Transportation Review Application
(Bend Development Code Chapter 4.7)

Permit Center
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Bend, OR 97701
P: 541-388-5580
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COMMUNITY DEVELOPMENT

Review Type

- ☑ Site Plan
- ☐ Land Division
- ☐ Master Plan
- ☐ Plan Amendment
- ☐ Seeking exception for submittal

Submit completed form to: comdeveng@bendoregon.gov

Applicant Information

Submitter's name: Joe Bessman Email: jbessman@kittelson.com

Company name: Kittelson & Associates, Inc. Phone: (541) 312-8300

Address: 354 SW Upper Terrace Dr, Suite 101, Bend, Oregon 97702
City State Zip Code

Project Information

Project Title: St. Charles Tower Average Daily Traffic (ADT): 1586

Project Address: 2500 NE Neff Road

Project Map and Tax Lot: 1712270001200

Seeking TFR exception? Why? No.

A Transportation Facilities Report (TFR) and/or Transportation Impact Analysis (TIA) must be submitted, reviewed and approved prior to Land Use Completeness Check. The City Engineer will determine the need for a TIA based on the TFR submittal.

Transportation Facilities Report (TFR) Submittal Checklist – Chapter 4.7.400

- ☑ Site Plan with Vicinity Map
- ☑ TFR Report (Stamped by a Professional Engineer)
  - ☑ Development Description
  - ☑ Transportation Demand Management
  - ☑ Trip Generation
  - ☑ Transportation Facilities Evaluation

Transportation Impact Analysis (TIA) Submittal Checklist – Chapter 4.7.500

- ☑ Site Plan with Vicinity Map
- ☑ TIA Report (Stamped by a Professional Engineer qualified in Traffic Engineering)
  - ☑ Study Analysis Years
  - ☑ Future Traffic Forecast
  - ☑ Arterial & Collector Left Turn, Median Refuge, and Right Turn Assessment
  - ☑ Safety Review
  - ☑ Proportionate Share Contribution
  - ☑ Traffic Counts
  - ☑ Operations Analysis Methodology
  - ☐ Walking, Bike & Transit Development

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TRANSPORTATION IMPACT ANALYSIS

Date:	January 25, 2017	Project #: 20398
To:	Russ Grayson, PE and Ryan Oster, PE, City of Bend	
From:	Joe Bessman, PE and Jacki Gulczynski	
Project:	St. Charles Tower	

This Transportation Impact Analysis (TIA) summarizes the operational conditions and needs surrounding the St. Charles Campus to assess the adequacy of the system to accommodate the proposed 120,000 square-foot Tower addition. The St. Charles Medical Center (SCMC) Campus is located on the Northwest corner of Neff Road and NE 27th Street in Bend, Oregon. The requirements for a TIA are contained within Bend Development Code 4.7.500.

PROJECT BACKGROUND

St. Charles Medical Center resides on a 54.35 acre parcel on the Northwest corner of Neff Road and NE 27th Street in Bend, Oregon. St. Charles is proposing a new 4-story addition to the north side of the St. Charles Hospital. The new addition is expected to contain 120,000 square-feet of new hospital space. The Tower will be constructed on the north end of the Hospital where Parking Lot H is currently located, displacing 80 to 100 parking stalls with the anticipated building footprint and required changes to circulation. Occupancy of the tower is anticipated in 2018.

There are multiple access points to the overall St. Charles Campus from the various roads surrounding the campus, and an internal private loop road allows staff, visitors, employees, and patients to access any of the on-site facilities regardless of which entrance they select. The primary entrance is located at the signalized Neff Road/Medical Center Drive intersection, with other entrances available from Purcell Boulevard, Williamson Boulevard, and Conners Avenue. Figure 1 illustrates the location of the site and the surrounding roadways.

Figure 1. Site Vicinity Map.

EXISTING TRANSPORTATION INFRASTRUCTURE

Vehicular System

Major roadways adjacent to the Hospital site include Neff Road and NE 27th Street. Neff Road is a major east-west roadway classified as a *Minor Arterial* in the City of Bend Transportation System Plan connecting the SCMC campus west to downtown Bend. Neff Road serves as the primary access route for Pilot Butte Middle School and Juniper Elementary School before descending the grade and connecting to the campus at Purcell Boulevard. Neff Road also serves as a major access route for BMC medical office buildings south of the campus before heading east to serve residential lands.

Classified as a *Major Arterial* within the City's Transportation System Plan, NE 27th Street is the highest-order north-south roadway east of 3rd Street. The alignment of NE 27th Street extends from Butler Market Road south to Knott Road, where it includes an interchange with the US 97 corridor. NE 27th Street contains a five-lane cross-section throughout the commercial and employment zoned lands between Bear Creek Road and the SCMC campus. North of Neff Road NE 27th Street transitions into a three-lane section, and south of Bear Creek Road it contains only a two-lane section with limited sidewalks and partial bicycle lanes. Mountain View High School fronts the NE 27th Street corridor north of the hospital. An entrance to the SCMC campus is available from the NE 27th Street/Conners Avenue intersection via Pasteur Court.

Table 1. Surrounding Roadway Characteristics

Roadway	Functional Classification	Cross-Section	Posted Speed	Bicycle Facilities	Pedestrian Facilities	Median
Neff Road	Minor Arterial	2-3 Lanes	35 mph[1]	Striped Bicycle Lanes	Partial[2]	Raised Median/Center Turn Lane
Purcell Boulevard	Major Collector	2 Lanes	25 mph	Striped Bicycle Lanes[3]	Yes	None
Williamson Boulevard	Local	2 Lanes	10 mph	None	Partial[4]	None
Medical Center Drive	Local	2 Lanes	10 mph	None	Yes	None
NE 27th Street	Major Arterial	4-5 Lanes	45 mph	Striped Bicycle Lanes	Yes	Raised Median/Center Turn Lane
Conners Avenue	Local	2 Lanes	Not Posted; 25 mph	None	Yes	None
Courtney Drive	Local	2 Lanes	Not Posted; 25 mph	None	Yes	None

[1] Posted speed changes to 20 mph on school days in vicinity of Pilot Butte Middle School

[2] 360 feet of disconnected sidewalk east of Purcell Boulevard

[3] Striped bike lanes terminate 250 feet north of Neff Road/Purcell Boulevard intersection

[4] No sidewalks north of Williamson Boulevard/Neff Road intersection toward Hospital

Pedestrian System

The pedestrian system along the NE 27th Street corridor is complete throughout the study area. There are missing sidewalks along the Neff Road corridor on the southwest corner of the SCMC campus and extending up the hill, though these are not a part of the project site frontage. These areas are highly constrained due to the steep grades, utilities, and limited right-of-way. However, a complete sidewalk system is available on the south side of Neff Road that provides a continuous route from the schools to NE 27th Street.

Specific observations of the pedestrian system are summarized below:

- Approximately 350 feet of sidewalk is missing along the Neff Road.
- Approximately 130 feet of sidewalk is missing along the Purcell Boulevard frontage north of Neff Road.
- Williamson Boulevard serves as a prominent vehicular entrance to the campus but does not include sidewalks. A complete pedestrian route to the hospital entrance is available from the bus stop located approximately 150 feet east of Williamson Boulevard.
- No sidewalks are present along the private Pasteur Court connection into the SCMC campus.

Missing sidewalks adjacent to the Neff Road/Purcell Boulevard are not part of the project site frontage. Recently, the SCMC campus has made significant investments in its internal parking and circulation system to address connectivity needs. These have included prioritizing patient parking near the hospital entrances, connecting parking lots to the entrances with accessible routes, and providing shuttle services for visitors and employees.

Bicycle System

Bicycle lanes are present on the surrounding major roadways including Neff Road and NE 27th Street. Purcell Boulevard contains bike lanes 250 feet north of the Neff Road/Purcell Boulevard intersection that transition into a shared roadway at the Ronald McDonald House access. A bicycle network is present from SCMC to Pilot Butte Middle School via Neff Road and Mountain View High School via NE 27th Street. There are no bicycle lanes on Williamson Boulevard, Medical Center Drive, Conners Avenue or Courtney Drive as all are classified as local streets.

Other bicycle amenities include secure bicycle parking near the main entrance and throughout the campus. Cascades East Transit services also accommodates bicycles at no additional charge.

Transit System

The Hospital has partnered with Cascade East Transit to provide higher quality transportation services across the City. There are currently three City transit routes that serve the SCMC campus. The Greenwood route travels from NE 27th Street to Courtney Drive, through the Hospital to Neff Road and continues down Purcell Boulevard. There are two Reed Market/Wells Acres routes that serve each travel direction. Both routes travel from NE 27th Street to Neff Road and create a loop from Medical Center Drive to Williamson Boulevard and back to Neff Road.

Figure 2. Cascade East Transit Map near study area

The existing stop on Neff Road, just east of the Neff Road/Williamson Boulevard intersection, is being relocated to Medical Center Drive, north of the Neff Road/Medical Center Drive intersection. Plans are underway to improve the bus stop with a concrete pad, bench, and sheltered waiting area. **Figure 2** illustrates the transit routes that serve the campus.

Adjacent Land Uses

St. Charles Medical Center is located in the Mountain View neighborhood and within the *Medical District Overlay Zone*. There are several medical office and supportive uses that surround the campus to the north and south. Immediately surrounding the medical zone are residential zones (RS and RM) and a small segment of commercial convenience (CG) that is intended to help contain trips within the area.

Planned Public and Private Projects

There were several funded projects identified within the site vicinity. A City sewer project is underway along the 27th Street corridor that will include installation of new sewer pipes followed by repaving of the entire roadway segment, addressing the poor pavement conditions. This project will temporarily detour traffic along Neff Road and Purcell Boulevard. Future phases of the sewer extension will occur along the campus frontage and continue north on Purcell Boulevard.

The City has identified plans to install pedestrian improvements near the intersections of Neff Road/Williamson Boulevard and NE 27th Street/Conners Avenue. The projects involve the addition of marked and signed crosswalks with raised pedestrian refuge islands in the roadway median. Both projects are still in the planning phase and have not yet established a construction schedule.

The City's Capital Improvement Project list contains two projects within the campus vicinity. This includes enhancements to the Neff Road/Purcell Boulevard signalized intersection and a planned project to extend sidewalks along the north side of Neff Road. A timeline has not been established for either project.

Several private development projects have been approved by the city and are pending construction within the next several years.

- An independent living facility for senior citizens has been approved by the city and will be located on Medical Center Drive south of the Hospital. The senior center is anticipated to generate 454 daily trips and 33 weekday p.m. peak hour trips.
- An affordable housing project has been approved to develop 53 townhomes in two separate parcels located northeast of the Hospital within the residential neighborhoods accessed from Purcell Boulevard.
- The Hospital is operating over its parking capacity with vehicles commonly parked in landscaping and undeveloped areas. To support the additional staff and patients, address current parking deficiencies, and replace parking impacted by the tower footprint, a new 500-stall surface parking lot has been approved in the northeast corner of the campus. The grading for the parking lot is currently underway.

The transportation impacts of the three private development projects have been included within this analysis.

SAFETY

Historical Crash Data

Crash records were obtained from the online ODOT Crash Analysis and Reporting Unit for all of Deschutes County for the five-year period from 2010 through 2014. The geocoded crash database was mapped, and a review was conducted of adjacent intersections and roadways, with detailed review then conducted of individual incidents. The ODOT crash database includes a mix of self-reported collisions and reports of first responders. Crashes that involve one or more motor vehicles, result in $1,500 or more in property damage or any level of personal injury are required to be reported.

Table 2 summarizes the study intersections and the total crashes, severity of the crashes, and crash rate per million entering vehicles. During the study period, no fatal crashes occurred at the study intersections or within the study area.

Table 2. Summary of Intersection Crashes

Intersection	Total Crashes	Injury	Non-Injury	Crash Rate Per Million Entering Vehicles
Neff Road/Purcell Boulevard	47	20	27	1.07
Neff Road/Williamson Boulevard	9	4	5	0.33
Neff Road/Medical Center Drive	11	5	6	0.33
Neff Road/NE 27th Street	36	16	20	0.59
Conners Avenue/NE 27th Street	15	7	8	0.36
Courtney Drive/NE 27th Street	6	3	3	0.15

As shown in Table 2, the intersection of Neff Road/Purcell Boulevard contains a crash rate over 1.0 crashes per million entering vehicles. This is generally indicative of potential geometric or operational issues, and is further reviewed below.

Neff Road/Purcell Boulevard Intersection

The Neff Road/Purcell Boulevard intersection is a high-volume intersection connecting two major roadway facilities at a signalized intersection. As shown in Figure 3, the intersection is located near the bottom of a hill, with eastbound Neff traffic experiencing an 8 to 12% downgrade on the approach. The traffic signal operates with protected and permissive signal phasing along Neff Road using an older five-section “doghouse” signal display. The signal heads are suspended by a spanwire setup with wooden signal poles on the southern approaches. Illumination is only present on the steel signal poles on the north side of the intersection.

The lane configuration at the intersection includes a three-lane cross-section along Neff Road and a two-lane section on Purcell Boulevard. Motorists commonly form two lanes on the northbound and

southbound approaches by encroaching into the bicycle lanes. When the field visit was conducted the bicycle lane striping showed significant wear.

Figure 3. Neff Road/Purcell Boulevard intersection profile.

Previous Studies

The Neff Road/Purcell Boulevard intersection was identified in the *City of Bend Arterial and Collector Multimodal Safety Study* as a 'hot spot' location with observed crash trends. As the report was prepared in 2012 it was premised on older crash data (2006 to 2010) but highlighted the following issues:

- High northbound rear-end crashes: mitigation recommended as restriping the approach to delineate the single turn lane.
- High occurrence of "right-hook" crashes: mitigation recommended as no northbound right-turn on red.
- High number of turning crashes during the permissive signal phase: mitigation recommended as protected-only signal phasing along Neff Road.

Costs for the proposed countermeasures identified in the study were cited as $100,390, with the estimated benefit of these improvements cited as $848,000.

Current Crash Data

Review of more current crash data noted some similarities with the 2012 study, but variations in the crash patterns were noted. Crash diagrams were prepared at the intersection and compared to those within the 2012 study, as summarized below:

- The predominant crash type was rear-end collisions, comprising 27 of the 47 crashes.
- Rear-end crashes were predominantly reported along the eastbound approach (14 of the 27 rear-end collisions); this was also the predominant trend within the 2006 through 2010 data.
- There were two crashes involving bicycles or pedestrians; in both of these crashes the pedestrian and cyclist were at fault. There were no "right-hook" crashes reported within the study time period.
- Ten of the total crashes were reported in snow and ice, and are likely attributable to the grades and queuing.

In addition to the high number of crashes at or within the immediate vicinity of the Neff Road/Purcell Boulevard intersection, with the queuing and congestion we also reviewed crashes on the intersection approaches. This indicated that several additional crashes in the area are also likely attributable to the signalized intersection. We noted that there were 10 reported crashes at the nearby intersection of Neff Road/Cliff Drive where queues from the traffic signal commonly extend past the intersection, and additional crashes along Neff Road that are also likely attributable to the intersection.

We visited the site in October 2016 to identify other geometric or visibility issues that could influence the crash patterns. The following observations were noted:

- Extensive queuing was noted on the approaches, and particularly in the eastbound direction.
- The overhead flashing sign on the eastbound intersection approach stating "Prepare to Stop when Lights Flash" provides an unclear warning indication to drivers. The sign was not visible from the back of the queue.
- The permissive left-turn signal phase along Neff Road provides limited value during the peak hours due to the heavy flow of east-west traffic on Neff Road and lack of available gaps.
- Drivers on northbound (and to a lesser degree the southbound) approach form two lines within the single northbound lane. The lack of bicycle lanes at the traffic signal approach makes it unclear where vehicles should position, and left-turning vehicles align along the centerline out of courtesy to the heavy right-turning volume.
- The fence along the south side of Neff Road toward the west impacts the sight lines for northbound right-turning vehicles.
- The tight curb radii require low speed turns at the intersection.

Safety Recommendations

Based on our review of the intersection, comparison and review of the current and prior crash data, and the operational analysis summarized within this report, we noted the following priority issues at the intersection:

- **Intersection congestion.** Intersection congestion was identified as a critical factor in several crash types, specifically the turning and rear-end collisions. The signal cycle failure and queue spillback occurring today results in queues extending beyond where drivers anticipate having

to stop. The delays and congestion also encourage drivers to accept shorter gaps, to extend into the yellow or red signal phase, and to position their vehicles to add additional turning lanes. While symptoms of the congestion can be addressed, the critical east-west connection provided by the Neff Road corridor and its primary access route to the region's hospital should emphasize the need for a reliable system.

- **Driver Expectation.** The horizontal and vertical curves on the northbound and eastbound approaches to the Neff Road/Purcell intersection restrict visibility of the signal. The "Prepare to Stop When Lights Flash" sign does not alert drivers that they are approaching a traffic signal, and could be interpreted in the converse when the lights are not flashing.
- **Bicycle and Pedestrian Routes and Visibility.** The need for reliable mobility along the Neff Road corridor has to balance with pedestrian and bicycle connectivity, route completeness, and comfort. The context of this campus by schools and the region's major employer

These priority issues and field observations are integrated into the intersection improvement recommendations within this report.

Neff Road/NE 27th Street Intersection

The Neff Road/NE 27th Street had 36 reported crashes during the five-year period, with 16 of these crashes resulting in some level of injury. The majority of the crashes (72%) were classified as rear-end collisions, and the primary crash cause was noted as following too closely and/or careless driving. No significant trends were identified for adverse weather or dark lighting conditions, and no pedestrian or bicycle crashes were reported at this intersection during the study period.

Figure 4. NE 27th Street merge area facing northbound.
Image source: maps.google.com.

Field observations of the intersection noted that immediately north of the intersection NE 27th Street merges from a five-lane section to a three-lane section. Racing maneuvers are common as motorists in the lower-volume outer lane (which largely serves as a de facto right-turn lane) attempt to pass the

standing queue. It was also observed that the bicycle lane on NE 27th Street is constricted to about one to two-feet in width in the northbound direction where the merge occurs (Figure 4), and this narrow bicycle lane width extends for about 250 feet before returning to a standard width bicycle lane. Additional space could be created in the raised median to provide this full-width bicycle lane, particularly on this primary roadway facility.

Neff Road/Williamson Boulevard Intersection

There were nine reported crashes at the unsignalized intersection of Neff Road/Williamson Boulevard between 2009 and 2014. Minor injuries were reported in four of the crashes. Crash types include six turning movements, two sideswipes, and one was a rear-end collision. All of the crashes occurred during dry, daylight conditions. There were no pedestrian or bicycle crashes within the database during the study period.

Field observations of the intersection indicated that the width of the SCMC campus provides limited pedestrian crossing opportunities between the signalized intersections. No sidewalks or walkways are present into the campus from Williamson Boulevard. A major transit stop with bus pull-out and shelter is located just east of the Williamson Boulevard intersection, and a continuous pedestrian route is provided from the transit stop to the access to the hospital entrance.

Neff Road/Medical Center Drive Intersection

The Neff Road/Medical Center Drive signalized intersection serves as the primary entrance to the SCMC campus and to medical office and retail uses to the south. There were 11 reported crashes during the review period, with five resulting in injuries (including a higher-severity injury collision). There were six crashes classified as angle or turning movement collisions, all involving vehicles turning left and traveling in the north-south direction on Medical Center Drive.

Site observations indicated that during peak periods (particularly noon and the evening peak) significant queues form on the north-south approaches, and the permissive signal phasing makes it difficult to exit the campus.

NE 27th Street/Conners Avenue Intersection

The unsignalized intersection at NE 27th Street and Conners Avenue experienced 15 crashes during the study period. Out of the 15 crashes, 7 resulted in some level of injury. Rear-end collisions were the most common crash type, comprising eight of the total crashes.

Field observations indicated that the placement of the new transit shelter on the northwest intersection quadrant and evergreen trees can restrict sight lines from a typical vehicle positioning. Clear sight lines can be obtained by pulling forward. Improving the sight lines could be helpful in improving the overall intersection visibility and help to reduce the rear-end crashes, which are typically less common at unsignalized intersections.

NE 27th Street/Courtney Drive Intersection

There were 6 reported crashes at the unsignalized, three-legged intersection between 2009 and 2014. Three of the crashes resulted in some level of injury. The crashes did not reflect any patterns based on overall crash, vehicle, or driver characteristics.

Intersection Sight Distance

Intersection sight distance was reviewed at each of the SCMC entrances to ensure an adequate view of potential conflicts is provided. The City of Bend typically applies the minimum recommended sight distance criteria based on the standard reference *A Policy on Geometric Design of Highways and Streets, 6th Edition,* published by the American Association of State Highway and Transportation Officials (AASHTO) in 2011 (commonly referred to as the Green Book). This reference provides the recommended sight distances as measured from a height of 3.5 feet 14.5 feet from the edge of travel way at the access point serving the proposed development, and varies based on the speed of the roadway.

As shown in Figures 5 and 6, there were two access locations with limited sight lines. At the NE 27th Street/Conners Avenue intersection trees should be trimmed and maintained to ensure proper sight lines. The Purcell Boulevard access has a similar constraint facing north. Adequate sight lines are available at both locations by pulling forward, but improving these would help reduce the likelihood for crashes.

Figure 5. NE 27th Street/Conners Avenue facing north.

Figure 6. Purcell Boulevard access facing north.

ESTIMATED TRIP GENERATION

Trip generation rates were estimated based on data contained within the standard reference *Trip Generation, 9th, Edition,* published by the Institute of Transportation Engineers (ITE). The sites used in the ITE manual were surveyed between the 1960s and the 2000s throughout the United States.

The *Trip Generation Manual* includes data using three independent variables to determine the average trip rate; this includes building size, employees, and number of beds. The trips per 1,000 square feet variable was selected as the most applicable metric for this project. The number of beds and correlation to trips could vary significantly depending on the specific hospital department, and employment can vary over time. Use of building size provides a static metric, and based on review of the data within the ITE manual, correlating trips to building size provides the best relationship to the data. Table 3 summarizes the anticipated number of trips that will be generated by the St. Charles Tower.

Table 3. Estimated Trip Generation

Land Use	ITE Code	Size (SF)	Daily Trip Estimate	Weekday PM Peak Hour		
				Total	In	Out
Hospital	610	120,000 SF	1,586	112	42	70

Based on discussions with St. Charles staff this trip generation estimate provides an overly high trip estimate and corresponding system impacts, as the type of uses proposed within the Tower will provide a lower than typical intensity, and future expansion space is not expected to be fully utilized for several years. However, at this time the ITE trip generation estimates reflect the only available hospital trip generation data.

TRIP DISTRIBUTION AND ASSIGNMENT

The assignment of weekday p.m. peak hour trips onto the surrounding transportation system is provided in Figure 7. These percentages are based on traffic counts collected as part of previous studies in 2014 and validated by similar traffic patterns were observed in 2016.

Truck traffic to the site is expected to be minimal following construction, and will largely consist of delivery, service, and single-unit emergency vehicles. The emergency department is located on the east side of the campus. The loading dock is located on the north end of the hospital between The Center and the Main Cancer Center, just north of Parking Lot A.

Based on the trip assignment shown in Figure 7 and the City's significance thresholds for analysis (15 or more trips per lane group), along with scoping direction provided by the City in response to the Transportation Facilities Report (TFR), the following intersections were classified as study intersections:

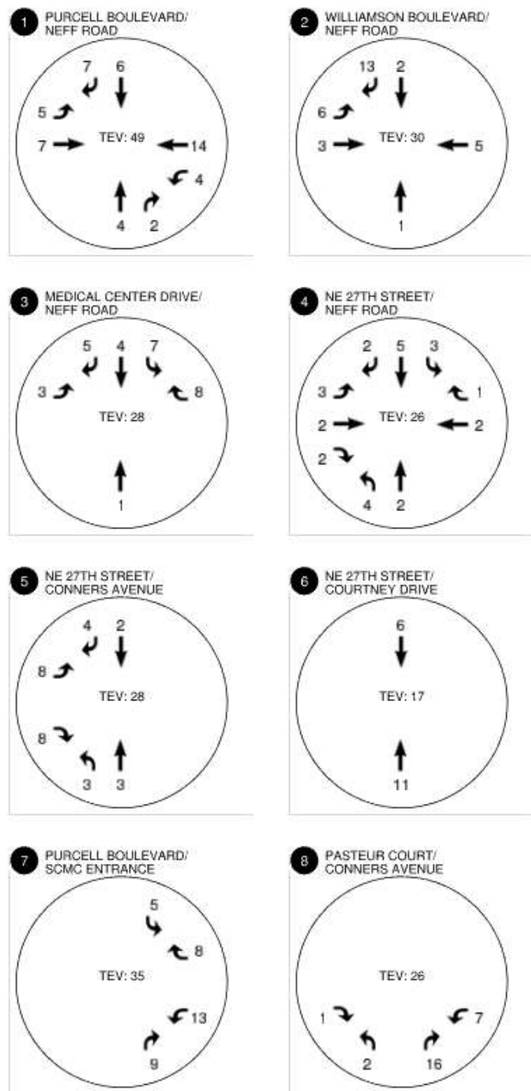
- Neff Road/Purcell Boulevard
- Neff Road/ Williamson Boulevard

- Neff Road/Medical Center Drive
- Neff Road/NE 27th Street
- NE 27th Street/Conners Avenue
- NE 27th Street/Courtney Drive
- Purcell Boulevard/SCMC Entrance

Scenario

Figure 7. Site-Generated Trips, Weekday PM Peak Hour

Site-Generated Trips



EXISTING TRAFFIC VOLUMES

Traffic counts were collected at the study area intersections on August 18, 2016. The counts were taken during the weekday to assess the evening commute peak hour (highest total entering vehicles between 4:00 to 6:00 p.m.). The system exhibited peak traffic between 4:30 p.m. and 5:30 p.m. Extended duration counts were also collected at the Neff Road/NE Medical Center Drive intersection to assess potential changes to signal phasing as separately discussed.

Tube traffic counts were taken throughout the city in May 2016. Multiple tube counts were taken within the site area including west of the Neff Road/Medical Center Drive intersection and north of the Neff Road/Purcell Boulevard intersection. These counts were recorded on May 19, during weekday school conditions. The traffic volumes from the tube counts were compared to the study intersection traffic count data from August 2016. It was observed that the summer counts were comparable to the volumes observed during a school day, including school peak arrival and release times. As a result, the summer count data was used to analyze the system traffic volumes without additional seasonal adjustments.

FUTURE BUILD OUT TRAFFIC VOLUME

As the specific development timeline will be based on the market conditions, a build-out year of 2018 was assumed for the purposes of the Transportation Impact Analysis. Historic traffic counts from the summer of 2006 were analyzed and compared to existing traffic counts in the study area to determine an adequate growth rate. It was determined that traffic patterns and volumes have remained relatively constant, with growth along Neff Road in the east-west direction averaging less than 1 percent annually. A conservative 2% annual growth rate was applied to the year 2016 traffic counts to estimate year 2018 conditions.

Traffic forecasts also include new trips from two approved private development projects (Housing Works and the senior living facility), and rerouting of St. Charles trips associated with the approved parking area in the northeast corner of the campus.

TRAFFIC OPERATIONS

Year 2016 existing, 2018 no-build, 2018 build-out, and a 2023 planning analysis were prepared using Synchro analysis software. The traffic operations worksheets are included in the attachments and reflect peak fifteen-minute operations during the weekday p.m. peak hour. The signalized intersections were analyzed using existing signal control provided by the city. All of the study intersections are under the jurisdiction of the City of Bend. City operational standards are contained within BDC 4.7.500(B)(6):

- Two-Way Stop Control. Average delay for the critical lane group for approaches of an arterial or collector to another arterial or collector with greater than 100 peak hour trips is greater than or equal to 50 seconds during the peak hour;
- For signalized and roundabout collector to collector and higher order intersections the volume-to-capacity ratio for the intersection as a whole is greater than or equal to 1.0 during the peak hour; and
- If the ninety-fifth percentile queue exceeds the existing available storage or is projected to block nearby critical system elements such as adjacent traffic signals, roundabouts, or at-grade rail crossings, or such that line of sight safety issues are identifiable.

Based on these standards, Table 4 summarizes the relevant performance standards for the study area intersections. Note that for local street connections at unsignalized intersections there is no operational standard. At these locations the 95th percentile queues must be accommodated within the available storage.

The City sewer project along the 27th Street corridor has an anticipated completion of summer 2017. The project will temporarily detour traffic from NE 27th Street along Neff Road and Purcell Boulevard. Construction along NE 27th Street will result in nightly closures and detours. Nightly traffic will be directed to Purcell Boulevard and then east onto Neff Road. Traffic counts were acquired before the construction and detour began. The sewer project is not anticipated to affect the traffic patterns or volumes along the corridor upon completion.Table 4 illustrates the operational conditions for the 2016 existing, 2018 no-build, 2018 build-out, and 2023 forecast analysis. The critical movements are labeled for the highest 95th percentile queue approach at each intersection. Each condition is summarized below.

As shown in Table 4, there are three intersections with operational needs:

- Neff Road/Purcell Boulevard
- NE 27th Street/Conners Avenue
- NE 27th Street/Courtney Drive

Each of these intersections shows the same deficiencies extending from existing conditions through build-out, and are not attributable to development of the proposed Tower.

Table 4. Summary of Intersection Operations, Weekday PM Peak Hour

Intersection Name	Intx Control	Performance Standard	Existing Conditions				Year 2018 "No-Build" Conditions				Year 2018 "Build Out" Conditions				Year 2023 Future Forecast			
			LOS	v/c	Delay (s)	95th % Queue (ft)	LOS	v/c	Delay (s)	95th % Queue (ft)	LOS	v/c	Delay (s)	95th % Queue (ft)	LOS	v/c	Delay (s)	95th % Queue (ft)
Neff Rd/ Purcell Blvd	Signalized	v/c < 1.0 95th % Queues	LOS E	0.91	65.1	EB: 607 WB: 620 NB: 481 SB: 552	LOS F	0.97	81.1	EB: 650 WB: 679 NB: 521 SB: 602	LOS F	0.99	87.1	EB: 665 WB: 706 NB: 535 SB: 624	F	1.09	117.9	EB: 764 WB: 810 NB: 611 SB: 706
Neff Rd/ Williamson Blvd	Two-Way Stop Control	95th % Queues	NB LTR LOS D	0.49	30.8	NB: 63 SB: 21	NB LTR LOS E	0.57	38.4	NB: 80 SB: 26	NB LTR LOS E	0.62	45.1	NB: 92 SB: 29	NB LTR LOS F	0.90	>50	NB: 165 SB: 50
Neff Rd/ Medical Center Dr	Signalized	v/c < 1.0 95th % Queues	LOS C	0.50	28.7	EB: 284 WB: 85 NB LT: 160 SB LT: 174	LOS C	0.53	26.9	EB: 319 WB: 195 NBL: 167 SBL: 146	LOS C	0.53	29.1	EB: 324 WB: 209 NBL: 169 SBL: 158	LOS C	0.60	30.1	EB: 388 WB: 244 NBL: 198 SB: 173
Neff Rd/ NE 27th Street	Signalized	v/c < 1.0 95th % Queues	LOS D	0.72	37.5	EB: 439 WB LT: 192 NB: 335 SB: 298	LOS D	0.76	38.8	EB: 427 WB LT: 199 NB: 360 SB: 325	LOS D	0.72	47.2	EB: 490 WB LT: 245 NB: 477 SB: 434	LOS D	0.87	55.2	EB: 485 WB LT: 256 NB: 614 SB: 568
NE 27th St/ Conners Ave	Two-Way Stop Control	95th % Queues	EB LTR LOS F	>1.0	>50	EB: 198 WB: 75	EB LTR LOS F	>1.0	>50	EB: 307 WB: 106	EB LTR LOS F	>1.0	>50	EB: 290 WB: 100	EB LTR LOS F	>1.0	>50	EB: 397 WB: 165
Courtney Dr/ NE 27th St	Two-Way Stop Control	95th % Queues	EB LTR LOS F	0.97	>50	EB: 201	EB LTR LOS F	>1.0	>50	EB: 242	EB LTR LOS F	>1.0	>50	EB: 250	EB LTR LOS F	>1.0	>50	EB: 367

POTENTIAL MITIGATION STRATEGIES

This section describes potential mitigation options and strategies to address the identified safety and operational deficiencies. The City has previously identified several improvement projects at locations within the study area. Table 5 summarizes these previously identified locations, the planned project, and their coinciding budgets.

Table 5. Summary of Prior City Planning Projects

Project Plan	Location	Project Description	Estimated Cost
Capital Improvement Plan (CIP)	Neff Road/ Purcell Boulevard	Sidewalk Improvements	$800,000
System Development Charge (SDC) List	Neff Road/Purcell Boulevard	New traffic signal/ lane addition	$2,588,482 (33% creditable)
	Neff Road (8th St to Purcell Blvd)	Sidewalk infill	$92,400 (20% creditable)
	NE 27th Street/ Conners Avenue	Single lane roundabout	$1,300,000 (100% creditable)
Bend Safety Implementation Plan	Neff Road/ Williamson Boulevard	West side pedestrian refuge island	$56,200
	NE 27th Street/ Conners Avenue	Mid block crossing	$176,200
	Neff Road/ Purcell Boulevard	Static bicycle warning signs	$155,300

Neff Road/Purcell Boulevard Intersection

Intersection Context and Prior Plans

The NE Neff Road/NE Purcell Boulevard intersection has been identified as a high priority for safety and operational improvements within the City of Bend for several years. In 2006 an evaluation and design project was conducted by the City to address the safety and operational issues. This evaluation considered both the installation of a roundabout or improvements to the traffic signal. Due to slopes, limited right-of-way, and the multi-lane roundabout design needs that was identified to serve forecast traffic, it was decided that a signalized option would be the most feasible and cost effective solution.

The signalized option identified effectively provided a three-lane cross-section on the Purcell Boulevard approaches and reconstructed the temporary spanwire traffic signal with standard mast arms. Separate right-turn deceleration lanes were also identified on the eastbound and southbound approaches to address the high turning volumes and to reduce the "right-hook" crashes as cyclists were descending the eastbound grade. The east-west crosswalk slopes at the traffic signal were identified as a concern as the slope of the overall intersection on the hillside exceeds ADA recommendations.

The signalized concept was developed to 30% design plans, but was then put on hold due to significant stormwater costs that were imposed on the project by water quality requirements in place at the time. It is our understanding that these requirements were subsequently amended.

Recommended Intersection Improvements

Based on review of the prior materials, the topography and available right-of-way identified within the 2006 study are assumed to be critical remaining obstacles for intersection improvements and the City's SDC list identifies a signalized solution at this location. Figure 8 illustrates how a signalized treatment similar to the prior plans could be readily implemented within the existing right-of-way.

The widening to a three-lane cross-section on Purcell Boulevard significantly addresses the capacity constraints at the intersection, which reduces queuing, delays, and addresses vehicle positioning concerns. It also provides clear bicycle lanes in all directions, and allows for the replacement of the spanwire traffic signal with typical mast arms and luminaires. The reconstruction would ideally include flashing yellow left-turn arrows on all approaches, and would operate with protected only signal phasing during the peak periods. With new luminaires on the south side of the intersection the critical pedestrian school route will be better highlighted to motorists.

The concept also shows the upstream replacement of the "Prepare to Stop" sign with a "Signal Ahead" sign to alert drivers to the constant potential need to stop. This treatment could be further reinforced by double-signing the approach. With reduced queues from the capacity enhancements the current location of the existing sign will be in the appropriate location.

Based on discussions with City of Bend transportation staff, the City is now considering development of a Capitol Improvement Project to fund an improvement at this location. The City's "roundabout first" policies now in place prioritize a roundabout at this intersection rather than the previously identified traffic signal improvements. Construction of a roundabout would be significant at this location due to the construction detours, grades, and limited available right-of-way.

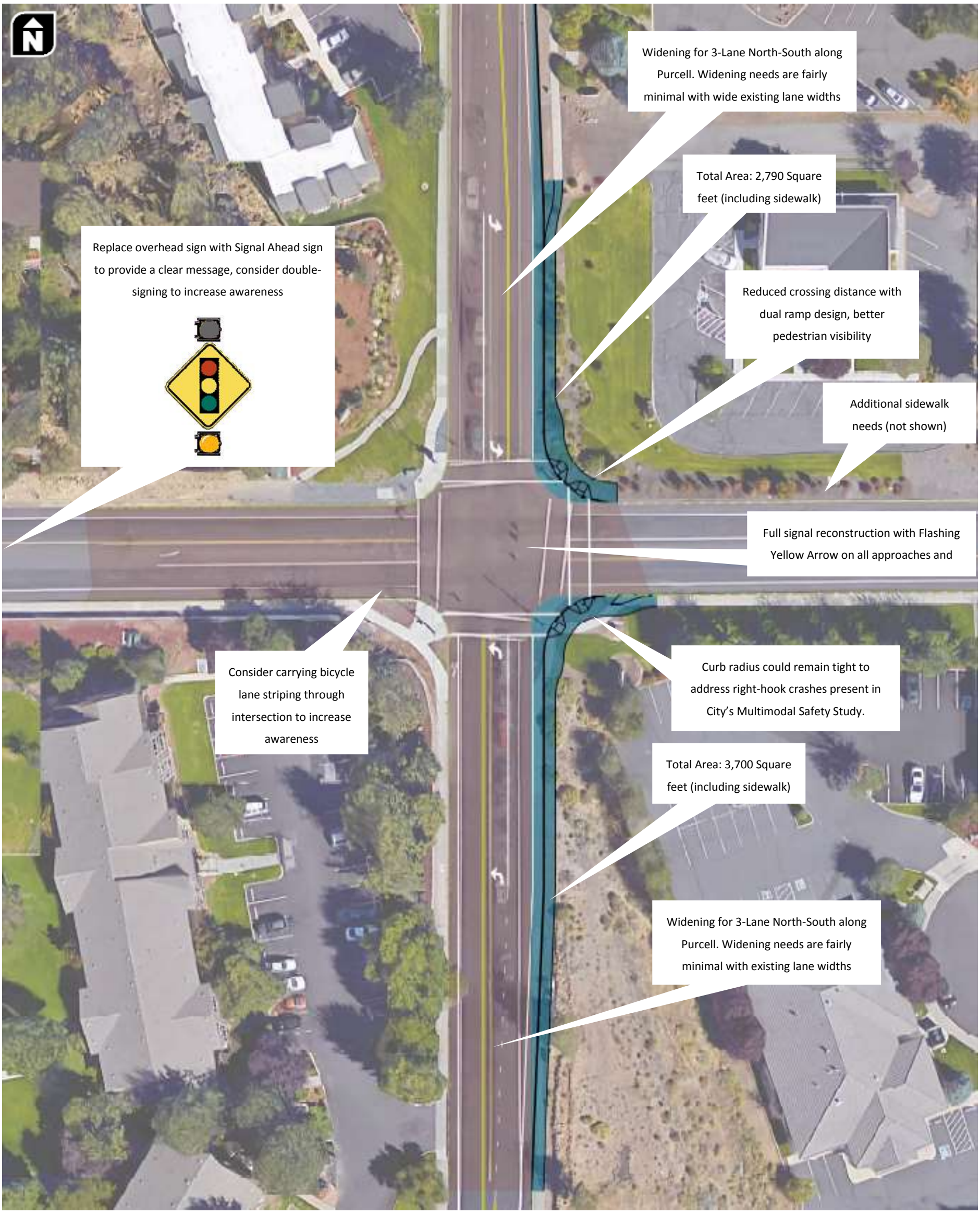


Figure 8. Recommended Intersection Improvements at Neff Road/Purcell Boulevard.

Field observations also note a lack of pedestrian connections along the north side of Neff Road. Figure 9 illustrates the missing facilities east of the intersection. For pedestrians to reach the signal, they must either walk in the bike lane or on the narrow, sloping dirt path. Figure 10 illustrates the terminated sidewalk north of the intersection on Purcell Boulevard. It is recommended that the sidewalk facilities to the northeast be completed to the intersection as part of any future intersection improvement project, and provide a continuous connection from the hospital to the southern sidewalk system.

Figure 9. Neff Road missing sidewalks (facing west toward Purcell Blvd)

Figure 10. Purcell Boulevard missing sidewalks (facing south toward Neff Road)

Figure 11. Missing sidewalks on the north side of Neff Road.

There are no pedestrian facilities on the north side of Neff Road traveling west toward the schools. As shown in Figure 11, a narrow dirt path has been formed by pedestrians using this side of the road. The City's planned sidewalk extension should address this critical section, though constrained right-of-way, utilities, and slopes are likely to increase construction costs beyond those allocated within the CIP.

Neff Road/ Williamson Boulevard Intersection

Figure 12 illustrates the layout of the Neff Road/Williamson Boulevard intersection and highlights the existing constraints.

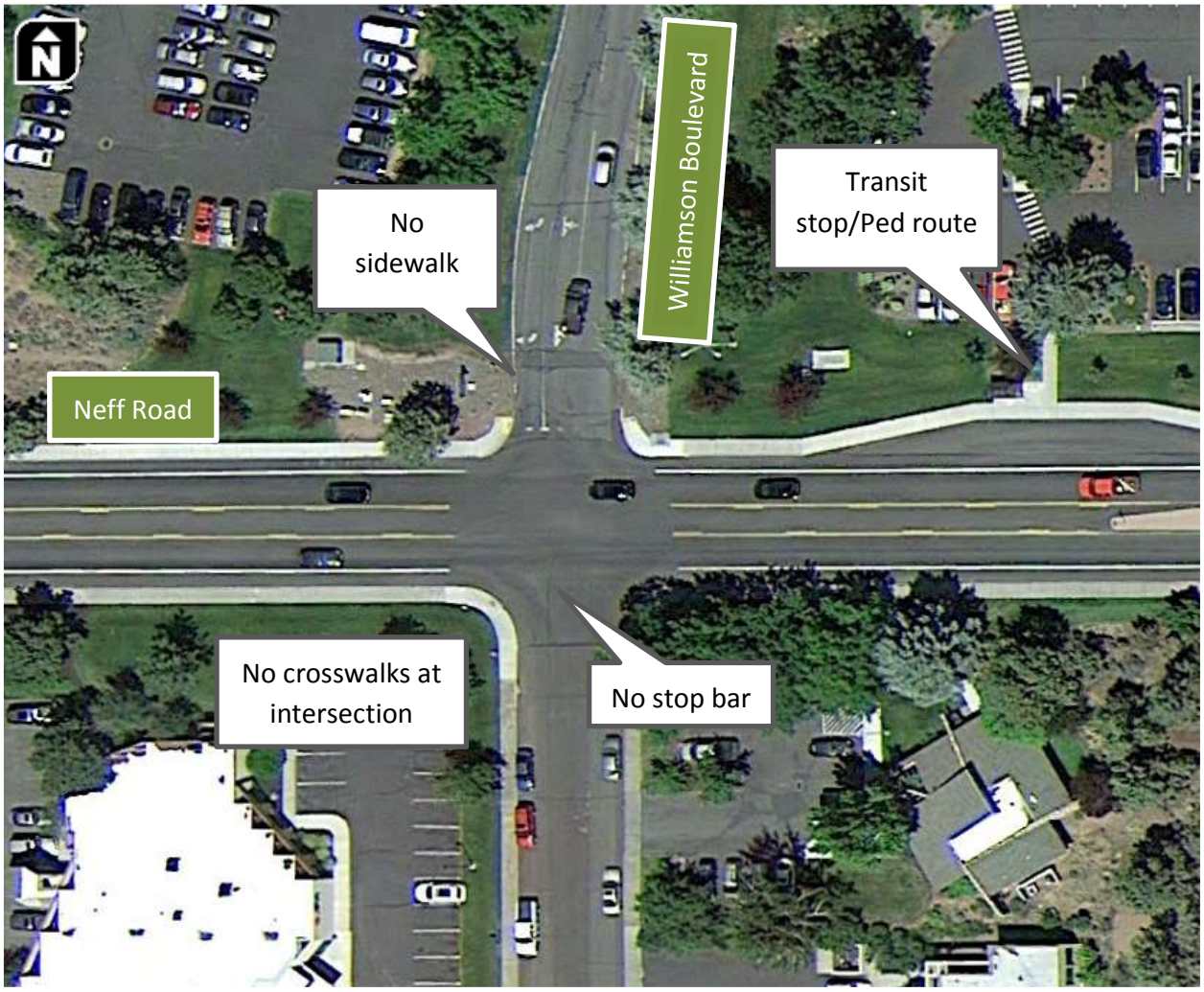


Figure 12. Neff Road/Williamson Boulevard intersection.

Improvement needs at the intersection should include routing SCMC pedestrian trips to the existing pathway at the transit stop, and considering restricting parking and adding striping to the southern approach to designate separate left- and right-turn lanes. As medical uses are located on both sides of Neff Road, an enhanced pedestrian crossing could help connect users of both medical facilities.

An enhanced pedestrian crossing is being planned by the City of Bend; ideally, this connection will be located in the intersection vicinity where it can readily connect to the transit stop and pedestrian route. With the weekday daily traffic volumes on Neff Road approaching 21,000 vehicles it is recommended that the City mark the crosswalk, include a pedestrian refuge, and consider a rapid-rectangular flashing beacon and illumination.

Neff Road/Medical Center Drive Intersection

Figure 13 illustrates the current layout of the Neff Road/Medical Center Drive signalized intersection.

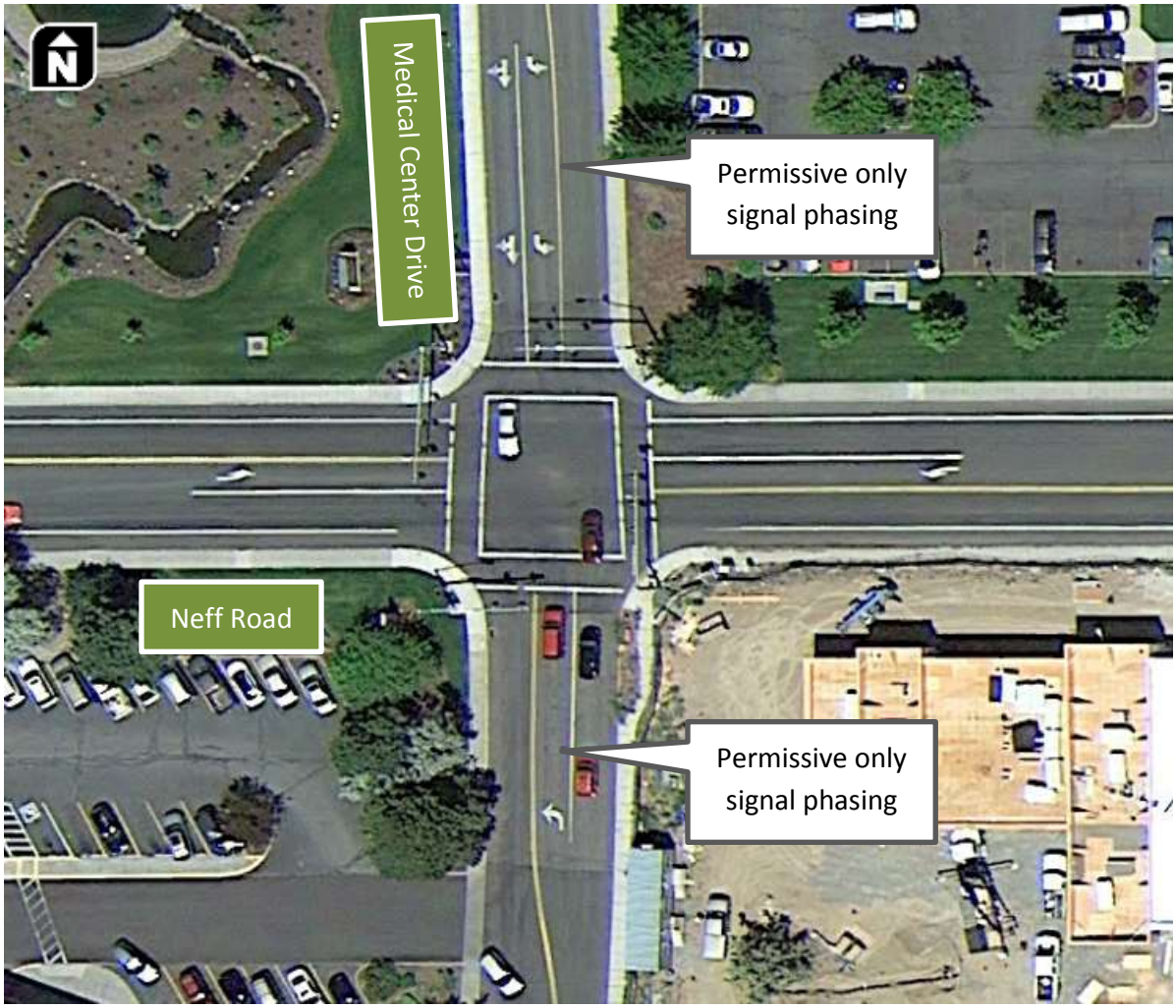


Figure 13. Neff Road/Medical Center Drive intersection configuration.

The intersection of Neff Road & Medical Center Drive is complete with marked crosswalks, accessible curb ramps, and pedestrian push buttons. The signal operates with protected and permissive signal phasing along Neff Road and permissive only signal phasing north-south on Medical Center Drive. Currently, the intersection operates with an average of 28.7 seconds of delay per vehicle with priority for east-west travel. Delays for the permissive north-south movements operate with 85.4 seconds of delay (LOS “F”) for the northbound left-turn and 67.5 seconds of delay (LOS “E”) for the southbound left-turn.

Review of crash data indicates that 4 of the 10 reported crashes at the intersection were associated with the permissive left-turn. Implementing protective/permissive phasing for the north and southbound approaches can substantially decrease the left turn delays, particularly during the peak periods. Figure 14 illustrates the flow profile at the intersection and highlights the peaking characteristics associated with shift changes. Operating the traffic signal with a leading protected signal phase during the highlighted periods would address the critical outbound times of day. The morning peak could continue to operate with permissive signal phasing as the traffic patterns are largely inbound.

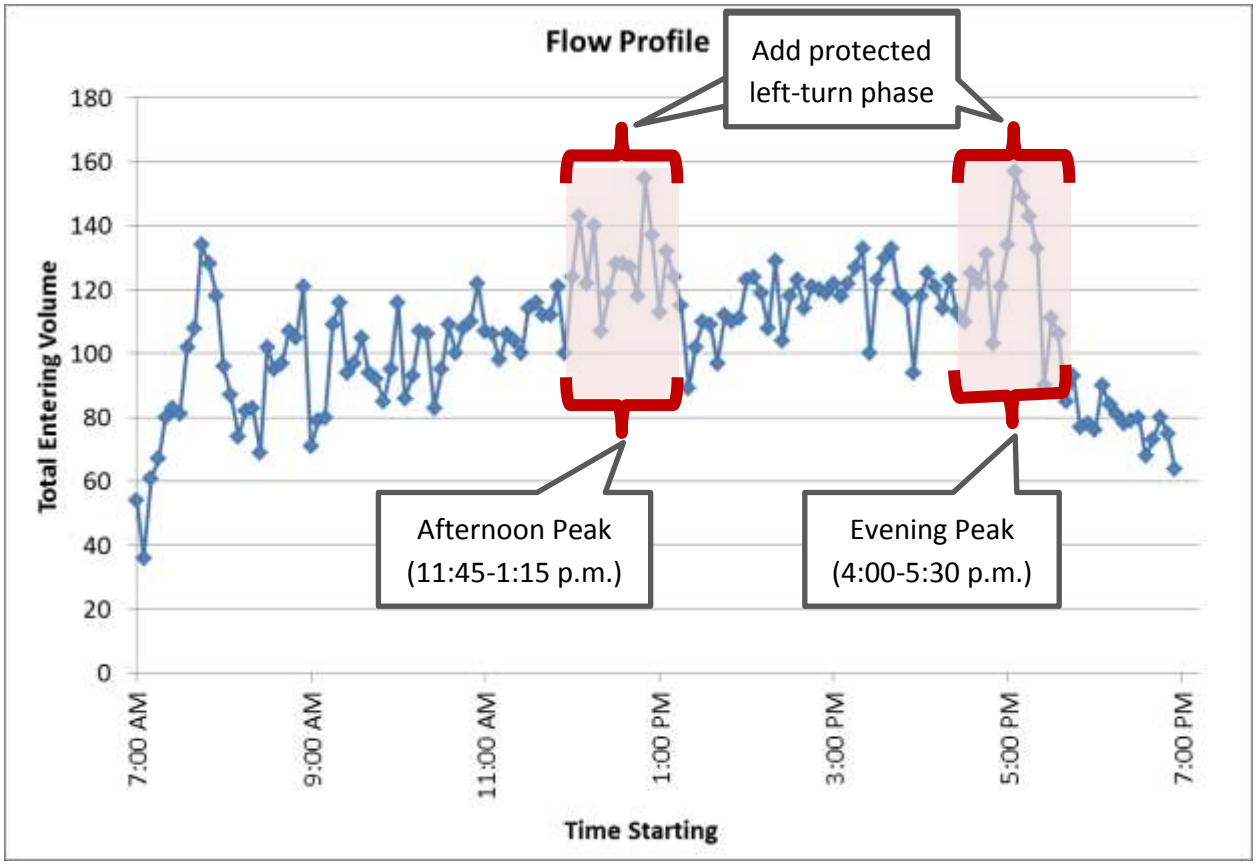


Figure 14. Neff Road/Medical Center Drive Traffic Volume Profile.

Based on our review, we recommend that the signal phasing at Neff Road/Medical Center Drive be modified to protective/permissive phasing for the northbound and southbound phases. Further review of ODOT signal timing guidance shows that this phasing is appropriate, and the operational analysis identifies an overall reduction in intersection delays. The north-south left-turns show significant improvements with the change in signal phasing, operating at LOS “D” and reducing overall intersection delays.

Neff Road/NE 27th Street

An aerial view of the NE Neff Road/NE 27th Street intersection is provided in Figure 15.

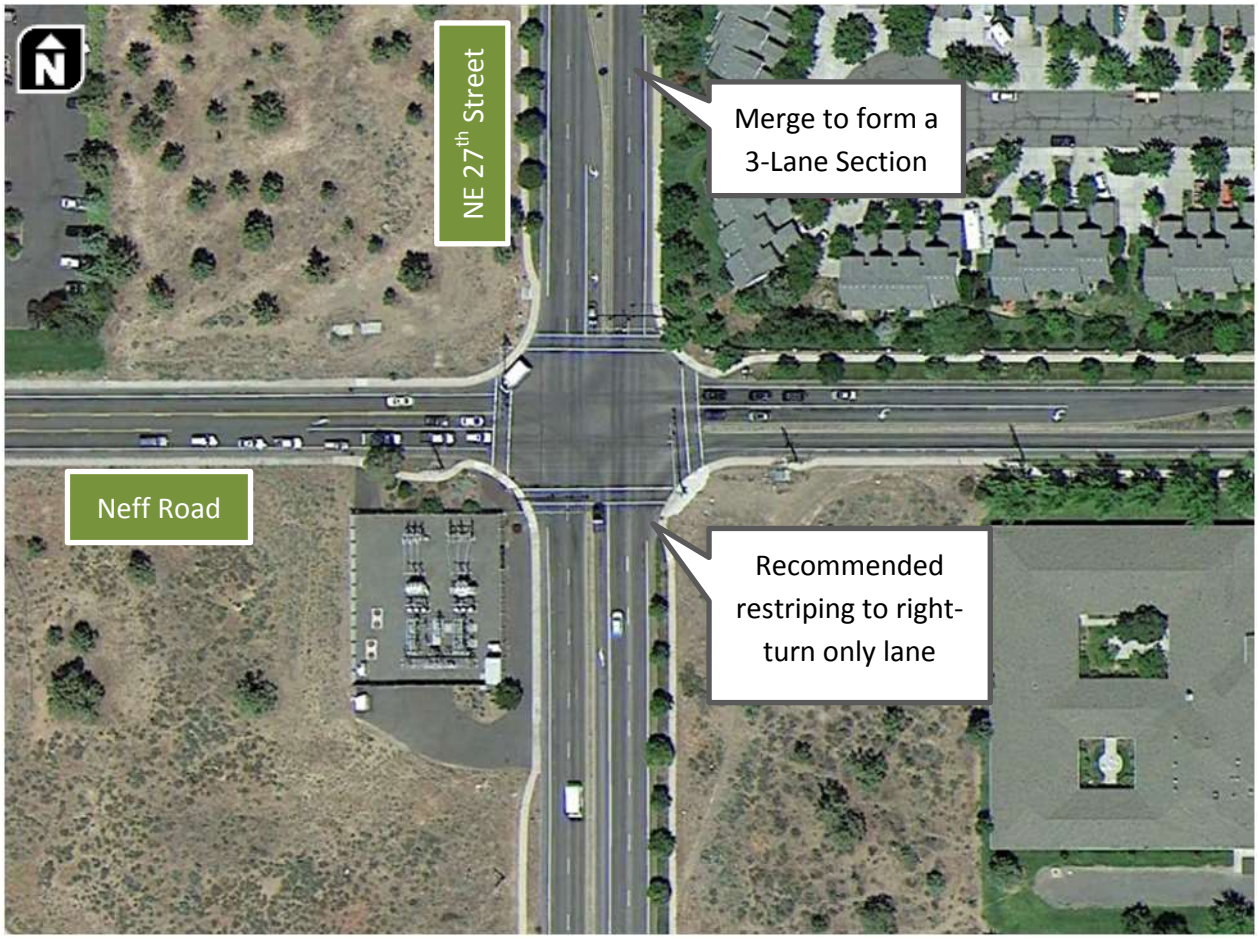


Figure 15. NE 27th Street/NE Neff Road intersection configuration.

The intersection of Neff Road & NE 27th Street is built-out with marked crosswalks, accessible curb ramps, pedestrian push buttons and protected and permissive signal phasing on all approaches. This intersection operates in coordination with the Neff Road/Medical Center Drive intersection. With the immediate merge north of the intersection the curbside lane effectively serves as a right-turn only de-facto lane, and commonly experiences "racing" maneuvers as more aggressive drivers attempt to bypass the queue. To improve safety we recommend that the curbside northbound lane be re-designated as a right-turn only lane. This is expected to have a relatively minimal impact on the actual intersection operations given the low lane utilization, along with an improvement in safety.

Conners Avenue and Courtney Drive

An aerial view of the Conners Avenue/NE 27th Street intersection is provided in Figure 16.

The Conners Avenue and Courtney Drive intersections form a loop to the west of NE 27th Street. Currently, delays are relatively well balanced between the two intersections, and both intersections are operating at their carrying capacity. Based on discussions with SCMC staff, employees understand the times of day that outbound access through Conners Avenue is more convenient than exiting the campus through access points on Neff Road. If delays were lower at the Conners Avenue access it is expected that the intersection would draw more traffic from the Neff Road corridor.

Plans are also being prepared that will create a new egress from the Conners Avenue – Courtney Drive loop onto an extension of NE Purcell Boulevard. This will eliminate the reliance on the NE 27th Street corridor for access to the medical buildings, and provides a direct connection to the adjacent neighborhoods. Plans for this extension are still preliminary and a timeline has not been established.

Figure 16. NE 27th Street/NE Conners Avenue.

A pedestrian crossing treatment is being planned by the City north of the intersection. The planned improvements are illustrated in Figure 17, and include a refuge island to allow pedestrians to cross NE 27th Street in two stages.

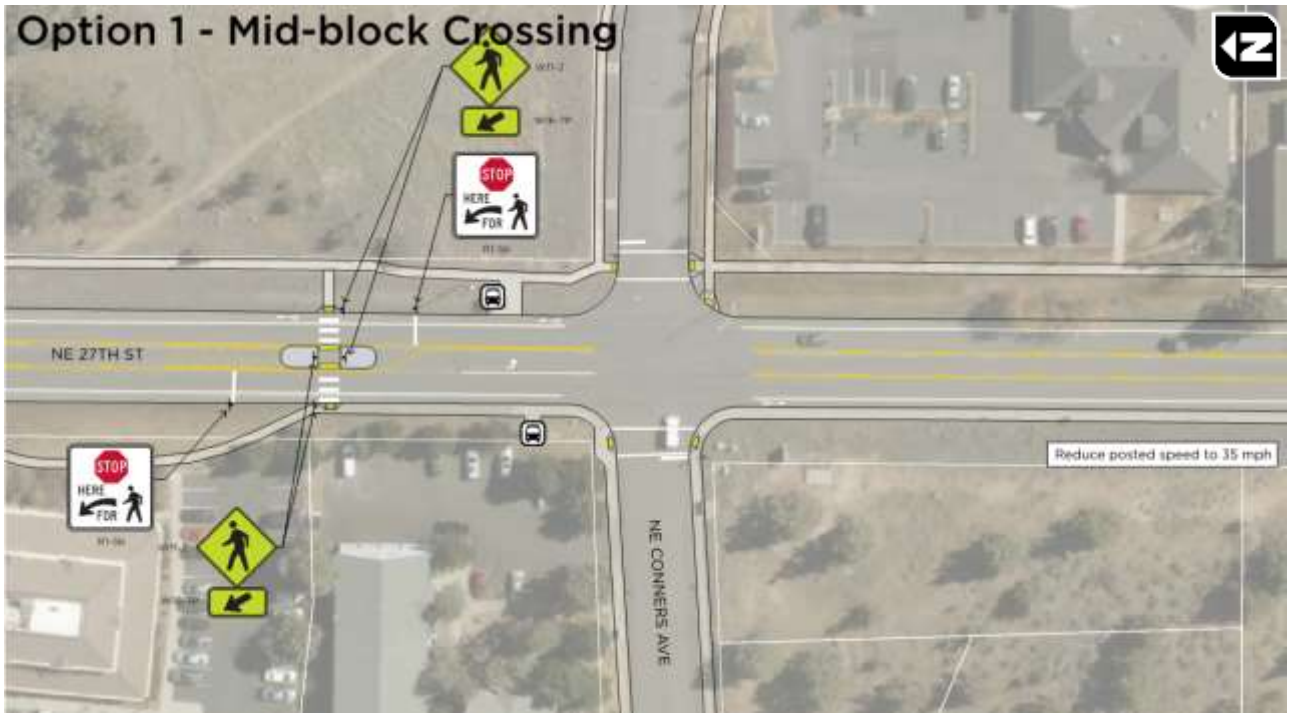


Figure 17. Conceptual pedestrian crossing improvement.

Capacity improvements have previously been identified at the NE 27th Street/Conners Avenue intersection as part of prior approvals for the medical office uses along Courtney Drive and Conners Avenue. As part of these prior approvals, a pro-rata fee has been established to construct a traffic signal. There is currently over $100,000 in contributions set aside for signalization.

We reviewed near-term volume projections to understand the opening day configuration needs of a traffic signal or roundabout at this location. However, capacity improvements should be planned to accommodate a longer-term forecast of 15-20 years. While use of a growth rate can approximate near-term volumes, traffic volumes on the arterial are already similar to those within the five-lane section, and could increase dramatically with the planned Empire Avenue extension to connect with NE 27th Street.

The signalized analysis shows that a three-lane section on NE Conners Avenue will provide adequate capacity to serve the existing volumes to accommodate year 2018 build-out conditions with approximately 30% reserve capacity. Preliminary review of a roundabout shows the critical southbound approach operating marginally, with an 11-vehicle queue and average delays of 21 seconds. The single-lane design provides limited capacity before the intersection would need to be widened to accommodate dual northbound and southbound through lanes on NE 27th Street, which would effectively require the northern extension of the five-lane section of NE 27th Street.

Overall comparison of the roundabout and traffic signal shows the following benefits:

- A traffic signal could provide adequate operations and reserve capacity with a three-lane section along NE 27th Street and NE Conners Avenue. A single lane roundabout could operate relatively well at day of opening, but would require widening NE 27th Street and a multilane design within 5 to 10 years.
- A traffic signal could be coordinated with the Neff Road signal to reduce through delays, and the signalized intersection would provide gaps for other unsignalized intersections along the NE 27th Street corridor.
- Either treatment would improve the existing safety of the intersection based on information within the Highway Safety Manual. The roundabout would provide better overall safety and a reduction in higher severity crashes. With a multilane roundabout this safety differential is reduced, but would still show better results than the traffic signal.
- Signalization could likely occur within the existing right-of-way, as Conners Avenue provides adequate width for a three-lane section through restriping. Additional right-of-way for a single- or multi-lane roundabout would be required.
- Several utilities are located on various quadrants of the NE 27th Street/NE Conners Avenue intersection. Relocation of utilities in the southeast corner will likely be required with either treatment, but impacts to utilities in the southwest corner may be avoided with the signal.
- Construction detours are significantly reduced with a signalized concept as little reconstruction within the roadway will be required. A new roundabout on the NE 27th Street corridor will require detours for an extended time period, with few parallel routes available to serve the demands.
- A signal or roundabout would provide an improved pedestrian crossing treatment at the intersection and eliminate the need for an adjacent mid-block crossing.

Based on this initial comparison signalization appears to be a more feasible improvement, maintains the existing NE 27th Street section, provides more reserve capacity, better improves the system, and can be readily implemented with the surrounding constraints at a reduced cost. This treatment is consistent with established City agreements and cost-sharing methods already in place. The City's "roundabout first" policy requires a specific comparison of the two alternatives, but initial indications show that a signal provides several crucial advantages at this location.

Conners Avenue/Pasteur Road Improvements

Pasteur Court serves as the access route for vehicles accessing the SCMC campus from NE 27th Street and from the adjacent medical district. If capacity improvements are provided at the NE 27th Street/NE Conners Avenue intersection this route will become more desirable. Pasteur Court was originally constructed as a cul de sac, and later connected into the hospital campus. The circular cul de sac configuration was not removed when the route was extended (see Figure 18).

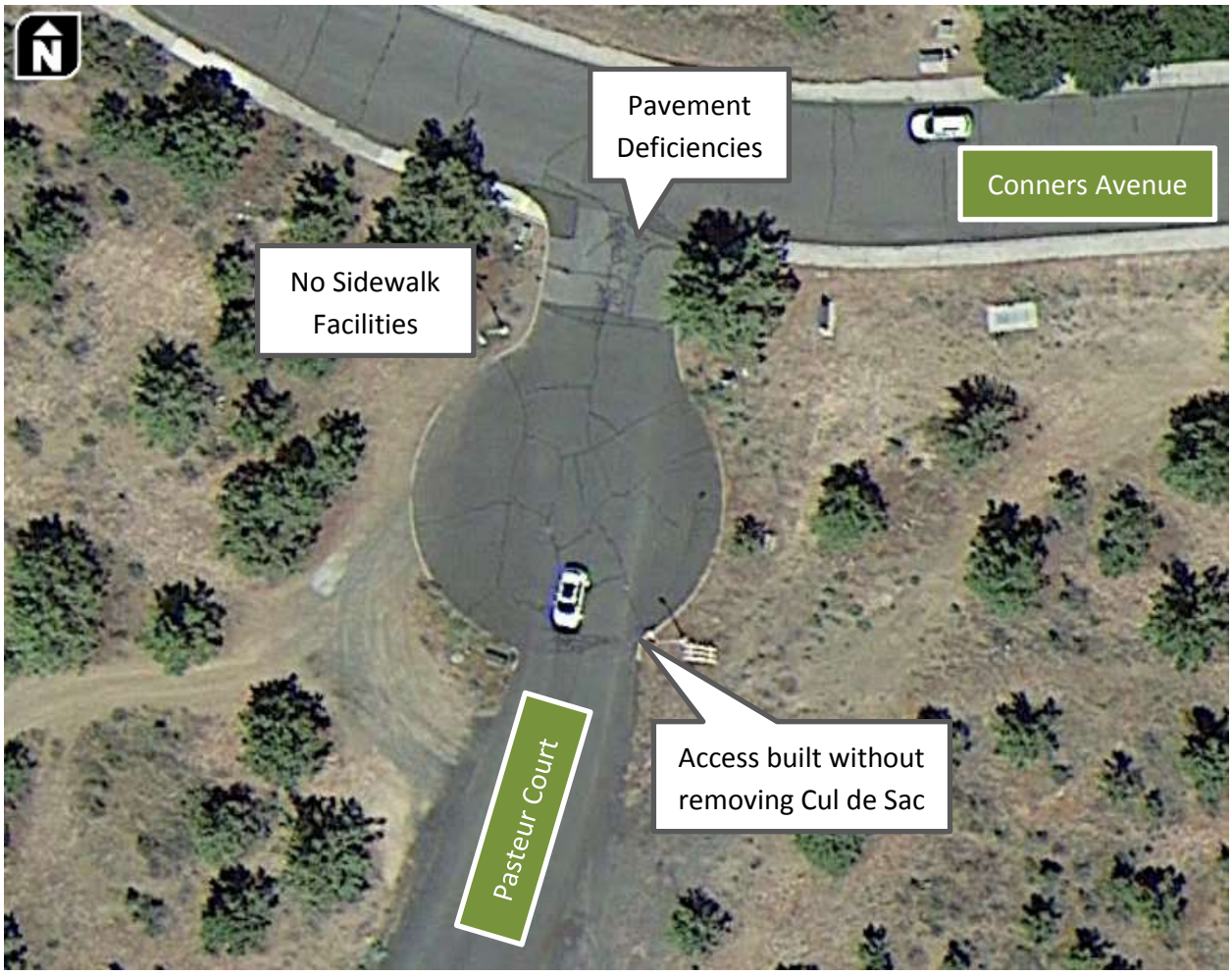


Figure 18. Aerial of Conners Avenue/Pasteur Road

It is recommended that the Pasteur Court connection be reconstructed as a more typical road, with removal of the cul-de-sac. A pedestrian pathway connection from the NE 27th Street corridor to the hospital should also be considered, and could be provided separate from the Pasteur Court roadway.

System Mitigation Strategies

This section has highlighted a variety of identified issues within the transportation system surrounding SCMC. After reveiewing the existing conditions of the site, the majority of the concerns within the system have been identified prior to the addition of the tower as the generated trips will have minimual impacts on the network. These mitigation strategies and options are intended to be discussed with the city to develop a reasonable plan to improve the intersections and overall system surrounding the SCMC campus.

FINDINGS AND NEXT STEPS

Based on this analysis the proposed hospital Tower can be developed in compliance with City requirements. Key findings are as follows:

- The proposed tower addition is expected to include 120,000 square-feet of new hospital space.
- The new tower is expected to generate 1,586 new weekday daily trips and 112 weekday p.m. peak hour trips (42 in, 70 out) based on standard ITE *hospital* rates. The actual trip rates for an ICU/future expansion area are expected to be less intense, and full occupancy is not expected for several years.
- Multimodal infrastructure is available throughout the study area; however, there are notable gaps in the sidewalk system along Neff Road and Purcell Boulevard.
- There are several transit locations available surrounding the Hospital campus, and SCMC has invested heavily in CET to improve transit access to the campus.
- The safety review showed critical issues at the Neff Road/Purcell Boulevard intersection. These crash patterns are largely consistent with trends identified in 2006 and within the City's 2012 multimodal safety study. The primary safety issues relate to intersection congestion, the surrounding slopes, and driver awareness. These safety issues are occurring today, the construction of the proposed Tower does not change the needs or priority.
- The operations analysis shows congested conditions at the Neff and Purcell intersection, and at the unsignalized Conners Avenue intersection with NE 27th Street. These conditions occur today, and will continue regardless of the proposed Tower construction.

There are several needs surrounding the St. Charles campus, with the highest priority being the Neff Road/Purcell Boulevard intersection and improvements at the NE 27th Street/NE Conners Avenue intersection. These needs have all been previously identified by the City through its system planning and other prior development applications. While this report presents various mitigation options to address these needs, the deficiencies exist under current conditions and have been documented in prior plans for several years.

Accordingly, we propose to meet with City staff and identify how prior cost contributions, system development charges, voluntary improvements, and other funding sources can be leveraged to best address the acute safety and operational needs. Following these discussions we will prepare the supplemental materials necessary to inform these discussions and decisions.

Please let us know if you have any questions on this analysis at (541) 312-8300.

TECHNICAL APPENDICES

A. Traffic Count Worksheets
B. Level of Service Worksheets
C. Mitigated Level of Service Worksheets

Appendix “A”
Manual Turning Movement Counts

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

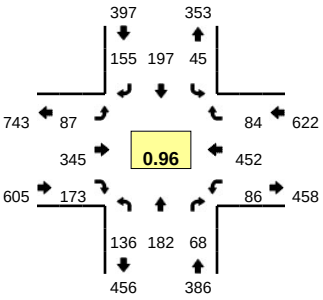
LOCATION: NE Purcell Blvd -- NE Neff Rd

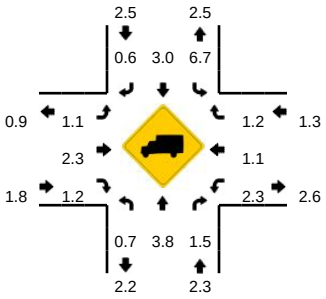
QC JOB #: 13884101

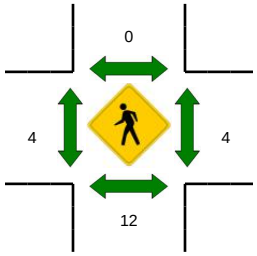
CITY/STATE: Bend, OR

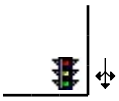
DATE: Thu, Aug 18 2016

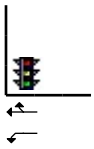
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

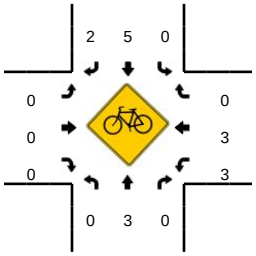


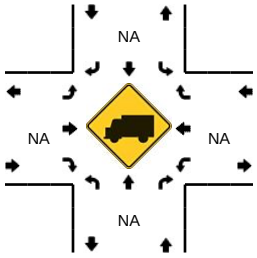


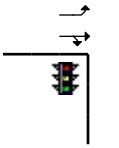


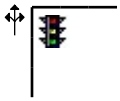


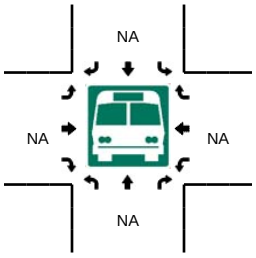












5-Min Count Period Beginning At	NE Purcell Blvd (Northbound)				NE Purcell Blvd (Southbound)				NE Neff Rd (Eastbound)				NE Neff Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	20	8	0	5	20	9	0	6	25	11	0	6	20	6	0	151	1878
4:05 PM	9	10	6	0	6	12	12	0	7	29	12	0	8	43	3	0	157	1892
4:10 PM	9	16	6	0	5	18	9	0	13	22	13	0	5	37	9	0	162	1864
4:15 PM	17	12	6	0	5	8	5	0	5	27	10	0	4	39	3	0	141	1869
4:20 PM	8	15	4	0	10	17	11	0	8	31	11	0	8	42	5	0	170	1876
4:25 PM	21	16	9	0	2	12	10	0	6	32	14	0	5	35	5	0	167	1904
4:30 PM	9	16	5	0	3	15	14	0	6	29	16	0	6	37	10	0	166	1949
4:35 PM	17	15	7	0	4	17	16	0	6	18	11	0	5	34	6	0	156	1926
4:40 PM	9	10	2	0	4	12	12	0	11	26	16	0	12	49	5	0	168	1921
4:45 PM	10	14	6	0	6	23	19	0	5	24	16	0	11	20	9	0	163	1911
4:50 PM	6	14	6	0	6	12	9	0	9	33	17	0	7	42	6	0	167	1924
4:55 PM	11	15	8	0	3	21	6	0	6	26	14	0	4	26	8	0	148	1916
5:00 PM	12	20	10	0	4	11	10	0	10	35	10	0	7	38	9	0	176	1941
5:05 PM	11	18	6	0	1	20	13	0	9	23	9	0	8	35	13	0	166	1950
5:10 PM	14	21	8	0	3	19	14	0	9	28	13	0	10	37	2	0	178	1966
5:15 PM	12	15	4	0	2	19	10	0	5	39	14	0	4	48	2	0	174	1999
5:20 PM	13	19	4	0	3	19	19	0	7	24	16	0	8	34	2	0	168	1997
5:25 PM	12	5	2	0	6	9	13	0	4	40	21	0	4	52	12	0	180	2010
5:30 PM	19	14	5	0	0	12	12	0	8	29	11	0	9	27	3	0	149	1993
5:35 PM	9	11	4	0	6	15	7	0	2	32	13	0	7	40	8	0	154	1991
5:40 PM	10	12	6	0	1	8	5	0	3	25	13	0	7	31	2	0	123	1946
5:45 PM	13	15	2	0	6	15	4	0	5	21	10	0	5	22	4	0	122	1905
5:50 PM	9	15	9	0	4	9	8	0	5	24	13	0	6	19	2	0	123	1861
5:55 PM	10	11	8	0	3	12	8	0	4	19	10	0	4	27	7	0	123	1836

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	148	156	40	0	44	188	168	0	64	412	204	0	64	536	64	0	2088
Heavy Trucks	0	8	0		0	0	0		4	4	0		4	16	0		36
Pedestrians		0				0				4				8			12
Bicycles	0	0	0		0	2	0		0	0	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

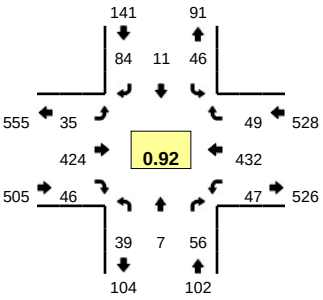
LOCATION: NE Williamson Blvd -- NE Neff Rd

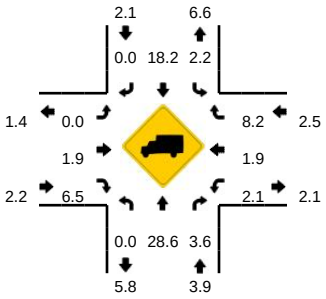
QC JOB #: 13884102

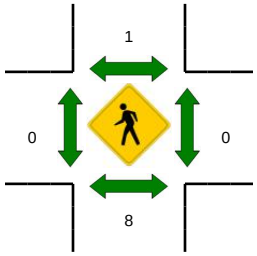
CITY/STATE: Bend, OR

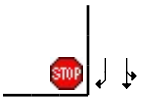
DATE: Thu, Aug 18 2016

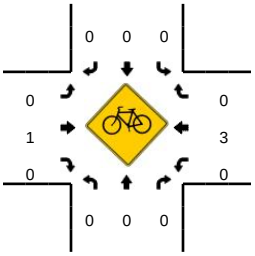
Peak-Hour: 3:10 PM -- 4:10 PM
Peak 15-Min: 3:35 PM -- 3:50 PM

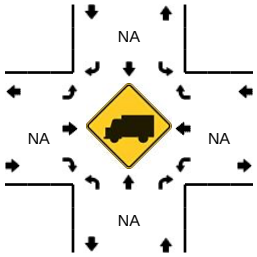


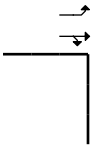


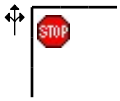


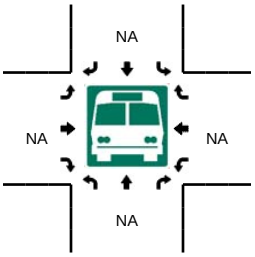












5-Min Count Period Beginning At	NE Williamson Blvd (Northbound)				NE Williamson Blvd (Southbound)				NE Neff Rd (Eastbound)				NE Neff Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:40 PM	0	0	8	0	2	1	5	0	2	31	5	0	2	42	7	0	105	
2:45 PM	1	1	5	0	4	1	4	0	5	39	4	0	2	38	7	0	111	
2:50 PM	3	1	8	0	3	0	9	0	4	19	1	0	6	40	2	0	96	
2:55 PM	1	0	8	0	1	0	3	0	6	38	3	1	4	25	6	0	96	1232
3:00 PM	1	0	5	0	2	0	4	0	3	33	7	0	2	41	4	0	102	1235
3:05 PM	5	0	2	0	4	1	3	0	2	33	6	0	0	39	9	0	104	1225
3:10 PM	1	0	1	0	4	0	5	0	8	52	4	0	6	32	6	0	119	1246
3:15 PM	3	0	8	0	2	3	8	0	2	33	8	0	3	31	9	0	110	1264
3:20 PM	5	0	2	0	1	2	6	0	5	42	4	0	3	35	6	0	111	1262
3:25 PM	2	1	4	0	2	0	2	0	4	27	1	0	4	32	3	0	82	1248
3:30 PM	2	0	5	0	5	0	6	0	0	29	3	0	8	34	4	0	96	1237
3:35 PM	4	2	4	0	7	0	17	0	2	39	4	0	4	42	4	0	129	1261
3:40 PM	2	0	2	0	2	2	8	0	3	26	4	0	2	42	5	0	98	1254
3:45 PM	3	3	1	0	2	2	8	0	2	42	7	0	3	46	1	0	120	1263
3:50 PM	2	0	7	0	6	0	4	0	3	38	1	0	1	39	2	0	103	1270
3:55 PM	4	1	2	0	3	0	7	0	1	36	3	0	2	27	3	0	89	1263
4:00 PM	6	0	10	0	6	1	6	0	4	27	6	0	8	31	5	0	110	1271
4:05 PM	5	0	10	0	6	1	7	0	1	33	1	0	3	41	1	0	109	1276
4:10 PM	5	0	3	0	5	0	8	0	3	32	3	0	3	39	0	0	101	1258
4:15 PM	4	1	1	0	6	0	3	0	3	31	5	0	2	39	1	0	96	1244
4:20 PM	6	0	1	0	1	0	1	0	2	40	4	0	3	42	1	0	101	1234
4:25 PM	5	0	5	0	2	0	7	0	2	32	4	0	4	38	1	0	100	1252
4:30 PM	8	0	4	0	1	2	4	0	2	38	4	0	3	38	1	0	105	1261
4:35 PM	7	0	5	0	4	0	4	0	1	24	2	0	1	38	0	0	86	1218

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	20	28	0	44	16	132	0	28	428	60	0	36	520	40	0	1388
Heavy Trucks	0	8	0		4	4	0		0	24	4		0	16	0		60
Pedestrians		20				0				0				0			20
Bicycles	0	0	0		0	0	0		0	0	0		0	3	0		3
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 27th St -- NE Neff Rd

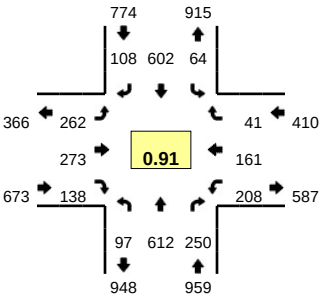
QC JOB #: 13884103

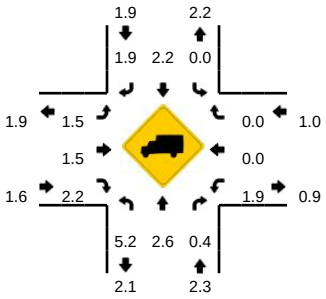
CITY/STATE: Bend, OR

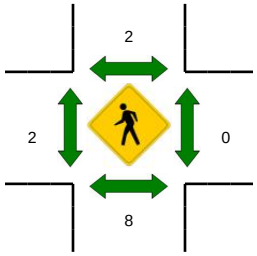
DATE: Thu, Aug 18 2016

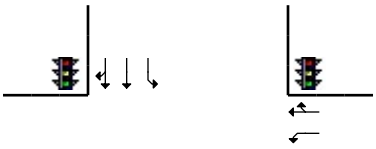
Peak-Hour: 4:30 PM -- 5:30 PM

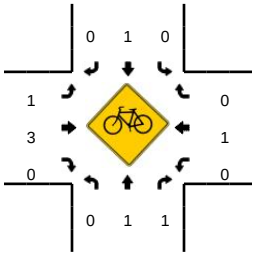
Peak 15-Min: 5:05 PM -- 5:20 PM

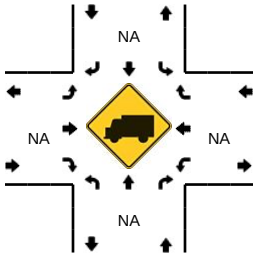


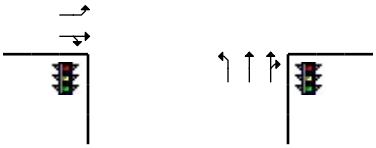


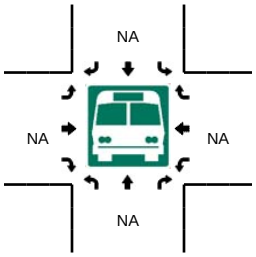












5-Min Count Period Beginning At	NE 27th St (Northbound)				NE 27th St (Southbound)				NE Neff Rd (Eastbound)				NE Neff Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	57	12	0	6	61	8	0	15	7	15	0	15	16	2	0	229	2468
4:05 PM	9	41	16	0	1	23	8	0	14	23	10	0	15	13	3	0	176	2440
4:10 PM	2	37	11	0	9	46	8	0	32	24	18	0	21	19	3	0	230	2463
4:15 PM	7	42	11	0	11	54	10	0	11	17	12	0	16	16	6	0	213	2485
4:20 PM	8	54	21	0	8	45	22	0	14	17	12	0	18	14	1	0	234	2507
4:25 PM	12	33	21	0	0	34	7	0	14	21	13	0	12	12	4	0	183	2489
4:30 PM	4	54	24	0	3	51	14	0	16	22	11	0	13	11	1	0	224	2515
4:35 PM	9	59	23	0	4	60	8	0	27	15	8	0	15	8	8	0	244	2535
4:40 PM	11	45	28	0	5	59	10	0	16	16	10	0	22	15	5	0	242	2561
4:45 PM	6	30	18	0	6	31	6	0	25	27	18	0	18	14	4	0	203	2563
4:50 PM	9	50	13	0	6	61	5	0	18	18	11	0	19	12	2	0	224	2600
4:55 PM	9	60	20	0	6	55	4	0	18	18	8	0	6	9	5	0	218	2620
5:00 PM	5	51	18	0	7	35	16	0	22	27	16	0	14	17	6	0	234	2625
5:05 PM	8	55	28	0	8	44	7	0	25	31	12	0	15	18	1	0	252	2701
5:10 PM	10	57	9	0	4	55	7	0	38	25	15	0	22	12	3	0	257	2728
5:15 PM	12	53	23	0	6	54	11	0	26	33	11	0	23	13	2	0	267	2782
5:20 PM	5	42	15	0	4	48	15	0	20	20	7	0	18	16	3	0	213	2761
5:25 PM	9	56	31	0	5	49	5	0	11	21	11	0	23	16	1	0	238	2816
5:30 PM	4	47	28	0	5	53	8	0	14	19	14	0	9	15	4	0	220	2812
5:35 PM	8	52	20	0	4	36	12	0	14	25	10	0	24	15	4	0	224	2792
5:40 PM	1	49	23	0	2	36	3	0	15	24	13	0	15	15	4	0	200	2750
5:45 PM	7	56	14	0	3	29	7	0	11	18	13	0	19	11	5	0	193	2740
5:50 PM	4	47	16	0	5	55	5	0	8	14	12	0	15	10	3	0	194	2710
5:55 PM	4	32	17	0	1	16	7	0	12	19	10	0	20	8	5	0	151	2643

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	120	660	240	0	72	612	100	0	356	356	152	0	240	172	24	0	3104
Heavy Trucks	12	8	4		0	12	4		0	4	0		0	0	0		44
Pedestrians		4				4				8				0			16
Bicycles	0	1	0		0	0	0		0	1	0		0	0	0		2
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 27th St -- NE Medical Center Dr

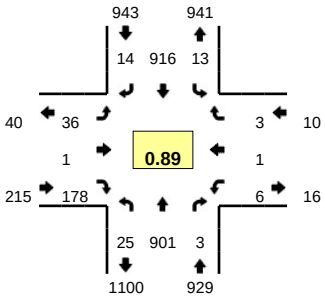
QC JOB #: 13884104

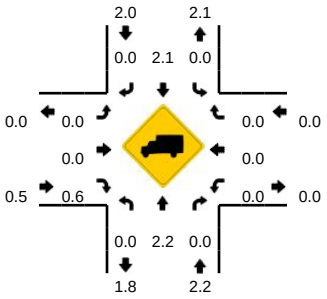
CITY/STATE: Bend, OR

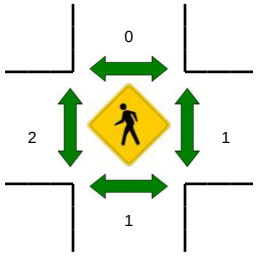
DATE: Thu, Aug 18 2016

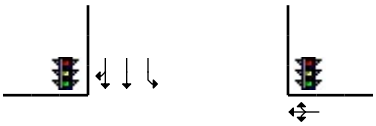
Peak-Hour: 4:30 PM -- 5:30 PM

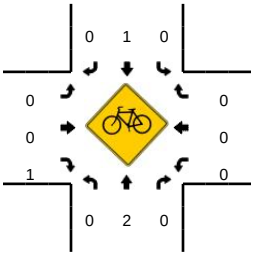
Peak 15-Min: 5:05 PM -- 5:20 PM

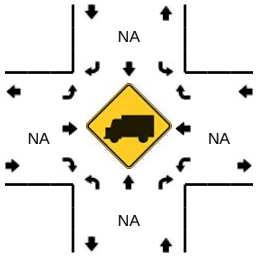


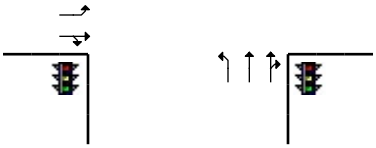


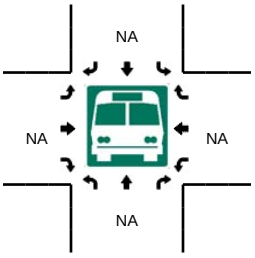












5-Min Count Period Beginning At	NE 27th St (Northbound)				NE 27th St (Southbound)				NE Medical Center Dr (Eastbound)				NE Medical Center Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	70	1	0	2	74	1	1	5	1	13	0	2	0	0	0	172	1957
4:05 PM	1	52	0	0	1	52	2	0	5	0	19	0	2	0	2	0	136	1917
4:10 PM	2	65	1	0	1	81	5	0	4	0	16	0	1	0	1	0	177	1941
4:15 PM	4	43	0	0	0	83	3	0	3	0	8	0	0	0	0	0	144	1929
4:20 PM	3	76	0	0	0	70	3	0	2	0	5	0	2	0	0	0	161	1934
4:25 PM	3	73	0	0	0	53	0	0	6	0	16	0	3	0	0	0	154	1923
4:30 PM	1	69	1	0	0	77	1	0	3	0	13	0	0	0	1	0	166	1929
4:35 PM	1	78	0	0	0	81	1	0	4	0	6	0	1	0	0	0	172	1932
4:40 PM	6	71	0	0	1	75	2	1	2	0	8	0	1	0	0	0	167	1913
4:45 PM	4	66	0	0	1	75	2	0	1	0	17	0	0	0	0	0	166	1930
4:50 PM	1	71	0	0	0	90	0	0	2	0	19	0	1	0	0	0	184	1966
4:55 PM	3	76	1	0	1	66	2	0	2	0	7	0	0	0	0	0	158	1957
5:00 PM	2	84	0	0	1	61	0	0	5	0	16	0	1	0	0	0	170	1955
5:05 PM	1	94	0	0	0	68	0	0	6	1	30	0	0	0	0	0	200	2019
5:10 PM	1	85	0	0	3	90	3	0	1	0	21	0	0	1	0	0	205	2047
5:15 PM	2	74	0	0	1	85	0	0	5	0	17	0	0	0	1	0	185	2088
5:20 PM	2	63	0	0	1	68	3	0	3	0	18	0	2	0	0	0	160	2087
5:25 PM	1	70	1	0	3	80	0	0	2	0	6	0	0	0	1	0	164	2097
5:30 PM	1	74	0	0	1	67	1	0	6	1	6	0	0	1	1	0	159	2090
5:35 PM	0	68	1	0	0	69	2	0	6	0	5	0	2	0	2	0	155	2073
5:40 PM	1	85	0	0	0	61	1	0	3	0	13	0	0	0	2	0	166	2072
5:45 PM	0	65	0	0	1	58	3	1	3	1	6	0	0	0	0	0	138	2044
5:50 PM	3	53	0	0	0	66	1	0	5	0	4	0	2	0	0	0	134	1994
5:55 PM	1	57	0	0	1	56	2	0	2	1	4	0	0	0	0	0	124	1960

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	1012	0	0	16	972	12	0	48	4	272	0	0	4	4	0	2360
Heavy Trucks	0	28	0		0	16	0		0	0	4		0	0	0		48
Pedestrians		0				0				8				4			12
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE Medical Center Dr -- NE Neff Rd

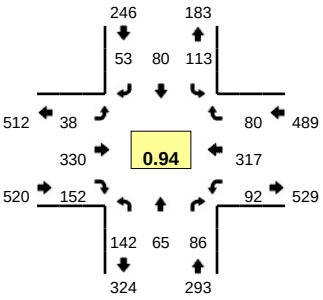
CITY/STATE: Bend, OR

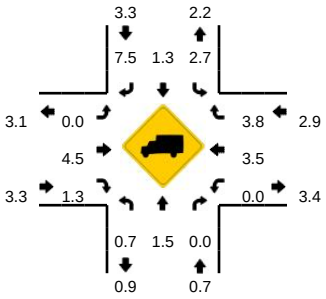
QC JOB #: 13884105

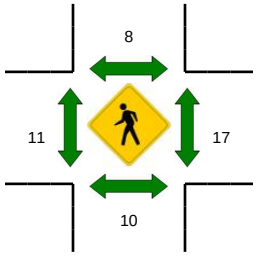
DATE: Thu, Aug 18 2016

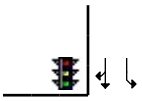
Peak-Hour: 12:00 PM -- 1:00 PM

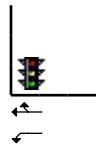
Peak 15-Min: 12:45 PM -- 1:00 PM

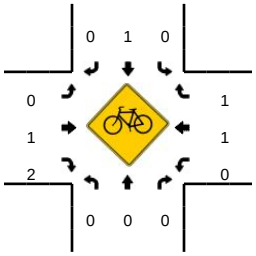


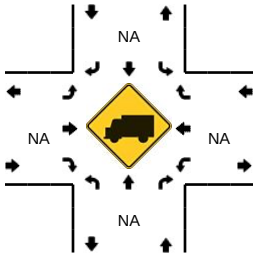


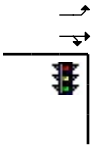


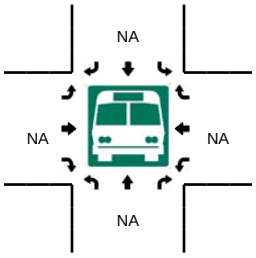












5-Min Count Period Beginning At	NE Medical Center Dr (Northbound)				NE Medical Center Dr (Southbound)				NE Neff Rd (Eastbound)				NE Neff Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	13	6	4	0	12	1	1	0	5	29	14	0	5	19	5	0	114	1284
11:35 AM	16	2	5	0	6	6	4	0	9	21	15	0	3	26	3	0	116	1291
11:40 AM	10	3	3	0	8	3	8	0	4	19	10	0	11	27	6	0	112	1303
11:45 AM	5	4	8	0	3	9	5	0	3	24	9	0	8	31	3	0	112	1307
11:50 AM	16	7	5	0	8	5	1	0	4	21	13	0	7	25	9	0	121	1318
11:55 AM	13	0	3	0	6	7	3	0	3	27	10	0	10	16	2	0	100	1296
12:00 PM	12	7	8	0	10	5	2	0	4	32	17	0	8	14	5	0	124	1313
12:05 PM	14	5	11	0	9	6	7	0	2	36	13	0	10	26	4	0	143	1350
12:10 PM	8	1	10	0	14	8	4	0	3	19	9	0	9	31	6	0	122	1374
12:15 PM	12	6	8	0	13	14	6	0	5	27	16	0	10	19	4	0	140	1408
12:20 PM	14	6	4	0	5	13	5	0	2	19	7	0	5	23	4	0	107	1411
12:25 PM	10	5	5	0	11	3	6	0	1	22	15	0	6	30	5	0	119	1430
12:30 PM	9	8	4	0	4	5	4	0	5	33	9	0	7	29	11	0	128	1444
12:35 PM	17	4	5	0	9	4	3	0	4	25	18	0	5	24	10	0	128	1456
12:40 PM	18	3	10	0	6	4	4	0	3	27	11	0	9	27	5	0	127	1471
12:45 PM	10	3	6	0	6	4	4	0	4	34	9	0	6	27	5	0	118	1477
12:50 PM	9	4	8	0	13	8	6	0	2	30	17	0	11	34	13	0	155	1511
12:55 PM	9	13	7	0	13	6	2	0	3	26	11	0	6	33	8	0	137	1548
1:00 PM	9	2	5	0	12	3	6	0	3	29	7	0	7	22	8	0	113	1537
1:05 PM	12	2	6	0	9	4	4	0	6	32	11	0	9	30	7	0	132	1526
1:10 PM	11	7	4	0	10	9	6	0	2	23	9	0	9	28	6	0	124	1528
1:15 PM	6	3	4	0	9	3	6	0	7	29	8	0	5	29	6	0	115	1503
1:20 PM	9	0	5	0	7	1	5	0	4	21	8	0	5	22	2	0	89	1485
1:25 PM	10	5	8	0	4	5	5	0	3	15	6	0	5	29	7	0	102	1468

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	112	80	84	0	128	72	48	0	36	360	148	0	92	376	104	0	1640
Heavy Trucks	0	0	0		0	0	4		0	12	0		0	12	0		28
Pedestrians		4				8				12				4			28
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE 27th St -- NE Conners Ave

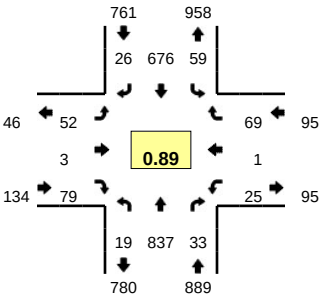
CITY/STATE: Bend, OR

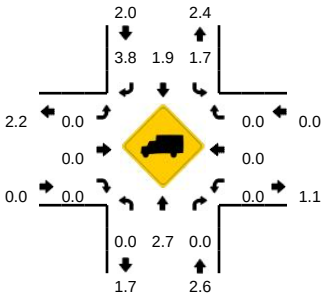
QC JOB #: 13884106

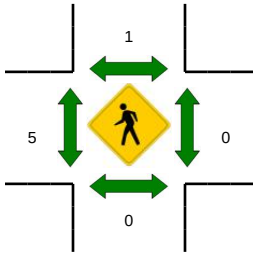
DATE: Thu, Aug 18 2016

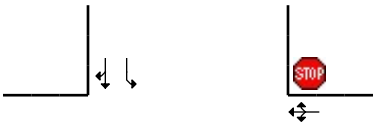
Peak-Hour: 4:20 PM -- 5:20 PM

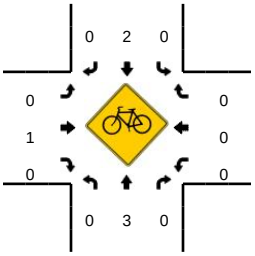
Peak 15-Min: 5:05 PM -- 5:20 PM

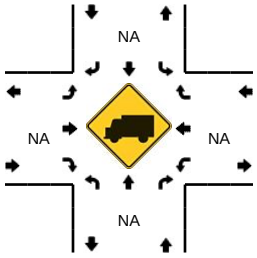


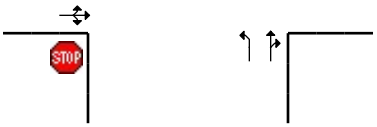


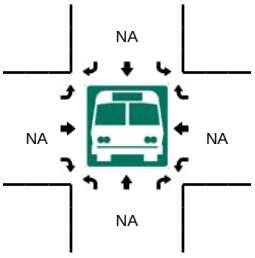












5-Min Count Period Beginning At	NE 27th St (Northbound)				NE 27th St (Southbound)				NE Conners Ave (Eastbound)				NE Conners Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:50 PM	6	71	3	0	3	37	4	0	7	1	3	0	2	1	3	0	141	1590
3:55 PM	4	56	4	0	6	60	4	0	2	1	1	0	0	0	2	0	140	1618
4:00 PM	1	60	5	0	2	60	2	0	3	0	11	0	1	0	3	0	148	1649
4:05 PM	0	61	5	0	5	40	1	0	4	1	7	0	1	0	1	0	126	1647
4:10 PM	3	72	5	0	5	65	2	0	5	0	9	0	1	0	4	0	171	1682
4:15 PM	1	55	3	0	8	51	2	0	3	0	6	0	3	0	2	0	134	1697
4:20 PM	4	50	3	0	7	60	3	0	4	0	6	0	3	1	7	0	148	1695
4:25 PM	0	55	1	0	4	42	1	0	9	0	7	0	4	0	5	0	128	1700
4:30 PM	5	62	2	0	5	68	3	0	5	0	7	0	1	0	2	0	160	1712
4:35 PM	1	86	2	0	4	50	2	0	8	0	7	0	2	0	3	0	165	1736
4:40 PM	0	61	4	0	2	62	0	0	3	0	7	0	2	0	8	0	149	1747
4:45 PM	0	64	2	0	6	56	1	0	4	0	5	0	3	0	4	0	145	1755
4:50 PM	3	60	4	0	9	46	5	0	2	0	8	0	2	0	5	0	144	1758
4:55 PM	0	82	4	0	2	57	3	0	3	0	3	0	0	0	7	0	161	1779
5:00 PM	2	64	4	0	6	53	2	0	7	0	9	0	1	0	3	0	151	1782
5:05 PM	0	78	4	0	9	56	1	0	4	1	8	0	2	0	11	0	174	1830
5:10 PM	2	96	1	0	1	62	2	0	2	1	12	0	3	0	11	0	193	1852
5:15 PM	2	79	2	0	4	64	3	0	1	1	0	0	2	0	3	0	161	1879
5:20 PM	3	67	2	0	4	51	0	0	4	0	7	0	1	0	6	0	145	1876
5:25 PM	4	52	1	0	6	55	1	0	3	0	2	0	0	0	3	0	127	1875
5:30 PM	1	60	0	0	1	45	3	0	2	0	2	0	0	0	2	0	116	1831
5:35 PM	2	72	1	0	2	52	3	0	9	0	3	0	0	0	2	0	146	1812
5:40 PM	3	72	2	0	0	43	5	0	1	2	2	0	0	0	1	0	131	1794
5:45 PM	2	71	1	0	2	47	3	0	3	0	0	0	1	0	4	0	134	1783

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	1012	28	0	56	728	24	0	28	12	80	0	28	0	100	0	2112
Heavy Trucks	0	20	0		4	12	4		0	0	0		0	0	0		40
Pedestrians		0				0				4				0			4
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

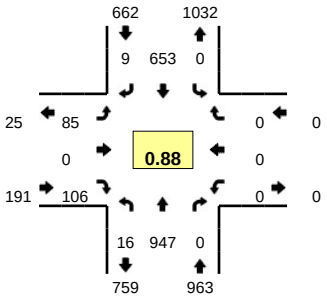
LOCATION: NE 27th St -- NE Courtney Dr

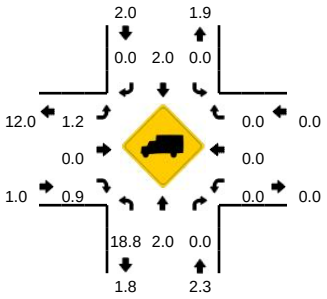
QC JOB #: 13884107

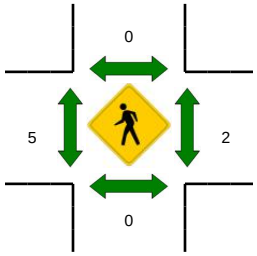
CITY/STATE: Bend, OR

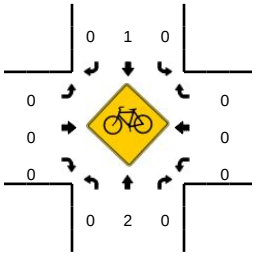
DATE: Thu, Aug 18 2016

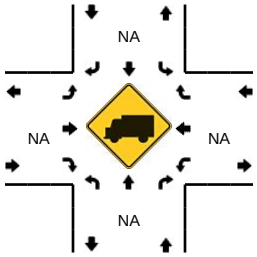
Peak-Hour: 4:20 PM -- 5:20 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

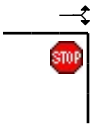


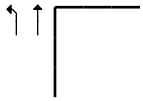


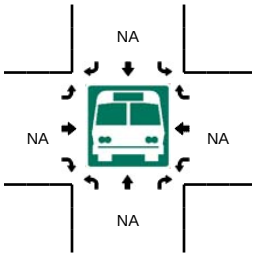












5-Min Count Period Beginning At	NE 27th St (Northbound)				NE 27th St (Southbound)				NE Courtney Dr (Eastbound)				NE Courtney Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	63	0	0	0	45	0	0	10	0	13	0	0	0	0	0	132	
4:05 PM	1	68	0	0	0	40	0	0	9	0	8	0	0	0	0	0	126	
4:10 PM	3	70	0	0	0	57	1	0	5	0	7	0	0	0	0	0	143	
4:15 PM	2	58	0	0	0	56	0	0	7	0	6	0	0	0	0	0	129	
4:20 PM	5	60	0	0	0	63	3	0	8	0	6	0	0	0	0	0	145	
4:25 PM	0	70	0	0	0	40	1	0	5	0	6	0	0	0	0	0	122	
4:30 PM	0	66	0	0	0	69	0	0	5	0	10	0	0	0	0	0	150	
4:35 PM	0	88	0	0	0	47	1	0	8	0	9	0	0	0	0	0	153	
4:40 PM	4	73	0	0	0	56	2	0	6	0	8	0	0	0	0	0	149	
4:45 PM	1	74	0	0	0	57	0	0	9	0	6	0	0	0	0	0	147	
4:50 PM	0	66	0	0	0	54	0	0	5	0	6	0	0	0	0	0	131	
4:55 PM	2	92	0	0	0	54	0	0	2	0	6	0	0	0	0	0	156	1683
5:00 PM	0	74	0	0	0	50	1	0	8	0	13	0	0	0	0	0	146	1697
5:05 PM	0	95	0	0	0	50	1	0	15	0	12	0	0	0	0	0	173	1744
5:10 PM	2	109	0	0	0	58	0	0	10	0	12	0	0	0	0	0	191	1792
5:15 PM	2	80	0	0	0	55	0	0	4	0	12	0	0	0	0	0	153	1816
5:20 PM	0	78	0	0	0	52	0	0	5	0	5	0	0	0	0	0	140	1811
5:25 PM	0	56	0	0	0	51	0	0	4	0	7	0	0	0	0	0	118	1807
5:30 PM	1	58	0	0	0	46	1	0	4	0	6	0	0	0	0	0	116	1773
5:35 PM	2	81	0	0	0	54	3	0	2	0	0	0	0	0	0	0	142	1762
5:40 PM	1	75	0	0	0	44	1	0	4	0	5	0	0	0	0	0	130	1743
5:45 PM	0	83	0	0	0	48	0	0	1	0	4	0	0	0	0	0	136	1732
5:50 PM	0	45	0	0	0	39	1	0	4	0	2	0	0	0	0	0	91	1692
5:55 PM	1	66	0	0	0	38	0	0	3	0	2	0	0	0	0	0	110	1646

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	1136	0	0	0	652	4	0	116	0	144	0	0	0	0	0	2068
Heavy Trucks	4	12	0		0	16	0		0	0	4		0	0	0		36
Pedestrians		0				0				0				8			8
Bicycles	0	1	0		0	0	0		0	0	0		0	0	0		1
Railroad																	
Stopped Buses																	

Comments:

Report generated on 8/26/2016 8:20 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix “B”
Level of Service Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	349	173	86	452	84	136	182	68	45	197	155
Future Volume (vph)	87	349	173	86	452	84	136	182	68	45	197	155
Satd. Flow (prot)	1787	1738	0	1770	1829	0	0	1768	0	0	1713	0
Flt Permitted	0.111			0.128				0.983			0.994	
Satd. Flow (perm)	209	1738	0	238	1829	0	0	1763	0	0	1711	0
Satd. Flow (RTOR)		21			8			8			23	
Confl. Peds. (#/hr)			12	12			4		4	4		4
Confl. Bikes (#/hr)						3			3			5
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
Heavy Vehicles (%)	1%	2%	1%	2%	1%	1%	1%	4%	1%	7%	3%	1%
Adj. Flow (vph)	87	349	173	86	452	84	136	182	68	45	197	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	522	0	86	536	0	0	386	0	0	397	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6								
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	22.0		11.0	22.0		23.0	23.0		23.0	23.0	
Total Split (s)	15.0	45.0		15.0	45.0		35.0	35.0		30.0	30.0	
Total Split (%)	12.0%	36.0%		12.0%	36.0%		28.0%	28.0%		24.0%	24.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	44.8	38.1		44.8	38.1			28.1			25.3	
Actuated g/C Ratio	0.38	0.32		0.38	0.32			0.24			0.22	
v/c Ratio	0.46	0.90		0.43	0.89			0.90			1.02	

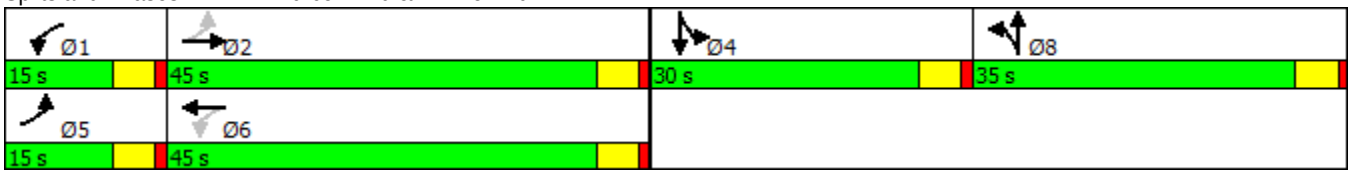
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	28.9	57.9		27.9	57.2			68.2			96.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	28.9	57.9		27.9	57.2			68.2			96.4	
LOS	C	E		C	E			E			F	
Approach Delay		53.7			53.2			68.2			96.4	
Approach LOS		D			D			E			F	
Queue Length 50th (ft)	41	384		40	401			293			~341	
Queue Length 95th (ft)	74	#607		73	#620			#481			#552	
Internal Link Dist (ft)		750			876			921			1097	
Turn Bay Length (ft)	125			125								
Base Capacity (vph)	217	614		225	637			464			388	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.40	0.85		0.38	0.84			0.83			1.02	

Intersection Summary	
Cycle Length: 125	
Actuated Cycle Length: 117.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 64.8	Intersection LOS: E
Intersection Capacity Utilization 94.8%	ICU Level of Service F
Analysis Period (min) 15	

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

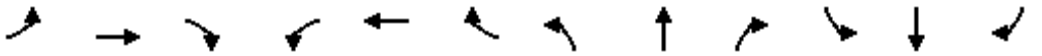
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: NE Purcell Blvd & NE Neff Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	349	173	86	452	84	136	182	68	45	197	155
Future Volume (vph)	87	349	173	86	452	84	136	182	68	45	197	155
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	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1787	1740		1770	1830			1768			1715	
Flt Permitted	0.11	1.00		0.13	1.00			0.98			0.99	
Satd. Flow (perm)	208	1740		238	1830			1768			1715	
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)	87	349	173	86	452	84	136	182	68	45	197	155
RTOR Reduction (vph)	0	14	0	0	5	0	0	6	0	0	18	0
Lane Group Flow (vph)	87	508	0	86	531	0	0	380	0	0	379	0
Confl. Peds. (#/hr)			12	12			4		4	4		4
Confl. Bikes (#/hr)						3			3			5
Heavy Vehicles (%)	1%	2%	1%	2%	1%	1%	1%	4%	1%	7%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	44.8	38.1		44.8	38.1			28.1			25.4	
Effective Green, g (s)	44.8	38.1		44.8	38.1			28.1			25.4	
Actuated g/C Ratio	0.38	0.32		0.38	0.32			0.24			0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	4.8		2.5	4.8			2.5			2.5	
Lane Grp Cap (vph)	168	560		176	589			419			368	
v/s Ratio Prot	c0.03	c0.29		0.03	0.29			c0.21			c0.22	
v/s Ratio Perm	0.17			0.16								
v/c Ratio	0.52	0.91		0.49	0.90			0.91			1.03	
Uniform Delay, d1	28.0	38.4		27.6	38.3			43.8			46.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	19.1		1.6	17.7			22.7			54.8	
Delay (s)	30.0	57.5		29.2	56.0			66.6			101.2	
Level of Service	C	E		C	E			E			F	
Approach Delay (s)		53.6			52.3			66.6			101.2	
Approach LOS		D			D			E			F	

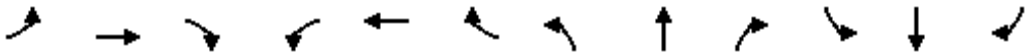
Intersection Summary			
HCM 2000 Control Delay	65.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	409	33	26	502	34	53	9	70	27	8	67
Future Volume (Veh/h)	20	409	33	26	502	34	53	9	70	27	8	67
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	20	409	33	26	502	34	53	9	70	27	8	67
Pedestrians								12			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								3.5			3.5	
Percent Blockage								1			0	
Right turn flare (veh)												3
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		956			942							
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	540			454			1069	1070	438	1098	1069	523
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	540			215			971	971	195	1007	971	523
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			66	95	90	82	96	88
cM capacity (veh/h)	1035			1100			154	196	685	146	196	556

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	20	442	26	536	132	102
Volume Left	20	0	26	0	53	27
Volume Right	0	33	0	34	70	67
cSH	1035	1700	1100	1700	268	459
Volume to Capacity	0.02	0.26	0.02	0.32	0.49	0.22
Queue Length 95th (ft)	1	0	2	0	63	21
Control Delay (s)	8.5	0.0	8.4	0.0	30.8	19.9
Lane LOS	A		A		D	C
Approach Delay (s)	0.4		0.4		30.8	19.9
Approach LOS					D	C

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	399	95	32	296	38	138	19	115	162	97	89
Future Volume (vph)	39	399	95	32	296	38	138	19	115	162	97	89
Satd. Flow (prot)	1752	1798	0	1805	1829	0	1805	1589	0	1787	1719	0
Flt Permitted	0.528			0.420			0.452			0.579		
Satd. Flow (perm)	970	1798	0	793	1829	0	854	1589	0	1074	1719	0
Satd. Flow (RTOR)		16			9			115			41	
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
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
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Adj. Flow (vph)	39	399	95	32	296	38	138	19	115	162	97	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	494	0	32	334	0	138	134	0	162	186	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	10.5	24.5		10.5	22.5		26.5	26.5		25.5	25.5	
Total Split (s)	15.0	62.0		15.0	62.0		33.0	33.0		33.0	33.0	
Total Split (%)	13.6%	56.4%		13.6%	56.4%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	78.5	74.5		78.2	74.4		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.71	0.68		0.71	0.68		0.18	0.18		0.18	0.18	
v/c Ratio	0.05	0.40		0.05	0.27		0.90	0.35		0.83	0.54	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	5.5	10.9		7.3	10.0		91.6	11.4		74.5	36.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.5	10.9		7.3	10.0		91.6	11.4		74.5	36.1	
LOS	A	B		A	A		F	B		E	D	
Approach Delay		10.5			9.8			52.1			54.0	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	6	153		8	87		96	11		111	93	
Queue Length 95th (ft)	20	284		m13	85		#160	58		174	150	
Internal Link Dist (ft)		547			675			595			282	
Turn Bay Length (ft)	100			100			75			100		
Base Capacity (vph)	787	1223		678	1240		221	497		278	476	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.40		0.05	0.27		0.62	0.27		0.58	0.39	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 39 (35%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 63.4%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: NE Medical Center Dr & NE Neff Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	399	95	32	296	38	138	19	115	162	97	89
Future Volume (vph)	39	399	95	32	296	38	138	19	115	162	97	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1748	1798		1800	1829		1796	1589		1763	1717	
Flt Permitted	0.53	1.00		0.42	1.00		0.45	1.00		0.58	1.00	
Satd. Flow (perm)	971	1798		795	1829		855	1589		1075	1717	
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)	39	399	95	32	296	38	138	19	115	162	97	89
RTOR Reduction (vph)	0	5	0	0	3	0	0	94	0	0	34	0
Lane Group Flow (vph)	39	489	0	32	331	0	138	40	0	162	152	0
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	76.6	72.7		76.4	72.6		20.0	20.0		20.0	20.0	
Effective Green, g (s)	76.6	72.7		76.4	72.6		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.70	0.66		0.69	0.66		0.18	0.18		0.18	0.18	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.8	4.2		2.8	4.2		2.2	2.2		2.2	2.2	
Lane Grp Cap (vph)	703	1188		586	1207		155	288		195	312	
v/s Ratio Prot	c0.00	c0.27		0.00	0.18			0.03			0.09	
v/s Ratio Perm	0.04			0.04			c0.16			0.15		
v/c Ratio	0.06	0.41		0.05	0.27		0.89	0.14		0.83	0.49	
Uniform Delay, d1	5.3	8.7		5.7	7.8		43.9	37.8		43.4	40.4	
Progression Factor	1.00	1.00		1.32	1.06		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.1		0.0	0.5		41.5	0.1		24.2	0.6	
Delay (s)	5.3	9.7		7.5	8.7		85.4	37.9		67.5	41.0	
Level of Service	A	A		A	A		F	D		E	D	
Approach Delay (s)		9.4			8.6			62.0			53.4	
Approach LOS		A			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

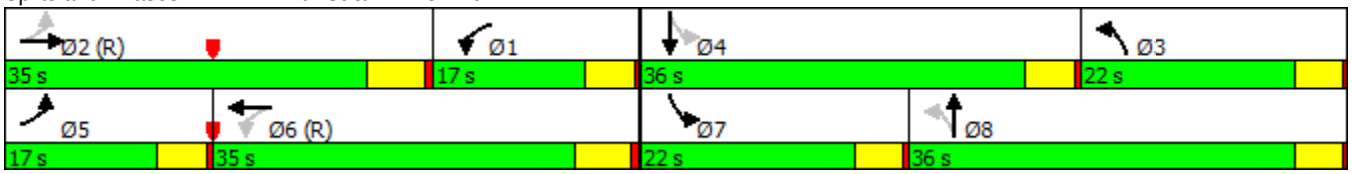
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	275	138	208	161	41	97	612	250	64	602	108
Future Volume (vph)	263	275	138	208	161	41	97	612	250	64	602	108
Satd. Flow (prot)	1770	1766	0	1770	1833	0	1719	3358	0	1805	3445	0
Flt Permitted	0.419			0.520			0.278			0.201		
Satd. Flow (perm)	778	1766	0	962	1833	0	502	3358	0	382	3445	0
Satd. Flow (RTOR)		22			11			56			19	
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
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
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Adj. Flow (vph)	263	275	138	208	161	41	97	612	250	64	602	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	263	413	0	208	202	0	97	862	0	64	710	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	27.4		9.5	28.4		9.5	35.5		9.5	34.5	
Total Split (s)	17.0	35.0		17.0	35.0		22.0	36.0		22.0	36.0	
Total Split (%)	15.5%	31.8%		15.5%	31.8%		20.0%	32.7%		20.0%	32.7%	
Yellow Time (s)	4.0	4.7		4.0	4.7		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.5	0.7		0.5	0.7		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lead		Lag	Lag		Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effct Green (s)	43.5	42.6		36.1	35.2		33.5	33.5		27.2	27.2	
Actuated g/C Ratio	0.40	0.39		0.33	0.32		0.30	0.30		0.25	0.25	
v/c Ratio	0.58	0.59		0.55	0.34		0.33	0.81		0.32	0.82	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	33.3	32.5		40.9	31.4		36.3	39.6		34.9	46.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.3	32.5		40.9	31.4		36.3	39.6		34.9	46.2	
LOS	C	C		D	C		D	D		C	D	
Approach Delay		32.8			36.2			39.2			45.3	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	119	228		121	111		50	277		35	241	
Queue Length 95th (ft)	#295	#439		192	179		87	335		68	298	
Internal Link Dist (ft)		675			451			765			592	
Turn Bay Length (ft)	125			250			325			125		
Base Capacity (vph)	451	697		442	599		368	1077		320	1000	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.58	0.59		0.47	0.34		0.26	0.80		0.20	0.71	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 38.9	Intersection LOS: D
Intersection Capacity Utilization 79.5%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 4: NE 27th St & NE Neff Rd



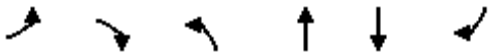
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	263	275	138	208	161	41	97	612	250	64	602	108
Future Volume (vph)	263	275	138	208	161	41	97	612	250	64	602	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	1766		1764	1832		1719	3360		1805	3445	
Flt Permitted	0.42	1.00		0.52	1.00		0.28	1.00		0.20	1.00	
Satd. Flow (perm)	780	1766		966	1832		503	3360		382	3445	
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	275	138	208	161	41	97	612	250	64	602	108
RTOR Reduction (vph)	0	14	0	0	8	0	0	39	0	0	14	0
Lane Group Flow (vph)	263	399	0	208	194	0	97	823	0	64	696	0
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	41.7	41.7		35.3	34.4		33.5	33.5		27.2	27.2	
Effective Green, g (s)	41.7	41.7		35.3	34.4		33.5	33.5		27.2	27.2	
Actuated g/C Ratio	0.38	0.38		0.32	0.31		0.30	0.30		0.25	0.25	
Clearance Time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	438	669		372	572		303	1023		188	851	
v/s Ratio Prot	0.09	c0.23		c0.04	0.11		0.04	c0.24		0.02	c0.20	
v/s Ratio Perm	c0.14			0.14			0.06			0.06		
v/c Ratio	0.60	0.60		0.56	0.34		0.32	0.80		0.34	0.82	
Uniform Delay, d1	25.3	27.4		32.3	29.1		35.5	35.2		33.5	39.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	3.6		1.8	1.6		0.6	4.7		1.1	6.1	
Delay (s)	27.5	31.1		34.2	30.7		36.1	39.9		34.6	45.2	
Level of Service	C	C		C	C		D	D		C	D	
Approach Delay (s)		29.7			32.4			39.5			44.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	3	75	19	0	66	22	851	32	58	680	23
Future Volume (Veh/h)	46	3	75	19	0	66	22	851	32	58	680	23
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	46	3	75	19	0	66	22	851	32	58	680	23
Pedestrians		5									1	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		3.5									3.5	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								944				
pX, platoon unblocked												
vC, conflicting volume	1774	1740	696	1784	1735	868	708			883		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1774	1740	696	1784	1735	868	708			883		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	5	96	83	60	100	81	98			92		
cM capacity (veh/h)	49	79	443	48	79	354	896			766		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	124	85	22	883	58	703
Volume Left	46	19	22	0	58	0
Volume Right	75	66	0	32	0	23
cSH	107	146	896	1700	766	1700
Volume to Capacity	1.15	0.58	0.02	0.52	0.08	0.41
Queue Length 95th (ft)	198	75	2	0	6	0
Control Delay (s)	209.3	59.6	9.1	0.0	10.1	0.0
Lane LOS	F	F	A		B	
Approach Delay (s)	209.3	59.6	0.2		0.8	
Approach LOS	F	F				

Intersection Summary				
Average Delay	17.0			
Intersection Capacity Utilization	67.1%	ICU Level of Service		C
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	106	11	952	655	5
Future Volume (Veh/h)	81	106	11	952	655	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	81	106	11	952	655	5
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1638	664	666			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1638	664	666			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	26	77	99			
cM capacity (veh/h)	109	460	811			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	187	11	952	660
Volume Left	81	11	0	0
Volume Right	106	0	0	5
cSH	192	811	1700	1700
Volume to Capacity	0.97	0.01	0.56	0.39
Queue Length 95th (ft)	201	1	0	0
Control Delay (s)	108.3	9.5	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	108.3	0.1		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	11.3		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	97	547	89	568	408	423
v/c Ratio	0.52	0.95	0.49	0.96	0.95	1.15
Control Delay	31.6	66.3	30.5	68.4	78.2	134.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	66.3	30.5	68.4	78.2	134.8
Queue Length 50th (ft)	46	413	42	440	317	~388
Queue Length 95th (ft)	81	#650	76	#679	#521	#602
Internal Link Dist (ft)		750		876	921	1097
Turn Bay Length (ft)	125		125			
Base Capacity (vph)	207	586	205	603	440	369
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.93	0.43	0.94	0.93	1.15

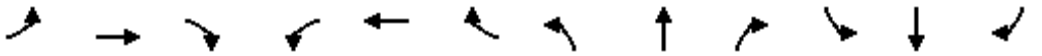
Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	367	180	89	475	93	141	196	71	50	209	164
Future Volume (vph)	97	367	180	89	475	93	141	196	71	50	209	164
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	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1787	1740		1770	1828			1769			1714	
Flt Permitted	0.10	1.00		0.10	1.00			0.98			0.99	
Satd. Flow (perm)	190	1740		189	1828			1769			1714	
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)	97	367	180	89	475	93	141	196	71	50	209	164
RTOR Reduction (vph)	0	14	0	0	5	0	0	6	0	0	18	0
Lane Group Flow (vph)	97	533	0	89	563	0	0	402	0	0	405	0
Confl. Peds. (#/hr)			12	12			4		4	4		4
Confl. Bikes (#/hr)						3			3			5
Heavy Vehicles (%)	1%	2%	1%	2%	1%	1%	1%	4%	1%	7%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	48.1	39.6		47.9	39.5			29.3			25.0	
Effective Green, g (s)	48.1	39.6		47.9	39.5			29.3			25.0	
Actuated g/C Ratio	0.39	0.32		0.39	0.32			0.24			0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	4.8		2.5	4.8			2.5			2.5	
Lane Grp Cap (vph)	185	563		182	590			423			350	
v/s Ratio Prot	c0.04	0.31		0.03	c0.31			c0.23			c0.24	
v/s Ratio Perm	0.17			0.16								
v/c Ratio	0.52	0.95		0.49	0.95			0.95			1.16	
Uniform Delay, d1	28.7	40.3		28.2	40.5			45.8			48.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	25.6		1.5	26.3			31.2			97.7	
Delay (s)	30.8	65.9		29.7	66.8			77.0			146.4	
Level of Service	C	E		C	E			E			F	
Approach Delay (s)		60.6			61.7			77.0			146.4	
Approach LOS		E			E			E			F	

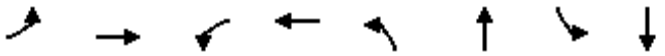
Intersection Summary			
HCM 2000 Control Delay	81.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	122.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	433	34	27	532	35	55	9	73	28	8	70
Future Volume (Veh/h)	21	433	34	27	532	35	55	9	73	28	8	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	21	433	34	27	532	35	55	9	73	28	8	70
Pedestrians								12			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								3.5			3.5	
Percent Blockage								1			0	
Right turn flare (veh)												3
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		956			942							
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	571			479			1129	1129	462	1160	1128	554
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571			206			1030	1030	185	1069	1029	554
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			59	95	89	78	95	87
cM capacity (veh/h)	1008			1074			133	175	673	127	175	534

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	21	467	27	567	137	106
Volume Left	21	0	27	0	55	28
Volume Right	0	34	0	35	73	70
cSH	1008	1700	1074	1700	239	405
Volume to Capacity	0.02	0.27	0.03	0.33	0.57	0.26
Queue Length 95th (ft)	2	0	2	0	80	26
Control Delay (s)	8.6	0.0	8.4	0.0	38.4	22.1
Lane LOS	A		A		E	C
Approach Delay (s)	0.4		0.4		38.4	22.1
Approach LOS					E	C

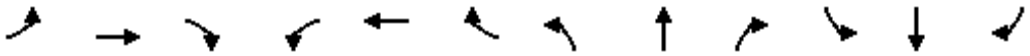
Intersection Summary				
Average Delay	6.0			
Intersection Capacity Utilization	52.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	521	33	354	148	140	139	194
v/c Ratio	0.06	0.43	0.06	0.29	0.91	0.35	0.68	0.54
Control Delay	6.1	12.0	7.4	10.6	93.3	10.9	56.9	35.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.1	12.0	7.4	10.6	93.3	10.9	56.9	35.3
Queue Length 50th (ft)	7	171	9	98	103	12	92	97
Queue Length 95th (ft)	22	319	m11	m195	#167	58	146	153
Internal Link Dist (ft)		547		675		595		282
Turn Bay Length (ft)	100		100		75		100	
Base Capacity (vph)	756	1204	645	1220	222	506	279	481
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.43	0.05	0.29	0.67	0.28	0.50	0.40

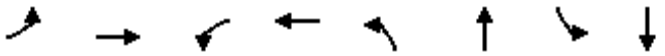
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	419	102	33	314	40	148	20	120	139	101	93
Future Volume (vph)	41	419	102	33	314	40	148	20	120	139	101	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		0.99	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1748	1797		1801	1829		1796	1589		1763	1717	
Flt Permitted	0.51	1.00		0.40	1.00		0.45	1.00		0.57	1.00	
Satd. Flow (perm)	938	1797		756	1829		846	1589		1063	1717	
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)	41	419	102	33	314	40	148	20	120	139	101	93
RTOR Reduction (vph)	0	6	0	0	3	0	0	97	0	0	33	0
Lane Group Flow (vph)	41	515	0	33	351	0	148	43	0	139	161	0
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	75.6	71.6		75.2	71.4		21.1	21.1		21.1	21.1	
Effective Green, g (s)	75.6	71.6		75.2	71.4		21.1	21.1		21.1	21.1	
Actuated g/C Ratio	0.69	0.65		0.68	0.65		0.19	0.19		0.19	0.19	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.8	4.2		2.8	4.2		2.2	2.2		2.2	2.2	
Lane Grp Cap (vph)	674	1169		552	1187		162	304		203	329	
v/s Ratio Prot	c0.00	c0.29		0.00	0.19			0.03			0.09	
v/s Ratio Perm	0.04			0.04			c0.17			0.13		
v/c Ratio	0.06	0.44		0.06	0.30		0.91	0.14		0.68	0.49	
Uniform Delay, d1	5.6	9.4		6.2	8.4		43.6	36.9		41.4	39.6	
Progression Factor	1.00	1.00		1.22	1.02		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.2		0.0	0.6		45.7	0.1		7.8	0.6	
Delay (s)	5.7	10.6		7.6	9.1		89.2	37.0		49.2	40.2	
Level of Service	A	B		A	A		F	D		D	D	
Approach Delay (s)		10.2			9.0			63.9			44.0	
Approach LOS		B			A			E			D	

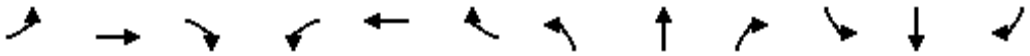
Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	270	408	216	213	103	899	77	762
v/c Ratio	0.64	0.61	0.60	0.38	0.35	0.82	0.36	0.84
Control Delay	38.4	35.5	43.9	33.2	37.1	39.3	35.2	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	35.5	43.9	33.2	37.1	39.3	35.2	46.5
Queue Length 50th (ft)	159	253	132	123	53	288	42	258
Queue Length 95th (ft)	#246	#427	199	189	93	360	79	325
Internal Link Dist (ft)		675		451		765		592
Turn Bay Length (ft)	125		250		325		125	
Base Capacity (vph)	419	665	418	569	361	1099	324	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.61	0.52	0.37	0.29	0.82	0.24	0.76

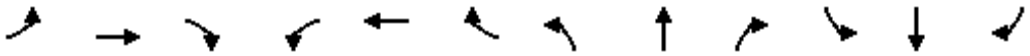
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	282	126	216	170	43	103	639	260	77	648	114
Future Volume (vph)	270	282	126	216	170	43	103	639	260	77	648	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	1774		1764	1833		1719	3361		1805	3447	
Flt Permitted	0.36	1.00		0.52	1.00		0.25	1.00		0.19	1.00	
Satd. Flow (perm)	679	1774		970	1833		450	3361		365	3447	
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)	270	282	126	216	170	43	103	639	260	77	648	114
RTOR Reduction (vph)	0	13	0	0	8	0	0	38	0	0	13	0
Lane Group Flow (vph)	270	395	0	216	205	0	103	861	0	77	749	0
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	39.6	39.6		32.9	32.0		34.7	34.7		28.6	28.6	
Effective Green, g (s)	39.6	39.6		32.9	32.0		34.7	34.7		28.6	28.6	
Actuated g/C Ratio	0.36	0.36		0.30	0.29		0.32	0.32		0.26	0.26	
Clearance Time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	408	638		355	533		302	1060		197	896	
v/s Ratio Prot	0.10	c0.22		c0.05	0.11		0.04	c0.26		0.03	c0.22	
v/s Ratio Perm	c0.14			0.13			0.06			0.07		
v/c Ratio	0.66	0.62		0.61	0.38		0.34	0.81		0.39	0.84	
Uniform Delay, d1	27.1	29.0		34.8	31.1		35.8	34.6		32.8	38.5	
Progression Factor	1.06	1.04		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	4.1		2.9	2.1		0.7	4.8		1.3	6.8	
Delay (s)	32.3	34.2		37.7	33.2		36.5	39.5		34.1	45.3	
Level of Service	C	C		D	C		D	D		C	D	
Approach Delay (s)		33.5			35.5			39.2			44.3	
Approach LOS		C			D			D			D	

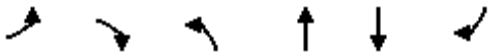
Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	3	108	20	0	69	23	882	33	60	709	24
Future Volume (Veh/h)	53	3	108	20	0	69	23	882	33	60	709	24
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	53	3	108	20	0	69	23	882	33	60	709	24
Pedestrians		5									1	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		3.5									3.5	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1844	1807	726	1883	1802	900	738			915		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1844	1807	726	1883	1802	900	738			915		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	96	75	45	100	80	97			92		
cM capacity (veh/h)	42	71	426	36	72	340	873			745		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	164	89	23	915	60	733
Volume Left	53	20	23	0	60	0
Volume Right	108	69	0	33	0	24
cSH	106	118	873	1700	745	1700
Volume to Capacity	1.55	0.76	0.03	0.54	0.08	0.43
Queue Length 95th (ft)	307	106	2	0	7	0
Control Delay (s)	359.5	96.2	9.2	0.0	10.3	0.0
Lane LOS	F	F	A		B	
Approach Delay (s)	359.5	96.2	0.2		0.8	
Approach LOS	F	F				

Intersection Summary				
Average Delay	34.5			
Intersection Capacity Utilization	71.6%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	84	110	11	993	683	5
Future Volume (Veh/h)	84	110	11	993	683	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	84	110	11	993	683	5
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1706	692	694			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1706	692	694			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	15	75	99			
cM capacity (veh/h)	99	443	791			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	194	11	993	688
Volume Left	84	11	0	0
Volume Right	110	0	0	5
cSH	177	791	1700	1700
Volume to Capacity	1.10	0.01	0.58	0.40
Queue Length 95th (ft)	242	1	0	0
Control Delay (s)	150.0	9.6	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	150.0	0.1		0.0
Approach LOS	F			

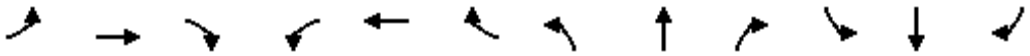
Intersection Summary			
Average Delay	15.5		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	104	555	93	585	414	439
v/c Ratio	0.56	0.96	0.51	0.98	0.96	1.20
Control Delay	33.5	67.8	31.3	73.0	81.1	154.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	67.8	31.3	73.0	81.1	154.4
Queue Length 50th (ft)	49	423	44	461	325	~417
Queue Length 95th (ft)	89	#667	78	#711	#535	#631
Internal Link Dist (ft)		750		876	921	1097
Turn Bay Length (ft)	125		125			
Base Capacity (vph)	206	581	204	598	436	365
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.96	0.46	0.98	0.95	1.20

Intersection Summary

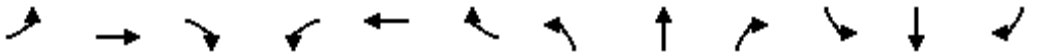
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	375	180	93	492	93	141	200	73	50	216	173
Future Volume (vph)	104	375	180	93	492	93	141	200	73	50	216	173
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	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1787	1742		1770	1829			1768			1713	
Flt Permitted	0.10	1.00		0.10	1.00			0.98			0.99	
Satd. Flow (perm)	187	1742		186	1829			1768			1713	
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)	104	375	180	93	492	93	141	200	73	50	216	173
RTOR Reduction (vph)	0	13	0	0	5	0	0	6	0	0	18	0
Lane Group Flow (vph)	104	542	0	93	580	0	0	408	0	0	421	0
Confl. Peds. (#/hr)			12	12			4		4	4		4
Confl. Bikes (#/hr)						3			3			5
Heavy Vehicles (%)	1%	2%	1%	2%	1%	1%	1%	4%	1%	7%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	48.9	40.2		48.5	40.0			29.6			25.0	
Effective Green, g (s)	48.9	40.2		48.5	40.0			29.6			25.0	
Actuated g/C Ratio	0.40	0.33		0.39	0.32			0.24			0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	4.8		2.5	4.8			2.5			2.5	
Lane Grp Cap (vph)	187	567		182	593			424			347	
v/s Ratio Prot	c0.04	0.31		0.04	c0.32			c0.23			c0.25	
v/s Ratio Perm	0.18			0.17								
v/c Ratio	0.56	0.96		0.51	0.98			0.96			1.21	
Uniform Delay, d1	29.3	40.7		28.5	41.2			46.3			49.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.9	27.2		1.8	31.2			33.8			119.3	
Delay (s)	32.1	67.9		30.3	72.4			80.1			168.4	
Level of Service	C	E		C	E			F			F	
Approach Delay (s)		62.2			66.6			80.1			168.4	
Approach LOS		E			E			F			F	

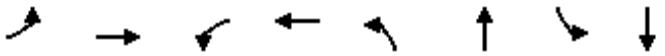
Intersection Summary			
HCM 2000 Control Delay	88.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	123.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	436	34	27	537	35	55	10	73	28	10	86
Future Volume (Veh/h)	28	436	34	27	537	35	55	10	73	28	10	86
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	28	436	34	27	537	35	55	10	73	28	10	86
Pedestrians								12			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								3.5			3.5	
Percent Blockage								1			0	
Right turn flare (veh)												3
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		956			942							
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	576			482			1160	1151	465	1182	1150	558
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	576			205			1067	1056	183	1096	1055	558
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			54	94	89	77	94	84
cM capacity (veh/h)	1004			1071			119	167	672	120	167	531

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	28	470	27	572	138	124
Volume Left	28	0	27	0	55	28
Volume Right	0	34	0	35	73	86
cSH	1004	1700	1071	1700	218	431
Volume to Capacity	0.03	0.28	0.03	0.34	0.63	0.29
Queue Length 95th (ft)	2	0	2	0	94	29
Control Delay (s)	8.7	0.0	8.4	0.0	46.1	22.2
Lane LOS	A		A		E	C
Approach Delay (s)	0.5		0.4		46.1	22.2
Approach LOS					E	C

Intersection Summary				
Average Delay	7.1			
Intersection Capacity Utilization	53.8%	ICU Level of Service		A
Analysis Period (min)	15			



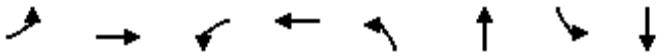
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	521	33	364	148	141	148	203
v/c Ratio	0.06	0.44	0.06	0.31	0.93	0.35	0.71	0.55
Control Delay	6.3	12.3	5.3	11.0	95.6	10.7	58.3	35.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	12.3	5.3	11.0	95.6	10.7	58.3	35.7
Queue Length 50th (ft)	8	173	4	137	103	12	98	103
Queue Length 95th (ft)	24	324	m20	212	#170	59	153	158
Internal Link Dist (ft)		547		675		595		282
Turn Bay Length (ft)	100		100		75		100	
Base Capacity (vph)	729	1197	647	1173	216	508	281	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.44	0.05	0.31	0.69	0.28	0.53	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Future Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		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	0.97		1.00	0.98		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	1797		1800	1822		1796	1591		1763	1716	
Flt Permitted	0.49	1.00		0.40	1.00		0.43	1.00		0.57	1.00	
Satd. Flow (perm)	902	1797		765	1822		820	1591		1065	1716	
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)	44	419	102	33	314	50	148	21	120	148	105	98
RTOR Reduction (vph)	0	6	0	0	4	0	0	96	0	0	33	0
Lane Group Flow (vph)	44	515	0	33	360	0	148	45	0	148	170	0
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	76.3	71.1		73.5	69.7		21.6	21.6		21.6	21.6	
Effective Green, g (s)	76.3	71.1		73.5	69.7		21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.69	0.65		0.67	0.63		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.8	4.2		2.8	4.2		2.2	2.2		2.2	2.2	
Lane Grp Cap (vph)	665	1161		546	1154		161	312		209	336	
v/s Ratio Prot	c0.00	c0.29		0.00	0.20			0.03			0.10	
v/s Ratio Perm	0.04			0.04			c0.18			0.14		
v/c Ratio	0.07	0.44		0.06	0.31		0.92	0.14		0.71	0.51	
Uniform Delay, d1	5.5	9.6		6.6	9.2		43.3	36.5		41.3	39.4	
Progression Factor	1.00	1.00		0.83	0.96		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.2		0.0	0.6		46.9	0.1		9.1	0.6	
Delay (s)	5.6	10.9		5.6	9.5		90.3	36.7		50.3	40.1	
Level of Service	A	B		A	A		F	D		D	D	
Approach Delay (s)		10.5			9.2			64.1			44.4	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	274	413	216	217	108	901	80	771
v/c Ratio	0.67	0.64	0.54	0.38	0.45	0.84	0.44	0.82
Control Delay	35.4	33.0	41.4	33.1	42.9	41.1	37.3	44.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	33.0	41.4	33.1	42.9	41.1	37.3	44.8
Queue Length 50th (ft)	114	214	127	122	56	290	43	261
Queue Length 95th (ft)	238	325	204	198	99	367	79	320
Internal Link Dist (ft)		675		451		765		592
Turn Bay Length (ft)	125		250		325		125	
Base Capacity (vph)	457	646	415	580	247	1124	183	1062
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.64	0.52	0.37	0.44	0.80	0.44	0.73

Intersection Summary

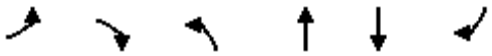
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Future Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1768	1773		1764	1833		1719	3361		1805	3446	
Flt Permitted	0.32	1.00		0.52	1.00		0.23	1.00		0.17	1.00	
Satd. Flow (perm)	604	1773		966	1833		415	3361		325	3446	
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)	274	284	129	216	173	44	108	641	260	80	655	116
RTOR Reduction (vph)	0	14	0	0	8	0	0	41	0	0	14	0
Lane Group Flow (vph)	274	399	0	216	209	0	108	860	0	80	757	0
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.1	38.1		34.1	33.2		33.9	33.9		29.4	29.4	
Effective Green, g (s)	38.1	38.1		34.1	33.2		33.9	33.9		29.4	29.4	
Actuated g/C Ratio	0.35	0.35		0.31	0.30		0.31	0.31		0.27	0.27	
Clearance Time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	399	614		394	553		252	1035		167	921	
v/s Ratio Prot	0.11	c0.22		c0.07	0.11		0.04	c0.26		0.03	c0.22	
v/s Ratio Perm	c0.13			0.10			0.09			0.10		
v/c Ratio	0.69	0.65		0.55	0.38		0.43	0.83		0.48	0.82	
Uniform Delay, d1	28.4	30.3		33.5	30.3		38.3	35.4		32.7	37.8	
Progression Factor	0.99	0.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	4.8		1.6	2.0		1.2	5.8		2.2	6.0	
Delay (s)	32.5	34.1		35.1	32.2		39.5	41.2		34.8	43.8	
Level of Service	C	C		D	C		D	D		C	D	
Approach Delay (s)		33.5			33.7			41.0			43.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	3	118	20	1	69	26	886	33	60	711	30
Future Volume (Veh/h)	62	3	118	20	1	69	26	886	33	60	711	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	62	3	118	20	1	69	26	886	33	60	711	30
Pedestrians		5									1	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		3.5									3.5	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1860	1822	731	1905	1820	904	746			919		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1860	1822	731	1905	1820	904	746			919		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	96	72	41	99	80	97			92		
cM capacity (veh/h)	41	69	423	34	70	338	867			743		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	183	90	26	919	60	741
Volume Left	62	20	26	0	60	0
Volume Right	118	69	0	33	0	30
cSH	99	111	867	1700	743	1700
Volume to Capacity	1.85	0.81	0.03	0.54	0.08	0.44
Queue Length 95th (ft)	376	116	2	0	7	0
Control Delay (s)	490.1	112.3	9.3	0.0	10.3	0.0
Lane LOS	F	F	A		B	
Approach Delay (s)	490.1	112.3	0.3		0.8	
Approach LOS	F	F				

Intersection Summary				
Average Delay	49.9			
Intersection Capacity Utilization	73.8%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	84	110	11	1006	691	5
Future Volume (Veh/h)	84	110	11	1006	691	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	84	110	11	1006	691	5
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1728	700	702			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1728	700	702			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	12	75	99			
cM capacity (veh/h)	96	439	786			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	194	11	1006	696
Volume Left	84	11	0	0
Volume Right	110	0	0	5
cSH	172	786	1700	1700
Volume to Capacity	1.13	0.01	0.59	0.41
Queue Length 95th (ft)	250	1	0	0
Control Delay (s)	161.0	9.6	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	161.0	0.1		0.0
Approach LOS	F			

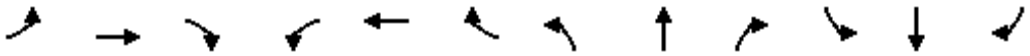
Intersection Summary			
Average Delay	16.4		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	114	611	102	643	455	483
v/c Ratio	0.60	1.06	0.55	1.08	1.05	1.33
Control Delay	36.6	92.7	33.6	100.2	101.8	203.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	92.7	33.6	100.2	101.8	203.1
Queue Length 50th (ft)	54	~528	48	~579	~398	~495
Queue Length 95th (ft)	100	#768	87	#815	#611	#711
Internal Link Dist (ft)		750		876	921	1097
Turn Bay Length (ft)	125		125			
Base Capacity (vph)	204	578	202	595	433	364
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	1.06	0.50	1.08	1.05	1.33

Intersection Summary

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

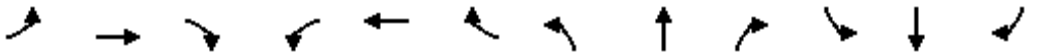
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	375	180	93	492	93	141	200	73	50	216	173
Future Volume (vph)	104	375	180	93	492	93	141	200	73	50	216	173
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	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00			0.99			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.95		1.00	0.98			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1787	1742		1770	1830			1768			1713	
Flt Permitted	0.10	1.00		0.10	1.00			0.98			0.99	
Satd. Flow (perm)	187	1742		186	1830			1768			1713	
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
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	114	412	198	102	541	102	155	220	80	55	238	190
RTOR Reduction (vph)	0	14	0	0	5	0	0	6	0	0	18	0
Lane Group Flow (vph)	114	598	0	102	638	0	0	449	0	0	465	0
Confl. Peds. (#/hr)			12	12			4		4	4		4
Confl. Bikes (#/hr)						3			3			5
Heavy Vehicles (%)	1%	2%	1%	2%	1%	1%	1%	4%	1%	7%	3%	1%
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases	2			6								
Actuated Green, G (s)	49.2	40.3		48.8	40.1			30.0			25.0	
Effective Green, g (s)	49.2	40.3		48.8	40.1			30.0			25.0	
Actuated g/C Ratio	0.40	0.32		0.39	0.32			0.24			0.20	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	2.5	4.8		2.5	4.8			2.5			2.5	
Lane Grp Cap (vph)	189	566		184	591			427			345	
v/s Ratio Prot	c0.04	0.34		0.04	c0.35			c0.25			c0.27	
v/s Ratio Perm	0.20			0.18								
v/c Ratio	0.60	1.06		0.55	1.08			1.05			1.35	
Uniform Delay, d1	29.8	41.9		29.8	42.0			47.0			49.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	4.5	53.4		2.9	60.1			57.7			174.2	
Delay (s)	34.3	95.2		32.6	102.0			104.7			223.7	
Level of Service	C	F		C	F			F			F	
Approach Delay (s)		85.6			92.5			104.7			223.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	119.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	109.8%	ICU Level of Service	H
Analysis Period (min)	15		

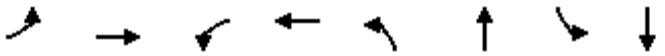
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	436	34	27	537	35	55	10	73	28	10	86
Future Volume (Veh/h)	28	436	34	27	537	35	55	10	73	28	10	86
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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)	31	480	37	30	591	39	61	11	80	31	11	95
Pedestrians								12			4	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								3.5			3.5	
Percent Blockage								1			0	
Right turn flare (veh)												3
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		956			942							
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75	
vC, conflicting volume	634			529			1276	1266	510	1302	1266	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	634			206			1202	1189	182	1236	1188	614
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			29	92	88	65	92	81
cM capacity (veh/h)	955			1022			86	132	643	88	132	493

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	31	517	30	630	152	137
Volume Left	31	0	30	0	61	31
Volume Right	0	37	0	39	80	95
cSH	955	1700	1022	1700	166	323
Volume to Capacity	0.03	0.30	0.03	0.37	0.92	0.42
Queue Length 95th (ft)	3	0	2	0	168	51
Control Delay (s)	8.9	0.0	8.6	0.0	104.2	29.9
Lane LOS	A		A		F	D
Approach Delay (s)	0.5		0.4		104.2	29.9
Approach LOS					F	D

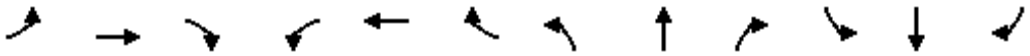
Intersection Summary				
Average Delay	13.7			
Intersection Capacity Utilization	58.2%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	573	36	400	163	155	163	224
v/c Ratio	0.08	0.49	0.07	0.35	0.98	0.35	0.74	0.56
Control Delay	7.0	14.4	6.9	12.6	107.1	9.9	59.1	35.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	14.4	6.9	12.6	107.1	9.9	59.1	35.4
Queue Length 50th (ft)	9	210	5	139	115	13	108	115
Queue Length 95th (ft)	27	387	m22	m221	#202	60	167	173
Internal Link Dist (ft)		547		675		595		282
Turn Bay Length (ft)	100		100		75		100	
Base Capacity (vph)	675	1169	588	1145	209	522	276	489
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.49	0.06	0.35	0.78	0.30	0.59	0.46

Intersection Summary

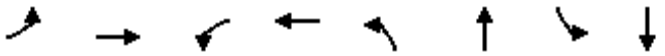
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Future Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		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	0.97		1.00	0.98		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	1797		1802	1822		1797	1591		1764	1717	
Flt Permitted	0.46	1.00		0.36	1.00		0.41	1.00		0.56	1.00	
Satd. Flow (perm)	842	1797		686	1822		782	1591		1033	1717	
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
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	48	461	112	36	345	55	163	23	132	163	116	108
RTOR Reduction (vph)	0	6	0	0	4	0	0	104	0	0	32	0
Lane Group Flow (vph)	48	567	0	36	396	0	163	51	0	163	192	0
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.5	69.1		71.5	67.6		23.5	23.5		23.5	23.5	
Effective Green, g (s)	74.5	69.1		71.5	67.6		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.68	0.63		0.65	0.61		0.21	0.21		0.21	0.21	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.8	4.2		2.8	4.2		2.2	2.2		2.2	2.2	
Lane Grp Cap (vph)	614	1128		485	1119		167	339		220	366	
v/s Ratio Prot	c0.00	c0.32		0.00	0.22			0.03			0.11	
v/s Ratio Perm	0.05			0.05			c0.21			0.16		
v/c Ratio	0.08	0.50		0.07	0.35		0.98	0.15		0.74	0.52	
Uniform Delay, d1	6.3	11.1		7.7	10.4		43.0	35.1		40.4	38.3	
Progression Factor	1.00	1.00		0.98	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.6		0.0	0.7		61.8	0.1		11.5	0.8	
Delay (s)	6.3	12.7		7.6	11.0		104.8	35.2		51.9	39.1	
Level of Service	A	B		A	B		F	D		D	D	
Approach Delay (s)		12.2			10.7			70.9			44.5	
Approach LOS		B			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	301	454	238	238	119	991	88	849
v/c Ratio	0.79	0.73	0.64	0.44	0.53	0.88	0.49	0.86
Control Delay	46.0	38.8	46.8	35.6	47.8	43.6	39.0	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	38.8	46.8	35.6	47.8	43.6	39.0	46.5
Queue Length 50th (ft)	140	270	149	143	61	327	46	288
Queue Length 95th (ft)	305	423	#226	218	108	#446	85	361
Internal Link Dist (ft)		675		451		765		592
Turn Bay Length (ft)	125		250		325		125	
Base Capacity (vph)	425	634	385	544	231	1128	179	1062
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.72	0.62	0.44	0.52	0.88	0.49	0.80

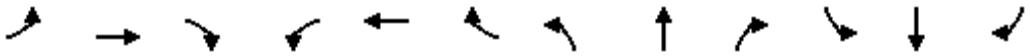
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Future Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.97		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1769	1773		1764	1833		1719	3361		1805	3446	
Flt Permitted	0.23	1.00		0.50	1.00		0.18	1.00		0.16	1.00	
Satd. Flow (perm)	428	1773		930	1833		331	3361		300	3446	
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
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	301	312	142	238	190	48	119	705	286	88	720	128
RTOR Reduction (vph)	0	15	0	0	8	0	0	40	0	0	14	0
Lane Group Flow (vph)	301	439	0	238	230	0	119	951	0	88	835	0
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.0	37.0		31.7	30.8		35.5	35.5		31.0	31.0	
Effective Green, g (s)	37.0	37.0		31.7	30.8		35.5	35.5		31.0	31.0	
Actuated g/C Ratio	0.34	0.34		0.29	0.28		0.32	0.32		0.28	0.28	
Clearance Time (s)	4.5	5.4		4.5	5.4		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	376	596		365	513		235	1084		162	971	
v/s Ratio Prot	c0.14	0.25		c0.08	0.13		0.05	c0.28		0.03	c0.24	
v/s Ratio Perm	c0.13			0.11			0.12			0.12		
v/c Ratio	0.80	0.74		0.65	0.45		0.51	0.88		0.54	0.86	
Uniform Delay, d1	30.0	32.2		35.0	32.6		39.3	35.2		32.0	37.4	
Progression Factor	1.12	1.03		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.4	7.1		4.1	2.8		1.7	8.2		3.7	7.9	
Delay (s)	43.9	40.3		39.2	35.4		41.0	43.4		35.7	45.3	
Level of Service	D	D		D	D		D	D		D	D	
Approach Delay (s)		41.7			37.3			43.1			44.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

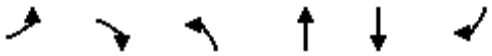
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	3	118	20	1	69	26	886	33	60	711	30
Future Volume (Veh/h)	62	3	118	20	1	69	26	886	33	60	711	30
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	68	3	130	22	1	76	29	975	36	66	782	33
Pedestrians		5									1	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		3.5									3.5	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2046	2004	804	2096	2003	994	820			1011		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2046	2004	804	2096	2003	994	820			1011		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	94	66	0	98	75	96			90		
cM capacity (veh/h)	28	52	385	22	52	300	814			686		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	201	99	29	1011	66	815
Volume Left	68	22	29	0	66	0
Volume Right	130	76	0	36	0	33
cSH	70	78	814	1700	686	1700
Volume to Capacity	2.86	1.27	0.04	0.59	0.10	0.48
Queue Length 95th (ft)	503	189	3	0	8	0
Control Delay (s)	967.6	287.5	9.6	0.0	10.8	0.0
Lane LOS	F	F	A		B	
Approach Delay (s)	967.6	287.5	0.3		0.8	
Approach LOS	F	F				

Intersection Summary				
Average Delay	100.8			
Intersection Capacity Utilization	80.1%	ICU Level of Service		D
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	84	110	11	1006	691	5
Future Volume (Veh/h)	84	110	11	1006	691	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	92	121	12	1107	760	6
Pedestrians	6					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1900	769	772			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1900	769	772			
tC, single (s)	6.4	6.2	4.4			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	0	70	98			
cM capacity (veh/h)	75	400	737			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	213	12	1107	766
Volume Left	92	12	0	0
Volume Right	121	0	0	6
cSH	139	737	1700	1700
Volume to Capacity	1.53	0.02	0.65	0.45
Queue Length 95th (ft)	367	1	0	0
Control Delay (s)	329.9	10.0	0.0	0.0
Lane LOS	F	A		
Approach Delay (s)	329.9	0.1		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	33.5		
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	1271			627		
pX, platoon unblocked						
vC, conflicting volume			0		0	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		0	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1623		1023	1085

Direction, Lane #	EB 1	WB 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

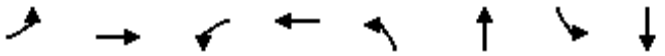
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑			↑
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)			672			
pX, platoon unblocked						
vC, conflicting volume	0	0			0	
vC1, stage 1 conf vol	0					
vC2, stage 2 conf vol	0					
vCu, unblocked vol	0	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1023	1085			1623	

Direction, Lane #	NB 1	SB 1
Volume Total	0	0
Volume Left	0	0
Volume Right	0	0
cSH	1700	1700
Volume to Capacity	0.00	0.00
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

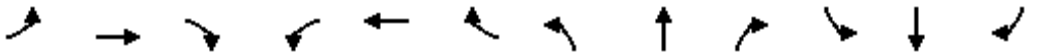
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	0.0%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix “C”
Mitigated LOS Worksheets



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	121	60	70	26	919	60	741
v/c Ratio	0.75	0.35	0.34	0.23	0.06	0.72	0.19	0.57
Control Delay	64.9	10.4	45.2	11.1	4.3	16.7	5.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.9	10.4	45.2	11.1	4.3	16.7	5.3	11.6
Queue Length 50th (ft)	106	2	38	1	4	403	9	268
Queue Length 95th (ft)	174	51	77	39	12	625	22	411
Internal Link Dist (ft)		300		471		864		586
Turn Bay Length (ft)					50		50	
Base Capacity (vph)	263	405	220	364	465	1270	323	1307
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.30	0.27	0.19	0.06	0.72	0.19	0.57

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	3	118	60	1	69	26	886	33	60	711	30
Future Volume (vph)	157	3	118	60	1	69	26	886	33	60	711	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.98		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	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		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)	1800	1587		1805	1582		1804	1853		1770	1847	
Flt Permitted	0.71	1.00		0.59	1.00		0.29	1.00		0.18	1.00	
Satd. Flow (perm)	1348	1587		1126	1582		555	1853		334	1847	
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	3	118	60	1	69	26	886	33	60	711	30
RTOR Reduction (vph)	0	100	0	0	58	0	0	1	0	0	1	0
Lane Group Flow (vph)	157	21	0	60	12	0	26	918	0	60	740	0
Confl. Peds. (#/hr)	1					1	5					5
Confl. Bikes (#/hr)			1						3			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	2%	4%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.2	17.2		17.2	17.2		77.8	74.5		80.8	76.0	
Effective Green, g (s)	17.2	17.2		17.2	17.2		77.8	74.5		80.8	76.0	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.68		0.73	0.69	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	210	248		176	247		430	1254		308	1276	
v/s Ratio Prot		0.01			0.01		0.00	c0.50		c0.01	0.40	
v/s Ratio Perm	c0.12			0.05			0.04			0.13		
v/c Ratio	0.75	0.09		0.34	0.05		0.06	0.73		0.19	0.58	
Uniform Delay, d1	44.3	39.7		41.3	39.4		6.3	11.4		9.9	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.5	0.2		1.2	0.1		0.1	3.8		0.3	1.9	
Delay (s)	57.8	39.8		42.5	39.5		6.3	15.2		10.2	10.7	
Level of Service	E	D		D	D		A	B		B	B	
Approach Delay (s)		50.0			40.9			14.9			10.7	
Approach LOS		D			D			B			B	

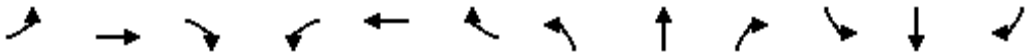
Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Parameter	Approach															
	EB (West Leg): NE Conners Ave				WB (East Leg): NE Conners Ave				NB (South Leg): NE 27th St				SB (North Leg): NE 27th St			
INPUTS																
Lane Configuration																
Entry Lane(s) Configuration	Case:	LTR			Case:	LTR			Case:	LTR			Case:	LTR		
(Note: This assumes 4 legs.)		1				1				1				1		
RT bypass configuration			Case:	None			Case:	None			Case:	None			Case:	1 None
(Note: This is in addition to the entry lane(s))				1				1				1				
Number of conflicting circ lanes		1				1				1				1		
Number of conflicting exit lanes for bypass lane (if used)																
Vehicular Volumes	U (v1U)	L (v1)	T (v2)	R (v3)	U (v4U)	L (v4)	T (v5)	R (v6)	U (v7U)	L (v7)	T (v8)	R (v9)	U (v10U)	L (v10)	T (v11)	R (v12)
Flow (veh/h)		65	3	93		22	0	76		28	980	37		67	783	32
% HV		0	0	0		0	0	0		0	2	0		2	2	4
PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Pedestrian Volumes (crossing leg)																
n_p	0				1				0				5			
Constants																
Time period, T (h)	0.25															
PCE for HV	2															
Default Values																
Lane volume assignment																
Case 4: LT, TR (bias to right lane)																
% Volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Case 5: L, LTR (bias to left lane)																
% volume in left lane, right lane	0.53	0.47			0.53	0.47			0.53	0.47			0.53	0.47		
Case 6: LTR, R (bias to right lane)																
% volume in left lane, right lane	0.47	0.53			0.47	0.53			0.47	0.53			0.47	0.53		
Capacity models																
Case 1: 1 confl lane																
Calibration parameters																
A (intercept)	1333.33	1333.33			1333.33	1333.33			1333.33	1333.33			1333.33	1333.33		
B (coefficient)	0.000764	0.000764			0.000764	0.000764			0.000764	0.000764			0.000764	0.000764		
Case 2: 2 confl lanes																
Calibration parameters																
A (intercept)	1130	1130			1130	1130			1130	1130			1130	1130		
B (coefficient)	0.00075	0.0007			0.00075	0.0007			0.00075	0.0007			0.00075	0.0007		
RT bypass, 1 confl lane (assumed same as Case 1 above)																
Calibration parameters																
A (intercept)	1333.33				1333.33				1333.33				1333.33			
B (coefficient)	0.000764				0.000764				0.000764				0.000764			
RT bypass, 2 confl lanes (assumed right lane, Case 2 above)																
Calibration parameters																
A (intercept)	1130				1130				1130				1130			
B (coefficient)	0.0007				0.0007				0.0007				0.0007			
SUMMARY																
Entry lane volume (veh/h)	N/A	180	N/A		N/A	110	N/A		N/A	1173	N/A		N/A	992	N/A	
Entry lane capacity (veh/h)	N/A	621	N/A		N/A	522	N/A		N/A	1163	N/A		N/A	1251	N/A	
x (v/c ratio)	N/A	0.29	N/A		N/A	0.21	N/A		N/A	1.01	N/A		N/A	0.79	N/A	
Lane control delay (s/veh)	N/A	9.6	N/A		N/A	9.8	N/A		N/A	47.5	N/A		N/A	16.8	N/A	
Lane LOS	N/A	A	N/A		N/A	A	N/A		N/A	F	N/A		N/A	C	N/A	
Approach control delay (s/veh)	9.6				9.8				47.5				16.8			
Approach LOS	A				A				E				C			
Intersection control delay (s/veh)	30.6															
Intersection LOS	D															
95th percentile queue (veh)	N/A	1.2	N/A		N/A	0.8	N/A		N/A	21.6	N/A		N/A	9.0	N/A	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	274	413	216	217	108	641	260	80	771
v/c Ratio	0.77	0.69	0.64	0.43	0.32	0.91	0.35	0.48	0.79
Control Delay	48.7	41.1	49.1	36.8	31.8	51.1	4.6	37.8	41.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	41.1	49.1	36.8	31.8	51.1	4.6	37.8	41.3
Queue Length 50th (ft)	110	206	134	128	48	405	6	43	257
Queue Length 95th (ft)	#337	#431	#219	203	86	#614	56	74	300
Internal Link Dist (ft)		675		451		765			592
Turn Bay Length (ft)	125		250		325			125	
Base Capacity (vph)	363	595	358	510	338	748	787	168	1378
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.69	0.60	0.43	0.32	0.86	0.33	0.48	0.56

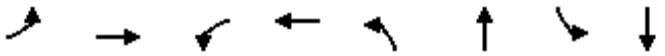
Intersection Summary

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



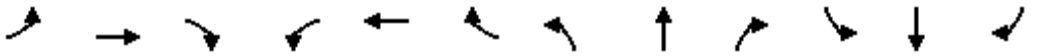
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Future Volume (vph)	274	284	129	216	173	44	108	641	260	80	655	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.4		4.5	5.4		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	0.99		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	0.95		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)	1768	1773		1764	1832		1719	1845	1581	1805	3446	
Flt Permitted	0.30	1.00		0.52	1.00		0.23	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	561	1773		966	1832		422	1845	1581	295	3446	
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)	274	284	129	216	173	44	108	641	260	80	655	116
RTOR Reduction (vph)	0	14	0	0	8	0	0	0	153	0	16	0
Lane Group Flow (vph)	274	399	0	216	209	0	108	641	107	80	755	0
Confl. Peds. (#/hr)	2		8	8		2	2					2
Confl. Bikes (#/hr)			3			1			1			1
Heavy Vehicles (%)	2%	1%	2%	2%	0%	0%	5%	3%	0%	0%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	35.2	35.2		29.8	28.9		41.8	41.8	41.8	30.8	30.8	
Effective Green, g (s)	35.2	35.2		29.8	28.9		41.8	41.8	41.8	30.8	30.8	
Actuated g/C Ratio	0.32	0.32		0.27	0.26		0.38	0.38	0.38	0.28	0.28	
Clearance Time (s)	4.5	5.4		4.5	5.4		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	348	567		327	481		349	701	600	151	964	
v/s Ratio Prot	c0.11	0.22		c0.05	0.11		0.05	c0.35		0.02	c0.22	
v/s Ratio Perm	c0.14			0.12			0.07		0.07	0.12		
v/c Ratio	0.79	0.70		0.66	0.43		0.31	0.91	0.18	0.53	0.78	
Uniform Delay, d1	30.7	32.8		36.9	33.7		32.5	32.4	22.7	32.1	36.5	
Progression Factor	1.10	1.05		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.2	6.5		4.9	2.8		0.5	16.5	0.1	3.3	4.2	
Delay (s)	43.9	41.1		41.9	36.6		33.0	48.9	22.8	35.4	40.7	
Level of Service	D	D		D	D		C	D	C	D	D	
Approach Delay (s)		42.2			39.2			40.5			40.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	521	33	364	148	141	148	203
v/c Ratio	0.08	0.51	0.07	0.36	0.53	0.44	0.45	0.75
Control Delay	10.3	19.1	10.4	17.5	35.8	14.6	33.3	53.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	19.1	10.4	17.5	35.8	14.6	33.3	53.0
Queue Length 50th (ft)	11	225	8	141	81	13	81	113
Queue Length 95th (ft)	31	398	25	259	118	66	119	181
Internal Link Dist (ft)		547		675		595		282
Turn Bay Length (ft)	100		100		75		100	
Base Capacity (vph)	567	1040	472	1014	288	436	333	397
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.50	0.07	0.36	0.51	0.32	0.44	0.51

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Future Volume (vph)	44	419	102	33	314	50	148	21	120	148	105	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.97		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	0.97		1.00	0.98		1.00	0.87		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1749	1797		1801	1822		1803	1591		1776	1713	
Flt Permitted	0.46	1.00		0.36	1.00		0.32	1.00		0.51	1.00	
Satd. Flow (perm)	840	1797		682	1822		606	1591		946	1713	
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)	44	419	102	33	314	50	148	21	120	148	105	98
RTOR Reduction (vph)	0	7	0	0	5	0	0	104	0	0	34	0
Lane Group Flow (vph)	44	514	0	33	359	0	148	37	0	148	169	0
Confl. Peds. (#/hr)	3		7	7		3	3		7	7		3
Confl. Bikes (#/hr)			2			1						4
Heavy Vehicles (%)	3%	2%	1%	0%	2%	0%	0%	0%	1%	1%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	66.3	60.8		63.3	59.3		27.1	15.1		27.3	15.2	
Effective Green, g (s)	66.3	60.8		63.3	59.3		27.1	15.1		27.3	15.2	
Actuated g/C Ratio	0.60	0.55		0.58	0.54		0.25	0.14		0.25	0.14	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.8	4.2		2.8	4.2		3.0	2.2		3.0	2.2	
Lane Grp Cap (vph)	551	993		433	982		279	218		326	236	
v/s Ratio Prot	c0.00	c0.29		0.00	0.20		c0.06	0.02		0.05	c0.10	
v/s Ratio Perm	0.04			0.04			0.07			0.06		
v/c Ratio	0.08	0.52		0.08	0.37		0.53	0.17		0.45	0.72	
Uniform Delay, d1	9.4	15.4		11.0	14.6		34.3	41.9		34.0	45.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.9		0.1	1.1		1.9	0.2		1.0	8.8	
Delay (s)	9.4	17.3		11.1	15.6		36.3	42.1		35.0	54.1	
Level of Service	A	B		B	B		D	D		C	D	
Approach Delay (s)		16.7			15.2			39.1			46.0	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	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)	18.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			