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FUTURE TRANSPORTATION CONDITIONS AND NEEDS

DATE: September 2, 2020

TO: Project Management Team

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SUBJECT: Newport Transportation System Plan Project #17081-007

Future Transportation Conditions and Needs | (Task 4.5; Technical Memo #7)

The condition of Newport's future transportation system depends on the growth in population, visitors, and employment; future travel patterns (*e.g.* choice of modes, routes, and frequency of trips); and community investment decisions. Growth in population, visitors, and the number of jobs is forecast based on trends and knowledge of the city and region. Future travel patterns are more difficult to predict as the community's investment decisions and the economy can have significant effect on choice of modes and routes. The objective of the transportation planning process is to generate information necessary for making decisions that will result in safe and efficient travel options through 2040.

SUMMARY OF 2040 SYSTEM NEEDS

The 2040 baseline analysis identifies how Newport's transportation system is expected to operate with additional residents, businesses, and visitors. These conditions were assessed based on the forecasted increase in trips generated by future transportation growth without any new investments in the transportation infrastructure. This analysis describes where the transportation system will perform satisfactorily and identifies areas that will likely be congested without additional investments. Subsequent memos will explore solutions for addressing future transportation system needs, including an analysis of alternative routes to the highway.

The most significant increases in traffic volumes are expected along the primary regional state facilities: US 20 and US 101. Increased traffic volumes on these state facilities is primarily driven by increased regional through traffic, which is expected to increase by over 50% through 2040. However, growth in traffic volumes will also be driven by new developments on the periphery of Newport where US 101 and US 20 serve as the only connection to retail and employment opportunities within Newport's core. As traffic volumes grow, traffic on adjacent local streets may increase as traffic seeks to avoid delay on US 101 and US 20 where parallel routes are available.

Overall, average daily traffic is forecast to increase nearly 30% during typical weekday traffic conditions and nearly 25% during peak summer traffic conditions on US 101 in downtown Newport. Average daily traffic is also forecast to increase up to 13% on US 20. Other routes with notable growth include Bay Boulevard, Yaquina Bay Road, and various roadways that parallel US 20 or US 101. For more detail on the travel forecasting process, refer to Technical Memorandum #6.

VEHICLE TRANSPORTATION SYSTEM NEEDS

Traffic volumes are forecast to increase by 2040 in Newport with most of the growth concentrated on US 101 and US 20. This growth will increase congestion on these key corridors during peak summer and average weekday conditions. Key identified needs include:

- Limited capacity at the following study intersections:
    - US 101/NE 73rd Street
    - US 101/NE 52nd Street
    - US 101/NW Oceanview Drive
    - US 101/US 20
    - US 101/ SW Angle Street
    - US 101/SW Hurbert Street
    - US 20/SE Benton Street
    - US 20/SE Moore Drive
- High delay for left turning traffic to or from US 101 and US 20 during the summer peak
- Limited alternatives to US 101 for north-south vehicle traffic in Newport, including:
    - Between SW Naterlin Drive and SW Abalone Street (Yaquina Bay Bridge)
    - Between NE 12th Street and NE 52nd Street (Northbound traffic only)
    - Between NW Oceanview Drive and NE 52nd Street (Southbound traffic only)
    - South of SE 42nd Street

PEDESTRIAN AND BICYCLE TRANSPORTATION SYSTEM NEEDS

Newport will continue to expand their existing pedestrian and bicycle networks through 2040; new developments, programmed investments, and an urban renewal district will help to expand Newport's future multimodal network. However, the historical built environment in much of Newport has created many significant sidewalk gaps that will likely remain through 2040. Key identified needs carried forward from the existing conditions analysis include:

- Sidewalk infill along Newport's arterial and collector streets
- ADA upgrades at intersections and accessible paths to the ultimate destination
- Safe crossing opportunities on US 101 and US 20

- Parallel routes or facility upgrades in locations where US 101 is the primary north-south route and a significant barrier for pedestrians (*e.g.* Yaquina Bay Bridge, between NW 25th Street and Agate Beach) including for areas that are expected to see new development through 2040

- Safety enhancements for NW Oceanview Drive

Much of Newport's arterial and collector street system provides a safe and comfortable experience for cyclists even without dedicated facilities due to low traffic volumes. However, new facilities can enhance the connectivity of Newport's bicycle network. Key identified needs include:

- New bike facilities (*e.g.* on-street bike lanes or separated multi-use pathways) or identified parallel routes for US 101 and US 20

- Safe crossing opportunities on US 101 and US 20

- Parallel routes or facility upgrades in locations where US 101 is the primary north-south route and a significant barrier for bicyclists (*e.g.* Yaquina Bay Bridge) including for areas that are expected to see new development through 2040

- Safety enhancements for NW Oceanview Drive

SNAPSHOT OF NEWPORT IN 2040

RISING POPULATION AND EMPLOYMENT

Today, Newport is home to over 4,600 households and accounts for over 11,300 jobs. Between now and 2040, both the number of households and employees is forecast to grow by 20 percent. Newport will have 5,600 households and about 13,500 jobs[1] by 2040. Summer tourism is also expected to continue to draw Oregonians to Newport for day trips or longer visits. With more residents, visitors, and employees in Newport, the transportation network will face increasing demand through 2040.

Housing growth is concentrated in Newport's urban fringe to the north, east, and south near the Oregon Coast Community College. Limited residential infill is also expected throughout the city. High employment growth is concentrated near Avery Street, the Lincoln County Fairgrounds, the Port of Newport, the South Beach area, Oregon Coast Community College, the Newport Airport, and the Holiday Beach area. Moderate employment growth is also expected along US 101 and in Newport's downtown area.

[1] Based on Newport Travel Demand Model land use data – note that these totals are based on boundaries approximated by the TAZs, which may not match current or future City limits (see Technical Memorandum #6: Future Traffic Forecast).

MORE TRAVEL

With more jobs, residents, visitors, and through travel, the street network in Newport must accommodate an additional 1,800 motor vehicle trips during the summer weekday evening design hour[2] and another 1,500 motor vehicle trips during average weekday evening traffic conditions. Today, the Newport street network is generally able to tolerate the extent of delay per current ODOT standards at most locations; however, limited local street connectivity through Newport will translate to high growth on both US 101 and US 20. Higher vehicle volumes along US 101 and US 20 will increase the left turn delay for side streets and further increase congestion. A detailed review of future travel patterns for Newport is provided in Technical Memorandum #6.

2040 motor vehicle volumes for design hour conditions were utilized to determine areas on the baseline roadway network that will be congested and may require future investments or alternate mobility targets to accommodate forecasted growth. The 2040 baseline motor vehicle volumes for study intersections in the appendix show volumes are anticipated to be highest along US 101, which connects Newport to other coastal communities and is a key tourist route.

FUTURE TRAVEL ESTIMATES

Future traffic volumes were developed using Newport's 2040 Travel Demand Models. Future vehicle travel patterns and forecast traffic volumes for each study intersection are documented in Technical Memorandum #6.

FUTURE ESTIMATES OF WALKING, BIKING, AND TRANSIT

Commute mode choice, traffic counts, and land use can all be used to identify locations in Newport where current residents might bike, walk, or take transit which, in turn, informs the future travel demand for these modes. Between 2014 and 2018, 68% of Newport residents drove to work alone while 16% of workers carpooled. Only 7% of Newport residents walked to work while less than 2% of residents took transit or biked to work[3]. The existing commute mode share will likely remain unchanged without future investments in multimodal infrastructure.

Existing traffic counts show pedestrian activity is highest near downtown Newport roughly between SW Bayley Street, SW 9th Street, US 101/W Olive Street, and SW Nye Street/SW 7th Street, and over 90 pedestrians were recorded at the intersection of SW 9th Street and SW Abbey Street during the PM peak hour[4]. Moderate pedestrian demand (*i.e.* over 10 observed pedestrians per hour) is present throughout much of Newport's residential adjacent to downtown although pedestrian

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[2] The future "design hour" is equivalent to the 30th highest annual hour analyzed under existing conditions which occurs in the summer.

[3] US Census. *Commuting Characteristics by Sex,* 2018. https://data.census.gov/cedsci/table?q=commute&tid=ACSST5Y2018.S0801&vintage=2018&hidePreview=true&moe=false&g=1600000US4152450

[4] Traffic counts collected July 11, 2019 as part of the TSP update.

demand drops significantly north of 20th Street. Bicycle volumes were low (less than 5 recorded bikes per hour for a given direction) at all study intersections. Outside of the downtown area, both the Nye Beach and Historic Bayfront areas are expected to generate significant pedestrian and bicyclist demand based on their existing land use.

Most housing growth is concentrated near the northern (*i.e.* north of N 20th Street) periphery of Newport, the eastern periphery of Newport, Big Creek Park, or the Oregon Coast Community College. Employment growth is concentrated around NE 73rd Street/NE Avery Street, the Lincoln County Fairgrounds, the Port of Newport, South Beach, the Oregon Coast Community College, and on Newport's southern periphery with only moderate employment growth near downtown Newport. Much of the forecasted growth is planned for areas with limited existing pedestrian and bicycle facilities. While new development will include enhancements to existing facilities, connectivity gaps between Newport's historical downtown and high-growth areas will remain, particularly for developments in northern Newport, eastern Newport, and the South Beach area where north-south travel is concentrated on highways with limited multimodal facilities. The inadequate walking and biking infrastructure further hinders transit riders, as these users typically utilize these facilities at the beginning and end of their trip.

2040 TRANSPORTATION SYSTEM NEEDS

Review of the expected growth throughout the City and existing gaps and deficiencies of the transportation system identified the following locations as possible candidates for improvements.

MOTOR VEHICLE NEEDS

Study intersection operations were analyzed for 2040 using the methodology outlined in the existing conditions memo[5]. Forecasted intersection operations were compared to applicable agency mobility targets to identify where significant congestion is likely to occur. Table 1, below, shows the study intersections that do not meet mobility targets under the 2040 design hour conditions[6]. A complete listing of operating conditions at study intersections is provided in the appendix.

Of the 20 study intersections, eight will not meet their respective mobility target during the 2040 design hour conditions. Nineteen of the study intersections met their mobility targets under existing conditions (2020); the intersection of US 101/US 20 is the only intersection that exceeded its mobility target under existing PM peak hour conditions[5]. All of the substandard intersections are on state highways. Half of the study intersections that exceed their mobility target are two-way

[5] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

[6] The future "design hour" is equivalent to the 30th highest annual hour analyzed under existing conditions which corresponds to summer traffic conditions for Newport. This is a common time period applied for design purposes and corresponds with adopted mobility targets.

stop control intersections. Increased traffic on US 101 will lead to excessive delay for left-turning traffic by 2040 at all unsignalized intersections, particularly during the summer peak.

TABLE 1: STUDY INTERSECTIONS THAT DO NOT MEET MOBILITY TARGETS/ STANDARDS (2040 PM PEAK- DESIGN HOUR CONDITIONS)

#	Study Intersection	Mobility Target	Volume/ Capacity Ratio	Delay (secs)	Level of Service
1	US 101/73rd (stop controlled on side street)	Highway Approaches 0.80 v/c; Side Street Approaches 0.95 v/c	0.55/ 1.57	13/ 405	B/ F
2	US 101/52nd (signalized)	0.80 v/c	0.89*	57.2	E
3	US 101/Oceanview (stop controlled on side street)	Highway Approaches 0.80 v/c; Side Street Approaches 0.95 v/c	0.72/ 1.12	11/ 157	B/ F
9	US 101/US 20 (signalized)	0.85 v/c	0.99	69.2	E
10	US 101/Angle (stop controlled on side street)	Highway Approaches 0.90 v/c; Side Street Approaches 0.95 v/c	0.49/ 2.63	12/ 1093	B/ F
11	US 101/Hurbert (signalized)	0.90 v/c	0.90	48.5	D
13	US 20/Benton (stop controlled on side street)	Highway Approaches 0.85 v/c; Side Street Approaches 0.95 v/c	0.46/ 1.05	10/ 118	B/ F
14	US 20/Moore (signalized)	0.85 v/c	0.85	30.5	C

*Reported using HCM 2000

Note: At signalized study intersections the v/c, LOS and delay are reported as the intersection average and at unsignalized intersections the v/c, LOS and delay are reported for the worst highway approach/ worst side street approach.

Considering the amount of congestion forecast for some study intersections, it may be found impractical to mitigate them sufficiently to comply with adopted mobility targets. This could be true for a variety of reasons, such as the project costs to reduce congestion or resulting undesirable impacts to the environment or other modes of travel from a project to reduce congestion. In such situations, adoption of "alternative" mobility targets that allow for higher levels of congestion, in balance with other objectives, may be considered.

A common approach to developing alternative mobility targets is to change the standard analysis parameters used or the time period to which the targets apply from the design hour[7] to an average weekday, which better represents traffic volumes experienced throughout the majority of the year.

[7] On state highways in Newport, the design hour volume occurs during the summer season when traffic volumes can be as much as 17 percent higher than typical weekday peaks hours.

In consideration of the possible need for alternative mobility targets, the analysis of study intersection operations was repeated under an average weekday condition. Study intersections that do not meet mobility targets under average weekday PM peak hour conditions in 2040 are summarized in Table 2.

Two intersections that fail to meet mobility targets during the design hour continue to do so during the average weekday, although the degree of congestion experienced is smaller. Six intersections (US 101/73rd, US 101/52nd, US 101/Oceanview, US 101/Hurbert, US 20/Benton, and US 20/Moore) that are substandard under 2040 design hour conditions are not under average weekday PM peak hour conditions. A complete listing of average weekday operating conditions at all study intersections is provided in the appendix.

TABLE 2: STUDY INTERSECTIONS THAT DO NOT MEET MOBILITY TARGETS/ STANDARDS (2040 PM PEAK- AVERAGE WEEKDAY CONDITIONS)

#	Study Intersection	Mobility Target	Volume/ Capacity Ratio	Delay (secs)	Level of Service
9	US 101/US 20 (signalized)	0.85 v/c	0.91	52.8	D
10	US 101/Angle (stop controlled on side street)	Highway Approaches 0.90 v/c; Side Street Approaches 0.95 v/c	0.41/1.24	11/377	B/F

Note: At signalized study intersections the v/c, LOS and delay are reported as the intersection average and at unsignalized intersections the v/c, LOS and delay are reported for the worst highway approach/ worst side street approach.

YAQUINA BAY BRIDGE

The Yaquina Bay Bridge is a key constraint for vehicles travelling north-south in Newport both today and in the future. Existing narrow travel lanes, lack of shoulders, and a steep grade all contribute to a capacity that is reduced by up to 25% when compared to similar highway segments[8]. The forecasted traffic volumes, summarized below in Table 3, are expected to exceed the capacity of the Yaquina Bay Bridge for both 2040 scenarios based on the projected land use. As traffic volumes grow, this congestion could impact segments of US 101 approaching the Yaquina Bay Bridge or lead to additional congestion in off-peak hours without any mitigations.

[8] Newport Transportation System Plan, 2012.

TABLE 3: EXPECTED GROWTH IN TRAFFIC VOLUMES ON THE YAQUINA BAY BRIDGE

Scenario	2018 Average Daily Traffic	2040 Average Daily Traffic	Percent Growth
AVERAGE WEEKDAY	14,200	19,800	39%
SUMMER	16,900	21,800	28%

Like many coastal bridges, the Yaquina Bay Bridge is a designated historic structure. The ODOT Historic Bridge Preservation Plan[9] details treatment options to extend the useful life of historic structures and maintain their original purpose. ODOT ensures that every reasonable effort is pursued to maintain transportation service for their historic bridges prior to other, more impactful decisions. The existing historic structural elements will be maintained to the maximum extent necessary, and any new elements must maintain the historical significance of the structure. Maintenance considerations could also include vehicle or load restrictions that limit traffic on historic bridges.

If in the future, ODOT determines that the Yaquina Bay Bridge can no longer maintain its intended function, the bridge could be paired with a parallel crossing to lessen vehicle demands or converted to a new use. Only after these options are exhausted will ODOT consider a full closure of the bridge. All future decisions regarding the use of the Yaquina Bay Bridge will be coordinated with ODOT.

PEDESTRIAN NETWORK NEEDS

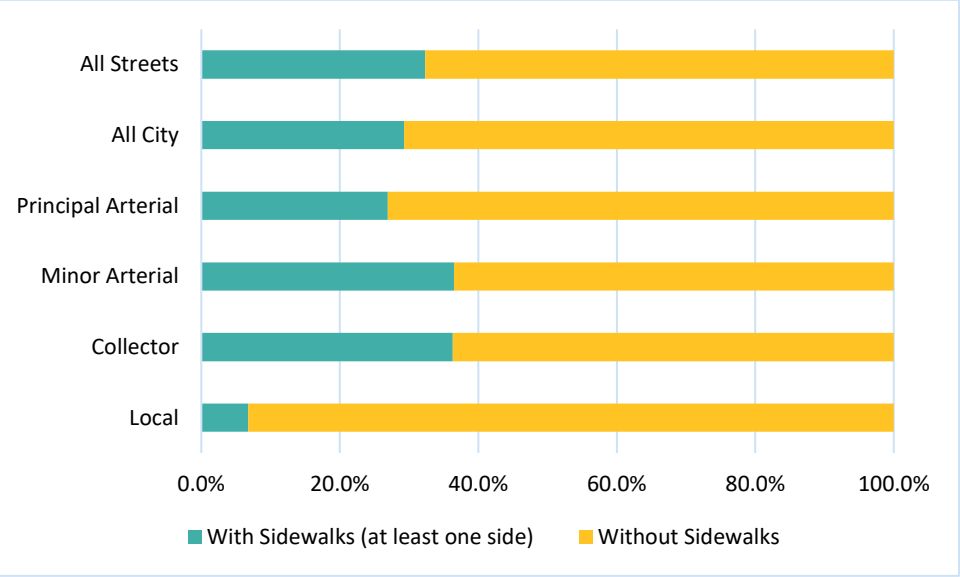
The following section describes the walking network needs identified for the 2040 Baseline street network.

FUTURE WALKING NETWORK

The percent of roadways with sidewalks, seen below in Figure 1, is not expected to change noticeably from existing conditions. Nearly 70% of streets in Newport lack sidewalks on both sides. While around 36% of Newport's collector and arterial streets have sidewalks on at least one side, only 7% of local streets have sidewalks on at least one side. These numbers do not incorporate Newport's 9.5 miles of off-street trails that also serve pedestrian travel.

[9] ODOT. *Historic Bridge Preservation Plan.* 2007.

FIGURE 1: PERCENT OF STREET MILES WITH SIDEWALKS IN NEWPORT



Identified pedestrian improvements expected to be complete by 2040 include:

- Sidewalk improvements on SW Harbor Way
- New sidewalk on US 101 in South Beach near SE 35th Street

FUTURE PEDESTRIAN LEVEL OF TRAFFIC STRESS (LTS)

The Pedestrian LTS assessment shows the extent to which the walking network on collector and arterial streets provides a level of comfort and safety for users. Locations rated as low or moderate stress (LTS 1 or 2) provide a safe and comfortable walking experience while locations rated as high or moderate stress (LTS 3 or 4) provide a less comfortable walking experience. The assessment method and conditions of the pedestrian network are summarized in a previous memo[10]. Since traffic volume is the only input factor anticipated to change significantly under future conditions, there were no changes made to the Pedestrian LTS evaluation identified in existing conditions (see Technical Memo #5).

About one-quarter of the collector and arterial street miles in Newport rate as low or moderate stress (LTS 1 or 2) for pedestrians. However, 60 percent of the collector and arterial street miles rate as extreme stress (LTS 4), largely due to lack of existing sidewalks. Overall, the pedestrian network continues to rate relatively high near downtown, and poor towards the edges of the City and in residential areas without sidewalks.

[10] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

WALKING FACILITY GAPS

Although there is generally good sidewalk coverage near downtown Newport, many of the residential areas of Newport were developed without sidewalks, and these sidewalk gaps remain. Completing selected segments on arterial and collector roadways, identified below, can create a more comprehensive pedestrian network. This list does not identify road segments where sidewalks are only provided on one side of the street which could still present a barrier to pedestrian travel.

- SW Harbor Way, SW 13th Street to SW 11th Street (City of Newport)
- SE 2nd Street, SE Benton Street to SE Coos Street (City of Newport)
- SE Coos Street, SE 2nd Street to US 20 (City of Newport)
- SW Bayley Street, SW 8th Street to SW Elizabeth Street (City of Newport)
- SW Elizabeth Street, SW Bayley Street to SW Park Street (City of Newport)
- SW 7th Street, SW Bayley Street to SW Alder Street (City of Newport)
- SW Abbey Street, US 101 to SW 6th Street (City of Newport)
- SW 2nd Street, SW Elizabeth Street to SW Cliff Street (City of Newport)
- NW 6th Street, NW Nye Street to NW Coast Street (City of Newport)
- NW Nye Street, NW 3rd Street to NW 6th Street (City of Newport)
- NW Nye Street, NW 7th Street to NW 8th Street (City of Newport)
- NW Nye Street, NW 10th Street to NW 16th Street (City of Newport)
- NW 8th Street, NW Coast Street to NW Spring Street (City of Newport)
- NW Spring Street, NW 8th Street to NW 12th Street (City of Newport)
- NW 11th Street, NW Spring Street to NW Lake Street (City of Newport)
- NW Oceanview Drive, NW 12th Street to US 101 (City of Newport)
- NW Edenview Way, NW 20th Street to NW Oceanview Drive (City of Newport)
- SE Coos Street, US 20 to NE 3rd Street (City of Newport)
- NE Benton Street, NE 3rd Street to NE 12th Street (City of Newport)
- NE Harney Street, US 20 to NE 3rd Street/NE Yaquina Heights Drive (City of Newport)
- NE 7th Street, Newport Middle School East Driveway to NE 6th Street (City of Newport)
- NE 20th Street, east of Fred Meyer (City of Newport)
- NE Harney Street, NE Big Creek Road to NE 31st Street (City of Newport)
- NE 36th Street, NE Harney Street to US 101 (City of Newport)
- NE Big Creek Road, NE Harney Street to NE 12th Street (City of Newport)
- NW 55th Street, US 101 to NW Rhododendron Street (City of Newport)

- NW 60th Street, US 101 to NW Biggs Street (City of Newport)
- NW Biggs Street, NW 60th Street to NW 55th Street (City of Newport)

In addition to the areas where these gaps already exist, future pedestrian infrastructure needs can be identified based on anticipated growth. Higher densities and more people require more pedestrian infrastructure to accommodate demand. Where growth is anticipated, street segments rated as high or extreme stress (LTS 3 or LTS 4) will need enhancements in order to improve their conditions. Potential treatments could include completing sidewalks on both sides of the street or widening existing sidewalks. These segments include:

- SE 40th Street, US 101 to existing shared use path (City of Newport) – complete shared use path on south side of street or consider crossing enhancements to connect to sidewalks on north side of street
- SE Ash Street, SE 40th Street to SE Ferry Slip Road (City of Newport) – complete sidewalks on east side of street and widen shared use path on west side of street as needed
- SE Ferry Slip Road, SE Ash Street to SE Chestnut Street (City of Newport) – complete sidewalks on east side of street and widen shared use path as needed
- NE 3rd Street, NE Harney Street to NE Eads Street (City of Newport) – complete sidewalks on south side of street
- NE 7th Street, NE Harney Street to 6th Street (City of Newport) – complete sidewalks on south side of street and existing gaps on north side of street
- NE Harney Street, NE 3rd Street to US 20 (City of Newport) – complete sidewalks on both sides of street
- US 101, SW Neff Way to SW Angle Street (ODOT) – install urban design features as needed to enhance the existing pedestrian space

OTHER PEDESTRIAN NEEDS

Other areas identified by the public as critical pedestrian needs are across the Yaquina Bay Bridge, along the NW Oceanview Drive corridor, the Oregon Coast Trail (including near Yaquina Head), and existing pedestrian crossings on US 101 and US 20, including previously proposed locations at US 20/NE Eads Street and near US 101/NE 60th Street. Vehicle speeds, safety, existing gaps, and poor connections are some of the top concerns for these areas. Completing the existing pedestrian system is another key step towards promoting walking as a safe and attractive option for Newport residents.

As mitigations for motor vehicle travel are considered for intersections and along roadway segments, innovative designs and/or "alternative" vehicular mobility targets that allow for higher levels of congestion may be considered to avoid undesirable impacts on pedestrian safety and connectivity.

METHODOLOGY TO ADDRESS DEFICIENCIES

A list of potential pedestrian network improvement projects will be developed in Technical Memorandum #8 based on streets with pedestrian deficiencies. A street is considered deficient for walking if it meets one or more of the following conditions:

- Arterial or collector street without pedestrian facilities.
- Extreme pedestrian stress (LTS 4) rating.
- High or extreme pedestrian stress (LTS 3 or 4) in close proximity to parks, schools, transit stops, or other important destinations.

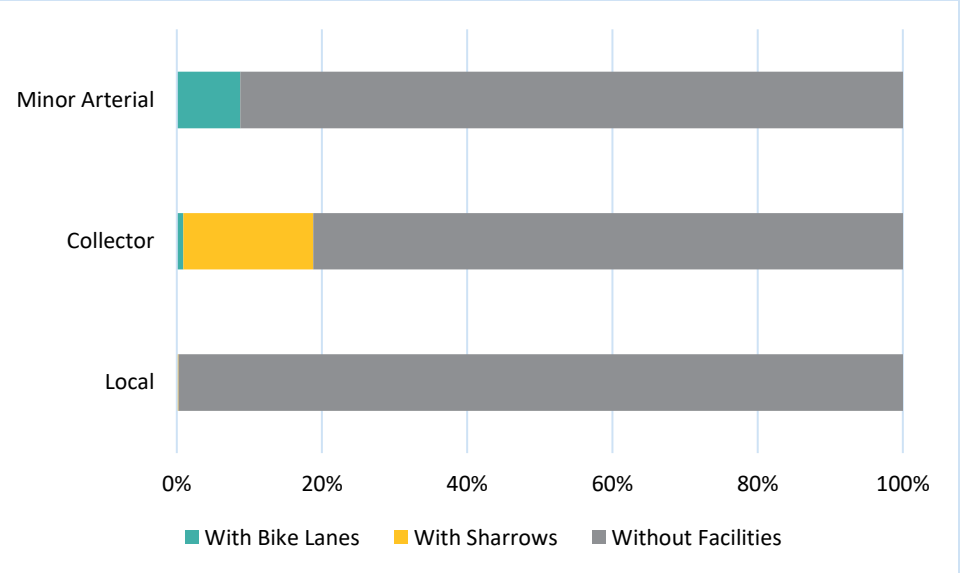
BICYCLE NETWORK NEEDS

The following section describes the bicycle network needs identified for the 2040 Baseline street network.

FUTURE BICYCLE NETWORK

The percent of roadways with bike facilities (either bike lanes or sharrows), seen below in Figure 2, will not change noticeably from existing conditions. Over 80% of Newport's collector streets and over 90% of Newport's arterial streets currently lack any bike facilities (*e.g.* bike lanes). Much of US 101 and US 20 also lack bike lanes although wider shoulders are available on US 101 north of NW 25th Street and south of SW Abalone Street which can serve a similar role for cyclists. These numbers do not incorporate off-street shared-use paths that may run alongside some roadways and serve bicycle travel.

FIGURE 2: PERCENT OF STREET MILES WITH BIKE FACILITIES IN NEWPORT



FUTURE BICYCLE LEVEL OF TRAFFIC STRESS (LTS)

Bicycle Level of Traffic Stress measures the degree that different street characteristics are stressful to people operating a bicycle. Locations rated as low or moderate stress (LTS 1 or 2) provide a safe and comfortable cycling experience while locations rated as high or extreme stress (LTS 3 or 4) provide a less comfortable cycling experience. The assessment method and conditions of the bicycle network are summarized in a previous memo[11]. Since traffic volume is the only input factor anticipated to change significantly under future conditions, there were no changes made to the Bicycle LTS evaluation identified in existing conditions (see Technical Memo #5).

Nearly 90% of Newport's collector streets rate as low or moderate stress (LTS 1 or 2) for cyclists. While most of Newport's collector streets lack dedicated bike facilities (*e.g.* bike lanes), most of these streets are relatively low volume, creating a comfortable environment for cyclists even without dedicated facilities. Conversely, less than 15% of Newport's arterial streets rate as low or moderate stress (LTS 1 or 2) and nearly 75% of the arterial streets rate as extreme stress (LTS 4) due to the lack of bike facilities (*e.g.* bike lanes) and higher volumes, particularly on US 101 and US 20. The streets with highest stress levels are the streets important for local and regional through travel, where most businesses and services are located. These streets can also provide the only through route for cyclists (*e.g.* the Yaquina Bay Bridge).

[11] DKS Associates. Technical Memorandum #5: Existing Conditions. April 8, 2020.

BICYCLE FACILITY GAPS

Most of Newport's arterial and collector street network does not include bike facilities (*e.g.* bike lanes), and existing facilities are often not continuous. While all existing gaps should be completed, completing key gaps which can provide safe alternatives to high traffic routes for cyclists should be priority. Potential key gaps on arterial and collector street segments include:

- SW 9th Street/SW Angle Street/SW 10th Street/SE 2nd Street/SE Coos Street, US 101 to US 20 (City of Newport)
- SW Bay Boulevard, SW Bay Street to SE Moore Drive (City of Newport)
- SW Hurbert Street/SW Canyon Way, SW 2nd Street to Bay Boulevard (City of Newport)
- SE Coos Street/NE Benton Street, US 20 to NE 11th Street (City of Newport)
- NW 11th Street/NE 11th Street, NW Spring Street to NE Eads Street (City of Newport)
- NW 3rd Street/NE 11th Street, NW Coast Street to NE Eads Street (City of Newport)
- SW 7th Street, SW Elizabeth Street to SW 2nd Street (City of Newport)
- SW Bayley Street, SW Elizabeth Street to US 101 (City of Newport)
- SW 2nd Street, SW Elizabeth Street to US 101 (City of Newport)
- SW Nye Street/NW Nye Street, SW 2nd Street to NW 15th Street (City of Newport)
- SW Abalone Street, US 101 to Existing Shared Use Path (City of Newport)
- NE Harney Street, NE Big Creek Road to NE 36th Street (City of Newport)
- NE 36th Street, NE Harney Street to US 101 (City of Newport)
- US 101, NW Oceanview Drive to NE 36th Street (ODOT)
- NE Big Creek Road, NE Harney Street to NE 12th Street (City of Newport)

High stress arterial and collector roadways with existing bike facilities (*e.g.* bike lanes) are another area that should be targeted for improvements. Major street segments rated as high or extreme stress (LTS 3 or 4) for cyclists include:

- US 101 (ODOT)
- US 20 (ODOT)
- NW Oceanview Drive, US 101 to NW Edenview Way (City of Newport)
- SE Bay Boulevard, SE Moore Drive to Embarcadero Resort Driveway (City of Newport)

Several of the identified bicycle facility gaps occur in areas where high household or employment growth is expected nearby. The following segments were identified for their potential to complete a key facility gap near high growth areas, connect existing bicycle facilities that are located near high growth areas, or to increase bicyclists' comfort near high growth areas:

- SE Ferry Slip Road, SE Ash Street to SE Marine Science Drive (City of Newport) – install on-street bike facility (*e.g.* bike lanes) or enhance intersection crossings for existing multi-use path
- NE Eads Street, NE 3rd Street to NE 7th Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE 7th Street, NE Eads Street to NE Harney Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE 3rd Street, NE Eads Street to NE Harney Street (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- NE Harney Street, NE 3rd Street to US 20 (City of Newport) – install on-street bike facility (*e.g.* bike lanes)
- SE Moore Drive, US 20 to SE Bay Boulevard (City of Newport) – install on-street bike facility (*e.g.* bike lanes)

Generally, improvements are needed if the City prioritizes more bicycle friendly streets for novice riders or tourists. Such improvements would focus on improving the density and connectivity of low-stress bike routes, improving crossing opportunities for key barriers (*e.g.* US 101, US 20), and providing parallel accommodations to US 101 to improve north-south connections for Newport.

OTHER BICYCLE NEEDS

Other areas identified by the public as critical bicycle needs are across the Yaquina Bay Bridge, along the NW Oceanview Drive corridor, the Oregon Coast Bike Route, and existing bicycle crossings on US 101 and US 20. Vehicle speeds and safety are some of the top concerns for these areas. Connecting the existing bicycle system is another key step towards promoting cycling as a safe and attractive option for Newport residents. High stress barriers in the cycling network can limit interest in bicycling but providing a connected bike network creates opportunities for cyclists to travel between home and work in a safe and comfortable manner. Ideally, all of Newport's street network would create low or moderate stress for cyclists (LTS 1 or 2).

Not all of the roadways lacking bicycle facilities will be able to accommodate bike lanes due to right-of-way constraints, limited funding, and/or fewer constraints on parallel corridors. A network of low and moderate stress bikeways (LTS 1 or 2) will be considered to relieve some of the right-of-way constraints posed on streets where bikeways are high or extreme stress (LTS 3 or 4), but space does not permit consideration of bike lanes or buffered bike lanes. This could include installing enhanced bike facilities (*e.g.* bike lanes) on parallel routes to US 101 or US 20 to facilitate bicycle travel when these opportunities existing. Ideally, these parallel routes will be

installed immediately adjacent to the US 101 or US 20 corridors to facilitate wayfinding and minimize out of direction travel for bicyclists. Crossing enhancements will likely be needed at locations where this proposed parallel system crosses US 101 or US 20 to protect cyclists and encourage cyclists of all ages and abilities to feel comfortable travelling within Newport.

As mitigations for motor vehicle travel are considered for intersections and along roadway segments, innovative designs and/or "alternative" vehicular mobility targets that allow for higher levels of congestion may also be considered to avoid undesirable impacts on bicycle safety and connectivity.

METHODOLOGY TO ADDRESS DEFICIENCIES

A list of potential bicycle network improvement projects will be developed in Technical Memorandum #8 based on streets with bicycle deficiencies. A street is considered deficient if it meets one or more of the following conditions:

- Arterial or collector street without bicycle facilities or adjacent corridor with bicycle facilities.
- Extreme bicycle stress (LTS 4) rating.
- High or extreme bicycle stress (LTS 3 or 4) in close proximity to parks, schools, transit stops, or other important destinations.

SAFETY NEEDS

Several locations were identified in Technical Memorandum #5 as high collision locations. With growing traffic volumes, these problematic areas likely will persist, and may even become progressively worse. These previously identified locations include:

- **US 101/52nd Street (signal):** This four-leg signalized intersection experienced 15 collisions over the five years, including 11 rear-end crashes. Rear-end crashes at this site were typically caused by a driver following too closely or failing to avoid the vehicle ahead. Most crashes at this site led to injuries (11 of 15).
- **US 101/11th Street (signal):** This is a four-leg signalized intersection; seven crashes occurred here over the five years. Two of the seven crashes involved bicyclists, caused by a driver failing to yield or disregarding the traffic signal. Both crashes led to an injury to the cyclist.
- **US 101/6th Street (signal):** This is four-leg signalized intersection with offset intersection legs for 6th Street. Two-thirds (10 of 15) of the crashes were rear-ends, primarily caused by a driver following too closely or inattention. Most of the crashes involved property damage only (9 of 15).
- **US 101/Bayley Street (Two-Way Stop Control, or TWSC):** This is a four-leg intersection with stop control on Bayley Street. A Rectangular Rapid Flashing Beacon (RRFB) is located immediately north of the intersection, along US 101, and the 9th Street/US 101 intersection is also located in close proximity which could contribute to a higher crash rate at this location. One pedestrian crash also occurred at this site over the five years caused by careless driving. Over half of the crashes resulted in injuries (10 of 14).
- **11th Street/Nye Street (TWSC):** This is a four-leg intersection with stop control on Nye Street where five crashes occurred over the five years. Both the critical crash rate and 90th percentile crash rate are exceeded at this site, in part due to the relatively low entering volume among study intersections on local streets. All crashes at this site were angle

crashes and were caused by a driver failing to yield or drivers who passed the stop sign. All five crashes resulted in property damage only.

- **Hurbert Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. The critical crash rate and 90th percentile crash rate are both exceeded at this site, likely due to the comparatively low entering volume. Additionally, this site experienced a high number of angle crashes (6 of 7) which were caused by failure to yield or vehicles passing the stop sign. Over half of the crashes (5 of 7) resulted in injuries.

- **Abbey Street/9th Street (TWSC):** This is a four-leg intersection with stop control on 9th Street. While the observed intersection crash rate is lower than the critical crash rate, this site exceeds the statewide 90th percentile crash rate. Over the past five years, all three crashes at this site were angle crashes caused by either passing the stop sign or failure to yield. Two of the crashes led to injuries and one crash resulted in property damage only.

- **Bay Boulevard/Moore Drive (TWSC):** This three-leg skewed intersection with stop control on the west leg (Bay Boulevard) had four crashes over the five years. Both the critical crash rate and 90th percentile crash rates are exceeded at this site. Half of the crashes involved turning movements, caused by either failure to yield or passing the stop sign which could be exacerbated due to the sites' geometry. This intersection was realigned to reduce some of the intersection skew between August, 2016, and July, 2019; the impacts of this geometric change cannot be assessed from the available data. Half of the crashes resulted in property damage only (2 of 4).

Additionally, the segment of US 101 between NE 52nd Street/Lighthouse Drive and US 20 was previously identified as having a crash rate over the statewide average crash rate. Crash causes on this segment reflect the dense urban land uses and are primarily categorized as failure to yield, following too closely, and failing to avoid the vehicle ahead. Most crashes (59 percent) occurred at intersections. There were five pedestrian-involved collisions and eight bicycle-involved collisions along this segment.

Additionally, according to the ODOT 2017 SPIS report (data reported between 2014 and 2016), and 2016 SPIS report (data reported between 2013 and 2015), several locations in Newport rank among the top most hazardous sections of highways in Oregon. The identified locations are listed below.

- US 101 around the N 20th Street intersection (top 10 percent segment, 2017; top 10 percent segment, 2016)

- US 101 around the N 16th Street intersection (top 10 percent segment, 2017)

- US 101 around the N 3rd Street intersection (top 10 percent segment, 2016)

- US 101 around the N 2nd Street intersection (top 10 percent segment, 2017)

- US 101 around the N 1st Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Lee Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Hurbert Street intersection (top 10 percent segment, 2016)
- US 101 around the SW Bayley Street intersection (top 5 percent segment, 2017)
- US 101 around the SW Bay Street intersection (top 5 percent segment, 2016)

Without targeted safety improvements, these identified safety deficiencies will likely remain through 2040. As traffic volumes growth through 2040 in Newport, additional safety deficiencies could also arise as vehicle exposure increases. Specific care should be taken at locations where high volumes of pedestrians or cyclists are expected to prioritize the safety of vulnerable road users.

FREIGHT NEEDS

With growing traffic volumes from existing conditions, six intersections along Oregon Freight Routes or Federal Truck Routes would not meet their respective mobility target/standard during the 2040 design hour conditions. These intersections are:

- US 101/73rd
- US 101/52nd
- US 101/Oceanview
- US 101/US 20
- US 20/Benton
- US 20/Moore

Although all of these intersections are on a designated freight route, three of the intersections are two-way stop control where the side street will experience significant delay in the future. Since freight traffic is concentrated on US 101 and US 20 in Newport, high side-street delay at the intersections of US 101/Oceanview and US 20/Benton will likely have a minimal impact to freight. However, 73rd Street serves an industrial area which can generate high freight traffic, and increased side street delay at this location will negatively impact freight operations. High vehicle delay at the other three traffic signals will also increase delay for freight travel through Newport on US 101 or US 20.

Other locations with identified freight needs include Bay Boulevard and the Yaquina Bay Bridge. Bay Boulevard is a working waterfront and is a key freight generator for the City of Newport. This area is also a tourist destination which can create conflicts between the high volume of

pedestrians, passenger cars, and freight vehicles which serve Newport's fishing industry. Freight vehicles can also struggle to navigate the steep grades for northbound traffic approaching the Yaquina Bay Bridge. A short term project which will relocate the existing signal from SE 32nd Street to SE 35th Street is expected to improve this operational issue for freight vehicles.

TRANSIT NEEDS

Transit service for Newport is provided by Lincoln County Transit. Typical existing service characteristics are summarized below:

- Lincoln County Transit provides service to Newport which includes a city loop and inter-city transit service to Lincoln City, Siletz, Yachats, Corvallis, and Albany.
- The Newport city loop completes a full loop through Newport six times each day, seven days a week, and in the evening, there is an additional southbound run to City Hall. Key destinations within Newport served by transit include grocery stores and other shopping, restaurants, local hotels and residences, Newport City Hall, post office, Oregon Coast Aquarium, NOAA facilities, and Nye Beach. Most destinations served by transit are north of Yaquina Bay Bridge or in the South Beach area. City loop buses are wheelchair accessible with bicycle racks.
- Inter-city transit service operates routes to Corvallis and Albany four times each day, to Lincoln City four times each day, to Yachats four times each day, and to Siletz six times a day between Monday and Saturday.
- Lincoln County Transit also operates Dial-A-Ride transit in Newport between Monday and Friday.
- Most Newport residents are within a half mile of a transit stop, and in the downtown core, most residents are within a quarter mile of a transit stop.
- Limited stop amenities (including many unmarked stops) makes the transit system challenging to navigate, particularly for visitors.
- Long headways (up to 90 minutes) and limited service hours (approximately between 7 am and 5pm) for the Newport city loop transit service limits the utility of this service for residents and visitors.
- Transit service is not currently provided south of SE 50th Avenue.

Lincoln County's Transit Development Plan will guide future changes to transit service. Identified changes through 2028 include:

- Add additional stops at Newport's Walmart and Fred Meyer as part of the Newport-Siletz route

- Add up to four additional daily runs on the Coast to Valley route which serves Corvallis and Albany and coordinate these runs to better align with work or Amtrak schedules
- Increase frequency up to 50 percent on weekdays and weekends for the Newport-Lincoln City Route
- Add additional stops at the Oregon Coast Community College as part of the Newport-Yachats route
- Extend Dial-A-Ride service hours and provide service seven days a week
- Modify the Newport City Loop route to remove the Nye Beach and Bayfront and maintain existing 90 minute headways
- Add a new Newport City Loop route which serves Fred Meyer, Nye Beach, City Hall, Bayfront, and Embarcadero with 45 minute headways
- Add a new Newport City Loop route which serves Nye Beach, City Hall, Bayfront, and Embarcadero with 30 minute headways

These transit enhancements were identified by Lincoln County Transit to address the most significant unmet needs within their transit system. Further investments will be coordinated with Lincoln County Transit.

OTHER NEEDS

Other key community concerns identified include:

- Congestion around NE Harney Street/SE Moore Drive due to schools and county fairground traffic
- Limited access to the hospital from US 101
- Dangerous on-street parking on US 101 in downtown Newport due to narrow travel lanes
- Southbound vehicle speeds on US 101 approaching the Yaquina Bay Bridge as vehicles merge
- Limited access and high delay travelling to and from residential neighborhoods whose only access is from US 101, such as San-Bay-O Circle

APPENDIX

STUDY INTERSECTION OPERATIONS: 2040 PM PEAK- DESIGN HOUR CONDITIONS

#	Study Intersection	Intersection Control	Mobility Target	V/C Ratio	Delay	LOS
1	US 101/73rd	Urban 4ST	0.8/0.95	0.55/1.57	13/405	B/F
2	US 101/52nd*	Urban 4SG	0.80	0.89	57.2	E
3	US 101/Oceanview	Urban 3ST	0.8/0.95	0.72/1.12	11/157	B/F
4	US 101/36th	Urban 3ST	0.8/0.95	0.68/0.24	11/32	B/D
5	US 101/31st	Urban 3ST	0.8/0.95	0.71/0.3	12/37	B/E
6	US 101/20th*	Urban 4SG	0.90	0.88	34.1	C
7	US 101/11th	Urban 4SG	0.90	0.65	5	A
8	US 101/6th	Urban 4SG	0.90	0.81	20.4	C
9	US 101/US 20	Urban 4SG	0.85	0.99	69.2	E
10	US 101/Angle	Urban 4ST	0.90/0.95	0.49/2.63	12/1093	B/F
11	US 101/Hurbert	Urban 4SG	0.90	0.90	48.5	D
12	US 101/Bayley	Urban 4ST	0.90/0.95	0.41/0.79	13/111	B/F
13	US 20/Benton	Urban 4ST	0.85/0.95	0.46/1.05	10/118	B/F
14	US 20/Moore	Urban 4SG	0.85	0.85	30.5	C
15	Oceanview/25th	Urban 4ST	0.95/0.95	0.15/0.27	8/12	A/B
16	11th/Nye	Urban 4ST	0.95/0.95	0.04/0.26	7/11	A/B
17	Harney/7th	Urban 4ST - AWSC	0.95	0.22	9.8	A
18	Hurbert/9th	Urban 4ST	0.95/0.95	0.06/0.44	7/15	A/B
19	Abbey/9th	Urban 4ST	0.95/0.95	0.09/0.23	8/13	A/B
20	Bay/Moore	Urban 3ST	0.95/0.95	0.11/0.33	8/14	A/B

*Reported using HCM 2000 (v/c ratio only)

**Reported using HCM 2000

STUDY INTERSECTION OPERATIONS: 2040 PM PEAK- AVERAGE WEEKDAY CONDITIONS

#	Study Intersection	Intersection Control	Mobility Target	V/C Ratio	Delay	LOS
1	US 101/73rd	Urban 4ST	0.8/0.95	0.46/0.92	12/130	B/F
2	US 101/52nd*	Urban 4SG	0.80	0.78	37.3	D
3	US 101/Oceanview	Urban 3ST	0.8/0.95	0.64/0.57	10/43	B/E
4	US 101/36th	Urban 3ST	0.8/0.95	0.63/0.18	11/26	B/D
5	US 101/31st	Urban 3ST	0.8/0.95	0.66/0.22	11/29	B/D
6	US 101/20th*	Urban 4SG	0.90	0.75	31.6	C
7	US 101/11th	Urban 4SG	0.90	0.55	6.8	A
8	US 101/6th	Urban 4SG	0.90	0.71	25.3	C
9	US 101/US 20	Urban 4SG	0.85	0.91	52.8	D
10	US 101/Angle	Urban 4ST	0.90/0.95	0.41/1.24	11/377	B/F
11	US 101/Hurbert	Urban 4SG	0.90	0.79	34.7	C
12	US 101/Bayley	Urban 4ST	0.90/0.95	0.36/0.41	12/50	B/F
13	US 20/Benton	Urban 4ST	0.85/0.95	0.43/0.62	10/36	A/E
14	US 20/Moore	Urban 4SG	0.85	0.69	19.3	B
15	Oceanview/25th	Urban 4ST	0.95/0.95	0.11/0.11	8/10	A/B
16	11th/Nye	Urban 4ST	0.95/0.95	0.03/0.19	7/10	A/B
17	Harney/7th	Urban 4ST - AWSC	0.95	0.20	9.5	A
18	Hurbert/9th	Urban 4ST	0.95/0.95	0.06/0.35	7/13	A/B
19	Abbey/9th	Urban 4ST	0.95/0.95	0.06/0.18	8/12	A/B
20	Bay/Moore	Urban 3ST	0.95/0.95	0.08/0.21	8/11	A/B

*Reported using HCM 2000 (v/c ratio only)

**Reported using HCM 2000

Intersection	
Int Delay, s/veh	25.3

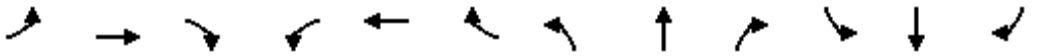
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕		↰	↑	↱	↰	↕	
Traffic Vol, veh/h	1	0	5	95	0	15	5	885	60	20	690	2
Future Vol, veh/h	1	0	5	95	0	15	5	885	60	20	690	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	5	100	0	16	5	932	63	21	726	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1751	1774	727	1714	1712	932	728	0	0	995	0	0
Stage 1	769	769	-	942	942	-	-	-	-	-	-	-
Stage 2	982	1005	-	772	770	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	68	84	427	~ 69	91	326	885	-	-	489	-	-
Stage 1	397	413	-	309	344	-	-	-	-	-	-	-
Stage 2	302	322	-	385	413	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	62	80	427	~ 66	87	326	885	-	-	489	-	-
Mov Cap-2 Maneuver	62	80	-	~ 66	87	-	-	-	-	-	-	-
Stage 1	395	395	-	307	342	-	-	-	-	-	-	-
Stage 2	286	320	-	364	395	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.2	$ 405.2	0	0.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	216	74	489	-	-
HCM Lane V/C Ratio	0.006	-	-	0.029	1.565	0.043	-	-
HCM Control Delay (s)	9.1	-	-	22.2	$ 405.2	12.7	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	9.7	0.1	-	-

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



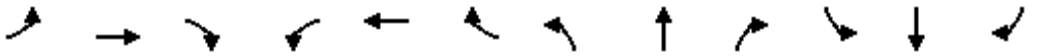
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	5	90	95	0	15	55	1080	120	30	850	30
Future Volume (veh/h)	35	5	90	95	0	15	55	1080	120	30	850	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	37	5	95	100	0	16	58	1137	0	32	895	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	55	4	297	59	0	299	79	1123		52	1102	
Arrive On Green	0.20	0.20	0.20	0.20	0.00	0.20	0.05	0.67	0.00	0.03	0.65	0.00
Sat Flow, veh/h	0	19	1457	0	0	1468	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	42	0	95	100	0	16	58	1137	0	32	895	0
Grp Sat Flow(s),veh/h/ln	19	0	1457	0	0	1468	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	6.8	0.0	0.0	1.1	4.4	82.0	0.0	2.3	48.1	0.0
Cycle Q Clear(g_c), s	24.5	0.0	6.8	24.5	0.0	1.1	4.4	82.0	0.0	2.3	48.1	0.0
Prop In Lane	0.88		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	0	297	59	0	299	79	1123		52	1102	
V/C Ratio(X)	0.71	0.00	0.32	1.71	0.00	0.05	0.74	1.01		0.62	0.81	
Avail Cap(c_a), veh/h	59	0	297	59	0	299	79	1123		81	1132	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.9	0.0	41.7	61.2	0.0	39.4	57.7	20.4	0.0	58.8	15.9	0.0
Incr Delay (d2), s/veh	31.4	0.0	0.5	379.7	0.0	0.1	28.8	30.0	0.0	8.5	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	2.5	8.0	0.0	0.4	2.4	35.7	0.0	1.1	17.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.3	0.0	42.1	440.9	0.0	39.4	86.5	50.4	0.0	67.3	21.0	0.0
LnGrp LOS	F	A	D	F	A	D	F	F		E	C	
Approach Vol, veh/h		137			116			1195	A		927	A
Approach Delay, s/veh		56.9			385.5			52.2			22.6	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	83.8		29.0	7.8	86.0		29.0				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	5.5	80.0		24.5	5.5	80.0		24.5				
Max Q Clear Time (g_c+I1), s	6.4	50.1		26.5	4.3	84.0		26.5				
Green Ext Time (p_c), s	0.0	13.4		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		57.2
HCM 6th LOS		E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	5	90	95	0	15	55	1080	120	30	850	30
Future Volume (vph)	35	5	90	95	0	15	55	1080	120	30	850	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		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	0.97	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1663	1440		1659	1442	1599	1667	1457	1662	1683	1488
Flt Permitted		0.68	1.00		0.73	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1176	1440		1274	1442	1599	1667	1457	1662	1683	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	5	95	100	0	16	58	1137	126	32	895	32
RTOR Reduction (vph)	0	0	83	0	0	14	0	0	19	0	0	9
Lane Group Flow (vph)	0	42	12	0	100	2	58	1137	107	32	895	23
Confl. Peds. (#/hr)	4		1	1		4						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	4%	5%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4		4			6			2
Actuated Green, G (s)		13.7	13.7		13.7	13.7	4.4	83.3	83.3	3.2	82.1	82.1
Effective Green, g (s)		14.2	14.2		14.2	14.2	4.9	85.3	85.3	3.7	84.1	84.1
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.04	0.74	0.74	0.03	0.73	0.73
Clearance Time (s)		4.5	4.5		4.5	4.5	4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.5	4.8	4.8	2.5	4.8	4.8
Lane Grp Cap (vph)		144	177		157	177	68	1234	1078	53	1228	1086
v/s Ratio Prot							c0.04	c0.68		0.02	0.53	
v/s Ratio Perm		0.04	0.01		c0.08	0.00			0.07			0.02
v/c Ratio		0.29	0.07		0.64	0.01	0.85	0.92	0.10	0.60	0.73	0.02
Uniform Delay, d1		45.9	44.6		48.0	44.3	54.8	12.2	4.2	55.0	9.0	4.3
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.1		7.2	0.0	60.3	11.7	0.1	15.3	2.6	0.0
Delay (s)		46.7	44.8		55.3	44.4	115.1	23.9	4.3	70.3	11.6	4.3
Level of Service		D	D		E	D	F	C	A	E	B	A
Approach Delay (s)		45.4			53.7			26.1			13.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	115.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	12.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	130	60	20	1150	970	55
Future Vol, veh/h	130	60	20	1150	970	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	138	64	21	1223	1032	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2297	1032	1091	0	-	0
Stage 1	1032	-	-	-	-	-
Stage 2	1265	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	~ 43	285	607	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 41	285	607	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	156.9	0.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	607	-	180	-	-
HCM Lane V/C Ratio	0.035	-	1.123	-	-
HCM Control Delay (s)	11.1	-	156.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	10.2	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	15	1085	40	10	995
Future Vol, veh/h	25	15	1085	40	10	995
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	27	16	1154	43	11	1059

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2235	1154	0	0	1197	0
Stage 1	1154	-	-	-	-	-
Stage 2	1081	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	47	210	-	-	590	-
Stage 1	303	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	46	210	-	-	590	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	322	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.5	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	178	590	-
HCM Lane V/C Ratio	-	-	0.239	0.018	-
HCM Control Delay (s)	-	-	31.5	11.2	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

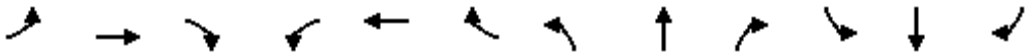
Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	10	1115	90	20	995
Future Vol, veh/h	35	10	1115	90	20	995
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	38	11	1212	98	22	1082

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2338	1212	0	0	1310	0
Stage 1	1212	-	-	-	-	-
Stage 2	1126	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	41	209	-	-	535	-
Stage 1	284	-	-	-	-	-
Stage 2	313	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	39	209	-	-	535	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	284	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.8	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	161	535	-
HCM Lane V/C Ratio	-	-	0.304	0.041	-
HCM Control Delay (s)	-	-	36.8	12	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	1.2	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	55	80	325	30	90	60	1325	115	80	1075	20
Future Volume (vph)	40	55	80	325	30	90	60	1325	115	80	1075	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1694	1405	1564	1495		1630	3162		1614	3218	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1694	1405	1564	1495		1630	3162		1614	3218	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	59	86	349	32	97	65	1425	124	86	1156	22
RTOR Reduction (vph)	0	0	78	0	22	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	102	8	244	212	0	65	1544	0	86	1177	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		10.5	10.5	22.1	22.1		6.7	60.3		8.6	62.2	
Effective Green, g (s)		11.0	11.0	22.6	22.6		7.2	61.3		9.1	63.2	
Actuated g/C Ratio		0.09	0.09	0.19	0.19		0.06	0.51		0.08	0.53	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		155	128	294	281		97	1615		122	1694	
v/s Ratio Prot		c0.06		c0.16	0.14		0.04	c0.49		c0.05	0.37	
v/s Ratio Perm			0.01									
v/c Ratio		0.66	0.06	0.83	0.75		0.67	0.96		0.70	0.69	
Uniform Delay, d1		52.7	49.8	46.9	46.1		55.2	28.1		54.1	21.2	
Progression Factor		1.00	1.00	1.00	1.00		1.07	0.58		1.00	1.00	
Incremental Delay, d2		8.7	0.1	17.0	10.4		12.0	11.7		15.8	2.4	
Delay (s)		61.4	49.9	63.9	56.5		70.9	27.9		69.9	23.6	
Level of Service		E	D	E	E		E	C		E	C	
Approach Delay (s)		56.1			60.3			29.6			26.7	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	79.0%	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)	75	15	25	30	10	50	10	1500	15	15	1445	25
Future Volume (veh/h)	75	15	25	30	10	50	10	1500	15	15	1445	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	79	16	26	32	11	53	11	1579	16	16	1521	26
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	147	28	34	84	36	99	24	2525	26	30	2515	43
Arrive On Green	0.11	0.12	0.11	0.11	0.12	0.11	0.03	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	845	245	298	382	315	858	1667	3292	33	1667	3265	56
Grp Volume(v), veh/h	121	0	0	96	0	0	11	778	817	16	755	792
Grp Sat Flow(s),veh/h/ln	1388	0	0	1554	0	0	1667	1624	1702	1667	1624	1697
Q Serve(g_s), s	3.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Cycle Q Clear(g_c), s	10.3	0.0	0.0	6.9	0.0	0.0	0.8	0.0	0.0	1.1	0.0	0.0
Prop In Lane	0.65		0.21	0.33		0.55	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	204	0	0	213	0	0	24	1245	1305	30	1251	1308
V/C Ratio(X)	0.59	0.00	0.00	0.45	0.00	0.00	0.46	0.62	0.63	0.53	0.60	0.61
Avail Cap(c_a), veh/h	336	0	0	349	0	0	83	1245	1305	83	1251	1308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.41	0.41	0.41	0.65	0.65	0.65
Uniform Delay (d), s/veh	51.7	0.0	0.0	50.2	0.0	0.0	57.8	0.0	0.0	57.4	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	1.1	0.0	0.0	4.1	1.0	0.9	7.0	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0	2.8	0.0	0.0	0.4	0.3	0.3	0.5	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	0.0	0.0	51.3	0.0	0.0	61.9	1.0	0.9	64.3	1.4	1.4
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		121			96			1606			1563	
Approach Delay, s/veh		53.8			51.3			1.4			2.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	96.4		17.8	6.2	96.0		17.8
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	5.5	76.0		24.5	5.5	76.0		24.5
Max Q Clear Time (g_c+I1), s	2.8	2.0		8.9	3.1	2.0		12.3
Green Ext Time (p_c), s	0.0	51.9		0.3	0.0	54.0		0.4

Intersection Summary		
HCM 6th Ctrl Delay		5.0
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	35	30	75	20	35	35	1445	25	25	1400	30
Future Volume (veh/h)	90	35	30	75	20	35	35	1445	25	25	1400	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	100	39	33	83	22	39	39	1606	28	28	1556	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	4	4
Cap, veh/h	127	50	42	113	30	53	55	1907	33	41	1855	39
Arrive On Green	0.12	0.13	0.12	0.10	0.12	0.10	0.03	0.58	0.57	0.05	1.00	1.00
Sat Flow, veh/h	954	372	315	932	247	438	1667	3265	57	1667	3225	68
Grp Volume(v), veh/h	172	0	0	144	0	0	39	797	837	28	776	813
Grp Sat Flow(s),veh/h/ln	1641	0	0	1617	0	0	1667	1624	1698	1667	1611	1682
Q Serve(g_s), s	12.2	0.0	0.0	10.4	0.0	0.0	2.8	48.2	48.5	2.0	0.0	0.0
Cycle Q Clear(g_c), s	12.2	0.0	0.0	10.4	0.0	0.0	2.8	48.2	48.5	2.0	0.0	0.0
Prop In Lane	0.58		0.19	0.58		0.27	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	219	0	0	195	0	0	55	948	992	41	927	968
V/C Ratio(X)	0.79	0.00	0.00	0.74	0.00	0.00	0.71	0.84	0.84	0.69	0.84	0.84
Avail Cap(c_a), veh/h	219	0	0	216	0	0	83	948	992	83	927	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.30	0.30	0.30	0.75	0.75	0.75
Uniform Delay (d), s/veh	51.1	0.0	0.0	51.8	0.0	0.0	57.4	20.4	20.5	56.6	0.0	0.0
Incr Delay (d2), s/veh	16.5	0.0	0.0	10.5	0.0	0.0	3.7	2.9	2.8	10.9	6.9	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0	4.9	0.0	0.0	1.2	17.6	18.6	0.9	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.7	0.0	0.0	62.3	0.0	0.0	61.1	23.3	23.3	67.6	6.9	6.7
LnGrp LOS	E	A	A	E	A	A	E	C	C	E	A	A
Approach Vol, veh/h		172			144			1673			1617	
Approach Delay, s/veh		67.7			62.3			24.2			7.8	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	73.5		18.5	6.9	74.6		20.0
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	5.5	63.5		14.0	5.5	63.5		14.0
Max Q Clear Time (g_c+I1), s	4.8	2.0		12.4	4.0	50.5		14.2
Green Ext Time (p_c), s	0.0	32.1		0.1	0.0	12.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	195	35	255	165	280	75	900	215	335	975	80
Future Volume (veh/h)	205	195	35	255	165	280	75	900	215	335	975	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	218	207	37	271	176	298	80	957	0	356	1037	85
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	250	238	43	276	330	270	106	991		350	1396	114
Arrive On Green	0.15	0.17	0.16	0.17	0.19	0.19	0.06	0.31	0.00	0.07	0.15	0.15
Sat Flow, veh/h	1654	1423	254	1576	1723	1410	1667	3221	1367	1615	3032	248
Grp Volume(v), veh/h	218	0	244	271	176	298	80	957	0	356	555	567
Grp Sat Flow(s),veh/h/ln	1654	0	1678	1576	1723	1410	1667	1611	1367	1615	1624	1657
Q Serve(g_s), s	15.5	0.0	17.0	20.6	11.0	23.0	5.7	35.1	0.0	26.0	39.2	39.3
Cycle Q Clear(g_c), s	15.5	0.0	17.0	20.6	11.0	23.0	5.7	35.1	0.0	26.0	39.2	39.3
Prop In Lane	1.00		0.15	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	250	0	281	276	330	270	106	991		350	748	763
V/C Ratio(X)	0.87	0.00	0.87	0.98	0.53	1.10	0.75	0.97		1.02	0.74	0.74
Avail Cap(c_a), veh/h	289	0	294	276	330	270	153	991		350	748	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.43	0.43	0.43
Uniform Delay (d), s/veh	49.8	0.0	48.7	49.3	43.7	48.5	55.2	40.9	0.0	55.7	44.1	44.1
Incr Delay (d2), s/veh	21.2	0.0	22.1	49.2	1.7	85.6	9.5	21.4	0.0	36.0	2.9	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	8.9	11.8	4.9	14.5	2.7	16.8	0.0	14.8	17.8	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	0.0	70.8	98.5	45.4	134.1	64.7	62.4	0.0	91.7	47.0	47.0
LnGrp LOS	E	A	E	F	D	F	E	E		F	D	D
Approach Vol, veh/h		462			745			1037	A		1478	
Approach Delay, s/veh		70.9			100.2			62.5			57.8	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	59.3	22.1	27.0	30.0	40.9	25.0	24.1
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	50.0	20.5	20.5	25.5	35.0	20.5	20.5
Max Q Clear Time (g_c+I1), s	7.7	41.3	17.5	25.0	28.0	37.1	22.6	19.0
Green Ext Time (p_c), s	0.0	6.6	0.1	0.0	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	69.2
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	25.2

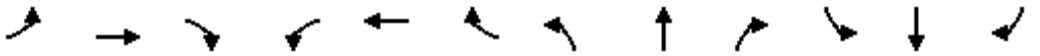
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	15	20	20	10	10	120	10	1080	15	60	1135	55
Future Vol, veh/h	15	20	20	10	10	120	10	1080	15	60	1135	55
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	16	22	22	11	11	132	11	1187	16	66	1247	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2052	2667	693	2012	2689	613	1329	0	0	1214	0	0
Stage 1	1431	1431	-	1228	1228	-	-	-	-	-	-	-
Stage 2	621	1236	-	784	1461	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	33	23	390	30	22	435	526	-	-	559	-	-
Stage 1	144	202	-	171	253	-	-	-	-	-	-	-
Stage 2	446	250	-	327	195	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	~ 12	376	-	11	430	515	-	-	553	-	-
Mov Cap-2 Maneuver	0	~ 12	-	-	11	-	-	-	-	-	-	-
Stage 1	132	109	-	158	234	-	-	-	-	-	-	-
Stage 2	276	232	-	134	105	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1092.8		0.5	2.9
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	515	-	-	23	-	553	-	-
HCM Lane V/C Ratio	0.021	-	-	2.628	-	0.119	-	-
HCM Control Delay (s)	12.1	0.4	-	$ 1092.8	-	12.4	2.5	-
HCM Lane LOS	B	A	-	F	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	7.6	-	0.4	-	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	25	35	70	40	45	20	965	10	45	1080	20
Future Volume (veh/h)	40	25	35	70	40	45	20	965	10	45	1080	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.96	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	41	26	36	72	41	46	21	995	10	46	1113	21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	105	67	70	124	62	58	23	1135	12	52	1330	26
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.34	0.35	0.34	0.40	0.41	0.40
Sat Flow, veh/h	441	471	490	564	439	408	66	3279	35	127	3232	64
Grp Volume(v), veh/h	103	0	0	159	0	0	538	0	488	619	0	561
Grp Sat Flow(s),veh/h/ln	1403	0	0	1411	0	0	1692	0	1687	1716	0	1707
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	36.6	0.0	31.9	39.9	0.0	34.5
Cycle Q Clear(g_c), s	8.0	0.0	0.0	13.1	0.0	0.0	36.6	0.0	31.9	39.9	0.0	34.5
Prop In Lane	0.40		0.35	0.45		0.29	0.04		0.02	0.07		0.04
Lane Grp Cap(c), veh/h	235	0	0	238	0	0	586	0	584	706	0	702
V/C Ratio(X)	0.44	0.00	0.00	0.67	0.00	0.00	0.92	0.00	0.84	0.88	0.00	0.80
Avail Cap(c_a), veh/h	271	0	0	273	0	0	592	0	591	706	0	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	0.0	49.9	0.0	0.0	37.6	0.0	36.1	32.5	0.0	31.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	4.4	0.0	0.0	20.4	0.0	11.5	14.4	0.0	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	5.0	0.0	0.0	18.4	0.0	15.0	19.3	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	0.0	0.0	54.3	0.0	0.0	58.0	0.0	47.6	46.9	0.0	40.2
LnGrp LOS	D	A	A	D	A	A	E	A	D	D	A	D
Approach Vol, veh/h		103			159			1026			1180	
Approach Delay, s/veh		48.5			54.3			53.0			43.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		53.4		21.1		45.6		21.1				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		45.0		19.5		41.0		19.5				
Max Q Clear Time (g_c+I1), s		41.9		15.1		38.6		10.0				
Green Ext Time (p_c), s		2.6		0.3		2.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			48.5									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	60	10	0	30	25	1110	10	10	1195	20
Future Vol, veh/h	15	0	60	10	0	30	25	1110	10	10	1195	20
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	17	0	67	11	0	33	28	1233	11	11	1328	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2057	2682	688	1989	2688	640	1363	0	0	1252	0	0
Stage 1	1374	1374	-	1303	1303	-	-	-	-	-	-	-
Stage 2	683	1308	-	686	1385	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	33	22	393	37	22	423	490	-	-	563	-	-
Stage 1	156	215	-	173	233	-	-	-	-	-	-	-
Stage 2	410	231	-	408	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	19	388	27	19	416	484	-	-	559	-	-
Mov Cap-2 Maneuver	27	19	-	27	19	-	-	-	-	-	-	-
Stage 1	145	196	-	162	218	-	-	-	-	-	-	-
Stage 2	352	216	-	311	194	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	110.6	79	0.3	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	484	-	-	106	90	559	-	-
HCM Lane V/C Ratio	0.057	-	-	0.786	0.494	0.02	-	-
HCM Control Delay (s)	12.9	-	-	110.6	79	11.6	0.4	-
HCM Lane LOS	B	-	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	4.3	2.1	0.1	-	-

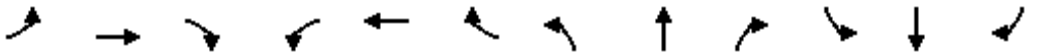
Intersection	
Int Delay, s/veh	17.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	695	45	120	625	5	20	5	210	5	10	40
Future Vol, veh/h	15	695	45	120	625	5	20	5	210	5	10	40
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	16	732	47	126	658	5	21	5	221	5	11	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	664	0	0	780	0	0	1729	1705	758	1816	1726	663
Stage 1	-	-	-	-	-	-	789	789	-	914	914	-
Stage 2	-	-	-	-	-	-	940	916	-	902	812	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	935	-	-	828	-	-	68	92	405	61	90	459
Stage 1	-	-	-	-	-	-	378	405	-	330	355	-
Stage 2	-	-	-	-	-	-	311	354	-	335	395	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	934	-	-	827	-	-	48	77	404	23	75	458
Mov Cap-2 Maneuver	-	-	-	-	-	-	48	77	-	23	75	-
Stage 1	-	-	-	-	-	-	371	398	-	324	301	-
Stage 2	-	-	-	-	-	-	231	300	-	147	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.6	118.2	55.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	235	934	-	-	827	-	-	126
HCM Lane V/C Ratio	1.053	0.017	-	-	0.153	-	-	0.459
HCM Control Delay (s)	118.2	8.9	-	-	10.1	-	-	55.8
HCM Lane LOS	F	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	10.4	0.1	-	-	0.5	-	-	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	835	135	75	570	195	125	80	75	175	65	40
Future Volume (veh/h)	60	835	135	75	570	195	125	80	75	175	65	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	65	908	147	82	620	212	136	87	82	190	71	43
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	87	1228	199	106	758	622	340	202	529	265	95	49
Arrive On Green	0.06	0.44	0.42	0.06	0.44	0.44	0.36	0.37	0.37	0.36	0.37	0.36
Sat Flow, veh/h	1537	2821	457	1628	1709	1402	749	545	1431	546	256	132
Grp Volume(v), veh/h	65	527	528	82	620	212	223	0	82	304	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1641	1628	1709	1402	1294	0	1431	934	0	0
Q Serve(g_s), s	3.9	24.8	24.8	4.6	29.3	9.2	0.0	0.0	3.5	18.5	0.0	0.0
Cycle Q Clear(g_c), s	3.9	24.8	24.8	4.6	29.3	9.2	12.0	0.0	3.5	30.5	0.0	0.0
Prop In Lane	1.00		0.28	1.00		1.00	0.61		1.00	0.62		0.14
Lane Grp Cap(c), veh/h	87	712	714	106	758	622	535	0	529	404	0	0
V/C Ratio(X)	0.74	0.74	0.74	0.78	0.82	0.34	0.42	0.00	0.15	0.75	0.00	0.00
Avail Cap(c_a), veh/h	100	797	799	106	832	683	639	0	635	504	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.9	21.7	21.9	42.6	22.5	16.9	22.1	0.0	19.5	32.4	0.0	0.0
Incr Delay (d2), s/veh	21.1	6.0	6.0	28.7	8.8	1.2	0.4	0.0	0.1	4.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	10.2	10.3	2.7	12.9	3.1	3.7	0.0	1.2	7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	27.8	27.9	71.3	31.3	18.1	22.5	0.0	19.6	37.3	0.0	0.0
LnGrp LOS	E	C	C	E	C	B	C	A	B	D	A	A
Approach Vol, veh/h		1120			914			305			304	
Approach Delay, s/veh		30.0			31.8			21.7			37.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	44.2		38.2	9.2	45.0		38.2				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.5	44.0		40.5	5.5	44.0		40.5				
Max Q Clear Time (g_c+I1), s	6.6	26.8		32.5	5.9	31.3		14.0				
Green Ext Time (p_c), s	0.0	12.4		1.2	0.0	8.0		1.4				

Intersection Summary			
HCM 6th Ctrl Delay		30.5	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	80	0	70	0	110	100	20	90	0
Future Vol, veh/h	0	0	0	80	0	70	0	110	100	20	90	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	99	0	86	0	136	123	25	111	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	402	421	111	360	360	199	111	0	0	260	0	0
Stage 1	161	161	-	199	199	-	-	-	-	-	-	-
Stage 2	241	260	-	161	161	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	562	527	948	586	570	847	1492	-	-	1316	-	-
Stage 1	846	769	-	791	740	-	-	-	-	-	-	-
Stage 2	767	697	-	829	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	497	516	948	577	558	846	1492	-	-	1315	-	-
Mov Cap-2 Maneuver	497	516	-	577	558	-	-	-	-	-	-	-
Stage 1	846	754	-	790	739	-	-	-	-	-	-	-
Stage 2	689	696	-	812	754	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.3	0	1.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1492	-	-	-	678	1315	-	-
HCM Lane V/C Ratio	-	-	-	-	0.273	0.019	-	-
HCM Control Delay (s)	0	-	-	0	12.3	7.8	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	5	30	5	15	25	10	15	100	55	15	60	5
Future Vol, veh/h	5	30	5	15	25	10	15	100	55	15	60	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	38	6	19	31	13	19	125	69	19	75	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	44	0	0	44	0	0	170	135	43	228	132	39
Stage 1	-	-	-	-	-	-	53	53	-	76	76	-
Stage 2	-	-	-	-	-	-	117	82	-	152	56	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1577	-	-	1577	-	-	798	760	1033	731	762	1038
Stage 1	-	-	-	-	-	-	965	855	-	938	836	-
Stage 2	-	-	-	-	-	-	892	831	-	855	852	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1577	-	-	1577	-	-	723	748	1031	586	750	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	723	748	-	586	750	-
Stage 1	-	-	-	-	-	-	961	852	-	934	826	-
Stage 2	-	-	-	-	-	-	796	821	-	677	849	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	2.2	10.9	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	818	1577	-	-	1577	-	-	725
HCM Lane V/C Ratio	0.26	0.004	-	-	0.012	-	-	0.138
HCM Control Delay (s)	10.9	7.3	0	-	7.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	40	135	25	30	0	125	0	35	0	1	0
Future Vol, veh/h	1	40	135	25	30	0	125	0	35	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	45	152	28	34	0	140	0	39	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.1	8.1	9.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	45%	0%
Vol Thru, %	0%	0%	23%	55%	100%
Vol Right, %	0%	100%	77%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	35	176	55	1
LT Vol	125	0	1	25	0
Through Vol	0	0	40	30	1
RT Vol	0	35	135	0	0
Lane Flow Rate	140	39	198	62	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.217	0.048	0.219	0.08	0.001
Departure Headway (Hd)	5.569	4.374	3.995	4.672	4.79
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	645	823	902	768	746
Service Time	3.297	2.074	2.009	2.694	2.826
HCM Lane V/C Ratio	0.217	0.047	0.22	0.081	0.001
HCM Control Delay	9.8	7.3	8.1	8.1	7.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0.2	0.8	0.3	0

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	55	10	5	70	20	20	215	15	20	100	70
Future Vol, veh/h	10	55	10	5	70	20	20	215	15	20	100	70
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	11	63	11	6	80	23	23	244	17	23	114	80

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	107	0	0	89	0	0	309	225	95	340	219	98
Stage 1	-	-	-	-	-	-	106	106	-	108	108	-
Stage 2	-	-	-	-	-	-	203	119	-	232	111	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1497	-	-	1519	-	-	636	674	907	618	672	963
Stage 1	-	-	-	-	-	-	890	807	-	902	798	-
Stage 2	-	-	-	-	-	-	790	797	-	775	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1491	-	-	1497	-	-	492	654	885	420	652	958
Mov Cap-2 Maneuver	-	-	-	-	-	-	492	654	-	420	652	-
Stage 1	-	-	-	-	-	-	870	789	-	891	792	-
Stage 2	-	-	-	-	-	-	617	791	-	515	778	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.4	14.8	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	647	1491	-	-	1497	-	-	693
HCM Lane V/C Ratio	0.439	0.008	-	-	0.004	-	-	0.312
HCM Control Delay (s)	14.8	7.4	0	-	7.4	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	25	35	15	1	75	45	20	80	10	40	45	15
Future Vol, veh/h	25	35	15	1	75	45	20	80	10	40	45	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	30	42	18	1	90	54	24	96	12	48	54	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	87	0	0	301	307	112	341	289	148
Stage 1	-	-	-	-	-	-	138	138	-	142	142	-
Stage 2	-	-	-	-	-	-	163	169	-	199	147	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1423	-	-	1522	-	-	655	604	947	605	624	886
Stage 1	-	-	-	-	-	-	870	779	-	851	783	-
Stage 2	-	-	-	-	-	-	844	755	-	794	779	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1392	-	-	1483	-	-	566	562	893	482	581	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	566	562	-	482	581	-
Stage 1	-	-	-	-	-	-	829	742	-	814	765	-
Stage 2	-	-	-	-	-	-	761	738	-	645	742	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	13	13.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	582	1392	-	-	1483	-	-	562
HCM Lane V/C Ratio	0.228	0.022	-	-	0.001	-	-	0.214
HCM Control Delay (s)	13	7.6	0	-	7.4	0	-	13.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	100	145	160	155	110
Future Vol, veh/h	65	100	145	160	155	110
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	72	111	161	178	172	122

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	674	181	172	0	-	0
Stage 1	172	-	-	-	-	-
Stage 2	502	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	417	867	1417	-	-	-
Stage 1	853	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	369	860	1417	-	-	-
Mov Cap-2 Maneuver	369	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	3.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1417	-	564	-	-
HCM Lane V/C Ratio	0.114	-	0.325	-	-
HCM Control Delay (s)	7.9	-	14.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.4	-	-

Intersection ID and Name	use dropdown NB PhasingType	use dropdown SB PhasingType	use dropdown EB PhasingType	use dropdown WB PhasingType	Cycle Length	Lost Time	BEGIN CALCULATIONS	1	3 EBL	4 EBT	5 EBR	6 WBL	7 WBT	8 WBR	9 NBL	10 NBT	11 NBR	12 SBL	13 SBT	14 SBR		Critical Flow Calculator WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	V/S E/W	V/S N/S	Intersection V/C	HCM 6th Ctrl Delay	HCM 6th LOS	Synchro ID
2: US 101 & Lighthouse Dr/52nd St	Protected	Protected	Permitted	Permitted	125	12		Adj Flow Rate, veh/h	37	5	95	100	0	16	58	1137	0	32	895	0	Protected	0.26	0.01	0.56	0.70						
								Sat Flow, veh/h	0	19	1457	0	0	1468	1615	1682	1483	1667	1695	1483	Permitted or Split	0.26	0.01	0.53	0.68						
								V/S	0.00	0.26	0.07	0.00	0.00	0.01	0.04	0.68	0.00	0.02	0.53	0.00	selected phasing	0.26	0.01	0.56	0.70	0.26	0.70	**1.06**	**57.2**	**E**	2
7: US 101 & 11th St	Protected	Protected	Permitted	Permitted	120	12		Adj Flow Rate, veh/h	79	16	26	32	11	53	11	1579	16	16	1521	26	Protected	0.17	0.16	0.47	0.49						
								Sat Flow, veh/h	845	245	298	382	315	858	1667	3292	33	1667	3265	56	Permitted or Split	0.09	0.08	0.47	0.48						
								V/S	0.09	0.07	0.09	0.08	0.03	0.06	0.01	0.48	0.48	0.01	0.47	0.46	selected phasing	0.09	0.08	0.47	0.49	0.09	0.49	**0.65**	**5**	**A**	7
8: US 101 & 6th St	Protected	Protected	Split	Split	120	16		Adj Flow Rate, veh/h	100	39	33	83	22	39	39	1606	28	28	1556	33	Protected	0.19	0.19	0.51	0.51						
								Sat Flow, veh/h	954	372	315	932	247	438	1667	3265	57	1667	3225	68	Permitted or Split	0.10	0.09	0.49	0.49						
								V/S	0.10	0.10	0.10	0.09	0.09	0.09	0.02	0.49	0.49	0.02	0.48	0.49	selected phasing	0.10	0.09	0.51	0.51	0.19	0.51	**0.81**	**20.4**	**C**	8
9: US 101 & Olive St/US 20	Protected	Protected	Protected	Protected	120	16		Adj Flow Rate, veh/h	218	207	37	271	176	298	80	957	0	356	1037	85	Protected	0.32	0.34	0.39	0.52						
								Sat Flow, veh/h	1654	1423	254	1576	1723	1410	1667	3221	1367	1615	3032	248	Permitted or Split	0.15	0.21	0.34	0.30						
								V/S	0.13	0.15	0.15	0.17	0.10	0.21	0.05	0.30	0.00	0.22	0.34	0.34	selected phasing	0.32	0.34	0.39	0.52	0.34	0.52	**0.99**	**69.2**	**E**	9
11: US 101 & Hurbert St	Split	Split	Permitted	Permitted	120	12		Adj Flow Rate, veh/h	41	26	36	72	41	46	21	995	10	46	1113	21	Protected	0.20	0.21	0.66	0.67						
								Sat Flow, veh/h	441	471	490	564	439	408	66	3279	35	127	3232	64	Permitted or Split	0.09	0.13	0.36	0.32						
								V/S	0.09	0.06	0.07	0.13	0.09	0.11	0.32	0.30	0.29	0.36	0.34	0.33	selected phasing	0.09	0.13	0.36	0.32	0.13	0.68	**0.90**	**48.5**	**D**	11
14: Moore Dr/Harney St & US 20	Permitted	Permitted	Protected	Protected	104	12		Adj Flow Rate, veh/h	65	908	147	82	620	212	136	87	82	190	71	43	Protected	0.37	0.41	0.51	0.51						
								Sat Flow, veh/h	1537	2821	457	1628	1709	1402	749	545	1431	546	256	132	Permitted or Split	0.32	0.36	0.35	0.18						
								V/S	0.04	0.32	0.32	0.05	0.36	0.15	0.18	0.16	0.06	0.35	0.28	0.33	selected phasing	0.37	0.41	0.35	0.18	0.41	0.35	**0.85**	**30.5**	**C**	14
								Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
								Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
								V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
								Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
								Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
								V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
								Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
								Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
								V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	

Sheet Description:
This sheet reads in the adjusted flow rate and the saturation flow rate from Synchro and divides them to calculated the V/S for each movement.
The critical flow calculator calculates the critical v/s for each conflicting phase pair.
for protected phases, this v/s is the left turn v/s plus the max of the opposing movement v/s
for the permitted and split phases, this v/s is the max of the three movement v/s
The next step selects the proper v/s based on phasing provided
V/S by east-west and north-south is selected by taking the max of the phase pairs or by adding them (if split phasing)
If overlap calculator was selected in input section and overlap phases were indicated, then overlap v/s for intersection is calculated. See details below
If the right turn v/s is greater than the through v/s for the right turn overlap approach, then the right turn is assumed the critical movement and intersection v/c calc will use the v/s overlap instead of approach v/s
The final step in v/c calculation uses the approach v/s ratios, cycle length, and lost time to calculate overall intersection v/c
Delay and LOS are read directly from the HCM 6 report

Overlap Calculator Details
Overlap calculator reads in whether an overlap phase is in use and what type of phasing is associated with the right turn approach and the overlapped approach
V/S is read in for right turn movement, and remaining approaches from previous calculations
-right turn overlap v/s is just the v/s for the right turn movement (i.e. NBR)
-right turn approach v/s is the critical v/s associated with the right turn approaches (i.e. NB/SB) and is calculated differently for protected vs split
-overlap approach v/s is the critical v/s associated with the overlap approaches (i.e. EB/WB) and is calculated differently for protected vs split phasing
The v/s overlap column sums the 3 v/s values for the overlap phasing to get the total v/s overlap to be used in the v/c calculation
If there are overlaps for multiple approaches, the v/s overlap will use the greatest of the approaches for most conservative approach
Use Overlap Calculator' must be enabled and 'Use OV V/S' must be showing in V/S Overlap column in order for overlap v/s to be used in final v/c calculation

Intersection ID and Name	Control Type		Major Approach	Row		1	3	4	5	6	7	8	9	10	11	12	13	14
	use dropdown	BEGIN	Sat. Flow Default	1700														
		CALCULATIONS		Reference		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
1: US 101 & 73rd Ct/73rd St	TWSC		NB/SB		7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
					8	Lane Configurations		0	1	0	0	1	0	1	1	1	1	1	0
					19	Mvmt Flow		1	0	5	100	0	16	5	932	63	21	726	2
					10	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R	
						Major V/C			0.00	0.00		0.01	0.01	0.01	0.55	0.04	0.04	0.43	0.43
						Minor (or AWSC) V/C	0.03				1.57								
					45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0	
					47	HCM Lane V/C Ratio	0.00	0.01	-	-	0.03	1.57	0.04	-	-	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	9.1	-	-	22.2	405.2	12.7	-	-	0.0	0.0	0.0	
					49	HCM Lane LOS	0	A	-	-	C	F	B	-	-	0	0	0	
3: US 101 & Oceanview Dr	TWSC		NB/SB		7	Movement	EBL		EBR				NBL	NBT			SBT	SBR	
					8	Lane Configurations		1		0				1	1			1	1
					19	Mvmt Flow		138	0	64	0	0	0	21	1223	0	0	1032	59
					70	Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	
						Major V/C							0.04	0.72			0.61	0.03	
						Minor (or AWSC) V/C	1.12												
					45	Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0	
					47	HCM Lane V/C Ratio	0.00	0.04	-	1.12	-	-	0.00	0.00	0.00	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	11.1	-	156.9	-	-	0.0	0.0	0.0	0.0	0.0	0.0	
					49	HCM Lane LOS	0	B	-	F	-	-	0	0	0	0	0	0	
4: US 101 & 36th Street	TWSC		NB/SB		7	Movement				WBL		WBR		NBT	NBR	SBL	SBT		
					8	Lane Configurations					1		0		1	1	1		
					19	Mvmt Flow		0	0	0	27	0	16	0	1154	43	11	1059	0
					130	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	
						Major V/C									0.68	0.03	0.02	0.62	
						Minor (or AWSC) V/C					0.24								
					45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0	
					47	HCM Lane V/C Ratio	0.00	-	-	0.24	0.02	-	0.00	0.00	0.00	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	-	-	31.5	11.2	-	0.0	0.0	0.0	0.0	0.0	0.0	
					49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0	
5: US 101 & 31st St	TWSC		NB/SB		7	Movement				WBL		WBR		NBT	NBR	SBL	SBT		
					8	Lane Configurations					1		0		1	1	1		
					19	Mvmt Flow		0	0	0	38	0	11	0	1212	98	22	1082	0
					187	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	
						Major V/C									0.71	0.06	0.04	0.64	
						Minor (or AWSC) V/C					0.30								
					45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0	
					47	HCM Lane V/C Ratio	0.00	-	-	0.30	0.04	-	0.00	0.00	0.00	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	-	-	36.8	12.0	-	0.0	0.0	0.0	0.0	0.0	0.0	
					49	HCM Lane LOS	0	-	-	E	B	-	0	0	0	0	0	0	
10: US 101 & Angle St	TWSC		NB/SB		7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
					8	Lane Configurations		0	1	0	0	1	0	0	2	0	0	2	0
					19	Mvmt Flow		16	22	22	11	11	132	11	1187	16	66	1247	60
					244	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LT	T or TR	TR or R	
						Major V/C			0.03	0.03		0.08	0.08	0.37	0.35	0.35	0.49	0.38	0.38
						Minor (or AWSC) V/C	2.63			-									
					45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0	
					47	HCM Lane V/C Ratio	0.00	0.02	-	-	2.63	-	0.12	-	-	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	12.1	0.4	-	1092.8	-	12.4	2.5	-	0.0	0.0	0.0	
					49	HCM Lane LOS	0	B	A	-	F	-	B	A	-	0	0	0	
12: US 101 & Bayley St	TWSC		NB/SB		7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
					8	Lane Configurations		0	1	0	0	1	0	1	2	0	0	2	0
					19	Mvmt Flow		17	0	67	11	0	33	28	1233	11	11	1328	22
					304	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	
						Major V/C			0.04	0.04		0.02	0.02	0.06	0.37	0.37	0.41	0.40	0.40
						Minor (or AWSC) V/C	0.79			0.49									
					45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0	
					47	HCM Lane V/C Ratio	0.00	0.06	-	-	0.79	0.49	0.02	-	-	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	12.9	-	-	110.6	79.0	11.6	0.4	-	0.0	0.0	0.0	
					49	HCM Lane LOS	0	B	-	-	F	F	B	A	-	0	0	0	
13: Benton St & US 20	TWSC		EB/WB		7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
					8	Lane Configurations	1	1	0	1	1	0	0	1	0	0	1	0	
					19	Mvmt Flow	16	732	47	126	658	5	21	5	221	5	11	42	
					361	Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	
						Major V/C	0.02	0.46	0.46	0.15	0.39	0.39		0.13	0.13		0.03	0.03	
						Minor (or AWSC) V/C							1.05			0.46			
					45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0	
					47	HCM Lane V/C Ratio	0.00	1.05	0.02	-	-	0.15	-	-	0.46	0.00	0.00	0.00	
					48	HCM Control Delay (s)	0.0	118.2	8.9	-	-	10.1	-	-	55.8	0.0	0.0	0.0	
					49	HCM Lane LOS	0	F	A	-	-	B	-	-	F	0	0	0	
15: Oceanview Dr & Pacific Pl/25th St	TWSC		NB/SB		7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
					8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0

Outputs

	NB	SB	EB	WB	Synchro ID
1: US 101 & 73rd Ct/73rd St V/C	**0.55**	**0.43**	**0.03**	**1.57**	**1**
1: US 101 & 73rd Ct/73rd St Delay	**9.10**	**12.70**	**22.20**	**405.20**	
1: US 101 & 73rd Ct/73rd St LOS	**A**	**B**	**C**	**F**	
3: US 101 & Oceanview Dr V/C	**0.72**	**0.61**	**1.12**	**0.00**	**3**
3: US 101 & Oceanview Dr Delay	**11.10**	**0.00**	**156.90**	**0.00**	
3: US 101 & Oceanview Dr LOS	**B**	**A**	**F**	**A**	
4: US 101 & 36th Street V/C	**0.68**	**0.62**	**0.00**	**0.24**	**4**
4: US 101 & 36th Street Delay	**0.00**	**11.20**	**0.00**	**31.50**	
4: US 101 & 36th Street LOS	**A**	**B**	**A**	**D**	
5: US 101 & 31st St V/C	**0.71**	**0.64**	**0.00**	**0.30**	**5**
5: US 101 & 31st St Delay	**0.00**	**12.00**	**0.00**	**36.80**	
5: US 101 & 31st St LOS	**A**	**B**	**A**	**E**	
10: US 101 & Angle St V/C	**0.37**	**0.49**	**2.63**	**0.00**	**10**
10: US 101 & Angle St Delay	**12.10**	**12.40**	**1092.80**	**0.00**	
10: US 101 & Angle St LOS	**B**	**B**	**F**	**A**	
12: US 101 & Bayley St V/C	**0.37**	**0.41**	**0.79**	**0.49**	**12**
12: US 101 & Bayley St Delay	**12.90**	**11.60**	**110.60**	**79.00**	
12: US 101 & Bayley St LOS	**B**	**B**	**F**	**F**	
13: Benton St & US 20 V/C	**1.05**	**0.46**	**0.46**	**0.39**	**13**
13: Benton St & US 20 Delay	**118.20**	**55.80**	**8.90**	**10.10**	
13: Benton St & US 20 LOS	**F**	**F**	**A**	**B**	
15: Oceanview Dr & Pacific Pl/25th St V/C	**0.15**	**0.08**	**0.00**	**0.27**	**15**
15: Oceanview Dr & Pacific Pl/25th St Delay	**0.00**	**7.80**	**0.00**	**12.30**	

Intersection ID and Name	use dropdown Control Type	BEGIN CALCULATIONS	Sat. Flow Default / Major Approach	1700 / Row Reference	1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
				19 Mvmt Flow		0	0	0	99	0	86	0	136	123	25	111	0	15: Oceanview Dr & Pacific Pl/25th St LOS	A	A	A	B	
				418 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.00	0.00		0.05	0.05		0.15	0.15	0.08	0.07	0.07							
				Minor (or AWSC) V/C	-			0.27																
				45 Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47 HCM Lane V/C Ratio	0.00	-	-	-	0.27	0.02	-	-		0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	0.0	-	-	0.0	12.3	7.8	0.0	-	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	-	A	B	A	A	-	0	0	0							
16: Nye St & 11th St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		16: Nye St & 11th St V/C	**0.26**	**0.14**	**0.03**	**0.04**	**16**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	16: Nye St & 11th St Delay	**10.90**	**10.80**	**7.30**	**7.30**	
				19 Mvmt Flow		6	38	6	19	31	13	19	125	69	19	75	6	16: Nye St & 11th St LOS	B	B	A	A	
				475 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.03	0.03	0.03	0.04	0.03	0.03		0.11	0.11		0.05	0.05							
				Minor (or AWSC) V/C								0.26			0.14									
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.26	0.00	-	-	0.01	-	-	0.14	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	10.9	7.3	0.0	-	7.3	0.0	-	10.8	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
17: Harney St & 7th St	AWSC		N/A	9 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		17: Harney St & 7th St V/C	**0.22**	**0.00**	**0.22**	**0.08**	**17**
				10 Lane Configurations		0	1	0	0	1	0	0	1	1	0	1	0	17: Harney St & 7th St Delay	**9.80**	**7.80**	**8.10**	**8.10**	
				15 Mvmt Flow		1	45	152	28	34	0	140	0	39	0	1	0	17: Harney St & 7th St LOS	A	A	A	A	
				534 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.12	0.12		0.02	0.02		0.00	0.02		0.00	0.00							
				Minor (or AWSC) V/C	0.22			0.08			0.22	0.05		0.00									
				29 Lane	0	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	0	0	0	0	0	0							
				45 HCM Lane V/C Ratio	0.00	0.22	0.05	0.22	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
				46 HCM Control Delay	0.0	9.8	7.3	8.1	8.1	7.8	0.0	0.0	0.0	0.0	0.0	0.0							
				47 HCM Lane LOS	0	A	A	A	A	A	0	0	0	0	0	0							
18: 9th St & Hurbert St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		18: 9th St & Hurbert St V/C	**0.44**	**0.31**	**0.05**	**0.06**	**18**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	18: 9th St & Hurbert St Delay	**14.80**	**12.50**	**7.40**	**7.40**	
				19 Mvmt Flow		11	63	11	6	80	23	23	244	17	23	114	80	18: 9th St & Hurbert St LOS	B	B	A	A	
				587 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.05	0.04	0.04	0.06	0.06	0.06		0.15	0.15		0.11	0.11							
				Minor (or AWSC) V/C								0.44			0.31									
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.44	0.01	-	-	0.00	-	-	0.31	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	14.8	7.4	0.0	-	7.4	0.0	-	12.5	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
19: 9th St & Abbey St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		19: 9th St & Abbey St V/C	**0.23**	**0.21**	**0.06**	**0.09**	**19**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	19: 9th St & Abbey St Delay	**13.00**	**13.10**	**7.60**	**7.40**	
				19 Mvmt Flow		30	42	18	1	90	54	24	96	12	48	54	18	19: 9th St & Abbey St LOS	B	B	A	A	
				644 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.06	0.04	0.04	0.09	0.08	0.08		0.06	0.06		0.04	0.04							
				Minor (or AWSC) V/C								0.23			0.21									
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.23	0.02	-	-	0.00	-	-	0.21	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	13.0	7.6	0.0	-	7.4	0.0	-	13.1	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
20: Bay Blvd & Moore Dr	TWSC		NB/SB	7 Movement	EBL		EBR				NBL	NBT			SBT	SBR		20: Bay Blvd & Moore Dr V/C	**0.11**	**0.10**	**0.33**	**0.00**	**20**
				8 Lane Configurations		1		0				1	1			1	1	20: Bay Blvd & Moore Dr Delay	**7.90**	**0.00**	**14.40**	**0.00**	
				19 Mvmt Flow		72	0	111	0	0	0	161	178	0	0	172	122	20: Bay Blvd & Moore Dr LOS	A	A	B	A	
				701 Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
				Major V/C							0.11	0.10			0.10	0.07							
				Minor (or AWSC) V/C	0.33																		
				45 Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.11	-	0.33	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	7.9	-	14.4	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	B	-	-	0	0	0	0	0	0							

Sheet Description:
This sheet reads in lane configurations by representing exclusive through or shared lanes with the number of lanes in the through movement, and any exclusive number of turn lanes in the respective turn movement. So a single LTR lane would have 1 under through and 0s under left and right.
This sheet also reads in movement flow and select v/c, LOS, and delay results. The calculations are shown in the box.
Calculations are split out by major and minor approach v/c; Major approach is determined from free approaches in report
The major v/c lanes row indicates the left turn lane configuration for each approach. This is important to determine how to add in the delay from the left turns to the overall calculated v/c for the major approach
In the major v/c row, left turn v/c is read from the report, while remaining movement v/c ratios are calculated based on the methodology given in the ODOT APM and the provided default saturation flow rate of 1700 (can be changed by user)
In the minor v/c row, v/c ratios by lane are calculated based on the ODOT APM method using volume and assumed saturation flow rate
The v/c ratio by approach is the max of the v/c by lane as calculated in the major or minor v/c rows
LOS and Delay by approach are read in from the report
For AWSC, all approaches are treated as minor approaches and the calculations remain the same
The summary table selects the worst approach for both directions and concatenates the results with a / for the final summary table for TWSC. For AWSC, the overall worst approach is reported.

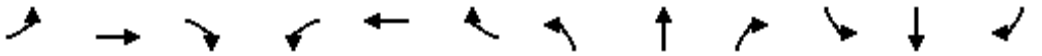
Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	5	90	0	15	2	735	50	20	570	2
Future Vol, veh/h	1	0	5	90	0	15	2	735	50	20	570	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	7	0	0	0	3	38	69	3	0
Mvmt Flow	1	0	5	95	0	16	2	774	53	21	600	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1456	1474	601	1424	1422	774	602	0	0	827	0	0
Stage 1	643	643	-	778	778	-	-	-	-	-	-	-
Stage 2	813	831	-	646	644	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.79	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.821	-	-
Pot Cap-1 Maneuver	109	128	504	111	137	402	985	-	-	577	-	-
Stage 1	465	472	-	382	410	-	-	-	-	-	-	-
Stage 2	375	387	-	452	471	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	102	123	504	107	132	402	985	-	-	577	-	-
Mov Cap-2 Maneuver	102	123	-	107	132	-	-	-	-	-	-	-
Stage 1	464	455	-	381	409	-	-	-	-	-	-	-
Stage 2	360	386	-	431	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	130.2	0	0.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	985	-	-	304	120	577	-	-
HCM Lane V/C Ratio	0.002	-	-	0.021	0.921	0.036	-	-
HCM Control Delay (s)	8.7	-	-	17.1	130.2	11.5	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	5.9	0.1	-	-



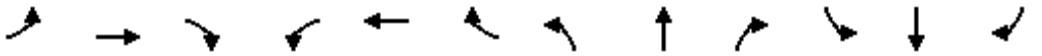
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	75	85	0	15	45	915	130	30	720	25
Future Volume (veh/h)	30	5	75	85	0	15	45	915	130	30	720	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1736	1750	1750	1750	1695	1682	1750	1750	1695	1750
Adj Flow Rate, veh/h	32	5	79	89	0	16	47	963	0	32	758	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	0	0	0	4	5	0	0	4	0
Cap, veh/h	60	5	325	64	0	328	65	1072		54	1067	
Arrive On Green	0.22	0.22	0.22	0.22	0.00	0.22	0.04	0.64	0.00	0.03	0.63	0.00
Sat Flow, veh/h	0	22	1458	0	0	1470	1615	1682	1483	1667	1695	1483
Grp Volume(v), veh/h	37	0	79	89	0	16	47	963	0	32	758	0
Grp Sat Flow(s),veh/h/ln	22	0	1458	0	0	1470	1615	1682	1483	1667	1695	1483
Q Serve(g_s), s	0.0	0.0	5.0	0.0	0.0	1.0	3.2	54.5	0.0	2.1	33.6	0.0
Cycle Q Clear(g_c), s	24.5	0.0	5.0	24.5	0.0	1.0	3.2	54.5	0.0	2.1	33.6	0.0
Prop In Lane	0.86		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	65	0	325	64	0	328	65	1072		54	1067	
V/C Ratio(X)	0.57	0.00	0.24	1.39	0.00	0.05	0.72	0.90		0.59	0.71	
Avail Cap(c_a), veh/h	65	0	325	64	0	328	86	1230		89	1240	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.6	0.0	35.8	55.8	0.0	34.2	53.2	17.3	0.0	53.5	13.9	0.0
Incr Delay (d2), s/veh	9.9	0.0	0.3	244.8	0.0	0.0	15.0	9.3	0.0	7.3	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.8	6.2	0.0	0.4	1.5	20.2	0.0	1.0	11.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.4	0.0	36.0	300.6	0.0	34.2	68.2	26.5	0.0	60.8	16.1	0.0
LnGrp LOS	E	A	D	F	A	C	E	C		E	B	
Approach Vol, veh/h		116			105			1010	A		790	A
Approach Delay, s/veh		44.5			260.0			28.4			17.9	
Approach LOS		D			F			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	74.6		29.0	7.7	75.4		29.0				
Change Period (Y+Rc), s	4.5	6.0		4.5	4.5	6.0		4.5				
Max Green Setting (Gmax), s	5.5	80.0		24.5	5.5	80.0		24.5				
Max Q Clear Time (g_c+I1), s	5.2	35.6		26.5	4.1	56.5		26.5				
Green Ext Time (p_c), s	0.0	11.9		0.0	0.0	13.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			37.3									
HCM 6th LOS			D									

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	75	85	0	15	45	915	130	30	720	25
Future Volume (vph)	30	5	75	85	0	15	45	915	130	30	720	25
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		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	0.97	1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		0.99	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1667	1441		1660	1445	1599	1667	1457	1662	1683	1488
Flt Permitted		0.71	1.00		0.73	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1242	1441		1280	1445	1599	1667	1457	1662	1683	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	5	79	89	0	16	47	963	137	32	758	26
RTOR Reduction (vph)	0	0	70	0	0	14	0	0	27	0	0	8
Lane Group Flow (vph)	0	37	9	0	89	2	47	963	110	32	758	18
Confl. Peds. (#/hr)	4		1	1		4						
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	4%	5%	0%	0%	4%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4		4			6			2
Actuated Green, G (s)		9.9	9.9		9.9	9.9	4.2	61.3	61.3	2.6	59.7	59.7
Effective Green, g (s)		10.4	10.4		10.4	10.4	4.7	63.3	63.3	3.1	61.7	61.7
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.05	0.71	0.71	0.03	0.69	0.69
Clearance Time (s)		4.5	4.5		4.5	4.5	4.5	6.0	6.0	4.5	6.0	6.0
Vehicle Extension (s)		2.5	2.5		2.5	2.5	2.5	4.8	4.8	2.5	4.8	4.8
Lane Grp Cap (vph)		145	168		149	169	84	1188	1038	58	1169	1033
v/s Ratio Prot							c0.03	c0.58		0.02	0.45	
v/s Ratio Perm		0.03	0.01		c0.07	0.00			0.08			0.01
v/c Ratio		0.26	0.06		0.60	0.01	0.56	0.81	0.11	0.55	0.65	0.02
Uniform Delay, d1		35.7	34.8		37.2	34.7	41.0	8.7	4.0	42.2	7.5	4.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.7	0.1		5.3	0.0	6.3	4.8	0.1	8.8	1.6	0.0
Delay (s)		36.4	34.9		42.5	34.7	47.4	13.5	4.0	51.0	9.2	4.2
Level of Service		D	C		D	C	D	B	A	D	A	A
Approach Delay (s)		35.4			41.3			13.7			10.6	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	30	20	1015	835	45
Future Vol, veh/h	85	30	20	1015	835	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	300	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	11	5	4	4
Mvmt Flow	90	32	21	1080	888	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2010	888	936	0	-	0
Stage 1	888	-	-	-	-	-
Stage 2	1122	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.21	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.299	-	-	-
Pot Cap-1 Maneuver	~ 66	345	696	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 64	345	696	-	-	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	393	-	-	-	-	-
Stage 2	314	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	42.5	0.2	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	696	-	213	-	-
HCM Lane V/C Ratio	0.031	-	0.574	-	-
HCM Control Delay (s)	10.3	-	42.5	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	3.2	-	-

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

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	15	1000	35	10	840
Future Vol, veh/h	20	15	1000	35	10	840
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	125	275	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	31	4	0	0	3
Mvmt Flow	21	16	1064	37	11	894

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1980	1064	0	0	1101	0
Stage 1	1064	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Critical Hdwy	6.4	6.51	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.579	-	-	2.2	-
Pot Cap-1 Maneuver	69	238	-	-	642	-
Stage 1	335	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	68	238	-	-	642	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	386	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	211	642	-
HCM Lane V/C Ratio	-	-	0.176	0.017	-
HCM Control Delay (s)	-	-	25.7	10.7	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

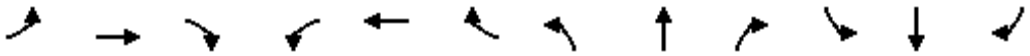
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	10	1025	85	15	845
Future Vol, veh/h	30	10	1025	85	15	845
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	50	300	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	14	5	0	0	3
Mvmt Flow	33	11	1114	92	16	918

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2064	1114	0	0	1206	0
Stage 1	1114	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Critical Hdwy	6.4	6.34	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	-	-	2.2	-
Pot Cap-1 Maneuver	61	240	-	-	586	-
Stage 1	317	-	-	-	-	-
Stage 2	379	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	59	240	-	-	586	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	317	-	-	-	-	-
Stage 2	369	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.8	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	194	586	-
HCM Lane V/C Ratio	-	-	0.224	0.028	-
HCM Control Delay (s)	-	-	28.8	11.3	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	45	70	265	25	75	50	1145	95	65	910	15
Future Volume (vph)	35	45	70	265	25	75	50	1145	95	65	910	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	0.95	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.94		1.00	0.99		1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1693	1406	1564	1495		1630	3164		1614	3220	
Flt Permitted		0.98	1.00	0.95	0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1693	1406	1564	1495		1630	3164		1614	3220	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	38	48	75	285	27	81	54	1231	102	70	978	16
RTOR Reduction (vph)	0	0	68	0	26	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	86	7	199	168	0	54	1328	0	70	993	0
Confl. Peds. (#/hr)	4		4	4		4	7		2	2		7
Heavy Vehicles (%)	0%	2%	4%	1%	0%	2%	2%	4%	0%	3%	3%	0%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	8	8		4	4		1	6		5	2	
Permitted Phases			8									
Actuated Green, G (s)		9.8	9.8	18.7	18.7		6.1	54.9		8.1	56.9	
Effective Green, g (s)		10.3	10.3	19.2	19.2		6.6	55.9		8.6	57.9	
Actuated g/C Ratio		0.09	0.09	0.17	0.17		0.06	0.51		0.08	0.53	
Clearance Time (s)		4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		2.5	2.5	2.5	2.5		2.5	5.1		2.5	5.1	
Lane Grp Cap (vph)		158	131	272	260		97	1607		126	1694	
v/s Ratio Prot		c0.05		c0.13	0.11		0.03	c0.42		c0.04	0.31	
v/s Ratio Perm			0.00									
v/c Ratio		0.54	0.05	0.73	0.65		0.56	0.83		0.56	0.59	
Uniform Delay, d1		47.6	45.4	43.0	42.3		50.3	22.9		48.9	17.8	
Progression Factor		1.00	1.00	1.00	1.00		1.09	1.17		1.00	1.00	
Incremental Delay, d2		3.0	0.1	9.2	4.8		4.7	4.3		4.2	1.5	
Delay (s)		50.6	45.5	52.1	47.1		59.4	31.0		53.1	19.3	
Level of Service		D	D	D	D		E	C		D	B	
Approach Delay (s)		48.2			49.7			32.2			21.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	15	20	25	10	45	10	1290	15	15	1215	20
Future Volume (veh/h)	65	15	20	25	10	45	10	1290	15	15	1215	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1709	1709
Adj Flow Rate, veh/h	68	16	21	26	11	47	11	1358	16	16	1279	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	3	3
Cap, veh/h	143	30	30	78	35	90	25	2535	30	31	2533	42
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	1.00	1.00	0.02	0.78	0.77
Sat Flow, veh/h	888	300	297	353	349	893	1667	3286	39	1667	3268	54
Grp Volume(v), veh/h	105	0	0	84	0	0	11	671	703	16	635	665
Grp Sat Flow(s),veh/h/ln	1484	0	0	1595	0	0	1667	1624	1701	1667	1624	1698
Q Serve(g_s), s	2.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.0	15.9	15.9
Cycle Q Clear(g_c), s	7.4	0.0	0.0	5.4	0.0	0.0	0.7	0.0	0.0	1.0	15.9	15.9
Prop In Lane	0.65		0.20	0.31		0.56	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	197	0	0	196	0	0	25	1253	1312	31	1259	1316
V/C Ratio(X)	0.53	0.00	0.00	0.43	0.00	0.00	0.44	0.54	0.54	0.52	0.50	0.51
Avail Cap(c_a), veh/h	391	0	0	396	0	0	91	1253	1312	91	1259	1316
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.59	0.59	0.59	0.78	0.78	0.78
Uniform Delay (d), s/veh	48.0	0.0	0.0	47.1	0.0	0.0	52.9	0.0	0.0	53.5	4.6	4.6
Incr Delay (d2), s/veh	1.7	0.0	0.0	1.1	0.0	0.0	5.3	1.0	0.9	7.5	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	2.3	0.0	0.0	0.3	0.3	0.3	0.5	4.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	0.0	0.0	48.2	0.0	0.0	58.2	1.0	0.9	61.0	5.7	5.7
LnGrp LOS	D	A	A	D	A	A	E	A	A	E	A	A
Approach Vol, veh/h		105			84			1385			1316	
Approach Delay, s/veh		49.6			48.2			1.4			6.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	89.3		15.1	6.0	88.9		15.1
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5
Max Green Setting (Gmax), s	5.5	65.0		25.5	5.5	65.0		25.5
Max Q Clear Time (g_c+I1), s	2.7	17.9		7.4	3.0	2.0		9.4
Green Ext Time (p_c), s	0.0	30.6		0.3	0.0	39.7		0.4

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	30	25	75	15	35	30	1255	20	20	1190	25
Future Volume (veh/h)	75	30	25	75	15	35	30	1255	20	20	1190	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1750	1750	1750	1750	1709	1709	1750	1695	1695
Adj Flow Rate, veh/h	83	33	28	83	17	39	33	1394	22	22	1322	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	0	0	0	0	3	3	0	4	4
Cap, veh/h	116	46	39	117	24	55	48	1908	30	37	1860	39
Arrive On Green	0.10	0.12	0.10	0.10	0.12	0.10	0.01	0.19	0.19	0.04	1.00	1.00
Sat Flow, veh/h	945	376	319	963	197	452	1667	3271	52	1667	3225	68
Grp Volume(v), veh/h	144	0	0	139	0	0	33	691	725	22	660	690
Grp Sat Flow(s),veh/h/ln	1640	0	0	1613	0	0	1667	1624	1699	1667	1611	1682
Q Serve(g_s), s	9.3	0.0	0.0	9.2	0.0	0.0	2.2	44.0	44.1	1.4	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0	9.2	0.0	0.0	2.2	44.0	44.1	1.4	0.0	0.0
Prop In Lane	0.58		0.19	0.60		0.28	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	202	0	0	196	0	0	48	947	991	37	929	970
V/C Ratio(X)	0.71	0.00	0.00	0.71	0.00	0.00	0.69	0.73	0.73	0.59	0.71	0.71
Avail Cap(c_a), veh/h	239	0	0	235	0	0	91	947	991	91	929	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.46	0.46	0.46	0.85	0.85	0.85
Uniform Delay (d), s/veh	47.1	0.0	0.0	47.3	0.0	0.0	54.0	36.3	36.3	52.0	0.0	0.0
Incr Delay (d2), s/veh	7.1	0.0	0.0	6.7	0.0	0.0	6.0	2.3	2.2	9.1	3.9	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.0	4.1	0.0	0.0	1.0	19.7	20.6	0.7	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	0.0	0.0	54.1	0.0	0.0	60.0	38.6	38.6	61.1	3.9	3.8
LnGrp LOS	D	A	A	D	A	A	E	D	D	E	A	A
Approach Vol, veh/h		144			139			1449			1372	
Approach Delay, s/veh		54.2			54.1			39.1			4.8	
Approach LOS		D			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	68.0		17.4	6.5	68.6		17.5
Change Period (Y+Rc), s	4.5	6.5		6.0	4.5	6.5		6.0
Max Green Setting (Gmax), s	5.5	53.5		14.0	5.5	53.5		14.0
Max Q Clear Time (g_c+I1), s	4.2	2.0		11.2	3.4	46.1		11.3
Green Ext Time (p_c), s	0.0	22.3		0.1	0.0	6.8		0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	170	25	220	140	250	60	825	205	330	870	70
Future Volume (veh/h)	170	170	25	220	140	250	60	825	205	330	870	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1736	1736	1736	1654	1723	1723	1750	1695	1614	1695	1709	1709
Adj Flow Rate, veh/h	181	181	27	234	149	266	64	878	0	351	926	74
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	7	2	2	0	4	10	4	3	3
Cap, veh/h	217	232	35	265	337	276	88	1086		308	1445	115
Arrive On Green	0.13	0.16	0.15	0.17	0.20	0.20	0.05	0.34	0.00	0.19	0.48	0.47
Sat Flow, veh/h	1654	1467	219	1576	1723	1411	1667	3221	1367	1615	3039	243
Grp Volume(v), veh/h	181	0	208	234	149	266	64	878	0	351	495	505
Grp Sat Flow(s),veh/h/ln	1654	0	1685	1576	1723	1411	1667	1611	1367	1615	1624	1658
Q Serve(g_s), s	11.7	0.0	13.0	16.0	8.4	20.6	4.2	27.3	0.0	21.0	25.3	25.3
Cycle Q Clear(g_c), s	11.7	0.0	13.0	16.0	8.4	20.6	4.2	27.3	0.0	21.0	25.3	25.3
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	217	0	267	265	337	276	88	1086		308	772	788
V/C Ratio(X)	0.84	0.00	0.78	0.88	0.44	0.96	0.73	0.81		1.14	0.64	0.64
Avail Cap(c_a), veh/h	286	0	322	272	337	276	167	1086		308	772	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.60	0.60	0.60
Uniform Delay (d), s/veh	46.6	0.0	44.5	44.7	39.0	43.9	51.3	33.2	0.0	44.5	21.8	21.8
Incr Delay (d2), s/veh	13.7	0.0	8.9	26.2	0.9	44.4	8.2	6.5	0.0	83.8	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	6.1	8.1	3.6	10.6	1.9	11.6	0.0	15.6	10.1	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	0.0	53.4	70.9	39.9	88.3	59.5	39.7	0.0	128.3	24.2	24.3
LnGrp LOS	E	A	D	E	D	F	E	D		F	C	C
Approach Vol, veh/h		389			649			942	A		1351	
Approach Delay, s/veh		56.6			70.9			41.0			51.3	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	56.3	18.4	25.5	25.0	41.1	22.5	21.4
Change Period (Y+Rc), s	4.5	5.0	4.5	4.5	4.5	5.0	4.5	4.5
Max Green Setting (Gmax), s	10.5	42.0	18.5	20.5	20.5	32.0	18.5	20.5
Max Q Clear Time (g_c+I1), s	6.2	27.3	13.7	22.6	23.0	29.3	18.0	15.0
Green Ext Time (p_c), s	0.0	9.3	0.2	0.0	0.0	2.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	52.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	20.8

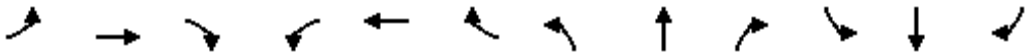
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	10	15	15	10	10	105	10	950	10	45	1015	45
Future Vol, veh/h	10	15	15	10	10	105	10	950	10	45	1015	45
Conflicting Peds, #/hr	0	0	17	17	0	0	22	0	11	11	0	22
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	14	0	2	0	4	0	4	2	2
Mvmt Flow	11	16	16	11	11	115	11	1044	11	49	1115	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1810	2348	621	1764	2367	539	1186	0	0	1066	0	0
Stage 1	1260	1260	-	1083	1083	-	-	-	-	-	-	-
Stage 2	550	1088	-	681	1284	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.78	6.5	6.94	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.78	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.64	4	3.32	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	50	37	435	47	36	487	596	-	-	638	-	-
Stage 1	183	244	-	212	296	-	-	-	-	-	-	-
Stage 2	492	294	-	379	238	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	20	27	419	19	26	482	584	-	-	631	-	-
Mov Cap-2 Maneuver	20	27	-	19	26	-	-	-	-	-	-	-
Stage 1	171	185	-	200	279	-	-	-	-	-	-	-
Stage 2	343	278	-	253	181	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 376.6	235.5	0.4	1.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	584	-	-	37	111	631	-	-
HCM Lane V/C Ratio	0.019	-	-	1.188	1.238	0.078	-	-
HCM Control Delay (s)	11.3	0.3	-	$ 376.6	235.5	11.2	1.2	-
HCM Lane LOS	B	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.5	9	0.3	-	-

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	20	30	60	35	40	20	845	10	40	965	20
Future Volume (veh/h)	35	20	30	60	35	40	20	845	10	40	965	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.98		0.98	1.00		0.96	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1750	1750	1750	1682	1682	1682	1695	1695	1695	1723	1723	1723
Adj Flow Rate, veh/h	36	21	31	62	36	41	21	871	10	41	995	21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0	5	5	5	4	4	4	2	2	2
Cap, veh/h	108	64	69	122	63	58	25	1103	13	53	1358	30
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.33	0.34	0.33	0.55	0.56	0.55
Sat Flow, veh/h	472	488	522	570	480	439	75	3263	39	127	3223	71
Grp Volume(v), veh/h	88	0	0	139	0	0	473	0	429	555	0	502
Grp Sat Flow(s),veh/h/ln	1482	0	0	1490	0	0	1692	0	1686	1716	0	1705
Q Serve(g_s), s	0.0	0.0	0.0	3.8	0.0	0.0	28.3	0.0	24.9	27.5	0.0	23.4
Cycle Q Clear(g_c), s	5.9	0.0	0.0	9.6	0.0	0.0	28.3	0.0	24.9	27.5	0.0	23.4
Prop In Lane	0.41		0.35	0.45		0.29	0.04		0.02	0.07		0.04
Lane Grp Cap(c), veh/h	234	0	0	237	0	0	572	0	570	723	0	718
V/C Ratio(X)	0.38	0.00	0.00	0.59	0.00	0.00	0.83	0.00	0.75	0.77	0.00	0.70
Avail Cap(c_a), veh/h	307	0	0	307	0	0	615	0	613	723	0	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.1	0.0	0.0	45.7	0.0	0.0	33.5	0.0	32.3	20.1	0.0	19.2
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.7	0.0	0.0	10.6	0.0	6.7	7.7	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	3.8	0.0	0.0	13.2	0.0	11.2	11.2	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	0.0	0.0	47.4	0.0	0.0	44.1	0.0	39.0	27.7	0.0	24.7
LnGrp LOS	D	A	A	D	A	A	D	A	D	C	A	C
Approach Vol, veh/h		88			139			902			1057	
Approach Delay, s/veh		44.9			47.4			41.7			26.3	
Approach LOS		D			D			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.3		18.5		41.2		18.5				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		37.0		19.5		39.0		19.5				
Max Q Clear Time (g_c+I1), s		29.5		11.6		30.3		7.9				
Green Ext Time (p_c), s		5.6		0.3		5.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			34.7									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	50	10	0	25	25	1015	10	5	1080	15
Future Vol, veh/h	10	0	50	10	0	25	25	1015	10	5	1080	15
Conflicting Peds, #/hr	10	0	0	0	0	10	13	0	8	8	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	4	3	0	0	2	0
Mvmt Flow	11	0	56	11	0	28	28	1128	11	6	1200	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1864	2437	622	1810	2440	588	1230	0	0	1147	0	0
Stage 1	1234	1234	-	1198	1198	-	-	-	-	-	-	-
Stage 2	630	1203	-	612	1242	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.24	-	-	2.2	-	-
Pot Cap-1 Maneuver	46	32	434	50	32	457	551	-	-	616	-	-
Stage 1	190	251	-	200	261	-	-	-	-	-	-	-
Stage 2	441	260	-	452	249	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	40	29	429	41	29	449	544	-	-	611	-	-
Mov Cap-2 Maneuver	40	29	-	41	29	-	-	-	-	-	-	-
Stage 1	178	240	-	188	246	-	-	-	-	-	-	-
Stage 2	389	245	-	382	239	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.2	50.4	0.3	0.2
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	544	-	-	164	117	611	-	-
HCM Lane V/C Ratio	0.051	-	-	0.407	0.332	0.009	-	-
HCM Control Delay (s)	12	-	-	41.2	50.4	10.9	0.2	-
HCM Lane LOS	B	-	-	E	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.8	1.3	0	-	-

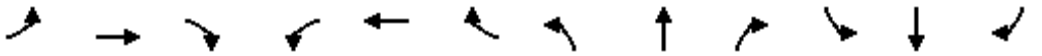
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	655	45	110	550	5	15	2	150	5	5	35
Future Vol, veh/h	10	655	45	110	550	5	15	2	150	5	5	35
Conflicting Peds, #/hr	1	0	1	1	0	1	1	0	1	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	5	4	4	0	6	0	3	0	0	3
Mvmt Flow	11	689	47	116	579	5	16	2	158	5	5	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	585	0	0	737	0	0	1572	1553	715	1631	1574	584
Stage 1	-	-	-	-	-	-	736	736	-	815	815	-
Stage 2	-	-	-	-	-	-	836	817	-	816	759	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.16	6.5	6.23	7.1	6.5	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.554	4	3.327	3.5	4	3.327
Pot Cap-1 Maneuver	1000	-	-	860	-	-	87	114	429	82	111	510
Stage 1	-	-	-	-	-	-	404	428	-	374	394	-
Stage 2	-	-	-	-	-	-	356	393	-	374	418	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	999	-	-	859	-	-	69	97	428	45	95	509
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	97	-	45	95	-
Stage 1	-	-	-	-	-	-	399	423	-	370	340	-
Stage 2	-	-	-	-	-	-	281	340	-	232	413	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.6	36.3	29.4
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	999	-	-	859	-	-	194
HCM Lane V/C Ratio	0.619	0.011	-	-	0.135	-	-	0.244
HCM Control Delay (s)	36.3	8.6	-	-	9.8	-	-	29.4
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.8	0	-	-	0.5	-	-	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	725	115	60	500	135	90	60	65	135	55	35
Future Volume (veh/h)	45	725	115	60	500	135	90	60	65	135	55	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1614	1723	1723	1709	1709	1654	1723	1723	1695	1750	1750	1750
Adj Flow Rate, veh/h	49	788	125	65	543	147	98	65	71	147	60	38
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	3	3	7	2	2	4	0	0	0
Cap, veh/h	78	1317	209	94	808	663	304	180	439	255	98	50
Arrive On Green	0.05	0.47	0.45	0.06	0.47	0.47	0.30	0.31	0.31	0.30	0.31	0.30
Sat Flow, veh/h	1537	2830	449	1628	1709	1402	724	588	1430	565	321	163
Grp Volume(v), veh/h	49	456	457	65	543	147	163	0	71	245	0	0
Grp Sat Flow(s),veh/h/ln	1537	1637	1642	1628	1709	1402	1311	0	1430	1048	0	0
Q Serve(g_s), s	2.2	14.6	14.7	2.8	17.4	4.4	0.0	0.0	2.6	10.1	0.0	0.0
Cycle Q Clear(g_c), s	2.2	14.6	14.7	2.8	17.4	4.4	6.9	0.0	2.6	16.9	0.0	0.0
Prop In Lane	1.00		0.27	1.00		1.00	0.60		1.00	0.60		0.16
Lane Grp Cap(c), veh/h	78	762	764	94	808	663	475	0	439	396	0	0
V/C Ratio(X)	0.63	0.60	0.60	0.69	0.67	0.22	0.34	0.00	0.16	0.62	0.00	0.00
Avail Cap(c_a), veh/h	130	1041	1045	138	1087	892	866	0	829	776	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	14.0	14.1	32.7	14.4	11.0	19.3	0.0	17.9	24.8	0.0	0.0
Incr Delay (d2), s/veh	6.0	2.9	2.9	6.4	3.7	0.6	0.3	0.0	0.1	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.4	5.5	1.2	6.8	1.3	2.1	0.0	0.8	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	16.9	17.0	39.1	18.1	11.6	19.7	0.0	18.0	26.4	0.0	0.0
LnGrp LOS	D	B	B	D	B	B	B	A	B	C	A	A
Approach Vol, veh/h		962			755			234			245	
Approach Delay, s/veh		18.1			18.7			19.2			26.4	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	36.9		25.7	7.6	37.4		25.7				
Change Period (Y+Rc), s	4.5	5.0		4.5	4.5	5.0		4.5				
Max Green Setting (Gmax), s	5.5	44.0		40.5	5.5	44.0		40.5				
Max Q Clear Time (g_c+I1), s	4.8	16.7		18.9	4.2	19.4		8.9				
Green Ext Time (p_c), s	0.0	15.3		1.6	0.0	10.6		1.0				

Intersection Summary		
HCM 6th Ctrl Delay		19.3
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	0	0	35	0	35	0	85	70	15	75	0
Future Vol, veh/h	0	0	0	35	0	35	0	85	70	15	75	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	7	0	0	0	0	0	0	2	0
Mvmt Flow	0	0	0	43	0	43	0	105	86	19	93	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	301	323	93	280	280	149	93	0	0	192	0	0
Stage 1	131	131	-	149	149	-	-	-	-	-	-	-
Stage 2	170	192	-	131	131	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	655	598	970	662	632	903	1514	-	-	1394	-	-
Stage 1	877	792	-	842	778	-	-	-	-	-	-	-
Stage 2	837	745	-	861	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	617	589	970	654	623	902	1514	-	-	1393	-	-
Mov Cap-2 Maneuver	617	589	-	654	623	-	-	-	-	-	-	-
Stage 1	877	781	-	841	777	-	-	-	-	-	-	-
Stage 2	797	744	-	849	781	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.4	0	1.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1514	-	-	-	758	1393	-	-
HCM Lane V/C Ratio	-	-	-	-	0.114	0.013	-	-
HCM Control Delay (s)	0	-	-	0	10.4	7.6	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	2	25	2	10	20	5	15	70	45	10	45	5
Future Vol, veh/h	2	25	2	10	20	5	15	70	45	10	45	5
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	31	3	13	25	6	19	88	56	13	56	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	31	0	0	34	0	0	125	96	35	167	94	29
Stage 1	-	-	-	-	-	-	39	39	-	54	54	-
Stage 2	-	-	-	-	-	-	86	57	-	113	40	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1595	-	-	1591	-	-	854	798	1044	802	800	1052
Stage 1	-	-	-	-	-	-	981	866	-	963	854	-
Stage 2	-	-	-	-	-	-	927	851	-	897	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1595	-	-	1591	-	-	796	790	1042	688	792	1051
Mov Cap-2 Maneuver	-	-	-	-	-	-	796	790	-	688	792	-
Stage 1	-	-	-	-	-	-	979	864	-	961	847	-
Stage 2	-	-	-	-	-	-	853	844	-	760	864	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	2.1	10.1	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	863	1595	-	-	1591	-	-	788
HCM Lane V/C Ratio	0.188	0.002	-	-	0.008	-	-	0.095
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	10
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	45	115	20	35	0	105	0	30	0	1	0
Future Vol, veh/h	1	45	115	20	35	0	105	0	30	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	0	0	0	0	1	0	0	0	0	0
Mvmt Flow	1	51	129	22	39	0	118	0	34	0	1	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.9	8	9	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	1%	36%	0%
Vol Thru, %	0%	0%	28%	64%	100%
Vol Right, %	0%	100%	71%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	30	161	55	1
LT Vol	105	0	1	20	0
Through Vol	0	0	45	35	1
RT Vol	0	30	115	0	0
Lane Flow Rate	118	34	181	62	1
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.182	0.041	0.198	0.078	0.001
Departure Headway (Hd)	5.553	4.33	3.949	4.558	4.714
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	650	832	912	788	759
Service Time	3.253	2.03	1.963	2.576	2.741
HCM Lane V/C Ratio	0.182	0.041	0.198	0.079	0.001
HCM Control Delay	9.5	7.2	7.9	8	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0.1	0.7	0.3	0

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	45	10	2	60	20	15	180	15	15	80	60
Future Vol, veh/h	10	45	10	2	60	20	15	180	15	15	80	60
Conflicting Peds, #/hr	4	0	15	15	0	4	2	0	11	11	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	0	0	6	2	23	0	6	0
Mvmt Flow	11	51	11	2	68	23	17	205	17	17	91	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	77	0	0	259	193	83	289	187	86
Stage 1	-	-	-	-	-	-	94	94	-	88	88	-
Stage 2	-	-	-	-	-	-	165	99	-	201	99	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.16	6.52	6.43	7.1	6.56	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.52	-	6.1	5.56	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.554	4.018	3.507	3.5	4.054	3.3
Pot Cap-1 Maneuver	1512	-	-	1535	-	-	686	702	921	667	700	978
Stage 1	-	-	-	-	-	-	903	817	-	925	814	-
Stage 2	-	-	-	-	-	-	828	813	-	805	805	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1513	-	-	560	683	898	492	681	972
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	683	-	492	681	-
Stage 1	-	-	-	-	-	-	883	799	-	914	810	-
Stage 2	-	-	-	-	-	-	682	809	-	577	787	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0.2	13.1	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	684	1506	-	-	1513	-	-	739
HCM Lane V/C Ratio	0.349	0.008	-	-	0.002	-	-	0.238
HCM Control Delay (s)	13.1	7.4	0	-	7.4	0	-	11.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	20	30	10	1	55	35	15	70	10	30	40	15
Future Vol, veh/h	20	30	10	1	55	35	15	70	10	30	40	15
Conflicting Peds, #/hr	23	0	27	27	0	23	8	0	34	34	0	8
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	3	0	4	0	6	0	7
Mvmt Flow	24	36	12	1	66	42	18	84	12	36	48	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	131	0	0	75	0	0	247	250	103	284	235	118
Stage 1	-	-	-	-	-	-	117	117	-	112	112	-
Stage 2	-	-	-	-	-	-	130	133	-	172	123	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.54	6.2	7.16	6.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.54	-	6.16	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.036	3.3	3.554	4	3.363
Pot Cap-1 Maneuver	1467	-	-	1537	-	-	711	649	957	660	669	921
Stage 1	-	-	-	-	-	-	892	795	-	883	807	-
Stage 2	-	-	-	-	-	-	878	782	-	821	798	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1497	-	-	625	607	902	543	626	894
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	607	-	543	626	-
Stage 1	-	-	-	-	-	-	855	761	-	849	788	-
Stage 2	-	-	-	-	-	-	801	764	-	685	764	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.1	12	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	632	1435	-	-	1497	-	-	625
HCM Lane V/C Ratio	0.181	0.017	-	-	0.001	-	-	0.164
HCM Control Delay (s)	12	7.6	0	-	7.4	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	85	95	95	120	40
Future Vol, veh/h	50	85	95	95	120	40
Conflicting Peds, #/hr	2	9	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	100	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	0	0	3	3	8
Mvmt Flow	56	94	106	106	133	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	453	142	133	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	561	911	1464	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	521	903	1464	-	-	-
Mov Cap-2 Maneuver	521	-	-	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	3.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1464	-	710	-	-
HCM Lane V/C Ratio	0.072	-	0.211	-	-
HCM Control Delay (s)	7.7	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Intersection ID and Name	use dropdown NB PhasingType	use dropdown SB PhasingType	use dropdown EB PhasingType	use dropdown WB PhasingType	Cycle Length	Lost Time	BEGIN CALCULATIONS 1	3 EBL	4 EBT	5 EBR	6 WBL	7 WBT	8 WBR	9 NBL	10 NBT	11 NBR	12 SBL	13 SBT	14 SBR		Critical Flow Calculator WBL/EBT	EBL/WBT	NBL/SBT	SBL/NBT	V/S E/W	V/S N/S	Intersection V/C	HCM 6th Ctrl Delay	HCM 6th LOS	Synchro ID
2: US 101 & Lighthouse Dr/52nd St	Protected	Protected	Permitted	Permitted	125	12	Adj Flow Rate, veh/h	32	5	79	89	0	16	47	963	0	32	758	0	Protected	0.23	0.01	0.48	0.59						
							Sat Flow, veh/h	0	22	1458	0	0	1470	1615	1682	1483	1667	1695	1483	Permitted or Split	0.23	0.01	0.45	0.57						
							V/S	0.00	0.23	0.05	0.00	0.00	0.01	0.03	0.57	0.00	0.02	0.45	0.00	selected phasing	0.23	0.01	0.48	0.59	0.23	0.59	**0.91**	**37.3**	**D**	2
7: US 101 & 11th St	Protected	Protected	Permitted	Permitted	120	12	Adj Flow Rate, veh/h	68	16	21	26	11	47	11	1358	16	16	1279	21	Protected	0.14	0.13	0.40	0.42						
							Sat Flow, veh/h	888	300	297	353	349	893	1667	3286	39	1667	3268	54	Permitted or Split	0.08	0.07	0.39	0.41						
							V/S	0.08	0.05	0.07	0.07	0.03	0.05	0.01	0.41	0.41	0.01	0.39	0.39	selected phasing	0.08	0.07	0.40	0.42	0.08	0.42	**0.55**	**6.8**	**A**	7
8: US 101 & 6th St	Protected	Protected	Split	Split	120	16	Adj Flow Rate, veh/h	83	33	28	83	17	39	33	1394	22	22	1322	28	Protected	0.17	0.17	0.43	0.44						
							Sat Flow, veh/h	945	376	319	963	197	452	1667	3271	52	1667	3225	68	Permitted or Split	0.09	0.09	0.41	0.43						
							V/S	0.09	0.09	0.09	0.09	0.09	0.09	0.02	0.43	0.42	0.01	0.41	0.41	selected phasing	0.09	0.09	0.43	0.44	0.17	0.44	**0.71**	**25.3**	**C**	8
9: US 101 & Olive St/US 20	Protected	Protected	Protected	Protected	120	16	Adj Flow Rate, veh/h	181	181	27	234	149	266	64	878	0	351	926	74	Protected	0.27	0.30	0.34	0.49						
							Sat Flow, veh/h	1654	1467	219	1576	1723	1411	1667	3221	1367	1615	3039	243	Permitted or Split	0.12	0.19	0.30	0.27						
							V/S	0.11	0.12	0.12	0.15	0.09	0.19	0.04	0.27	0.00	0.22	0.30	0.30	selected phasing	0.27	0.30	0.34	0.49	0.30	0.49	**0.91**	**52.8**	**D**	9
11: US 101 & Hurbert St	Split	Split	Permitted	Permitted	120	12	Adj Flow Rate, veh/h	36	21	31	62	36	41	21	871	10	41	995	21	Protected	0.17	0.17	0.59	0.59						
							Sat Flow, veh/h	472	488	522	570	480	439	75	3263	39	127	3223	71	Permitted or Split	0.08	0.11	0.32	0.28						
							V/S	0.08	0.04	0.06	0.11	0.08	0.09	0.28	0.27	0.26	0.32	0.31	0.30	selected phasing	0.08	0.11	0.32	0.28	0.11	0.60	**0.79**	**34.7**	**C**	11
14: Moore Dr/Harney St & US 20	Permitted	Permitted	Protected	Protected	104	12	Adj Flow Rate, veh/h	49	788	125	65	543	147	98	65	71	147	60	38	Protected	0.32	0.35	0.37	0.37						
							Sat Flow, veh/h	1537	2830	449	1628	1709	1402	724	588	1430	565	321	163	Permitted or Split	0.28	0.32	0.26	0.14						
							V/S	0.03	0.28	0.28	0.04	0.32	0.10	0.14	0.11	0.05	0.26	0.19	0.23	selected phasing	0.32	0.35	0.26	0.14	0.35	0.26	**0.69**	**19.3**	**B**	14
							Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
							Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
							V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
							Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
							Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
							V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	
							Adj Flow Rate, veh/h													Protected	0.00	0.00	0.00	0.00						
							Sat Flow, veh/h													Permitted or Split	0.00	0.00	0.00	0.00						
							V/S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	selected phasing	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0**	**A**	

Sheet Description:
This sheet reads in the adjusted flow rate and the saturation flow rate from Synchro and divides them to calculated the V/S for each movement.
The critical flow calculator calculates the critical v/s for each conflicting phase pair.
for protected phases, this v/s is the left turn v/s plus the max of the opposing movement v/s
for the permitted and split phases, this v/s is the max of the three movement v/s
The next step selects the proper v/s based on phasing provided
V/S by east-west and north-south is selected by taking the max of the phase pairs or by adding them (if split phasing)
If overlap calculator was selected in input section and overlap phases were indicated, then overlap v/s for intersection is calculated. See details below
If the right turn v/s is greater than the through v/s for the right turn overlap approach, then the right turn is assumed the critical movement and intersection v/c calc will use the v/s overlap instead of approach v/s
The final step in v/c calculation uses the approach v/s ratios, cycle length, and lost time to calculate overall intersection v/c
Delay and LOS are read directly from the HCM 6 report

Overlap Calculator Details
Overlap calculator reads in whether an overlap phase is in use and what type of phasing is associated with the right turn approach and the overlapped approach
V/S is read in for right turn movement, and remaining approaches from previous calculations
-right turn overlap v/s is just the v/s for the right turn movement (i.e. NBR)
-right turn approach v/s is the critical v/s associated with the right turn approaches (i.e. NB/SB) and is calculated differently for protected vs split
-overlap approach v/s is the critical v/s associated with the overlap approaches (i.e. EB/WB) and is calculated differently for protected vs split phasing
The v/s overlap column sums the 3 v/s values for the overlap phasing to get the total v/s overlap to be used in the v/c calculation
If there are overlaps for multiple approaches, the v/s overlap will use the greatest of the approaches for most conservative approach
Use Overlap Calculator' must be enabled and 'Use OV V/S' must be showing in V/S Overlap column in order for overlap v/s to be used in final v/c calculation

Intersection ID and Name	Control Type		Major Approach	Row Reference		1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
	use dropdown	BEGIN	Sat. Flow Default	1700																				
		CALCULATIONS				EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
1: US 101 & 73rd Ct/73rd St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		1: US 101 & 73rd Ct/73rd St V/C	**0.46**	**0.35**	**0.02**	**0.92**	**1**
				8	Lane Configurations		0	1	0	0	1	0	1	1	1	1	1	0	1: US 101 & 73rd Ct/73rd St Delay	**8.70**	**11.50**	**17.10**	**130.20**	
				19	Mvmt Flow		1	0	5	95	0	16	2	774	53	21	600	2	1: US 101 & 73rd Ct/73rd St LOS	**A**	**B**	**C**	**F**	
				10	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C			0.00	0.00		0.01	0.01	0.00	0.46	0.03	0.04	0.35	0.35						
					Minor (or AWSC) V/C	0.02				0.92														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.00	-	-	0.02	0.92	0.04	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	8.7	-	-	17.1	130.2	11.5	-	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	A	-	-	C	F	B	-	-	0	0	0							
3: US 101 & Oceanview Dr	TWSC		NB/SB	7	Movement	EBL		EBR				NBL	NBT			SBT	SBR		3: US 101 & Oceanview Dr V/C	**0.64**	**0.52**	**0.57**	**0.00**	**3**
				8	Lane Configurations		1		0				1	1			1	1	1	3: US 101 & Oceanview Dr Delay	**10.30**	**0.00**	**42.50**	**0.00**	
				19	Mvmt Flow		90	0	32	0	0	0	21	1080	0	0	888	48	3: US 101 & Oceanview Dr LOS	**B**	**A**	**E**	**A**	
				67	Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C								0.03	0.64			0.52	0.03						
					Minor (or AWSC) V/C	0.57																		
				45	Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.03	-	0.57	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	10.3	-	42.5	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	E	-	-	0	0	0	0	0	0							
4: US 101 & 36th Street	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			4: US 101 & 36th Street V/C	**0.63**	**0.53**	**0.00**	**0.18**	**4**
				8	Lane Configurations					1		0		1	1	1	1		4: US 101 & 36th Street Delay	**0.00**	**10.70**	**0.00**	**25.70**	
				19	Mvmt Flow		0	0	0	21	0	16	0	1064	37	11	894	0	4: US 101 & 36th Street LOS	**A**	**B**	**A**	**D**	
				127	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.63	0.02	0.02	0.53							
					Minor (or AWSC) V/C					0.18														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.18	0.02	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	25.7	10.7	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0							
5: US 101 & 31st St	TWSC		NB/SB	7	Movement				WBL		WBR		NBT	NBR	SBL	SBT			5: US 101 & 31st St V/C	**0.66**	**0.54**	**0.00**	**0.22**	**5**
				8	Lane Configurations					1		0		1	1	1	1		5: US 101 & 31st St Delay	**0.00**	**11.30**	**0.00**	**28.80**	
				19	Mvmt Flow		0	0	0	33	0	11	0	1114	92	16	918	0	5: US 101 & 31st St LOS	**A**	**B**	**A**	**D**	
				184	Major V/C Lanes	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R							
					Major V/C									0.66	0.05	0.03	0.54							
					Minor (or AWSC) V/C					0.22														
				45	Minor Lane/Major Mvmt	0	NBT	NBR	WBLn1	SBL	SBT	0	0	0	0	0	0							
				47	HCM Lane V/C Ratio	0.00	-	-	0.22	0.03	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	-	-	28.8	11.3	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49	HCM Lane LOS	0	-	-	D	B	-	0	0	0	0	0	0							
10: US 101 & Angle St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		10: US 101 & Angle St V/C	**0.33**	**0.41**	**1.19**	**1.24**	**10**
				8	Lane Configurations		0	1	0	0	1	0	0	2	0	0	2	0	10: US 101 & Angle St Delay	**11.30**	**11.20**	**376.60**	**235.50**	
				19	Mvmt Flow		11	16	16	11	11	115	11	1044	11	49	1115	49	10: US 101 & Angle St LOS	**B**	**B**	**F**	**F**	
				241	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.02	0.02		0.07	0.07	0.33	0.31	0.31	0.41	0.34	0.34						
					Minor (or AWSC) V/C	1.19				1.24														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.02	-	-	1.19	1.24	0.08	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	11.3	0.3	-	376.6	235.5	11.2	1.2	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	A	-	F	F	B	A	-	0	0	0							
12: US 101 & Bayley St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		12: US 101 & Bayley St V/C	**0.34**	**0.36**	**0.41**	**0.33**	**12**
				8	Lane Configurations		0	1	0	0	1	0	1	2	0	0	2	0	12: US 101 & Bayley St Delay	**12.00**	**10.90**	**41.20**	**50.40**	
				19	Mvmt Flow		11	0	56	11	0	28	28	1128	11	6	1200	17	12: US 101 & Bayley St LOS	**B**	**B**	**E**	**F**	
				301	Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
					Major V/C			0.03	0.03		0.02	0.02	0.05	0.34	0.34	0.36	0.36	0.36						
					Minor (or AWSC) V/C	0.41				0.33														
				45	Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.05	-	-	0.41	0.33	0.01	-	-	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	12.0	-	-	41.2	50.4	10.9	0.2	-	0.0	0.0	0.0							
				49	HCM Lane LOS	0	B	-	-	E	F	B	A	-	0	0	0							
13: Benton St & US 20	TWSC		EB/WB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		13: Benton St & US 20 V/C	**0.62**	**0.24**	**0.43**	**0.34**	**13**
				8	Lane Configurations		1	1	0	1	1	0	0	1	0	0	1	0	13: Benton St & US 20 Delay	**36.30**	**29.40**	**8.60**	**9.80**	
				19	Mvmt Flow		11	689	47	116	579	5	16	2	158	5	5	37	13: Benton St & US 20 LOS	**E**	**D**	**A**	**A**	
				358	Major V/C Lanes	L	T or TR	TR or R	L	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
					Major V/C		0.01	0.43	0.43	0.14	0.34	0.34		0.09	0.09		0.02	0.02						
					Minor (or AWSC) V/C								0.62			0.24								
				45	Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47	HCM Lane V/C Ratio	0.00	0.62	0.01	-	-	0.14	-	-	0.24	0.00	0.00	0.00							
				48	HCM Control Delay (s)	0.0	36.3	8.6	-	-	9.8	-	-	29.4	0.0	0.0	0.0							
				49	HCM Lane LOS	0	E	A	-	-	A	-	-	D	0	0	0							
15: Oceanview Dr & Pacific Pl/25th St	TWSC		NB/SB	7	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		15: Oceanview Dr & Pacific Pl/25th St V/C	**0.11**	**0.07**	**0.00**	**0.11**	**15**
				8	Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	15: Oceanview Dr & Pacific Pl/25th St Delay	**0.00**	**7.60**	**0.00**	**10.40**	

Intersection ID and Name	use dropdown Control Type	BEGIN CALCULATIONS	Sat. Flow Default / Major Approach	1700 / Row Reference	1	3	4	5	6	7	8	9	10	11	12	13	14	Outputs	NB	SB	EB	WB	Synchro ID
				19 Mvmt Flow		0	0	0	43	0	43	0	105	86	19	93	0	15: Oceanview Dr & Pacific Pl/25th St LOS	A	A	A	B	
				415 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.00	0.00		0.03	0.03		0.11	0.11	0.07	0.05	0.05							
				Minor (or AWSC) V/C	-			0.11																
				45 Minor Lane/Major Mvmt	0	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR	0	0	0							
				47 HCM Lane V/C Ratio	0.00	-	-	-	-	0.11	0.01	-	-	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	0.0	-	-	0.0	10.4	7.6	0.0	-	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	-	A	B	A	A	-	0	0	0							
16: Nye St & 11th St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		16: Nye St & 11th St V/C	**0.19**	**0.10**	**0.02**	**0.03**	**16**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	16: Nye St & 11th St Delay	**10.10**	**10.00**	**7.30**	**7.30**	
				19 Mvmt Flow		3	31	3	13	25	6	19	88	56	13	56	6	16: Nye St & 11th St LOS	B	B	A	A	
				472 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.02	0.02	0.02	0.03	0.02	0.02		0.08	0.08		0.04	0.04						
				Minor (or AWSC) V/C								0.19			0.10								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.19	0.00	-	-	0.01	-	-	0.10	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	10.1	7.3	0.0	-	7.3	0.0	-	10.0	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
17: Harney St & 7th St	AWSC		N/A	9 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		17: Harney St & 7th St V/C	**0.18**	**0.00**	**0.20**	**0.08**	**17**
				10 Lane Configurations		0	1	0	0	1	0	0	1	1	0	1	0	17: Harney St & 7th St Delay	**9.50**	**7.70**	**7.90**	**8.00**	
				15 Mvmt Flow		1	51	129	22	39	0	118	0	34	0	1	0	17: Harney St & 7th St LOS	A	A	A	A	
				531 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LT	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.11	0.11		0.02	0.02		0.00	0.02		0.00	0.00							
				Minor (or AWSC) V/C	0.20			0.08			0.18	0.04		0.00									
				29 Lane	0	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	0	0	0	0	0	0							
				45 HCM Lane V/C Ratio	0.00	0.18	0.04	0.20	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00							
				46 HCM Control Delay	0.0	9.5	7.2	7.9	8.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0							
				47 HCM Lane LOS	0	A	A	A	A	A	0	0	0	0	0	0							
18: 9th St & Hurbert St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		18: 9th St & Hurbert St V/C	**0.35**	**0.24**	**0.04**	**0.06**	**18**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	18: 9th St & Hurbert St Delay	**13.10**	**11.40**	**7.40**	**7.40**	
				19 Mvmt Flow		11	51	11	2	68	23	17	205	17	17	91	68	18: 9th St & Hurbert St LOS	B	B	A	A	
				584 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.04	0.04	0.06	0.05	0.05		0.13	0.13		0.09	0.09							
				Minor (or AWSC) V/C								0.35			0.24								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.35	0.01	-	-	0.00	-	-	0.24	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	13.1	7.4	0.0	-	7.4	0.0	-	11.4	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
19: 9th St & Abbey St	TWSC		EB/WB	7 Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		19: 9th St & Abbey St V/C	**0.18**	**0.16**	**0.05**	**0.06**	**19**
				8 Lane Configurations		0	1	0	0	1	0	0	1	0	0	1	0	19: 9th St & Abbey St Delay	**12.00**	**11.90**	**7.60**	**7.40**	
				19 Mvmt Flow		24	36	12	1	66	42	18	84	12	36	48	18	19: 9th St & Abbey St LOS	B	B	A	A	
				641 Major V/C Lanes	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R	LTR	T or TR	TR or R							
				Major V/C		0.05	0.03	0.03	0.06	0.06	0.06		0.06	0.06		0.04	0.04						
				Minor (or AWSC) V/C								0.18			0.16								
				45 Minor Lane/Major Mvmt	0	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.18	0.02	-	-	0.00	-	-	0.16	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	12.0	7.6	0.0	-	7.4	0.0	-	11.9	0.0	0.0	0.0							
				49 HCM Lane LOS	0	B	A	A	-	A	A	-	B	0	0	0							
20: Bay Blvd & Moore Dr	TWSC		NB/SB	7 Movement	EBL		EBR				NBL	NBT			SBT	SBR		20: Bay Blvd & Moore Dr V/C	**0.07**	**0.08**	**0.21**	**0.00**	**20**
				8 Lane Configurations		1		0				1	1			1	1	20: Bay Blvd & Moore Dr Delay	**7.70**	**0.00**	**11.40**	**0.00**	
				19 Mvmt Flow		56	0	94	0	0	0	106	106	0	0	133	44	20: Bay Blvd & Moore Dr LOS	A	A	B	A	
				698 Major V/C Lanes	LTR	T or TR	TR or R	LT	T or TR	TR or R	L	T or TR	TR or R	LT	T or TR	TR or R							
				Major V/C							0.07	0.06			0.08	0.03							
				Minor (or AWSC) V/C	0.21																		
				45 Minor Lane/Major Mvmt	0	NBL	NBT	EBLn1	SBT	SBR	0	0	0	0	0	0							
				47 HCM Lane V/C Ratio	0.00	0.07	-	0.21	-	-	0.00	0.00	0.00	0.00	0.00	0.00							
				48 HCM Control Delay (s)	0.0	7.7	-	11.4	-	-	0.0	0.0	0.0	0.0	0.0	0.0							
				49 HCM Lane LOS	0	A	-	B	-	-	0	0	0	0	0	0							

Sheet Description:
This sheet reads in lane configurations by representing exclusive through or shared lanes with the number of lanes in the through movement, and any exclusive number of turn lanes in the respective turn movement. So a single LTR lane would have 1 under through and 0s under left and right.
This sheet also reads in movement flow and select v/c, LOS, and delay results. The calculations are shown in the box.
Calculations are split out by major and minor approach v/c; Major approach is determined from free approaches in report
The major v/c lanes row indicates the left turn lane configuration for each approach. This is important to determine how to add in the delay from the left turns to the overall calculated v/c for the major approach
In the major v/c row, left turn v/c is read from the report, while remaining movement v/c ratios are calculated based on the methodology given in the ODOT APM and the provided default saturation flow rate of 1700 (can be changed by user)
In the minor v/c row, v/c ratios by lane are calculated based on the ODOT APM method using volume and assumed saturation flow rate
The v/c ratio by approach is the max of the v/c by lane as calculated in the major or minor v/c rows
LOS and Delay by approach are read in from the report
For AWSC, all approaches are treated as minor approaches and the calculations remain the same
The summary table selects the worst approach for both directions and concatenates the results with a / for the final summary table for TWSC. For AWSC, the overall worst approach is reported.