	1.1	21.6	6.7					47.4	47.4	63.8
Level of Service		A	A	C	A					D	D	E
Approach Delay (s)		6.0			8.3			0.0			61.2	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

Description: All Traffic Data Services - 11/4/04

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	817	674	0	869	129	464	2	99	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0				
Lane Util. Factor		0.95	1.00		0.95		0.95	0.95				
Frpb, ped/bikes		1.00	1.00		1.00		1.00	0.99				
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00				
Frt		1.00	0.85		0.98		1.00	0.95				
Flt Protected		1.00	1.00		1.00		0.95	0.97				
Satd. Flow (prot)		3473	1560		3493		1635	1582				
Flt Permitted		1.00	1.00		1.00		0.95	0.97				
Satd. Flow (perm)		3473	1560		3493		1635	1582				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	878	725	0	934	139	499	2	106	0	0	0
RTOR Reduction (vph)	0	0	0	0	7	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	878	725	0	1066	0	309	283	0	0	0	0
Confl. Peds. (#/hr)						2			2			
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA				
Protected Phases		2			6		4	4				
Permitted Phases			Free									
Actuated Green, G (s)		99.7	140.0		99.7		30.3	30.3				
Effective Green, g (s)		99.7	140.0		99.7		30.3	30.3				
Actuated g/C Ratio		0.71	1.00		0.71		0.22	0.22				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		2.0			2.0		2.0	2.0				
Lane Grp Cap (vph)		2473	1560		2487		353	342				
v/s Ratio Prot		0.25			0.31		c0.19	0.18				
v/s Ratio Perm			c0.46									
v/c Ratio		0.36	0.46		0.43		0.88	0.83				
Uniform Delay, d1		7.8	0.0		8.3		53.0	52.4				
Progression Factor		0.15	1.00		0.34		1.00	1.00				
Incremental Delay, d2		0.3	0.9		0.5		20.2	14.4				
Delay (s)		1.5	0.9		3.3		73.2	66.8				
Level of Service		A	A		A		E	E				
Approach Delay (s)		1.2			3.3			70.0			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	139	647	180	62	617	108	219	65	52	143	122	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3349		1770	3404		1755	1863	1506	1755	1863	1506
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3349		1770	3404		1755	1863	1506	1755	1863	1506
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	153	711	198	68	678	119	241	71	57	157	134	198
RTOR Reduction (vph)	0	11	0	0	8	0	0	0	47	0	0	174
Lane Group Flow (vph)	153	898	0	68	789	0	241	71	10	157	134	24
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			4
Actuated Green, G (s)	27.0	70.7		8.6	52.3		23.6	23.6	23.6	17.1	17.1	17.1
Effective Green, g (s)	27.0	70.7		8.6	52.3		23.6	23.6	23.6	17.1	17.1	17.1
Actuated g/C Ratio	0.19	0.51		0.06	0.37		0.17	0.17	0.17	0.12	0.12	0.12
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	341	1691		108	1271		295	314	253	214	227	183
v/s Ratio Prot	0.09	c0.27		0.04	c0.23		c0.14	0.04		c0.09	0.07	
v/s Ratio Perm									0.01			0.02
v/c Ratio	0.45	0.53		0.63	0.62		0.82	0.23	0.04	0.73	0.59	0.13
Uniform Delay, d1	49.9	23.4		64.1	35.8		56.1	50.3	48.7	59.3	58.1	54.8
Progression Factor	1.38	1.63		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.1		8.0	2.3		15.1	0.1	0.0	10.6	2.7	0.1
Delay (s)	69.1	39.3		72.1	38.0		71.3	50.4	48.7	69.9	60.9	54.9
Level of Service	E	D		E	D		E	D	D	E	E	D
Approach Delay (s)		43.6			40.7			63.8			61.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	48.5	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)	20.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	162	85	156	81	110	57	2	144	1211	87	5	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.95			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1699	1853	1499	1715	3287			3368	4893			1796
Flt Permitted	0.59	1.00	1.00	0.65	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1051	1853	1499	1171	3287			3368	4893			1796
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	167	88	161	84	113	59	2	148	1248	90	5	47
RTOR Reduction (vph)	0	0	141	0	52	0	0	0	4	0	0	0
Lane Group Flow (vph)	167	88	20	84	120	0	0	150	1334	0	0	52
Confl. Peds. (#/hr)	20		16	14		18	5	16		14	9	18
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	25.8	17.7	17.7	25.8	17.3			10.5	86.2			8.0
Effective Green, g (s)	25.8	17.7	17.7	25.8	17.3			10.5	86.2			8.0
Actuated g/C Ratio	0.18	0.13	0.13	0.18	0.12			0.08	0.62			0.06
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	233	234	189	247	406			252	3012			102
v/s Ratio Prot	c0.04	0.05		0.02	0.04			c0.04	c0.27			0.03
v/s Ratio Perm	c0.09		0.01	0.04								
v/c Ratio	0.72	0.38	0.11	0.34	0.30			0.60	0.44			0.51
Uniform Delay, d1	54.6	56.1	54.2	51.0	55.8			62.7	14.2			64.1
Progression Factor	1.00	1.00	1.00	1.00	1.00			0.99	0.96			0.69
Incremental Delay, d2	8.4	0.4	0.1	0.3	0.1			2.5	0.5			1.4
Delay (s)	63.0	56.5	54.2	51.3	56.0			64.8	14.1			45.7
Level of Service	E	E	D	D	E			E	B			D
Approach Delay (s)		58.2			54.4				19.3			
Approach LOS		E			D				B			

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1154	158
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.0	5.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.95
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1507
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1507
Peak-hour factor, PHF	0.97	0.97
Adj. Flow (vph)	1190	163
RTOR Reduction (vph)	0	56
Lane Group Flow (vph)	1190	107
Confl. Peds. (#/hr)		20
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	83.7	92.2
Effective Green, g (s)	83.7	92.2
Actuated g/C Ratio	0.60	0.66
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	3069	992
v/s Ratio Prot	c0.23	0.01
v/s Ratio Perm		0.06
v/c Ratio	0.39	0.11
Uniform Delay, d1	14.7	8.8
Progression Factor	0.43	0.13
Incremental Delay, d2	0.3	0.0
Delay (s)	6.7	1.1
Level of Service	A	A
Approach Delay (s)	7.5	
Approach LOS	A	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	16	127	1134	119	470	868	67	6	181	431	426	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%				2%		
Total Lost time (s)		5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.95		0.97	0.95			0.97	0.95	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.99			1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (prot)		1720	3412		3337	3397			3352	3456	1530	1796
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (perm)		1720	3412		3337	3397			3352	3456	1530	1796
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)	17	134	1194	125	495	914	71	6	191	454	448	155
RTOR Reduction (vph)	0	0	5	0	0	4	0	0	0	0	61	0
Lane Group Flow (vph)	0	151	1314	0	495	981	0	0	197	454	387	155
Confl. Peds. (#/hr)	5	8		7	9		10	2	7		9	10
Heavy Vehicles (%)	2%	2%	2%	2%	4%	4%	4%	3%	3%	3%	3%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	2	0	0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	pm+ov	Prot
Protected Phases	7	7	4		3	8		5	5	2	3	1
Permitted Phases											2	
Actuated Green, G (s)		19.0	70.9		19.0	70.9			13.8	25.6	44.6	14.5
Effective Green, g (s)		19.0	70.9		19.0	70.9			13.8	25.6	44.6	14.5
Actuated g/C Ratio		0.13	0.47		0.13	0.47			0.09	0.17	0.30	0.10
Clearance Time (s)		5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		217	1612		422	1605			308	589	505	173
v/s Ratio Prot		0.09	c0.39		c0.15	0.29			0.06	0.13	c0.10	0.09
v/s Ratio Perm											0.16	
v/c Ratio		0.70	0.82		1.17	0.61			0.64	0.77	0.77	0.90
Uniform Delay, d1		62.7	33.9		65.5	29.3			65.7	59.4	48.0	67.0
Progression Factor		0.80	0.66		1.28	0.24			0.86	0.84	1.33	1.00
Incremental Delay, d2		6.0	3.7		91.6	1.0			2.9	5.1	5.6	39.1
Delay (s)		56.0	26.2		175.7	8.0			59.3	54.9	69.4	106.1
Level of Service		E	C		F	A			E	D	E	F
Approach Delay (s)			29.3			64.1				61.6		
Approach LOS			C			E				E		

Intersection Summary			
HCM 2000 Control Delay	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		
Description:			

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	467	169
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.0	5.0
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.97
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3578	1552
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3578	1552
Peak-hour factor, PHF	0.95	0.95
Adj. Flow (vph)	492	178
RTOR Reduction (vph)	0	120
Lane Group Flow (vph)	492	58
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	2	2
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	26.3	26.3
Effective Green, g (s)	26.3	26.3
Actuated g/C Ratio	0.18	0.18
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	627	272
v/s Ratio Prot	c0.14	
v/s Ratio Perm		0.04
v/c Ratio	0.78	0.21
Uniform Delay, d1	59.1	53.0
Progression Factor	1.00	1.00
Incremental Delay, d2	5.9	0.1
Delay (s)	65.1	53.1
Level of Service	E	D
Approach Delay (s)	70.2	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	171	1255	282	782	992	378	95	302	640	646	283	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-4%				2%			-2%
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	0.94	0.95	1.00		0.97	0.91	0.91	0.97	0.95
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97		1.00	0.99	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	1.00	0.85		1.00	0.96	0.85	1.00	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1704	3436	1476	5027	3561	1535		3419	3203	1441	3502	3509
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1704	3436	1476	5027	3561	1535		3419	3203	1441	3502	3509
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)	180	1321	297	823	1044	398	100	318	674	680	298	651
RTOR Reduction (vph)	0	0	83	0	0	190	0	0	26	46	0	8
Lane Group Flow (vph)	180	1321	214	823	1044	208	0	418	913	369	298	735
Confl. Peds. (#/hr)	26		15	13		13	2	15		13	24	
Heavy Vehicles (%)	4%	4%	4%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	2	2	2	2	2	0	0	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot	NA
Protected Phases	7	4		3	8		5	5	2	2 3	1	6
Permitted Phases			4			8						
Actuated Green, G (s)	19.0	49.7	49.7	25.0	55.7	55.7		19.7	40.1	70.1	15.2	35.6
Effective Green, g (s)	19.0	49.7	49.7	25.0	55.7	55.7		19.7	40.1	70.1	15.2	35.6
Actuated g/C Ratio	0.13	0.33	0.33	0.17	0.37	0.37		0.13	0.27	0.47	0.10	0.24
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	215	1138	489	837	1322	569		449	856	673	354	832
v/s Ratio Prot	0.11	c0.38		c0.16	0.29			0.12	c0.29	0.26	0.09	c0.21
v/s Ratio Perm			0.15			0.14						
v/c Ratio	0.84	1.16	0.44	0.98	0.79	0.37		0.93	1.07	0.55	0.84	0.88
Uniform Delay, d1	64.0	50.1	39.2	62.3	41.9	34.3		64.5	54.9	28.6	66.2	55.2
Progression Factor	0.92	0.85	0.91	1.00	1.00	1.00		1.12	1.14	1.19	0.89	0.91
Incremental Delay, d2	13.3	77.9	1.5	23.5	3.9	1.4		22.6	47.7	0.4	13.1	8.9
Delay (s)	71.9	120.7	37.2	85.8	45.8	35.7		94.9	110.6	34.5	72.2	59.2
Level of Service	E	F	D	F	D	D		F	F	C	E	E
Approach Delay (s)		102.0			58.6				89.1			62.9
Approach LOS		F			E				F			E

Intersection Summary			
HCM 2000 Control Delay	78.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
Description:			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	87
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	92
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	26
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	317	310	168	189	360	69	1	105	501	61	41	721
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			-2%
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	6.0		5.0	5.0		5.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00		0.97	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3436	1872	1579	1799	3628	1588		3333	3362		1753	3492
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.24	1.00		0.95	1.00
Satd. Flow (perm)	3436	1872	1579	1799	3628	1588		826	3362		1753	3492
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)	364	356	193	217	414	79	1	121	576	70	47	829
RTOR Reduction (vph)	0	0	149	0	0	61	0	0	5	0	0	0
Lane Group Flow (vph)	364	356	44	217	414	18	0	122	641	0	47	829
Confl. Peds. (#/hr)						1				1	1	
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	4%	4%	4%	4%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	custom	Prot	NA		Prot	NA
Protected Phases	7	4		3	8			5	2		1	6
Permitted Phases			4			8	5					
Actuated Green, G (s)	20.0	34.3	34.3	20.0	34.3	34.3		16.0	61.1		13.6	58.7
Effective Green, g (s)	20.0	34.3	34.3	20.0	34.3	33.3		17.0	62.1		13.6	58.7
Actuated g/C Ratio	0.13	0.23	0.23	0.13	0.23	0.22		0.11	0.41		0.09	0.39
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		6.0	6.0		5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	458	428	361	239	829	352		93	1391		158	1366
v/s Ratio Prot	0.11	c0.19		c0.12	0.11				0.19		0.03	c0.24
v/s Ratio Perm			0.03			0.01		c0.15				
v/c Ratio	0.79	0.83	0.12	0.91	0.50	0.05		1.31	0.46		0.30	0.61
Uniform Delay, d1	63.0	55.1	45.9	64.1	50.4	45.9		66.5	31.8		63.7	36.4
Progression Factor	1.00	1.00	1.00	0.80	1.03	1.00		1.00	1.00		0.81	0.66
Incremental Delay, d2	8.6	12.4	0.1	33.4	0.2	0.0		198.0	1.1		0.2	0.8
Delay (s)	71.6	67.5	46.0	84.7	52.1	45.9		264.5	32.9		51.9	24.7
Level of Service	E	E	D	F	D	D		F	C		D	C
Approach Delay (s)		64.6			61.4				69.7			26.8
Approach LOS		E			E				E			C

Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	188
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1568
Flt Permitted	1.00
Satd. Flow (perm)	1568
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	216
RTOR Reduction (vph)	131
Lane Group Flow (vph)	85
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	58.7
Effective Green, g (s)	58.7
Actuated g/C Ratio	0.39
Clearance Time (s)	5.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	613
v/s Ratio Prot	
v/s Ratio Perm	0.05
v/c Ratio	0.14
Uniform Delay, d1	29.4
Progression Factor	0.99
Incremental Delay, d2	0.2
Delay (s)	29.2
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5251: Enchanted Pkwy S & S 356 St

8/5/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	13	159	13	12	7	318	962	29	11	810	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.98	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.95		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1782	1540	1734	1753		1778	3519		1744	3473	
Flt Permitted		0.72	1.00	0.53	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1345	1540	971	1753		1778	3519		1744	3473	
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.96	0.96	0.96	0.98	0.98	0.98
Adj. Flow (vph)	266	14	171	15	14	8	331	1002	30	11	827	0
RTOR Reduction (vph)	0	0	138	0	6	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	280	33	15	16	0	331	1031	0	11	827	0
Confl. Peds. (#/hr)	1		3	9		7	3		9	7		1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	pm+pt	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		34.9	27.8	26.8	26.8		29.3	89.5		2.6	59.8	
Effective Green, g (s)		36.9	28.8	28.8	28.8		31.3	90.5		2.6	61.8	
Actuated g/C Ratio		0.25	0.19	0.19	0.19		0.21	0.60		0.02	0.41	
Clearance Time (s)		6.0	6.0	7.0	7.0		7.0	6.0		5.0	7.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		354	295	186	336		371	2123		30	1430	
v/s Ratio Prot		c0.04			0.01		c0.19	0.29		0.01	c0.24	
v/s Ratio Perm		c0.15	0.02	0.02								
v/c Ratio		0.79	0.11	0.08	0.05		0.89	0.49		0.37	0.58	
Uniform Delay, d1		52.9	50.0	49.7	49.4		57.7	16.7		72.9	34.0	
Progression Factor		0.20	0.15	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.9	0.0	0.1	0.0		22.1	0.8		2.8	1.7	
Delay (s)		19.6	7.4	49.8	49.4		79.8	17.5		75.6	35.8	
Level of Service		B	A	D	D		E	B		E	D	
Approach Delay (s)		15.0			49.6			32.6			36.3	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S/Pacific Hwy S & S 312 St

7/29/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	231	327	135	125	246	107	30	169	778	74	2	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.96			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.96		1.00	0.95			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1721	3318		1736	3210			1759	4994			1755
Flt Permitted	0.25	1.00		0.25	1.00			0.95	1.00			0.95
Satd. Flow (perm)	454	3318		450	3210			1759	4994			1755
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	233	330	136	126	248	108	30	171	786	75	2	115
RTOR Reduction (vph)	0	36	0	0	38	0	0	0	6	0	0	0
Lane Group Flow (vph)	233	430	0	126	318	0	0	201	855	0	0	117
Confl. Peds. (#/hr)	45		35	22		74				29		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	38.2	27.3		38.2	18.3			20.2	70.2			13.6
Effective Green, g (s)	36.2	26.3		36.2	17.3			20.2	70.2			13.6
Actuated g/C Ratio	0.26	0.19		0.26	0.12			0.14	0.50			0.10
Clearance Time (s)	4.0	4.0		4.0	4.0			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	288	623		207	396			253	2504			170
v/s Ratio Prot	c0.11	0.13		0.04	0.10			c0.11	0.17			0.07
v/s Ratio Perm	c0.10			0.11								
v/c Ratio	0.81	0.69		0.61	0.80			0.79	0.34			0.69
Uniform Delay, d1	44.9	53.1		42.2	59.7			57.9	21.0			61.1
Progression Factor	1.26	1.23		0.98	0.97			1.12	0.89			1.00
Incremental Delay, d2	14.0	2.6		3.4	10.5			13.7	0.3			8.9
Delay (s)	70.3	67.6		44.5	68.2			78.3	19.1			70.0
Level of Service	E	E		D	E			E	B			E
Approach Delay (s)		68.5			62.0				30.3			
Approach LOS		E			E				C			

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	873	124
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	5.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.97
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5058	1508
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5058	1508
Peak-hour factor, PHF	0.99	0.99
Adj. Flow (vph)	882	125
RTOR Reduction (vph)	0	52
Lane Group Flow (vph)	882	73
Confl. Peds. (#/hr)		13
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	4
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	63.6	83.5
Effective Green, g (s)	63.6	81.5
Actuated g/C Ratio	0.45	0.58
Clearance Time (s)	5.0	4.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2297	877
v/s Ratio Prot	c0.17	0.01
v/s Ratio Perm		0.04
v/c Ratio	0.38	0.08
Uniform Delay, d1	25.3	12.8
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.0
Delay (s)	25.7	12.9
Level of Service	C	B
Approach Delay (s)	28.9	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	98	66	122	94	71	102	45	208	962	107	8	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.96			1.00	0.98			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.90		1.00	0.91			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1740	1601		1736	1629			1769	4861			1737
Flt Permitted	0.30	1.00		0.26	1.00			0.95	1.00			0.95
Satd. Flow (perm)	545	1601		483	1629			1769	4861			1737
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	100	67	124	96	72	104	46	212	982	109	8	110
RTOR Reduction (vph)	0	52	0	0	45	0	0	0	7	0	0	0
Lane Group Flow (vph)	100	139	0	96	131	0	0	258	1084	0	0	118
Confl. Peds. (#/hr)	8		21	12		33				37		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	24.5	17.5		24.5	16.7			23.8	75.7			21.8
Effective Green, g (s)	22.5	16.5		22.5	15.7			23.8	75.7			21.8
Actuated g/C Ratio	0.16	0.12		0.16	0.11			0.17	0.54			0.16
Clearance Time (s)	4.0	4.0		4.0	4.0			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	145	188		131	182			300	2628			270
v/s Ratio Prot	0.03	c0.09		0.03	c0.08			c0.15	0.22			0.07
v/s Ratio Perm	0.08			0.09								
v/c Ratio	0.69	0.74		0.73	0.72			0.86	0.41			0.44
Uniform Delay, d1	53.0	59.7		61.4	60.0			56.5	19.0			53.5
Progression Factor	1.00	1.00		0.82	0.76			0.97	0.85			0.95
Incremental Delay, d2	10.4	12.3		15.2	9.8			16.0	0.4			0.4
Delay (s)	63.4	71.9		65.7	55.5			70.6	16.6			51.4
Level of Service	E	E		E	E			E	B			D
Approach Delay (s)		69.0			59.1				26.9			
Approach LOS		E			E				C			

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1069	53
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5046	
Flt Permitted	1.00	
Satd. Flow (perm)	5046	
Peak-hour factor, PHF	0.98	0.98
Adj. Flow (vph)	1091	54
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	1142	0
Confl. Peds. (#/hr)		17
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	73.7	
Effective Green, g (s)	73.7	
Actuated g/C Ratio	0.53	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2656	
v/s Ratio Prot	c0.23	
v/s Ratio Perm		
v/c Ratio	0.43	
Uniform Delay, d1	20.3	
Progression Factor	0.54	
Incremental Delay, d2	0.5	
Delay (s)	11.4	
Level of Service	B	
Approach Delay (s)	15.2	
Approach LOS	B	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	10	337	940	143	1	360	717	280	13	220	779	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.0	5.0			5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	0.99			1.00	1.00	0.95		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.98			1.00	1.00	0.85		1.00	0.97	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5126			3467	5081	1514		3377	4887	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5126			3467	5081	1514		3377	4887	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	351	979	149	1	375	747	292	14	229	811	198
RTOR Reduction (vph)	0	0	14	0	0	0	0	164	0	0	30	0
Lane Group Flow (vph)	0	361	1114	0	0	376	747	128	0	243	979	0
Confl. Peds. (#/hr)				27				38				27
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	7	7	4		3	3	8		5	5	2	
Permitted Phases								8				
Actuated Green, G (s)		17.3	45.1			21.0	48.8	48.8		14.0	36.2	
Effective Green, g (s)		17.3	45.1			21.0	48.8	48.8		14.0	36.2	
Actuated g/C Ratio		0.12	0.32			0.15	0.35	0.35		0.10	0.26	
Clearance Time (s)		5.0	5.0			5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		441	1651			520	1771	527		337	1263	
v/s Ratio Prot		c0.10	c0.22			c0.11	0.15			0.07	c0.20	
v/s Ratio Perm								0.08				
v/c Ratio		0.82	0.68			0.72	0.42	0.24		0.72	0.77	
Uniform Delay, d1		59.8	41.1			56.7	34.8	32.5		61.1	48.1	
Progression Factor		0.84	1.22			0.64	0.43	0.26		1.25	0.58	
Incremental Delay, d2		6.9	1.4			3.3	0.6	0.9		5.1	2.2	
Delay (s)		57.0	51.4			39.9	15.6	9.3		81.5	30.1	
Level of Service		E	D			D	B	A		F	C	
Approach Delay (s)			52.8				20.8				40.1	
Approach LOS			D				C				D	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	24	317	695	190
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.93
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3474	5187	1457
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3474	5187	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	330	724	198
RTOR Reduction (vph)	0	0	0	142
Lane Group Flow (vph)	0	355	724	56
Confl. Peds. (#/hr)				38
Heavy Vehicles (%)	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	1	1	6	
Permitted Phases				6
Actuated Green, G (s)		17.7	39.9	39.9
Effective Green, g (s)		17.7	39.9	39.9
Actuated g/C Ratio		0.13	0.28	0.28
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		439	1478	415
v/s Ratio Prot		c0.10	0.14	
v/s Ratio Perm				0.04
v/c Ratio		0.81	0.49	0.14
Uniform Delay, d1		59.5	41.6	37.2
Progression Factor		0.72	0.60	0.89
Incremental Delay, d2		9.1	0.1	0.0
Delay (s)		52.3	25.2	33.4
Level of Service		D	C	C
Approach Delay (s)			34.0	
Approach LOS			C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	6	147	1163	23	300	1316	174	37	121	241	348	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99		1.00	1.00	0.97	1.00	0.96
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.94
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3209	4841		3483	5111		1733	1735	1498	3327	1574
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3209	4841		3483	5111		1733	1735	1498	3327	1574
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	6	156	1237	24	319	1400	185	39	129	256	370	164
RTOR Reduction (vph)	0	0	1	0	0	10	0	0	0	65	0	20
Lane Group Flow (vph)	0	162	1260	0	319	1575	0	39	129	191	370	255
Confl. Peds. (#/hr)				69			20			27		
Heavy Vehicles (%)	3%	3%	3%	3%	1%	1%	1%	2%	2%	2%	4%	4%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		10.6	62.5		21.0	72.9		8.2	18.5	39.5	19.0	29.3
Effective Green, g (s)		10.6	62.5		21.0	72.9		7.7	18.0	39.5	18.5	28.8
Actuated g/C Ratio		0.08	0.45		0.15	0.52		0.06	0.13	0.28	0.13	0.21
Clearance Time (s)		5.0	5.0		5.0	5.0		4.5	4.5	5.0	4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		242	2161		522	2661		95	223	422	439	323
v/s Ratio Prot		0.05	c0.26		0.09	c0.31		0.02	c0.07	0.07	0.11	c0.16
v/s Ratio Perm										0.06		
v/c Ratio		0.67	0.58		0.61	0.59		0.41	0.58	0.45	0.84	0.79
Uniform Delay, d1		63.0	29.0		55.7	23.2		64.0	57.4	41.4	59.3	52.7
Progression Factor		1.13	0.53		0.85	0.60		1.02	1.00	0.95	0.94	0.87
Incremental Delay, d2		4.9	1.1		1.2	0.8		1.0	2.2	0.3	11.2	9.5
Delay (s)		75.8	16.5		48.4	14.9		66.1	59.5	39.4	66.7	55.2
Level of Service		E	B		D	B		E	E	D	E	E
Approach Delay (s)			23.3			20.5			48.0			61.8
Approach LOS			C			C			D			E

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	104
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	111
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	62
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	96	153	174	302	155	43	83	159	1110	191	5	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	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	0.97			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1504	3375	1768			1773	4971			1713
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1504	3375	1768			1773	4971			1713
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	102	163	185	321	165	46	88	169	1181	203	5	131
RTOR Reduction (vph)	0	0	114	0	8	0	0	0	14	0	0	0
Lane Group Flow (vph)	102	163	71	321	203	0	0	257	1370	0	0	136
Confl. Peds. (#/hr)	9		12	13		10	8	12		13	5	10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	0	8	6	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	12.3	17.2	17.2	17.6	22.5			18.0	61.2			25.0
Effective Green, g (s)	11.8	16.7	16.7	17.1	22.0			18.0	61.2			25.0
Actuated g/C Ratio	0.08	0.12	0.12	0.12	0.16			0.13	0.44			0.18
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	149	216	179	412	277			227	2173			305
v/s Ratio Prot	0.06	c0.09		0.10	c0.12			c0.14	c0.28			0.08
v/s Ratio Perm			0.05									
v/c Ratio	0.68	0.75	0.40	0.78	0.73			1.13	0.63			0.45
Uniform Delay, d1	62.3	59.7	57.0	59.6	56.2			61.0	30.6			51.3
Progression Factor	0.89	0.87	0.63	0.81	0.79			0.81	0.69			0.59
Incremental Delay, d2	9.8	12.3	0.5	8.2	8.4			96.1	1.2			0.3
Delay (s)	65.4	64.3	36.6	56.4	52.9			145.2	22.4			30.4
Level of Service	E	E	D	E	D			F	C			C
Approach Delay (s)		53.2			55.0				41.7			
Approach LOS		D			E				D			

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	955	76
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4969	
Flt Permitted	1.00	
Satd. Flow (perm)	4969	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	1016	81
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	1092	0
Confl. Peds. (#/hr)		9
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	68.2	
Effective Green, g (s)	68.2	
Actuated g/C Ratio	0.49	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2420	
v/s Ratio Prot	c0.22	
v/s Ratio Perm		
v/c Ratio	0.45	
Uniform Delay, d1	23.6	
Progression Factor	0.42	
Incremental Delay, d2	0.5	
Delay (s)	10.4	
Level of Service	B	
Approach Delay (s)	12.6	
Approach LOS	B	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
30: West Main St

7/28/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	61	12	73	71	57	37	165	77	179	518	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.93		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1817		1770	1738		1770	1774		1770	1849	
Flt Permitted	0.67	1.00		0.48	1.00		0.34	1.00		0.51	1.00	
Satd. Flow (perm)	1245	1817		901	1738		627	1774		947	1849	
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)	11	66	13	79	77	62	40	179	84	195	563	29
RTOR Reduction (vph)	0	8	0	0	30	0	0	17	0	0	2	0
Lane Group Flow (vph)	11	71	0	79	109	0	40	246	0	195	590	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.1	10.9		22.5	16.3		48.0	44.6		57.0	49.1	
Effective Green, g (s)	12.1	10.9		22.5	16.3		48.0	44.6		57.0	49.1	
Actuated g/C Ratio	0.13	0.12		0.25	0.18		0.53	0.50		0.63	0.55	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	174	220		288	314		377	879		672	1008	
v/s Ratio Prot	0.00	0.04		c0.02	c0.06		0.00	0.14		c0.03	c0.32	
v/s Ratio Perm	0.01			0.05			0.05			0.16		
v/c Ratio	0.06	0.32		0.27	0.35		0.11	0.28		0.29	0.59	
Uniform Delay, d1	33.9	36.2		26.6	32.2		10.7	13.3		7.2	13.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.2	0.2		0.0	0.8		0.1	2.5	
Delay (s)	34.0	36.5		26.8	32.4		10.7	14.1		7.2	16.1	
Level of Service	C	D		C	C		B	B		A	B	
Approach Delay (s)		36.2			30.4			13.6			13.9	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	508	365	203	674	65	211	145	88	70	460	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			-3%	
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.96	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	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	3578	1489	1770	3443		3406	1855	1501	1782	1815	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1789	3578	1489	1770	3443		3406	1855	1501	1782	1815	
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)	118	535	384	214	709	68	222	153	93	74	484	126
RTOR Reduction (vph)	0	0	226	0	6	0	0	0	58	0	8	0
Lane Group Flow (vph)	118	535	158	214	771	0	222	153	35	74	602	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	1	2	0	0	4	1	4	1	2	2	0	4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	11.0	30.1	30.1	16.7	35.8		9.8	45.8	45.8	7.4	43.4	
Effective Green, g (s)	11.0	30.1	29.1	16.7	35.8		9.8	45.8	45.8	7.4	43.4	
Actuated g/C Ratio	0.09	0.25	0.24	0.14	0.30		0.08	0.38	0.38	0.06	0.36	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	163	897	361	246	1027		278	707	572	109	656	
v/s Ratio Prot	0.07	c0.15		c0.12	c0.22		c0.07	0.08		0.04	c0.33	
v/s Ratio Perm			0.11						0.02			
v/c Ratio	0.72	0.60	0.44	0.87	0.75		0.80	0.22	0.06	0.68	0.92	
Uniform Delay, d1	53.0	39.6	38.5	50.6	38.1		54.1	25.0	23.5	55.1	36.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.6	2.9	3.8	25.5	5.1		13.8	0.1	0.0	12.4	17.5	
Delay (s)	65.6	42.5	42.3	76.1	43.1		67.9	25.1	23.5	67.5	54.1	
Level of Service	E	D	D	E	D		E	C	C	E	D	
Approach Delay (s)		45.1			50.2			45.1			55.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	351	485	406	513	989	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	366	505	423	534	1030	321
RTOR Reduction (vph)	0	231	0	0	0	62
Lane Group Flow (vph)	366	274	423	534	1030	259
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	14.0	14.0	11.0	66.0	50.0	50.0
Effective Green, g (s)	14.0	14.0	11.0	66.0	50.0	50.0
Actuated g/C Ratio	0.16	0.16	0.12	0.73	0.56	0.56
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	534	246	419	1366	1035	879
v/s Ratio Prot	0.11		c0.12	0.29	c0.55	
v/s Ratio Perm		c0.17				0.16
v/c Ratio	0.69	1.12	1.01	0.39	1.00	0.29
Uniform Delay, d1	35.9	38.0	39.5	4.5	19.9	10.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	92.0	46.4	0.8	26.8	0.9
Delay (s)	38.8	130.0	85.9	5.3	46.7	11.5
Level of Service	D	F	F	A	D	B
Approach Delay (s)	91.7			40.9	38.3	
Approach LOS	F			D	D	

Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	29	29	20	394	21	199	34	14	882	311	6	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	11	12	12	12	12	12	12	11
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		6.0		5.5	5.5	5.5		5.5	5.5			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		0.99		1.00	1.00	0.97		1.00	0.99			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.97		1.00	1.00	0.85		1.00	0.96			1.00
Flt Protected		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1741		1694	1711	1564		1805	4873			3318
Flt Permitted		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1741		1694	1711	1564		1805	4873			3318
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.96	0.96
Adj. Flow (vph)	36	36	25	428	23	216	36	15	928	327	6	325
RTOR Reduction (vph)	0	0	0	0	0	179	0	0	32	0	0	0
Lane Group Flow (vph)	0	97	0	227	224	37	0	51	1223	0	0	331
Confl. Peds. (#/hr)	10		10	13		13	22	22		22	18	18
Confl. Bikes (#/hr)						2				1		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	0	9	9	0	6	9	0	6	0	6	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		20.4		27.6	27.6	27.6		7.2	70.9			19.1
Effective Green, g (s)		19.4		27.6	27.6	27.6		7.7	71.4			19.6
Actuated g/C Ratio		0.12		0.17	0.17	0.17		0.05	0.45			0.12
Clearance Time (s)		5.0		5.5	5.5	5.5		6.0	6.0			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		211		292	295	269		86	2174			406
v/s Ratio Prot		c0.06		c0.13	0.13			0.03	0.25			c0.10
v/s Ratio Perm						0.02						
v/c Ratio		0.46		0.78	0.76	0.14		0.59	0.56			0.82
Uniform Delay, d1		65.4		63.3	63.0	56.1		74.6	32.8			68.4
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.01
Incremental Delay, d2		0.6		11.2	9.6	0.1		7.1	1.1			11.3
Delay (s)		66.0		74.5	72.6	56.2		81.7	33.8			80.3
Level of Service		E		E	E	E		F	C			F
Approach Delay (s)		66.0			67.9				35.7			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1773	63
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4982	
Flt Permitted	1.00	
Satd. Flow (perm)	4982	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	1847	66
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1911	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	9	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	82.8	
Effective Green, g (s)	83.3	
Actuated g/C Ratio	0.52	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2593	
v/s Ratio Prot	c0.38	
v/s Ratio Perm		
v/c Ratio	0.74	
Uniform Delay, d1	29.8	
Progression Factor	1.02	
Incremental Delay, d2	1.9	
Delay (s)	32.4	
Level of Service	C	
Approach Delay (s)	39.5	
Approach LOS	D	

Intersection Summary

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	132	369	108	200	360	117	140	236	188	333	484	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	11	11	12	11	11
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.95	1.00	1.00	0.94
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	3353		1716	3166		1760	1784	1440	1779	1846	1477
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	1824	3353		1716	3166		276	1784	1440	735	1846	1477
Peak-hour factor, PHF	0.89	0.89	0.89	0.86	0.86	0.86	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	148	415	121	233	419	136	152	257	204	366	532	213
RTOR Reduction (vph)	0	16	0	0	19	0	0	0	133	0	0	0
Lane Group Flow (vph)	148	520	0	233	536	0	152	257	71	366	532	213
Confl. Peds. (#/hr)	16		16	6		6	20		20	35		35
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	16.0	45.2		23.9	53.1		60.4	39.0	39.0	60.4	52.2	68.2
Effective Green, g (s)	16.0	45.2		23.9	53.1		60.4	39.0	39.0	60.4	52.2	68.2
Actuated g/C Ratio	0.11	0.30		0.16	0.35		0.40	0.26	0.26	0.40	0.35	0.45
Clearance Time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	194	1010		273	1120		192	463	374	444	642	671
v/s Ratio Prot	0.08	0.16		c0.14	c0.17		0.04	0.14		c0.12	c0.29	0.03
v/s Ratio Perm							0.28		0.05	0.21		0.11
v/c Ratio	0.76	0.51		0.85	0.48		0.79	0.56	0.19	0.82	0.83	0.32
Uniform Delay, d1	65.2	43.3		61.3	37.7		59.9	48.0	43.2	46.5	44.8	26.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.7	1.9		21.2	1.5		18.5	0.8	0.1	11.3	8.3	0.1
Delay (s)	79.8	45.2		82.6	39.2		78.4	48.8	43.3	57.7	53.1	26.2
Level of Service	E	D		F	D		E	D	D	E	D	C
Approach Delay (s)		52.7			52.0			54.3			49.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	299	94	347	713	80	99	373	272	66	498	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-2%			2%	
Total Lost time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1743	3321		1718	3438		1791	1900	1574	1740	3278	
Flt Permitted	0.95	1.00		0.95	1.00		0.16	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	1743	3321		1718	3438		296	1900	1574	609	3278	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.93	0.93	0.93	0.95	0.95	0.95
Adj. Flow (vph)	153	322	101	377	775	87	106	401	292	69	524	316
RTOR Reduction (vph)	0	26	0	0	8	0	0	0	91	0	69	0
Lane Group Flow (vph)	153	397	0	377	854	0	106	401	201	69	771	0
Confl. Peds. (#/hr)	3		3	8		8	2		2	3		3
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	6	6	2	0	2	0	4	4	6	2
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases							8		4	4		
Actuated Green, G (s)	14.3	20.2		29.6	35.5		51.2	44.9	74.5	51.2	40.3	
Effective Green, g (s)	14.3	20.2		29.6	35.5		51.2	44.9	74.5	51.2	40.3	
Actuated g/C Ratio	0.12	0.17		0.25	0.30		0.43	0.37	0.62	0.43	0.34	
Clearance Time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	207	559		423	1017		262	710	1042	319	1100	
v/s Ratio Prot	0.09	0.12		c0.22	c0.25		0.04	c0.21	0.05	0.01	c0.24	
v/s Ratio Perm							0.14		0.08	0.08		
v/c Ratio	0.74	0.71		0.89	0.84		0.40	0.56	0.19	0.22	0.70	
Uniform Delay, d1	51.0	47.1		43.6	39.6		40.8	29.8	9.8	21.8	34.6	
Progression Factor	0.93	1.02		1.00	1.00		1.01	1.01	1.27	1.00	0.96	
Incremental Delay, d2	11.2	3.5		19.9	6.0		0.4	3.2	0.0	0.1	2.3	
Delay (s)	58.4	51.5		63.5	45.5		41.6	33.3	12.5	21.8	35.4	
Level of Service	E	D		E	D		D	C	B	C	D	
Approach Delay (s)		53.4			51.0			26.8			34.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Cout Consultant - Oct 14, 2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	636	117	329	1047	125	185	317	230	97	360	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1742	3369		1796	3468		1738	1891	1570	1750	3401	
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00	1.00	0.12	1.00	
Satd. Flow (perm)	1742	3369		1796	3468		267	1891	1570	225	3401	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	89	699	129	358	1138	136	210	360	261	105	391	136
RTOR Reduction (vph)	0	9	0	0	5	0	0	0	41	0	22	0
Lane Group Flow (vph)	89	819	0	358	1269	0	210	360	220	105	505	0
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA	
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases							4		8	8		
Actuated Green, G (s)	12.0	60.5		35.3	83.8		45.2	34.1	69.4	45.2	27.4	
Effective Green, g (s)	12.0	60.5		35.3	83.8		45.2	34.1	69.4	45.2	27.4	
Actuated g/C Ratio	0.08	0.38		0.22	0.52		0.28	0.21	0.43	0.28	0.17	
Clearance Time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	130	1273		396	1816		239	403	680	169	582	
v/s Ratio Prot	0.05	0.24		c0.20	c0.37		c0.10	c0.19	0.07	0.04	0.15	
v/s Ratio Perm							0.15		0.07	0.13		
v/c Ratio	0.68	0.64		0.90	0.70		0.88	0.89	0.32	0.62	0.87	
Uniform Delay, d1	72.2	40.9		60.7	28.6		64.7	61.2	29.8	66.9	64.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.3	2.5		22.9	2.3		27.7	20.9	0.1	5.0	12.5	
Delay (s)	83.4	43.4		83.6	30.9		92.4	82.1	29.9	71.9	77.0	
Level of Service	F	D		F	C		F	F	C	E	E	
Approach Delay (s)		47.3			42.5			68.3			76.2	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	54.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SWL2	SWL	SWR
Lane Configurations											
Volume (vph)	0	1365	304	85	1212	0	0	0	502	3	872
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%		2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0				5.0	5.0	5.0
Lane Util. Factor		0.95	1.00	1.00	0.95				0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.97	1.00	1.00				1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				0.95	0.95	1.00
Satd. Flow (prot)		3507	1506	1759	3560				1667	1681	3600
Flt Permitted		1.00	1.00	0.12	1.00				0.95	0.95	1.00
Satd. Flow (perm)		3507	1506	218	3560				1667	1681	3600
Peak-hour factor, PHF	0.94	0.94	0.94	0.97	0.97	0.97	1.00	1.00	0.96	0.96	0.96
Adj. Flow (vph)	0	1452	323	88	1249	0	0	0	523	3	908
RTOR Reduction (vph)	0	0	88	0	0	0	0	0	0	0	100
Lane Group Flow (vph)	0	1452	235	88	1249	0	0	0	261	265	808
Confl. Peds. (#/hr)	2		2						5	5	5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	0	2
Turn Type		NA	Perm	D.P+P	NA				Prot	Prot	custom
Protected Phases		2		1	6				4	4	4 5
Permitted Phases			2	2							
Actuated Green, G (s)		103.5	103.5	113.5	103.5				31.5	31.5	46.5
Effective Green, g (s)		103.5	103.5	113.5	103.5				31.5	31.5	46.5
Actuated g/C Ratio		0.65	0.65	0.71	0.65				0.20	0.20	0.29
Clearance Time (s)		5.0	5.0	5.0	5.0				5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0				2.0	2.0	
Lane Grp Cap (vph)		2268	974	250	2302				328	330	1046
v/s Ratio Prot		c0.41		0.02	0.35				0.16	0.16	c0.22
v/s Ratio Perm			0.16	0.23							
v/c Ratio		0.64	0.24	0.35	0.54				0.80	0.80	0.77
Uniform Delay, d1		17.0	11.8	29.3	15.4				61.2	61.3	51.9
Progression Factor		1.00	1.00	0.87	0.77				1.00	1.00	1.00
Incremental Delay, d2		1.4	0.6	0.3	0.8				11.8	12.5	3.3
Delay (s)		18.4	12.4	25.7	12.6				72.9	73.8	55.2
Level of Service		B	B	C	B				E	E	E
Approach Delay (s)		17.3			13.5		0.0			61.9	
Approach LOS		B			B		A			E	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NEL2	NEL	NER
Lane Configurations											
Volume (vph)	0	1236	602	0	858	202	0	0	385	0	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%		3%			2%	
Total Lost time (s)		5.0	5.0		5.0				5.0	5.0	
Lane Util. Factor		0.95	1.00		0.95				0.95	0.95	
Frpb, ped/bikes		1.00	1.00		0.99				1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00				1.00	1.00	
Frt		1.00	0.85		0.97				1.00	0.87	
Flt Protected		1.00	1.00		1.00				0.95	0.99	
Satd. Flow (prot)		3507	1575		3453				1651	1489	
Flt Permitted		1.00	1.00		1.00				0.95	0.99	
Satd. Flow (perm)		3507	1575		3453				1651	1489	
Peak-hour factor, PHF	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	0.91	0.91	0.91
Adj. Flow (vph)	0	1274	621	0	975	230	0	0	423	0	364
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	28	0
Lane Group Flow (vph)	0	1274	621	0	1195	0	0	0	381	378	0
Confl. Peds. (#/hr)				2		2	10	10	1	1	1
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	0	2
Turn Type		NA	Free		NA				Prot	Prot	
Protected Phases		2			6				4	4	
Permitted Phases			Free								
Actuated Green, G (s)		103.3	160.0		103.3				46.7	46.7	
Effective Green, g (s)		103.3	160.0		103.3				46.7	46.7	
Actuated g/C Ratio		0.65	1.00		0.65				0.29	0.29	
Clearance Time (s)		5.0			5.0				5.0	5.0	
Vehicle Extension (s)		2.0			2.0				2.0	2.0	
Lane Grp Cap (vph)		2264	1575		2229				481	434	
v/s Ratio Prot		c0.36			0.35				0.23	c0.25	
v/s Ratio Perm			0.39								
v/c Ratio		0.56	0.39		0.54				0.79	0.87	
Uniform Delay, d1		15.8	0.0		15.4				52.2	53.8	
Progression Factor		0.56	1.00		1.00				1.00	1.00	
Incremental Delay, d2		0.8	0.6		0.9				8.1	16.6	
Delay (s)		9.6	0.6		16.3				60.3	70.4	
Level of Service		A	A		B				E	E	
Approach Delay (s)		6.7			16.3		0.0			65.5	
Approach LOS		A			B		A			E	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	929	612	215	721	128	170	119	50	142	251	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.95	1.00	1.00	0.95
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	0.98		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)	1770	3525	1505	1770	3398		1755	1863	1499	1755	1863	1499
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)	1770	3525	1505	1770	3398		1755	1863	1499	1755	1863	1499
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	224	968	638	224	751	133	177	124	52	148	261	132
RTOR Reduction (vph)	0	0	65	0	8	0	0	0	42	0	0	98
Lane Group Flow (vph)	224	968	573	224	876	0	177	124	10	148	261	34
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	23.4	57.3	88.7	26.0	59.9		31.4	31.4	31.4	25.3	25.3	25.3
Effective Green, g (s)	23.4	57.3	86.7	26.0	59.9		31.4	31.4	31.4	25.3	25.3	25.3
Actuated g/C Ratio	0.15	0.36	0.54	0.16	0.37		0.20	0.20	0.20	0.16	0.16	0.16
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	258	1262	871	287	1272		344	365	294	277	294	237
v/s Ratio Prot	c0.13	c0.27	c0.12	c0.13	0.26		0.10	0.07		0.08	c0.14	
v/s Ratio Perm			0.26						0.01			0.02
v/c Ratio	0.87	0.77	0.66	0.78	0.69		0.51	0.34	0.03	0.53	0.89	0.14
Uniform Delay, d1	66.8	45.4	26.1	64.3	42.2		57.5	55.4	52.0	61.9	66.0	58.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	24.4	4.5	1.4	11.9	3.1		0.5	0.2	0.0	1.0	25.3	0.1
Delay (s)	91.2	49.9	27.5	76.2	45.2		58.0	55.6	52.1	62.9	91.3	58.1
Level of Service	F	D	C	E	D		E	E	D	E	F	E
Approach Delay (s)		47.2			51.5			56.3			75.4	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	232	558	105	177	683	190	203	406	100	16	209	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	11	11	12	11	11	11
Grade (%)		0%			1%			2%				-2%
Total Lost time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95			1.00	0.95
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97			1.00	0.97
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	3351	3346		3295	3438	1545	1694	3265			1729	3331
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.12	1.00			0.19	1.00
Satd. Flow (perm)	3351	3346		3295	3438	1545	214	3265			338	3331
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	244	587	111	203	785	218	211	423	104	18	230	593
RTOR Reduction (vph)	0	10	0	0	0	107	0	18	0	0	0	16
Lane Group Flow (vph)	244	688	0	203	785	111	211	509	0	0	248	723
Confl. Peds. (#/hr)	10		10	5		5	1		1	5	5	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	6	0	2	0	2	2	0	2	6
Turn Type	Prot	NA		Prot	NA	Perm	D.P+P	NA		D.P+P	D.P+P	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases						8	6			2	2	
Actuated Green, G (s)	13.7	55.0		14.5	56.3	56.3	51.0	27.1			51.5	35.3
Effective Green, g (s)	13.7	55.0		14.5	56.3	56.3	51.0	27.1			51.5	35.3
Actuated g/C Ratio	0.10	0.39		0.10	0.40	0.40	0.36	0.19			0.37	0.25
Clearance Time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	327	1314		341	1382	621	243	632			366	839
v/s Ratio Prot	c0.07	0.21		0.06	c0.23		c0.10	0.16			0.12	0.22
v/s Ratio Perm						0.07	c0.22				0.13	
v/c Ratio	0.75	0.52		0.60	0.57	0.18	0.87	0.81			0.68	0.86
Uniform Delay, d1	61.5	32.5		59.9	32.4	27.0	54.1	53.9			46.9	50.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	7.9	1.5		1.9	1.7	0.6	25.5	7.0			3.9	8.8
Delay (s)	69.3	34.0		61.8	34.1	27.6	79.7	60.9			50.8	58.8
Level of Service	E	C		E	C	C	E	E			D	E
Approach Delay (s)		43.1			37.6			66.3				56.8
Approach LOS		D			D			E				E

Intersection Summary			
HCM 2000 Control Delay	49.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/22/2014

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	133
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	146
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	5
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	273	316	383	137	360	108	14	249	987	79	26	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1735	1872	1536	1749	3404			3401	4951			1796
Flt Permitted	0.18	1.00	1.00	0.19	1.00			0.95	1.00			0.95
Satd. Flow (perm)	323	1872	1536	350	3404			3401	4951			1796
Peak-hour factor, PHF	0.81	0.81	0.81	0.82	0.82	0.82	0.88	0.88	0.88	0.88	0.86	0.86
Adj. Flow (vph)	337	390	473	167	439	132	16	283	1122	90	30	92
RTOR Reduction (vph)	0	0	144	0	19	0	0	0	5	0	0	0
Lane Group Flow (vph)	337	390	329	167	552	0	0	299	1207	0	0	122
Confl. Peds. (#/hr)	6		6	7		7	3	3		3	3	3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	58.4	42.2	42.2	58.4	33.4			16.3	63.3			17.8
Effective Green, g (s)	58.4	42.2	42.2	58.4	33.4			16.3	63.3			17.8
Actuated g/C Ratio	0.36	0.26	0.26	0.36	0.21			0.10	0.40			0.11
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	338	493	405	269	710			346	1958			199
v/s Ratio Prot	c0.16	0.21		0.06	0.16			c0.09	0.24			0.07
v/s Ratio Perm	c0.21		0.21	0.16								
v/c Ratio	1.00	0.79	0.81	0.62	0.78			0.86	0.62			0.61
Uniform Delay, d1	43.2	54.8	55.2	58.9	59.8			70.8	38.6			67.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	47.8	7.9	11.2	3.2	4.9			18.9	1.5			3.9
Delay (s)	91.0	62.7	66.5	62.1	64.7			89.7	40.1			71.6
Level of Service	F	E	E	E	E			F	D			E
Approach Delay (s)		72.1			64.1				49.9			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	53.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1300	282
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	4.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1573
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1573
Peak-hour factor, PHF	0.86	0.86
Adj. Flow (vph)	1512	328
RTOR Reduction (vph)	0	40
Lane Group Flow (vph)	1512	288
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	64.8	89.8
Effective Green, g (s)	64.8	89.8
Actuated g/C Ratio	0.40	0.56
Clearance Time (s)	5.5	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2079	882
v/s Ratio Prot	c0.29	0.05
v/s Ratio Perm		0.13
v/c Ratio	0.73	0.33
Uniform Delay, d1	40.1	18.9
Progression Factor	1.00	1.00
Incremental Delay, d2	2.3	0.1
Delay (s)	42.5	18.8
Level of Service	D	B
Approach Delay (s)	40.4	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	263	115	187	432	127	232	236	173	76	207	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			2%			1%			1%	
Total Lost time (s)	4.5	4.5	5.5	4.5	4.5		4.5	4.5		5.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		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
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	1844	1502	1747	1782		1756	1736		1778	1834	1572
Flt Permitted	0.24	1.00	1.00	0.50	1.00		0.38	1.00		0.14	1.00	1.00
Satd. Flow (perm)	447	1844	1502	925	1782		704	1736		254	1834	1572
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	43	289	126	199	460	135	249	254	186	83	225	138
RTOR Reduction (vph)	0	0	68	0	7	0	0	23	0	0	0	110
Lane Group Flow (vph)	43	289	58	199	588	0	249	417	0	83	225	28
Confl. Peds. (#/hr)	1		1	4		4	1		1			
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	5	5	3	0	3	0	0	0	5	3
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8		4	4			6			2		6
Actuated Green, G (s)	62.2	56.2	56.2	62.2	58.1		39.8	32.5		39.3	24.0	24.0
Effective Green, g (s)	62.2	56.2	55.2	62.2	58.1		39.8	32.5		39.3	24.0	24.0
Actuated g/C Ratio	0.52	0.47	0.46	0.52	0.48		0.33	0.27		0.33	0.20	0.20
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	276	863	690	520	862		372	470		169	366	314
v/s Ratio Prot	0.01	0.16		c0.02	c0.33		c0.09	c0.24		0.03	0.12	
v/s Ratio Perm	0.08		0.04	0.18			0.13			0.13		0.02
v/c Ratio	0.16	0.33	0.08	0.38	0.68		0.67	0.89		0.49	0.61	0.09
Uniform Delay, d1	30.9	20.1	18.2	22.0	23.8		31.7	42.0		31.1	43.8	39.1
Progression Factor	1.00	1.00	1.00	0.94	0.93		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	1.0	0.2	0.1	3.3		3.5	17.6		0.8	2.2	0.0
Delay (s)	31.0	21.2	18.4	20.7	25.6		35.2	59.6		31.9	45.9	39.1
Level of Service	C	C	B	C	C		D	E		C	D	D
Approach Delay (s)		21.3			24.3			50.8			41.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/23/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	635	69	290	1052	153	59	136	34	167	466	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-1%			7%			-3%	
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3384	3437		3443	3578	1577	1711	3320		1799	3613	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3384	3437		3443	3578	1577	1711	3320		1799	3613	1593
Peak-hour factor, PHF	0.89	0.89	0.89	0.98	0.98	0.98	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	93	713	78	296	1073	156	67	155	39	180	501	173
RTOR Reduction (vph)	0	4	0	0	0	45	0	15	0	0	0	68
Lane Group Flow (vph)	93	787	0	296	1073	111	67	179	0	180	501	105
Confl. Peds. (#/hr)				1		1	3		3	1		1
Heavy Vehicles (%)	1%	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	2	1	2	2	2	2	2	2	2	2
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Actuated Green, G (s)	9.2	79.6		19.7	90.1	113.6	13.7	18.2		23.5	27.5	36.7
Effective Green, g (s)	9.2	79.6		19.7	90.1	113.6	13.7	18.2		23.5	27.5	36.7
Actuated g/C Ratio	0.06	0.50		0.12	0.56	0.71	0.09	0.11		0.15	0.17	0.23
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	194	1709		423	2014	1168	146	377		264	620	410
v/s Ratio Prot	0.03	0.23		c0.09	c0.30	0.01	0.04	0.05		c0.10	c0.14	0.01
v/s Ratio Perm						0.06						0.05
v/c Ratio	0.48	0.46		0.70	0.53	0.09	0.46	0.47		0.68	0.81	0.26
Uniform Delay, d1	73.1	26.2		67.3	21.8	7.2	69.6	66.4		64.7	63.7	50.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.9		4.1	1.0	0.0	0.8	0.3		5.7	7.2	0.1
Delay (s)	73.8	27.1		71.4	22.8	7.2	70.5	66.8		70.4	70.9	50.6
Level of Service	E	C		E	C	A	E	E		E	E	D
Approach Delay (s)		32.0			30.7			67.7			66.7	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/22/2014

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	41	101	993	250	576	1240	55	225	425	460	141	762
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%			2%			-3%
Total Lost time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91		0.97	0.95	1.00	1.00	0.95
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1737	4863		3369	4965		3288	3390	1511	1796	3578
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1737	4863		3369	4965		3288	3390	1511	1796	3578
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.94	0.94	0.94	0.93	0.93	0.93	0.96	0.96
Adj. Flow (vph)	45	111	1091	275	613	1319	59	242	457	495	147	794
RTOR Reduction (vph)	0	0	26	0	0	3	0	0	0	51	0	0
Lane Group Flow (vph)	0	156	1340	0	613	1375	0	242	457	444	147	794
Confl. Peds. (#/hr)	5	5		5				3		3	2	
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	5%	5%	5%	2%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	0	0	2
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		23.5	52.2		31.1	60.3		14.3	32.2	63.3	24.0	41.9
Effective Green, g (s)		23.5	52.2		31.1	60.3		14.3	32.2	63.3	24.0	41.9
Actuated g/C Ratio		0.15	0.33		0.19	0.38		0.09	0.20	0.40	0.15	0.26
Clearance Time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		255	1586		654	1871		293	682	597	269	936
v/s Ratio Prot		0.09	c0.28		c0.18	0.28		c0.07	0.13	0.14	0.08	c0.22
v/s Ratio Perm										0.15		
v/c Ratio		0.61	0.84		0.94	0.73		0.83	0.67	0.74	0.55	0.85
Uniform Delay, d1		64.0	50.1		63.5	43.0		71.6	59.0	41.4	63.0	56.0
Progression Factor		1.00	1.00		1.46	1.39		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.0	5.7		13.0	1.4		16.3	2.0	4.4	1.2	6.9
Delay (s)		67.0	55.8		105.5	61.1		87.9	61.0	45.8	64.2	63.0
Level of Service		E	E		F	E		F	E	D	E	E
Approach Delay (s)			57.0			74.8			60.2			60.7
Approach LOS			E			E			E			E

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	150
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1571
Flt Permitted	1.00
Satd. Flow (perm)	1571
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	156
RTOR Reduction (vph)	88
Lane Group Flow (vph)	68
Confl. Peds. (#/hr)	2
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	41.9
Effective Green, g (s)	41.9
Actuated g/C Ratio	0.26
Clearance Time (s)	5.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	411
v/s Ratio Prot	
v/s Ratio Perm	0.04
v/c Ratio	0.17
Uniform Delay, d1	45.6
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	45.6
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	4	105	1085	316	943	1434	404	157	287	497	482	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			2%			-4%				2%		
Total Lost time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.91	1.00	0.94	0.91	1.00		0.97	0.91	0.91	0.97
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.96	0.85	1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (prot)		1688	4891	1485	5027	5123	1554		3419	3231	1441	3502
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (perm)		1688	4891	1485	5027	5123	1554		3419	3231	1441	3502
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.93	0.93	0.93	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	5	122	1262	367	1014	1542	434	167	305	529	513	410
RTOR Reduction (vph)	0	0	0	86	0	0	186	0	0	22	40	0
Lane Group Flow (vph)	0	127	1262	281	1014	1542	248	0	472	697	283	410
Confl. Peds. (#/hr)	4	4		4	5		5	1	1		1	14
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%	3%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	2	0	0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot
Protected Phases	7	7	4		3	8		5	5	2	2 3	1
Permitted Phases				4			8					
Actuated Green, G (s)		14.3	44.0	44.0	31.0	60.7	60.7		22.0	41.2	77.2	24.3
Effective Green, g (s)		14.3	44.0	44.0	31.0	60.7	60.7		22.0	41.2	77.2	24.3
Actuated g/C Ratio		0.09	0.28	0.28	0.19	0.38	0.38		0.14	0.26	0.48	0.15
Clearance Time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0		5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		150	1345	408	973	1943	589		470	831	695	531
v/s Ratio Prot		0.08	c0.26		c0.20	0.30			c0.14	0.22	0.20	0.12
v/s Ratio Perm				0.19			0.16					
v/c Ratio		0.85	0.94	0.69	1.04	0.79	0.42		1.00	0.84	0.41	0.77
Uniform Delay, d1		71.8	56.7	51.9	64.5	44.1	36.7		69.0	56.3	26.7	65.2
Progression Factor		1.09	1.34	1.54	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2		21.4	9.1	5.6	40.4	3.4	2.2		42.6	7.1	0.1	6.3
Delay (s)		99.8	85.3	85.3	104.9	47.5	38.9		111.6	63.4	26.8	71.5
Level of Service		F	F	F	F	D	D		F	E	C	E
Approach Delay (s)			86.4			65.7				70.6		
Approach LOS			F			E				E		

Intersection Summary			
HCM 2000 Control Delay	72.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/09/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	699	132
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.95	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	3495	
Flt Permitted	1.00	
Satd. Flow (perm)	3495	
Peak-hour factor, PHF	0.94	0.94
Adj. Flow (vph)	744	140
RTOR Reduction (vph)	10	0
Lane Group Flow (vph)	874	0
Confl. Peds. (#/hr)		14
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	43.0	
Effective Green, g (s)	43.0	
Actuated g/C Ratio	0.27	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	939	
v/s Ratio Prot	c0.25	
v/s Ratio Perm		
v/c Ratio	0.93	
Uniform Delay, d1	57.1	
Progression Factor	1.00	
Incremental Delay, d2	15.2	
Delay (s)	72.3	
Level of Service	E	
Approach Delay (s)	72.0	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	437	362	3	57	859	226	45	47	13	211	70	394
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			1%	
Total Lost time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	3460	1864		1796	3445		1766	1806			1804	1530
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	3460	1864		1796	3445		1766	1806			1804	1530
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.75	0.75	0.75	0.97	0.97	0.97
Adj. Flow (vph)	486	402	3	62	934	246	60	63	17	218	72	406
RTOR Reduction (vph)	0	0	0	0	17	0	0	9	0	0	0	326
Lane Group Flow (vph)	486	405	0	62	1163	0	60	71	0	0	290	80
Confl. Peds. (#/hr)	3		3	4		4	3		3	8		8
Confl. Bikes (#/hr)			3						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	3	1	3	1	2	2	0	3
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases												1
Actuated Green, G (s)	17.5	64.3		7.1	53.9		10.6	10.6			20.5	20.5
Effective Green, g (s)	17.5	64.3		7.1	53.9		10.6	10.6			20.5	20.5
Actuated g/C Ratio	0.15	0.54		0.06	0.45		0.09	0.09			0.17	0.17
Clearance Time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	504	998		106	1547		155	159			308	261
v/s Ratio Prot	c0.14	0.22		0.03	c0.34		0.03	c0.04			c0.16	
v/s Ratio Perm												0.05
v/c Ratio	0.96	0.41		0.58	0.75		0.39	0.45			0.94	0.31
Uniform Delay, d1	50.9	16.5		55.0	27.5		51.6	51.9			49.2	43.5
Progression Factor	1.00	1.00		0.91	1.00		1.00	1.00			1.05	2.52
Incremental Delay, d2	30.7	1.2		4.8	3.2		0.6	0.7			35.1	0.2
Delay (s)	81.7	17.7		54.7	30.7		52.2	52.6			86.5	110.1
Level of Service	F	B		D	C		D	D			F	F
Approach Delay (s)		52.6			31.9			52.5			100.3	
Approach LOS		D			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	55.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/29/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	155	485	28	54	812	97	30	30	48	250	49	595
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			3%			1%	
Total Lost time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1808	1919	1581	1742	3408		1696	1785	1530	1761	1853	1563
Flt Permitted	0.14	1.00	1.00	0.30	1.00		0.72	1.00	1.00	0.73	1.00	1.00
Satd. Flow (perm)	274	1919	1581	547	3408		1286	1785	1530	1352	1853	1563
Peak-hour factor, PHF	0.95	0.95	0.95	0.92	0.92	0.92	0.71	0.71	0.71	0.87	0.87	0.87
Adj. Flow (vph)	163	511	29	59	883	105	42	42	68	287	56	684
RTOR Reduction (vph)	0	0	16	0	7	0	0	0	63	0	0	105
Lane Group Flow (vph)	163	511	13	59	981	0	42	42	5	287	56	579
Confl. Peds. (#/hr)	3		3									
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	2	0	0	0	2	2	2	2	0	0	0	2
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	1	6		5	2		7	4		3	8	1
Permitted Phases	2		6	6			8		4	4		8
Actuated Green, G (s)	74.0	54.7	54.7	74.0	48.6		26.5	9.7	9.7	26.5	13.0	38.4
Effective Green, g (s)	74.0	54.7	54.7	74.0	48.6		26.5	9.7	9.7	26.5	13.0	38.4
Actuated g/C Ratio	0.62	0.46	0.46	0.62	0.41		0.22	0.08	0.08	0.22	0.11	0.32
Clearance Time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	493	874	720	529	1380		330	144	123	355	200	571
v/s Ratio Prot	0.07	0.27		0.02	c0.29		0.01	0.02		c0.11	0.03	c0.21
v/s Ratio Perm	0.13		0.01	0.05			0.01		0.00	0.07		0.16
v/c Ratio	0.33	0.58	0.02	0.11	0.71		0.13	0.29	0.04	0.81	0.28	1.01
Uniform Delay, d1	28.0	24.2	17.9	19.7	29.8		37.7	51.9	50.9	42.9	49.2	40.8
Progression Factor	0.61	0.90	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	2.8	0.0	0.0	3.1		0.1	0.4	0.1	12.0	0.3	41.3
Delay (s)	17.2	24.7	18.0	19.7	33.0		37.7	52.3	50.9	54.9	49.5	82.1
Level of Service	B	C	B	B	C		D	D	D	D	D	F
Approach Delay (s)		22.6			32.2			47.7			72.8	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Traffic Count Consultants - 10/16/2014			
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	239	294	311	238	467	43	2	170	573	58	56	1179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			-2%
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0			4.5	4.5		5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95			0.97	0.95		1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3470	1891	1594	1764	3509			3240	3281		1753	3492
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	3470	1891	1594	1764	3509			3240	3281		1753	3492
Peak-hour factor, PHF	0.93	0.93	0.93	0.87	0.87	0.87	0.81	0.81	0.81	0.81	0.94	0.94
Adj. Flow (vph)	257	316	334	274	537	49	2	210	707	72	60	1254
RTOR Reduction (vph)	0	0	123	0	4	0	0	0	4	0	0	0
Lane Group Flow (vph)	257	316	211	274	582	0	0	212	775	0	60	1254
Confl. Peds. (#/hr)				1		1						
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	7%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	2
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	15.6	32.5	32.5	25.0	40.9			11.6	72.3		8.2	68.9
Effective Green, g (s)	15.6	32.5	32.5	25.0	40.9			12.6	73.3		8.2	68.9
Actuated g/C Ratio	0.10	0.20	0.20	0.16	0.26			0.08	0.46		0.05	0.43
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	338	384	323	275	896			255	1503		89	1503
v/s Ratio Prot	0.07	c0.17		c0.16	0.17			c0.07	0.24		0.03	c0.36
v/s Ratio Perm			0.13									
v/c Ratio	0.76	0.82	0.65	1.00	0.65			0.83	0.52		0.67	0.83
Uniform Delay, d1	70.4	61.0	58.6	67.5	53.1			72.7	30.8		74.6	40.5
Progression Factor	1.00	1.00	1.00	0.78	0.73			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.8	12.7	3.6	52.1	1.2			19.3	1.3		14.7	5.6
Delay (s)	79.1	73.7	62.2	104.7	39.7			91.9	32.0		89.3	46.1
Level of Service	E	E	E	F	D			F	C		F	D
Approach Delay (s)		71.0			60.4				44.8			45.2
Approach LOS		E			E				D			D

Intersection Summary			
HCM 2000 Control Delay	53.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	229
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.5
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1568
Flt Permitted	1.00
Satd. Flow (perm)	1568
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	244
RTOR Reduction (vph)	80
Lane Group Flow (vph)	164
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	68.9
Effective Green, g (s)	68.9
Actuated g/C Ratio	0.43
Clearance Time (s)	5.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	675
v/s Ratio Prot	
v/s Ratio Perm	0.10
v/c Ratio	0.24
Uniform Delay, d1	29.0
Progression Factor	1.00
Incremental Delay, d2	0.9
Delay (s)	29.8
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	10	234	29	68	6	345	973	51	9	1156	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		3.5	3.5	2.0	2.0		3.0	4.0		5.0	3.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.99		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1539	1749	1856		1796	3543		1778	3540	
Flt Permitted		0.59	1.00	0.37	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1082	1539	678	1856		1796	3543		1778	3540	
Peak-hour factor, PHF	0.86	0.86	0.86	0.83	0.83	0.83	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	212	12	272	35	82	7	359	1014	53	9	1204	5
RTOR Reduction (vph)	0	0	214	0	2	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	224	58	35	87	0	359	1065	0	9	1209	0
Confl. Peds. (#/hr)	2		2	4		4	8		8	6		6
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		33.1	33.1	33.6	33.6		35.0	92.4		2.0	59.4	
Effective Green, g (s)		34.1	34.1	35.6	35.6		37.0	93.4		2.0	61.4	
Actuated g/C Ratio		0.21	0.21	0.22	0.22		0.23	0.58		0.01	0.38	
Clearance Time (s)		4.5	4.5	4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		230	327	150	412		415	2068		22	1358	
v/s Ratio Prot					0.05		c0.20	0.30		0.01	c0.34	
v/s Ratio Perm		c0.21	0.04	0.05								
v/c Ratio		0.97	0.18	0.23	0.21		0.87	0.52		0.41	0.89	
Uniform Delay, d1		62.5	51.5	51.0	50.8		59.1	19.8		78.4	46.1	
Progression Factor		0.18	0.47	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		44.8	0.1	0.3	0.1		16.4	0.9		4.5	9.1	
Delay (s)		56.3	24.1	51.3	50.9		75.5	20.7		82.9	55.2	
Level of Service		E	C	D	D		E	C		F	E	
Approach Delay (s)		38.6			51.0			34.5			55.4	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

7/28/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	190	328	108	116	443	92	29	191	764	67	76	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.96		1.00	0.97			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1734	3272		1753	3308			1759	4989			1773
Flt Permitted	0.17	1.00		0.24	1.00			0.95	1.00			0.95
Satd. Flow (perm)	307	3272		442	3308			1759	4989			1773
Peak-hour factor, PHF	0.93	0.93	0.93	0.96	0.96	0.96	0.98	0.98	0.98	0.98	0.90	0.90
Adj. Flow (vph)	204	353	116	121	461	96	30	195	780	68	84	143
RTOR Reduction (vph)	0	24	0	0	11	0	0	0	6	0	0	0
Lane Group Flow (vph)	204	445	0	121	546	0	0	225	842	0	0	227
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	29
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	49.7	30.3		50.2	31.2			24.5	58.3			32.0
Effective Green, g (s)	47.7	29.3		48.2	30.2			24.5	58.3			32.0
Actuated g/C Ratio	0.30	0.18		0.30	0.19			0.15	0.36			0.20
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	247	599		288	624			269	1817			354
v/s Ratio Prot	0.09	c0.14		0.05	c0.16			c0.13	0.17			c0.13
v/s Ratio Perm	0.16			0.08								
v/c Ratio	0.83	0.74		0.42	0.87			0.84	0.46			0.64
Uniform Delay, d1	46.1	61.8		56.1	63.1			65.8	38.9			58.7
Progression Factor	1.00	1.00		1.00	1.00			1.31	1.30			1.00
Incremental Delay, d2	18.8	4.4		0.4	12.6			17.7	0.8			3.0
Delay (s)	65.0	66.2		56.5	75.6			103.8	51.4			61.7
Level of Service	E	E		E	E			F	D			E
Approach Delay (s)		65.8			72.2				62.4			
Approach LOS		E			E				E			

Intersection Summary			
HCM 2000 Control Delay	54.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/25/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1058	203
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	0%	
Total Lost time (s)	5.0	5.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.95
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5108	1488
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5108	1488
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	1176	226
RTOR Reduction (vph)	0	77
Lane Group Flow (vph)	1176	149
Confl. Peds. (#/hr)		29
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	4	4
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	65.8	84.3
Effective Green, g (s)	65.8	82.3
Actuated g/C Ratio	0.41	0.51
Clearance Time (s)	5.0	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2100	765
v/s Ratio Prot	c0.23	0.02
v/s Ratio Perm		0.08
v/c Ratio	0.56	0.19
Uniform Delay, d1	36.0	21.0
Progression Factor	1.00	1.00
Incremental Delay, d2	1.1	0.0
Delay (s)	37.1	21.0
Level of Service	D	C
Approach Delay (s)	38.3	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	71	58	98	117	78	104	74	201	968	87	41	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.91		1.00	0.91			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1751	1569		1697	1585			1769	4940			1737
Flt Permitted	0.31	1.00		0.46	1.00			0.95	1.00			0.95
Satd. Flow (perm)	564	1569		819	1585			1769	4940			1737
Peak-hour factor, PHF	0.95	0.95	0.95	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.91	0.91
Adj. Flow (vph)	75	61	103	139	93	124	80	218	1052	95	45	82
RTOR Reduction (vph)	0	40	0	0	33	0	0	0	5	0	0	0
Lane Group Flow (vph)	75	124	0	139	184	0	0	298	1142	0	0	127
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	31.7	26.2		31.7	24.9			39.5	93.8			15.5
Effective Green, g (s)	29.7	25.2		29.7	23.9			39.5	93.8			15.5
Actuated g/C Ratio	0.19	0.16		0.19	0.15			0.25	0.59			0.10
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	147	247		176	236			436	2896			168
v/s Ratio Prot	0.02	0.08		0.02	c0.12			c0.17	0.23			c0.07
v/s Ratio Perm	0.08			c0.12								
v/c Ratio	0.51	0.50		0.79	0.78			0.68	0.39			0.76
Uniform Delay, d1	56.0	61.7		67.0	65.5			54.6	17.8			70.4
Progression Factor	1.00	1.00		1.00	1.00			0.92	0.81			1.11
Incremental Delay, d2	1.2	0.6		19.2	13.7			2.9	0.3			13.8
Delay (s)	57.2	62.3		86.2	79.2			53.3	14.8			92.2
Level of Service	E	E		F	E			D	B			F
Approach Delay (s)		60.7			81.9				22.8			
Approach LOS		E			F				C			

Intersection Summary			
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1214	54
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5051	
Flt Permitted	1.00	
Satd. Flow (perm)	5051	
Peak-hour factor, PHF	0.91	0.91
Adj. Flow (vph)	1334	59
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	1390	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	69.8	
Effective Green, g (s)	69.8	
Actuated g/C Ratio	0.44	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2203	
v/s Ratio Prot	c0.28	
v/s Ratio Perm		
v/c Ratio	0.63	
Uniform Delay, d1	35.1	
Progression Factor	1.48	
Incremental Delay, d2	1.2	
Delay (s)	53.3	
Level of Service	D	
Approach Delay (s)	56.6	
Approach LOS	E	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	14	329	773	58	4	363	1282	208	24	185	676	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.99			1.00	1.00	0.85		1.00	0.97	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5186			3467	5081	1552		3377	4886	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5186			3467	5081	1552		3377	4886	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.88
Adj. Flow (vph)	15	350	822	62	4	386	1364	221	27	210	768	199
RTOR Reduction (vph)	0	0	5	0	0	0	0	98	0	0	28	0
Lane Group Flow (vph)	0	365	879	0	0	390	1364	123	0	237	939	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		20.1	52.5			21.7	53.6	53.6		14.9	46.4	
Effective Green, g (s)		20.1	52.5			21.7	53.6	53.6		14.9	46.4	
Actuated g/C Ratio		0.13	0.33			0.14	0.34	0.34		0.09	0.29	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		448	1701			470	1702	519		314	1416	
v/s Ratio Prot		c0.10	0.17			0.11	c0.27			0.07	0.19	
v/s Ratio Perm								0.08				
v/c Ratio		0.81	0.52			0.83	0.80	0.24		0.75	0.66	
Uniform Delay, d1		68.1	43.5			67.4	48.4	38.4		70.8	49.9	
Progression Factor		1.00	1.00			1.03	1.03	1.61		0.90	1.45	
Incremental Delay, d2		10.3	1.1			8.5	3.1	0.8		7.5	2.1	
Delay (s)		78.5	44.6			77.9	53.1	62.6		71.4	74.6	
Level of Service		E	D			E	D	E		E	E	
Approach Delay (s)			54.5				59.1				74.0	
Approach LOS			D				E				E	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	17	240	871	272
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1487
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1487
Peak-hour factor, PHF	0.84	0.84	0.84	0.84
Adj. Flow (vph)	20	286	1037	324
RTOR Reduction (vph)	0	0	0	103
Lane Group Flow (vph)	0	306	1037	221
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		18.9	50.4	50.4
Effective Green, g (s)		18.9	50.4	50.4
Actuated g/C Ratio		0.12	0.31	0.31
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		406	1617	468
v/s Ratio Prot		c0.09	c0.20	
v/s Ratio Perm				0.15
v/c Ratio		0.75	0.64	0.47
Uniform Delay, d1		68.3	47.0	44.1
Progression Factor		0.69	0.88	0.89
Incremental Delay, d2		5.5	1.6	2.7
Delay (s)		52.7	42.9	42.0
Level of Service		D	D	D
Approach Delay (s)			44.5	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	8	187	869	69	10	55	1559	99	124	81	62	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	11	11	12	11	11	12	11
Grade (%)			-3%				2%			-1%		
Total Lost time (s)		5.0	5.0			4.5	4.5		4.5	5.0		5.0
Lane Util. Factor		0.97	0.91			0.97	0.91		1.00	1.00		1.00
Frpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		1.00
Frt		1.00	0.99			1.00	0.99		1.00	0.93		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		3402	4947			3318	4831		1708	1695		1718
Flt Permitted		0.95	1.00			0.95	1.00		0.20	1.00		0.36
Satd. Flow (perm)		3402	4947			3318	4831		351	1695		642
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.89	0.89	0.89	0.89	0.86	0.86	0.86	0.85
Adj. Flow (vph)	8	195	905	72	11	62	1752	111	144	94	72	175
RTOR Reduction (vph)	0	0	5	0	0	0	3	0	0	19	0	0
Lane Group Flow (vph)	0	203	972	0	0	73	1860	0	144	147	0	175
Confl. Peds. (#/hr)	7	7		7	18	18		18	4		4	12
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	4	0	4	0	4	0	4	0	4	0	4	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P
Protected Phases	5	5	2		1	1	6		7	4		3
Permitted Phases									8			4
Actuated Green, G (s)		13.1	97.3			10.5	94.7		33.7	20.7		33.7
Effective Green, g (s)		13.1	97.3			10.5	94.7		32.7	20.2		32.7
Actuated g/C Ratio		0.08	0.61			0.07	0.59		0.20	0.13		0.20
Clearance Time (s)		5.0	5.0			4.5	4.5		4.0	4.5		4.5
Vehicle Extension (s)		2.0	2.0			2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		278	3008			217	2859		141	213		215
v/s Ratio Prot		c0.06	0.20			0.02	c0.38		c0.05	0.09		c0.06
v/s Ratio Perm									c0.16			0.10
v/c Ratio		0.73	0.32			0.34	0.65		1.02	0.69		0.81
Uniform Delay, d1		71.7	15.3			71.4	21.7		70.6	66.9		64.9
Progression Factor		0.84	1.99			0.76	0.32		1.00	1.00		1.00
Incremental Delay, d2		6.8	0.2			0.3	1.0		81.5	7.2		19.5
Delay (s)		67.4	30.7			54.7	8.0		152.1	74.1		84.4
Level of Service		E	C			D	A		F	E		F
Approach Delay (s)			37.0				9.7			110.3		
Approach LOS			D				A			F		

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	79	135
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.91	
Flt Protected	1.00	
Satd. Flow (prot)	1639	
Flt Permitted	1.00	
Satd. Flow (perm)	1639	
Peak-hour factor, PHF	0.85	0.85
Adj. Flow (vph)	93	159
RTOR Reduction (vph)	41	0
Lane Group Flow (vph)	211	0
Confl. Peds. (#/hr)		12
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	0	4
Turn Type	NA	
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	25.0	
Effective Green, g (s)	24.5	
Actuated g/C Ratio	0.15	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	250	
v/s Ratio Prot	0.13	
v/s Ratio Perm		
v/c Ratio	0.84	
Uniform Delay, d1	65.9	
Progression Factor	1.00	
Incremental Delay, d2	21.1	
Delay (s)	86.9	
Level of Service	F	
Approach Delay (s)	85.9	
Approach LOS	F	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	116	962	19	317	1411	157	68	159	272	395	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.95
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3240	4899		3483	5141		1733	1735	1506	3359	1674
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3240	4899		3483	5141		1733	1735	1506	3359	1674
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.94	0.94	0.94	0.88	0.88	0.88	0.86	0.86
Adj. Flow (vph)	8	125	1034	20	337	1501	167	77	181	309	459	287
RTOR Reduction (vph)	0	0	1	0	0	7	0	0	0	54	0	12
Lane Group Flow (vph)	0	133	1053	0	337	1661	0	77	181	255	459	417
Confl. Peds. (#/hr)	25	25		25	10		10	17		17	4	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		9.7	65.6		19.2	75.1		10.2	29.7	48.9	25.5	45.0
Effective Green, g (s)		9.7	65.6		19.2	75.1		9.7	29.2	48.9	25.0	44.5
Actuated g/C Ratio		0.06	0.41		0.12	0.47		0.06	0.18	0.31	0.16	0.28
Clearance Time (s)		4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		196	2008		417	2413		105	316	512	524	465
v/s Ratio Prot		0.04	0.21		c0.10	c0.32		0.04	0.10	0.06	c0.14	c0.25
v/s Ratio Perm										0.11		
v/c Ratio		0.68	0.52		0.81	0.69		0.73	0.57	0.50	0.88	0.90
Uniform Delay, d1		73.6	35.5		68.6	33.3		73.9	59.7	45.5	66.0	55.5
Progression Factor		1.22	0.65		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		6.9	0.9		10.4	1.6		20.2	1.6	0.3	14.7	19.0
Delay (s)		97.0	23.9		79.0	34.9		94.1	61.3	45.8	80.7	74.6
Level of Service		F	C		E	C		F	E	D	F	E
Approach Delay (s)			32.1			42.3			57.3			77.7
Approach LOS			C			D			E			E

Intersection Summary			
HCM 2000 Control Delay	48.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	122
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.86
Adj. Flow (vph)	142
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	72	170	123	395	158	23	162	149	1000	211	49	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99			1.00
Flpb, ped/bikes	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	0.98			1.00	0.97			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1094	3375	1796			1773	4958			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1094	3375	1796			1773	4958			1730
Peak-hour factor, PHF	0.72	0.72	0.72	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.90	0.90
Adj. Flow (vph)	100	236	171	429	172	25	171	157	1053	222	54	102
RTOR Reduction (vph)	0	0	107	0	3	0	0	0	18	0	0	0
Lane Group Flow (vph)	100	236	64	429	194	0	0	328	1258	0	0	156
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	25.2	26.4	26.4	22.8	24.0			35.0	72.5			18.3
Effective Green, g (s)	24.7	25.9	25.9	22.3	23.5			35.0	72.5			18.3
Actuated g/C Ratio	0.15	0.16	0.16	0.14	0.15			0.22	0.45			0.11
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	274	293	177	470	263			387	2246			197
v/s Ratio Prot	0.06	c0.13		c0.13	0.11			c0.19	0.25			0.09
v/s Ratio Perm			0.06									
v/c Ratio	0.36	0.81	0.36	0.91	0.74			0.85	0.56			0.79
Uniform Delay, d1	60.6	64.6	59.7	67.9	65.3			59.9	32.1			69.0
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.34
Incremental Delay, d2	0.3	14.0	0.5	21.6	8.9			15.1	1.0			14.1
Delay (s)	60.9	78.7	60.1	89.5	74.2			75.0	33.1			106.6
Level of Service	E	E	E	F	E			E	C			F
Approach Delay (s)		68.9			84.7				41.7			
Approach LOS		E			F				D			

Intersection Summary			
HCM 2000 Control Delay	48.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1145	88
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5023	
Flt Permitted	1.00	
Satd. Flow (perm)	5023	
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	1272	98
RTOR Reduction (vph)	5	0
Lane Group Flow (vph)	1365	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	55.8	
Effective Green, g (s)	55.8	
Actuated g/C Ratio	0.35	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1751	
v/s Ratio Prot	c0.27	
v/s Ratio Perm		
v/c Ratio	0.78	
Uniform Delay, d1	46.6	
Progression Factor	0.46	
Incremental Delay, d2	2.7	
Delay (s)	24.1	
Level of Service	C	
Approach Delay (s)	32.6	
Approach LOS	C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
60: Military Rd S & S 272 St

7/29/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	23	237	439	68	36	459	62	345	438	108	51	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-3%			0%			0%			-3%
Total Lost time (s)		5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.96	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.92
Flt Protected		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1789	3578	1489	1770	3418		3406	1855	1501	1782	1701
Flt Permitted		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1789	3578	1489	1770	3418		3406	1855	1501	1782	1701
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	23	242	448	69	37	468	63	352	447	110	52	80
RTOR Reduction (vph)	0	0	0	36	0	7	0	0	0	82	0	37
Lane Group Flow (vph)	0	265	448	33	37	524	0	352	447	28	52	132
Confl. Peds. (#/hr)	10	10		10	10		10	10		10	10	
Bus Blockages (#/hr)	0	1	2	0	0	4	1	4	1	2	2	0
Turn Type	Prot	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA
Protected Phases	7	7	4		3	8		5	2		1	6
Permitted Phases				4						2		
Actuated Green, G (s)		23.0	57.9	57.9	4.9	39.8		16.6	30.3	30.3	6.9	20.6
Effective Green, g (s)		23.0	57.9	56.9	4.9	39.8		16.6	30.3	30.3	6.9	20.6
Actuated g/C Ratio		0.19	0.48	0.47	0.04	0.33		0.14	0.25	0.25	0.06	0.17
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		342	1726	706	72	1133		471	468	379	102	292
v/s Ratio Prot		c0.15	0.13		0.02	c0.15		c0.10	c0.24		0.03	0.08
v/s Ratio Perm				0.02						0.02		
v/c Ratio		0.77	0.26	0.05	0.51	0.46		0.75	0.96	0.07	0.51	0.45
Uniform Delay, d1		46.0	18.4	17.0	56.4	31.7		49.7	44.2	34.2	54.9	44.6
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		9.6	0.4	0.1	2.6	1.4		5.6	30.0	0.0	1.5	0.4
Delay (s)		55.6	18.7	17.1	58.9	33.0		55.3	74.2	34.2	56.4	45.0
Level of Service		E	B	B	E	C		E	E	C	E	D
Approach Delay (s)			31.1			34.7			62.0			47.7
Approach LOS			C			C			E			D

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	87
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	89
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	351	485	406	513	989	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	0.97	1.00	0.97	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	1583	3433	1863	3413	
Flt Permitted	0.95	1.00	0.36	1.00	1.00	
Satd. Flow (perm)	3433	1583	1314	1863	3413	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	369	511	427	540	1041	324
RTOR Reduction (vph)	0	11	0	0	93	0
Lane Group Flow (vph)	369	500	427	540	1272	0
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	11.0	11.0	11.0	11.0	11.0	
Effective Green, g (s)	11.0	11.0	11.0	11.0	11.0	
Actuated g/C Ratio	0.34	0.34	0.34	0.34	0.34	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	1180	544	451	640	1173	
v/s Ratio Prot	0.11			0.29	c0.37	
v/s Ratio Perm		c0.32	0.32			
v/c Ratio	0.31	0.92	0.95	0.84	1.08	
Uniform Delay, d1	7.7	10.1	10.2	9.7	10.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	20.2	31.0	12.8	52.4	
Delay (s)	7.8	30.3	41.2	22.5	62.9	
Level of Service	A	C	D	C	E	
Approach Delay (s)	20.8			30.8	62.9	
Approach LOS	C			C	E	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	32.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	36	13	6	84	5	271	1	7	1507	194	4	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		5.0		5.0	5.0	5.0		5.0	5.0			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		1.00		1.00	1.00	0.99		1.00	1.00			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.99		1.00	1.00	0.85		1.00	0.98			1.00
Flt Protected		0.97		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1684		1722	1771	1619		1805	5085			3432
Flt Permitted		0.97		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1684		1722	1771	1619		1805	5085			3432
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	38	14	6	88	5	282	1	7	1570	202	4	45
RTOR Reduction (vph)	0	4	0	0	0	256	0	0	5	0	0	0
Lane Group Flow (vph)	0	54	0	47	46	26	0	8	1767	0	0	49
Confl. Peds. (#/hr)			3			1						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	5	5	0	2	5	0	2	0	2	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		15.0		15.0	15.0	15.0		1.3	104.2			5.8
Effective Green, g (s)		14.0		15.0	15.0	15.0		1.8	104.7			6.3
Actuated g/C Ratio		0.09		0.09	0.09	0.09		0.01	0.65			0.04
Clearance Time (s)		4.0		5.0	5.0	5.0		5.5	5.5			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		147		161	166	151		20	3327			135
v/s Ratio Prot		c0.03		c0.03	0.03			0.00	c0.35			c0.01
v/s Ratio Perm						0.02						
v/c Ratio		0.37		0.29	0.28	0.18		0.40	0.53			0.36
Uniform Delay, d1		68.8		67.6	67.5	66.8		78.6	14.6			74.9
Progression Factor		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		0.6		0.4	0.3	0.2		4.7	0.6			0.6
Delay (s)		69.4		67.9	67.8	67.0		83.3	15.3			75.5
Level of Service		E		E	E	E		F	B			E
Approach Delay (s)		69.4			67.2				15.6			
Approach LOS		E			E				B			

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	280	16
Ideal Flow (vphpl)	1900	1900
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5009	
Flt Permitted	1.00	
Satd. Flow (perm)	5009	
Peak-hour factor, PHF	0.96	0.96
Adj. Flow (vph)	292	17
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	307	0
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	5	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	108.7	
Effective Green, g (s)	109.2	
Actuated g/C Ratio	0.68	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	3418	
v/s Ratio Prot	c0.06	
v/s Ratio Perm		
v/c Ratio	0.09	
Uniform Delay, d1	8.6	
Progression Factor	1.01	
Incremental Delay, d2	0.1	
Delay (s)	8.7	
Level of Service	A	
Approach Delay (s)	17.9	
Approach LOS	B	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	175	47	70	189	214	110	416	60	52	120	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.96		1.00	1.00	0.91	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
Frt	1.00	0.97		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1807	3419		1699	2999		1743	1827	1414	1799	1909	1600
Flt Permitted	0.95	1.00		0.95	1.00		0.65	1.00	1.00	0.30	1.00	1.00
Satd. Flow (perm)	1807	3419		1699	2999		1192	1827	1414	575	1909	1600
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	141	188	51	75	203	230	118	447	65	56	129	47
RTOR Reduction (vph)	0	14	0	0	138	0	0	0	38	0	0	0
Lane Group Flow (vph)	141	225	0	75	295	0	118	447	27	56	129	47
Confl. Peds. (#/hr)			21			14			32	11		3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	21.0	52.0		10.9	41.9		67.1	61.2	61.2	67.1	58.0	79.0
Effective Green, g (s)	21.0	52.0		10.9	41.9		67.1	61.2	61.2	67.1	58.0	79.0
Actuated g/C Ratio	0.14	0.35		0.07	0.28		0.45	0.41	0.41	0.45	0.39	0.53
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	252	1185		123	837		566	745	576	305	738	842
v/s Ratio Prot	c0.08	0.07		c0.04	c0.10		c0.01	c0.24		0.01	0.07	0.01
v/s Ratio Perm							0.08		0.02	0.07		0.02
v/c Ratio	0.56	0.19		0.61	0.35		0.21	0.60	0.05	0.18	0.17	0.06
Uniform Delay, d1	60.2	34.3		67.5	43.2		24.6	34.8	26.8	25.7	30.3	17.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4		5.8	1.2		0.1	3.6	0.2	0.1	0.5	0.0
Delay (s)	61.7	34.6		73.2	44.4		24.7	38.4	26.9	25.8	30.8	17.3
Level of Service	E	C		E	D		C	D	C	C	C	B
Approach Delay (s)		44.7			48.6			34.6			26.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	167	397	60	72	130	18	50	369	263	69	168	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1787	3469		1587	3359		1737	1881	1543	1759	3337	
Flt Permitted	0.95	1.00		0.95	1.00		0.60	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	1787	3469		1587	3359		1088	1881	1543	822	3337	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	180	427	65	77	140	19	54	397	283	74	181	52
RTOR Reduction (vph)	0	11	0	0	9	0	0	0	86	0	16	0
Lane Group Flow (vph)	180	481	0	77	150	0	54	397	197	74	217	0
Confl. Peds. (#/hr)			2	2			1					1
Heavy Vehicles (%)	1%	1%	1%	11%	5%	6%	3%	1%	3%	1%	3%	3%
Bus Blockages (#/hr)	0	4	6	6	2	0	2	0	4	4	6	2
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	16.2	22.7		10.1	16.6		68.4	63.2	73.3	66.0	62.0	
Effective Green, g (s)	16.2	22.7		10.1	16.6		68.4	63.2	73.3	66.0	62.0	
Actuated g/C Ratio	0.13	0.19		0.08	0.14		0.57	0.53	0.61	0.55	0.52	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	241	656		133	464		648	990	1006	483	1724	
v/s Ratio Prot	c0.10	c0.14		0.05	0.04		0.00	c0.21	0.02	c0.01	0.06	
v/s Ratio Perm							0.04		0.11	0.08		
v/c Ratio	0.75	0.73		0.58	0.32		0.08	0.40	0.20	0.15	0.13	
Uniform Delay, d1	49.9	45.8		52.9	46.6		11.5	17.0	10.3	13.1	15.0	
Progression Factor	0.98	0.96		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	3.6		3.8	0.1		0.0	1.2	0.0	0.1	0.1	
Delay (s)	59.6	47.7		56.7	46.8		11.5	18.3	10.4	13.2	15.1	
Level of Service	E	D		E	D		B	B	B	B	B	
Approach Delay (s)		50.9			50.0			14.7			14.7	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	872	128	92	244	67	37	201	191	74	202	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1742	3382		1778	3359		1737	1891	1547	1747	3494	
Flt Permitted	0.95	1.00		0.95	1.00		0.60	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1742	3382		1778	3359		1099	1891	1547	574	3494	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	84	938	138	99	262	72	40	216	205	80	217	26
RTOR Reduction (vph)	0	10	0	0	21	0	0	0	78	0	8	0
Lane Group Flow (vph)	84	1066	0	99	313	0	40	216	127	80	235	0
Confl. Peds. (#/hr)			4			5	1		8	5		1
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	1	6		5	2		3	8	5	7	4	
Permitted Phases							8		8	4		
Actuated Green, G (s)	8.8	45.0		10.0	46.2		28.0	28.0	38.0	29.4	29.4	
Effective Green, g (s)	8.8	45.0		10.0	46.2		28.0	28.0	38.0	29.4	29.4	
Actuated g/C Ratio	0.08	0.41		0.09	0.42		0.25	0.25	0.35	0.27	0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	139	1383		161	1410		312	481	604	228	933	
v/s Ratio Prot	0.05	c0.32		c0.06	0.09		0.01	c0.11	0.02	c0.02	0.07	
v/s Ratio Perm							0.03		0.06	0.07		
v/c Ratio	0.60	0.77		0.61	0.22		0.13	0.45	0.21	0.35	0.25	
Uniform Delay, d1	48.9	28.0		48.1	20.4		31.7	34.5	25.4	31.6	31.7	
Progression Factor	1.00	1.00		0.99	0.96		0.87	0.90	1.58	1.00	1.00	
Incremental Delay, d2	5.0	4.2		4.8	0.4		0.1	2.7	0.1	0.3	0.6	
Delay (s)	53.9	32.3		52.4	19.9		27.7	33.9	40.3	31.9	32.3	
Level of Service	D	C		D	B		C	C	D	C	C	
Approach Delay (s)		33.8			27.3			36.2			32.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
Description:			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3057: I-5 SB Ramp/ I-5 SB Ramp & S 320 St/S 320 St 8/7/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	0	1009	411	2	194	669	0	0	0	0	115	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%				0%			2%			2%
Total Lost time (s)		5.0	5.0		5.0	5.0						5.0
Lane Util. Factor		0.95	1.00		1.00	0.95						1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00						1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00						1.00
Frt		1.00	0.85		1.00	1.00						1.00
Flt Protected		1.00	1.00		0.95	1.00						0.95
Satd. Flow (prot)		3542	1550		1725	3457						1758
Flt Permitted		1.00	1.00		0.21	1.00						0.95
Satd. Flow (perm)		3542	1550		376	3457						1758
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1121	457	2	216	743	0	0	0	0	128	2
RTOR Reduction (vph)	0	0	156	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1121	301	0	218	743	0	0	0	0	0	130
Confl. Peds. (#/hr)	4						4					
Heavy Vehicles (%)	0%	1%	2%	2%	3%	4%	0%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	4	0	4	2	0	2	0	2	2	0
Turn Type		NA	Perm	custom	D.P+P	NA					Perm	NA
Protected Phases		2			1	6						4
Permitted Phases			2	1	2						4	
Actuated Green, G (s)		72.4	72.4		82.1	87.1						12.9
Effective Green, g (s)		72.4	72.4		82.1	87.1						12.9
Actuated g/C Ratio		0.66	0.66		0.75	0.79						0.12
Clearance Time (s)		5.0	5.0		5.0	5.0						5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0						2.0
Lane Grp Cap (vph)		2331	1020		399	2737						206
v/s Ratio Prot		0.32			c0.05	0.21						
v/s Ratio Perm			0.19		c0.36							0.07
v/c Ratio		0.48	0.29		0.55	0.27						0.63
Uniform Delay, d1		9.4	8.0		5.6	3.0						46.3
Progression Factor		0.37	0.20		1.45	1.23						1.00
Incremental Delay, d2		0.6	0.6		0.8	0.2						4.6
Delay (s)		4.1	2.3		8.8	4.0						50.8
Level of Service		A	A		A	A						D
Approach Delay (s)		3.6				5.1			0.0			45.2
Approach LOS		A				A			A			D

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Description: All Traffic Data Services - 11/4/04

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	412
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	0.76
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	3564
Flt Permitted	1.00
Satd. Flow (perm)	3564
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	458
RTOR Reduction (vph)	404
Lane Group Flow (vph)	54
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	12.9
Effective Green, g (s)	12.9
Actuated g/C Ratio	0.12
Clearance Time (s)	5.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	417
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.13
Uniform Delay, d1	43.5
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	43.6
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	579	554	0	573	273	277	1	239	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0				
Lane Util. Factor		0.95	1.00		0.95		0.95	0.95				
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00				
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00				
Frt		1.00	0.85		0.95		1.00	0.87				
Flt Protected		1.00	1.00		1.00		0.95	0.99				
Satd. Flow (prot)		3507	1587		3339		1635	1495				
Flt Permitted		1.00	1.00		1.00		0.95	0.99				
Satd. Flow (perm)		3507	1587		3339		1635	1495				
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	616	589	0	610	290	295	1	254	0	0	0
RTOR Reduction (vph)	0	0	0	0	41	0	0	202	0	0	0	0
Lane Group Flow (vph)	0	616	589	0	859	0	265	83	0	0	0	0
Confl. Peds. (#/hr)			1	1								
Heavy Vehicles (%)	0%	2%	0%	0%	3%	3%	3%	3%	3%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA				
Protected Phases		2			6		4	4				
Permitted Phases			Free									
Actuated Green, G (s)		77.5	110.0		77.5		22.5	22.5				
Effective Green, g (s)		77.5	110.0		77.5		22.5	22.5				
Actuated g/C Ratio		0.70	1.00		0.70		0.20	0.20				
Clearance Time (s)		5.0			5.0		5.0	5.0				
Vehicle Extension (s)		2.0			2.0		2.0	2.0				
Lane Grp Cap (vph)		2470	1587		2352		334	305				
v/s Ratio Prot		0.18			0.26		c0.16	0.06				
v/s Ratio Perm			c0.37									
v/c Ratio		0.25	0.37		0.37		0.79	0.27				
Uniform Delay, d1		5.8	0.0		6.5		41.5	36.9				
Progression Factor		0.44	1.00		0.60		1.00	1.00				
Incremental Delay, d2		0.2	0.6		0.4		11.4	0.2				
Delay (s)		2.8	0.6		4.3		53.0	37.0				
Level of Service		A	A		A		D	D				
Approach Delay (s)		1.7			4.3			44.7			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	470	52	21	502	83	317	255	95	133	55	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3453		1770	3423		1755	1863	1525	1755	1863	1525
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3453		1770	3423		1755	1863	1525	1755	1863	1525
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)	103	495	55	22	528	87	334	268	100	140	58	159
RTOR Reduction (vph)	0	9	0	0	16	0	0	0	77	0	0	138
Lane Group Flow (vph)	103	541	0	22	599	0	334	268	24	140	58	21
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			4
Actuated Green, G (s)	10.0	27.9		2.6	20.5		18.8	18.8	18.8	10.7	10.7	10.7
Effective Green, g (s)	10.0	27.9		2.6	20.5		18.8	18.8	18.8	10.7	10.7	10.7
Actuated g/C Ratio	0.12	0.35		0.03	0.26		0.24	0.24	0.24	0.13	0.13	0.13
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	221	1204		57	877		412	437	358	234	249	203
v/s Ratio Prot	0.06	c0.16		0.01	c0.18		c0.19	0.14		c0.08	0.03	
v/s Ratio Perm									0.02			0.01
v/c Ratio	0.47	0.45		0.39	0.68		0.81	0.61	0.07	0.60	0.23	0.10
Uniform Delay, d1	32.5	20.1		37.9	26.8		28.9	27.4	23.8	32.6	31.0	30.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2		1.6	4.3		10.9	1.8	0.0	2.7	0.2	0.1
Delay (s)	33.1	21.3		39.5	31.1		39.8	29.1	23.8	35.4	31.2	30.5
Level of Service	C	C		D	C		D	C	C	D	C	C
Approach Delay (s)		23.2			31.4			33.5			32.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	79	145	132	40	225	43	325	598	57	4	22	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			3%				-3%
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.91			1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99			1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1606	1872	1535	1699	3385		3303	4810			1781	4894
Flt Permitted	0.37	1.00	1.00	0.47	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	623	1872	1535	836	3385		3303	4810			1781	4894
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Adj. Flow (vph)	104	191	174	53	296	57	428	787	75	5	29	374
RTOR Reduction (vph)	0	0	141	0	18	0	0	7	0	0	0	0
Lane Group Flow (vph)	104	191	33	53	335	0	428	855	0	0	34	374
Confl. Peds. (#/hr)	6					6	4					
Heavy Vehicles (%)	9%	1%	3%	4%	3%	2%	4%	4%	4%	2%	3%	7%
Bus Blockages (#/hr)	6	0	4	4	2	6	2	6	0	6	0	4
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	NA		Prot	Prot	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases	8		4	4								
Actuated Green, G (s)	24.9	20.9	20.9	24.9	17.7		18.5	59.7			5.4	46.6
Effective Green, g (s)	24.9	20.9	20.9	24.9	17.7		18.5	59.7			5.4	46.6
Actuated g/C Ratio	0.23	0.19	0.19	0.23	0.16		0.17	0.54			0.05	0.42
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	205	355	291	220	544		555	2610			87	2073
v/s Ratio Prot	0.03	c0.10		0.01	c0.10		c0.13	c0.18			c0.02	0.08
v/s Ratio Perm	0.08		0.02	0.05								
v/c Ratio	0.51	0.54	0.11	0.24	0.62		0.77	0.33			0.39	0.18
Uniform Delay, d1	42.2	40.2	36.9	34.1	43.0		43.7	14.0			50.7	19.8
Progression Factor	1.66	1.56	6.35	0.92	0.85		1.00	0.85			1.06	1.13
Incremental Delay, d2	0.7	0.7	0.1	0.2	1.4		6.0	0.3			1.0	0.2
Delay (s)	70.6	63.6	234.3	31.6	38.0		49.9	12.3			54.8	22.5
Level of Service	E	E	F	C	D		D	B			D	C
Approach Delay (s)		128.5			37.2			24.8				26.5
Approach LOS		F			D			C				C

Intersection Summary			
HCM 2000 Control Delay	44.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	162
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1539
Flt Permitted	1.00
Satd. Flow (perm)	1539
Peak-hour factor, PHF	0.76
Adj. Flow (vph)	213
RTOR Reduction (vph)	99
Lane Group Flow (vph)	114
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	2
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Actuated Green, G (s)	53.8
Effective Green, g (s)	53.8
Actuated g/C Ratio	0.49
Clearance Time (s)	5.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	752
v/s Ratio Prot	0.01
v/s Ratio Perm	0.06
v/c Ratio	0.15
Uniform Delay, d1	15.5
Progression Factor	1.87
Incremental Delay, d2	0.0
Delay (s)	29.1
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	5	57	1217	45	196	814	96	1	192	348	440	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%				2%		
Total Lost time (s)		5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.91		0.97	0.91			0.97	0.95	1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.98			1.00	1.00	0.85	1.00
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (prot)		1720	4953		3402	4952			3385	3490	1548	1796
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (perm)		1720	4953		3402	4952			3385	3490	1548	1796
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	6	63	1352	50	218	904	107	1	213	387	489	71
RTOR Reduction (vph)	0	0	2	0	0	8	0	0	0	0	60	0
Lane Group Flow (vph)	0	69	1400	0	218	1003	0	0	214	387	429	71
Confl. Peds. (#/hr)	5	8		7	9		10	2	7		9	10
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	2	0	0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	pm+ov	Prot
Protected Phases	7	7	4		3	8		5	5	2	3	1
Permitted Phases											2	
Actuated Green, G (s)		8.8	75.0		22.2	88.4			13.7	23.9	46.1	8.9
Effective Green, g (s)		8.8	75.0		22.2	88.4			13.7	23.9	46.1	8.9
Actuated g/C Ratio		0.06	0.50		0.15	0.59			0.09	0.16	0.31	0.06
Clearance Time (s)		5.0	5.0		5.0	5.0			5.0	5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		100	2476		503	2918			309	556	475	106
v/s Ratio Prot		0.04	c0.28		0.06	0.20			0.06	0.11	c0.13	c0.04
v/s Ratio Perm											0.14	
v/c Ratio		0.69	0.57		0.43	0.34			0.69	0.70	0.90	0.67
Uniform Delay, d1		69.3	26.1		58.2	15.9			66.1	59.6	49.8	69.1
Progression Factor		0.85	0.66		1.39	0.28			1.00	1.04	0.74	1.00
Incremental Delay, d2		13.5	0.9		0.2	0.3			5.2	3.0	19.3	11.7
Delay (s)		72.7	18.1		81.3	4.6			71.0	65.2	56.3	80.9
Level of Service		E	B		F	A			E	E	E	F
Approach Delay (s)			20.6			18.2				62.4		
Approach LOS			C			B				E		

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

Description:
c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	137	45
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.0	5.0
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	0.97
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3578	1552
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3578	1552
Peak-hour factor, PHF	0.90	0.90
Adj. Flow (vph)	152	50
RTOR Reduction (vph)	0	44
Lane Group Flow (vph)	152	6
Confl. Peds. (#/hr)		8
Bus Blockages (#/hr)	2	2
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	19.1	19.1
Effective Green, g (s)	19.1	19.1
Actuated g/C Ratio	0.13	0.13
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	455	197
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.00
v/c Ratio	0.33	0.03
Uniform Delay, d1	59.7	57.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.2	0.0
Delay (s)	59.8	57.4
Level of Service	E	E
Approach Delay (s)	64.8	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	282	219	169	37	108	29	83	561	34	11	207	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%			2%			-2%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3403	1836	1542	1683	3424	1549	3302	3052		1823	3363	1524
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3403	1836	1542	1683	3424	1549	3302	3052		1823	3363	1524
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	310	241	186	41	119	32	91	616	37	12	227	69
RTOR Reduction (vph)	0	0	149	0	0	28	0	2	0	0	0	37
Lane Group Flow (vph)	310	241	37	41	119	4	91	651	0	12	227	32
Confl. Peds. (#/hr)			1	1					1	1		
Heavy Vehicles (%)	3%	4%	3%	8%	7%	5%	5%	16%	7%	0%	8%	7%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	18.0	30.0	30.0	7.1	19.1	19.1	21.6	89.3		2.6	70.3	70.3
Effective Green, g (s)	18.0	30.0	30.0	7.1	19.1	18.1	22.6	90.3		2.6	70.3	70.3
Actuated g/C Ratio	0.12	0.20	0.20	0.05	0.13	0.12	0.15	0.60		0.02	0.47	0.47
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0		5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	408	367	308	79	435	186	497	1837		31	1576	714
v/s Ratio Prot	c0.09	c0.13		0.02	0.03		0.03	c0.21		c0.01	0.07	
v/s Ratio Perm			0.02			0.00						0.02
v/c Ratio	0.76	0.66	0.12	0.52	0.27	0.02	0.18	0.35		0.39	0.14	0.05
Uniform Delay, d1	63.9	55.3	49.2	69.8	59.2	58.1	55.6	15.1		72.9	22.7	21.6
Progression Factor	1.00	1.00	1.00	0.80	0.92	1.00	1.00	1.00		0.85	0.26	1.00
Incremental Delay, d2	7.1	3.2	0.1	2.2	0.1	0.0	0.1	0.5		2.8	0.2	0.1
Delay (s)	71.0	58.5	49.3	58.4	54.6	58.2	55.7	15.6		64.8	6.1	21.7
Level of Service	E	E	D	E	D	E	E	B		E	A	C
Approach Delay (s)		61.4			56.0			20.5			11.9	
Approach LOS		E			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix B

Future No Action Geometries, Turning Movement Forecasts, and LOS Analysis Results

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	316	456	208	170	337	155	30	222	904	80	2	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.95		1.00	0.95			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1733	3236		1755	3220			3439	4992			1773
Flt Permitted	0.26	1.00		0.23	1.00			0.95	1.00			0.95
Satd. Flow (perm)	467	3236		433	3220			3439	4992			1773
Peak-hour factor, PHF	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. Flow (vph)	316	456	208	170	337	155	30	222	904	80	2	118
RTOR Reduction (vph)	0	40	0	0	42	0	0	0	6	0	0	0
Lane Group Flow (vph)	316	624	0	170	450	0	0	252	978	0	0	120
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	29
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	50.7	43.4		51.2	28.2			14.0	56.0			13.3
Effective Green, g (s)	48.7	42.4		49.2	27.2			14.0	56.0			13.3
Actuated g/C Ratio	0.35	0.30		0.35	0.19			0.10	0.40			0.10
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	356	980		216	625			343	1996			168
v/s Ratio Prot	0.14	0.19		0.04	0.14			c0.07	0.20			0.07
v/s Ratio Perm	c0.17			c0.24								
v/c Ratio	0.89	0.64		0.79	0.72			0.73	0.49			0.71
Uniform Delay, d1	37.3	42.2		51.9	52.8			61.2	31.3			61.5
Progression Factor	1.00	1.00		1.00	1.00			0.55	0.22			1.00
Incremental Delay, d2	21.9	1.0		15.9	3.5			6.1	0.8			11.3
Delay (s)	59.1	43.2		67.7	56.3			39.7	7.5			72.8
Level of Service	E	D		E	E			D	A			E
Approach Delay (s)		48.3			59.2				14.1			
Approach LOS		D			E				B			

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/25/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1232	285
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	0%	
Total Lost time (s)	5.0	6.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.94
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5108	1476
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5108	1476
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1232	285
RTOR Reduction (vph)	0	144
Lane Group Flow (vph)	1232	141
Confl. Peds. (#/hr)		29
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	4	4
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	55.3	55.3
Effective Green, g (s)	55.3	54.3
Actuated g/C Ratio	0.39	0.39
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2017	572
v/s Ratio Prot	c0.24	
v/s Ratio Perm		0.10
v/c Ratio	0.61	0.25
Uniform Delay, d1	33.8	29.0
Progression Factor	1.00	1.00
Incremental Delay, d2	1.4	1.0
Delay (s)	35.2	30.0
Level of Service	D	C
Approach Delay (s)	37.0	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	98	66	122	139	71	114	48	208	1144	139	9	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.90		1.00	0.91			1.00	0.98			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1749	1566		1700	1573			1769	4914			1737
Flt Permitted	0.36	1.00		0.42	1.00			0.95	1.00			0.95
Satd. Flow (perm)	661	1566		759	1573			1769	4914			1737
Peak-hour factor, PHF	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. Flow (vph)	98	66	122	139	71	114	48	208	1144	139	9	127
RTOR Reduction (vph)	0	52	0	0	47	0	0	0	9	0	0	0
Lane Group Flow (vph)	98	136	0	139	138	0	0	256	1274	0	0	136
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	28.8	23.8		28.8	18.2			23.8	73.2			19.0
Effective Green, g (s)	26.8	22.8		26.8	17.2			23.8	73.2			19.0
Actuated g/C Ratio	0.19	0.16		0.19	0.12			0.17	0.52			0.14
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	201	255		172	193			300	2569			235
v/s Ratio Prot	c0.03	0.09		0.02	0.09			c0.14	0.26			0.08
v/s Ratio Perm	0.06			c0.13								
v/c Ratio	0.49	0.53		0.81	0.71			0.85	0.50			0.58
Uniform Delay, d1	56.3	53.7		58.8	59.0			56.4	21.5			56.7
Progression Factor	1.00	1.00		1.00	1.00			0.82	1.69			0.89
Incremental Delay, d2	0.7	1.1		22.4	9.9			10.5	0.3			1.8
Delay (s)	57.0	54.8		81.2	68.9			56.8	36.6			52.1
Level of Service	E	D		F	E			E	D			D
Approach Delay (s)		55.6			74.2				40.0			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1522	53
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5065	
Flt Permitted	1.00	
Satd. Flow (perm)	5065	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1522	53
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1573	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	68.4	
Effective Green, g (s)	68.4	
Actuated g/C Ratio	0.49	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2474	
v/s Ratio Prot	c0.31	
v/s Ratio Perm		
v/c Ratio	0.64	
Uniform Delay, d1	26.6	
Progression Factor	0.74	
Incremental Delay, d2	1.0	
Delay (s)	20.8	
Level of Service	C	
Approach Delay (s)	23.3	
Approach LOS	C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	59	415	1259	155	1	479	890	284	16	291	955	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	0.99			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.98			1.00	1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5146			3467	5081	1555		3377	4836	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5146			3467	5081	1555		3377	4836	
Peak-hour factor, PHF	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. Flow (vph)	59	415	1259	155	1	479	890	284	16	291	955	341
RTOR Reduction (vph)	0	0	11	0	0	0	0	114	0	0	46	0
Lane Group Flow (vph)	0	474	1403	0	0	480	890	170	0	307	1250	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		19.5	41.5			20.0	41.5	41.5		16.4	39.0	
Effective Green, g (s)		19.5	41.5			20.0	41.5	41.5		16.4	39.0	
Actuated g/C Ratio		0.14	0.30			0.14	0.30	0.30		0.12	0.28	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		497	1525			495	1506	460		395	1347	
v/s Ratio Prot		0.13	c0.27			c0.14	0.18			0.09	c0.26	
v/s Ratio Perm								0.11				
v/c Ratio		0.95	0.92			0.97	0.59	0.37		0.78	0.93	
Uniform Delay, d1		59.8	47.6			59.7	42.0	38.9		60.0	49.1	
Progression Factor		1.00	1.00			1.24	1.45	2.22		0.68	1.02	
Incremental Delay, d2		28.6	10.5			26.2	1.2	1.6		5.1	8.1	
Delay (s)		88.4	58.1			100.4	62.1	88.1		46.0	58.1	
Level of Service		F	E			F	E	F		D	E	
Approach Delay (s)			65.7				77.7				55.8	
Approach LOS			E				E				E	

Intersection Summary			
HCM 2000 Control Delay	63.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	109.8%	ICU Level of Service	H
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	27	428	1047	248
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1493
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1493
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	428	1047	248
RTOR Reduction (vph)	0	0	0	98
Lane Group Flow (vph)	0	455	1047	150
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		19.0	41.6	41.6
Effective Green, g (s)		19.0	41.6	41.6
Actuated g/C Ratio		0.14	0.30	0.30
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		466	1526	443
v/s Ratio Prot		c0.13	0.20	
v/s Ratio Perm				0.10
v/c Ratio		0.98	0.69	0.34
Uniform Delay, d1		60.3	43.4	38.4
Progression Factor		0.96	0.93	1.32
Incremental Delay, d2		30.4	2.0	1.6
Delay (s)		88.1	42.3	52.2
Level of Service		F	D	D
Approach Delay (s)			55.6	
Approach LOS			E	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	323	1666	186	9	122	1388	197	156	87	89	248	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	11	11	12	11	11
Grade (%)		-3%				2%			-1%			-3%
Total Lost time (s)	5.0	5.0			4.5	4.5		4.5	5.0		5.0	5.5
Lane Util. Factor	0.97	0.91			0.97	0.91		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00	0.99		1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.98			1.00	0.98		1.00	0.92		1.00	0.91
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3402	4925			3318	4771		1708	1674		1718	1649
Flt Permitted	0.95	1.00			0.95	1.00		0.16	1.00		0.39	1.00
Satd. Flow (perm)	3402	4925			3318	4771		285	1674		698	1649
Peak-hour factor, PHF	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. Flow (vph)	323	1666	186	9	122	1388	197	156	87	89	248	129
RTOR Reduction (vph)	0	8	0	0	0	11	0	0	28	0	0	42
Lane Group Flow (vph)	323	1844	0	0	131	1574	0	156	148	0	248	285
Confl. Peds. (#/hr)	7		7	18	18		18	4		4	12	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	4	0	4	0	4	0	4	4	0
Turn Type	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P	NA
Protected Phases	5	2		1	1	6		7	4		3	8
Permitted Phases								8			4	
Actuated Green, G (s)	16.4	74.4			10.5	68.5		36.6	20.4		36.6	27.7
Effective Green, g (s)	16.4	74.4			10.5	68.5		35.6	19.9		35.6	27.2
Actuated g/C Ratio	0.12	0.53			0.08	0.49		0.25	0.14		0.25	0.19
Clearance Time (s)	5.0	5.0			4.5	4.5		4.0	4.5		4.5	5.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	398	2617			248	2334		157	237		291	320
v/s Ratio Prot	0.09	c0.37			0.04	c0.33		0.06	0.09		0.10	0.17
v/s Ratio Perm								c0.19			c0.12	
v/c Ratio	0.81	0.70			0.53	0.67		0.99	0.62		0.85	0.89
Uniform Delay, d1	60.3	24.6			62.4	27.2		60.7	56.5		46.7	55.0
Progression Factor	1.00	1.29			0.66	0.30		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.6	0.8			0.7	1.2		69.5	3.6		20.0	24.6
Delay (s)	66.0	32.4			41.8	9.5		130.2	60.2		66.7	79.5
Level of Service	E	C			D	A		F	E		E	E
Approach Delay (s)		37.4				11.9			93.1			74.0
Approach LOS		D				B			F			E

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	198
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	198
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	12
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	6	289	1450	65	637	1496	344	40	159	323	499	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.95
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3240	4875		3483	5062		1733	1735	1514	3359	1666
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3240	4875		3483	5062		1733	1735	1514	3359	1666
Peak-hour factor, PHF	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. Flow (vph)	6	289	1450	65	637	1496	344	40	159	323	499	237
RTOR Reduction (vph)	0	0	3	0	0	24	0	0	0	60	0	16
Lane Group Flow (vph)	0	295	1512	0	637	1816	0	40	159	263	499	354
Confl. Peds. (#/hr)	25	25		25	10		10	17		17	4	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		12.5	51.7		23.5	62.7		8.2	22.8	46.3	22.0	36.6
Effective Green, g (s)		12.5	51.7		23.5	62.7		7.7	22.3	46.3	21.5	36.1
Actuated g/C Ratio		0.09	0.37		0.17	0.45		0.06	0.16	0.33	0.15	0.26
Clearance Time (s)		4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		289	1800		584	2267		95	276	560	515	429
v/s Ratio Prot		0.09	c0.31		c0.18	0.36		0.02	0.09	0.08	c0.15	c0.21
v/s Ratio Perm										0.09		
v/c Ratio		1.02	0.84		1.09	0.80		0.42	0.58	0.47	0.97	0.83
Uniform Delay, d1		63.8	40.4		58.2	33.3		64.0	54.5	37.1	58.9	49.0
Progression Factor		0.94	0.94		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		56.8	4.6		64.3	3.1		1.1	1.8	0.2	31.3	11.7
Delay (s)		116.8	42.7		122.6	36.4		65.1	56.3	37.3	90.2	60.7
Level of Service		F	D		F	D		E	E	D	F	E
Approach Delay (s)			54.8			58.5			45.2			77.6
Approach LOS			D			E			D			E

Intersection Summary			
HCM 2000 Control Delay	59.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	133
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	133
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	169	182	198	515	287	49	83	174	1384	213	5	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99			1.00
Flpb, ped/bikes	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	0.98			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1097	3375	1790			1773	5002			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1097	3375	1790			1773	5002			1730
Peak-hour factor, PHF	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. Flow (vph)	169	182	198	515	287	49	83	174	1384	213	5	207
RTOR Reduction (vph)	0	0	108	0	5	0	0	0	13	0	0	0
Lane Group Flow (vph)	169	182	90	515	331	0	0	257	1584	0	0	212
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	15.9	23.6	23.6	22.8	30.5			21.0	55.6			18.0
Effective Green, g (s)	15.4	23.1	23.1	22.3	30.0			21.0	55.6			18.0
Actuated g/C Ratio	0.11	0.17	0.17	0.16	0.21			0.15	0.40			0.13
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	195	298	181	537	383			265	1986			222
v/s Ratio Prot	0.10	0.10		c0.15	c0.19			c0.14	c0.32			0.12
v/s Ratio Perm			0.08									
v/c Ratio	0.87	0.61	0.50	0.96	0.86			0.97	0.80			0.95
Uniform Delay, d1	61.3	54.3	53.2	58.4	53.0			59.2	37.2			60.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.29
Incremental Delay, d2	29.9	2.6	0.8	28.2	17.5			46.1	3.4			34.6
Delay (s)	91.2	56.9	54.0	86.6	70.5			105.3	40.7			112.9
Level of Service	F	E	D	F	E			F	D			F
Approach Delay (s)		66.4			80.3				49.6			
Approach LOS		E			F				D			

Intersection Summary			
HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1160	289
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4900	
Flt Permitted	1.00	
Satd. Flow (perm)	4900	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1160	289
RTOR Reduction (vph)	27	0
Lane Group Flow (vph)	1422	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	52.6	
Effective Green, g (s)	52.6	
Actuated g/C Ratio	0.38	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1841	
v/s Ratio Prot	0.29	
v/s Ratio Perm		
v/c Ratio	0.77	
Uniform Delay, d1	38.4	
Progression Factor	0.47	
Incremental Delay, d2	1.9	
Delay (s)	20.0	
Level of Service	C	
Approach Delay (s)	31.9	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	354	513	493	574	941	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	354	513	493	574	941	430
RTOR Reduction (vph)	0	277	0	0	0	56
Lane Group Flow (vph)	354	236	493	574	941	374
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.7	22.7	21.8	107.3	80.5	80.5
Effective Green, g (s)	22.7	22.7	21.8	107.3	80.5	80.5
Actuated g/C Ratio	0.16	0.16	0.16	0.77	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	556	256	534	1427	1071	910
v/s Ratio Prot	0.10		c0.14	0.31	c0.51	
v/s Ratio Perm		c0.15				0.24
v/c Ratio	0.64	0.92	0.92	0.40	0.88	0.41
Uniform Delay, d1	54.8	57.8	58.3	5.5	25.6	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	35.2	21.4	0.8	10.2	1.4
Delay (s)	56.6	92.9	79.7	6.4	35.8	17.9
Level of Service	E	F	E	A	D	B
Approach Delay (s)	78.1			40.2	30.2	
Approach LOS	E			D	C	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3040: 1 Av S & SW 320 St/S 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1300	179	0	1141	268	0	462	338	0	314	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1583		3592	1560		3556	1511
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1583		3592	1560		3556	1511
Peak-hour factor, PHF	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. Flow (vph)	0	1300	179	0	1141	268	0	462	338	0	314	130
RTOR Reduction (vph)	0	0	55	0	0	60	0	0	41	0	0	59
Lane Group Flow (vph)	0	1300	124	0	1141	208	0	462	297	0	314	71
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		96.9	96.9		96.4	96.4		33.6	33.6		34.1	34.1
Effective Green, g (s)		96.9	95.9		96.4	96.4		33.6	33.6		34.1	34.1
Actuated g/C Ratio		0.69	0.69		0.69	0.69		0.24	0.24		0.24	0.24
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2392	1053		2434	1090		862	374		866	368
v/s Ratio Prot		c0.38			0.32			0.13			0.09	
v/s Ratio Perm			0.08			0.13			c0.19			0.05
v/c Ratio		0.54	0.12		0.47	0.19		0.54	0.79		0.36	0.19
Uniform Delay, d1		10.6	7.6		10.0	7.8		46.4	50.0		43.9	42.0
Progression Factor		1.00	1.00		0.98	0.96		1.00	1.00		1.06	1.12
Incremental Delay, d2		0.9	0.2		0.7	0.4		0.3	10.3		0.1	0.1
Delay (s)		11.5	7.8		10.5	7.9		46.7	60.3		46.7	47.1
Level of Service		B	A		B	A		D	E		D	D
Approach Delay (s)		11.1			10.0			52.5			46.8	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1715	803	203	1600	0	0	0	0	195	0	1021
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5046	1507	1759	5122					1667	1681	3600
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5046	1507	1759	5122					1667	1681	3600
Peak-hour factor, PHF	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. Flow (vph)	0	1715	803	203	1600	0	0	0	0	195	0	1021
RTOR Reduction (vph)	0	0	342	0	0	0	0	0	0	0	0	43
Lane Group Flow (vph)	0	1715	461	203	1600	0	0	0	0	97	98	978
Confl. Peds. (#/hr)	2		2							5		5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	2	0	2
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									
Actuated Green, G (s)		69.0	69.0	24.0	84.4					32.0	32.0	45.6
Effective Green, g (s)		69.0	69.0	24.0	84.4					32.0	32.0	45.6
Actuated g/C Ratio		0.49	0.49	0.17	0.60					0.23	0.23	0.33
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	
Lane Grp Cap (vph)		2486	742	301	3087					381	384	1172
v/s Ratio Prot		c0.34		c0.12	0.31					0.06	0.06	c0.27
v/s Ratio Perm			0.31									
v/c Ratio		0.69	0.62	0.67	0.52					0.25	0.26	0.83
Uniform Delay, d1		27.3	25.9	54.3	16.1					44.2	44.2	43.7
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		1.6	3.9	4.6	0.6					0.1	0.1	5.0
Delay (s)		28.9	29.8	59.0	16.7					44.4	44.4	48.7
Level of Service		C	C	E	B					D	D	D
Approach Delay (s)		29.2			21.4			0.0			48.0	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1174	681	0	1283	132	500	2	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.99		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		5060		1651	1669	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		5060		1651	1669	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	1174	681	0	1283	132	500	2	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	52	0	0	0
Lane Group Flow (vph)	0	1174	681	0	1410	0	250	252	48	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		103.5	140.0		103.5		26.5	26.5	26.5			
Effective Green, g (s)		103.5	140.0		103.5		26.5	26.5	25.5			
Actuated g/C Ratio		0.74	1.00		0.74		0.19	0.19	0.18			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		3730	1575		3740		312	315	279			
v/s Ratio Prot		0.23			0.28		c0.15	0.15				
v/s Ratio Perm			c0.43						0.03			
v/c Ratio		0.31	0.43		0.38		0.80	0.80	0.17			
Uniform Delay, d1		6.2	0.0		6.6		54.2	54.2	48.4			
Progression Factor		1.00	1.00		1.00		1.02	1.02	1.05			
Incremental Delay, d2		0.2	0.9		0.3		13.0	12.8	0.1			
Delay (s)		6.4	0.9		6.9		68.4	68.1	50.7			
Level of Service		A	A		A		E	E	D			
Approach Delay (s)		4.4			6.9			65.3			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 9/23/2014 - Traffic Count Consultant			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3064: Military Rd S & S 320 St/S Peasley Cyn Rd

8/11/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	800	204	68	875	112	225	132	57	143	189	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1499	1770	3433		1755	1863	1506	1755	1863	1506
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)	1770	3525	1499	1770	3433		1755	1863	1506	1755	1863	1506
Peak-hour factor, PHF	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. Flow (vph)	142	800	204	68	875	112	225	132	57	143	189	377
RTOR Reduction (vph)	0	0	72	0	6	0	0	0	48	0	0	257
Lane Group Flow (vph)	142	800	132	68	981	0	225	132	9	143	189	120
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	14.8	69.3	90.9	9.6	64.1		21.6	21.6	21.6	19.5	19.5	19.5
Effective Green, g (s)	14.8	69.3	88.9	9.6	64.1		21.6	21.6	21.6	19.5	19.5	19.5
Actuated g/C Ratio	0.11	0.49	0.64	0.07	0.46		0.15	0.15	0.15	0.14	0.14	0.14
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	187	1744	1016	121	1571		270	287	232	244	259	209
v/s Ratio Prot	c0.08	0.23	0.02	0.04	c0.29		c0.13	0.07		0.08	c0.10	
v/s Ratio Perm			0.07						0.01			0.08
v/c Ratio	0.76	0.46	0.13	0.56	0.62		0.83	0.46	0.04	0.59	0.73	0.57
Uniform Delay, d1	60.9	23.1	10.2	63.2	28.8		57.5	53.9	50.4	56.5	57.7	56.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.5	0.9	0.0	3.5	1.9		18.5	0.4	0.0	2.3	8.4	2.3
Delay (s)	75.3	24.0	10.2	66.7	30.7		76.0	54.3	50.4	58.8	66.1	58.7
Level of Service	E	C	B	E	C		E	D	D	E	E	E
Approach Delay (s)		27.9			33.0			65.6			60.7	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	183	97	158	84	175	59	2	168	1570	128	5	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1732	1872	1537	1743	3392			3401	4950			1796
Flt Permitted	0.53	1.00	1.00	0.66	1.00			0.95	1.00			0.95
Satd. Flow (perm)	958	1872	1537	1203	3392			3401	4950			1796
Peak-hour factor, PHF	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. Flow (vph)	183	97	158	84	175	59	2	168	1570	128	5	49
RTOR Reduction (vph)	0	0	133	0	28	0	0	0	5	0	0	0
Lane Group Flow (vph)	183	97	25	84	206	0	0	170	1693	0	0	54
Confl. Peds. (#/hr)	6		6	7		7	3	3		3	3	3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	33.7	22.0	22.0	33.7	23.2			10.1	78.2			7.6
Effective Green, g (s)	33.7	22.0	22.0	33.7	23.2			10.1	78.2			7.6
Actuated g/C Ratio	0.24	0.16	0.16	0.24	0.17			0.07	0.56			0.05
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	288	294	241	334	562			245	2764			97
v/s Ratio Prot	c0.05	0.05		0.02	0.06			0.05	c0.34			0.03
v/s Ratio Perm	c0.11		0.02	0.04								
v/c Ratio	0.64	0.33	0.10	0.25	0.37			0.69	0.61			0.56
Uniform Delay, d1	45.7	52.4	50.5	44.2	51.9			63.4	20.7			64.6
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Incremental Delay, d2	3.4	0.2	0.1	0.1	0.1			6.7	1.0			3.9
Delay (s)	49.1	52.7	50.6	44.3	52.0			70.1	21.8			68.7
Level of Service	D	D	D	D	D			E	C			E
Approach Delay (s)		50.4			50.0				26.2			
Approach LOS		D			D				C			

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1624	212
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	4.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1569
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1569
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1624	212
RTOR Reduction (vph)	0	75
Lane Group Flow (vph)	1624	137
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	75.7	86.2
Effective Green, g (s)	75.7	86.2
Actuated g/C Ratio	0.54	0.62
Clearance Time (s)	5.5	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2776	966
v/s Ratio Prot	c0.32	0.01
v/s Ratio Perm		0.08
v/c Ratio	0.59	0.14
Uniform Delay, d1	21.6	11.3
Progression Factor	1.00	0.98
Incremental Delay, d2	0.9	0.0
Delay (s)	22.5	11.2
Level of Service	C	B
Approach Delay (s)	22.5	
Approach LOS	C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	18	161	1663	148	627	1015	73	6	214	493	536	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%				2%		
Total Lost time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91			0.97	0.86	0.86	0.97
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	0.99	0.99	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.99			1.00	0.95	0.85	1.00
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (prot)		1737	4964		3369	4947			3279	4343	1295	3485
Flt Permitted		0.95	1.00		0.95	1.00			0.28	1.00	1.00	0.95
Satd. Flow (perm)		1737	4964		3369	4947			961	4343	1295	3485
Peak-hour factor, PHF	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. Flow (vph)	18	161	1663	148	627	1015	73	6	214	493	536	149
RTOR Reduction (vph)	0	0	7	0	0	5	0	0	0	73	34	0
Lane Group Flow (vph)	0	179	1804	0	627	1083	0	0	220	688	234	149
Confl. Peds. (#/hr)	5	5		5				10	3		3	2
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	2%	5%	5%	5%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	0	2	2	0	0
Turn Type	Prot	Prot	NA		Prot	NA		custom	Prot	NA	pm+ov	Prot
Protected Phases	7	7	4		3	8			5	2	3	1
Permitted Phases								5			2	
Actuated Green, G (s)		19.5	51.0		16.0	48.0			18.1	43.0	59.0	9.5
Effective Green, g (s)		19.5	51.0		16.0	48.0			18.1	43.0	59.0	9.5
Actuated g/C Ratio		0.14	0.36		0.11	0.34			0.13	0.31	0.42	0.07
Clearance Time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		241	1808		385	1696			124	1333	545	236
v/s Ratio Prot		c0.10	c0.36		c0.19	0.22				0.16	0.05	0.04
v/s Ratio Perm									c0.23		0.13	
v/c Ratio		0.74	1.00		1.63	0.64			1.77	0.52	0.43	0.63
Uniform Delay, d1		57.8	44.4		62.0	38.7			61.0	39.9	28.6	63.5
Progression Factor		1.00	1.00		0.72	0.81			1.00	1.00	1.00	1.00
Incremental Delay, d2		10.3	20.7		288.5	0.9			379.0	0.1	0.2	4.0
Delay (s)		68.1	65.1		333.1	32.2			439.9	40.1	28.8	67.5
Level of Service		E	E		F	C			F	D	C	E
Approach Delay (s)			65.4			142.2				108.1		
Approach LOS			E			F				F		

Intersection Summary			
HCM 2000 Control Delay	93.6	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)	20.5
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	641	345
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.95	
Flt Protected	1.00	
Satd. Flow (prot)	4853	
Flt Permitted	1.00	
Satd. Flow (perm)	4853	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	641	345
RTOR Reduction (vph)	72	0
Lane Group Flow (vph)	914	0
Confl. Peds. (#/hr)		2
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	34.4	
Effective Green, g (s)	34.4	
Actuated g/C Ratio	0.25	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1192	
v/s Ratio Prot	c0.19	
v/s Ratio Perm		
v/c Ratio	0.77	
Uniform Delay, d1	49.1	
Progression Factor	1.00	
Incremental Delay, d2	2.7	
Delay (s)	51.8	
Level of Service	D	
Approach Delay (s)	53.8	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	181	1832	354	786	1168	400	98	408	952	653	320	722
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-4%				2%			-2%
Total Lost time (s)	4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.5
Lane Util. Factor	1.00	0.91	1.00	0.94	0.91	1.00		0.97	0.91	0.91	0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98	0.85	1.00	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1688	4891	1485	5027	5123	1556		3419	3296	1441	3502	5076
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1688	4891	1485	5027	5123	1556		3419	3296	1441	3502	5076
Peak-hour factor, PHF	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. Flow (vph)	181	1832	354	786	1168	400	98	408	952	653	320	722
RTOR Reduction (vph)	0	0	92	0	0	166	0	0	9	52	0	11
Lane Group Flow (vph)	181	1832	262	786	1168	234	0	506	1106	438	320	798
Confl. Peds. (#/hr)	4		4	5		5	1	1		1	14	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	2	2	2	2	2	0	0	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot	NA
Protected Phases	7	4		3	8		5	5	2	2 3	1	6
Permitted Phases			4			8						
Actuated Green, G (s)	18.5	45.0	45.0	16.0	42.5	42.5		15.0	46.5	62.5	13.0	44.0
Effective Green, g (s)	18.5	45.0	45.0	16.0	42.5	42.5		15.0	46.5	62.5	13.0	44.0
Actuated g/C Ratio	0.13	0.32	0.32	0.11	0.30	0.30		0.11	0.33	0.45	0.09	0.31
Clearance Time (s)	4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0		5.0	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	223	1572	477	574	1555	472		366	1094	643	325	1595
v/s Ratio Prot	0.11	c0.37		c0.16	0.23			c0.15	c0.34	0.30	c0.09	0.16
v/s Ratio Perm			0.18			0.15						
v/c Ratio	0.81	1.17	0.55	1.37	0.75	0.50		1.38	1.01	0.68	0.98	0.50
Uniform Delay, d1	59.1	47.5	39.1	62.0	44.0	40.0		62.5	46.8	30.8	63.4	39.1
Progression Factor	0.63	0.55	0.24	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.3	78.3	2.3	177.1	3.4	3.7		188.4	29.9	2.4	45.3	0.1
Delay (s)	47.4	104.3	11.5	239.1	47.4	43.7		250.9	76.6	33.2	108.7	39.1
Level of Service	D	F	B	F	D	D		F	E	C	F	D
Approach Delay (s)		86.1			110.8				108.3			58.9
Approach LOS		F			F				F			E

Intersection Summary			
HCM 2000 Control Delay	95.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		

Description: 9/09/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	87
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	87
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	14
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	324	601	171	216	420	77	1	108	859	66	72	816
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			-2%
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0			4.5	4.5		5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95			0.97	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.99		1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3470	1891	1594	1764	3468			3240	4735		1753	4762
Flt Permitted	0.95	1.00	1.00	0.08	1.00			0.95	1.00		0.20	1.00
Satd. Flow (perm)	3470	1891	1594	154	3468			3240	4735		368	4762
Peak-hour factor, PHF	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. Flow (vph)	324	601	171	216	420	77	1	108	859	66	72	816
RTOR Reduction (vph)	0	0	105	0	13	0	0	0	6	0	0	67
Lane Group Flow (vph)	324	601	66	216	484	0	0	109	919	0	72	1185
Confl. Peds. (#/hr)				1		1						
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	7%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	2
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	Prot	NA		D.P+P	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases			4	4							2	
Actuated Green, G (s)	36.0	48.4	48.4	61.8	24.8			10.6	49.6		56.2	45.6
Effective Green, g (s)	36.0	48.4	48.4	61.8	24.8			11.6	50.6		56.2	45.6
Actuated g/C Ratio	0.26	0.35	0.35	0.44	0.18			0.08	0.36		0.40	0.33
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	892	653	551	222	614			268	1711		213	1551
v/s Ratio Prot	0.09	0.32		c0.09	0.14			0.03	c0.19		0.02	c0.25
v/s Ratio Perm			0.04	c0.34							0.12	
v/c Ratio	0.36	0.92	0.12	0.97	0.79			0.41	0.54		0.34	0.76
Uniform Delay, d1	42.6	44.0	31.3	58.1	55.1			60.9	35.4		27.2	42.4
Progression Factor	1.00	1.00	1.00	0.56	1.53			1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	18.1	0.0	51.7	6.0			0.4	1.2		0.3	3.6
Delay (s)	42.7	62.1	31.3	84.4	90.3			61.3	36.6		27.6	46.0
Level of Service	D	E	C	F	F			E	D		C	D
Approach Delay (s)		51.5			88.5				39.2			45.0
Approach LOS		D			F				D			D

Intersection Summary			
HCM 2000 Control Delay	52.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 9/10/2014 - Traffic Count Consultant			

c Critical Lane Group

Movement	SBR
Lanes, Configurations	
Volume (vph)	436
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	436
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	17	355	18	14	12	565	1228	36	17	937	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		3.5	3.5	2.0	2.0		3.0	4.0		5.0	3.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1540	1751	1737		3484	3558		1778	3542	
Flt Permitted		0.72	1.00	0.29	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1329	1540	530	1737		3484	3558		1778	3542	
Peak-hour factor, PHF	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. Flow (vph)	293	17	355	18	14	12	565	1228	36	17	937	0
RTOR Reduction (vph)	0	0	265	0	9	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	310	90	18	17	0	565	1263	0	17	937	0
Confl. Peds. (#/hr)	2		2	4		4	8		8	6		6
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		34.3	34.3	34.8	34.8		25.1	78.5		2.9	56.3	
Effective Green, g (s)		35.3	35.3	36.8	36.8		27.1	79.5		2.9	58.3	
Actuated g/C Ratio		0.25	0.25	0.26	0.26		0.19	0.57		0.02	0.42	
Clearance Time (s)		4.5	4.5	4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		335	388	139	456		674	2020		36	1474	
v/s Ratio Prot					0.01		c0.16	0.36		0.01	c0.26	
v/s Ratio Perm		c0.23	0.06	0.03								
v/c Ratio		0.93	0.23	0.13	0.04		0.84	0.63		0.47	0.64	
Uniform Delay, d1		51.1	41.6	39.4	38.4		54.3	20.3		67.8	32.4	
Progression Factor		0.58	0.29	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		29.5	0.1	0.2	0.0		8.6	1.5		3.5	2.1	
Delay (s)		59.2	12.3	39.5	38.4		62.9	21.7		71.3	34.5	
Level of Service		E	B	D	D		E	C		E	C	
Approach Delay (s)		34.2			38.9			34.5			35.2	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
30: 8/5/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	381	45	296	187	62	32	309	119	32	822	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1833		1770	1793		1770	1785		1770	1813	
Flt Permitted	0.60	1.00		0.11	1.00		0.06	1.00		0.39	1.00	
Satd. Flow (perm)	1126	1833		201	1793		107	1785		721	1813	
Peak-hour factor, PHF	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. Flow (vph)	10	381	45	296	187	62	32	309	119	32	822	179
RTOR Reduction (vph)	0	3	0	0	7	0	0	10	0	0	6	0
Lane Group Flow (vph)	10	423	0	296	242	0	32	418	0	32	995	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	33.2	32.0		52.0	45.8		73.0	69.4		73.0	69.4	
Effective Green, g (s)	33.2	32.0		52.0	45.8		73.0	69.4		73.0	69.4	
Actuated g/C Ratio	0.24	0.23		0.37	0.33		0.52	0.50		0.52	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	272	418		242	586		98	884		402	898	
v/s Ratio Prot	0.00	0.23		c0.13	0.13		c0.01	0.23		0.00	c0.55	
v/s Ratio Perm	0.01			c0.32			0.16			0.04		
v/c Ratio	0.04	1.01		1.22	0.41		0.33	0.47		0.08	1.11	
Uniform Delay, d1	41.0	54.0		41.0	36.6		31.9	23.3		17.4	35.3	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.75		1.00	1.00	
Incremental Delay, d2	0.0	47.0		131.5	0.2		0.6	1.6		0.0	64.4	
Delay (s)	41.0	101.0		172.6	36.8		24.1	19.1		17.4	99.7	
Level of Service	D	F		F	D		C	B		B	F	
Approach Delay (s)		99.6			110.5			19.4			97.1	
Approach LOS		F			F			B			F	

Intersection Summary			
HCM 2000 Control Delay	86.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	1040	413	271	679	66	291	362	93	75	657	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			-3%	
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.95	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	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	3578	1475	1770	3439		3406	1855	1493	1782	1831	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1789	3578	1475	1770	3439		3406	1855	1493	1782	1831	
Peak-hour factor, PHF	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. Flow (vph)	146	1040	413	271	679	66	291	362	93	75	657	125
RTOR Reduction (vph)	0	0	166	0	5	0	0	0	57	0	5	0
Lane Group Flow (vph)	146	1040	247	271	740	0	291	362	36	75	777	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	1	2	0	0	4	1	4	1	2	2	0	4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	15.0	37.0	37.0	20.0	42.0		11.0	53.7	53.7	9.3	52.0	
Effective Green, g (s)	15.0	37.0	36.0	20.0	42.0		11.0	53.7	53.7	9.3	52.0	
Actuated g/C Ratio	0.11	0.26	0.26	0.14	0.30		0.08	0.38	0.38	0.07	0.37	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	191	945	379	252	1031		267	711	572	118	680	
v/s Ratio Prot	0.08	c0.29		c0.15	0.22		c0.09	0.20		0.04	c0.42	
v/s Ratio Perm			0.17						0.02			
v/c Ratio	0.76	1.10	0.65	1.08	0.72		1.09	0.51	0.06	0.64	1.14	
Uniform Delay, d1	60.8	51.5	46.4	60.0	43.7		64.5	33.1	27.3	63.7	44.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.0	60.8	8.5	78.2	4.3		81.2	0.2	0.0	8.0	81.0	
Delay (s)	75.8	112.3	54.9	138.2	48.0		145.7	33.3	27.3	71.7	125.0	
Level of Service	E	F	D	F	D		F	C	C	E	F	
Approach Delay (s)		94.1			72.1			76.4			120.3	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	91.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		
Description: Mils272			
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	437	665	525	574	1443	597
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	437	665	525	574	1443	597
RTOR Reduction (vph)	0	178	0	0	0	53
Lane Group Flow (vph)	437	487	525	574	1443	544
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	27.0	27.0	17.0	103.0	81.0	81.0
Effective Green, g (s)	27.0	27.0	17.0	103.0	81.0	81.0
Actuated g/C Ratio	0.19	0.19	0.12	0.74	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	662	305	416	1370	1077	915
v/s Ratio Prot	0.13		c0.15	0.31	c0.77	
v/s Ratio Perm		c0.31				0.34
v/c Ratio	0.66	1.60	1.26	0.42	1.34	0.59
Uniform Delay, d1	52.3	56.5	61.5	7.1	29.5	18.9
Progression Factor	1.00	1.00	1.00	1.00	0.74	0.57
Incremental Delay, d2	1.9	284.1	136.0	0.9	157.9	2.2
Delay (s)	54.2	340.6	197.5	8.0	179.9	13.1
Level of Service	D	F	F	A	F	B
Approach Delay (s)	227.0			98.5	131.1	
Approach LOS	F			F	F	

Intersection Summary			
HCM 2000 Control Delay	147.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	125.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	38	47	20	606	49	325	34	14	887	565	11	537
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	11	12	12	12	12	12	12	11
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		6.0		5.5	5.5	5.5		5.5	5.5			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		1.00		1.00	1.00	0.97		1.00	0.98			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.97		1.00	1.00	0.85		1.00	0.94			1.00
Flt Protected		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1761		1694	1715	1568		1805	4750			3318
Flt Permitted		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1761		1694	1715	1568		1805	4750			3318
Peak-hour factor, PHF	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. Flow (vph)	38	47	20	606	49	325	34	14	887	565	11	537
RTOR Reduction (vph)	0	0	0	0	0	251	0	0	65	0	0	0
Lane Group Flow (vph)	0	105	0	327	328	74	0	48	1387	0	0	548
Confl. Peds. (#/hr)	10		10	13		13	22	22		22	18	18
Confl. Bikes (#/hr)						2				1		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	0	9	9	0	6	9	0	6	0	6	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		22.9		31.8	31.8	31.8		6.6	51.8			11.5
Effective Green, g (s)		21.9		31.8	31.8	31.8		7.1	52.3			12.0
Actuated g/C Ratio		0.16		0.23	0.23	0.23		0.05	0.37			0.09
Clearance Time (s)		5.0		5.5	5.5	5.5		6.0	6.0			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		275		384	389	356		91	1774			284
v/s Ratio Prot		c0.06		c0.19	0.19			0.03	0.29			c0.17
v/s Ratio Perm						0.05						
v/c Ratio		0.38		0.85	0.84	0.21		0.53	0.88dr			1.93
Uniform Delay, d1		53.0		51.8	51.7	43.9		64.8	38.8			64.0
Progression Factor		1.00		1.03	1.03	2.81		1.01	0.90			0.90
Incremental Delay, d2		0.3		15.8	14.6	0.1		2.5	3.5			430.6
Delay (s)		53.3		69.2	67.9	123.6		68.1	38.3			488.3
Level of Service		D		E	E	F		E	D			F
Approach Delay (s)		53.3			86.8				39.2			
Approach LOS		D			F				D			

Intersection Summary			
HCM 2000 Control Delay	124.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	2139	131
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4956	
Flt Permitted	1.00	
Satd. Flow (perm)	4956	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	2139	131
RTOR Reduction (vph)	4	0
Lane Group Flow (vph)	2266	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	9	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	56.7	
Effective Green, g (s)	57.2	
Actuated g/C Ratio	0.41	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2024	
v/s Ratio Prot	c0.46	
v/s Ratio Perm		
v/c Ratio	1.12	
Uniform Delay, d1	41.4	
Progression Factor	1.24	
Incremental Delay, d2	61.0	
Delay (s)	112.3	
Level of Service	F	
Approach Delay (s)	185.4	
Approach LOS	F	

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	519	252	428	577	122	150	346	215	333	489	291
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	11	11	12	11	11
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	3281		1716	3210		1760	1784	1444	1794	1846	1508
Flt Permitted	0.95	1.00		0.95	1.00		0.10	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	1824	3281		1716	3210		190	1784	1444	331	1846	1508
Peak-hour factor, PHF	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. Flow (vph)	260	519	252	428	577	122	150	346	215	333	489	291
RTOR Reduction (vph)	0	42	0	0	14	0	0	0	134	0	0	0
Lane Group Flow (vph)	260	729	0	428	685	0	150	346	81	333	489	291
Confl. Peds. (#/hr)	16		16	6		6	20		20	35		35
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	33.1	33.5		35.5	35.9		48.8	30.3	30.3	48.8	39.0	72.1
Effective Green, g (s)	33.1	33.5		35.5	35.9		48.8	30.3	30.3	48.8	39.0	72.1
Actuated g/C Ratio	0.24	0.24		0.26	0.26		0.35	0.22	0.22	0.35	0.28	0.52
Clearance Time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	436	794		440	833		178	390	316	312	520	786
v/s Ratio Prot	0.14	c0.22		c0.25	0.21		0.06	0.19		c0.14	0.26	0.09
v/s Ratio Perm							0.24		0.06	c0.23		0.10
v/c Ratio	0.60	0.92		0.97	0.82		0.84	0.89	0.26	1.07	0.94	0.37
Uniform Delay, d1	46.7	51.1		50.9	48.2		35.9	52.3	44.7	37.6	48.5	19.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	15.0		35.5	6.3		27.7	20.3	0.2	69.9	25.1	0.1
Delay (s)	48.1	66.1		86.4	54.5		63.6	72.7	44.9	107.5	73.7	19.7
Level of Service	D	E		F	D		E	E	D	F	E	B
Approach Delay (s)		61.6			66.6			62.3			69.7	
Approach LOS		E			E			E			E	

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)	138.3	Sum of lost time (s)	20.5
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2557: 28 Av S & S 312 St

8/5/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	366	2	103	2	0	0	155	307	2	0	265	527
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	366	2	103	2	0	0	155	307	2	0	265	527

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	471	2	464	265	527
Volume Left (vph)	366	2	155	0	0
Volume Right (vph)	103	0	2	0	527
Hadj (s)	0.04	0.20	0.10	0.02	-0.68
Departure Headway (s)	7.0	9.5	7.1	7.4	6.7
Degree Utilization, x	0.92	0.01	0.92	0.55	0.98
Capacity (veh/h)	516	365	495	480	527
Control Delay (s)	48.4	12.6	49.0	17.9	59.3
Approach Delay (s)	48.4	12.6	49.0	45.4	
Approach LOS	E	B	E	E	

Intersection Summary			
Delay	47.2		
Level of Service	E		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 9/30/2014 - Traffic Count Consultant			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	373	134	487	1146	85	104	479	433	73	570	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-2%			2%	
Total Lost time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1743	3306		3374	3459		1791	1900	1573	1741	3270	
Flt Permitted	0.95	1.00		0.95	1.00		0.10	1.00	1.00	0.18	1.00	
Satd. Flow (perm)	1743	3306		3374	3459		180	1900	1573	326	3270	
Peak-hour factor, PHF	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. Flow (vph)	214	373	134	487	1146	85	104	479	433	73	570	364
RTOR Reduction (vph)	0	25	0	0	4	0	0	0	117	0	74	0
Lane Group Flow (vph)	214	482	0	487	1227	0	104	479	316	73	860	0
Confl. Peds. (#/hr)	3		3	8		8	2		2	3		3
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	6	6	2	0	2	0	4	4	6	2
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases							8		4	4		
Actuated Green, G (s)	18.2	44.0		24.3	50.1		52.7	45.8	70.1	52.7	41.8	
Effective Green, g (s)	18.2	44.0		24.3	50.1		52.7	45.8	70.1	52.7	41.8	
Actuated g/C Ratio	0.13	0.31		0.17	0.36		0.38	0.33	0.50	0.38	0.30	
Clearance Time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	226	1039		585	1237		193	621	843	192	976	
v/s Ratio Prot	c0.12	0.15		0.14	c0.35		0.04	c0.25	0.07	0.02	c0.26	
v/s Ratio Perm							0.16		0.14	0.12		
v/c Ratio	0.95	0.46		0.83	0.99		0.54	0.77	0.38	0.38	0.88	
Uniform Delay, d1	60.4	38.5		55.9	44.8		55.9	42.4	21.5	31.7	46.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.30	1.24	
Incremental Delay, d2	44.4	0.1		9.4	23.5		1.5	9.0	0.1	0.3	8.8	
Delay (s)	104.8	38.7		65.3	68.3		57.5	51.4	21.6	41.4	67.0	
Level of Service	F	D		E	E		E	D	C	D	E	
Approach Delay (s)		58.3			67.4			39.3			65.1	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	95.4%	ICU Level of Service	F
Analysis Period (min)	15		

Description: All Traffic Data - May 2, 2012

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3040: 1 Av S & SW 320 St/S 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	965	265	0	1605	279	0	672	342	0	604	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1583		3592	1560		3556	1511
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1583		3592	1560		3556	1511
Peak-hour factor, PHF	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. Flow (vph)	0	965	265	0	1605	279	0	672	342	0	604	235
RTOR Reduction (vph)	0	0	22	0	0	16	0	0	112	0	0	27
Lane Group Flow (vph)	0	965	243	0	1605	263	0	672	230	0	604	208
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		96.2	96.2		95.7	95.7		34.3	34.3		34.8	34.8
Effective Green, g (s)		96.2	95.2		95.7	95.7		34.3	34.3		34.8	34.8
Actuated g/C Ratio		0.69	0.68		0.68	0.68		0.24	0.24		0.25	0.25
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2375	1045		2416	1082		880	382		883	375
v/s Ratio Prot		0.28			c0.45			c0.19			0.17	
v/s Ratio Perm			0.16			0.17			0.15			0.14
v/c Ratio		0.41	0.23		0.66	0.24		0.76	0.60		0.68	0.55
Uniform Delay, d1		9.5	8.5		12.8	8.4		49.1	46.8		47.6	45.8
Progression Factor		1.00	1.00		1.24	1.25		0.95	0.89		1.08	1.14
Incremental Delay, d2		0.5	0.5		1.3	0.5		3.5	1.8		1.7	1.0
Delay (s)		10.0	9.0		17.2	11.0		49.9	43.4		53.1	53.3
Level of Service		B	A		B	B		D	D		D	D
Approach Delay (s)		9.8			16.3			47.7			53.2	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1695	525	116	1620	0	0	0	0	720	3	1237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5046	1507	1759	5122					1667	1686	3600
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5046	1507	1759	5122					1667	1686	3600
Peak-hour factor, PHF	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. Flow (vph)	0	1695	525	116	1620	0	0	0	0	720	3	1237
RTOR Reduction (vph)	0	0	237	0	0	0	0	0	0	0	0	32
Lane Group Flow (vph)	0	1695	288	116	1620	0	0	0	0	360	363	1205
Confl. Peds. (#/hr)	2		2							5		5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	2	0	2
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									
Actuated Green, G (s)		61.8	61.8	17.0	70.4					46.2	46.2	59.6
Effective Green, g (s)		61.8	61.8	17.0	70.4					46.2	46.2	59.6
Actuated g/C Ratio		0.44	0.44	0.12	0.50					0.33	0.33	0.43
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	
Lane Grp Cap (vph)		2227	665	213	2575					550	556	1532
v/s Ratio Prot		c0.34		0.07	c0.32					0.22	0.22	c0.33
v/s Ratio Perm			0.19									
v/c Ratio		0.76	0.43	0.54	0.63					0.65	0.65	0.79
Uniform Delay, d1		32.9	27.0	57.9	25.3					40.1	40.1	34.7
Progression Factor		1.30	3.25	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		2.4	2.0	1.5	1.2					2.1	2.1	2.5
Delay (s)		45.3	89.7	59.4	26.5					42.2	42.2	37.2
Level of Service		D	F	E	C					D	D	D
Approach Delay (s)		55.8			28.7			0.0			39.1	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1776	608	0	1267	207	415	0	336	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.98		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		5016		1651	1664	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		5016		1651	1664	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	1776	608	0	1267	207	415	0	336	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	12	0	0	0
Lane Group Flow (vph)	0	1776	608	0	1463	0	207	208	324	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		94.4	140.0		94.4		35.6	35.6	35.6			
Effective Green, g (s)		94.4	140.0		94.4		35.6	35.6	34.6			
Actuated g/C Ratio		0.67	1.00		0.67		0.25	0.25	0.25			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		3402	1575		3382		419	423	378			
v/s Ratio Prot		c0.35			0.29		0.13	0.12				
v/s Ratio Perm			0.39						c0.21			
v/c Ratio		0.52	0.39		0.43		0.49	0.49	0.86			
Uniform Delay, d1		11.5	0.0		10.5		44.5	44.5	50.3			
Progression Factor		1.00	1.00		0.89		1.02	1.02	1.01			
Incremental Delay, d2		0.6	0.7		0.4		0.3	0.3	16.5			
Delay (s)		12.0	0.7		9.8		45.6	45.5	67.5			
Level of Service		B	A		A		D	D	E			
Approach Delay (s)		9.1			9.8			55.4			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3064: Military Rd S & S 320 St/S Peasley Cyn Rd

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1148	693	235	1022	133	175	241	55	142	389	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1527	1770	3431		1755	1863	1506	1755	1863	1506
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)	1770	3525	1527	1770	3431		1755	1863	1506	1755	1863	1506
Peak-hour factor, PHF	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. Flow (vph)	220	1148	693	235	1022	133	175	241	55	142	389	266
RTOR Reduction (vph)	0	0	22	0	8	0	0	0	39	0	0	141
Lane Group Flow (vph)	220	1148	671	235	1148	0	175	241	16	142	389	125
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	21.5	43.5	85.0	13.0	35.0		41.5	41.5	41.5	22.0	22.0	22.0
Effective Green, g (s)	21.5	43.5	83.0	13.0	35.0		41.5	41.5	41.5	22.0	22.0	22.0
Actuated g/C Ratio	0.15	0.31	0.59	0.09	0.25		0.30	0.30	0.30	0.16	0.16	0.16
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	271	1095	970	164	857		520	552	446	275	292	236
v/s Ratio Prot	0.12	c0.33	c0.20	0.13	c0.33		0.10	0.13		0.08	c0.21	
v/s Ratio Perm			0.24						0.01			0.08
v/c Ratio	0.81	1.05	0.69	1.43	1.34		0.34	0.44	0.04	0.52	1.33	0.53
Uniform Delay, d1	57.3	48.2	19.7	63.5	52.5		38.5	39.8	35.0	54.1	59.0	54.3
Progression Factor	1.18	1.14	1.59	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.5	39.5	1.6	226.1	160.4		0.1	0.2	0.0	0.7	171.1	1.1
Delay (s)	82.4	94.6	32.9	289.6	212.9		38.6	40.0	35.0	54.8	230.1	55.4
Level of Service	F	F	C	F	F		D	D	D	D	F	E
Approach Delay (s)		72.5			225.9			38.9			140.6	
Approach LOS		E			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	125.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	389	646	105	182	1175	212	203	538	105	16	277	551
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	11	11	12	11	11	11
Grade (%)		0%			1%			2%				-2%
Total Lost time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95			1.00	0.95
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98			1.00	0.94
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	3351	3359		3295	3438	1545	1694	3283			1730	3231
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00			0.14	1.00
Satd. Flow (perm)	3351	3359		3295	3438	1545	194	3283			248	3231
Peak-hour factor, PHF	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. Flow (vph)	389	646	105	182	1175	212	203	538	105	16	277	551
RTOR Reduction (vph)	0	9	0	0	0	81	0	12	0	0	0	60
Lane Group Flow (vph)	389	742	0	182	1175	131	203	631	0	0	293	812
Confl. Peds. (#/hr)	10		10	5		5	1		1	5	5	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	6	0	2	0	2	2	0	2	6
Turn Type	Prot	NA		Prot	NA	Perm	D.P+P	NA		D.P+P	D.P+P	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases						8	6			2	2	
Actuated Green, G (s)	17.5	58.1		11.2	52.3	52.3	51.2	29.4			51.7	36.7
Effective Green, g (s)	17.5	58.1		11.2	52.3	52.3	51.2	29.4			51.7	36.7
Actuated g/C Ratio	0.12	0.42		0.08	0.37	0.37	0.37	0.21			0.37	0.26
Clearance Time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	418	1393		263	1284	577	226	689			327	846
v/s Ratio Prot	c0.12	0.22		0.06	c0.34		0.09	c0.19			0.14	c0.25
v/s Ratio Perm						0.08	0.23				0.19	
v/c Ratio	0.93	0.53		0.69	0.92	0.23	0.90	0.92			0.90	0.96
Uniform Delay, d1	60.6	30.7		62.7	41.7	30.0	37.1	54.1			52.3	50.9
Progression Factor	0.98	0.96		1.10	0.99	1.04	1.00	1.00			1.31	1.34
Incremental Delay, d2	26.9	1.5		6.1	11.4	0.9	32.8	16.6			24.3	21.1
Delay (s)	86.3	31.0		74.9	52.8	32.1	70.0	70.7			92.7	89.4
Level of Service	F	C		E	D	C	E	E			F	F
Approach Delay (s)		49.9			52.6			70.5				90.2
Approach LOS		D			D			E				F

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		
Description: Traffic Count Consultants - 10/22/2014			
c Critical Lane Group			

Movement	SBR
Lanes, Configurations	
Volume (vph)	321
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	321
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	5
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	309	359	388	142	574	111	14	290	1280	116	26	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1735	1872	1537	1749	3446			3401	4944			1796
Flt Permitted	0.15	1.00	1.00	0.21	1.00			0.95	1.00			0.95
Satd. Flow (perm)	268	1872	1537	380	3446			3401	4944			1796
Peak-hour factor, PHF	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. Flow (vph)	309	359	388	142	574	111	14	290	1280	116	26	84
RTOR Reduction (vph)	0	0	131	0	12	0	0	0	7	0	0	0
Lane Group Flow (vph)	309	359	257	142	673	0	0	304	1389	0	0	110
Confl. Peds. (#/hr)	6		6	7		7	3	3		3	3	3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	47.3	33.7	33.7	47.3	33.8			12.0	56.7			15.5
Effective Green, g (s)	47.3	33.7	33.7	47.3	33.8			12.0	56.7			15.5
Actuated g/C Ratio	0.34	0.24	0.24	0.34	0.24			0.09	0.41			0.11
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	232	450	369	261	831			291	2002			198
v/s Ratio Prot	c0.13	0.19		0.05	0.20			c0.09	0.28			0.06
v/s Ratio Perm	c0.32		0.17	0.13								
v/c Ratio	1.33	0.80	0.70	0.54	0.81			1.04	0.69			0.56
Uniform Delay, d1	39.0	49.9	48.5	51.8	50.1			64.0	34.5			59.0
Progression Factor	1.44	1.07	1.32	1.12	1.09			1.23	0.91			1.00
Incremental Delay, d2	174.8	8.6	4.4	1.2	5.4			64.1	1.9			1.9
Delay (s)	231.0	61.8	68.3	59.2	59.7			143.0	33.2			61.1
Level of Service	F	E	E	E	E			F	C			E
Approach Delay (s)		113.7			59.7				52.8			
Approach LOS		F			E				D			

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1890	319
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	4.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1571
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1571
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1890	319
RTOR Reduction (vph)	0	48
Lane Group Flow (vph)	1890	271
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	60.2	73.7
Effective Green, g (s)	60.2	73.7
Actuated g/C Ratio	0.43	0.53
Clearance Time (s)	5.5	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2207	827
v/s Ratio Prot	c0.37	0.03
v/s Ratio Perm		0.14
v/c Ratio	0.86	0.33
Uniform Delay, d1	36.0	19.0
Progression Factor	1.00	0.99
Incremental Delay, d2	4.5	0.1
Delay (s)	40.5	18.9
Level of Service	D	B
Approach Delay (s)	38.5	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	529	125	384	833	205	237	241	175	163	227	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			2%			1%			1%	
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		5.0	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	3389		1750	3425		1756	1744		1778	1834	1572
Flt Permitted	0.18	1.00		0.27	1.00		0.36	1.00		0.12	1.00	1.00
Satd. Flow (perm)	331	3389		495	3425		670	1744		232	1834	1572
Peak-hour factor, PHF	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. Flow (vph)	49	529	125	384	833	205	237	241	175	163	227	127
RTOR Reduction (vph)	0	13	0	0	13	0	0	20	0	0	0	101
Lane Group Flow (vph)	49	641	0	384	1025	0	237	396	0	163	227	26
Confl. Peds. (#/hr)	1		1	4		4	1		1			
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	5	5	3	0	3	0	0	0	5	3
Turn Type	D.P+P	NA		D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8			4			6			2		6
Actuated Green, G (s)	77.3	50.2		77.3	72.0		44.7	35.4		44.2	28.2	28.2
Effective Green, g (s)	77.3	50.2		77.3	72.0		44.7	35.4		44.2	28.2	28.2
Actuated g/C Ratio	0.55	0.36		0.55	0.51		0.32	0.25		0.32	0.20	0.20
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	236	1215		516	1761		341	440		170	369	316
v/s Ratio Prot	0.01	0.19		c0.14	0.30		0.08	0.23		c0.06	0.12	
v/s Ratio Perm	0.11			c0.27			0.14			c0.24		0.02
v/c Ratio	0.21	0.53		0.74	0.58		0.70	0.90		0.96	0.62	0.08
Uniform Delay, d1	16.9	35.5		20.1	23.6		38.1	50.6		59.9	51.0	45.4
Progression Factor	1.00	1.00		1.43	0.77		1.00	1.00		1.18	1.19	2.22
Incremental Delay, d2	0.2	1.6		5.0	1.4		4.9	20.3		55.6	2.1	0.0
Delay (s)	17.1	37.2		33.7	19.5		43.0	70.9		126.4	63.0	101.0
Level of Service	B	D		C	B		D	E		F	E	F
Approach Delay (s)		35.8			23.3			60.8			92.3	
Approach LOS		D			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/23/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	109	737	174	295	1452	158	64	147	256	172	765	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-1%			7%			-3%	
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3384	3389		3443	3578	1578	1711	3076		1799	3613	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3384	3389		3443	3578	1578	1711	3076		1799	3613	1593
Peak-hour factor, PHF	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. Flow (vph)	109	737	174	295	1452	158	64	147	256	172	765	349
RTOR Reduction (vph)	0	14	0	0	0	46	0	223	0	0	0	62
Lane Group Flow (vph)	109	897	0	295	1452	112	64	180	0	172	765	287
Confl. Peds. (#/hr)				1		1	3		3	1		1
Heavy Vehicles (%)	1%	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	2	1	2	2	2	2	2	2	2	2
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Actuated Green, G (s)	10.5	62.0		18.0	69.5	93.7	7.5	16.8		24.2	33.0	43.5
Effective Green, g (s)	10.5	62.0		18.0	69.5	93.7	7.5	16.8		24.2	33.0	43.5
Actuated g/C Ratio	0.08	0.44		0.13	0.50	0.67	0.05	0.12		0.17	0.24	0.31
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	253	1500		442	1776	1112	91	369		310	851	494
v/s Ratio Prot	0.03	0.26		c0.09	c0.41	0.02	c0.04	0.06		0.10	c0.21	0.04
v/s Ratio Perm						0.05						0.14
v/c Ratio	0.43	0.60		0.67	0.82	0.10	0.70	0.49		0.55	0.90	0.58
Uniform Delay, d1	61.9	29.6		58.1	29.9	8.2	65.2	57.6		53.0	51.9	40.6
Progression Factor	0.85	1.04		1.27	1.67	3.96	0.79	1.31		1.08	1.09	1.17
Incremental Delay, d2	0.4	1.7		2.5	3.7	0.0	8.1	0.2		1.2	11.8	1.1
Delay (s)	53.3	32.4		76.1	53.5	32.5	59.6	75.4		58.7	68.6	48.6
Level of Service	D	C		E	D	C	E	E		E	E	D
Approach Delay (s)		34.7			55.3			73.2			61.9	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/22/2014

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	47	128	1456	310	769	1450	60	266	546	579	143	1046
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%			2%			-3%
Total Lost time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91		0.97	0.86	0.86	0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	0.99	0.99	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.97		1.00	0.99		1.00	0.95	0.85	1.00	0.97
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1737	4886		3369	4968		3288	4347	1296	3485	4957
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1737	4886		3369	4968		3288	4347	1296	3485	4957
Peak-hour factor, PHF	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. Flow (vph)	47	128	1456	310	769	1450	60	266	546	579	143	1046
RTOR Reduction (vph)	0	0	23	0	0	3	0	0	68	30	0	38
Lane Group Flow (vph)	0	175	1743	0	769	1507	0	266	768	259	143	1314
Confl. Peds. (#/hr)	5	5		5				3		3	2	
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	5%	5%	5%	2%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	0	0	2
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		17.5	44.3		21.0	48.3		12.8	45.4	66.4	8.8	41.4
Effective Green, g (s)		17.5	44.3		21.0	48.3		12.8	45.4	66.4	8.8	41.4
Actuated g/C Ratio		0.12	0.32		0.15	0.34		0.09	0.32	0.47	0.06	0.30
Clearance Time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		217	1546		505	1713		300	1409	614	219	1465
v/s Ratio Prot		0.10	c0.36		c0.23	0.30		c0.08	0.18	0.06	0.04	c0.27
v/s Ratio Perm										0.14		
v/c Ratio		0.81	1.13		1.52	0.88		0.89	0.54	0.42	0.65	0.90
Uniform Delay, d1		59.6	47.9		59.5	43.1		62.9	38.8	24.2	64.1	47.3
Progression Factor		1.01	0.91		0.61	0.87		1.16	1.34	1.99	0.94	1.09
Incremental Delay, d2		17.5	65.8		238.8	2.5		21.1	0.2	0.1	5.2	7.3
Delay (s)		77.5	109.4		275.2	39.9		94.3	52.3	48.4	65.3	58.9
Level of Service		E	F		F	D		F	D	D	E	E
Approach Delay (s)			106.5			119.3			59.5			59.5
Approach LOS			F			F			E			E

Intersection Summary			
HCM 2000 Control Delay	91.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	306
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	306
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	4	111	1584	397	948	1689	427	162	388	739	487	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			2%			-4%				2%		
Total Lost time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.91	1.00	0.94	0.91	1.00		0.97	0.91	0.91	0.97
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98	0.85	1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (prot)		1688	4891	1485	5027	5123	1556		3419	3301	1441	3502
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (perm)		1688	4891	1485	5027	5123	1556		3419	3301	1441	3502
Peak-hour factor, PHF	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. Flow (vph)	4	111	1584	397	948	1689	427	162	388	739	487	435
RTOR Reduction (vph)	0	0	0	94	0	0	192	0	0	9	55	0
Lane Group Flow (vph)	0	115	1584	303	948	1689	235	0	550	847	315	435
Confl. Peds. (#/hr)	4	4		4	5		5	1	1		1	14
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%	3%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	2	0	0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot
Protected Phases	7	7	4		3	8		5	5	2	2 3	1
Permitted Phases				4			8					
Actuated Green, G (s)		10.5	42.8	42.8	18.0	50.3	50.3		17.0	39.8	57.8	19.9
Effective Green, g (s)		10.5	42.8	42.8	18.0	50.3	50.3		17.0	39.8	57.8	19.9
Actuated g/C Ratio		0.08	0.31	0.31	0.13	0.36	0.36		0.12	0.28	0.41	0.14
Clearance Time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0		5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		126	1495	453	646	1840	559		415	938	594	497
v/s Ratio Prot		0.07	c0.32		c0.19	0.33			c0.16	c0.26	0.22	c0.12
v/s Ratio Perm				0.20			0.15					
v/c Ratio		0.91	1.06	0.67	1.47	0.92	0.42		1.33	0.90	0.53	0.88
Uniform Delay, d1		64.3	48.6	42.4	61.0	42.9	33.9		61.5	48.2	30.9	58.8
Progression Factor		0.64	0.50	0.29	1.02	0.98	1.07		0.86	1.03	1.54	1.10
Incremental Delay, d2		27.1	33.1	2.9	213.9	4.0	1.0		161.8	11.3	0.4	15.2
Delay (s)		68.0	57.6	15.1	275.9	45.9	37.1		214.7	60.8	48.1	79.9
Level of Service		E	E	B	F	D	D		F	E	D	E
Approach Delay (s)			50.1			115.9				105.8		
Approach LOS			D			F				F		

Intersection Summary			
HCM 2000 Control Delay	87.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	106.5%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/09/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	817	132
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	5048	
Flt Permitted	1.00	
Satd. Flow (perm)	5048	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	817	132
RTOR Reduction (vph)	16	0
Lane Group Flow (vph)	933	0
Confl. Peds. (#/hr)		14
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	42.2	
Effective Green, g (s)	42.2	
Actuated g/C Ratio	0.30	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1521	
v/s Ratio Prot	0.18	
v/s Ratio Perm		
v/c Ratio	0.61	
Uniform Delay, d1	41.9	
Progression Factor	1.16	
Incremental Delay, d2	0.5	
Delay (s)	49.0	
Level of Service	D	
Approach Delay (s)	58.7	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	544	402	3	226	1210	231	61	47	13	310	111	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			1%	
Total Lost time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	3460	1864		1796	3474		1766	1805			1805	1526
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	3460	1864		1796	3474		1766	1805			1805	1526
Peak-hour factor, PHF	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. Flow (vph)	544	402	3	226	1210	231	61	47	13	310	111	399
RTOR Reduction (vph)	0	0	0	0	10	0	0	7	0	0	0	268
Lane Group Flow (vph)	544	405	0	226	1431	0	61	53	0	0	421	131
Confl. Peds. (#/hr)	3		3	4		4	3		3	8		8
Confl. Bikes (#/hr)			3						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	3	1	3	1	2	2	0	3
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases												1
Actuated Green, G (s)	18.5	60.4		19.9	61.8		12.7	12.7			29.5	29.5
Effective Green, g (s)	18.5	60.4		19.9	61.8		12.7	12.7			29.5	29.5
Actuated g/C Ratio	0.13	0.43		0.14	0.44		0.09	0.09			0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	457	804		255	1533		160	163			380	321
v/s Ratio Prot	c0.16	0.22		0.13	c0.41		c0.03	0.03			c0.23	
v/s Ratio Perm												0.09
v/c Ratio	1.19	0.50		0.89	0.93		0.38	0.32			1.11	0.41
Uniform Delay, d1	60.8	28.9		58.9	37.1		59.9	59.6			55.2	47.7
Progression Factor	1.00	1.00		1.10	0.96		1.00	1.00			1.15	2.39
Incremental Delay, d2	105.6	2.2		27.3	11.6		0.6	0.4			78.3	0.3
Delay (s)	166.4	31.2		91.9	47.1		60.5	60.0			141.8	114.4
Level of Service	F	C		F	D		E	E			F	F
Approach Delay (s)		108.7			53.2			60.3			128.5	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	85.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/29/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	301	490	33	71	1116	102	33	57	52	349	78	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			3%			1%	
Total Lost time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		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)	1808	1919	1579	1742	3421		1696	1785	1530	1761	1853	1563
Flt Permitted	0.07	1.00	1.00	0.32	1.00		0.71	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	142	1919	1579	579	3421		1261	1785	1530	1334	1853	1563
Peak-hour factor, PHF	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. Flow (vph)	301	490	33	71	1116	102	33	57	52	349	78	779
RTOR Reduction (vph)	0	0	18	0	4	0	0	0	43	0	0	208
Lane Group Flow (vph)	301	490	15	71	1214	0	33	57	9	349	78	571
Confl. Peds. (#/hr)	3		3									
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	2	0	0	0	2	2	2	2	0	0	0	2
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	2		6	6			8		4	4		8
Actuated Green, G (s)	71.0	64.9	64.9	71.0	53.5		49.5	23.5	23.5	49.5	46.5	46.5
Effective Green, g (s)	71.0	64.9	64.9	71.0	53.5		49.5	23.5	23.5	49.5	46.5	46.5
Actuated g/C Ratio	0.51	0.46	0.46	0.51	0.38		0.35	0.17	0.17	0.35	0.33	0.33
Clearance Time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	280	889	731	344	1307		455	299	256	550	615	519
v/s Ratio Prot	c0.13	0.26		0.01	0.35		0.00	0.03		0.12	0.04	
v/s Ratio Perm	c0.41		0.01	0.10			0.02		0.01	c0.11		c0.37
v/c Ratio	1.07	0.55	0.02	0.21	0.93		0.07	0.19	0.03	0.63	0.13	1.10
Uniform Delay, d1	45.1	27.1	20.3	19.7	41.4		30.0	50.1	48.8	36.5	32.6	46.8
Progression Factor	1.24	0.86	1.00	0.92	1.16		1.00	1.00	1.00	1.53	1.32	1.78
Incremental Delay, d2	75.0	2.4	0.1	0.1	8.6		0.0	0.1	0.0	1.1	0.0	61.7
Delay (s)	130.9	25.8	20.4	18.2	56.6		30.1	50.2	48.8	57.1	43.1	144.9
Level of Service	F	C	C	B	E		C	D	D	E	D	F
Approach Delay (s)		64.0			54.5			45.0			112.9	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	76.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/16/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	244	570	316	272	545	48	2	175	983	63	3	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0			4.5	4.5			5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	3470	1891	1594	1764	3510			3240	4743			1753
Flt Permitted	0.95	1.00	1.00	0.10	1.00			0.95	1.00			0.17
Satd. Flow (perm)	3470	1891	1594	177	3510			3240	4743			310
Peak-hour factor, PHF	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. Flow (vph)	244	570	316	272	545	48	2	175	983	63	3	99
RTOR Reduction (vph)	0	0	112	0	6	0	0	0	5	0	0	0
Lane Group Flow (vph)	244	570	204	272	587	0	0	177	1041	0	0	102
Confl. Peds. (#/hr)				1		1					10	
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	7%	2%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	0
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	Prot	NA		custom	D.P+P
Protected Phases	7	4		3	8		5	5	2			1
Permitted Phases			4	4							1	2
Actuated Green, G (s)	27.0	42.0	42.0	57.0	29.0			9.5	52.7			61.0
Effective Green, g (s)	27.0	42.0	42.0	57.0	29.0			10.5	53.7			61.0
Actuated g/C Ratio	0.19	0.30	0.30	0.41	0.21			0.08	0.38			0.44
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0			5.5	5.5			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	669	567	478	242	727			243	1819			220
v/s Ratio Prot	0.07	0.30		c0.12	0.17			c0.05	0.22			0.03
v/s Ratio Perm			0.13	c0.34								0.17
v/c Ratio	0.36	1.01	0.43	1.12	0.81			0.73	0.57			0.46
Uniform Delay, d1	49.1	49.0	39.3	59.1	52.8			63.4	34.1			25.3
Progression Factor	0.95	1.08	1.15	0.70	1.30			1.00	1.00			0.85
Incremental Delay, d2	0.1	37.5	0.2	95.0	6.2			8.9	1.3			0.5
Delay (s)	46.8	90.4	45.6	136.4	74.9			72.2	35.4			21.8
Level of Service	D	F	D	F	E			E	D			C
Approach Delay (s)		68.5			94.3				40.7			
Approach LOS		E			F				D			

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1385	531
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	4815	
Flt Permitted	1.00	
Satd. Flow (perm)	4815	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1385	531
RTOR Reduction (vph)	49	0
Lane Group Flow (vph)	1867	0
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	4%	4%
Bus Blockages (#/hr)	2	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	51.5	
Effective Green, g (s)	51.5	
Actuated g/C Ratio	0.37	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1771	
v/s Ratio Prot	c0.39	
v/s Ratio Perm		
v/c Ratio	1.05	
Uniform Delay, d1	44.2	
Progression Factor	0.90	
Incremental Delay, d2	35.7	
Delay (s)	75.3	
Level of Service	E	
Approach Delay (s)	72.6	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	13	522	40	82	10	613	1242	64	14	1337	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		3.5	3.5	2.0	2.0		3.0	4.0		5.0	3.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1766	1540	1750	1847		3484	3544		1778	3540	
Flt Permitted		0.60	1.00	0.40	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1105	1540	738	1847		3484	3544		1778	3540	
Peak-hour factor, PHF	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. Flow (vph)	216	13	522	40	82	10	613	1242	64	14	1337	5
RTOR Reduction (vph)	0	0	399	0	3	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	229	123	40	89	0	613	1304	0	14	1342	0
Confl. Peds. (#/hr)	2		2	4		4	8		8	6		6
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		32.1	32.1	32.6	32.6		22.0	80.9		2.7	61.6	
Effective Green, g (s)		33.1	33.1	34.6	34.6		24.0	81.9		2.7	63.6	
Actuated g/C Ratio		0.24	0.24	0.25	0.25		0.17	0.59		0.02	0.45	
Clearance Time (s)		4.5	4.5	4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		261	364	182	456		597	2073		34	1608	
v/s Ratio Prot					0.05		c0.18	0.37		0.01	c0.38	
v/s Ratio Perm		c0.21	0.08	0.05								
v/c Ratio		0.88	0.34	0.22	0.20		1.03	0.63		0.41	0.83	
Uniform Delay, d1		51.5	44.4	42.0	41.7		58.0	19.1		67.9	33.6	
Progression Factor		0.62	0.93	1.00	1.00		1.20	1.32		1.06	1.16	
Incremental Delay, d2		25.3	0.2	0.2	0.1		42.4	1.4		2.5	4.5	
Delay (s)		57.5	41.4	42.2	41.8		112.3	26.6		74.4	43.4	
Level of Service		E	D	D	D		F	C		E	D	
Approach Delay (s)		46.3			41.9			53.9			43.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

7/29/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	260	457	166	158	606	133	29	251	888	72	76	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.96		1.00	0.97			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1735	3264		1755	3308			3439	5000			1773
Flt Permitted	0.14	1.00		0.22	1.00			0.95	1.00			0.95
Satd. Flow (perm)	247	3264		415	3308			3439	5000			1773
Peak-hour factor, PHF	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. Flow (vph)	260	457	166	158	606	133	29	251	888	72	76	134
RTOR Reduction (vph)	0	28	0	0	13	0	0	0	6	0	0	0
Lane Group Flow (vph)	260	595	0	158	726	0	0	280	954	0	0	210
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	29
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	54.9	37.9		55.4	36.2			14.0	44.9			20.2
Effective Green, g (s)	52.9	36.9		53.4	35.2			14.0	44.9			20.2
Actuated g/C Ratio	0.38	0.26		0.38	0.25			0.10	0.32			0.14
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	281	860		316	831			343	1603			255
v/s Ratio Prot	c0.12	0.18		0.06	0.22			c0.08	0.19			0.12
v/s Ratio Perm	c0.23			0.13								
v/c Ratio	0.93	0.69		0.50	0.87			0.82	0.60			0.82
Uniform Delay, d1	36.1	46.4		46.0	50.3			61.7	39.9			58.2
Progression Factor	1.06	1.09		1.23	1.17			0.61	0.39			1.25
Incremental Delay, d2	33.7	1.9		0.5	9.7			11.9	1.4			17.7
Delay (s)	71.9	52.7		57.2	68.6			49.6	17.2			90.4
Level of Service	E	D		E	E			D	B			F
Approach Delay (s)		58.4			66.6				24.5			
Approach LOS		E			E				C			

Intersection Summary			
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 9/25/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1493	466
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	0%	
Total Lost time (s)	5.0	6.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.94
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5108	1476
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5108	1476
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1493	466
RTOR Reduction (vph)	0	212
Lane Group Flow (vph)	1493	254
Confl. Peds. (#/hr)		29
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	4	4
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	51.1	51.1
Effective Green, g (s)	51.1	50.1
Actuated g/C Ratio	0.37	0.36
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	1864	528
v/s Ratio Prot	c0.29	
v/s Ratio Perm		0.17
v/c Ratio	0.80	0.48
Uniform Delay, d1	39.9	34.9
Progression Factor	1.14	1.93
Incremental Delay, d2	3.6	3.0
Delay (s)	49.0	70.5
Level of Service	D	E
Approach Delay (s)	57.6	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	71	58	98	173	78	116	79	201	1151	113	46	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.91		1.00	0.91			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1748	1573		1696	1579			1769	4937			1737
Flt Permitted	0.39	1.00		0.52	1.00			0.95	1.00			0.95
Satd. Flow (perm)	725	1573		937	1579			1769	4937			1737
Peak-hour factor, PHF	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. Flow (vph)	71	58	98	173	78	116	79	201	1151	113	46	88
RTOR Reduction (vph)	0	46	0	0	43	0	0	0	7	0	0	0
Lane Group Flow (vph)	71	110	0	173	151	0	0	280	1257	0	0	134
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	31.6	25.5		31.6	21.8			24.5	70.4			19.0
Effective Green, g (s)	29.6	24.5		29.6	20.8			24.5	70.4			19.0
Actuated g/C Ratio	0.21	0.18		0.21	0.15			0.18	0.50			0.14
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	217	275		225	234			309	2482			235
v/s Ratio Prot	c0.02	0.07		c0.03	0.10			c0.16	0.25			0.08
v/s Ratio Perm	0.05			c0.13								
v/c Ratio	0.33	0.40		0.77	0.64			0.91	0.51			0.57
Uniform Delay, d1	53.2	51.2		55.7	56.1			56.6	23.2			56.7
Progression Factor	1.00	1.00		0.67	0.72			0.75	1.50			0.71
Incremental Delay, d2	0.3	0.3		13.1	4.4			20.3	0.5			1.4
Delay (s)	53.5	51.6		50.2	44.9			62.5	35.2			41.4
Level of Service	D	D		D	D			E	D			D
Approach Delay (s)		52.2			47.4				40.1			
Approach LOS		D			D				D			

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1729	54
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	5069	
Flt Permitted	1.00	
Satd. Flow (perm)	5069	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1729	54
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1781	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	64.9	
Effective Green, g (s)	64.9	
Actuated g/C Ratio	0.46	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2349	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.76	
Uniform Delay, d1	31.1	
Progression Factor	0.47	
Incremental Delay, d2	1.6	
Delay (s)	16.2	
Level of Service	B	
Approach Delay (s)	17.9	
Approach LOS	B	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
3050: Pacific Hwy S & S 320 St

8/5/2015

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	83	405	1035	63	5	483	1592	211	29	245	829	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.99			1.00	1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5201			3467	5081	1555		3377	4825	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5201			3467	5081	1555		3377	4825	
Peak-hour factor, PHF	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. Flow (vph)	83	405	1035	63	5	483	1592	211	29	245	829	314
RTOR Reduction (vph)	0	0	5	0	0	0	0	92	0	0	49	0
Lane Group Flow (vph)	0	488	1093	0	0	488	1592	119	0	274	1094	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		19.5	43.5			22.0	45.5	45.5		13.5	39.0	
Effective Green, g (s)		19.5	43.5			22.0	45.5	45.5		13.5	39.0	
Actuated g/C Ratio		0.14	0.31			0.16	0.32	0.32		0.10	0.28	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		497	1616			544	1651	505		325	1344	
v/s Ratio Prot		c0.14	0.21			0.14	c0.31			0.08	c0.23	
v/s Ratio Perm								0.08				
v/c Ratio		0.98	0.68			0.90	0.96	0.24		0.84	0.81	
Uniform Delay, d1		60.1	42.1			57.9	46.5	34.5		62.2	47.1	
Progression Factor		0.83	0.76			1.25	1.40	2.47		0.75	1.18	
Incremental Delay, d2		34.2	2.2			12.2	11.5	0.7		12.5	3.9	
Delay (s)		83.9	34.0			84.6	76.7	86.0		59.4	59.5	
Level of Service		F	C			F	E	F		E	E	
Approach Delay (s)			49.3				79.2				59.5	
Approach LOS			D				E				E	

Intersection Summary			
HCM 2000 Control Delay	61.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	19	324	1312	355
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1493
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1493
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	324	1312	355
RTOR Reduction (vph)	0	0	0	100
Lane Group Flow (vph)	0	343	1312	256
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		15.0	40.5	40.5
Effective Green, g (s)		15.0	40.5	40.5
Actuated g/C Ratio		0.11	0.29	0.29
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		368	1485	431
v/s Ratio Prot		0.10	c0.26	
v/s Ratio Perm				0.17
v/c Ratio		0.93	0.88	0.59
Uniform Delay, d1		62.0	47.5	42.7
Progression Factor		0.91	0.89	1.00
Incremental Delay, d2		22.5	5.5	4.0
Delay (s)		79.0	47.9	46.7
Level of Service		E	D	D
Approach Delay (s)			53.0	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	8	302	1183	128	22	105	1779	106	124	84	63	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	11	11	12	11	11	12	11
Grade (%)			-3%				2%			-1%		
Total Lost time (s)		5.0	5.0			4.5	4.5		4.5	5.0		5.0
Lane Util. Factor		0.97	0.91			0.97	0.91		1.00	1.00		1.00
Frpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		0.99
Frt		1.00	0.99			1.00	0.99		1.00	0.94		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		3402	4927			3318	4835		1708	1697		1715
Flt Permitted		0.95	1.00			0.95	1.00		0.15	1.00		0.51
Satd. Flow (perm)		3402	4927			3318	4835		273	1697		923
Peak-hour factor, PHF	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. Flow (vph)	8	302	1183	128	22	105	1779	106	124	84	63	201
RTOR Reduction (vph)	0	0	8	0	0	0	4	0	0	21	0	0
Lane Group Flow (vph)	0	310	1303	0	0	127	1881	0	124	126	0	201
Confl. Peds. (#/hr)	7	7		7	18	18		18	4		4	12
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	4	0	4	0	4	0	4	0	4	0	4	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P
Protected Phases	5	5	2		1	1	6		7	4		3
Permitted Phases									8			4
Actuated Green, G (s)		15.2	75.6			10.5	70.9		35.4	23.9		35.4
Effective Green, g (s)		15.2	75.6			10.5	70.9		34.4	23.4		34.4
Actuated g/C Ratio		0.11	0.54			0.08	0.51		0.25	0.17		0.25
Clearance Time (s)		5.0	5.0			4.5	4.5		4.0	4.5		4.5
Vehicle Extension (s)		2.0	2.0			2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		369	2660			248	2448		150	283		289
v/s Ratio Prot		c0.09	0.26			0.04	c0.39		0.05	0.07		0.05
v/s Ratio Perm									0.15			c0.12
v/c Ratio		0.84	0.49			0.51	0.77		0.83	0.45		0.70
Uniform Delay, d1		61.2	20.1			62.3	27.9		61.8	52.5		46.4
Progression Factor		1.01	1.31			0.70	0.40		1.00	1.00		1.06
Incremental Delay, d2		11.0	0.5			0.5	1.8		28.4	0.4		5.8
Delay (s)		72.7	26.8			43.9	13.0		90.2	52.9		54.9
Level of Service		E	C			D	B		F	D		D
Approach Delay (s)			35.6				14.9			69.9		
Approach LOS			D				B			E		

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	82	279
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.88	
Flt Protected	1.00	
Satd. Flow (prot)	1596	
Flt Permitted	1.00	
Satd. Flow (perm)	1596	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	82	279
RTOR Reduction (vph)	93	0
Lane Group Flow (vph)	268	0
Confl. Peds. (#/hr)		12
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	0	4
Turn Type	NA	
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	26.8	
Effective Green, g (s)	26.3	
Actuated g/C Ratio	0.19	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	299	
v/s Ratio Prot	c0.17	
v/s Ratio Perm		
v/c Ratio	0.90	
Uniform Delay, d1	55.5	
Progression Factor	0.94	
Incremental Delay, d2	26.7	
Delay (s)	79.0	
Level of Service	E	
Approach Delay (s)	70.4	
Approach LOS	E	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	228	1199	54	673	1604	310	73	209	365	566	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.96
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3240	4875		3483	5085		1733	1735	1514	3359	1686
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3240	4875		3483	5085		1733	1735	1514	3359	1686
Peak-hour factor, PHF	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. Flow (vph)	7	228	1199	54	673	1604	310	73	209	365	566	380
RTOR Reduction (vph)	0	0	4	0	0	19	0	0	0	58	0	11
Lane Group Flow (vph)	0	235	1249	0	673	1895	0	73	209	307	566	525
Confl. Peds. (#/hr)	25	25		25	10		10	17		17	4	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		10.5	39.8		25.5	54.8		9.1	25.0	50.5	29.7	45.6
Effective Green, g (s)		10.5	39.8		25.5	54.8		8.6	24.5	50.5	29.2	45.1
Actuated g/C Ratio		0.08	0.28		0.18	0.39		0.06	0.18	0.36	0.21	0.32
Clearance Time (s)		4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		243	1385		634	1990		106	303	605	700	543
v/s Ratio Prot		0.07	0.26		c0.19	c0.37		0.04	0.12	0.09	c0.17	c0.31
v/s Ratio Perm										0.11		
v/c Ratio		0.97	0.90		1.06	0.95		0.69	0.69	0.51	0.81	0.97
Uniform Delay, d1		64.6	48.2		57.2	41.3		64.4	54.2	35.0	52.7	46.7
Progression Factor		0.96	0.95		0.76	0.79		1.18	1.00	0.96	1.08	1.06
Incremental Delay, d2		46.7	9.5		51.5	10.8		13.8	5.1	0.2	6.3	29.5
Delay (s)		109.0	55.1		95.3	43.6		89.5	59.1	33.9	63.1	78.8
Level of Service		F	E		F	D		F	E	C	E	E
Approach Delay (s)			63.6			57.0			48.3			70.7
Approach LOS			E			E			D			E

Intersection Summary			
HCM 2000 Control Delay	60.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	156
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	156
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	127	202	140	674	293	26	162	163	1247	235	49	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99			1.00
Flpb, ped/bikes	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	0.99			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1097	3375	1811			1773	4977			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1097	3375	1811			1773	4977			1730
Peak-hour factor, PHF	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. Flow (vph)	127	202	140	674	293	26	162	163	1247	235	49	155
RTOR Reduction (vph)	0	0	76	0	2	0	0	0	17	0	0	0
Lane Group Flow (vph)	127	202	64	674	317	0	0	325	1465	0	0	204
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	14.0	22.0	22.0	23.0	31.0			21.0	58.0			17.0
Effective Green, g (s)	13.5	21.5	21.5	22.5	30.5			21.0	58.0			17.0
Actuated g/C Ratio	0.10	0.15	0.15	0.16	0.22			0.15	0.41			0.12
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	171	278	168	542	394			265	2061			210
v/s Ratio Prot	0.07	0.11		c0.20	c0.17			c0.18	c0.29			0.12
v/s Ratio Perm			0.06									
v/c Ratio	0.74	0.73	0.38	1.24	0.80			1.23	0.71			0.97
Uniform Delay, d1	61.6	56.5	53.3	58.8	51.9			59.5	34.0			61.3
Progression Factor	1.00	1.00	1.00	0.85	0.98			1.00	1.00			1.46
Incremental Delay, d2	14.1	7.8	0.5	124.5	10.7			130.6	2.1			36.0
Delay (s)	75.6	64.2	53.8	174.2	61.8			190.1	36.2			125.6
Level of Service	E	E	D	F	E			F	D			F
Approach Delay (s)		64.2			138.1				63.8			
Approach LOS		E			F				E			

Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	107.2%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1391	335
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4905	
Flt Permitted	1.00	
Satd. Flow (perm)	4905	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1391	335
RTOR Reduction (vph)	25	0
Lane Group Flow (vph)	1701	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	54.0	
Effective Green, g (s)	54.0	
Actuated g/C Ratio	0.39	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1891	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.90	
Uniform Delay, d1	40.4	
Progression Factor	0.34	
Incremental Delay, d2	3.9	
Delay (s)	17.4	
Level of Service	B	
Approach Delay (s)	28.9	
Approach LOS	C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
60: Military Rd S & S 272 St

8/7/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	23	338	444	160	55	462	83	495	607	132	53	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-3%			0%			0%			-3%
Total Lost time (s)		5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.96	1.00	0.98
Flpb, ped/bikes		0.95	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	0.98		1.00	1.00	0.85	1.00	0.94
Flt Protected		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1697	3578	1489	1770	3392		3406	1855	1501	1782	1757
Flt Permitted		0.45	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		801	3578	1489	1770	3392		3406	1855	1501	1782	1757
Peak-hour factor, PHF	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. Flow (vph)	23	338	444	160	55	462	83	495	607	132	53	157
RTOR Reduction (vph)	0	0	0	90	0	12	0	0	0	96	0	18
Lane Group Flow (vph)	0	361	444	70	55	533	0	495	607	36	53	231
Confl. Peds. (#/hr)	10	10		10	10		10	10		10	10	
Bus Blockages (#/hr)	0	1	2	0	0	4	1	4	1	2	2	0
Turn Type	custom	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA
Protected Phases		7	4		3	8		5	2		1	6
Permitted Phases	7			4						2		
Actuated Green, G (s)		40.0	53.5	53.5	6.8	20.3		19.9	33.0	33.0	6.7	19.8
Effective Green, g (s)		40.0	53.5	52.5	6.8	20.3		19.9	33.0	33.0	6.7	19.8
Actuated g/C Ratio		0.33	0.45	0.44	0.06	0.17		0.17	0.28	0.28	0.06	0.17
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		267	1595	651	100	573		564	510	412	99	289
v/s Ratio Prot			0.12		0.03	c0.16		c0.15	c0.33		0.03	0.13
v/s Ratio Perm		c0.45		0.05						0.02		
v/c Ratio		1.35	0.28	0.11	0.55	0.93		0.88	1.19	0.09	0.54	0.80
Uniform Delay, d1		40.0	21.0	19.9	55.1	49.1		48.9	43.5	32.3	55.1	48.2
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		181.1	0.4	0.3	3.7	23.7		14.0	103.8	0.0	2.8	13.9
Delay (s)		221.1	21.5	20.3	58.8	72.8		62.8	147.3	32.4	57.9	62.1
Level of Service		F	C	C	E	E		E	F	C	E	E
Approach Delay (s)			95.9			71.5			101.1			61.4
Approach LOS			F			E			F			E

Intersection Summary			
HCM 2000 Control Delay	89.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Mils272			
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	92
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	92
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	507	637	470	1366	994	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	507	637	470	1366	994	313
RTOR Reduction (vph)	0	228	0	0	0	47
Lane Group Flow (vph)	507	409	470	1366	994	266
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.0	26.0	16.0	84.0	63.0	63.0
Effective Green, g (s)	26.0	26.0	16.0	84.0	63.0	63.0
Actuated g/C Ratio	0.22	0.22	0.13	0.70	0.52	0.52
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	743	342	457	1304	978	831
v/s Ratio Prot	0.15		0.14	c0.73	0.53	
v/s Ratio Perm		c0.26				0.17
v/c Ratio	0.68	1.20	1.03	1.05	1.02	0.32
Uniform Delay, d1	43.2	47.0	52.0	18.0	28.5	16.3
Progression Factor	1.00	1.00	1.00	1.00	0.69	0.46
Incremental Delay, d2	2.1	113.2	49.6	38.4	19.3	0.3
Delay (s)	45.3	160.2	101.6	56.4	38.9	7.7
Level of Service	D	F	F	E	D	A
Approach Delay (s)	109.3			67.9	31.4	
Approach LOS	F			E	C	

Intersection Summary			
HCM 2000 Control Delay	67.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	99	79	6	206	6	305	1	7	2555	372	4	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	11	12	12	12	12	12	12	11
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		6.0		5.5	5.5	5.5		5.5	5.5			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		1.00		1.00	1.00	0.97		1.00	0.99			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		1.00		1.00	1.00	0.85		1.00	0.98			1.00
Flt Protected		0.97		0.95	0.95	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1790		1694	1707	1569		1805	5019			3318
Flt Permitted		0.97		0.95	0.95	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1790		1694	1707	1569		1805	5019			3318
Peak-hour factor, PHF	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. Flow (vph)	99	79	6	206	6	305	1	7	2555	372	4	85
RTOR Reduction (vph)	0	0	0	0	0	266	0	0	10	0	0	0
Lane Group Flow (vph)	0	184	0	105	107	39	0	8	2917	0	0	89
Confl. Peds. (#/hr)	10		10	13		13	22	22		22	18	18
Confl. Bikes (#/hr)						2				1		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	0	9	9	0	6	9	0	6	0	6	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		19.9		15.3	15.3	15.3		1.2	56.5			6.3
Effective Green, g (s)		18.9		15.3	15.3	15.3		1.7	57.0			6.8
Actuated g/C Ratio		0.16		0.13	0.13	0.13		0.01	0.48			0.06
Clearance Time (s)		5.0		5.5	5.5	5.5		6.0	6.0			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		281		215	217	200		25	2384			188
v/s Ratio Prot		c0.10		0.06	c0.06			0.00	c0.58			c0.03
v/s Ratio Perm						0.02						
v/c Ratio		0.65		0.49	0.49	0.19		0.32	1.22			0.47
Uniform Delay, d1		47.5		48.7	48.7	46.8		58.6	31.5			54.9
Progression Factor		1.00		0.98	0.98	3.24		1.10	1.03			0.83
Incremental Delay, d2		4.1		0.6	0.6	0.2		2.7	104.6			0.6
Delay (s)		51.6		48.5	48.5	151.7		67.1	136.9			46.2
Level of Service		D		D	D	F		E	F			D
Approach Delay (s)		51.6			109.4				136.7			
Approach LOS		D			F				F			

Intersection Summary			
HCM 2000 Control Delay	112.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	112.6%	ICU Level of Service	H
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	513	28
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4965	
Flt Permitted	1.00	
Satd. Flow (perm)	4965	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	513	28
RTOR Reduction (vph)	3	0
Lane Group Flow (vph)	538	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	9	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	61.6	
Effective Green, g (s)	62.1	
Actuated g/C Ratio	0.52	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2569	
v/s Ratio Prot	c0.11	
v/s Ratio Perm		
v/c Ratio	0.21	
Uniform Delay, d1	15.7	
Progression Factor	0.96	
Incremental Delay, d2	0.2	
Delay (s)	15.2	
Level of Service	B	
Approach Delay (s)	19.6	
Approach LOS	B	

Intersection Summary

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	438	52	75	194	214	178	478	176	107	215	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	11	11	12	11	11
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	3453		1716	3008		1746	1784	1462	1795	1846	1522
Flt Permitted	0.95	1.00		0.95	1.00		0.57	1.00	1.00	0.24	1.00	1.00
Satd. Flow (perm)	1824	3453		1716	3008		1041	1784	1462	459	1846	1522
Peak-hour factor, PHF	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. Flow (vph)	230	438	52	75	194	214	178	478	176	107	215	67
RTOR Reduction (vph)	0	8	0	0	183	0	0	0	101	0	0	0
Lane Group Flow (vph)	230	482	0	75	225	0	178	478	75	107	215	67
Confl. Peds. (#/hr)	16		16	6		6	20		20	35		35
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	17.2	22.7		6.7	12.2		35.5	29.9	29.9	35.5	26.8	44.0
Effective Green, g (s)	17.2	22.7		6.7	12.2		35.5	29.9	29.9	35.5	26.8	44.0
Actuated g/C Ratio	0.20	0.27		0.08	0.14		0.42	0.35	0.35	0.42	0.31	0.52
Clearance Time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	367	917		134	429		504	624	511	278	579	784
v/s Ratio Prot	c0.13	0.14		0.04	c0.07		c0.04	c0.27		0.03	0.12	0.02
v/s Ratio Perm							0.11		0.05	0.13		0.03
v/c Ratio	0.63	0.53		0.56	0.52		0.35	0.77	0.15	0.38	0.37	0.09
Uniform Delay, d1	31.2	26.8		37.9	33.9		16.3	24.6	19.0	17.0	22.8	10.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.3		2.9	0.5		0.2	5.0	0.0	0.3	0.1	0.0
Delay (s)	33.6	27.0		40.8	34.4		16.4	29.7	19.1	17.3	22.9	10.5
Level of Service	C	C		D	C		B	C	B	B	C	B
Approach Delay (s)		29.1			35.4			24.6			19.2	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	85.4	Sum of lost time (s)	20.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	360	533	81	36	101	207	20	65	372	616	81	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%				3%			-2%			2%
Total Lost time (s)	4.5	4.5			5.0	5.0		5.0	5.0	5.0	4.5	4.5
Lane Util. Factor	1.00	0.95			0.97	0.95		1.00	1.00	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	0.99		1.00	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1743	3382			3365	3447		1789	1900	1579	1740	3388
Flt Permitted	0.95	1.00			0.10	1.00		0.43	1.00	1.00	0.21	1.00
Satd. Flow (perm)	1743	3382			346	3447		804	1900	1579	381	3388
Peak-hour factor, PHF	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. Flow (vph)	360	533	81	36	101	207	20	65	372	616	81	289
RTOR Reduction (vph)	0	10	0	0	0	6	0	0	0	55	0	16
Lane Group Flow (vph)	360	604	0	0	137	221	0	65	372	561	81	339
Confl. Peds. (#/hr)	3		3	10	8		8	2		2	3	
Confl. Bikes (#/hr)										1		
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	6	0	6	2	0	2	0	4	4	6
Turn Type	Prot	NA		custom	Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA
Protected Phases	1	6			5	2		7	4	5!	3	8
Permitted Phases				5!				8		4	4	
Actuated Green, G (s)	28.9	23.0			41.0	35.1		37.0	30.0	71.0	37.0	29.0
Effective Green, g (s)	28.9	23.0			41.0	35.1		37.0	30.0	71.0	37.0	29.0
Actuated g/C Ratio	0.24	0.19			0.34	0.29		0.31	0.25	0.59	0.31	0.24
Clearance Time (s)	4.5	4.5			5.0	5.0		5.0	5.0	5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	419	648			118	1008		313	475	1000	196	818
v/s Ratio Prot	0.21	c0.18				0.06		0.01	c0.20	0.19	0.02	c0.10
v/s Ratio Perm					c0.40			0.05		0.16	0.10	
v/c Ratio	0.86	0.93			1.16	0.22		0.21	0.78	0.56	0.41	0.41
Uniform Delay, d1	43.6	47.7			39.5	32.1		35.3	42.0	15.0	31.6	38.3
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.44	1.36
Incremental Delay, d2	15.4	20.2			132.6	0.0		0.1	12.2	0.4	0.4	1.1
Delay (s)	59.0	67.9			172.1	32.1		35.4	54.1	15.4	45.8	53.4
Level of Service	E	E			F	C		D	D	B	D	D
Approach Delay (s)		64.6				84.8			30.3			52.0
Approach LOS		E				F			C			D

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: All Traffic Data - May 2, 2012

! Phase conflict between lane groups.

Movement	SBR
Lane Configurations	
Volume (vph)	66
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	66
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1374	258	0	342	182	0	543	438	0	340	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1584		3592	1560		3556	1513
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1584		3592	1560		3556	1513
Peak-hour factor, PHF	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. Flow (vph)	0	1374	258	0	342	182	0	543	438	0	340	127
RTOR Reduction (vph)	0	0	101	0	0	71	0	0	22	0	0	85
Lane Group Flow (vph)	0	1374	157	0	342	111	0	543	416	0	340	42
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		71.5	71.5		71.0	71.0		39.0	39.0		39.5	39.5
Effective Green, g (s)		71.5	70.5		71.0	71.0		39.0	39.0		39.5	39.5
Actuated g/C Ratio		0.60	0.59		0.59	0.59		0.32	0.32		0.33	0.33
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2059	903		2091	937		1167	507		1170	498
v/s Ratio Prot		c0.40			0.10			0.15			0.10	
v/s Ratio Perm			0.10			0.07			c0.27			0.03
v/c Ratio		0.67	0.17		0.16	0.12		0.47	0.82		0.29	0.08
Uniform Delay, d1		16.3	11.4		11.1	10.8		32.2	37.3		29.9	27.8
Progression Factor		1.00	1.00		1.50	3.63		0.87	0.88		1.49	4.14
Incremental Delay, d2		1.7	0.4		0.1	0.2		0.1	9.7		0.0	0.0
Delay (s)		18.0	11.8		16.8	39.2		28.1	42.5		44.5	115.1
Level of Service		B	B		B	D		C	D		D	F
Approach Delay (s)		17.0			24.6			34.5			63.7	
Approach LOS		B			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3057: I-5 SB Ramp & S 320 St

8/7/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	0	1651	413	2	199	886	0	0	0	0	120	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%				0%			2%			2%
Total Lost time (s)		5.0	5.0		5.0	5.0					5.0	5.0
Lane Util. Factor		0.91	1.00		1.00	0.91					0.95	0.95
Frpb, ped/bikes		1.00	0.97		1.00	1.00					1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00					1.00	1.00
Frt		1.00	0.85		1.00	1.00					1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00					0.95	0.95
Satd. Flow (prot)		5046	1509		1758	5122					1667	1688
Flt Permitted		1.00	1.00		0.95	1.00					0.95	0.95
Satd. Flow (perm)		5046	1509		1758	5122					1667	1688
Peak-hour factor, PHF	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. Flow (vph)	0	1651	413	2	199	886	0	0	0	0	120	2
RTOR Reduction (vph)	0	0	179	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1651	234	0	201	886	0	0	0	0	61	61
Confl. Peds. (#/hr)	2		2	10							5	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	0	4	2	0	2	0	2	2	0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									
Actuated Green, G (s)		68.1	68.1		27.0	90.1					9.9	9.9
Effective Green, g (s)		68.1	68.1		27.0	90.1					9.9	9.9
Actuated g/C Ratio		0.57	0.57		0.22	0.75					0.08	0.08
Clearance Time (s)		5.0	5.0		5.0	5.0					5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0					2.0	2.0
Lane Grp Cap (vph)		2863	856		395	3845					137	139
v/s Ratio Prot		c0.33			c0.11	0.17					c0.04	0.04
v/s Ratio Perm			0.16									
v/c Ratio		0.58	0.27		0.51	0.23					0.45	0.44
Uniform Delay, d1		16.7	13.3		40.7	4.5					52.4	52.4
Progression Factor		1.49	6.43		1.00	1.00					1.00	1.00
Incremental Delay, d2		0.8	0.7		0.4	0.1					0.8	0.8
Delay (s)		25.7	86.3		41.1	4.6					53.3	53.2
Level of Service		C	F		D	A					D	D
Approach Delay (s)		37.8				11.4			0.0			45.2
Approach LOS		D				B			A			D

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	417
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	0.76
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	3600
Flt Permitted	1.00
Satd. Flow (perm)	3600
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	417
RTOR Reduction (vph)	331
Lane Group Flow (vph)	86
Confl. Peds. (#/hr)	5
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	custom
Protected Phases	4 5
Permitted Phases	
Actuated Green, G (s)	19.9
Effective Green, g (s)	19.9
Actuated g/C Ratio	0.17
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	597
v/s Ratio Prot	0.02
v/s Ratio Perm	
v/c Ratio	0.14
Uniform Delay, d1	42.8
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	42.8
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	625	977	0	773	441	282	1	729	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		0.99		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.95		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		4813		1651	1669	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		4813		1651	1669	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	625	977	0	773	441	282	1	729	0	0	0
RTOR Reduction (vph)	0	0	0	0	77	0	0	0	34	0	0	0
Lane Group Flow (vph)	0	625	977	0	1137	0	141	142	695	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		45.1	120.0		45.1		64.9	64.9	64.9			
Effective Green, g (s)		45.1	120.0		45.1		64.9	64.9	63.9			
Actuated g/C Ratio		0.38	1.00		0.38		0.54	0.54	0.53			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		1896	1575		1808		892	902	816			
v/s Ratio Prot		0.12			0.24		0.09	0.09				
v/s Ratio Perm			c0.62						c0.45			
v/c Ratio		0.33	0.62		0.63		0.16	0.16	0.85			
Uniform Delay, d1		26.7	0.0		30.6		13.8	13.8	24.0			
Progression Factor		1.00	1.00		1.00		1.05	1.05	1.04			
Incremental Delay, d2		0.5	1.8		1.6		0.0	0.0	8.2			
Delay (s)		27.1	1.8		32.1		14.5	14.5	33.3			
Level of Service		C	A		C		B	B	C			
Approach Delay (s)		11.7			32.1			28.0			0.0	
Approach LOS		B			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 9/23/2014 - Traffic Count Consultant			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	990	57	22	607	88	331	515	100	138	151	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1529	1770	3426		1755	1863	1512	1755	1863	1512
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)	1770	3525	1529	1770	3426		1755	1863	1512	1755	1863	1512
Peak-hour factor, PHF	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. Flow (vph)	210	990	57	22	607	88	331	515	100	138	151	181
RTOR Reduction (vph)	0	0	20	0	9	0	0	0	70	0	0	161
Lane Group Flow (vph)	210	990	37	22	686	0	331	515	30	138	151	20
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	16.6	44.9	80.7	6.0	34.3		35.8	35.8	35.8	13.3	13.3	13.3
Effective Green, g (s)	16.6	44.9	78.7	6.0	34.3		35.8	35.8	35.8	13.3	13.3	13.3
Actuated g/C Ratio	0.14	0.37	0.66	0.05	0.29		0.30	0.30	0.30	0.11	0.11	0.11
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	244	1318	1079	88	979		523	555	451	194	206	167
v/s Ratio Prot	0.12	c0.28	0.01	0.01	c0.20		0.19	c0.28		0.08	c0.08	
v/s Ratio Perm			0.01						0.02			0.01
v/c Ratio	0.86	0.75	0.03	0.25	0.70		0.63	0.93	0.07	0.71	0.73	0.12
Uniform Delay, d1	50.6	32.7	7.3	54.8	38.3		36.4	40.8	30.1	51.5	51.6	48.1
Progression Factor	1.32	1.25	3.72	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	21.2	3.3	0.0	0.5	4.2		1.8	21.5	0.0	9.8	11.0	0.1
Delay (s)	88.1	44.2	27.0	55.4	42.4		38.3	62.3	30.2	61.3	62.6	48.2
Level of Service	F	D	C	E	D		D	E	C	E	E	D
Approach Delay (s)		50.7			42.8			50.5			56.7	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	289	377	137	64	306	48	330	1442	91	9	29	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			3%				-3%
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5		5.0	5.0			5.5	5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.91			1.00	0.91
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99			1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1733	1872	1539	1749	3462		3401	4965			1796	5134
Flt Permitted	0.43	1.00	1.00	0.23	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	784	1872	1539	421	3462		3401	4965			1796	5134
Peak-hour factor, PHF	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. Flow (vph)	289	377	137	64	306	48	330	1442	91	9	29	544
RTOR Reduction (vph)	0	0	101	0	13	0	0	4	0	0	0	0
Lane Group Flow (vph)	289	377	36	64	341	0	330	1529	0	0	38	544
Confl. Peds. (#/hr)	6		6	7		7	3		3	3	3	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	2	6	0	6	0	4
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	NA		Prot	Prot	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases	8		4	4								
Actuated Green, G (s)	36.6	31.3	31.3	36.6	26.1		15.4	57.2			5.7	47.5
Effective Green, g (s)	36.6	31.3	31.3	36.6	26.1		15.4	57.2			5.7	47.5
Actuated g/C Ratio	0.31	0.26	0.26	0.31	0.22		0.13	0.48			0.05	0.40
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5		5.0	5.0			5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	322	488	401	187	752		436	2366			85	2032
v/s Ratio Prot	0.08	c0.20		0.02	0.10		c0.10	c0.31			c0.02	0.11
v/s Ratio Perm	c0.20		0.02	0.09								
v/c Ratio	0.90	0.77	0.09	0.34	0.45		0.76	0.65			0.45	0.27
Uniform Delay, d1	37.8	41.1	33.6	45.8	40.8		50.5	23.7			55.6	24.5
Progression Factor	1.16	1.06	3.42	1.12	1.02		1.11	1.34			1.01	1.01
Incremental Delay, d2	24.4	6.5	0.0	0.4	0.1		6.4	1.3			1.4	0.3
Delay (s)	68.1	50.1	114.9	51.8	41.6		62.4	33.3			57.6	25.0
Level of Service	E	D	F	D	D		E	C			E	C
Approach Delay (s)		67.6			43.2			38.4				24.7
Approach LOS		E			D			D				C

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	184
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1572
Flt Permitted	1.00
Satd. Flow (perm)	1572
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	184
RTOR Reduction (vph)	95
Lane Group Flow (vph)	89
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Actuated Green, G (s)	58.0
Effective Green, g (s)	58.0
Actuated g/C Ratio	0.48
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	759
v/s Ratio Prot	0.01
v/s Ratio Perm	0.05
v/c Ratio	0.12
Uniform Delay, d1	17.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	16.9
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	5	72	1222	109	408	828	101	2	197	719	750	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%				2%		
Total Lost time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91			0.97	0.86	0.86	0.97
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00			0.99	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.98			1.00	0.95	0.85	1.00
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (prot)		1737	4965		3369	4916			3264	4351	1294	3485
Flt Permitted		0.95	1.00		0.95	1.00			0.55	1.00	1.00	0.95
Satd. Flow (perm)		1737	4965		3369	4916			1883	4351	1294	3485
Peak-hour factor, PHF	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. Flow (vph)	5	72	1222	109	408	828	101	2	197	719	750	74
RTOR Reduction (vph)	0	0	8	0	0	12	0	0	0	85	42	0
Lane Group Flow (vph)	0	77	1323	0	408	917	0	0	199	1009	333	74
Confl. Peds. (#/hr)	5	5		5				10	3		3	2
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	2%	5%	5%	5%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	0	2	2	0	0
Turn Type	Prot	Prot	NA		Prot	NA		custom	Prot	NA	pm+ov	Prot
Protected Phases	7	7	4		3	8			5	2	3	1
Permitted Phases								5			2	
Actuated Green, G (s)		7.5	48.7		8.0	49.7			22.1	37.2	45.2	5.6
Effective Green, g (s)		7.5	48.7		8.0	49.7			22.1	37.2	45.2	5.6
Actuated g/C Ratio		0.06	0.41		0.07	0.41			0.18	0.31	0.38	0.05
Clearance Time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		108	2014		224	2036			346	1348	487	162
v/s Ratio Prot		0.04	c0.27		c0.12	0.19				c0.23	0.05	0.02
v/s Ratio Perm									0.11		0.21	
v/c Ratio		0.71	0.66		1.82	0.45			0.58	0.75	0.68	0.46
Uniform Delay, d1		55.2	28.9		56.0	25.3			44.7	37.2	31.4	55.7
Progression Factor		0.85	0.87		0.63	1.05			1.30	1.42	1.63	0.71
Incremental Delay, d2		14.9	1.5		371.2	0.1			1.2	1.7	2.6	0.7
Delay (s)		61.8	26.5		406.3	26.8			59.4	54.4	53.7	40.3
Level of Service		E	C		F	C			E	D	D	D
Approach Delay (s)			28.5			142.6				54.9		
Approach LOS			C			F				D		

Intersection Summary			
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	248	76
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	4951	
Flt Permitted	1.00	
Satd. Flow (perm)	4951	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	248	76
RTOR Reduction (vph)	57	0
Lane Group Flow (vph)	267	0
Confl. Peds. (#/hr)		2
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	20.7	
Effective Green, g (s)	20.7	
Actuated g/C Ratio	0.17	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	854	
v/s Ratio Prot	c0.05	
v/s Ratio Perm		
v/c Ratio	0.31	
Uniform Delay, d1	43.4	
Progression Factor	0.95	
Incremental Delay, d2	0.1	
Delay (s)	41.5	
Level of Service	D	
Approach Delay (s)	41.3	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	590	271	174	45	379	31	88	867	39	3	11	556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%			2%				-2%
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0		4.5	4.5			5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95		0.97	0.91			1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.99			1.00	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	3470	1891	1594	1764	3514		3240	4755			1759	4928
Flt Permitted	0.95	1.00	1.00	0.33	1.00		0.95	1.00			0.26	1.00
Satd. Flow (perm)	3470	1891	1594	617	3514		3240	4755			475	4928
Peak-hour factor, PHF	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. Flow (vph)	590	271	174	45	379	31	88	867	39	3	11	556
RTOR Reduction (vph)	0	0	136	0	7	0	0	3	0	0	0	13
Lane Group Flow (vph)	590	271	38	45	403	0	88	903	0	0	14	624
Confl. Peds. (#/hr)				1		1				10		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	2%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	0	2
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	NA		custom	D.P+P	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases			4	4						1	2	
Actuated Green, G (s)	15.2	26.4	26.4	36.4	20.2		12.8	59.4			61.6	48.8
Effective Green, g (s)	15.2	26.4	26.4	36.4	20.2		13.8	60.4			61.6	48.8
Actuated g/C Ratio	0.13	0.22	0.22	0.30	0.17		0.12	0.50			0.51	0.41
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	439	416	350	282	591		372	2393			267	2004
v/s Ratio Prot	c0.17	c0.14		0.01	0.11		0.03	c0.19			0.00	c0.13
v/s Ratio Perm			0.02	0.03							0.03	
v/c Ratio	1.34	0.65	0.11	0.16	0.68		0.24	0.38			0.05	0.31
Uniform Delay, d1	52.4	42.6	37.4	39.4	46.9		48.3	18.3			14.7	24.2
Progression Factor	0.97	0.91	1.19	1.02	1.49		1.00	1.00			1.15	1.15
Incremental Delay, d2	167.9	2.5	0.0	0.1	2.5		0.1	0.5			0.0	0.3
Delay (s)	218.6	41.4	44.4	40.4	72.5		48.4	18.7			16.9	28.1
Level of Service	F	D	D	D	E		D	B			B	C
Approach Delay (s)		142.9			69.3			21.4				27.8
Approach LOS		F			E			C				C

Intersection Summary			
HCM 2000 Control Delay	69.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	81
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	81
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

8/7/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	408	377	44	31	128	90	3	60	1326	22	35	571
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			0%
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00		1.00	0.98			1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.94			1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1725	3362		1750	3163			3439	5075		1773	5108
Flt Permitted	0.62	1.00		0.39	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	1118	3362		727	3163			3439	5075		1773	5108
Peak-hour factor, PHF	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. Flow (vph)	408	377	44	31	128	90	3	60	1326	22	35	571
RTOR Reduction (vph)	0	8	0	0	70	0	0	0	1	0	0	0
Lane Group Flow (vph)	408	413	0	31	148	0	0	63	1347	0	35	571
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	2	4
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases	8			4								
Actuated Green, G (s)	44.2	31.1		44.7	27.7			9.0	51.0		4.8	46.8
Effective Green, g (s)	42.2	30.1		42.7	26.7			9.0	51.0		4.8	46.8
Actuated g/C Ratio	0.35	0.25		0.36	0.22			0.08	0.42		0.04	0.39
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	471	843		366	703			257	2156		70	1992
v/s Ratio Prot	c0.11	0.12		0.01	0.05			0.02	c0.27		c0.02	0.11
v/s Ratio Perm	c0.19			0.02								
v/c Ratio	0.87	0.49		0.08	0.21			0.25	0.62		0.50	0.29
Uniform Delay, d1	33.9	38.4		30.4	38.1			52.3	27.0		56.4	25.1
Progression Factor	1.30	1.00		1.41	1.50			0.71	0.46		1.14	1.42
Incremental Delay, d2	14.7	0.2		0.0	0.1			0.2	1.3		1.9	0.3
Delay (s)	58.7	38.4		42.8	57.3			37.3	13.7		66.3	36.1
Level of Service	E	D		D	E			D	B		E	D
Approach Delay (s)		48.4			55.5				14.7			70.9
Approach LOS		D			E				B			E

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 9/25/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	105
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1487
Flt Permitted	1.00
Satd. Flow (perm)	1487
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	105
RTOR Reduction (vph)	65
Lane Group Flow (vph)	40
Confl. Peds. (#/hr)	29
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	46.8
Effective Green, g (s)	45.8
Actuated g/C Ratio	0.38
Clearance Time (s)	5.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	567
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.07
Uniform Delay, d1	23.6
Progression Factor	11.08
Incremental Delay, d2	0.2
Delay (s)	261.4
Level of Service	F
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	6	5	3	31	8	42	8	15	1421	84	6	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00	1.00			1.00
Flpb, ped/bikes	0.98	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.94		1.00	0.87			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1729	1660		1689	1508			1769	4979			1737
Flt Permitted	0.72	1.00		0.75	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1318	1660		1338	1508			1769	4979			1737
Peak-hour factor, PHF	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. Flow (vph)	6	5	3	31	8	42	8	15	1421	84	6	36
RTOR Reduction (vph)	0	3	0	0	38	0	0	0	3	0	0	0
Lane Group Flow (vph)	6	5	0	31	12	0	0	23	1502	0	0	42
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	13.1	9.4		13.1	11.9			4.2	79.0			8.9
Effective Green, g (s)	11.1	8.4		11.1	10.9			4.2	79.0			8.9
Actuated g/C Ratio	0.09	0.07		0.09	0.09			0.04	0.66			0.07
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	122	116		131	136			61	3277			128
v/s Ratio Prot	c0.00	0.00		c0.01	0.01			0.01	c0.30			c0.02
v/s Ratio Perm	0.00			c0.02								
v/c Ratio	0.05	0.04		0.24	0.09			0.38	0.46			0.33
Uniform Delay, d1	49.6	52.1		50.6	50.0			56.6	10.0			52.7
Progression Factor	1.00	1.00		1.16	1.88			0.84	1.39			0.71
Incremental Delay, d2	0.1	0.1		0.3	0.1			0.7	0.2			0.5
Delay (s)	49.7	52.1		59.1	94.2			48.6	14.2			37.7
Level of Service	D	D		E	F			D	B			D
Approach Delay (s)		51.1			80.8				14.7			
Approach LOS		D			F				B			

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	574	6
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	5096	
Flt Permitted	1.00	
Satd. Flow (perm)	5096	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	574	6
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	579	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	83.7	
Effective Green, g (s)	83.7	
Actuated g/C Ratio	0.70	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	3554	
v/s Ratio Prot	0.11	
v/s Ratio Perm		
v/c Ratio	0.16	
Uniform Delay, d1	6.2	
Progression Factor	0.25	
Incremental Delay, d2	0.1	
Delay (s)	1.7	
Level of Service	A	
Approach Delay (s)	4.1	
Approach LOS	A	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	115	250	1536	10	4	140	479	137	5	107	1190	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.97		1.00	1.00	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	1.00			1.00	1.00	0.85		1.00	0.98	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5255			3467	5081	1559		3377	4957	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5255			3467	5081	1559		3377	4957	
Peak-hour factor, PHF	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. Flow (vph)	115	250	1536	10	4	140	479	137	5	107	1190	188
RTOR Reduction (vph)	0	0	1	0	0	0	0	90	0	0	18	0
Lane Group Flow (vph)	0	365	1545	0	0	144	479	47	0	112	1360	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		10.5	42.9			9.3	41.2	41.2		8.1	39.0	
Effective Green, g (s)		10.5	42.9			9.3	41.2	41.2		8.1	39.0	
Actuated g/C Ratio		0.09	0.36			0.08	0.34	0.34		0.07	0.32	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		312	1878			268	1744	535		227	1611	
v/s Ratio Prot		c0.10	c0.29			c0.04	0.09			0.03	c0.27	
v/s Ratio Perm								0.03				
v/c Ratio		1.17	0.82			0.54	0.27	0.09		0.49	0.84	
Uniform Delay, d1		54.8	35.1			53.3	28.6	26.7		54.0	37.7	
Progression Factor		0.92	0.87			1.17	1.58	6.67		0.81	1.27	
Incremental Delay, d2		104.3	4.1			1.0	0.4	0.3		0.5	4.6	
Delay (s)		154.6	34.7			63.2	45.5	178.4		44.0	52.4	
Level of Service		F	C			E	D	F		D	D	
Approach Delay (s)			57.6				72.8				51.7	
Approach LOS			E				E				D	

Intersection Summary			
HCM 2000 Control Delay	55.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	2	121	442	73
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1498
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1498
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2	121	442	73
RTOR Reduction (vph)	0	0	0	49
Lane Group Flow (vph)	0	123	442	24
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		8.3	39.2	39.2
Effective Green, g (s)		8.3	39.2	39.2
Actuated g/C Ratio		0.07	0.33	0.33
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		237	1677	489
v/s Ratio Prot		c0.04	0.09	
v/s Ratio Perm				0.02
v/c Ratio		0.52	0.26	0.05
Uniform Delay, d1		53.9	29.8	27.6
Progression Factor		1.05	0.99	1.00
Incremental Delay, d2		0.8	0.4	0.2
Delay (s)		57.6	30.0	27.8
Level of Service		E	C	C
Approach Delay (s)			35.1	
Approach LOS			D	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	171	1641	68	19	8	726	48	9	5	3	37	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	11	11	12	11	11
Grade (%)		-3%				2%			-1%			-3%
Total Lost time (s)	5.0	5.0			4.5	4.5		4.5	5.0		5.0	5.5
Lane Util. Factor	0.97	0.91			0.97	0.91		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	0.99		1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		0.99	1.00
Frt	1.00	0.99			1.00	0.99		1.00	0.94		1.00	0.89
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3402	4978			3318	4831		1703	1714		1707	1605
Flt Permitted	0.95	1.00			0.95	1.00		0.72	1.00		0.75	1.00
Satd. Flow (perm)	3402	4978			3318	4831		1290	1714		1352	1605
Peak-hour factor, PHF	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. Flow (vph)	171	1641	68	19	8	726	48	9	5	3	37	14
RTOR Reduction (vph)	0	2	0	0	0	4	0	0	3	0	0	37
Lane Group Flow (vph)	171	1707	0	0	27	770	0	9	5	0	37	20
Confl. Peds. (#/hr)	7		7	18	18		18	4		4	12	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	4	0	4	0	4	0	4	4	0
Turn Type	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P	NA
Protected Phases	5	2		1	1	6		7	4		3	8
Permitted Phases								8			4	
Actuated Green, G (s)	9.7	77.0			6.3	73.6		18.2	13.7		18.2	16.6
Effective Green, g (s)	9.7	77.0			6.3	73.6		17.2	13.2		17.2	16.1
Actuated g/C Ratio	0.08	0.64			0.05	0.61		0.14	0.11		0.14	0.13
Clearance Time (s)	5.0	5.0			4.5	4.5		4.0	4.5		4.5	5.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	274	3194			174	2963		188	188		205	215
v/s Ratio Prot	0.05	c0.34			0.01	c0.16		0.00	0.00		c0.01	0.01
v/s Ratio Perm								0.01			c0.02	
v/c Ratio	0.62	0.53			0.16	0.26		0.05	0.03		0.18	0.09
Uniform Delay, d1	53.4	11.7			54.3	10.7		44.3	47.7		45.0	45.5
Progression Factor	0.95	1.62			0.77	0.54		1.00	1.00		1.01	1.25
Incremental Delay, d2	1.9	0.4			0.1	0.2		0.0	0.0		0.2	0.1
Delay (s)	52.6	19.4			41.9	6.0		44.4	47.7		45.5	56.8
Level of Service	D	B			D	A		D	D		D	E
Approach Delay (s)		22.4				7.2			45.9			52.3
Approach LOS		C				A			D			D

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 9/24/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	43
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	43
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	12
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	1347	25	166	824	159	32	332	435	363	99	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			1%			0%	
Total Lost time (s)	4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0	
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3240	4901		3483	5087		1733	1735	1506	3359	1652	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3240	4901		3483	5087		1733	1735	1506	3359	1652	
Peak-hour factor, PHF	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. Flow (vph)	165	1347	25	166	824	159	32	332	435	363	99	68
RTOR Reduction (vph)	0	1	0	0	22	0	0	0	38	0	23	0
Lane Group Flow (vph)	165	1371	0	166	961	0	32	332	397	363	144	0
Confl. Peds. (#/hr)	25		25	10		10	17		17	4		4
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	16	6	10	10	4	16	4	16	6	6	10	4
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases									2			
Actuated Green, G (s)	10.5	45.9		10.5	45.9		13.6	27.4	37.9	16.2	30.0	
Effective Green, g (s)	10.5	45.9		10.5	45.9		13.1	26.9	37.9	15.7	29.5	
Actuated g/C Ratio	0.09	0.38		0.09	0.38		0.11	0.22	0.32	0.13	0.25	
Clearance Time (s)	4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	283	1874		304	1945		189	388	544	439	406	
v/s Ratio Prot	0.05	c0.28		0.05	0.19		0.02	c0.19	c0.06	c0.11	0.09	
v/s Ratio Perm									0.20			
v/c Ratio	0.58	0.73		0.55	0.49		0.17	0.86	0.73	0.83	0.35	
Uniform Delay, d1	52.6	31.8		52.5	28.2		48.5	44.7	36.5	50.8	37.4	
Progression Factor	1.00	1.12		0.62	0.67		1.09	1.02	1.03	1.05	1.18	
Incremental Delay, d2	1.9	2.5		0.8	0.7		0.2	16.1	4.3	10.9	0.2	
Delay (s)	54.5	38.0		33.2	19.5		53.3	61.7	42.1	64.2	44.3	
Level of Service	D	D		C	B		D	E	D	E	D	
Approach Delay (s)		39.8			21.5			50.7			57.9	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	157	252	26	125	45	11	26	51	1418	250	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	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	0.97			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1101	3375	1774			1773	4989			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1101	3375	1774			1773	4989			1730
Peak-hour factor, PHF	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. Flow (vph)	157	252	26	125	45	11	26	51	1418	250	1	12
RTOR Reduction (vph)	0	0	21	0	9	0	0	0	15	0	0	0
Lane Group Flow (vph)	157	252	5	125	47	0	0	77	1653	0	0	13
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	15.8	23.8	23.8	8.4	16.4			7.9	65.2			2.6
Effective Green, g (s)	15.3	23.3	23.3	7.9	15.9			7.9	65.2			2.6
Actuated g/C Ratio	0.13	0.19	0.19	0.07	0.13			0.07	0.54			0.02
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	226	351	213	222	235			116	2710			37
v/s Ratio Prot	c0.09	c0.14		0.04	0.03			c0.04	c0.33			0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.69	0.72	0.02	0.56	0.20			0.66	0.61			0.35
Uniform Delay, d1	50.1	45.3	39.1	54.4	46.4			54.8	18.7			57.9
Progression Factor	1.00	1.00	1.00	0.91	0.84			1.00	1.00			1.11
Incremental Delay, d2	7.3	5.7	0.0	1.9	0.2			10.5	1.0			2.0
Delay (s)	57.4	51.0	39.2	51.5	39.2			65.3	19.7			66.3
Level of Service	E	D	D	D	D			E	B			E
Approach Delay (s)		52.6			47.7				21.8			
Approach LOS		D			D				C			

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	510	63
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	4989	
Flt Permitted	1.00	
Satd. Flow (perm)	4989	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	510	63
RTOR Reduction (vph)	10	0
Lane Group Flow (vph)	563	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	59.9	
Effective Green, g (s)	59.9	
Actuated g/C Ratio	0.50	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2490	
v/s Ratio Prot	0.11	
v/s Ratio Perm		
v/c Ratio	0.23	
Uniform Delay, d1	17.0	
Progression Factor	0.42	
Incremental Delay, d2	0.2	
Delay (s)	7.3	
Level of Service	A	
Approach Delay (s)	8.7	
Approach LOS	A	

Intersection Summary

Appendix C

Future Action Geometries, Turning Movement Forecasts, and LOS Analysis Results

HCM Signalized Intersection Capacity Analysis
60: Military Rd S & S 272 St

8/7/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	23	335	444	154	61	464	85	502	608	128	53	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-3%			0%			0%			-3%
Total Lost time (s)		5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00
Frpb, ped/bikes		1.00	1.00	0.93	1.00	0.99		1.00	1.00	0.96	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94
Flt Protected		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1789	3578	1489	1770	3390		3406	1855	1501	1782	1754
Flt Permitted		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1789	3578	1489	1770	3390		3406	1855	1501	1782	1754
Peak-hour factor, PHF	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. Flow (vph)	23	335	444	154	61	464	85	502	608	128	53	152
RTOR Reduction (vph)	0	0	0	97	0	12	0	0	0	84	0	18
Lane Group Flow (vph)	0	358	444	57	61	537	0	502	608	44	53	226
Confl. Peds. (#/hr)	10	10		10	10		10	10		10	10	
Bus Blockages (#/hr)	0	1	2	0	0	4	1	4	1	2	2	0
Turn Type	Prot	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA
Protected Phases	7	7	4		3	8		5	2		1	6
Permitted Phases				4						2		
Actuated Green, G (s)		28.1	45.3	45.3	7.1	24.3		21.4	40.9	40.9	6.7	26.2
Effective Green, g (s)		28.1	45.3	44.3	7.1	24.3		21.4	40.9	40.9	6.7	26.2
Actuated g/C Ratio		0.23	0.38	0.37	0.06	0.20		0.18	0.34	0.34	0.06	0.22
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		418	1350	549	104	686		607	632	511	99	382
v/s Ratio Prot		c0.20	0.12		0.03	c0.16		c0.15	c0.33		0.03	0.13
v/s Ratio Perm				0.04						0.03		
v/c Ratio		0.86	0.33	0.10	0.59	0.78		0.83	0.96	0.09	0.54	0.59
Uniform Delay, d1		44.0	26.5	24.8	55.0	45.3		47.5	38.8	26.9	55.1	42.1
Progression Factor		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		15.2	0.7	0.4	5.3	8.7		8.6	26.3	0.0	2.8	1.6
Delay (s)		59.2	27.2	25.2	60.4	54.0		56.1	65.1	26.9	57.9	43.7
Level of Service		E	C	C	E	D		E	E	C	E	D
Approach Delay (s)			38.9			54.7			57.5			46.3
Approach LOS			D			D			E			D

Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Mils272			
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	92
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	92
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	10
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	522	641	478	1363	994	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	522	641	478	1363	994	313
RTOR Reduction (vph)	0	228	0	0	0	47
Lane Group Flow (vph)	522	413	478	1363	994	266
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	26.0	26.0	16.0	84.0	63.0	63.0
Effective Green, g (s)	26.0	26.0	16.0	84.0	63.0	63.0
Actuated g/C Ratio	0.22	0.22	0.13	0.70	0.52	0.52
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	743	342	457	1304	978	831
v/s Ratio Prot	0.15		0.14	c0.73	0.53	
v/s Ratio Perm		c0.26				0.17
v/c Ratio	0.70	1.21	1.05	1.05	1.02	0.32
Uniform Delay, d1	43.4	47.0	52.0	18.0	28.5	16.3
Progression Factor	1.00	1.00	1.00	1.00	0.69	0.46
Incremental Delay, d2	2.5	117.8	54.6	37.6	19.3	0.3
Delay (s)	45.9	164.8	106.6	55.6	38.9	7.7
Level of Service	D	F	F	E	D	A
Approach Delay (s)	111.4			68.9	31.4	
Approach LOS	F			E	C	

Intersection Summary			
HCM 2000 Control Delay	69.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	91	103	6	216	6	305	1	7	2578	365	4	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	11	12	12	12	12	12	12	11
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		6.0		5.5	5.5	5.5		5.5	5.5			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		1.00		1.00	1.00	0.97		1.00	0.99			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		1.00		1.00	1.00	0.85		1.00	0.98			1.00
Flt Protected		0.98		0.95	0.95	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1798		1694	1707	1569		1805	5022			3318
Flt Permitted		0.98		0.95	0.95	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1798		1694	1707	1569		1805	5022			3318
Peak-hour factor, PHF	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. Flow (vph)	91	103	6	216	6	305	1	7	2578	365	4	91
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	10	0	0	0
Lane Group Flow (vph)	0	200	0	110	112	40	0	8	2933	0	0	95
Confl. Peds. (#/hr)	10		10	13		13	22	22		22	18	18
Confl. Bikes (#/hr)						2				1		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	0	9	9	0	6	9	0	6	0	6	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		20.7		15.6	15.6	15.6		1.2	55.4			6.3
Effective Green, g (s)		19.7		15.6	15.6	15.6		1.7	55.9			6.8
Actuated g/C Ratio		0.16		0.13	0.13	0.13		0.01	0.47			0.06
Clearance Time (s)		5.0		5.5	5.5	5.5		6.0	6.0			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		295		220	221	203		25	2339			188
v/s Ratio Prot		c0.11		0.06	c0.07			0.00	c0.58			c0.03
v/s Ratio Perm						0.03						
v/c Ratio		0.68		0.50	0.51	0.20		0.32	1.25			0.51
Uniform Delay, d1		47.2		48.6	48.6	46.6		58.6	32.0			55.0
Progression Factor		1.00		0.98	0.98	3.27		1.14	1.01			0.83
Incremental Delay, d2		4.8		0.6	0.7	0.2		2.7	117.9			0.7
Delay (s)		52.0		48.5	48.4	152.6		69.4	150.3			46.4
Level of Service		D		D	D	F		E	F			D
Approach Delay (s)		52.0			108.7				150.1			
Approach LOS		D			F				F			

Intersection Summary			
HCM 2000 Control Delay	121.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	524	24
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4974	
Flt Permitted	1.00	
Satd. Flow (perm)	4974	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	524	24
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	546	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	9	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	60.5	
Effective Green, g (s)	61.0	
Actuated g/C Ratio	0.51	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2528	
v/s Ratio Prot	c0.11	
v/s Ratio Perm		
v/c Ratio	0.22	
Uniform Delay, d1	16.3	
Progression Factor	0.97	
Incremental Delay, d2	0.2	
Delay (s)	16.0	
Level of Service	B	
Approach Delay (s)	20.4	
Approach LOS	C	

Intersection Summary

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	468	52	75	194	214	175	495	171	105	218	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	11	11	12	11	11
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.97	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	3457		1716	3008		1746	1784	1462	1795	1846	1521
Flt Permitted	0.95	1.00		0.95	1.00		0.56	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1824	3457		1716	3008		1036	1784	1462	436	1846	1521
Peak-hour factor, PHF	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. Flow (vph)	215	468	52	75	194	214	175	495	171	105	218	69
RTOR Reduction (vph)	0	7	0	0	184	0	0	0	100	0	0	0
Lane Group Flow (vph)	215	513	0	75	224	0	175	495	71	105	218	69
Confl. Peds. (#/hr)	16		16	6		6	20		20	35		35
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	17.4	23.0		6.7	12.3		36.6	31.0	31.0	36.6	27.9	45.3
Effective Green, g (s)	17.4	23.0		6.7	12.3		36.6	31.0	31.0	36.6	27.9	45.3
Actuated g/C Ratio	0.20	0.26		0.08	0.14		0.42	0.36	0.36	0.42	0.32	0.52
Clearance Time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	365	916		132	426		508	637	522	271	593	793
v/s Ratio Prot	0.12	c0.15		0.04	c0.07		c0.03	c0.28		0.02	0.12	0.02
v/s Ratio Perm							0.11		0.05	0.14		0.03
v/c Ratio	0.59	0.56		0.57	0.53		0.34	0.78	0.14	0.39	0.37	0.09
Uniform Delay, d1	31.5	27.5		38.7	34.5		16.2	24.8	18.9	17.1	22.7	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.4		3.3	0.5		0.1	5.4	0.0	0.3	0.1	0.0
Delay (s)	33.0	28.0		42.0	35.1		16.3	30.2	18.9	17.5	22.8	10.4
Level of Service	C	C		D	D		B	C	B	B	C	B
Approach Delay (s)		29.4			36.2			25.0			19.2	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	20.5
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	361	538	81	37	110	200	19	56	372	618	79	282
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%				3%			-2%			2%
Total Lost time (s)	4.5	4.5			5.0	5.0		5.0	5.0	5.0	4.5	4.5
Lane Util. Factor	1.00	0.95			0.97	0.95		1.00	1.00	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	0.99	1.00	1.00
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98			1.00	0.99		1.00	1.00	0.85	1.00	0.97
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1743	3383			3366	3448		1789	1900	1579	1740	3376
Flt Permitted	0.95	1.00			0.10	1.00		0.42	1.00	1.00	0.20	1.00
Satd. Flow (perm)	1743	3383			346	3448		800	1900	1579	375	3376
Peak-hour factor, PHF	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. Flow (vph)	361	538	81	37	110	200	19	56	372	618	79	282
RTOR Reduction (vph)	0	10	0	0	0	6	0	0	0	56	0	19
Lane Group Flow (vph)	361	609	0	0	147	213	0	56	372	562	79	337
Confl. Peds. (#/hr)	3		3	10	8		8	2		2	3	
Confl. Bikes (#/hr)										1		
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	6	0	6	2	0	2	0	4	4	6
Turn Type	Prot	NA		custom	Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA
Protected Phases	1	6			5	2		7	4	5!	3	8
Permitted Phases				5!				8		4	4	
Actuated Green, G (s)	28.9	23.2			41.0	35.3		36.8	29.8	70.8	36.8	28.8
Effective Green, g (s)	28.9	23.2			41.0	35.3		36.8	29.8	70.8	36.8	28.8
Actuated g/C Ratio	0.24	0.19			0.34	0.29		0.31	0.25	0.59	0.31	0.24
Clearance Time (s)	4.5	4.5			5.0	5.0		5.0	5.0	5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	419	654			118	1014		311	471	997	194	810
v/s Ratio Prot	0.21	c0.18				0.06		0.01	c0.20	0.19	0.02	c0.10
v/s Ratio Perm					c0.43			0.04		0.16	0.10	
v/c Ratio	0.86	0.93			1.25	0.21		0.18	0.79	0.56	0.41	0.42
Uniform Delay, d1	43.6	47.6			39.5	31.9		35.2	42.2	15.1	31.8	38.5
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	1.43	1.37
Incremental Delay, d2	15.9	19.9			163.0	0.0		0.1	12.7	0.4	0.4	1.1
Delay (s)	59.6	67.5			202.5	31.9		35.3	54.8	15.6	45.9	53.8
Level of Service	E	E			F	C		D	D	B	D	D
Approach Delay (s)		64.6				100.4			30.6			52.3
Approach LOS		E				F			C			D

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

Description: All Traffic Data - May 2, 2012

! Phase conflict between lane groups.

Movement	SBR
Lanes, Configurations	
Volume (vph)	74
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	74
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1384	242	0	337	183	0	549	436	0	355	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1584		3592	1560		3556	1513
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1584		3592	1560		3556	1513
Peak-hour factor, PHF	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. Flow (vph)	0	1384	242	0	337	183	0	549	436	0	355	125
RTOR Reduction (vph)	0	0	94	0	0	70	0	0	22	0	0	84
Lane Group Flow (vph)	0	1384	148	0	337	113	0	549	414	0	355	41
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		71.6	71.6		71.1	71.1		38.9	38.9		39.4	39.4
Effective Green, g (s)		71.6	70.6		71.1	71.1		38.9	38.9		39.4	39.4
Actuated g/C Ratio		0.60	0.59		0.59	0.59		0.32	0.32		0.33	0.33
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2062	904		2094	938		1164	505		1167	496
v/s Ratio Prot		c0.40			0.10			0.15			0.10	
v/s Ratio Perm			0.10			0.07			c0.27			0.03
v/c Ratio		0.67	0.16		0.16	0.12		0.47	0.82		0.30	0.08
Uniform Delay, d1		16.3	11.2		11.0	10.7		32.4	37.3		30.1	27.8
Progression Factor		1.00	1.00		1.49	3.45		0.87	0.88		1.49	4.12
Incremental Delay, d2		1.8	0.4		0.1	0.2		0.1	9.7		0.1	0.0
Delay (s)		18.0	11.6		16.6	37.3		28.3	42.5		44.9	114.6
Level of Service		B	B		B	D		C	D		D	F
Approach Delay (s)		17.1			23.9			34.6			63.1	
Approach LOS		B			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	0	1739	450	2	199	946	0	0	0	0	120	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%				0%			2%			2%
Total Lost time (s)		5.0	5.0		5.0	5.0					5.0	5.0
Lane Util. Factor		0.91	1.00		1.00	0.91					0.95	0.95
Frpb, ped/bikes		1.00	0.97		1.00	1.00					1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00					1.00	1.00
Frt		1.00	0.85		1.00	1.00					1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00					0.95	0.95
Satd. Flow (prot)		5046	1509		1758	5122					1667	1688
Flt Permitted		1.00	1.00		0.95	1.00					0.95	0.95
Satd. Flow (perm)		5046	1509		1758	5122					1667	1688
Peak-hour factor, PHF	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. Flow (vph)	0	1739	450	2	199	946	0	0	0	0	120	2
RTOR Reduction (vph)	0	0	195	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1739	255	0	201	946	0	0	0	0	61	61
Confl. Peds. (#/hr)	2		2	10							5	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	0	4	2	0	2	0	2	2	0
Turn Type		NA	Perm	Prot	Prot	NA					Split	NA
Protected Phases		2		1	1	6					4	4
Permitted Phases			2									
Actuated Green, G (s)		68.1	68.1		27.0	90.1					9.9	9.9
Effective Green, g (s)		68.1	68.1		27.0	90.1					9.9	9.9
Actuated g/C Ratio		0.57	0.57		0.22	0.75					0.08	0.08
Clearance Time (s)		5.0	5.0		5.0	5.0					5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0	2.0					2.0	2.0
Lane Grp Cap (vph)		2863	856		395	3845					137	139
v/s Ratio Prot		c0.34			c0.11	0.18					c0.04	0.04
v/s Ratio Perm			0.17									
v/c Ratio		0.61	0.30		0.51	0.25					0.45	0.44
Uniform Delay, d1		17.1	13.5		40.7	4.6					52.4	52.4
Progression Factor		1.48	6.33		1.00	1.00					1.00	1.00
Incremental Delay, d2		0.9	0.8		0.4	0.2					0.8	0.8
Delay (s)		26.2	86.3		41.1	4.7					53.3	53.2
Level of Service		C	F		D	A					D	D
Approach Delay (s)		38.6				11.1			0.0			45.6
Approach LOS		D				B			A			D

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
Description: 9/23/2014 - Traffic Count Consultant			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	419
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	5.0
Lane Util. Factor	0.76
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	3600
Flt Permitted	1.00
Satd. Flow (perm)	3600
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	419
RTOR Reduction (vph)	291
Lane Group Flow (vph)	128
Confl. Peds. (#/hr)	5
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	custom
Protected Phases	4 5
Permitted Phases	
Actuated Green, G (s)	19.9
Effective Green, g (s)	19.9
Actuated g/C Ratio	0.17
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	597
v/s Ratio Prot	0.04
v/s Ratio Perm	
v/c Ratio	0.21
Uniform Delay, d1	43.3
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	43.4
Level of Service	D
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	685	1004	0	815	422	282	1	725	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		0.99		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.95		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		4833		1651	1669	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		4833		1651	1669	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	685	1004	0	815	422	282	1	725	0	0	0
RTOR Reduction (vph)	0	0	0	0	70	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	685	1004	0	1167	0	141	142	699	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		44.7	120.0		44.7		65.3	65.3	65.3			
Effective Green, g (s)		44.7	120.0		44.7		65.3	65.3	64.3			
Actuated g/C Ratio		0.37	1.00		0.37		0.54	0.54	0.54			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		1879	1575		1800		898	908	821			
v/s Ratio Prot		0.14			0.24		0.09	0.09				
v/s Ratio Perm			c0.64						c0.46			
v/c Ratio		0.36	0.64		0.65		0.16	0.16	0.85			
Uniform Delay, d1		27.3	0.0		31.1		13.6	13.6	23.8			
Progression Factor		1.00	1.00		0.96		1.05	1.05	1.04			
Incremental Delay, d2		0.5	2.0		1.8		0.0	0.0	8.2			
Delay (s)		27.9	2.0		31.7		14.3	14.3	33.0			
Level of Service		C	A		C		B	B	C			
Approach Delay (s)		12.5			31.7			27.8			0.0	
Approach LOS		B			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
Description: 9/23/2014 - Traffic Count Consultant			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	1027	57	21	644	88	318	536	100	138	157	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1529	1770	3431		1755	1863	1512	1755	1863	1512
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)	1770	3525	1529	1770	3431		1755	1863	1512	1755	1863	1512
Peak-hour factor, PHF	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. Flow (vph)	217	1027	57	21	644	88	318	536	100	138	157	181
RTOR Reduction (vph)	0	0	19	0	9	0	0	0	69	0	0	161
Lane Group Flow (vph)	217	1027	38	21	723	0	318	536	31	138	157	20
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	16.9	45.8	82.5	4.0	32.9		36.7	36.7	36.7	13.5	13.5	13.5
Effective Green, g (s)	16.9	45.8	80.5	4.0	32.9		36.7	36.7	36.7	13.5	13.5	13.5
Actuated g/C Ratio	0.14	0.38	0.67	0.03	0.27		0.31	0.31	0.31	0.11	0.11	0.11
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	249	1345	1102	59	940		536	569	462	197	209	170
v/s Ratio Prot	0.12	c0.29	0.01	0.01	c0.21		0.18	c0.29		0.08	c0.08	
v/s Ratio Perm			0.01						0.02			0.01
v/c Ratio	0.87	0.76	0.03	0.36	0.77		0.59	0.94	0.07	0.70	0.75	0.12
Uniform Delay, d1	50.5	32.4	6.7	56.7	40.1		35.3	40.6	29.5	51.3	51.6	47.9
Progression Factor	1.35	1.17	3.28	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.5	3.5	0.0	1.3	6.0		1.2	23.9	0.0	8.8	12.6	0.1
Delay (s)	90.5	41.4	21.8	58.1	46.1		36.5	64.5	29.5	60.1	64.2	48.0
Level of Service	F	D	C	E	D		D	E	C	E	E	D
Approach Delay (s)		48.7			46.4			51.5			56.9	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	313	365	137	64	292	48	330	1433	107	8	34	562
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%			3%				-3%
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5		5.0	5.0			5.5	5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		0.97	0.91			1.00	0.91
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99			1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1733	1872	1539	1749	3458		3401	4956			1796	5134
Flt Permitted	0.44	1.00	1.00	0.24	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	804	1872	1539	437	3458		3401	4956			1796	5134
Peak-hour factor, PHF	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. Flow (vph)	313	365	137	64	292	48	330	1433	107	8	34	562
RTOR Reduction (vph)	0	0	102	0	13	0	0	5	0	0	0	0
Lane Group Flow (vph)	313	365	35	64	327	0	330	1535	0	0	42	562
Confl. Peds. (#/hr)	6		6	7		7	3		3	3	3	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	2	6	0	6	0	4
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	NA		Prot	Prot	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases	8		4	4								
Actuated Green, G (s)	35.9	30.6	30.6	35.9	25.4		15.4	56.0			7.6	48.2
Effective Green, g (s)	35.9	30.6	30.6	35.9	25.4		15.4	56.0			7.6	48.2
Actuated g/C Ratio	0.30	0.26	0.26	0.30	0.21		0.13	0.47			0.06	0.40
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5		5.0	5.0			5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	321	477	392	188	731		436	2312			113	2062
v/s Ratio Prot	c0.09	0.20		0.01	0.09		0.10	c0.31			c0.02	0.11
v/s Ratio Perm	c0.21		0.02	0.09								
v/c Ratio	0.98	0.77	0.09	0.34	0.45		0.76	0.66			0.37	0.27
Uniform Delay, d1	39.6	41.4	34.1	45.7	41.2		50.5	24.7			53.9	24.1
Progression Factor	1.14	1.06	3.42	1.12	1.02		1.10	1.44			1.01	1.01
Incremental Delay, d2	41.8	6.2	0.0	0.4	0.1		6.4	1.5			0.8	0.3
Delay (s)	86.7	50.1	116.5	51.5	42.3		62.1	37.2			55.1	24.6
Level of Service	F	D	F	D	D		E	D			E	C
Approach Delay (s)		75.3			43.8			41.6				24.2
Approach LOS		E			D			D				C

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	198
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	0.99
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1572
Flt Permitted	1.00
Satd. Flow (perm)	1572
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	198
RTOR Reduction (vph)	101
Lane Group Flow (vph)	97
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	pm+ov
Protected Phases	7
Permitted Phases	6
Actuated Green, G (s)	58.7
Effective Green, g (s)	58.7
Actuated g/C Ratio	0.49
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	768
v/s Ratio Prot	0.01
v/s Ratio Perm	0.05
v/c Ratio	0.13
Uniform Delay, d1	16.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	16.7
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	6	68	1222	103	423	832	101	2	197	707	762	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%				2%		
Total Lost time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91			0.97	0.86	0.86	0.97
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	0.99	0.99	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00			0.99	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.98			1.00	0.95	0.85	1.00
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	0.95
Satd. Flow (prot)		1737	4968		3369	4916			3264	4345	1294	3485
Flt Permitted		0.95	1.00		0.95	1.00			0.54	1.00	1.00	0.95
Satd. Flow (perm)		1737	4968		3369	4916			1863	4345	1294	3485
Peak-hour factor, PHF	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. Flow (vph)	6	68	1222	103	423	832	101	2	197	707	762	71
RTOR Reduction (vph)	0	0	7	0	0	11	0	0	0	87	42	0
Lane Group Flow (vph)	0	74	1318	0	423	922	0	0	199	1001	339	71
Confl. Peds. (#/hr)	5	5		5				10	3		3	2
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	2%	5%	5%	5%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	0	2	2	0	0
Turn Type	Prot	Prot	NA		Prot	NA		custom	Prot	NA	pm+ov	Prot
Protected Phases	7	7	4		3	8			5	2	3	1
Permitted Phases								5			2	
Actuated Green, G (s)		6.0	48.0		8.9	51.4			21.6	37.1	46.0	5.5
Effective Green, g (s)		6.0	48.0		8.9	51.4			21.6	37.1	46.0	5.5
Actuated g/C Ratio		0.05	0.40		0.07	0.43			0.18	0.31	0.38	0.05
Clearance Time (s)		4.5	5.0		5.0	5.0			5.0	5.0	5.0	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0			2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		86	1987		249	2105			335	1343	496	159
v/s Ratio Prot		0.04	c0.27		c0.13	0.19				c0.23	0.05	0.02
v/s Ratio Perm									0.11		0.21	
v/c Ratio		0.86	0.66		1.70	0.44			0.59	0.75	0.68	0.45
Uniform Delay, d1		56.6	29.4		55.5	24.1			45.2	37.2	30.9	55.8
Progression Factor		0.84	0.87		0.63	1.06			1.30	1.42	1.62	0.71
Incremental Delay, d2		47.6	1.5		316.0	0.1			1.6	1.7	2.6	0.7
Delay (s)		95.4	27.0		350.9	25.6			60.2	54.3	52.5	40.6
Level of Service		F	C		F	C			E	D	D	D
Approach Delay (s)			30.7			127.0				54.6		
Approach LOS			C			F				D		

Intersection Summary			
HCM 2000 Control Delay	66.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	263	72
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4967	
Flt Permitted	1.00	
Satd. Flow (perm)	4967	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	263	72
RTOR Reduction (vph)	51	0
Lane Group Flow (vph)	284	0
Confl. Peds. (#/hr)		2
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	21.0	
Effective Green, g (s)	21.0	
Actuated g/C Ratio	0.18	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	869	
v/s Ratio Prot	c0.06	
v/s Ratio Perm		
v/c Ratio	0.33	
Uniform Delay, d1	43.3	
Progression Factor	0.95	
Incremental Delay, d2	0.1	
Delay (s)	41.4	
Level of Service	D	
Approach Delay (s)	41.3	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	597	271	174	41	383	30	88	873	39	3	11	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%			2%				-2%
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0		4.5	4.5			5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95		0.97	0.91			1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.99			1.00	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	3470	1891	1594	1764	3515		3240	4756			1759	4921
Flt Permitted	0.95	1.00	1.00	0.38	1.00		0.95	1.00			0.25	1.00
Satd. Flow (perm)	3470	1891	1594	703	3515		3240	4756			467	4921
Peak-hour factor, PHF	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. Flow (vph)	597	271	174	41	383	30	88	873	39	3	11	567
RTOR Reduction (vph)	0	0	130	0	6	0	0	3	0	0	0	15
Lane Group Flow (vph)	597	271	44	41	407	0	88	909	0	0	14	642
Confl. Peds. (#/hr)				1		1				10		
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	2%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	0	2
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	NA		custom	D.P+P	NA
Protected Phases	7	4		3	8		5	2			1	6
Permitted Phases			4	4						1	2	
Actuated Green, G (s)	16.4	30.2	30.2	37.7	20.3		12.8	58.1			60.3	47.5
Effective Green, g (s)	16.4	30.2	30.2	37.7	20.3		13.8	59.1			60.3	47.5
Actuated g/C Ratio	0.14	0.25	0.25	0.31	0.17		0.12	0.49			0.50	0.40
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0		5.5	5.5			5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	474	475	401	287	594		372	2342			258	1947
v/s Ratio Prot	c0.17	0.14		0.01	c0.12		0.03	c0.19			0.00	c0.13
v/s Ratio Perm			0.03	0.04							0.03	
v/c Ratio	1.26	0.57	0.11	0.14	0.69		0.24	0.39			0.05	0.33
Uniform Delay, d1	51.8	39.2	34.5	37.6	46.8		48.3	19.1			15.3	25.2
Progression Factor	0.97	0.92	1.19	1.02	1.49		1.00	1.00			1.15	1.14
Incremental Delay, d2	131.3	0.9	0.0	0.1	2.6		0.1	0.5			0.0	0.4
Delay (s)	181.5	37.2	41.2	38.3	72.5		48.4	19.6			17.6	29.0
Level of Service	F	D	D	D	E		D	B			B	C
Approach Delay (s)		120.5			69.4			22.1				28.8
Approach LOS		F			E			C				C

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	90
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	90
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

8/7/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	432	365	44	36	144	86	3	56	1303	30	42	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			0%
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00	1.00		1.00	1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.94			1.00	1.00		1.00	1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1725	3360		1749	3187			3439	5068		1773	5108
Flt Permitted	0.61	1.00		0.41	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	1102	3360		758	3187			3439	5068		1773	5108
Peak-hour factor, PHF	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. Flow (vph)	432	365	44	36	144	86	3	56	1303	30	42	580
RTOR Reduction (vph)	0	9	0	0	65	0	0	0	2	0	0	0
Lane Group Flow (vph)	432	400	0	36	165	0	0	59	1331	0	42	580
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	2	4
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases	8			4								
Actuated Green, G (s)	46.2	32.0		46.7	29.7			8.0	47.5		6.3	45.8
Effective Green, g (s)	44.2	31.0		44.7	28.7			8.0	47.5		6.3	45.8
Actuated g/C Ratio	0.37	0.26		0.37	0.24			0.07	0.40		0.05	0.38
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0		5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	486	868		395	762			229	2006		93	1949
v/s Ratio Prot	c0.11	0.12		0.01	0.05			0.02	c0.26		c0.02	0.11
v/s Ratio Perm	c0.21			0.02								
v/c Ratio	0.89	0.46		0.09	0.22			0.26	0.66		0.45	0.30
Uniform Delay, d1	33.1	37.5		28.7	36.6			53.2	29.7		55.2	25.9
Progression Factor	1.28	0.96		1.39	1.44			0.71	0.52		1.16	1.41
Incremental Delay, d2	17.1	0.1		0.0	0.1			0.2	1.6		1.2	0.4
Delay (s)	59.3	36.0		39.8	52.7			37.9	17.0		65.2	36.7
Level of Service	E	D		D	D			D	B		E	D
Approach Delay (s)		48.0			50.9				17.9			61.7
Approach LOS		D			D				B			E

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/25/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	119
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	0.95
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1487
Flt Permitted	1.00
Satd. Flow (perm)	1487
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	119
RTOR Reduction (vph)	75
Lane Group Flow (vph)	44
Confl. Peds. (#/hr)	29
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	45.8
Effective Green, g (s)	44.8
Actuated g/C Ratio	0.37
Clearance Time (s)	5.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	555
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.08
Uniform Delay, d1	24.3
Progression Factor	7.50
Incremental Delay, d2	0.3
Delay (s)	182.3
Level of Service	F
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	6	5	3	51	8	64	8	15	1393	118	9	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.98	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.94		1.00	0.87			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1731	1660		1689	1493			1769	4954			1737
Flt Permitted	0.71	1.00		0.75	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1294	1660		1338	1493			1769	4954			1737
Peak-hour factor, PHF	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. Flow (vph)	6	5	3	51	8	64	8	15	1393	118	9	40
RTOR Reduction (vph)	0	3	0	0	58	0	0	0	5	0	0	0
Lane Group Flow (vph)	6	5	0	51	14	0	0	23	1506	0	0	49
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	13.4	8.6		13.4	12.2			4.2	78.8			8.8
Effective Green, g (s)	11.4	7.6		11.4	11.2			4.2	78.8			8.8
Actuated g/C Ratio	0.10	0.06		0.10	0.09			0.04	0.66			0.07
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	123	105		138	139			61	3253			127
v/s Ratio Prot	c0.00	0.00		c0.01	0.01			0.01	c0.30			c0.03
v/s Ratio Perm	0.00			c0.02								
v/c Ratio	0.05	0.05		0.37	0.10			0.38	0.46			0.39
Uniform Delay, d1	49.4	52.8		51.1	49.8			56.6	10.2			53.0
Progression Factor	1.00	1.00		1.15	2.05			0.82	1.43			0.69
Incremental Delay, d2	0.1	0.1		0.6	0.1			0.6	0.2			0.7
Delay (s)	49.4	52.9		59.5	102.3			47.1	14.7			37.3
Level of Service	D	D		E	F			D	B			D
Approach Delay (s)		51.4			84.6				15.2			
Approach LOS		D			F				B			

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	571	6
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	5096	
Flt Permitted	1.00	
Satd. Flow (perm)	5096	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	571	6
RTOR Reduction (vph)	1	0
Lane Group Flow (vph)	576	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	83.4	
Effective Green, g (s)	83.4	
Actuated g/C Ratio	0.70	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	3541	
v/s Ratio Prot	0.11	
v/s Ratio Perm		
v/c Ratio	0.16	
Uniform Delay, d1	6.3	
Progression Factor	0.26	
Incremental Delay, d2	0.1	
Delay (s)	1.7	
Level of Service	A	
Approach Delay (s)	4.5	
Approach LOS	A	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	118	283	1523	10	1	170	489	137	5	99	1171	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	1.00			1.00	1.00	0.85		1.00	0.97	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5255			3467	5081	1559		3377	4927	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5255			3467	5081	1559		3377	4927	
Peak-hour factor, PHF	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. Flow (vph)	118	283	1523	10	1	170	489	137	5	99	1171	238
RTOR Reduction (vph)	0	0	1	0	0	0	0	90	0	0	26	0
Lane Group Flow (vph)	0	401	1532	0	0	171	489	47	0	104	1383	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		10.5	41.8			10.2	41.0	41.0		7.9	39.0	
Effective Green, g (s)		10.5	41.8			10.2	41.0	41.0		7.9	39.0	
Actuated g/C Ratio		0.09	0.35			0.08	0.34	0.34		0.07	0.32	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		312	1830			294	1736	532		222	1601	
v/s Ratio Prot		c0.11	c0.29			c0.05	0.10			0.03	c0.28	
v/s Ratio Perm								0.03				
v/c Ratio		1.29	0.84			0.58	0.28	0.09		0.47	0.86	
Uniform Delay, d1		54.8	36.0			52.8	28.8	26.8		54.0	38.0	
Progression Factor		0.92	0.88			1.18	1.62	7.08		0.80	1.26	
Incremental Delay, d2		149.7	4.6			1.9	0.4	0.3		0.5	5.3	
Delay (s)		200.1	36.1			64.1	46.9	190.1		43.7	53.4	
Level of Service		F	D			E	D	F		D	D	
Approach Delay (s)			70.1				75.2				52.7	
Approach LOS			E				E				D	

Intersection Summary			
HCM 2000 Control Delay	60.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	98.9%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	4	127	449	71
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.97
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1498
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1498
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	127	449	71
RTOR Reduction (vph)	0	0	0	48
Lane Group Flow (vph)	0	131	449	23
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		8.5	39.6	39.6
Effective Green, g (s)		8.5	39.6	39.6
Actuated g/C Ratio		0.07	0.33	0.33
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		243	1694	494
v/s Ratio Prot		c0.04	0.09	
v/s Ratio Perm				0.02
v/c Ratio		0.54	0.27	0.05
Uniform Delay, d1		53.9	29.5	27.4
Progression Factor		1.02	0.95	1.00
Incremental Delay, d2		1.1	0.4	0.2
Delay (s)		56.3	28.5	27.5
Level of Service		E	C	C
Approach Delay (s)			34.0	
Approach LOS			C	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	216	1659	45	30	10	762	58	8	4	2	44	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	11	11	12	11	11
Grade (%)		-3%				2%			-1%			-3%
Total Lost time (s)	5.0	5.0			4.5	4.5		4.5	5.0		5.0	5.5
Lane Util. Factor	0.97	0.91			0.97	0.91		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	0.99		1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		0.99	1.00
Frt	1.00	1.00			1.00	0.99		1.00	0.95		1.00	0.88
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3402	4989			3318	4823		1703	1727		1707	1589
Flt Permitted	0.95	1.00			0.95	1.00		0.72	1.00		0.75	1.00
Satd. Flow (perm)	3402	4989			3318	4823		1286	1727		1355	1589
Peak-hour factor, PHF	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. Flow (vph)	216	1659	45	30	10	762	58	8	4	2	44	12
RTOR Reduction (vph)	0	2	0	0	0	5	0	0	2	0	0	42
Lane Group Flow (vph)	216	1702	0	0	40	815	0	8	4	0	44	19
Confl. Peds. (#/hr)	7		7	18	18		18	4		4	12	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	4	0	4	0	4	0	4	4	0
Turn Type	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P	NA
Protected Phases	5	2		1	1	6		7	4		3	8
Permitted Phases								8			4	
Actuated Green, G (s)	10.4	74.4			8.4	72.4		18.7	12.6		18.7	17.0
Effective Green, g (s)	10.4	74.4			8.4	72.4		17.7	12.1		17.7	16.5
Actuated g/C Ratio	0.09	0.62			0.07	0.60		0.15	0.10		0.15	0.14
Clearance Time (s)	5.0	5.0			4.5	4.5		4.0	4.5		4.5	5.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	294	3093			232	2909		193	174		216	218
v/s Ratio Prot	c0.06	c0.34			0.01	c0.17		0.00	0.00		c0.01	0.01
v/s Ratio Perm								0.01			c0.02	
v/c Ratio	0.73	0.55			0.17	0.28		0.04	0.02		0.20	0.09
Uniform Delay, d1	53.5	13.2			52.5	11.4		43.9	48.6		44.8	45.2
Progression Factor	0.94	1.72			0.76	0.53		1.00	1.00		1.02	1.29
Incremental Delay, d2	4.7	0.4			0.1	0.2		0.0	0.0		0.2	0.1
Delay (s)	55.0	23.0			40.2	6.3		43.9	48.6		45.7	58.4
Level of Service	E	C			D	A		D	D		D	E
Approach Delay (s)		26.6				7.9			45.9			53.1
Approach LOS		C				A			D			D

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	49
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	49
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	12
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1382	23	158	849	210	36	333	398	446	99	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-5%			1%			0%	
Total Lost time (s)	4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0	
Lane Util. Factor	0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3240	4903		3483	5054		1733	1735	1506	3359	1640	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3240	4903		3483	5054		1733	1735	1506	3359	1640	
Peak-hour factor, PHF	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. Flow (vph)	136	1382	23	158	849	210	36	333	398	446	99	81
RTOR Reduction (vph)	0	1	0	0	32	0	0	0	38	0	28	0
Lane Group Flow (vph)	136	1404	0	158	1027	0	36	333	360	446	152	0
Confl. Peds. (#/hr)	25		25	10		10	17		17	4		4
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%	3%
Bus Blockages (#/hr)	16	6	10	10	4	16	4	16	6	6	10	4
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases									2			
Actuated Green, G (s)	10.5	45.8		10.5	45.8		13.4	27.4	37.9	16.3	30.3	
Effective Green, g (s)	10.5	45.8		10.5	45.8		12.9	26.9	37.9	15.8	29.8	
Actuated g/C Ratio	0.09	0.38		0.09	0.38		0.11	0.22	0.32	0.13	0.25	
Clearance Time (s)	4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	283	1871		304	1928		186	388	544	442	407	
v/s Ratio Prot	0.04	c0.29		0.05	0.20		0.02	c0.19	c0.06	c0.13	0.09	
v/s Ratio Perm									0.18			
v/c Ratio	0.48	0.75		0.52	0.53		0.19	0.86	0.66	1.01	0.37	
Uniform Delay, d1	52.2	32.1		52.3	28.8		48.8	44.7	35.5	52.1	37.4	
Progression Factor	0.96	1.07		0.61	0.61		1.10	1.02	1.04	1.04	1.19	
Incremental Delay, d2	0.5	2.7		0.5	0.8		0.2	16.3	2.3	43.8	0.2	
Delay (s)	50.6	37.0		32.5	18.4		53.8	62.1	39.2	97.9	44.7	
Level of Service	D	D		C	B		D	E	D	F	D	
Approach Delay (s)		38.2			20.2			49.9			82.6	
Approach LOS		D			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	160	247	25	121	45	11	26	44	1420	256	1	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	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	0.97			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1101	3375	1774			1773	4986			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1101	3375	1774			1773	4986			1730
Peak-hour factor, PHF	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. Flow (vph)	160	247	25	121	45	11	26	44	1420	256	1	16
RTOR Reduction (vph)	0	0	20	0	9	0	0	0	16	0	0	0
Lane Group Flow (vph)	160	247	5	121	47	0	0	70	1660	0	0	17
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	15.8	23.7	23.7	8.3	16.2			7.6	65.2			2.8
Effective Green, g (s)	15.3	23.2	23.2	7.8	15.7			7.6	65.2			2.8
Actuated g/C Ratio	0.13	0.19	0.19	0.06	0.13			0.06	0.54			0.02
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	226	350	212	219	232			112	2709			40
v/s Ratio Prot	c0.09	c0.14		0.04	0.03			c0.04	c0.33			0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.71	0.71	0.02	0.55	0.20			0.62	0.61			0.42
Uniform Delay, d1	50.2	45.2	39.2	54.4	46.6			54.8	18.8			57.8
Progression Factor	1.00	1.00	1.00	0.91	0.84			1.00	1.00			1.13
Incremental Delay, d2	8.0	5.2	0.0	1.7	0.2			7.6	1.0			2.5
Delay (s)	58.2	50.4	39.2	51.4	39.1			62.4	19.8			67.9
Level of Service	E	D	D	D	D			E	B			E
Approach Delay (s)		52.7			47.5				21.5			
Approach LOS		D			D				C			

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 9/24/2014 -Traffic Count Consultant			

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	546	64
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	4994	
Flt Permitted	1.00	
Satd. Flow (perm)	4994	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	546	64
RTOR Reduction (vph)	9	0
Lane Group Flow (vph)	601	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	60.4	
Effective Green, g (s)	60.4	
Actuated g/C Ratio	0.50	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2513	
v/s Ratio Prot	0.12	
v/s Ratio Perm		
v/c Ratio	0.24	
Uniform Delay, d1	16.8	
Progression Factor	0.39	
Incremental Delay, d2	0.2	
Delay (s)	6.7	
Level of Service	A	
Approach Delay (s)	8.4	
Approach LOS	A	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	263	434	143	155	624	181	29	250	864	70	76	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99			1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.96		1.00	0.97			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1735	3275		1755	3279			3439	5000			1773
Flt Permitted	0.11	1.00		0.24	1.00			0.95	1.00			0.95
Satd. Flow (perm)	200	3275		435	3279			3439	5000			1773
Peak-hour factor, PHF	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. Flow (vph)	263	434	143	155	624	181	29	250	864	70	76	134
RTOR Reduction (vph)	0	25	0	0	19	0	0	0	6	0	0	0
Lane Group Flow (vph)	263	552	0	155	786	0	0	279	928	0	0	210
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	29
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	56.8	34.9		57.3	37.5			14.0	43.0			20.2
Effective Green, g (s)	54.8	33.9		55.3	36.5			14.0	43.0			20.2
Actuated g/C Ratio	0.39	0.24		0.39	0.26			0.10	0.31			0.14
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	278	793		373	854			343	1535			255
v/s Ratio Prot	c0.12	0.17		0.06	0.24			c0.08	0.19			0.12
v/s Ratio Perm	c0.25			0.10								
v/c Ratio	0.95	0.70		0.42	0.92			0.81	0.60			0.82
Uniform Delay, d1	40.5	48.4		42.7	50.3			61.7	41.3			58.2
Progression Factor	0.98	1.06		1.21	1.13			0.59	0.38			1.27
Incremental Delay, d2	38.7	2.1		0.3	14.7			11.6	1.6			17.7
Delay (s)	78.4	53.5		52.0	71.7			47.8	17.3			91.3
Level of Service	E	D		D	E			D	B			F
Approach Delay (s)		61.3			68.6				24.3			
Approach LOS		E			E				C			

Intersection Summary			
HCM 2000 Control Delay	53.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 9/25/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1486	472
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	0%	
Total Lost time (s)	5.0	6.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.94
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5108	1476
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5108	1476
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1486	472
RTOR Reduction (vph)	0	220
Lane Group Flow (vph)	1486	252
Confl. Peds. (#/hr)		29
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	4	4
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	49.2	49.2
Effective Green, g (s)	49.2	48.2
Actuated g/C Ratio	0.35	0.34
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	1795	508
v/s Ratio Prot	c0.29	
v/s Ratio Perm		0.17
v/c Ratio	0.83	0.50
Uniform Delay, d1	41.5	36.3
Progression Factor	1.13	1.94
Incremental Delay, d2	4.4	3.3
Delay (s)	51.4	73.9
Level of Service	D	E
Approach Delay (s)	60.2	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	71	58	98	199	78	127	79	201	1114	131	46	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.91		1.00	0.91			1.00	0.98			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1749	1573		1696	1572			1769	4918			1737
Flt Permitted	0.38	1.00		0.54	1.00			0.95	1.00			0.95
Satd. Flow (perm)	694	1573		966	1572			1769	4918			1737
Peak-hour factor, PHF	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. Flow (vph)	71	58	98	199	78	127	79	201	1114	131	46	104
RTOR Reduction (vph)	0	45	0	0	47	0	0	0	9	0	0	0
Lane Group Flow (vph)	71	111	0	199	158	0	0	280	1236	0	0	150
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	34.3	27.7		34.3	22.7			24.5	67.7			19.0
Effective Green, g (s)	32.3	26.7		32.3	21.7			24.5	67.7			19.0
Actuated g/C Ratio	0.23	0.19		0.23	0.15			0.18	0.48			0.14
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	239	299		252	243			309	2378			235
v/s Ratio Prot	c0.02	0.07		c0.03	0.10			c0.16	0.25			0.09
v/s Ratio Perm	0.05			c0.15								
v/c Ratio	0.30	0.37		0.79	0.65			0.91	0.52			0.64
Uniform Delay, d1	51.6	49.3		54.1	55.6			56.6	24.9			57.2
Progression Factor	1.00	1.00		0.69	0.72			0.83	1.59			0.69
Incremental Delay, d2	0.3	0.3		13.9	4.4			19.7	0.5			2.8
Delay (s)	51.8	49.6		51.2	44.6			66.7	40.0			42.5
Level of Service	D	D		D	D			E	D			D
Approach Delay (s)		50.3			47.9				44.9			
Approach LOS		D			D				D			

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 9/24/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1709	54
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	1.00	
Flt Protected	1.00	
Satd. Flow (prot)	5069	
Flt Permitted	1.00	
Satd. Flow (perm)	5069	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1709	54
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1761	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	62.2	
Effective Green, g (s)	62.2	
Actuated g/C Ratio	0.44	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2252	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.78	
Uniform Delay, d1	33.1	
Progression Factor	0.48	
Incremental Delay, d2	1.9	
Delay (s)	17.8	
Level of Service	B	
Approach Delay (s)	19.7	
Approach LOS	B	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	83	404	1035	63	4	447	1639	213	24	190	812	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	1.00			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.99			1.00	1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5201			3467	5081	1555		3377	4807	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5201			3467	5081	1555		3377	4807	
Peak-hour factor, PHF	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. Flow (vph)	83	404	1035	63	4	447	1639	213	24	190	812	337
RTOR Reduction (vph)	0	0	5	0	0	0	0	92	0	0	53	0
Lane Group Flow (vph)	0	487	1093	0	0	451	1639	121	0	214	1096	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		19.5	44.5			21.2	45.7	45.7		12.4	39.0	
Effective Green, g (s)		19.5	44.5			21.2	45.7	45.7		12.4	39.0	
Actuated g/C Ratio		0.14	0.32			0.15	0.33	0.33		0.09	0.28	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		497	1653			525	1658	507		299	1339	
v/s Ratio Prot		c0.14	0.21			0.13	c0.32			0.06	c0.23	
v/s Ratio Perm								0.08				
v/c Ratio		0.98	0.66			0.86	0.99	0.24		0.72	0.82	
Uniform Delay, d1		60.1	41.2			57.9	46.9	34.5		62.1	47.2	
Progression Factor		0.82	0.73			1.24	1.39	2.44		0.73	1.18	
Incremental Delay, d2		33.4	2.0			8.7	15.3	0.7		4.8	4.1	
Delay (s)		82.4	32.2			80.8	80.4	84.8		50.0	59.8	
Level of Service		F	C			F	F	F		D	E	
Approach Delay (s)			47.6				80.9				58.3	
Approach LOS			D				F				E	

Intersection Summary			
HCM 2000 Control Delay	60.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	106.6%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	22	307	1336	353
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1493
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1493
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	22	307	1336	353
RTOR Reduction (vph)	0	0	0	99
Lane Group Flow (vph)	0	329	1336	254
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		14.8	41.4	41.4
Effective Green, g (s)		14.8	41.4	41.4
Actuated g/C Ratio		0.11	0.30	0.30
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		363	1518	441
v/s Ratio Prot		0.10	c0.26	
v/s Ratio Perm				0.17
v/c Ratio		0.91	0.88	0.58
Uniform Delay, d1		61.9	46.9	41.9
Progression Factor		0.88	0.85	0.92
Incremental Delay, d2		17.7	5.1	3.5
Delay (s)		72.2	45.0	42.1
Level of Service		E	D	D
Approach Delay (s)			48.9	
Approach LOS			D	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	8	306	1246	74	32	106	1811	112	129	83	64	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	11	11	12	11	11	12	11
Grade (%)			-3%				2%			-1%		
Total Lost time (s)		5.0	5.0			4.5	4.5		4.5	5.0		5.0
Lane Util. Factor		0.97	0.91			0.97	0.91		1.00	1.00		1.00
Frpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	0.99		1.00
Flpb, ped/bikes		1.00	1.00			1.00	1.00		1.00	1.00		0.99
Frt		1.00	0.99			1.00	0.99		1.00	0.93		1.00
Flt Protected		0.95	1.00			0.95	1.00		0.95	1.00		0.95
Satd. Flow (prot)		3402	4963			3318	4833		1708	1695		1715
Flt Permitted		0.95	1.00			0.95	1.00		0.16	1.00		0.51
Satd. Flow (perm)		3402	4963			3318	4833		281	1695		913
Peak-hour factor, PHF	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. Flow (vph)	8	306	1246	74	32	106	1811	112	129	83	64	205
RTOR Reduction (vph)	0	0	4	0	0	0	4	0	0	22	0	0
Lane Group Flow (vph)	0	314	1316	0	0	138	1919	0	129	125	0	205
Confl. Peds. (#/hr)	7	7		7	18	18		18	4		4	12
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	4	0	4	0	4	0	4	0	4	0	4	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P
Protected Phases	5	5	2		1	1	6		7	4		3
Permitted Phases									8			4
Actuated Green, G (s)		15.3	76.2			10.5	71.4		34.8	23.3		34.8
Effective Green, g (s)		15.3	76.2			10.5	71.4		33.8	22.8		33.8
Actuated g/C Ratio		0.11	0.54			0.08	0.51		0.24	0.16		0.24
Clearance Time (s)		5.0	5.0			4.5	4.5		4.0	4.5		4.5
Vehicle Extension (s)		2.0	2.0			2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		371	2701			248	2464		151	276		283
v/s Ratio Prot		c0.09	0.27			0.04	c0.40		0.05	0.07		0.06
v/s Ratio Perm									0.16			c0.12
v/c Ratio		0.85	0.49			0.56	0.78		0.85	0.45		0.72
Uniform Delay, d1		61.2	19.8			62.5	27.9		61.9	53.0		47.2
Progression Factor		1.02	1.14			0.71	0.42		1.00	1.00		1.05
Incremental Delay, d2		10.8	0.4			1.1	1.9		33.7	0.4		7.5
Delay (s)		73.3	22.9			45.5	13.5		95.6	53.4		57.3
Level of Service		E	C			D	B		F	D		E
Approach Delay (s)			32.6				15.7			73.1		
Approach LOS			C				B			E		

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		
Description: 9/24/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	81	271
Ideal Flow (vphpl)	1900	1900
Lane Width	11	12
Grade (%)	-3%	
Total Lost time (s)	5.5	
Lane Util. Factor	1.00	
Frpb, ped/bikes	0.98	
Flpb, ped/bikes	1.00	
Frt	0.88	
Flt Protected	1.00	
Satd. Flow (prot)	1597	
Flt Permitted	1.00	
Satd. Flow (perm)	1597	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	81	271
RTOR Reduction (vph)	92	0
Lane Group Flow (vph)	260	0
Confl. Peds. (#/hr)		12
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	0	4
Turn Type	NA	
Protected Phases	8	
Permitted Phases		
Actuated Green, G (s)	26.1	
Effective Green, g (s)	25.6	
Actuated g/C Ratio	0.18	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	292	
v/s Ratio Prot	c0.16	
v/s Ratio Perm		
v/c Ratio	0.89	
Uniform Delay, d1	55.9	
Progression Factor	0.94	
Incremental Delay, d2	26.4	
Delay (s)	78.7	
Level of Service	E	
Approach Delay (s)	70.8	
Approach LOS	E	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	7	247	1230	57	649	1610	361	73	189	277	581	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.95
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3240	4874		3483	5066		1733	1735	1514	3359	1681
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3240	4874		3483	5066		1733	1735	1514	3359	1681
Peak-hour factor, PHF	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. Flow (vph)	7	247	1230	57	649	1610	361	73	189	277	581	364
RTOR Reduction (vph)	0	0	4	0	0	24	0	0	0	58	0	12
Lane Group Flow (vph)	0	254	1283	0	649	1947	0	73	189	219	581	513
Confl. Peds. (#/hr)	25	25		25	10		10	17		17	4	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		10.5	40.3		25.5	55.3		9.1	24.1	49.6	30.1	45.1
Effective Green, g (s)		10.5	40.3		25.5	55.3		8.6	23.6	49.6	29.6	44.6
Actuated g/C Ratio		0.08	0.29		0.18	0.39		0.06	0.17	0.35	0.21	0.32
Clearance Time (s)		4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		243	1403		634	2001		106	292	595	710	535
v/s Ratio Prot		0.08	0.26		c0.19	c0.38		0.04	0.11	0.07	c0.17	c0.31
v/s Ratio Perm										0.08		
v/c Ratio		1.05	0.91		1.02	0.97		0.69	0.65	0.37	0.82	0.96
Uniform Delay, d1		64.8	48.2		57.2	41.6		64.4	54.3	33.6	52.6	46.8
Progression Factor		1.01	0.92		0.77	0.79		1.21	0.99	0.96	1.09	1.06
Incremental Delay, d2		69.0	10.4		40.2	13.8		13.7	3.7	0.1	6.8	28.0
Delay (s)		134.4	54.8		84.2	46.8		91.8	57.3	32.5	64.3	77.5
Level of Service		F	D		F	D		F	E	C	E	E
Approach Delay (s)			68.0			56.1			49.2			70.6
Approach LOS			E			E			D			E

Intersection Summary			
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	161
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	161
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	130	190	134	615	309	26	162	165	1233	228	49	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99			1.00
Flpb, ped/bikes	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	0.99			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1097	3375	1813			1773	4980			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1097	3375	1813			1773	4980			1730
Peak-hour factor, PHF	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. Flow (vph)	130	190	134	615	309	26	162	165	1233	228	49	136
RTOR Reduction (vph)	0	0	76	0	2	0	0	0	16	0	0	0
Lane Group Flow (vph)	130	190	58	615	333	0	0	327	1445	0	0	185
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	14.1	22.3	22.3	23.0	31.2			21.0	58.3			16.4
Effective Green, g (s)	13.6	21.8	21.8	22.5	30.7			21.0	58.3			16.4
Actuated g/C Ratio	0.10	0.16	0.16	0.16	0.22			0.15	0.42			0.12
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	172	282	170	542	397			265	2073			202
v/s Ratio Prot	0.07	0.10		c0.18	c0.18			c0.18	c0.29			0.11
v/s Ratio Perm			0.05									
v/c Ratio	0.76	0.67	0.34	1.13	0.84			1.23	0.70			0.92
Uniform Delay, d1	61.6	55.7	52.7	58.8	52.3			59.5	33.6			61.1
Progression Factor	1.00	1.00	1.00	0.84	0.99			1.00	1.00			1.38
Incremental Delay, d2	15.3	4.9	0.4	81.4	13.7			133.5	2.0			25.8
Delay (s)	76.9	60.7	53.1	130.7	65.3			193.0	35.6			110.4
Level of Service	E	E	D	F	E			F	D			F
Approach Delay (s)		63.1			107.6				64.4			
Approach LOS		E			F				E			

Intersection Summary			
HCM 2000 Control Delay	59.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1424	310
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4920	
Flt Permitted	1.00	
Satd. Flow (perm)	4920	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1424	310
RTOR Reduction (vph)	22	0
Lane Group Flow (vph)	1712	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	53.7	
Effective Green, g (s)	53.7	
Actuated g/C Ratio	0.38	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1887	
v/s Ratio Prot	c0.35	
v/s Ratio Perm		
v/c Ratio	0.91	
Uniform Delay, d1	40.8	
Progression Factor	0.41	
Incremental Delay, d2	4.5	
Delay (s)	21.2	
Level of Service	C	
Approach Delay (s)	29.8	
Approach LOS	C	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	361	54	302	186	62	33	299	124	32	803	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1826		1770	1793		1770	1781		1770	1812	
Flt Permitted	0.61	1.00		0.11	1.00		0.06	1.00		0.39	1.00	
Satd. Flow (perm)	1127	1826		201	1793		107	1781		729	1812	
Peak-hour factor, PHF	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. Flow (vph)	10	361	54	302	186	62	33	299	124	32	803	179
RTOR Reduction (vph)	0	4	0	0	7	0	0	10	0	0	6	0
Lane Group Flow (vph)	10	411	0	302	241	0	33	413	0	32	976	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	33.2	32.0		52.0	45.8		73.0	69.4		73.0	69.4	
Effective Green, g (s)	33.2	32.0		52.0	45.8		73.0	69.4		73.0	69.4	
Actuated g/C Ratio	0.24	0.23		0.37	0.33		0.52	0.50		0.52	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	272	417		242	586		98	882		406	898	
v/s Ratio Prot	0.00	0.23		c0.13	0.13		c0.01	0.23		0.00	c0.54	
v/s Ratio Perm	0.01			c0.33			0.17			0.04		
v/c Ratio	0.04	0.99		1.25	0.41		0.34	0.47		0.08	1.09	
Uniform Delay, d1	41.0	53.8		41.0	36.6		31.9	23.2		17.4	35.3	
Progression Factor	1.00	1.00		1.00	1.00		0.73	0.76		1.00	1.00	
Incremental Delay, d2	0.0	39.9		141.2	0.2		0.6	1.6		0.0	56.6	
Delay (s)	41.0	93.7		182.1	36.8		24.1	19.1		17.4	91.9	
Level of Service	D	F		F	D		C	B		B	F	
Approach Delay (s)		92.5			116.6			19.5			89.6	
Approach LOS		F			F			B			F	

Intersection Summary			
HCM 2000 Control Delay	83.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	157	1027	413	273	679	66	292	355	93	75	659	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-3%			0%			0%			-3%	
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.92	1.00	0.99		1.00	1.00	0.95	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	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	3578	1475	1770	3439		3406	1855	1493	1782	1831	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1789	3578	1475	1770	3439		3406	1855	1493	1782	1831	
Peak-hour factor, PHF	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. Flow (vph)	157	1027	413	273	679	66	292	355	93	75	659	125
RTOR Reduction (vph)	0	0	165	0	5	0	0	0	57	0	5	0
Lane Group Flow (vph)	157	1027	248	273	740	0	292	355	36	75	779	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	1	2	0	0	4	1	4	1	2	2	0	4
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	15.0	37.0	37.0	20.0	42.0		11.0	53.7	53.7	9.3	52.0	
Effective Green, g (s)	15.0	37.0	36.0	20.0	42.0		11.0	53.7	53.7	9.3	52.0	
Actuated g/C Ratio	0.11	0.26	0.26	0.14	0.30		0.08	0.38	0.38	0.07	0.37	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	191	945	379	252	1031		267	711	572	118	680	
v/s Ratio Prot	0.09	c0.29		c0.15	0.22		c0.09	0.19		0.04	c0.43	
v/s Ratio Perm			0.17						0.02			
v/c Ratio	0.82	1.09	0.65	1.08	0.72		1.09	0.50	0.06	0.64	1.15	
Uniform Delay, d1	61.2	51.5	46.4	60.0	43.7		64.5	32.9	27.3	63.7	44.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.9	55.8	8.5	80.7	4.3		82.4	0.2	0.0	8.0	82.1	
Delay (s)	84.1	107.3	55.0	140.7	48.0		146.9	33.1	27.3	71.7	126.1	
Level of Service	F	F	D	F	D		F	C	C	E	F	
Approach Delay (s)		91.5			72.9			77.3			121.4	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	90.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		
Description: Mils272			
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	421	672	509	570	1424	616
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	421	672	509	570	1424	616
RTOR Reduction (vph)	0	179	0	0	0	56
Lane Group Flow (vph)	421	493	509	570	1424	560
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	27.0	27.0	17.0	103.0	81.0	81.0
Effective Green, g (s)	27.0	27.0	17.0	103.0	81.0	81.0
Actuated g/C Ratio	0.19	0.19	0.12	0.74	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	662	305	416	1370	1077	915
v/s Ratio Prot	0.12		c0.15	0.31	c0.76	
v/s Ratio Perm		c0.31				0.35
v/c Ratio	0.64	1.62	1.22	0.42	1.32	0.61
Uniform Delay, d1	52.0	56.5	61.5	7.0	29.5	19.3
Progression Factor	1.00	1.00	1.00	1.00	0.75	0.59
Incremental Delay, d2	1.5	291.8	120.4	0.9	150.2	2.4
Delay (s)	53.5	348.3	181.9	8.0	172.4	13.9
Level of Service	D	F	F	A	F	B
Approach Delay (s)	234.7			90.0	124.5	
Approach LOS	F			F	F	

Intersection Summary			
HCM 2000 Control Delay	144.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	124.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	38	45	20	598	50	322	34	14	887	570	6	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	14	12	12	11	12	12	12	12	12	12	11
Grade (%)		14%			-7%				-2%			
Total Lost time (s)		6.0		5.5	5.5	5.5		5.5	5.5			5.0
Lane Util. Factor		1.00		0.95	0.95	1.00		1.00	0.91			0.97
Frpb, ped/bikes		1.00		1.00	1.00	0.97		1.00	0.98			1.00
Flpb, ped/bikes		1.00		1.00	1.00	1.00		1.00	1.00			1.00
Frt		0.97		1.00	1.00	0.85		1.00	0.94			1.00
Flt Protected		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (prot)		1759		1694	1715	1568		1805	4748			3318
Flt Permitted		0.98		0.95	0.96	1.00		0.95	1.00			0.95
Satd. Flow (perm)		1759		1694	1715	1568		1805	4748			3318
Peak-hour factor, PHF	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. Flow (vph)	38	45	20	598	50	322	34	14	887	570	6	525
RTOR Reduction (vph)	0	0	0	0	0	249	0	0	66	0	0	0
Lane Group Flow (vph)	0	103	0	323	325	73	0	48	1391	0	0	531
Confl. Peds. (#/hr)	10		10	13		13	22	22		22	18	18
Confl. Bikes (#/hr)						2				1		
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	0	9	9	0	6	9	0	6	0	6	0
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA		Prot	Prot
Protected Phases	7	7		8	8		5	5	2		1	1
Permitted Phases						8						
Actuated Green, G (s)		22.8		31.7	31.7	31.7		6.6	52.0			11.5
Effective Green, g (s)		21.8		31.7	31.7	31.7		7.1	52.5			12.0
Actuated g/C Ratio		0.16		0.23	0.23	0.23		0.05	0.38			0.09
Clearance Time (s)		5.0		5.5	5.5	5.5		6.0	6.0			5.5
Vehicle Extension (s)		2.0		2.0	2.0	2.0		2.0	2.0			2.0
Lane Grp Cap (vph)		273		383	388	355		91	1780			284
v/s Ratio Prot		c0.06		c0.19	0.19			0.03	0.29			c0.16
v/s Ratio Perm						0.05						
v/c Ratio		0.38		0.84	0.84	0.21		0.53	0.88dr			1.87
Uniform Delay, d1		53.0		51.8	51.7	43.9		64.8	38.7			64.0
Progression Factor		1.00		1.03	1.03	2.82		1.01	0.90			0.90
Incremental Delay, d2		0.3		14.8	13.9	0.1		2.5	3.4			404.1
Delay (s)		53.3		68.2	67.2	123.8		68.1	38.4			461.8
Level of Service		D		E	E	F		E	D			F
Approach Delay (s)		53.3			86.3				39.3			
Approach LOS		D			F				D			

Intersection Summary			
HCM 2000 Control Delay	121.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	2154	133
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	4956	
Flt Permitted	1.00	
Satd. Flow (perm)	4956	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	2154	133
RTOR Reduction (vph)	4	0
Lane Group Flow (vph)	2283	0
Confl. Peds. (#/hr)		18
Confl. Bikes (#/hr)		4
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	9	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	56.9	
Effective Green, g (s)	57.4	
Actuated g/C Ratio	0.41	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2031	
v/s Ratio Prot	c0.46	
v/s Ratio Perm		
v/c Ratio	1.12	
Uniform Delay, d1	41.3	
Progression Factor	1.24	
Incremental Delay, d2	62.8	
Delay (s)	114.1	
Level of Service	F	
Approach Delay (s)	179.6	
Approach LOS	F	

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	515	247	426	587	122	147	344	214	333	489	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	11	11	12	11	11
Grade (%)		-5%			8%			3%			-3%	
Total Lost time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1824	3283		1716	3212		1760	1784	1444	1794	1846	1508
Flt Permitted	0.95	1.00		0.95	1.00		0.10	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	1824	3283		1716	3212		190	1784	1444	342	1846	1508
Peak-hour factor, PHF	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. Flow (vph)	265	515	247	426	587	122	147	344	214	333	489	285
RTOR Reduction (vph)	0	42	0	0	14	0	0	0	133	0	0	0
Lane Group Flow (vph)	265	720	0	426	695	0	147	344	81	333	489	285
Confl. Peds. (#/hr)	16		16	6		6	20		20	35		35
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	0	1	0	1	2	2	0	0
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	Perm	D.P+P	NA	pm+ov
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases							4		8	8		4
Actuated Green, G (s)	32.3	33.2		35.3	36.2		48.8	30.3	30.3	48.8	39.1	71.4
Effective Green, g (s)	32.3	33.2		35.3	36.2		48.8	30.3	30.3	48.8	39.1	71.4
Actuated g/C Ratio	0.23	0.24		0.26	0.26		0.35	0.22	0.22	0.35	0.28	0.52
Clearance Time (s)	5.5	5.5		4.5	4.5		5.0	5.0	5.0	5.5	5.5	5.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	427	790		439	843		177	392	317	316	523	781
v/s Ratio Prot	0.15	c0.22		c0.25	0.22		0.06	0.19		c0.14	0.26	0.09
v/s Ratio Perm							0.24		0.06	c0.23		0.10
v/c Ratio	0.62	0.91		0.97	0.82		0.83	0.88	0.25	1.05	0.93	0.36
Uniform Delay, d1	47.3	50.9		50.7	47.8		35.6	52.0	44.4	37.6	48.1	19.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	14.5		35.0	6.3		25.8	18.8	0.2	65.5	23.8	0.1
Delay (s)	49.3	65.3		85.8	54.1		61.4	70.8	44.6	103.0	71.9	19.8
Level of Service	D	E		F	D		E	E	D	F	E	B
Approach Delay (s)		61.2			66.0			60.9			67.9	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	137.8	Sum of lost time (s)	20.5
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		
Description: Traffic Count Consultant - 10/01/2014			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2557: 28 Av S & S 312 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	373	2	105	2	0	0	153	297	2	0	265	528
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	373	2	105	2	0	0	153	297	2	0	265	528

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total (vph)	480	2	452	265	528
Volume Left (vph)	373	2	153	0	0
Volume Right (vph)	105	0	2	0	528
Hadj (s)	0.04	0.20	0.10	0.02	-0.68
Departure Headway (s)	7.0	9.5	7.2	7.5	6.7
Degree Utilization, x	0.93	0.01	0.90	0.55	0.99
Capacity (veh/h)	518	365	505	480	528
Control Delay (s)	50.9	12.6	45.9	17.9	60.4
Approach Delay (s)	50.9	12.6	45.9	46.2	
Approach LOS	F	B	E	E	

Intersection Summary			
Delay	47.4		
Level of Service	E		
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
Description: 9/30/2014 - Traffic Count Consultant			

HCM Signalized Intersection Capacity Analysis
3028: 21 Av SW & SW 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	405	99	564	1156	85	104	473	424	74	566	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			3%			-2%			2%	
Total Lost time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1743	3345		3374	3459		1791	1900	1573	1741	3269	
Flt Permitted	0.95	1.00		0.95	1.00		0.10	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	1743	3345		3374	3459		180	1900	1573	399	3269	
Peak-hour factor, PHF	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. Flow (vph)	142	405	99	564	1156	85	104	473	424	74	566	364
RTOR Reduction (vph)	0	16	0	0	4	0	0	0	100	0	73	0
Lane Group Flow (vph)	142	488	0	564	1237	0	104	473	324	74	857	0
Confl. Peds. (#/hr)	3		3	8		8	2		2	3		3
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	6	6	2	0	2	0	4	4	6	2
Turn Type	Prot	NA		Prot	NA		D.P+P	NA	pm+ov	D.P+P	NA	
Protected Phases	1	6		5	2		7	4	5	3	8	
Permitted Phases							8		4	4		
Actuated Green, G (s)	15.0	38.8		26.2	50.0		56.0	49.1	75.3	56.0	45.0	
Effective Green, g (s)	15.0	38.8		26.2	50.0		56.0	49.1	75.3	56.0	45.0	
Actuated g/C Ratio	0.11	0.28		0.19	0.36		0.40	0.35	0.54	0.40	0.32	
Clearance Time (s)	4.5	4.5		5.0	5.0		5.0	5.0	5.0	4.5	4.5	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	186	927		631	1235		198	666	902	225	1050	
v/s Ratio Prot	0.08	0.15		c0.17	c0.36		0.04	c0.25	0.07	0.02	c0.26	
v/s Ratio Perm							0.17		0.14	0.12		
v/c Ratio	0.76	0.53		0.89	1.00		0.53	0.71	0.36	0.33	0.82	
Uniform Delay, d1	60.8	42.8		55.5	45.0		53.6	39.3	18.5	29.2	43.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.31	1.27	
Incremental Delay, d2	15.3	0.3		14.7	26.0		1.2	6.3	0.1	0.2	5.3	
Delay (s)	76.1	43.1		70.3	71.0		54.8	45.6	18.7	38.7	60.8	
Level of Service	E	D		E	E		D	D	B	D	E	
Approach Delay (s)		50.3			70.8			35.2			59.2	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	57.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
Description: All Traffic Data - May 2, 2012			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3040: 1 Av S & SW 320 St/S 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	958	264	0	1599	268	0	666	350	0	590	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1583		3592	1560		3556	1511
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1583		3592	1560		3556	1511
Peak-hour factor, PHF	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. Flow (vph)	0	958	264	0	1599	268	0	666	350	0	590	201
RTOR Reduction (vph)	0	0	24	0	0	16	0	0	114	0	0	27
Lane Group Flow (vph)	0	958	240	0	1599	252	0	666	236	0	590	174
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		96.4	96.4		95.9	95.9		34.1	34.1		34.6	34.6
Effective Green, g (s)		96.4	95.4		95.9	95.9		34.1	34.1		34.6	34.6
Actuated g/C Ratio		0.69	0.68		0.69	0.69		0.24	0.24		0.25	0.25
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2380	1048		2421	1084		874	379		878	373
v/s Ratio Prot		0.28			c0.45			c0.19			0.17	
v/s Ratio Perm			0.16			0.16			0.15			0.12
v/c Ratio		0.40	0.23		0.66	0.23		0.76	0.62		0.67	0.47
Uniform Delay, d1		9.4	8.4		12.7	8.3		49.2	47.2		47.6	44.8
Progression Factor		1.00	1.00		1.26	1.23		0.94	0.89		1.09	1.17
Incremental Delay, d2		0.5	0.5		1.2	0.4		3.5	2.2		1.5	0.3
Delay (s)		9.9	8.9		17.2	10.6		50.0	44.2		53.2	52.8
Level of Service		A	A		B	B		D	D		D	D
Approach Delay (s)		9.7			16.3			48.0			53.1	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1689	507	134	1609	0	0	0	0	694	3	1302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5046	1507	1759	5122					1667	1686	3600
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5046	1507	1759	5122					1667	1686	3600
Peak-hour factor, PHF	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. Flow (vph)	0	1689	507	134	1609	0	0	0	0	694	3	1302
RTOR Reduction (vph)	0	0	231	0	0	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	1689	276	134	1609	0	0	0	0	347	350	1271
Confl. Peds. (#/hr)	2		2							5		5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	2	0	2
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									
Actuated Green, G (s)		61.4	61.4	17.0	69.8					46.6	46.6	60.2
Effective Green, g (s)		61.4	61.4	17.0	69.8					46.6	46.6	60.2
Actuated g/C Ratio		0.44	0.44	0.12	0.50					0.33	0.33	0.43
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	
Lane Grp Cap (vph)		2213	660	213	2553					554	561	1548
v/s Ratio Prot		c0.33		0.08	c0.31					0.21	0.21	c0.35
v/s Ratio Perm			0.18									
v/c Ratio		0.76	0.42	0.63	0.63					0.63	0.62	0.82
Uniform Delay, d1		33.2	27.0	58.5	25.7					39.4	39.3	35.1
Progression Factor		1.32	3.39	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		2.5	1.9	4.1	1.2					1.6	1.6	3.5
Delay (s)		46.2	93.5	62.6	26.9					41.0	40.9	38.6
Level of Service		D	F	E	C					D	D	D
Approach Delay (s)		57.2			29.6			0.0			39.4	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1746	607	0	1290	207	398	0	336	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.98		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		5018		1651	1664	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		5018		1651	1664	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	1746	607	0	1290	207	398	0	336	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	12	0	0	0
Lane Group Flow (vph)	0	1746	607	0	1486	0	199	199	324	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		94.5	140.0		94.5		35.5	35.5	35.5			
Effective Green, g (s)		94.5	140.0		94.5		35.5	35.5	34.5			
Actuated g/C Ratio		0.68	1.00		0.68		0.25	0.25	0.25			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		3406	1575		3387		418	421	377			
v/s Ratio Prot		c0.35			0.30		0.12	0.12				
v/s Ratio Perm			0.39						c0.21			
v/c Ratio		0.51	0.39		0.44		0.48	0.47	0.86			
Uniform Delay, d1		11.3	0.0		10.5		44.4	44.3	50.4			
Progression Factor		1.00	1.00		1.14		1.02	1.02	1.01			
Incremental Delay, d2		0.6	0.7		0.4		0.3	0.3	16.8			
Delay (s)		11.9	0.7		12.4		45.4	45.3	67.8			
Level of Service		B	A		B		D	D	E			
Approach Delay (s)		9.0			12.4			55.6			0.0	
Approach LOS		A			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1140	682	232	1034	133	175	254	55	147	391	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1508	1770	3432		1755	1863	1506	1755	1863	1506
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)	1770	3525	1508	1770	3432		1755	1863	1506	1755	1863	1506
Peak-hour factor, PHF	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. Flow (vph)	220	1140	682	232	1034	133	175	254	55	147	391	268
RTOR Reduction (vph)	0	0	38	0	7	0	0	0	46	0	0	141
Lane Group Flow (vph)	220	1140	644	232	1160	0	175	254	9	147	391	127
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	18.0	50.0	73.0	18.0	50.0		23.0	23.0	23.0	29.0	29.0	29.0
Effective Green, g (s)	18.0	50.0	71.0	18.0	50.0		23.0	23.0	23.0	29.0	29.0	29.0
Actuated g/C Ratio	0.13	0.36	0.51	0.13	0.36		0.16	0.16	0.16	0.21	0.21	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	227	1258	829	227	1225		288	306	247	363	385	311
v/s Ratio Prot	0.12	c0.32	c0.12	0.13	c0.34		0.10	0.14		0.08	c0.21	
v/s Ratio Perm			0.30						0.01			0.08
v/c Ratio	0.97	0.91	0.78	1.02	0.95		0.61	0.83	0.04	0.40	1.02	0.41
Uniform Delay, d1	60.7	42.8	28.0	61.0	43.7		54.3	56.6	49.2	48.0	55.5	48.1
Progression Factor	1.19	1.13	1.29	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.2	10.0	3.8	65.5	15.8		2.5	16.4	0.0	0.3	49.9	0.3
Delay (s)	119.2	58.3	40.0	126.5	59.5		56.8	73.0	49.2	48.3	105.4	48.4
Level of Service	F	E	D	F	E		E	E	D	D	F	D
Approach Delay (s)		58.8			70.6			64.4			76.0	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	65.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (vph)	384	645	105	182	1184	201	203	539	105	16	287	554
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	12	11	11	12	11	11	11
Grade (%)		0%			1%			2%				-2%
Total Lost time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95			1.00	0.95
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98			1.00	0.95
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00			0.95	1.00
Satd. Flow (prot)	3351	3359		3295	3438	1545	1694	3284			1730	3239
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00			0.14	1.00
Satd. Flow (perm)	3351	3359		3295	3438	1545	195	3284			247	3239
Peak-hour factor, PHF	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. Flow (vph)	384	645	105	182	1184	201	203	539	105	16	287	554
RTOR Reduction (vph)	0	9	0	0	0	81	0	12	0	0	0	53
Lane Group Flow (vph)	384	741	0	182	1184	120	203	632	0	0	303	804
Confl. Peds. (#/hr)	10		10	5		5	1		1	5	5	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	6	0	2	0	2	2	0	2	6
Turn Type	Prot	NA		Prot	NA	Perm	D.P+P	NA		D.P+P	D.P+P	NA
Protected Phases	7	4		3	8		5	2		1	1	6
Permitted Phases						8	6			2	2	
Actuated Green, G (s)	17.6	58.2		11.2	52.3	52.3	51.1	29.5			51.6	36.6
Effective Green, g (s)	17.6	58.2		11.2	52.3	52.3	51.1	29.5			51.6	36.6
Actuated g/C Ratio	0.13	0.42		0.08	0.37	0.37	0.37	0.21			0.37	0.26
Clearance Time (s)	4.5	5.0		4.5	4.5	4.5	5.0	4.5			5.0	5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	421	1396		263	1284	577	226	691			325	846
v/s Ratio Prot	c0.11	0.22		0.06	c0.34		0.09	0.19			0.15	c0.25
v/s Ratio Perm						0.08	0.23				c0.20	
v/c Ratio	0.91	0.53		0.69	0.92	0.21	0.90	0.91			0.93	0.95
Uniform Delay, d1	60.4	30.7		62.7	41.9	29.8	37.0	54.0			52.8	50.8
Progression Factor	0.97	0.95		1.10	0.99	1.04	1.00	1.00			1.30	1.33
Incremental Delay, d2	23.3	1.4		6.1	12.0	0.8	32.8	16.4			31.7	19.2
Delay (s)	82.1	30.5		74.9	53.7	31.9	69.9	70.4			100.6	87.0
Level of Service	F	C		E	D	C	E	E			F	F
Approach Delay (s)		48.0			53.3			70.3				90.5
Approach LOS		D			D			E				F

Intersection Summary			
HCM 2000 Control Delay	64.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	96.0%	ICU Level of Service	F
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/22/2014

c Critical Lane Group

Movement	SBR
Lanes, Configurations	
Volume (vph)	303
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	303
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	5
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	296	375	388	142	567	108	14	294	1268	111	26	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1735	1872	1537	1749	3447			3401	4946			1796
Flt Permitted	0.15	1.00	1.00	0.20	1.00			0.95	1.00			0.95
Satd. Flow (perm)	274	1872	1537	360	3447			3401	4946			1796
Peak-hour factor, PHF	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. Flow (vph)	296	375	388	142	567	108	14	294	1268	111	26	84
RTOR Reduction (vph)	0	0	128	0	12	0	0	0	7	0	0	0
Lane Group Flow (vph)	296	375	260	142	663	0	0	308	1372	0	0	110
Confl. Peds. (#/hr)	6		6	7		7	3	3		3	3	3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	46.9	34.8	34.8	46.9	33.4			12.0	57.1			15.5
Effective Green, g (s)	46.9	34.8	34.8	46.9	33.4			12.0	57.1			15.5
Actuated g/C Ratio	0.33	0.25	0.25	0.33	0.24			0.09	0.41			0.11
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	232	465	382	240	822			291	2017			198
v/s Ratio Prot	c0.12	0.20		0.05	0.19			c0.09	0.28			0.06
v/s Ratio Perm	c0.30		0.17	0.15								
v/c Ratio	1.28	0.81	0.68	0.59	0.81			1.06	0.68			0.56
Uniform Delay, d1	39.3	49.4	47.6	53.2	50.3			64.0	34.0			59.0
Progression Factor	1.44	1.07	1.33	1.12	1.09			1.23	0.91			1.00
Incremental Delay, d2	152.2	9.0	3.6	2.5	5.3			68.1	1.8			1.9
Delay (s)	208.8	61.8	66.7	62.1	60.1			147.0	32.6			61.1
Level of Service	F	E	E	E	E			F	C			E
Approach Delay (s)		104.7			60.4				53.5			
Approach LOS		F			E				D			

Intersection Summary			
HCM 2000 Control Delay	57.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1856	317
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	4.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.99
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1571
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1571
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1856	317
RTOR Reduction (vph)	0	48
Lane Group Flow (vph)	1856	269
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	60.6	74.1
Effective Green, g (s)	60.6	74.1
Actuated g/C Ratio	0.43	0.53
Clearance Time (s)	5.5	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2222	831
v/s Ratio Prot	c0.36	0.03
v/s Ratio Perm		0.14
v/c Ratio	0.84	0.32
Uniform Delay, d1	35.3	18.7
Progression Factor	1.00	0.99
Incremental Delay, d2	3.9	0.1
Delay (s)	39.1	18.6
Level of Service	D	B
Approach Delay (s)	37.3	
Approach LOS	D	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	529	125	387	834	194	237	240	175	148	227	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			2%			1%			1%	
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		5.0	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1752	3389		1750	3430		1756	1744		1778	1834	1572
Flt Permitted	0.19	1.00		0.27	1.00		0.35	1.00		0.12	1.00	1.00
Satd. Flow (perm)	342	3389		499	3430		649	1744		232	1834	1572
Peak-hour factor, PHF	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. Flow (vph)	50	529	125	387	834	194	237	240	175	148	227	127
RTOR Reduction (vph)	0	13	0	0	12	0	0	20	0	0	0	102
Lane Group Flow (vph)	50	641	0	387	1016	0	237	395	0	148	227	25
Confl. Peds. (#/hr)	1		1	4		4	1		1			
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	5	5	3	0	3	0	0	0	5	3
Turn Type	D.P+P	NA		D.P+P	NA		D.P+P	NA		D.P+P	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	8			4			6			2		6
Actuated Green, G (s)	78.1	50.7		78.1	72.8		43.9	35.3		43.4	27.3	27.3
Effective Green, g (s)	78.1	50.7		78.1	72.8		43.9	35.3		43.4	27.3	27.3
Actuated g/C Ratio	0.56	0.36		0.56	0.52		0.31	0.25		0.31	0.20	0.20
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	244	1227		523	1783		334	439		161	357	306
v/s Ratio Prot	0.01	0.19		c0.14	0.30		0.08	0.23		0.05	0.12	
v/s Ratio Perm	0.11			c0.27			c0.14			c0.23		0.02
v/c Ratio	0.20	0.52		0.74	0.57		0.71	0.90		0.92	0.64	0.08
Uniform Delay, d1	16.4	35.1		19.6	22.9		38.8	50.6		60.1	51.8	46.1
Progression Factor	1.00	1.00		1.47	0.76		1.00	1.00		1.21	1.22	2.34
Incremental Delay, d2	0.2	1.6		4.7	1.3		5.6	20.3		46.4	2.7	0.0
Delay (s)	16.6	36.7		33.4	18.7		44.3	70.9		119.1	65.6	108.0
Level of Service	B	D		C	B		D	E		F	E	F
Approach Delay (s)		35.3			22.7			61.2			92.1	
Approach LOS		D			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	43.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	90.2%	ICU Level of Service	E
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/23/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	738	178	295	1512	158	64	155	194	172	760	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		4%			-1%			7%			-3%	
Total Lost time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	0.99		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
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3384	3387		3443	3578	1578	1711	3120		1799	3613	1593
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3384	3387		3443	3578	1578	1711	3120		1799	3613	1593
Peak-hour factor, PHF	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. Flow (vph)	112	738	178	295	1512	158	64	155	194	172	760	300
RTOR Reduction (vph)	0	14	0	0	0	45	0	170	0	0	0	62
Lane Group Flow (vph)	112	902	0	295	1512	113	64	179	0	172	760	238
Confl. Peds. (#/hr)				1		1	3		3	1		1
Heavy Vehicles (%)	1%	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	2	1	2	2	2	2	2	2	2	2
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Actuated Green, G (s)	10.5	62.1		18.0	69.6	93.5	7.5	17.0		23.9	32.9	43.4
Effective Green, g (s)	10.5	62.1		18.0	69.6	93.5	7.5	17.0		23.9	32.9	43.4
Actuated g/C Ratio	0.08	0.44		0.13	0.50	0.67	0.05	0.12		0.17	0.23	0.31
Clearance Time (s)	4.5	4.5		5.0	5.0	5.0	5.0	4.5		5.0	5.0	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	253	1502		442	1778	1110	91	378		307	849	493
v/s Ratio Prot	0.03	0.27		c0.09	c0.42	0.02	c0.04	0.06		0.10	c0.21	0.04
v/s Ratio Perm						0.05						0.11
v/c Ratio	0.44	0.60		0.67	0.85	0.10	0.70	0.47		0.56	0.90	0.48
Uniform Delay, d1	62.0	29.5		58.1	30.7	8.3	65.2	57.3		53.2	51.9	39.2
Progression Factor	0.86	1.04		1.25	1.64	3.62	0.78	1.16		1.09	1.10	1.18
Incremental Delay, d2	0.4	1.8		2.6	4.7	0.0	7.3	0.1		1.4	11.5	0.3
Delay (s)	53.6	32.4		75.5	55.1	30.1	58.2	66.5		59.2	68.5	46.4
Level of Service	D	C		E	E	C	E	E		E	E	D
Approach Delay (s)		34.7			56.2			65.2			61.8	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/22/2014

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
4848: Pacific Hwy S & S 348 St

8/6/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	45	133	1427	298	789	1435	60	274	537	582	146	1024
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%			2%			-3%
Total Lost time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91		0.97	0.86	0.86	0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	0.99	0.99	1.00	1.00
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.97		1.00	0.99		1.00	0.95	0.85	1.00	0.96
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1737	4888		3369	4967		3288	4344	1296	3485	4950
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1737	4888		3369	4967		3288	4344	1296	3485	4950
Peak-hour factor, PHF	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. Flow (vph)	45	133	1427	298	789	1435	60	274	537	582	146	1024
RTOR Reduction (vph)	0	0	23	0	0	3	0	0	70	30	0	39
Lane Group Flow (vph)	0	178	1702	0	789	1492	0	274	758	261	146	1300
Confl. Peds. (#/hr)	5	5		5				3		3	2	
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	5%	5%	5%	2%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	0	0	2
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		17.5	44.2		21.0	48.2		12.9	45.4	66.4	8.9	41.4
Effective Green, g (s)		17.5	44.2		21.0	48.2		12.9	45.4	66.4	8.9	41.4
Actuated g/C Ratio		0.12	0.32		0.15	0.34		0.09	0.32	0.47	0.06	0.30
Clearance Time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		217	1543		505	1710		302	1408	614	221	1463
v/s Ratio Prot		0.10	c0.35		c0.23	0.30		c0.08	0.17	0.06	0.04	c0.26
v/s Ratio Perm										0.14		
v/c Ratio		0.82	1.10		1.56	0.87		0.91	0.54	0.42	0.66	0.89
Uniform Delay, d1		59.7	47.9		59.5	43.0		63.0	38.7	24.2	64.1	47.1
Progression Factor		1.01	0.93		0.62	0.87		1.16	1.34	1.99	0.94	1.09
Incremental Delay, d2		19.5	56.2		256.4	2.3		24.4	0.2	0.1	5.6	6.7
Delay (s)		80.1	100.6		293.3	39.8		97.4	52.1	48.3	65.5	58.0
Level of Service		F	F		F	D		F	D	D	E	E
Approach Delay (s)			98.7			127.4			60.2			58.8
Approach LOS			F			F			E			E

Intersection Summary			
HCM 2000 Control Delay	92.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	111.3%	ICU Level of Service	H
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	315
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	315
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Lane Configurations												
Volume (vph)	4	109	1573	391	957	1685	413	157	399	732	487	434
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			2%			-4%				2%		
Total Lost time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor		1.00	0.91	1.00	0.94	0.91	1.00		0.97	0.91	0.91	0.97
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98	0.85	1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (prot)		1688	4891	1485	5027	5123	1556		3419	3300	1441	3502
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95
Satd. Flow (perm)		1688	4891	1485	5027	5123	1556		3419	3300	1441	3502
Peak-hour factor, PHF	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. Flow (vph)	4	109	1573	391	957	1685	413	157	399	732	487	434
RTOR Reduction (vph)	0	0	0	94	0	0	186	0	0	9	55	0
Lane Group Flow (vph)	0	113	1573	297	957	1685	227	0	556	840	315	434
Confl. Peds. (#/hr)	4	4		4	5		5	1	1		1	14
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%	3%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	2	0	0
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot
Protected Phases	7	7	4		3	8		5	5	2	2 3	1
Permitted Phases				4			8					
Actuated Green, G (s)		10.5	42.9	42.9	18.0	50.4	50.4		17.0	39.7	57.7	19.9
Effective Green, g (s)		10.5	42.9	42.9	18.0	50.4	50.4		17.0	39.7	57.7	19.9
Actuated g/C Ratio		0.08	0.31	0.31	0.13	0.36	0.36		0.12	0.28	0.41	0.14
Clearance Time (s)		4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0		5.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0
Lane Grp Cap (vph)		126	1498	455	646	1844	560		415	935	593	497
v/s Ratio Prot		0.07	c0.32		c0.19	0.33			c0.16	c0.25	0.22	c0.12
v/s Ratio Perm				0.20			0.15					
v/c Ratio		0.90	1.05	0.65	1.48	0.91	0.41		1.34	0.90	0.53	0.87
Uniform Delay, d1		64.2	48.5	42.1	61.0	42.7	33.6		61.5	48.2	31.0	58.8
Progression Factor		0.64	0.51	0.29	1.02	0.98	1.07		0.86	1.03	1.54	1.10
Incremental Delay, d2		25.6	30.1	2.9	220.1	3.8	0.9		167.9	10.7	0.4	15.0
Delay (s)		66.9	54.9	15.3	282.2	45.6	36.7		220.7	60.1	48.2	79.9
Level of Service		E	D	B	F	D	D		F	E	D	E
Approach Delay (s)			48.1			118.5				108.0		
Approach LOS			D			F				F		

Intersection Summary			
HCM 2000 Control Delay	88.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	106.4%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/09/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	791	132
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.98	
Flt Protected	1.00	
Satd. Flow (prot)	5044	
Flt Permitted	1.00	
Satd. Flow (perm)	5044	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	791	132
RTOR Reduction (vph)	17	0
Lane Group Flow (vph)	906	0
Confl. Peds. (#/hr)		14
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	2	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	42.1	
Effective Green, g (s)	42.1	
Actuated g/C Ratio	0.30	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1516	
v/s Ratio Prot	0.18	
v/s Ratio Perm		
v/c Ratio	0.60	
Uniform Delay, d1	41.7	
Progression Factor	1.16	
Incremental Delay, d2	0.4	
Delay (s)	48.9	
Level of Service	D	
Approach Delay (s)	58.8	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	530	416	3	236	1206	231	60	47	13	303	119	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		0%			-1%			0%			1%	
Total Lost time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98		1.00	0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	3460	1864		1796	3473		1766	1805			1807	1526
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (perm)	3460	1864		1796	3473		1766	1805			1807	1526
Peak-hour factor, PHF	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. Flow (vph)	530	416	3	236	1206	231	60	47	13	303	119	399
RTOR Reduction (vph)	0	0	0	0	10	0	0	7	0	0	0	268
Lane Group Flow (vph)	530	419	0	236	1427	0	60	53	0	0	422	131
Confl. Peds. (#/hr)	3		3	4		4	3		3	8		8
Confl. Bikes (#/hr)			3						1			
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	1	2	0	0	3	1	3	1	2	2	0	3
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		1	1	
Permitted Phases												1
Actuated Green, G (s)	18.5	59.9		20.4	61.8		12.7	12.7			29.5	29.5
Effective Green, g (s)	18.5	59.9		20.4	61.8		12.7	12.7			29.5	29.5
Actuated g/C Ratio	0.13	0.43		0.15	0.44		0.09	0.09			0.21	0.21
Clearance Time (s)	4.5	4.5		4.5	4.5		4.0	4.0			4.5	4.5
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	457	797		261	1533		160	163			380	321
v/s Ratio Prot	c0.15	0.22		0.13	c0.41		c0.03	0.03			c0.23	
v/s Ratio Perm												0.09
v/c Ratio	1.16	0.53		0.90	0.93		0.38	0.32			1.11	0.41
Uniform Delay, d1	60.8	29.6		58.8	37.1		59.9	59.6			55.2	47.7
Progression Factor	1.00	1.00		1.09	0.96		1.00	1.00			1.15	2.37
Incremental Delay, d2	93.8	2.5		30.4	11.3		0.5	0.4			79.2	0.3
Delay (s)	154.5	32.0		94.5	46.8		60.5	60.0			142.7	113.4
Level of Service	F	C		F	D		E	E			F	F
Approach Delay (s)		100.5			53.6			60.3			128.5	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	83.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.5
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/29/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	305	490	33	75	1108	102	33	56	54	346	72	778
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			3%			1%	
Total Lost time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		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)	1808	1919	1578	1742	3421		1696	1785	1530	1761	1853	1563
Flt Permitted	0.07	1.00	1.00	0.31	1.00		0.71	1.00	1.00	0.72	1.00	1.00
Satd. Flow (perm)	142	1919	1578	567	3421		1268	1785	1530	1335	1853	1563
Peak-hour factor, PHF	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. Flow (vph)	305	490	33	75	1108	102	33	56	54	346	72	778
RTOR Reduction (vph)	0	0	18	0	4	0	0	0	45	0	0	208
Lane Group Flow (vph)	305	490	15	75	1206	0	33	56	9	346	72	570
Confl. Peds. (#/hr)	3		3									
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	2	0	0	0	2	2	2	2	0	0	0	2
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.P+P	NA	Perm	D.P+P	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	2		6	6			8		4	4		8
Actuated Green, G (s)	71.0	63.7	63.7	71.0	53.5		49.5	23.5	23.5	49.5	46.5	46.5
Effective Green, g (s)	71.0	63.7	63.7	71.0	53.5		49.5	23.5	23.5	49.5	46.5	46.5
Actuated g/C Ratio	0.51	0.46	0.46	0.51	0.38		0.35	0.17	0.17	0.35	0.33	0.33
Clearance Time (s)	5.5	5.5	5.5	4.5	4.5		5.0	4.5	4.5	5.0	4.5	4.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	280	873	717	348	1307		457	299	256	551	615	519
v/s Ratio Prot	c0.14	0.26		0.01	0.35		0.00	0.03		0.12	0.04	
v/s Ratio Perm	c0.41		0.01	0.10			0.02		0.01	c0.11		c0.36
v/c Ratio	1.09	0.56	0.02	0.22	0.92		0.07	0.19	0.04	0.63	0.12	1.10
Uniform Delay, d1	45.1	27.9	21.0	19.8	41.3		30.0	50.0	48.8	36.4	32.5	46.8
Progression Factor	1.26	0.85	1.00	0.93	1.17		1.00	1.00	1.00	1.53	1.31	1.78
Incremental Delay, d2	79.5	2.6	0.1	0.1	8.1		0.0	0.1	0.0	1.0	0.0	61.1
Delay (s)	136.6	26.4	21.0	18.6	56.4		30.1	50.2	48.8	56.8	42.7	144.1
Level of Service	F	C	C	B	E		C	D	D	E	D	F
Approach Delay (s)		66.8			54.2			45.0			112.7	
Approach LOS		E			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	77.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

Description: Traffic Count Consultants - 10/16/2014

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	244	567	316	271	538	48	2	175	976	63	4	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0			4.5	4.5			5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	3470	1891	1594	1764	3510			3240	4743			1754
Flt Permitted	0.95	1.00	1.00	0.10	1.00			0.95	1.00			0.17
Satd. Flow (perm)	3470	1891	1594	177	3510			3240	4743			314
Peak-hour factor, PHF	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. Flow (vph)	244	567	316	271	538	48	2	175	976	63	4	97
RTOR Reduction (vph)	0	0	112	0	6	0	0	0	5	0	0	0
Lane Group Flow (vph)	244	567	204	271	580	0	0	177	1034	0	0	101
Confl. Peds. (#/hr)				1		1					10	
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	7%	2%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	0
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	Prot	NA		custom	D.P+P
Protected Phases	7	4		3	8		5	5	2			1
Permitted Phases			4	4							1	2
Actuated Green, G (s)	27.2	42.0	42.0	57.0	28.8			9.5	52.7			61.0
Effective Green, g (s)	27.2	42.0	42.0	57.0	28.8			10.5	53.7			61.0
Actuated g/C Ratio	0.19	0.30	0.30	0.41	0.21			0.08	0.38			0.44
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0			5.5	5.5			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	674	567	478	242	722			243	1819			222
v/s Ratio Prot	0.07	0.30		c0.12	0.17			c0.05	0.22			0.03
v/s Ratio Perm			0.13	c0.34								0.17
v/c Ratio	0.36	1.00	0.43	1.12	0.80			0.73	0.57			0.45
Uniform Delay, d1	48.9	49.0	39.3	59.1	52.9			63.4	34.0			25.2
Progression Factor	0.94	1.07	1.13	0.70	1.31			1.00	1.00			0.82
Incremental Delay, d2	0.1	36.1	0.2	93.5	6.1			8.9	1.3			0.5
Delay (s)	46.1	88.4	44.6	135.0	75.5			72.2	35.3			21.0
Level of Service	D	F	D	F	E			E	D			C
Approach Delay (s)		67.0			94.3				40.7			
Approach LOS		E			F				D			

Intersection Summary			
HCM 2000 Control Delay	66.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1370	535
Ideal Flow (vphpl)	1900	1900
Grade (%)	-2%	
Total Lost time (s)	5.5	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.96	
Flt Protected	1.00	
Satd. Flow (prot)	4812	
Flt Permitted	1.00	
Satd. Flow (perm)	4812	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1370	535
RTOR Reduction (vph)	50	0
Lane Group Flow (vph)	1855	0
Confl. Peds. (#/hr)		
Heavy Vehicles (%)	4%	4%
Bus Blockages (#/hr)	2	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	51.5	
Effective Green, g (s)	51.5	
Actuated g/C Ratio	0.37	
Clearance Time (s)	5.5	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1770	
v/s Ratio Prot	c0.39	
v/s Ratio Perm		
v/c Ratio	1.05	
Uniform Delay, d1	44.2	
Progression Factor	0.89	
Incremental Delay, d2	33.6	
Delay (s)	73.2	
Level of Service	E	
Approach Delay (s)	70.5	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	10	522	39	81	11	586	1253	64	14	1322	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		3.5	3.5	2.0	2.0		3.0	4.0		5.0	3.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765	1540	1750	1844		3484	3544		1778	3540	
Flt Permitted		0.59	1.00	0.40	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1100	1540	743	1844		3484	3544		1778	3540	
Peak-hour factor, PHF	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. Flow (vph)	217	10	522	39	81	11	586	1253	64	14	1322	5
RTOR Reduction (vph)	0	0	399	0	4	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	227	123	39	88	0	586	1315	0	14	1327	0
Confl. Peds. (#/hr)	2		2	4		4	8		8	6		6
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		32.0	32.0	32.5	32.5		22.0	81.0		2.7	61.7	
Effective Green, g (s)		33.0	33.0	34.5	34.5		24.0	82.0		2.7	63.7	
Actuated g/C Ratio		0.24	0.24	0.25	0.25		0.17	0.59		0.02	0.46	
Clearance Time (s)		4.5	4.5	4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		259	363	183	454		597	2075		34	1610	
v/s Ratio Prot					0.05		c0.17	0.37		0.01	c0.37	
v/s Ratio Perm		c0.21	0.08	0.05								
v/c Ratio		0.88	0.34	0.21	0.19		0.98	0.63		0.41	0.82	
Uniform Delay, d1		51.5	44.4	42.0	41.8		57.8	19.1		67.9	33.3	
Progression Factor		0.62	0.94	1.00	1.00		1.20	1.33		1.06	1.17	
Incremental Delay, d2		25.4	0.2	0.2	0.1		30.5	1.4		2.5	4.2	
Delay (s)		57.4	41.8	42.2	41.8		100.1	26.7		74.3	43.1	
Level of Service		E	D	D	D		F	C		E	D	
Approach Delay (s)		46.5			41.9			49.3			43.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
2550: Pacific Hwy S & S 312 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	320	433	179	167	347	211	30	221	880	77	2	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		1%			0%				0%			
Total Lost time (s)	5.5	6.0		5.5	6.5			5.0	5.0			5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00			1.00
Frt	1.00	0.96		1.00	0.94			1.00	0.99			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1734	3249		1755	3179			3439	4993			1773
Flt Permitted	0.18	1.00		0.25	1.00			0.95	1.00			0.95
Satd. Flow (perm)	324	3249		471	3179			3439	4993			1773
Peak-hour factor, PHF	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. Flow (vph)	320	433	179	167	347	211	30	221	880	77	2	118
RTOR Reduction (vph)	0	36	0	0	72	0	0	0	6	0	0	0
Lane Group Flow (vph)	320	576	0	167	486	0	0	251	951	0	0	120
Confl. Peds. (#/hr)	14		14	29		29	42	42		42	29	29
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	6	2	4	4	4	6	4	4	6	2	6	2
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	50.9	41.1		51.4	27.2			14.0	55.8			13.3
Effective Green, g (s)	48.9	40.1		49.4	26.2			14.0	55.8			13.3
Actuated g/C Ratio	0.35	0.29		0.35	0.19			0.10	0.40			0.10
Clearance Time (s)	4.5	5.0		4.5	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	341	930		251	594			343	1990			168
v/s Ratio Prot	c0.15	0.18		0.04	0.15			c0.07	0.19			0.07
v/s Ratio Perm	c0.17			0.19								
v/c Ratio	0.94	0.62		0.67	0.82			0.73	0.48			0.71
Uniform Delay, d1	37.8	43.3		49.9	54.6			61.2	31.3			61.5
Progression Factor	1.06	1.07		1.26	1.23			0.53	0.23			1.21
Incremental Delay, d2	32.3	0.9		5.0	8.2			6.0	0.7			10.7
Delay (s)	72.4	47.4		67.9	75.5			38.5	8.0			85.1
Level of Service	E	D		E	E			D	A			F
Approach Delay (s)		56.0			73.7				14.3			
Approach LOS		E			E				B			

Intersection Summary			
HCM 2000 Control Delay	48.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/25/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1226	288
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	0%	
Total Lost time (s)	5.0	6.0
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.94
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5108	1476
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5108	1476
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1226	288
RTOR Reduction (vph)	0	144
Lane Group Flow (vph)	1226	144
Confl. Peds. (#/hr)		29
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	4	4
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Actuated Green, G (s)	55.1	55.1
Effective Green, g (s)	55.1	54.1
Actuated g/C Ratio	0.39	0.39
Clearance Time (s)	5.0	5.0
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2010	570
v/s Ratio Prot	c0.24	
v/s Ratio Perm		0.10
v/c Ratio	0.61	0.25
Uniform Delay, d1	33.9	29.2
Progression Factor	1.34	3.11
Incremental Delay, d2	1.3	1.0
Delay (s)	46.6	91.9
Level of Service	D	F
Approach Delay (s)	57.4	
Approach LOS	E	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	98	66	122	160	71	125	48	208	1107	161	9	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	12	11	12	12	12	12	12	12	12
Grade (%)		-2%			0%				2%			
Total Lost time (s)	5.0	6.0		5.5	6.5			4.5	4.5			5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.98			1.00	0.99			1.00
Flpb, ped/bikes	0.99	1.00		0.99	1.00			1.00	1.00			1.00
Frt	1.00	0.90		1.00	0.90			1.00	0.98			1.00
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1751	1566		1699	1567			1769	4892			1737
Flt Permitted	0.33	1.00		0.45	1.00			0.95	1.00			0.95
Satd. Flow (perm)	599	1566		806	1567			1769	4892			1737
Peak-hour factor, PHF	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. Flow (vph)	98	66	122	160	71	125	48	208	1107	161	9	150
RTOR Reduction (vph)	0	51	0	0	53	0	0	0	12	0	0	0
Lane Group Flow (vph)	98	137	0	160	143	0	0	256	1256	0	0	159
Confl. Peds. (#/hr)	25		25	14		14	19	19		19	25	25
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	7	4	4	0	6	4	0	6	7	6	7
Turn Type	D.P+P	NA		D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8			4								
Actuated Green, G (s)	31.5	26.1		31.5	18.4			23.6	68.5			21.0
Effective Green, g (s)	29.5	25.1		29.5	17.4			23.6	68.5			21.0
Actuated g/C Ratio	0.21	0.18		0.21	0.12			0.17	0.49			0.15
Clearance Time (s)	4.0	5.0		4.5	5.5			4.5	4.5			5.0
Vehicle Extension (s)	2.0	2.0		2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	225	280		197	194			298	2393			260
v/s Ratio Prot	0.04	0.09		c0.03	0.09			c0.14	0.26			0.09
v/s Ratio Perm	0.05			c0.14								
v/c Ratio	0.44	0.49		0.81	0.74			0.86	0.52			0.61
Uniform Delay, d1	54.5	51.7		57.2	59.1			56.6	24.6			55.7
Progression Factor	1.00	1.00		0.66	0.76			0.83	1.48			0.85
Incremental Delay, d2	0.5	0.5		20.6	11.8			10.9	0.4			2.5
Delay (s)	55.0	52.2		58.4	56.8			57.7	36.7			50.0
Level of Service	D	D		E	E			E	D			D
Approach Delay (s)		53.1			57.5				40.2			
Approach LOS		D			E				D			

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1505	53
Ideal Flow (vphpl)	1900	1900
Lane Width	12	12
Grade (%)	-2%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	1.00	
Flpb, ped/bikes	1.00	
Frt	0.99	
Flt Protected	1.00	
Satd. Flow (prot)	5064	
Flt Permitted	1.00	
Satd. Flow (perm)	5064	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1505	53
RTOR Reduction (vph)	2	0
Lane Group Flow (vph)	1556	0
Confl. Peds. (#/hr)		25
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	0
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	65.9	
Effective Green, g (s)	65.9	
Actuated g/C Ratio	0.47	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	2383	
v/s Ratio Prot	c0.31	
v/s Ratio Perm		
v/c Ratio	0.65	
Uniform Delay, d1	28.3	
Progression Factor	0.72	
Incremental Delay, d2	1.2	
Delay (s)	21.6	
Level of Service	C	
Approach Delay (s)	24.2	
Approach LOS	C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	59	414	1259	155	1	443	917	287	13	226	936	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-6%				0%				2%	
Total Lost time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Lane Util. Factor		0.97	0.91			0.97	0.91	1.00		0.97	0.91	
Frpb, ped/bikes		1.00	0.99			1.00	1.00	0.97		1.00	0.99	
Flpb, ped/bikes		1.00	1.00			1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.98			1.00	1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)		3571	5146			3467	5081	1555		3377	4819	
Flt Permitted		0.95	1.00			0.95	1.00	1.00		0.95	1.00	
Satd. Flow (perm)		3571	5146			3467	5081	1555		3377	4819	
Peak-hour factor, PHF	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. Flow (vph)	59	414	1259	155	1	443	917	287	13	226	936	366
RTOR Reduction (vph)	0	0	11	0	0	0	0	102	0	0	51	0
Lane Group Flow (vph)	0	473	1403	0	0	444	917	185	0	239	1252	0
Confl. Peds. (#/hr)	35	35		35	15	15		15	24	24		24
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	8	0	4	0	4	0	8	0	0	8	0	4
Turn Type	Prot	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot	NA	
Protected Phases	1	1	6		5	5	2		3	3	8	
Permitted Phases								2				
Actuated Green, G (s)		19.5	43.5			19.0	42.5	42.5		13.7	39.0	
Effective Green, g (s)		19.5	43.5			19.0	42.5	42.5		13.7	39.0	
Actuated g/C Ratio		0.14	0.31			0.14	0.30	0.30		0.10	0.28	
Clearance Time (s)		5.5	5.5			5.0	5.5	5.5		5.0	5.0	
Vehicle Extension (s)		2.0	2.0			2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		497	1598			470	1542	472		330	1342	
v/s Ratio Prot		0.13	c0.27			c0.13	0.18			0.07	c0.26	
v/s Ratio Perm								0.12				
v/c Ratio		0.95	0.88			0.94	0.59	0.39		0.72	0.93	
Uniform Delay, d1		59.8	45.7			60.0	41.4	38.5		61.3	49.2	
Progression Factor		0.88	0.84			1.23	1.46	2.08		0.65	0.98	
Incremental Delay, d2		27.5	6.9			21.7	1.2	1.7		4.1	8.9	
Delay (s)		80.0	45.5			95.5	61.9	81.9		43.8	57.2	
Level of Service		F	D			F	E	F		D	E	
Approach Delay (s)			54.1				74.4				55.1	
Approach LOS			D				E				E	

Intersection Summary			
HCM 2000 Control Delay	59.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	109.3%	ICU Level of Service	H
Analysis Period (min)	15		

Description: 9/24/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Volume (vph)	31	405	1066	247
Ideal Flow (vphpl)	1900	1900	1900	1900
Grade (%)			-2%	
Total Lost time (s)		5.0	5.0	5.0
Lane Util. Factor		0.97	0.91	1.00
Frpb, ped/bikes		1.00	1.00	0.96
Flpb, ped/bikes		1.00	1.00	1.00
Frt		1.00	1.00	0.85
Flt Protected		0.95	1.00	1.00
Satd. Flow (prot)		3440	5136	1493
Flt Permitted		0.95	1.00	1.00
Satd. Flow (perm)		3440	5136	1493
Peak-hour factor, PHF	1.00	1.00	1.00	1.00
Adj. Flow (vph)	31	405	1066	247
RTOR Reduction (vph)	0	0	0	97
Lane Group Flow (vph)	0	436	1066	150
Confl. Peds. (#/hr)	19	19		19
Heavy Vehicles (%)	2%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	8
Turn Type	Prot	Prot	NA	Perm
Protected Phases	7	7	4	
Permitted Phases				4
Actuated Green, G (s)		18.0	43.3	43.3
Effective Green, g (s)		18.0	43.3	43.3
Actuated g/C Ratio		0.13	0.31	0.31
Clearance Time (s)		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0	2.0
Lane Grp Cap (vph)		442	1588	461
v/s Ratio Prot		c0.13	0.21	
v/s Ratio Perm				0.10
v/c Ratio		0.99	0.67	0.33
Uniform Delay, d1		60.9	42.1	37.1
Progression Factor		0.94	0.89	1.24
Incremental Delay, d2		33.6	1.7	1.4
Delay (s)		90.6	39.4	47.5
Level of Service		F	D	D
Approach Delay (s)			53.3	
Approach LOS			D	

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	327	1755	107	13	123	1413	208	162	86	91	253	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	11	11	12	11	11
Grade (%)		-3%				2%			-1%			-3%
Total Lost time (s)	5.0	5.0			4.5	4.5		4.5	5.0		5.0	5.5
Lane Util. Factor	0.97	0.91			0.97	0.91		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00			1.00	0.99		1.00	0.99		1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	0.99			1.00	0.98		1.00	0.92		1.00	0.91
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	3402	4962			3318	4767		1708	1671		1719	1650
Flt Permitted	0.95	1.00			0.95	1.00		0.16	1.00		0.38	1.00
Satd. Flow (perm)	3402	4962			3318	4767		290	1671		687	1650
Peak-hour factor, PHF	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. Flow (vph)	327	1755	107	13	123	1413	208	162	86	91	253	127
RTOR Reduction (vph)	0	4	0	0	0	12	0	0	30	0	0	42
Lane Group Flow (vph)	327	1858	0	0	136	1609	0	162	147	0	253	278
Confl. Peds. (#/hr)	7		7	18	18		18	4		4	12	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	4	0	4	0	4	0	4	4	0
Turn Type	Prot	NA		Prot	Prot	NA		D.P+P	NA		D.P+P	NA
Protected Phases	5	2		1	1	6		7	4		3	8
Permitted Phases								8			4	
Actuated Green, G (s)	16.5	74.5			10.5	68.5		36.5	20.2		36.5	27.1
Effective Green, g (s)	16.5	74.5			10.5	68.5		35.5	19.7		35.5	26.6
Actuated g/C Ratio	0.12	0.53			0.08	0.49		0.25	0.14		0.25	0.19
Clearance Time (s)	5.0	5.0			4.5	4.5		4.0	4.5		4.5	5.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	400	2640			248	2332		163	235		290	313
v/s Ratio Prot	c0.10	c0.37			0.04	c0.34		0.06	0.09		0.10	0.17
v/s Ratio Perm								c0.19			c0.12	
v/c Ratio	0.82	0.70			0.55	0.69		0.99	0.63		0.87	0.89
Uniform Delay, d1	60.3	24.5			62.5	27.6		60.5	56.7		47.1	55.2
Progression Factor	1.00	1.24			0.68	0.34		1.00	1.00		1.04	0.93
Incremental Delay, d2	6.3	0.8			1.0	1.3		68.3	3.7		23.1	24.1
Delay (s)	66.8	31.1			43.6	10.6		128.7	60.4		72.2	75.4
Level of Service	E	C			D	B		F	E		E	E
Approach Delay (s)		36.4				13.2			93.0			74.0
Approach LOS		D				B			F			E

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
Description: 9/24/2014 - Traffic Count Consultant			
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Volume (vph)	193
Ideal Flow (vphpl)	1900
Lane Width	12
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	193
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	12
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	6	313	1487	69	614	1502	400	40	144	245	512	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			5%			-5%			1%			0%
Total Lost time (s)		4.5	4.5		5.5	5.5		5.0	6.0	5.5	5.0	6.0
Lane Util. Factor		0.97	0.91		0.97	0.91		1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.94
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3240	4874		3483	5040		1733	1735	1513	3359	1661
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3240	4874		3483	5040		1733	1735	1513	3359	1661
Peak-hour factor, PHF	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. Flow (vph)	6	313	1487	69	614	1502	400	40	144	245	512	227
RTOR Reduction (vph)	0	0	3	0	0	30	0	0	0	62	0	17
Lane Group Flow (vph)	0	319	1553	0	614	1872	0	40	144	183	512	347
Confl. Peds. (#/hr)	25	25		25	10		10	17		17	4	
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	4	16	6	10	10	4	16	4	16	6	6	10
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		12.5	54.2		21.5	63.2		8.4	22.2	43.7	22.1	35.9
Effective Green, g (s)		12.5	54.2		21.5	63.2		7.9	21.7	43.7	21.6	35.4
Actuated g/C Ratio		0.09	0.39		0.15	0.45		0.06	0.15	0.31	0.15	0.25
Clearance Time (s)		4.5	4.5		5.5	5.5		4.5	5.5	5.5	4.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		289	1886		534	2275		97	268	531	518	419
v/s Ratio Prot		0.10	0.32		c0.18	c0.37		0.02	0.08	0.05	c0.15	c0.21
v/s Ratio Perm										0.07		
v/c Ratio		1.10	0.82		1.15	0.82		0.41	0.54	0.34	0.99	0.83
Uniform Delay, d1		63.8	38.6		59.2	33.5		63.8	54.5	37.1	59.1	49.4
Progression Factor		0.96	0.93		0.78	0.75		1.20	0.98	1.02	1.05	1.13
Incremental Delay, d2		82.3	4.0		85.7	3.2		1.0	1.0	0.1	35.2	11.6
Delay (s)		143.3	39.9		131.7	28.2		77.3	54.7	38.2	97.1	67.7
Level of Service		F	D		F	C		E	D	D	F	E
Approach Delay (s)			57.5			53.5			47.4			84.8
Approach LOS			E			D			D			F

Intersection Summary			
HCM 2000 Control Delay	59.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		
Description: TC2 - 9/24/2014			

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	137
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	137
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	4
Heavy Vehicles (%)	3%
Bus Blockages (#/hr)	4
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	173	171	190	470	303	49	83	176	1369	206	5	182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			1%				0%			
Total Lost time (s)	5.0	5.5	5.5	5.5	6.0			5.0	5.0			5.0
Lane Util. Factor	1.00	1.00	1.00	0.97	1.00			1.00	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99			1.00
Flpb, ped/bikes	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	0.98			1.00	0.98			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1778	1812	1097	3375	1792			1773	5005			1730
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (perm)	1778	1812	1097	3375	1792			1773	5005			1730
Peak-hour factor, PHF	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. Flow (vph)	173	171	190	470	303	49	83	176	1369	206	5	182
RTOR Reduction (vph)	0	0	106	0	5	0	0	0	13	0	0	0
Lane Group Flow (vph)	173	171	84	470	347	0	0	259	1562	0	0	187
Confl. Peds. (#/hr)	16		16	16		16	9	9		9	8	8
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	8	72	6	2	0	6	2	0	8	0	8
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases			4									
Actuated Green, G (s)	16.1	26.0	26.0	20.9	30.8			21.6	57.1			16.0
Effective Green, g (s)	15.6	25.5	25.5	20.4	30.3			21.6	57.1			16.0
Actuated g/C Ratio	0.11	0.18	0.18	0.15	0.22			0.15	0.41			0.11
Clearance Time (s)	4.5	5.0	5.0	5.0	5.5			5.0	5.0			5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	198	330	199	491	387			273	2041			197
v/s Ratio Prot	0.10	0.09		c0.14	c0.19			c0.15	c0.31			0.11
v/s Ratio Perm			0.08									
v/c Ratio	0.87	0.52	0.42	0.96	0.90			0.95	0.77			0.95
Uniform Delay, d1	61.2	51.7	50.7	59.4	53.3			58.7	35.7			61.6
Progression Factor	1.00	1.00	1.00	0.83	1.03			1.00	1.00			1.14
Incremental Delay, d2	31.1	0.6	0.5	29.5	22.1			39.9	2.8			36.9
Delay (s)	92.4	52.3	51.3	78.5	76.8			98.5	38.5			107.1
Level of Service	F	D	D	E	E			F	D			F
Approach Delay (s)		64.9			77.7				47.0			
Approach LOS		E			E				D			

Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/24/2014 -Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1188	268
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Total Lost time (s)	5.0	
Lane Util. Factor	0.91	
Frpb, ped/bikes	0.99	
Flpb, ped/bikes	1.00	
Frt	0.97	
Flt Protected	1.00	
Satd. Flow (prot)	4915	
Flt Permitted	1.00	
Satd. Flow (perm)	4915	
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1188	268
RTOR Reduction (vph)	24	0
Lane Group Flow (vph)	1432	0
Confl. Peds. (#/hr)		8
Heavy Vehicles (%)	1%	1%
Bus Blockages (#/hr)	6	2
Turn Type	NA	
Protected Phases	6	
Permitted Phases		
Actuated Green, G (s)	51.5	
Effective Green, g (s)	51.5	
Actuated g/C Ratio	0.37	
Clearance Time (s)	5.0	
Vehicle Extension (s)	2.0	
Lane Grp Cap (vph)	1808	
v/s Ratio Prot	0.29	
v/s Ratio Perm		
v/c Ratio	0.79	
Uniform Delay, d1	39.5	
Progression Factor	0.59	
Incremental Delay, d2	2.3	
Delay (s)	25.7	
Level of Service	C	
Approach Delay (s)	35.0	
Approach LOS	C	

Intersection Summary

HCM Signalized Intersection Capacity Analysis
670: S Peasley Cyn Rd

8/6/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	341	518	478	570	929	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	3433	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	3433	1863	1863	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	341	518	478	570	929	444
RTOR Reduction (vph)	0	272	0	0	0	58
Lane Group Flow (vph)	341	246	478	570	929	386
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	23.4	23.4	21.2	106.6	80.4	80.4
Effective Green, g (s)	23.4	23.4	21.2	106.6	80.4	80.4
Actuated g/C Ratio	0.17	0.17	0.15	0.76	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	573	264	519	1418	1069	909
v/s Ratio Prot	0.10		c0.14	0.31	c0.50	
v/s Ratio Perm		c0.16				0.24
v/c Ratio	0.60	0.93	0.92	0.40	0.87	0.42
Uniform Delay, d1	53.9	57.5	58.6	5.7	25.3	16.8
Progression Factor	1.00	1.00	1.00	1.00	0.58	0.30
Incremental Delay, d2	1.1	37.3	21.5	0.9	4.0	0.6
Delay (s)	55.0	94.8	80.1	6.6	18.6	5.5
Level of Service	E	F	F	A	B	A
Approach Delay (s)	79.0			40.1	14.4	
Approach LOS	E			D	B	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3040: 1 Av S & SW 320 St/S 320 St

8/6/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1291	178	0	1136	257	0	458	345	0	306	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			-1%			-1%			1%	
Total Lost time (s)		4.5	5.5		5.0	5.0		5.0	5.0		4.5	4.5
Lane Util. Factor		0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Frpb, ped/bikes		1.00	0.99		1.00	0.98		1.00	0.99		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)		3457	1538		3535	1583		3592	1560		3556	1511
Flt Permitted		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)		3457	1538		3535	1583		3592	1560		3556	1511
Peak-hour factor, PHF	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. Flow (vph)	0	1291	178	0	1136	257	0	458	345	0	306	111
RTOR Reduction (vph)	0	0	55	0	0	64	0	0	40	0	0	57
Lane Group Flow (vph)	0	1291	123	0	1136	193	0	458	305	0	306	54
Confl. Peds. (#/hr)	1		1	2		2	1		1	4		4
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	4	0	0	8	0	8	0	4	4	0	8
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases			6			2			8			4
Actuated Green, G (s)		96.2	96.2		95.7	95.7		34.3	34.3		34.8	34.8
Effective Green, g (s)		96.2	95.2		95.7	95.7		34.3	34.3		34.8	34.8
Actuated g/C Ratio		0.69	0.68		0.68	0.68		0.24	0.24		0.25	0.25
Clearance Time (s)		4.5	4.5		5.0	5.0		5.0	5.0		4.5	4.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)		2375	1045		2416	1082		880	382		883	375
v/s Ratio Prot		c0.37			0.32			0.13			0.09	
v/s Ratio Perm			0.08			0.12			c0.20			0.04
v/c Ratio		0.54	0.12		0.47	0.18		0.52	0.80		0.35	0.14
Uniform Delay, d1		10.9	7.8		10.3	8.0		45.7	49.6		43.3	41.0
Progression Factor		1.00	1.00		1.36	2.41		0.87	0.87		1.27	1.96
Incremental Delay, d2		0.9	0.2		0.5	0.3		0.2	10.1		0.1	0.1
Delay (s)		11.8	8.0		14.6	19.5		40.3	53.2		54.8	80.2
Level of Service		B	A		B	B		D	D		D	F
Approach Delay (s)		11.4			15.5			45.8			61.6	
Approach LOS		B			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

Description: Traffic Count Consultant - 10/15/2014

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3057: I-5 SB Ramp & S 320 St

8/11/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1709	776	235	1589	0	0	0	0	188	0	1075
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			2%			2%	
Total Lost time (s)		5.0	5.0	5.0	5.0					5.0	5.0	5.0
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.95	0.76
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5046	1507	1759	5122					1667	1681	3600
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5046	1507	1759	5122					1667	1681	3600
Peak-hour factor, PHF	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. Flow (vph)	0	1709	776	235	1589	0	0	0	0	188	0	1075
RTOR Reduction (vph)	0	0	351	0	0	0	0	0	0	0	0	40
Lane Group Flow (vph)	0	1709	425	235	1589	0	0	0	0	94	94	1035
Confl. Peds. (#/hr)	2		2							5		5
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	4	4	2	0	2	0	2	2	0	2
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					4	4	4 5
Permitted Phases			2									
Actuated Green, G (s)		64.0	64.0	27.0	82.4					34.0	34.0	47.6
Effective Green, g (s)		64.0	64.0	27.0	82.4					34.0	34.0	47.6
Actuated g/C Ratio		0.46	0.46	0.19	0.59					0.24	0.24	0.34
Clearance Time (s)		5.0	5.0	5.0	5.0					5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0					2.0	2.0	
Lane Grp Cap (vph)		2306	688	339	3014					404	408	1224
v/s Ratio Prot		c0.34		c0.13	0.31					0.06	0.06	c0.29
v/s Ratio Perm			0.28									
v/c Ratio		0.74	0.62	0.69	0.53					0.23	0.23	0.85
Uniform Delay, d1		31.2	28.8	52.6	17.2					42.5	42.5	42.8
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		2.2	4.1	4.9	0.7					0.1	0.1	5.3
Delay (s)		33.4	32.9	57.5	17.8					42.6	42.6	48.1
Level of Service		C	C	E	B					D	D	D
Approach Delay (s)		33.2			23.0			0.0			47.3	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1154	680	0	1307	132	480	2	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-1%			2%			3%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0	6.0			
Lane Util. Factor		0.91	1.00		0.91		0.95	0.95	1.00			
Frpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	0.99			
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00	1.00			
Frt		1.00	0.85		0.99		1.00	1.00	0.85			
Flt Protected		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (prot)		5046	1575		5062		1651	1669	1533			
Flt Permitted		1.00	1.00		1.00		0.95	0.95	1.00			
Satd. Flow (perm)		5046	1575		5062		1651	1669	1533			
Peak-hour factor, PHF	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. Flow (vph)	0	1154	680	0	1307	132	480	2	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	59	0	0	0
Lane Group Flow (vph)	0	1154	680	0	1434	0	240	242	41	0	0	0
Confl. Peds. (#/hr)				2		2	1		1	10		10
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type		NA	Free		NA		Split	NA	Perm			
Protected Phases		2			6		4	4				
Permitted Phases			Free						4			
Actuated Green, G (s)		104.4	140.0		104.4		25.6	25.6	25.6			
Effective Green, g (s)		104.4	140.0		104.4		25.6	25.6	24.6			
Actuated g/C Ratio		0.75	1.00		0.75		0.18	0.18	0.18			
Clearance Time (s)		5.0			5.0		5.0	5.0	5.0			
Vehicle Extension (s)		2.0			2.0		2.0	2.0	2.0			
Lane Grp Cap (vph)		3762	1575		3774		301	305	269			
v/s Ratio Prot		0.23			0.28		c0.15	0.14				
v/s Ratio Perm			c0.43						0.03			
v/c Ratio		0.31	0.43		0.38		0.80	0.79	0.15			
Uniform Delay, d1		5.9	0.0		6.3		54.7	54.7	48.9			
Progression Factor		1.00	1.00		1.29		1.02	1.02	1.06			
Incremental Delay, d2		0.2	0.9		0.3		12.8	12.4	0.1			
Delay (s)		6.1	0.9		8.4		68.7	68.2	51.9			
Level of Service		A	A		A		E	E	D			
Approach Delay (s)		4.1			8.4			65.6			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Description: 9/23/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	794	201	67	885	112	225	139	57	148	190	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		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)	1770	3525	1499	1770	3434		1755	1863	1506	1755	1863	1506
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)	1770	3525	1499	1770	3434		1755	1863	1506	1755	1863	1506
Peak-hour factor, PHF	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. Flow (vph)	142	794	201	67	885	112	225	139	57	148	190	380
RTOR Reduction (vph)	0	0	71	0	6	0	0	0	48	0	0	257
Lane Group Flow (vph)	142	794	130	67	991	0	225	139	9	148	190	123
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Bus Blockages (#/hr)	0	2	0	0	2	0	2	0	2	2	0	2
Turn Type	Prot	NA	pm+ov	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2	8	1	6		8	8		4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	14.8	70.1	91.7	8.8	64.1		21.6	21.6	21.6	19.5	19.5	19.5
Effective Green, g (s)	14.8	70.1	89.7	8.8	64.1		21.6	21.6	21.6	19.5	19.5	19.5
Actuated g/C Ratio	0.11	0.50	0.64	0.06	0.46		0.15	0.15	0.15	0.14	0.14	0.14
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	187	1765	1024	111	1572		270	287	232	244	259	209
v/s Ratio Prot	c0.08	0.23	0.02	0.04	c0.29		c0.13	0.07		0.08	c0.10	
v/s Ratio Perm			0.07						0.01			0.08
v/c Ratio	0.76	0.45	0.13	0.60	0.63		0.83	0.48	0.04	0.61	0.73	0.59
Uniform Delay, d1	60.9	22.5	9.8	63.9	28.9		57.5	54.1	50.4	56.6	57.8	56.5
Progression Factor	1.11	1.30	4.83	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	0.7	0.0	6.2	1.9		18.5	0.5	0.0	2.9	8.9	2.7
Delay (s)	79.6	29.9	47.5	70.1	30.9		76.0	54.6	50.4	59.6	66.7	59.2
Level of Service	E	C	D	E	C		E	D	D	E	E	E
Approach Delay (s)		39.2			33.3			65.5			61.2	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
Description: Mils320			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Volume (vph)	176	101	158	84	173	57	2	170	1556	122	5	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			1%				3%			
Total Lost time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95			0.97	0.91			1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85	1.00	0.96			1.00	0.99			1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00			0.95
Satd. Flow (prot)	1732	1872	1537	1743	3395			3401	4953			1796
Flt Permitted	0.53	1.00	1.00	0.64	1.00			0.95	1.00			0.95
Satd. Flow (perm)	969	1872	1537	1183	3395			3401	4953			1796
Peak-hour factor, PHF	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. Flow (vph)	176	101	158	84	173	57	2	170	1556	122	5	49
RTOR Reduction (vph)	0	0	133	0	28	0	0	0	5	0	0	0
Lane Group Flow (vph)	176	101	25	84	202	0	0	172	1673	0	0	54
Confl. Peds. (#/hr)	6		6	7		7	3	3		3	3	3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%	2%
Bus Blockages (#/hr)	6	0	4	4	2	6	4	2	6	0	6	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		Prot	Prot	NA		Prot	Prot
Protected Phases	7	4		3	8		5	5	2		1	1
Permitted Phases	8		4	4								
Actuated Green, G (s)	33.7	22.2	22.2	33.7	23.2			10.2	78.2			7.6
Effective Green, g (s)	33.7	22.2	22.2	33.7	23.2			10.2	78.2			7.6
Actuated g/C Ratio	0.24	0.16	0.16	0.24	0.17			0.07	0.56			0.05
Clearance Time (s)	4.5	5.5	5.5	4.5	5.5			5.0	5.0			5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)	290	296	243	330	562			247	2766			97
v/s Ratio Prot	c0.05	0.05		0.02	0.06			0.05	c0.34			0.03
v/s Ratio Perm	c0.10		0.02	0.04								
v/c Ratio	0.61	0.34	0.10	0.25	0.36			0.70	0.60			0.56
Uniform Delay, d1	45.3	52.4	50.4	44.4	51.8			63.4	20.6			64.6
Progression Factor	1.27	1.05	3.05	1.19	1.14			1.12	0.69			1.01
Incremental Delay, d2	2.3	0.2	0.1	0.1	0.1			6.6	1.0			3.9
Delay (s)	60.0	55.1	153.8	53.2	59.1			77.6	15.2			69.0
Level of Service	E	E	F	D	E			E	B			E
Approach Delay (s)		92.9			57.5				21.0			
Approach LOS		F			E				C			

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/18/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBT	SBR
Lane Configurations		
Volume (vph)	1648	178
Ideal Flow (vphpl)	1900	1900
Grade (%)	-3%	
Total Lost time (s)	5.5	4.5
Lane Util. Factor	0.91	1.00
Frpb, ped/bikes	1.00	0.98
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	5134	1569
Flt Permitted	1.00	1.00
Satd. Flow (perm)	5134	1569
Peak-hour factor, PHF	1.00	1.00
Adj. Flow (vph)	1648	178
RTOR Reduction (vph)	0	62
Lane Group Flow (vph)	1648	116
Confl. Peds. (#/hr)		3
Heavy Vehicles (%)	2%	2%
Bus Blockages (#/hr)	4	2
Turn Type	NA	pm+ov
Protected Phases	6	7
Permitted Phases		6
Actuated Green, G (s)	75.6	86.1
Effective Green, g (s)	75.6	86.1
Actuated g/C Ratio	0.54	0.61
Clearance Time (s)	5.5	4.5
Vehicle Extension (s)	2.0	2.0
Lane Grp Cap (vph)	2772	964
v/s Ratio Prot	c0.32	0.01
v/s Ratio Perm		0.06
v/c Ratio	0.59	0.12
Uniform Delay, d1	21.8	11.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.9	0.0
Delay (s)	22.8	11.2
Level of Service	C	B
Approach Delay (s)	23.0	
Approach LOS	C	

Intersection Summary

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	18	167	1630	142	644	1005	73	224	545	539	152	628
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			4%			1%			2%			-3%
Total Lost time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Lane Util. Factor		1.00	0.91		0.97	0.91		0.97	0.86	0.86	0.97	0.91
Frpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	0.99	1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.99		1.00	0.99		1.00	0.95	0.85	1.00	0.95
Flt Protected		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)		1737	4966		3369	4947		3288	4359	1297	3485	4844
Flt Permitted		0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)		1737	4966		3369	4947		3288	4359	1297	3485	4844
Peak-hour factor, PHF	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. Flow (vph)	18	167	1630	142	644	1005	73	224	545	539	152	628
RTOR Reduction (vph)	0	0	7	0	0	5	0	0	68	33	0	77
Lane Group Flow (vph)	0	185	1765	0	644	1073	0	224	747	236	152	906
Confl. Peds. (#/hr)	5	5		5				3		3	2	
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	5%	5%	5%	2%	2%
Bus Blockages (#/hr)	2	2	0	2	2	2	2	2	2	0	0	2
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Actuated Green, G (s)		24.5	50.9		21.0	47.9		13.2	38.6	59.6	9.0	34.4
Effective Green, g (s)		24.5	50.9		21.0	47.9		13.2	38.6	59.6	9.0	34.4
Actuated g/C Ratio		0.18	0.36		0.15	0.34		0.09	0.28	0.43	0.06	0.25
Clearance Time (s)		4.5	5.0		5.0	5.0		5.0	5.0	5.0	5.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)		303	1805		505	1692		310	1201	552	224	1190
v/s Ratio Prot		c0.11	c0.36		c0.19	0.22		0.07	c0.17	0.06	0.04	c0.19
v/s Ratio Perm										0.12		
v/c Ratio		0.61	0.98		1.28	0.63		0.72	0.62	0.43	0.68	0.76
Uniform Delay, d1		53.3	44.0		59.5	38.7		61.6	44.3	28.2	64.1	49.0
Progression Factor		1.00	0.90		0.76	0.93		1.28	1.44	2.00	0.76	1.01
Incremental Delay, d2		2.4	16.0		131.2	0.9		5.6	0.6	0.2	6.1	2.6
Delay (s)		55.7	55.8		176.2	36.7		84.8	64.4	56.7	54.7	52.0
Level of Service		E	E		F	D		F	E	E	D	D
Approach Delay (s)			55.8			88.9			66.3			52.3
Approach LOS			E			F			E			D

Intersection Summary			
HCM 2000 Control Delay	66.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.5
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/11/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	355
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	355
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Heavy Vehicles (%)	2%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	178	1819	349	794	1166	386	95	420	943	653	319	699
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-4%				2%			-2%
Total Lost time (s)	4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.5
Lane Util. Factor	1.00	0.91	1.00	0.94	0.91	1.00		0.97	0.91	0.91	0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.98	0.85	1.00	0.98
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1688	4891	1485	5027	5123	1556		3419	3292	1441	3502	5073
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1688	4891	1485	5027	5123	1556		3419	3292	1441	3502	5073
Peak-hour factor, PHF	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. Flow (vph)	178	1819	349	794	1166	386	95	420	943	653	319	699
RTOR Reduction (vph)	0	0	93	0	0	167	0	0	10	51	0	11
Lane Group Flow (vph)	178	1819	256	794	1166	219	0	515	1103	432	319	775
Confl. Peds. (#/hr)	4		4	5		5	1	1		1	14	
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	2	2	2	2	2	0	0	2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	Prot	NA	pt+ov	Prot	NA
Protected Phases	7	4		3	8		5	5	2	2 3	1	6
Permitted Phases			4			8						
Actuated Green, G (s)	18.5	44.0	44.0	16.0	41.5	41.5		16.0	47.5	63.5	13.0	44.0
Effective Green, g (s)	18.5	44.0	44.0	16.0	41.5	41.5		16.0	47.5	63.5	13.0	44.0
Actuated g/C Ratio	0.13	0.31	0.31	0.11	0.30	0.30		0.11	0.34	0.45	0.09	0.31
Clearance Time (s)	4.5	4.5	4.5	5.0	5.0	5.0		5.0	5.0		5.0	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	223	1537	466	574	1518	461		390	1116	653	325	1594
v/s Ratio Prot	0.11	c0.37		c0.16	0.23			c0.15	c0.34	0.30	c0.09	0.15
v/s Ratio Perm			0.17			0.14						
v/c Ratio	0.80	1.18	0.55	1.38	0.77	0.47		1.32	0.99	0.66	0.98	0.49
Uniform Delay, d1	58.9	48.0	39.8	62.0	44.9	40.3		62.0	46.0	29.9	63.4	38.9
Progression Factor	0.61	0.54	0.22	0.99	0.99	1.07		0.88	1.10	1.50	1.06	1.11
Incremental Delay, d2	9.3	86.3	2.4	177.0	1.6	1.4		160.9	23.5	1.9	44.1	0.1
Delay (s)	45.3	112.4	11.2	238.6	45.9	44.5		215.7	74.2	46.8	111.2	43.1
Level of Service	D	F	B	F	D	D		F	E	D	F	D
Approach Delay (s)		92.2			110.9				102.5			62.8
Approach LOS		F			F				F			E

Intersection Summary			
HCM 2000 Control Delay	96.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

Description: 9/09/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lane Configurations	
Volume (vph)	87
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	87
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	14
Heavy Vehicles (%)	1%
Bus Blockages (#/hr)	2
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	324	598	171	215	415	77	1	108	853	66	71	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			-3%				2%			-2%
Total Lost time (s)	7.0	5.0	5.0	6.0	5.0			4.5	4.5		5.5	5.5
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95			0.97	0.91		1.00	0.91
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.99		1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	3470	1891	1594	1764	3467			3240	4735		1753	4765
Flt Permitted	0.95	1.00	1.00	0.08	1.00			0.95	1.00		0.20	1.00
Satd. Flow (perm)	3470	1891	1594	154	3467			3240	4735		373	4765
Peak-hour factor, PHF	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. Flow (vph)	324	598	171	215	415	77	1	108	853	66	71	838
RTOR Reduction (vph)	0	0	105	0	13	0	0	0	6	0	0	65
Lane Group Flow (vph)	324	598	66	215	479	0	0	109	913	0	71	1212
Confl. Peds. (#/hr)				1		1						
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	7%	4%	4%
Bus Blockages (#/hr)	2	0	2	2	0	2	2	0	2	0	0	2
Turn Type	Prot	NA	Perm	D.P+P	NA		Prot	Prot	NA		D.P+P	NA
Protected Phases	7	4		3	8		5	5	2		1	6
Permitted Phases			4	4							2	
Actuated Green, G (s)	36.0	48.3	48.3	61.7	24.7			10.6	49.7		56.3	45.7
Effective Green, g (s)	36.0	48.3	48.3	61.7	24.7			11.6	50.7		56.3	45.7
Actuated g/C Ratio	0.26	0.34	0.34	0.44	0.18			0.08	0.36		0.40	0.33
Clearance Time (s)	7.0	5.0	5.0	6.0	5.0			5.5	5.5		5.5	5.5
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	892	652	549	221	611			268	1714		215	1555
v/s Ratio Prot	0.09	0.32		c0.09	0.14			0.03	c0.19		0.02	c0.25
v/s Ratio Perm			0.04	c0.33							0.12	
v/c Ratio	0.36	0.92	0.12	0.97	0.78			0.41	0.53		0.33	0.78
Uniform Delay, d1	42.6	43.9	31.3	58.0	55.1			60.9	35.3		27.1	42.6
Progression Factor	1.02	1.06	1.40	0.56	1.54			1.00	1.00		0.88	0.94
Incremental Delay, d2	0.1	16.2	0.0	51.8	5.9			0.4	1.2		0.3	3.3
Delay (s)	43.4	63.0	43.8	84.5	90.8			61.3	36.5		24.1	43.3
Level of Service	D	E	D	F	F			E	D		C	D
Approach Delay (s)		54.2			88.9				39.1			42.3
Approach LOS		D			F				D			D

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group

Movement	SBR
Lanes, Configurations	
Volume (vph)	439
Ideal Flow (vphpl)	1900
Grade (%)	
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	1.00
Adj. Flow (vph)	439
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	295	13	355	17	14	13	540	1239	36	17	926	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			-1%			1%	
Total Lost time (s)		3.5	3.5	2.0	2.0		3.0	4.0		5.0	3.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		0.97	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.99	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1764	1540	1751	1731		3484	3558		1778	3542	
Flt Permitted		0.72	1.00	0.28	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1322	1540	524	1731		3484	3558		1778	3542	
Peak-hour factor, PHF	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. Flow (vph)	295	13	355	17	14	13	540	1239	36	17	926	0
RTOR Reduction (vph)	0	0	267	0	10	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	308	88	17	17	0	540	1274	0	17	926	0
Confl. Peds. (#/hr)	2		2	4		4	8		8	6		6
Heavy Vehicles (%)	2%	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	2	0	2	2	0	2	0	2	0	0	2	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		33.7	33.7	34.2	34.2		26.1	79.1		2.9	55.9	
Effective Green, g (s)		34.7	34.7	36.2	36.2		28.1	80.1		2.9	57.9	
Actuated g/C Ratio		0.25	0.25	0.26	0.26		0.20	0.57		0.02	0.41	
Clearance Time (s)		4.5	4.5	4.0	4.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)		327	381	135	447		699	2035		36	1464	
v/s Ratio Prot					0.01		c0.15	0.36		0.01	c0.26	
v/s Ratio Perm		c0.23	0.06	0.03								
v/c Ratio		0.94	0.23	0.13	0.04		0.77	0.63		0.47	0.63	
Uniform Delay, d1		51.7	42.0	39.8	38.9		52.9	20.0		67.8	32.6	
Progression Factor		0.58	0.29	1.00	1.00		1.22	1.33		1.06	1.37	
Incremental Delay, d2		33.7	0.1	0.2	0.0		4.4	1.3		2.9	1.7	
Delay (s)		63.4	12.2	39.9	38.9		69.0	27.9		74.7	46.3	
Level of Service		E	B	D	D		E	C		E	D	
Approach Delay (s)		36.0			39.3			40.1			46.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	41.2	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)	18.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

Description: 9/10/2014 - Traffic Count Consultant

c Critical Lane Group