Exhibit C
(Ord.No. 2906)

City of Sumner Transportation Plan

January 6, 2025

CITY OF SUMNER WASHINGTON

Consultant Team
Transpo Group

Table of Contents

Appendix

Appendix A LOS Definition

Appendix B LOS Summary and Worksheets

Appendix C Transportation Impact Fee Detail

Exhibits

Executive Summary

The Transportation Plan provides the link between the Land Use Element and the transportation facilities and services needed to support growth during the next twenty years. This is accomplished by identifying capacity, operational, and safety improvements along City roadways and by addressing multimodal needs such as transit, pedestrian, and bicycle facilities.

The City has identified a range of goals and policies to implement the Transportation Plan efficiently and effectively. The goals and policies are outlined elsewhere, in the Transportation Element of the Comprehensive Plan. The Transportation Element strives to emphasize the importance of pedestrians and bicycles and prioritizes the creation of a network of multimodal transportation.

Inventory of Existing Transportation System

An inventory of the existing Sumner transportation system was conducted in Spring and Summer 2023. The inventory covers the street system, traffic volumes, traffic operations, traffic safety, transit and rail service, and pedestrian and bicycle facilities. The inventory is used in updating the City's travel demand model to determine the future traffic conditions for this Transportation Plan.

Street System. The street system inventory includes discussion of Sumner roadway functional classifications, which is the hierarchy of roadways in the city. The classifications act as a guide for future development of the street system. Sumner also has adopted a formal truck route plan to manage truck traffic within its city limits.

Daily and weekday PM peak hour traffic volumes were also reviewed to understand the amount of vehicle traffic carried on the city streets. Daily traffic volumes have grown; however, the City's weekday PM peak hour traffic volumes have changed less than 1 percent per year since the 2015 Transportation Plan was completed and along some roadways traffic volumes have decreased. Since the COVID-19 pandemic travel patterns have changed with more people working from home or having flexible work hours such that they may not commute during the evening period.

Traffic Volumes and Operations. Traffic volumes were used to evaluate traffic operations for Sumner's key intersections. Traffic operations analysis provides a quantitative method for evaluating existing and future transportation conditions. The nationally recognized Highway Capacity Manual (HCM) level of service (LOS) method is used to evaluate intersection operations of Sumner facilities. Five intersections do not meet the currently adopted LOS standard during the weekday PM peak hour operating at LOS E or F. The poor operations are known issues at the SR 162 and SR 410 WB Ramps and the East Valley Highway/Forest Canyon Road E intersection due regional traffic impacts. The existing traffic operations are considered in developing the transportation improvement program documented in Chapter 5 of this Plan.

Traffic Safety. Citywide collision records for the last 5-years (2018-2022) are used to identify potential safety issues for vehicles, pedestrians, and cyclists. Of the 21 serious injury and fatal crashes, over 20 percent involved pedestrians and about 5 percent involved bicyclists. The most frequently reported collision type was rear-end crashes, which often occur in congestion or stop-and-go traffic. The review of

traffic safety is used to inform decisions related to street and intersection improvements documented in Chapter 5 of this Plan.

Transit and Rail Service. Sumner is currently not served by Pierce Transit, which limits transit options and accessibility within the city. The only transit stop in the city is at the Sumner Sounder Train Station and is served by Sound Transit. Sound Transit's Sounder S line offers commuter rail service between Lakewood and downtown Seattle with stops in Tacoma, Puyallup, Sumner, Auburn, Kent, and Tukwila. The transportation improvement program documented in Chapter 5 of this Plan considers the need to collaborate with Pierce Transit on potential future transit service based on anticipated growth of the city.

Freight Train Traffic. Sumner has Burlington Northern Sante Fe (BNSF) and Union Pacific (UPRR) lines. There are currently 71 trains that run through Sumner on the BNSF tracks and 10 trains on the UPRR line daily. Based on a review of Washington State's Joint Transportation Committee Road-Rail Safety Study Crossing Analysis, additional trains are anticipated in the future along the BNSF and UPRR lines in Sumner.

Pedestrian and Bicycle Facilities. The city is striving to create a fully integrated transportation system and recognizes the need to prioritize locations where it expects heavy non-motorized use, such as routes connecting residential areas to recreational facilities and schools, and places of employment. Sidewalks are located intermittently around the city, mostly along arterial roadways located within Sumner's downtown and nearby neighborhoods. There are limited formal bicycle facilities in Sumner. To prioritize the pedestrian and bicycle system for Sumner, Chapter 4 describes recommended level of service (LOS) guidelines.

Transportation Demand Management. The City of Sumner has adopted a Commute Trip Reduction (CTR) program. The CTR program establishes goals consistent with State legislation.

Technology. Transportation System Management and Operations (TSMO) is an integrated approach to optimize the performance of existing infrastructure by implementing multimodal, intermodal, and often cross-jurisdictional systems, services, and projects. Most of the city's current transportation infrastructure is outdated and there are limited abilities to provide TSMO without future upgrades. In addition, electric vehicles are also considered transportation technology. There is no City-provided charging infrastructure in the right-of-way or on City-owned properties (e.g., public parking lots).

Travel Forecasts and Alternatives Evaluation

Sumner's Transportation Plan is developed based on the evaluation of the existing and future transportation system needs. Travel forecasts were developed by updating the Sumner's travel demand model based on the 20-Year land use plan. The model is a tool that converts existing and future land uses into trips. Four land use alternatives were evaluated to identify transportation needs for vehicles, bicycle, and pedestrian modes including updates to the transportation programs and improvement projects. Recommendations are made to update the vehicle LOS policy and adopt a new pedestrian and bicycle LOS policy. The future needs for the transportation system are identified by evaluating the level of service (LOS) for vehicles, pedestrians, and bicycles. The outcome of the analysis is a list of programs and projects to support the Sumner 20-Year growth plan.

Transportation Improvement Program

The alternatives analysis, financing, and goals and policies were used to develop a comprehensive transportation improvement program (TIP) for the City. The program addresses existing and forecast needs within the 20-year planning horizon. Key recommendations for the Sumner transportation improvement program are:

1. Monitor the transportation system against the Transportation Plan.
2. Add a signal replacement program to the maintenance and operations program.
3. Explore additional transit service for Sumner including getting involved in the Pierce Transit long-range planning efforts.
4. If public transit service is provided within Sumner in the future, the City should adopt a transit LOS.
5. Adopt the non-motorized system and LOS standards.
6. Adopt the list of multimodal transportation improvements and continue to monitor the establishment LOS by mode to ensure the improvements continue to support the goals and policies.

The list of 20-Year improvements is provided in Exhibit 5-5 beginning on page 50.

Finance and Implementation

The GMA requires the Transportation Plan to include a multi-year financing plan based on the identified needs in the transportation improvement program. The financing plan for the Transportation Plan provides a basis for the City's annual Six-Year Transportation Improvement Program (TIP).

Finance. Key funding sources for the city include fees and taxes, grants, partnerships with other agencies, developer funding improvements and transportation impact fees (TIFs).

Part of the finance strategy is to update the transportation impact fee. The update recommends eliminating the current TIF approach with three districts and having one fee schedule for the entire city to simplify the structure and make the fee equitable throughout the city. The fee update, including non-motorized transportation improvements, is $7,452 per weekday PM peak hour vehicle trip. Staff will review and recommend options for the City Council to determine what fee is ultimately selected. The remaining funds not covered by the TIF, or other revenue sources would be made up with sources like grants.

Reassessment. The funding strategy is partially based on grants and other outside funding that the city does not control. The city may be able to shift revenues from other funding programs to address specific needs as yearly budgets are prepared or consider other revenue options such as increasing the vehicle license tab fee. The City is committed to reassessing their transportation needs and funding sources each year as part of their annual Six-Year Transportation Improvement Program (TIP). This allows the city to match the financing program with the shorter-term improvement projects and funding.

Implementation. Implementation includes coordination with developers and partnering with other agencies to construct the transportation improvement projects. Partnering with other agencies and use of grants will be especially critical in the implementation of safety, capacity, and operational improvements along SR 167 and SR 410. This may include re-prioritizing roadway projects as new

funding sources become available or by focusing on areas most impacted by new development. The City will also continue to review strategies for phasing improvements allowing funding to be spread over a longer period. In addition, the city will need to review, maintain, and update its Concurrency Management Program, Transportation Impact Fee, and other development review processes to account for the revised multimodal LOS standards and assure that the impacts of growth are mitigated, and transportation improvements are completed concurrent with new development.

Consistency with Other Agencies

The GMA works to increase coordination and compatibility between the various agencies that are responsible for the overall transportation system. As part of the Transportation Plan, consistency with nearby transportation agencies is reviewed including Washington State Department of Transportation (WSDOT), Pierce County Sound Transit, Auburn, Pacific, Edgewood, and Puyallup. The Plan is consistent with nearby agencies and the city is committed to continuing to partner with these agencies to improve transportation for the community.

1. Introduction

The City of Sumner adopted its first Transportation Plan in January 1993. In 1994, the City adopted a Comprehensive Plan consistent with the Growth Management Act (GMA) and the Transportation Plan was updated in 2002 and 2015. Amendments to the 2015 Transportation Plan were adopted in 2017, 2019, and 2020.

The Transportation Plan provides the link between the Land Use Element and the transportation facilities and services needed to support growth during the next twenty years. This is accomplished by identifying capacity, operational, and safety improvements along City roadways and by addressing multimodal needs such as transit, pedestrian, and bicycle facilities. The Transportation Plan reflects the interdependence of transportation and land use and is influenced by choices made as part of the Land Use Element. Conversely, land uses are similarly influenced by choices and policies made in the Transportation Plan.

The Transportation Plan implements the City's Transportation Element, which is a key component of the City's Comprehensive Plan which works hand-in-hand with other Comprehensive Plan Elements. The Transportation Element identifies the City of Sumner's goals and policies for transportation as well as the City's future transportation system and facilities, level-of-service (LOS) standards, and concurrency monitoring system. Future land uses proposed as part of the Land Use Element are used to develop transportation strategies and to identify necessary transportation facilities (roadways, sidewalks, trails, bike lanes, etc.). Similarly, the Capital Facilities Element and the City's ongoing Transportation Improvement Program (TIP) present specific facility recommendations based on the Transportation Plan and Transportation Element.

The Plan update includes an inventory of existing transportation facilities and services, development and analysis of 2044 travel forecasts, evaluation of needs and deficiencies, identification of transportation system improvements consistent with goals and policies, and financing strategies. The Plan update also addresses requirements for a concurrency program and the multimodal transportation impact fee (TIF) program.

Growth Management Act

The Transportation Element was developed in accordance with the Washington State Growth Management Act (GMA). The GMA requires that the following topics be addressed within the Transportation Plan:

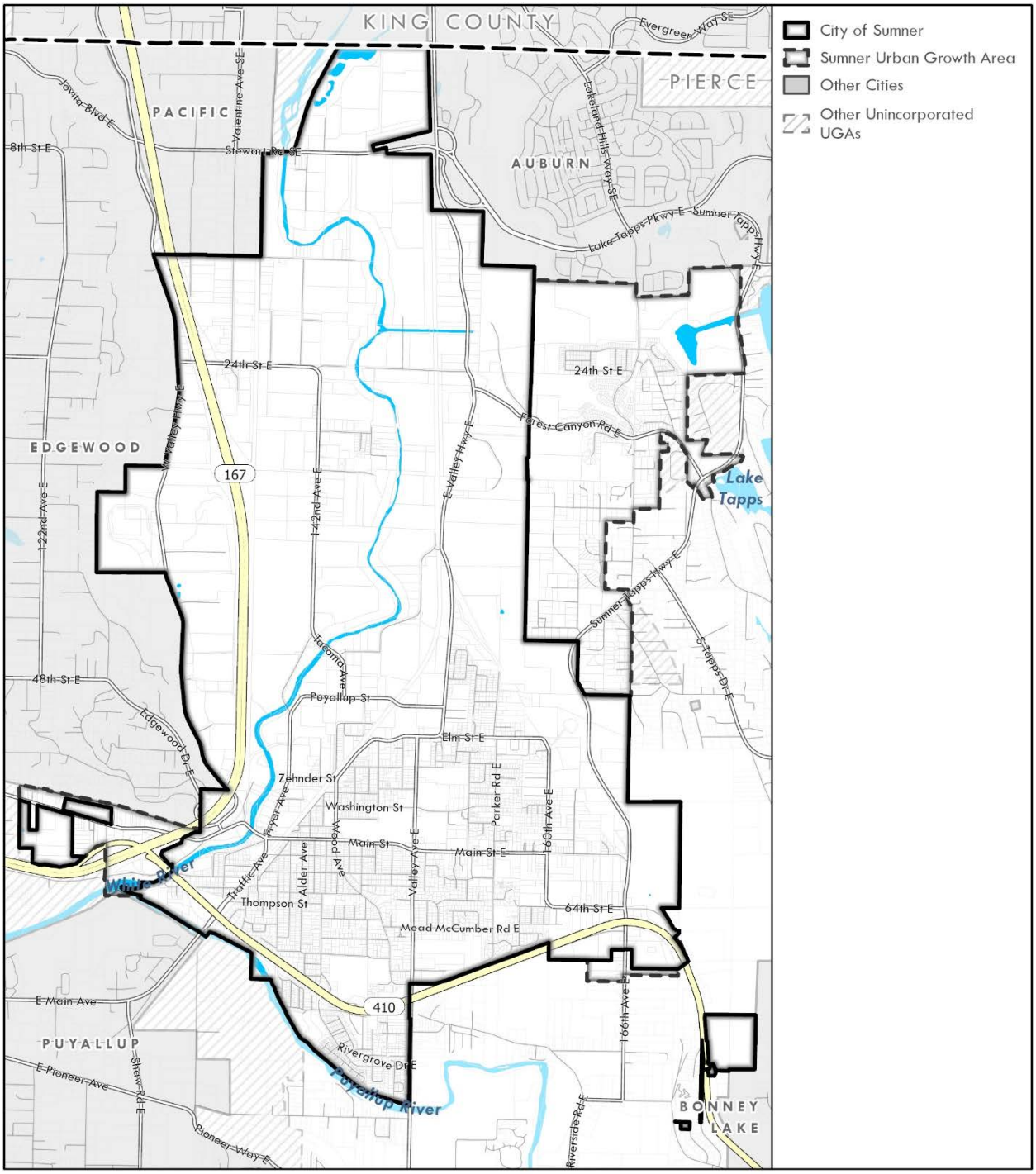
- Land use assumptions used in estimating travel demand.
- Facility and service needs, including an inventory of air, water, and ground transportation facilities and services, transit alignments, general aviation/ airport facilities, and state-owned transportation facilities within the city's jurisdictional boundaries.
- Level of service (LOS) standards to gauge the performance of the system.

- Identification of actions and requirements needed to bring existing facilities and services up to standard.
- Forecasts of future traffic based on the land use plan.
- Identification of improvements and programs needed to address current and future transportation system deficiencies, including Transportation Demand Management strategies.
- A realistic multi-year financing plan that is balanced with the adopted level of service standards and the land use element.
- An explanation of intergovernmental coordination strategies and regional consistency.
- Local transportation elements must also include the following:
  - Estimated traffic impacts to State-owned transportation facilities resulting from land-use assumptions.
  - LOS for state-owned transportation facilities.
  - Identification and assessment of GMA concurrency and the applicability to highways of statewide significance.
  - A pedestrian and bicycle component that includes collaborative efforts to identify and designate planned improvements for pedestrian and bicycle facilities and corridors that address and encourage enhanced community access and promote healthy lifestyles.

Study Area

The study area includes all areas within Sumner City limits and Urban Growth Area (UGA). The UGA has been delineated with Pierce County, consistent with the requirements of the GMA. The transportation planning study area is shown in Exhibit 1-1. The city lies adjacent to the UGAs of the City of Pacific and City of Auburn (north) and the City of Edgewood (west). Unincorporated areas of Pierce County also surround portions of Sumner.

Exhibit 1-1. Study Area



CITY OF SUMNER

Transportation Plan Study Area

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

2. Goals and Policies

The City has identified a range of goals and policies to implement the Transportation Plan efficiently and effectively. The goals and policies are outlined elsewhere in the Transportation Element of the Comprehensive Plan. The Transportation Element strives to emphasize the importance of pedestrians and bicycles and prioritizing the creation a network of multimodal transportation-related improvements and policies to ensure that vehicle traffic can coexist with the community's need for a safe and comfortable active transportation environment. It also recognizes the need for the City to work with other transportation service providers to plan, design, fund, and implement transportation projects and programs to serve the community.

The goals and policies provide a framework for decision making related to transportation projects and programs. The transportation goals and policies cover the following elements:

7. Citywide Transportation Goal
8. Public Involvement
9. Agency Coordination
10. Transportation System Mobility and Efficiency
11. Subarea Plans Transportation and Circulation System
12. Pedestrians and Bicycles
13. Commuter Rail and Transit
14. Commute Trip Reduction and Transportation Demand Management (TMD)
15. Equity in Transportation-Related Decisions
16. Land Use and Environmental Considerations
17. Program Financing and Implementation

The transportation goals and policies will be used by the City in deciding how to secure and use funding, decisions related to new land use development applications, and coordination with other City planning objectives.

3. Inventory of Existing Transportation System

The transportation system within the City of Sumner includes streets and highways, pedestrian and bicycle facilities, and transit and rail service. An inventory of the existing transportation system was conducted in Spring and Summer 2023. This transportation system inventory and associated analyses provide a baseline for the existing transportation system and aid in identifying key transportation issues addressed in the update of the Plan. The inventory covers the street system, traffic control, traffic volumes, traffic operations, traffic safety, transit and rail service, and pedestrian and bicycle facilities. The inventory is used in updating the City's travel demand model to determine the future traffic volume forecasts for the 2023 Sumner Transportation Plan.

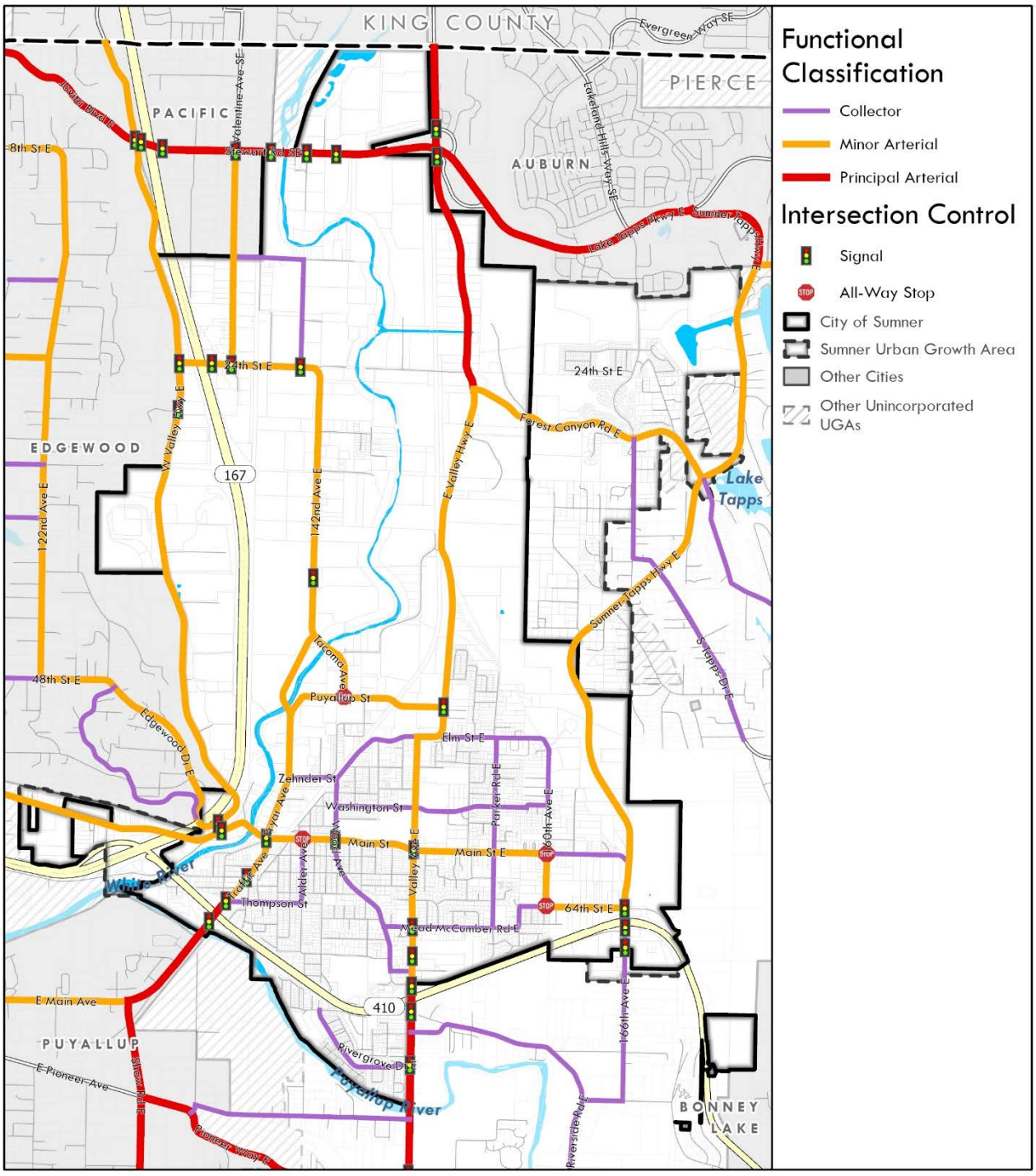
Freeways, Arterials, and Collectors

Exhibit 3-1 summarizes the existing traffic control and functional classification of the city street system. Roadway functional classification provides for a hierarchy of roadways. These classifications also act as a guide for future development of the overall street system. The city's functional classifications include principal arterials, minor arterials, collectors, and local streets. Arterial streets serve higher traffic volumes and may have few access points. Collector streets link arterials and local streets and may provide access to individual parcels. Collectors are also vital in connecting the residential areas to the central business district and are excellent candidates for multimodal facilities. Local streets provide neighborhood circulation and access to individual parcels.

The city also has two freeways, State Route (SR) 167 and 410 that run through it. The State has designated SR 167 as a Highway of Statewide Significance (HSS). HSS facilities provide and support transportation functions that promote and maintain significant statewide travel and economic linkages. Improvement plans for this HSS facility are developed from a statewide perspective. This planning includes policy development and accompanying funding support to represent a broad range of interests that depend on the facility. Because of its designation as an HSS facility, the State has the authority of setting the level of service (LOS) standards for SR 167. SR 410 is a State Highway of Regional Significance. LOS standards for SR 410 are established by the Puget Sound Regional Council (PSRC), in consultation with WSDOT.

Exhibit 3-2 provides a summary of the key characteristics of the roadway serving Sumner.

Exhibit 3-1. Existing Traffic Control and Functional Classification



CITY OF SUMNER

Existing Traffic Control and Functional Classification

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Map Date: February 2024

Exhibit 3-2. Characteristics of Key Roadways Serving Sumner

Roadway	Classification	Jurisdiction	Number of Travel Lanes	Posted Speed Limit	Parking?	Sidewalks?	Bicycle Facilities?
North-South Roadways							
SR 167	Freeway	WSDOT	4	60 mph	No	No	No
Valley Avenue	Minor/Principal Arterial[1]	Sumner	2 to 3	25 mph	No	Yes	Yes
Traffic Avenue	Minor Arterial[2]	Sumner	4 to 5	25 mph	No	Yes	No
Fryar Avenue	Minor Arterial	Sumner	3	25 mph	No	Yes	Yes
142nd Avenue E	Minor Arterial	Sumner	5	35 mph	No	Yes	No
136th Avenue E	Minor Arterial	Sumner	3	30 mph	No	Yes	No
East Valley Highway	Minor Arterial[3]	Sumner	2 to 3	25 mph	No	No	No
West Valley Highway	Minor Arterial	Sumner	2 to 4	35 mph	No	Yes	No
Sumner-Tapps Highway	Minor Arterial	Sumner	2	45 mph	No	No	No
Cannery Way (formerly Bridge Street)	Minor Arterial	Sumner	2	25 mph	No	Yes	No
Valley Avenue E	Minor Arterial	Sumner	2	25 mph	No	No	No
160th Avenue E	Minor Arterial[4]	Sumner	2	25 mph	Yes	No	No
Sumner Heights Drive	Collector	Sumner	2	25 mph	No	Yes	No
Alder Avenue	Collector	Sumner	2	25 mph	Yes	Yes	No
Wood Avenue	Collector	Sumner	2	25 mph	Yes	Yes	No
158th Avenue E	Collector	Sumner	2	25 mph	No	Yes	No
Parker Road	Collector	Sumner	2	25 mph	No	Yes	No
East-West Roadways							
SR 410	Freeway	WSDOT	4	55 mph	No	No	no
24th Street E	Minor Arterial	Sumner	2 to 5	35 mph	No	Yes	No
Main Street	Minor Arterial	Sumner	2	25 mph	Yes	Yes	No
Stewart Road	Principal Arterial	Sumner	2-5	35 mph	No	Yes	No
Puyallup Street	Minor Arterial	Sumner	2	25 mph	No	Yes	No
Forest Canyon Road	Minor Arterial	Sumner	2	25 mph	No	No	No
64th Avenue E	Minor Arterial	Sumner	2	25 mph	Yes	Yes	No
Zehnder Street	Collector	Sumner	2	25 mph	No	Yes	No
Thompson Street	Collector	Sumner	2	25 mph	Yes	Yes	No
Elm Street	Minor Arterial Collector[5]	Sumner	2 to 3	25 mph	No	Some[6]	No

Roadway	Classification	Jurisdiction	Number of Travel Lanes	Posted Speed Limit	Parking?	Sidewalks?	Bicycle Facilities?
Meade-McCumber Road	Collector	Sumner	2	25 mph	Yes	Yes	No
Washington Street	Collector	Sumner	2	25 mph	No	Yes	No
Rivergrove Drive	Collector	Sumner	2	25 mph	Yes	Yes	No
Riverside Drive	Collector	Sumner	2	35 mph	No	No	No

Note: WSDOT = Washington State Department of Transportation; mph = miles per hour
1. Principal arterial south of SR 410
2. Principal arterial south of Thompson Street
3. Principal arterial north of Forest Canyon Road
4. Collector north of Main Street E
5. Minor Arterial between Valley Avenue and East Valley Highway and Collector Arterial from Valley Avenue and Wood Avenue and East Valley Highway and 160th Avenue E.
6. Elm Street does not have sidewalks on portions between Valley Avenue and Wood Avenue

Traffic Volumes

Daily traffic volumes were provided by the city and weekday PM peak hour traffic volumes were generally collected in February and November 2023 by IDAX at key intersections throughout the city. Exhibit 3-3 illustrates the average daily traffic volumes along key streets serving the city. Exhibit 3-3 shows daily traffic volumes along Valley Avenue E (SR 162) and Sumner-Tapps Highway within the City. Main Street in the Town Center area has about 11,000 vehicles per day while Stewart Road in the industrial area has about 14,000 vehicles per day.

Exhibit 3-4 summarizes the rates of growth along Sumners major corridors compared to 2014/2013 PM peak hour traffic volumes.

As shown on Exhibit 3-4, the weekday PM peak hour traffic growth was largest at intersections serving the northern part of the city industrial areas, where most of the growth has been concentrated over the past ten years. The largest increase in weekday PM peak hour traffic volumes occurred at the intersection of 142nd Avenue and 24th Street E, where traffic increased by 5 percent annually. At the access ramps to SR 167, traffic volumes have grown modestly between one tenth of a percent to 1.5 percent annually. The City's lowest growth in volumes occurred along the SR 162/Valley Avenue corridor. This pattern of little to no change in traffic volumes is thought to be a result of changing patterns in weekly commuter patterns. Since the COVID-19 pandemic travel patterns have changed with more people working from home or having more flexible hours when they may not commute daily or during the evening period.

Overall, the City's traffic volumes have changed less than 1 percent per year since the 2015 Transportation Plan was completed.

Exhibit 3-3. Existing Daily Traffic Volumes

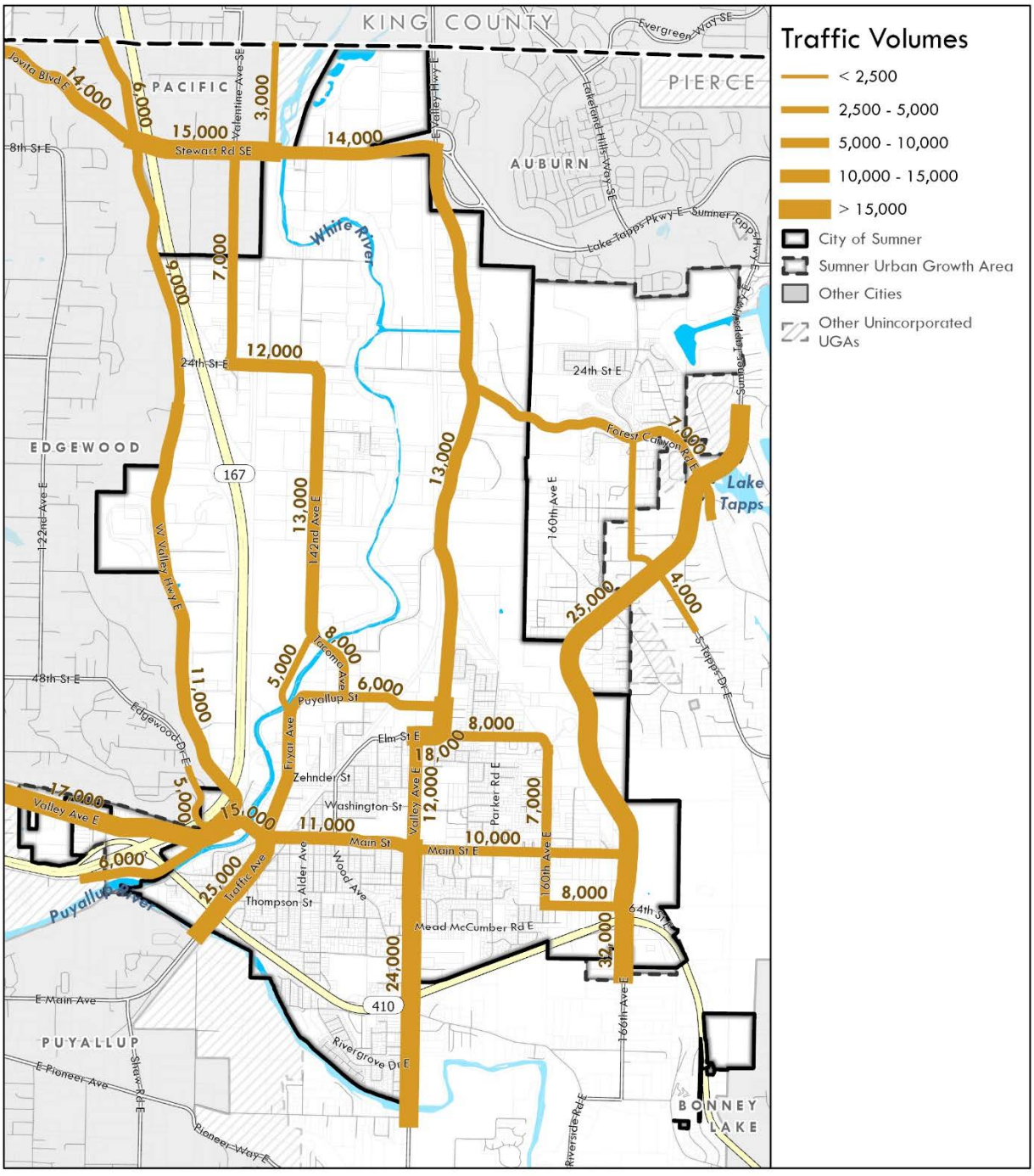


Exhibit 3-4. Weekday PM Peak Hour Roadway Volumes and Annual Growth[1]

Roadway	Cross-Street	2013/2014 PM Peak Volumes	2023 PM Peak Volumes	PM Peak Annual Growth Rate
W Valley Hwy E	Jovita Blvd	1,880	2,020	0.80%
SR 167 SB Ramps	Stewart Rd SE	1,550	1,770	1.50%
SR 167 NB Ramps	Stewart Rd SE	1,770	1,790	0.10%
140th Ct E2	Stewart Rd SE	1,250	1,550	2.40%
West Valley Hwy	24th St SE	1,160	1,350	1.70%
SR 167 NB Ramps	24th St SE	1,200	1,290	0.80%
136th Ave E2	24th St E	1,260	1,580	2.60%
142nd Ave E2	24th St E	790	1,230	5.00%
East Valley Hwy	Forest Canyon Rd	1,460	1,520	0.50%
West Valley Hwy	SR167 SB Ramps	1,060	1,240	1.80%
142nd Ave E	Costco Access	-	940	-
West Valley Hwy E	42nd St E	630	590	-0.70%
Tacoma Ave	Puyallup St	813	860	0.70%
East Valley Hwy	Puyallup St	1,500	1,490	-0.10%
East Valley Hwy	Elm St	1,430	1,430	-0.10%
Valley Ave	Elm St	1,140	1,120	-0.20%
Fryar Ave	Zehnder Ave	1,040	1,090	0.60%
West Valley Hwy	Sumner Heights Dr E	880	820	-0.80%
Valley Ave E	Sumner Heights Dr E	1,240	1,180	-0.60%
Traffic Ave	Main St	2,070	2,070	0.00%
Alder Ave	Main St	880	750	-1.90%
Wood Ave	Main St	1,170	980	-1.90%
Valley Ave	Main St	1,970	1,806	-1.00%
Parker Rd	Main St	1,070	970	-1.20%
160th Ave (Van Tassel Rd)	Main St (60th St E)	1,050	1,090	0.40%
Sumner-Tapps Hwy (166th Ave E)	Main St (60th St E)	1,650	1,550	-0.70%
Traffic Ave	Maple St	1,430	1,500	0.60%
Traffic Ave	SR 410 WB Ramps (Thompson St)	2,300	2,500	0.90%
Traffic Ave	SR 410 EB Ramps	2,160	2,690	2.50%
Valley Ave	Meade Mc Cumber Rd E	1,490	1,440	-0.40%

Roadway	Cross-Street	2013/2014 PM Peak Volumes	2023 PM Peak Volumes	PM Peak Annual Growth Rate
Parker Rd	Meade Mc Cumber Rd E	250	350	3.70%
160th Ave E	64th St E	500	630	2.50%
Sumner- Tapps Hwy (166th Ave E)	64th St E	1,900	2,060	0.90%
Sumner-Tapps Hwy E (166th Ave E)	SR 410 WB Ramps	1,960	2,010	0.30%
Sumner-Tapps Hwy (166th Ave E)	SR 410 EB Ramps	1,780	1,680	-0.60%
Valley Ave	Gary St	1,480	1,450	-0.20%
SR 162	SR 410 WB Ramp	1,920	1,770	-0.90%
SR 162	SR 410 EB Ramp	2,090	2,150	0.30%
SR 162	74th St E	1,770	1,920	0.90%
SR 162	Rivergrove Dr	1,590	1,530	-0.40%

Note:
1. PM Peak Volumes rounded to the nearest tenth.

Truck Traffic

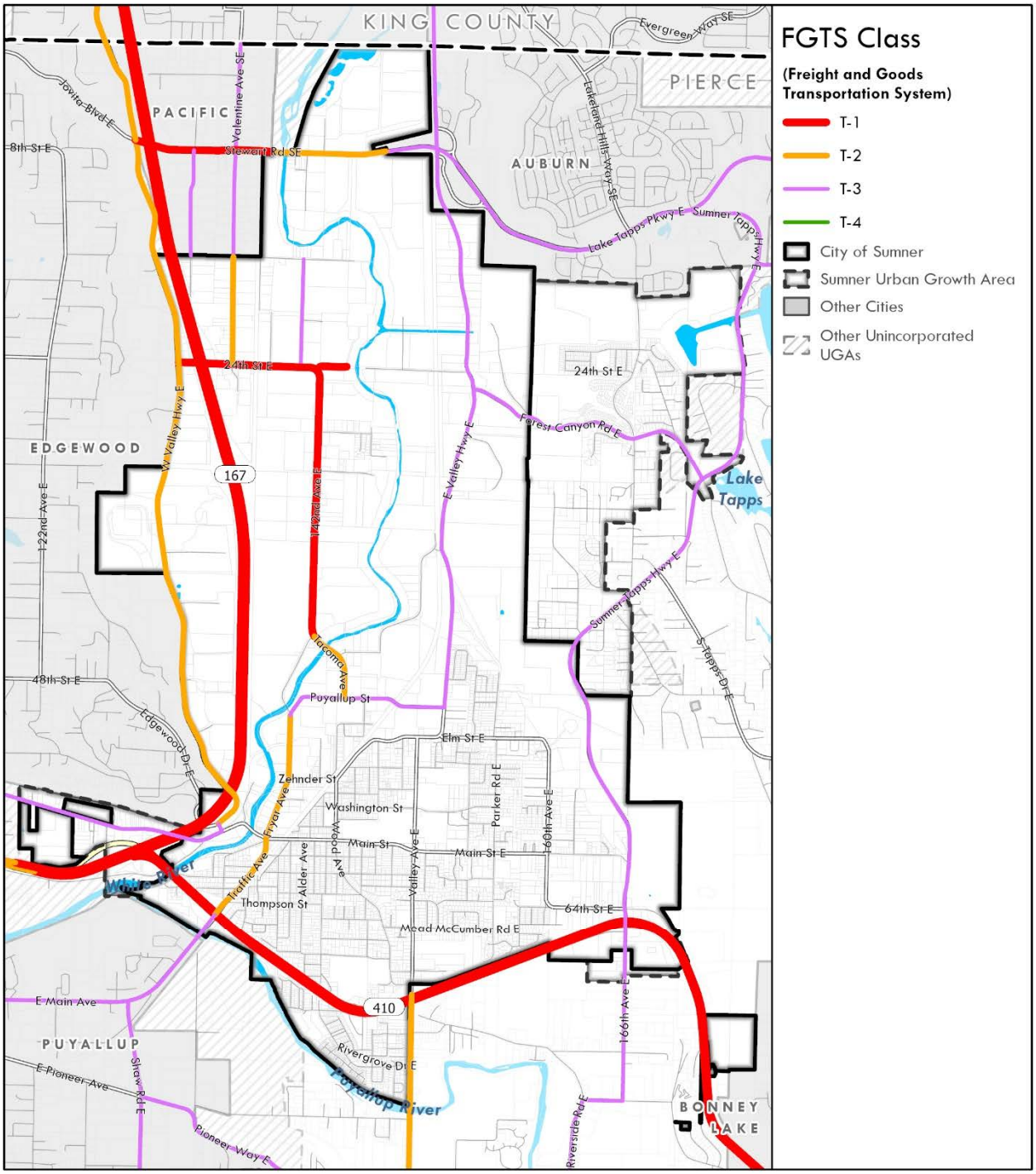
The availability of industrial land and its proximity to the SR 167, SR 410, I-5 freeway corridors has made Sumner an attractive place for trucking-related developments such as warehousing and distribution centers.

Sumner has adopted a formal truck route plan to manage truck traffic within its city limits. Exhibit 3-5 illustrates the existing truck routes. Existing truck traffic is routed around the perimeter of the residential and commercial sections of Sumner. Truck traffic entering and exiting Sumner from the industrial areas to the north is served by the two SR 167 interchanges at Stewart Road and 24th Street E.

Sumner's warehouse and industrial area generates heavy truck traffic volumes on 136th Avenue E and Stewart Road on movements to and from SR 167. Heavy truck traffic is significant not only because of its impact on traffic flow but because of the impact on parking and the structure of the roadways. There are limited places where truck parking is allowed and some areas along truck routes have not been designed sufficiently for trucks.

Several roadways within the city are classified as T-2 or T-1 level roadways in the Washington State Freight and Goods Transportation System (FGTS). These roadways carry between 4 and 10 million tons (T-2) or more than 10 million tons (T-1) per year, depending on their classification. Sumner roadways classified as T-1 include 142nd Avenue E from Tacoma Avenue to 24th Street E, and 24th Street E from West Valley Highway to 142nd Avenue E. The City's T-2 designated truck routes include Traffic Avenue from SR 410 to Main Street, Fryar Avenue from Main Street to Puyallup Street E, West Valley Highway from Sumner Heights Drive to 16th Street E, and Stewart Road from Butte Avenue SE to the City Limits.

Exhibit 3-5. Existing Truck Routes



CITY OF SUMNER

Existing Truck Routes

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Traffic Operations

Traffic volumes were used to evaluate traffic operations in Sumner. Traffic operations analysis provides a quantitative method for evaluating existing and future transportation conditions. The City's operational standard is presented along with the analysis methodology. A discussion of existing traffic operations is also provided.

Analysis Methodology

Traffic operations were evaluated for the existing year (2023) based on the level of service (LOS) methodologies of the Highway Capacity Manual (HCM) (Transportation Research Board). The HCM is a nationally recognized and locally accepted method of measuring traffic flow and congestion. Criteria range from LOS A, indicating free-flowing conditions with minimal vehicle delays, to LOS F, indicating extreme congestion with long vehicle delays. At signalized intersections, LOS is measured in terms of average delay per vehicle. At unsignalized intersections, LOS is measured in terms of the average vehicle delay and is typically reported for the worst traffic movement instead of for the whole intersection. Appendix A includes an in-depth discussion of LOS.

Intersection LOS analysis was performed for major intersections within the study area based on 2023 conditions. Like the scope of the previous study in 2015, 43 intersections were selected for analysis, based on location and likelihood that they might be impacted by future growth. Turning movement counts collected in February and November 2023 were used in this analysis.

The study area current LOS standards are set by Sumner, Pacific, and WSDOT. The current adopted LOS standards set by each jurisdiction are summarized below:

- City of Sumner[1]
  - LOS D all intersections except as specifically noted
    - Exception to the LOS D standard are:
      - Traffic Avenue/Main Street/Fryar Avenue (LOS F)
      - Main Street/Alder Avenue (LOS F)
      - Valley Avenue East/Main Street (LOS F)
      - West Valley Highway East/Valley Avenue/Sumner Heights Drive (LOS F)
- City of Pacific
  - LOS D (Butte Avenue SE/Stewart Road SE)
- WSDOT/PSRC[2]
  - LOS D for Highways of Statewide Significance (HSS) in urban areas
  - LOS C for Highways of Statewide Significance (HSS) in rural areas
  - LOS D for Regional Significance State Highways (RSSH), Tier 2

[1] 2015 Sumner Transportation Plan
[2] Level of Service Standards for Washington State Highways, 2010

Because SR 167 is a designated HSS, the State requires local jurisdictions to adopt this LOS standard for HSS facilities in their Comprehensive Plans. For non-HSS facilities, the State requires that an agency coordinate with WSDOT in establishing a LOS standard for those facilities. SR 410 and SR 162 are not HSS-designated facilities. Puget Sound Regional Council (PSRC) has adopted LOS standards for regionally significant state highways or state transportation facilities that are non-HSS such as SR 410 and SR 162. SR 162 and SR 410 both Tier 2 RSSH. Based on the PSRC tiered LOS system, both SR 410 and SR 162 have an adopted LOS D standard. SR 410 is also part of the National Highway System within the City.

Sumner has significant regional traffic that diverges onto the local roadway system due to congestion on the regional network. Exhibit 3-6 illustrates the existing weekday PM peak hour LOS at the study intersections. Existing traffic operations were analyzed based on the procedures documented in the Highway Capacity Manual 6th Edition or 2000 when the 6th Edition method is unable to evaluate the operations. The analysis uses Synchro 11.0 for signalized and stop controlled intersections. Detailed LOS and delay summary is provided in Appendix B.

Generally, traffic operations have remained consistent over the last 10 years. Four intersections do not meet the currently adopted LOS standard during the weekday PM peak hour operating at LOS E or F including:

- Stewart Rd SE/Butte Ave SE (LOS F) - unsignalized (signal being installed)
- E Valley Hwy E/Forest Canyon Rd E (LOS F) – unsignalized
- Sumner-Tapps Hwy E/SR 410 WB Ramps (LOS F) - unsignalized
- Valley Ave/74th St E (LOS F) – unsignalized

Stewart Road/Butte Avenue SE is in the City of Pacific and there is an improvement project to signalize this intersection that will be completed by the end of 2023.

Exhibit 3-7 provides a comparison between 2015 and 2023 LOS, delay, and worst movements at the study intersections not meeting the adopted LOS standard or showing a trend towards increased delay. Poor operations are known issues at the SR 162 and SR 410 WB Ramps and the East Valley Highway/Forest Canyon Road E intersection. The City of Sumner's 6-Year Transportation Improvement Program 2024-2029 includes improving the Stewart Road SE/Butte Avenue SE intersection. The city is currently installing a new signal and adding turn lanes at the Stewart Road SE/Butte Avenue SE intersection.

In addition, two intersections currently meet adopted LOS standards yet show a trend (more than one LOS difference) toward increased delay and are included in the summary table. The intersections showing a negative trend in operation are:

- SR 167 NB Ramps/ 24th Street E – signalized
- Sumner-Tapps Highway E/64th Street E – signalized

The city has identified improvements at the Sumner-Tapps Highway E/64th Street E intersection as part of improvements at the SR 410/166th Avenue E/Sumner-Tapps Highway interchange.

Exhibit 3-6. Existing Weekday PM Peak Hour Level of Service

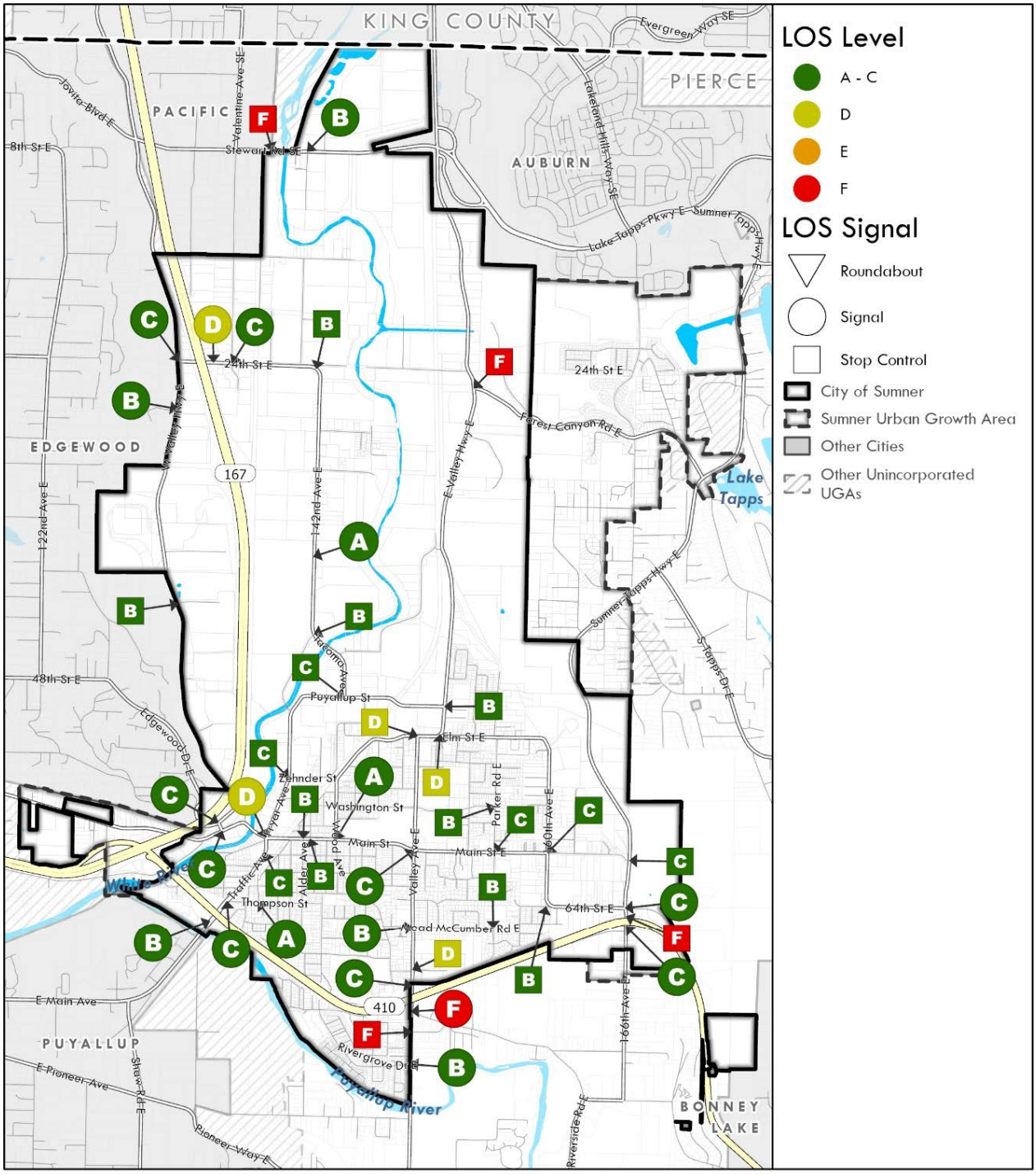


Exhibit 3-7. 2015 and 2023 Weekday PM Peak Hour Level of Service Comparison

Intersection		2015 PM Peak Hour			2023 PM Peak Hour		
Major Rd	**Minor Rd**	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS[1]**	**Delay[2]**	**WM[3]**
Stewart Rd	Butte Ave SE	Not Studied in 2015			F	186	SB
East Valley Hwy E	Forest Canyon Rd	D	29	WB	F	327	WB
Sumner-Tapps Hwy E	SR 410 WB Ramps	F	>50	WB	F	61	WB
Valley Ave	74th St E	C	19	WB	F	110	EB
SR 167 NB Ramps	24th St E	A	7	-	D	36	-
Sumner Tapps Hwy E	64th St E	A	9	-	C	22	-

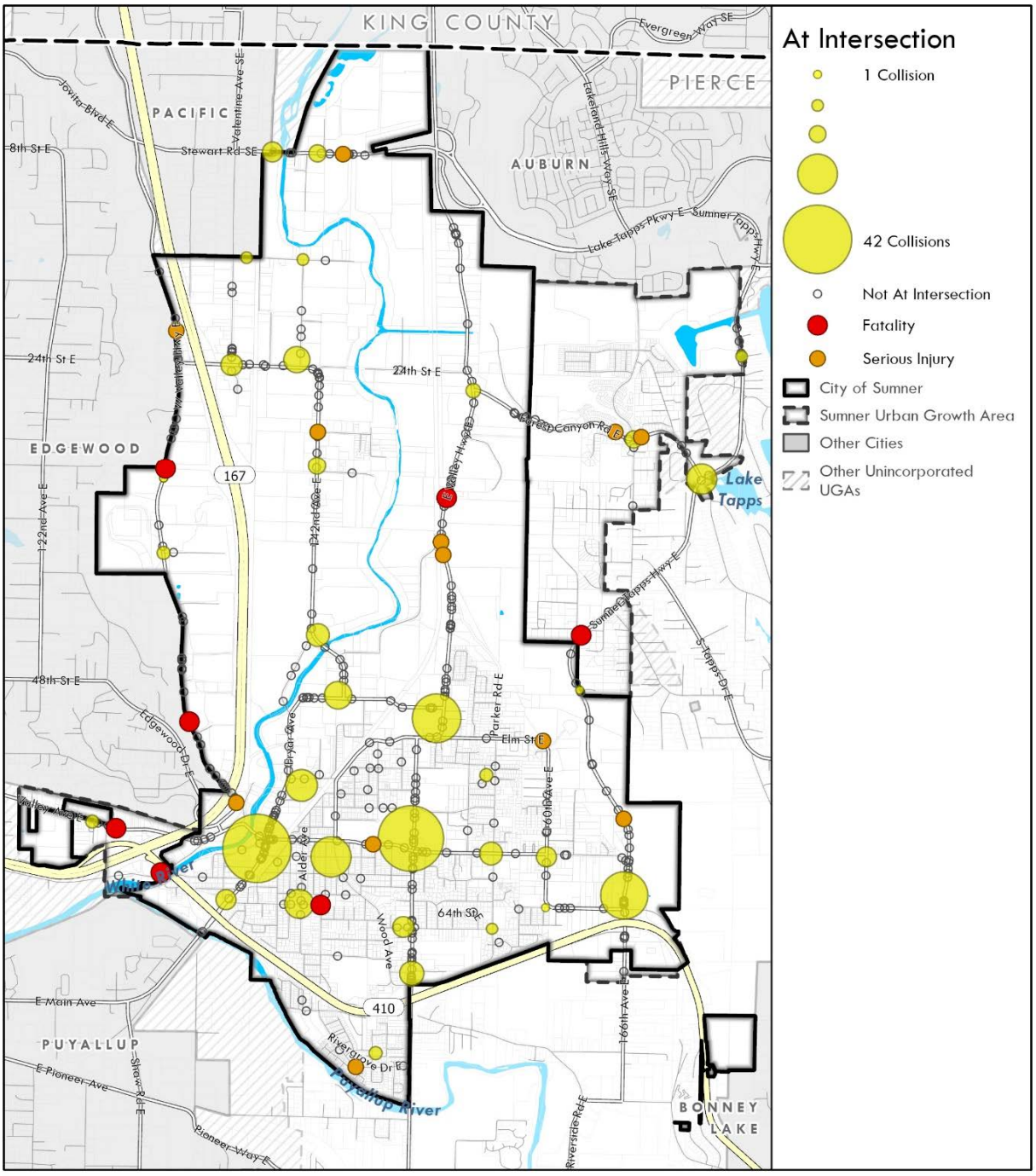
Notes:
1. LOS = level of service based on the Highway Capacity Manual (HCM)
2. Average delay in seconds per vehicle.
3. WM means worst movement and SB means southbound, WB means westbound, NB means northbound, EB means eastbound.

Traffic Safety

A review of citywide collision records was completed to identify potential safety issues for vehicles, pedestrians, and cyclists. The traffic safety analysis included collision data for a five-year period from January 1, 2018 through December 31, 2022. This information was provided by WSDOT for SR 162, SR 167, SR 410, and all roadways within City limits. A map of Sumner's Collision History is shown on Exhibit 3-8.

Four (4) fatalities and 17 serious injury crashes occurred over the 5-year period. The number of collisions occurring at locations in the city are generally low to moderate with a moderate concentration of collisions occurring along Main Street, Traffic Avenue and 166th Avenue E/Sumner Tapps Highway.

Exhibit 3-8. Sumner 5-Year (2018-2022) Collision History



CITY OF SUMNER

Sumner 5-Year (2018-2022) Collision History

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

N

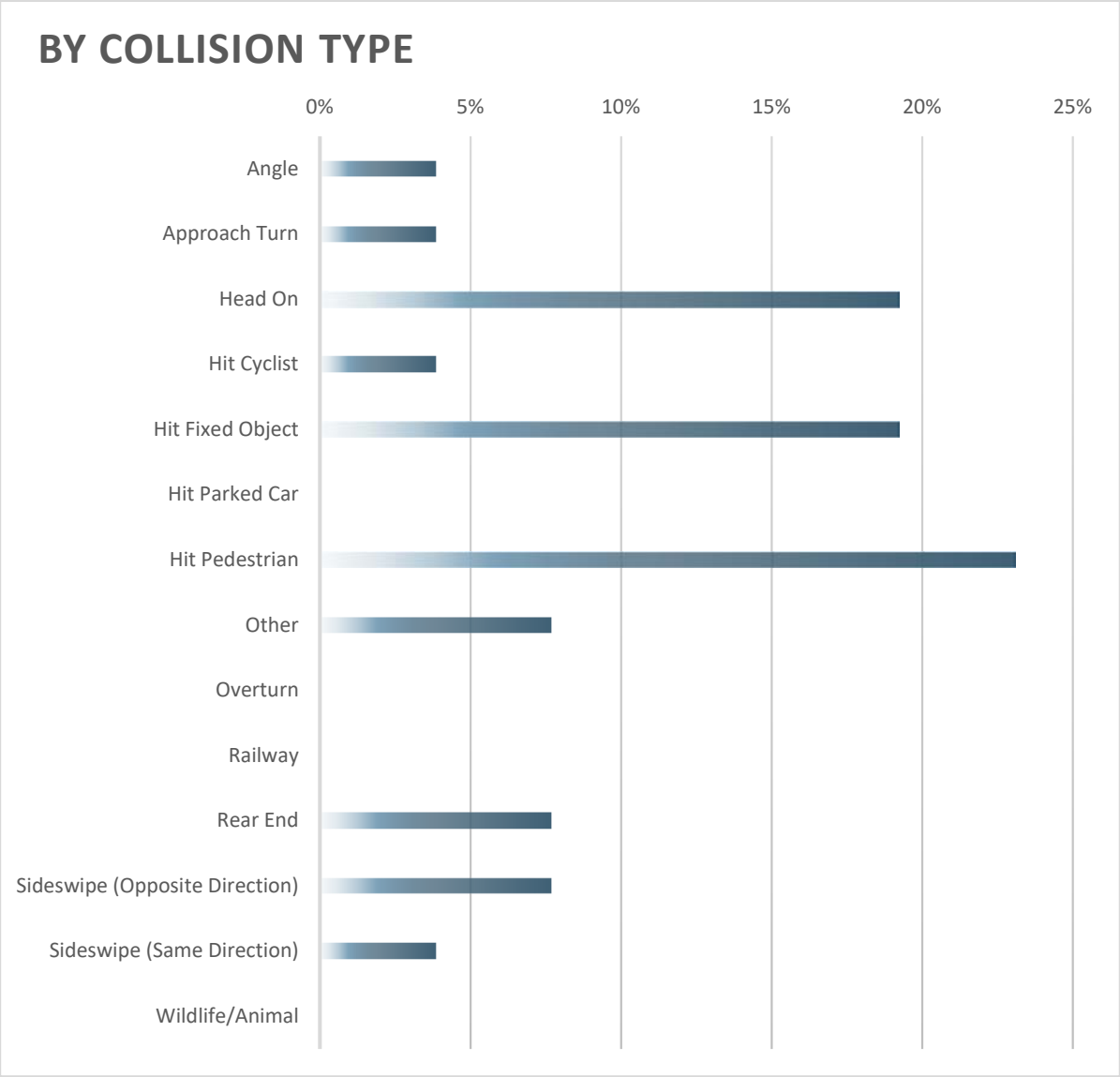
0 ½ Miles

CITY OF SUMNER WASHINGTON

Map Date: February 2024

A total of 1,603 collisions over the five-year period were recorded. Of these, 21 crashes resulted in a serious injury or fatal (SIF) outcome. Exhibit 3-9 shows the collision types for fatal and serious injury collisions. Of the serious injury and fatal crashes, over 20 percent involved pedestrians and about 5 percent involved bicyclists. Intersection improvements identified to address operations or safety are identified in Chapter 5.

Exhibit 3-9. Fatal and Serious Injury Collision Types



The most frequently reported collision type was rear-end crashes, which often occur in congestion or stop-and-go traffic. Rear-end crashes accounted for approximately 40 percent of all the crashes in the five-year period.

Transit Service and Rail Service

Transit Service

Sumner is currently not served by Pierce Transit, which limits transit options and accessibility within the city. The only transit stop in the city is at the Sumner Sounder Train Station and is served by Sound Transit. Exhibit 3-10 illustrates the bus Sound Transit bus routes, which are described below.

Sound Transit Route 578 provides service between Seattle to Puyallup. This service is intended to be a Sounder train shadow and currently runs with one stop at the Sumner train station, stops in Puyallup, and Federal Way, and three stops in Seattle. Service is provided between 6 a.m. and 12 a.m. on weekdays. The route operates on 60-minute headways on weekdays and weekends.

Route 596 provides shuttle service between Bonney Lake Park and Ride and the Sumner Sounder Station. The route operates on 25-minute headways on weekdays and there is no weekend service. This route is scheduled in coordination with the train schedule to shuttle commuters to and from the Bonney Lake Park and Ride. Service is provided between 5 a.m. and 8 p.m. on weekdays.

The City of Sumner is currently operating a "last mile" shuttle service pilot project from the Sumner Sounder Station to businesses in the Manufacturing/Industrial Center (MIC) that operates during the commuter train service times. The single 14-passenger shuttle offers service for a paid fare of $3 per ride and is often partially subsidized by the employer.

Pierce County also provides Beyond the Borders Connector, a local on-demand bus service, which helps eligible residents access public transportation, medical services, employment, shopping, and social activities. There is no cost to riders. Use of the service is unlimited, and riders can get on and off at all stops throughout the community and ride multiple times each day.

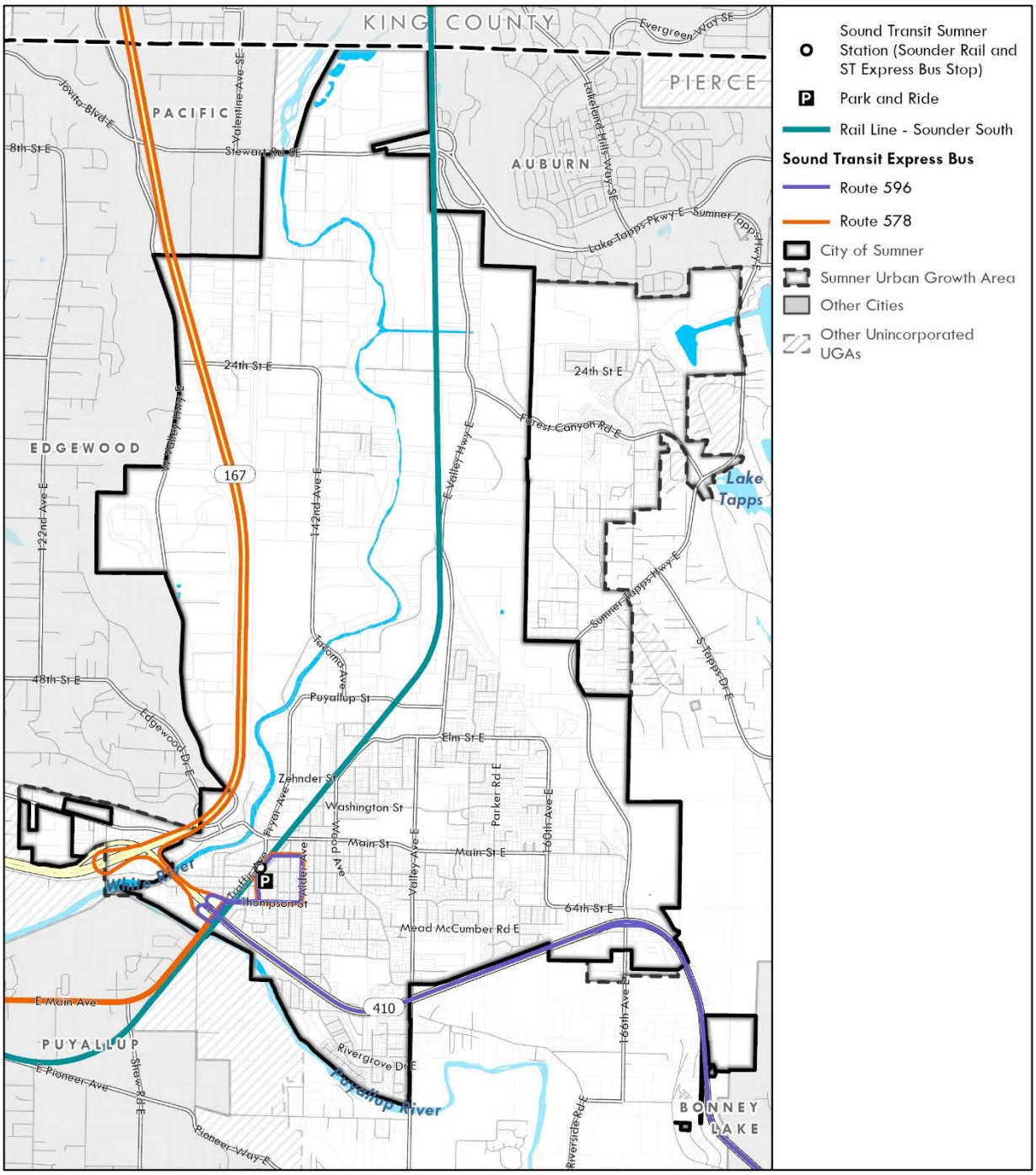
Commuter Rail Service

Sound Transit's Sounder S line offers commuter rail service between Lakewood and downtown Seattle with stops in Tacoma, Puyallup, Sumner, Auburn, Kent, and Tukwila. The Sounder service shares the Burlington Northern Santa Fe (BNSF) tracks. The Sumner Station is located south of Maple Street between Narrow and Traffic Streets in downtown Sumner. There are currently three morning and ten afternoon trains southbound and ten morning trains and three afternoon trains northbound serving the Sumner Station during the commute hours. According to Sound Transit, 130 total parking spaces are available near the Sumner commuter rail station with an additional 500 parking spaces proposed as part of Sound Transit's Sumner Access Improvement Project parking garage.

Sound Transit's ridership dramatically decreased during the pandemic in 2020 and continues to slowly recover. Although the Sounder ridership is over 3 million riders less per year compared to 2019, the Sound Transit's Transit Transportation Development Plan 2023-2028 indicates service saw nearly double the ridership in 2022 compared to 2021. Daily boardings continue to increase with the S Line, which serves Sumner, having an average of 6,500 daily boardings as of June 2023[3].

[3] Sound Transit Ridership Report accessed June 2023 https://www.soundtransit.org/ride-with-us/system-performance-tracker/ridership

Exhibit 3-10. Existing Transit Service



CITY OF SUMNER

Existing Transit Service

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Freight Train Traffic

The BNSF railroad lines run north-south through the City of Sumner. The Union Pacific (UPRR) line is located on the west side of the White (Stuck) River, paralleling SR 167. The BNSF rail line is located on the east side of the White (Stuck) River and runs through downtown Sumner paralleling Traffic Avenue. Sound Transit's Sounder Service uses BNSF tracks. There are currently 71 trains that run through Sumner on the BNSF tracks and 10 trains on the UPRR line daily. The projected rail use by 2035 is 102 on the BNSF tracks and 27 on the UPRR tracks.[4]

Pedestrian and Bicycle Facilities

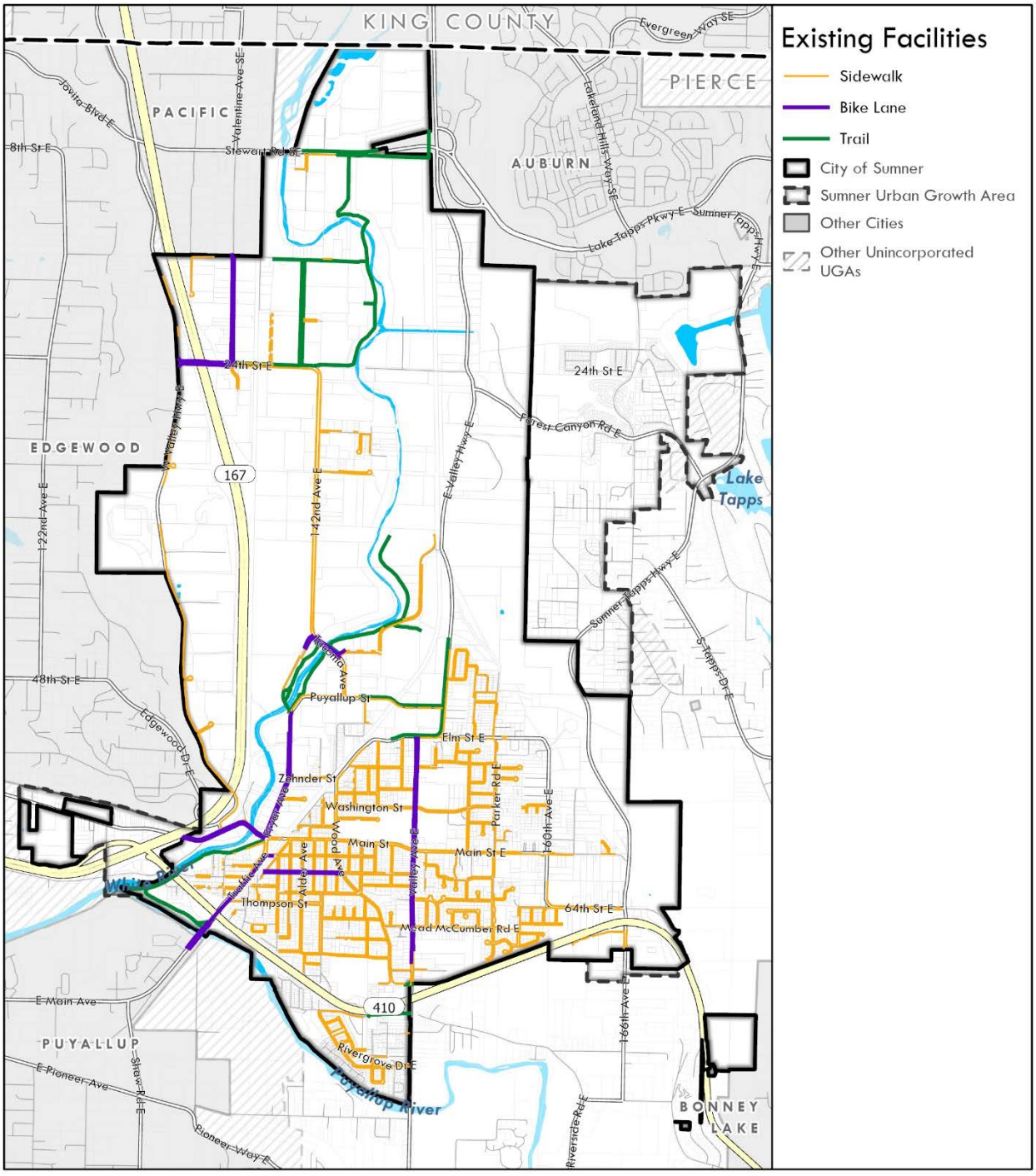
Continuity in pedestrian and bicycle access within the city provides for increased safety, comfort, and ease for residents and recreational users. The city is striving to create a fully integrated system for these modes of transportation and recognizes the need to prioritize locations where it expects heavy non-motorized use, such as routes connecting residential areas to recreational facilities and schools, and places of employment.

Exhibit 3-11 illustrates the current non-motorized system within the city. The city's existing transportation system was historically designed and constructed for vehicular traffic. The existing system provides access for people on foot, bike, or other modes primarily with sidewalks, bike lanes, and off-street trails. Sidewalks are located intermittently around the city, mostly along arterial roadways located within Sumner's downtown and nearby neighborhoods.

There are limited formal bicycle facilities in Sumner. For the most part, bicyclists share the road with motorized traffic or use paved roadway shoulders, where available. Formal bike lanes are present along Valley Avenue, Fryar Avenue and Academy Street.

[4] State of Washington Joint Transportation Committee Road-Rail Safety Study Crossing Analysis (Joint Transportation Committee Road-Rail Study Crossing Analysis (transpogroup.com) accessed November 2023.

Exhibit 3-11. Existing Non-Motorized Facilities



CITY OF SUMNER

Existing Non-Motorized Facilities

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Transportation Demand Management

The City of Sumner has adopted a Commute Trip Reduction (CTR) program. The CTR program establishes goals consistent with State legislation. The individual demand management strategies that are typical elements of the CTR and Transportation Demand Management (TDM) programs are different for employment and residential developments.

Manufacturing and Industrial Center (MIC) and Town Center Subarea Plans described TDM strategies to reduce employment and residential drive-alone trips, including shuttles and transit options, improving bicycle and pedestrian connectivity and incentive programs led by employers. In 2023 the City of Sumner began a shuttle pilot program, BusUp, in partnership with employers in the MIC to provide a "last mile" service from the downtown transit station to the MIC.

Technology

Transportation System Management and Operations (TSMO) is an integrated approach to optimize the performance of existing infrastructure by implementing multimodal, intermodal, and often cross-jurisdictional systems, services, and projects. TSMO seeks to operate the existing transportation system as safely and efficiently as possible, often maintaining or even regaining previous capacity levels and improving safety performance levels. In practice, TSMO is applied on a corridor or in a region as a series of operational strategies.

Most of the city's current transportation infrastructure is outdated and there are limited abilities to provide TSMO without future upgrades. The city is currently looking into investments in fiber optic systems and will be considering what upgrades are needed and to leverage the fiber project to allow for TSMO.

In addition, as the use of electric vehicles (EVs) continues to grow within transportation systems, it becomes essential to establish an accessible EV charging infrastructure. Currently, there is no City-provided charging infrastructure in the right-of-way or on City-owned properties (e.g., public parking lots).

4. Travel Forecasts and Alternatives Evaluation

Sumner's Transportation Plan is developed based on the evaluation of the existing transportation system and future transportation system needs based on planned future growth. GMA requires that the transportation planning horizon be at least ten years in the future. The City of Sumner selected a 2044 horizon year. Year 2044 provides a long-range look at the transportation system needed to support anticipated growth in the city and other communities in northern Pierce County. Travel forecasts have been developed and analysis has been conducted for average weekday conditions during the PM peak hour. The weekday PM peak hour generally has the highest overall traffic volumes in the community and thus provides the basis for identifying capacity related improvement needs.

Primary analyses of the 2044 traffic forecasts were initially based on the following travel forecasting assumptions:

- Committed Improvement projects in Sumner's current Transportation Improvement Program (TIP)
- Improvement projects in available transportation plans from adjacent jurisdictions
- Puget Sound Regional Council's (PSRC) Transportation Vision 2050 Update Regional Capacity Projects List (as of May 2022)
- WSDOT's 2023-2026 Statewide Transportation Improvement Program
- Sumner's forecast land use data (for four alternatives)
- PSRC 2050 Land Use Targets forecasts and regional trip end data from the 2050 regional travel demand model.

Based on these assumptions, travel forecasts were developed using Sumner's travel demand model. The model is a tool that is used to convert existing and future land uses into trips. The following provides an overview of the land use assumptions, travel demand model, and the alternatives analysis. The travel forecasts provide a technical basis for identifying the transportation improvement projects in the transportation systems plan.

Land Use Data

A strong relationship exists between land use and the transportation facilities necessary to provide mobility within the community. Future transportation improvements recommended in the Transportation Plan have been defined to support the Land Use Element of the Comprehensive Plan.

2044 forecasts of land use growth throughout the city and its Urban Growth Area (UGA) were developed for four land use alternatives. The alternatives were prepared to evaluate different levels, types, and allocation of growth in the city. Alternative 1 is consistent with development levels evaluated as part of the 2015 Comprehensive Plan and serves as a baseline or benchmark for understanding the other alternatives. Alternatives 2 and 3 have the same levels of development but allocated differently

throughout the city. Alternatives 2 and 3 represent growth beyond what was planned for in 2015. The Preferred Alternative is similar to Alternative 1 in terms of land use development levels.

Exhibit 4-1 summarizes 2044 additional growth land use data by alternative as allocated to the:

- Town Center
- Manufacturing and Industrial Center (MIC)
- Other Areas inclusive of East Sumner, South Sumner, and the Urban Growth Area (UGA)

Exhibit 4-1. 2044 Land Use Growth Allocation by Alternative

Land Use by Subarea	Alternative 1	Alternative 2	Alternative 3	Preferred Alternative
Housing Units				
Town center	1,245	1,245	1,309	1,245
MIC	0	0	0	0
Other	740	1,755	1,691	740
Total	**1,985**	**3,000**	**3,000**	**1,985**
Jobs				
Town center	330	330	330	330
MIC	3,900	3,900	3,900	3,900
Other	1,083	1,083	1,083	1,083
Total	**5,313**	**5,313**	**5,313**	**5,313**

Source: BERK Consulting, 2024

As shown in Exhibit 4-1, the number of jobs is the same across the four alternatives. Alternatives 2 and 3 would both increase the number of housing units by 1,015 units, but those would be allocated the growth to different areas of the city.

Exhibit 4-2 provides a summary of the total anticipated housings units and jobs under existing conditions and each Alternative.

Exhibit 4-2. Total Land Use by Alternative

Land Use by Subarea	Existing	Alternative 1	Alternative 2	Alternative 3	Preferred Alternative
Housing Units	5,272	6,356	7,371	7,371	6,356
Jobs	23,262	24,919	24,919	24,919	24,919

Source: BERK Consulting, 2024

As shown in Exhibit 4-2, Alternative 1 and the Preferred Alternative would have the same level of development with an increase of 1,084 housing units and 1,657 jobs. The difference between the two Alternatives is the allocation of the jobs and housing throughout the City.

In addition to Alternative 1 and the Preferred Alternative two Alternatives were evaluated which represent more of an increase in housing and jobs. Alternative 2 and 3 show over 7,300 housing units and 24,900 jobs within the city and surrounding study area by 2044. Representing an increase of 2,099 housing units and 1,657 jobs over the current condition. The primary difference between Alternative 2 and 3 is the concentration of housing units located east of E Valley Highway E south of Forest Canyon Road E under Alternative 2.

Travel Forecasting Model

A travel demand forecasting model was developed to assist in defining future transportation system needs. The model uses the VISUM software package and forecasts weekday PM peak hour traffic volumes based on the 2044 land use alternatives. The model study area includes a portion of the City of Pacific and parts of Pierce County just beyond the city limits.

The model was calibrated to match existing base year traffic volumes (2023) and then used to develop a baseline 2044 traffic forecast. City, County, and State transportation improvement projects likely to be funded and built by 2044 were included in the future baseline model and are described below. The 2044 baseline model only included city projects that are in design, construction, or recently built. The 2044 travel forecasts were used to identify future transportation needs.

Transportation Network Assumptions Used in the Model

Exhibit 4-3 summarizes the future baseline transportation improvement projects that were assumed to be completed as part of the baseline 2044 transportation system modeling. The projects listed in the exhibit are planned improvements with either full or partial funding and would be completed before 2044 by Sumner or other agencies. It is noted that the Butte Avenue SE/Stewart Road SW and Main Street/Wood Avenue intersection improvements have already been completed but were under construction during the period of the existing inventory data gathering. Projects that are not fully funded are also identified in the transportation improvement plan (Chapter 5) and included in the strategy for finance and implementation (Chapter 6).

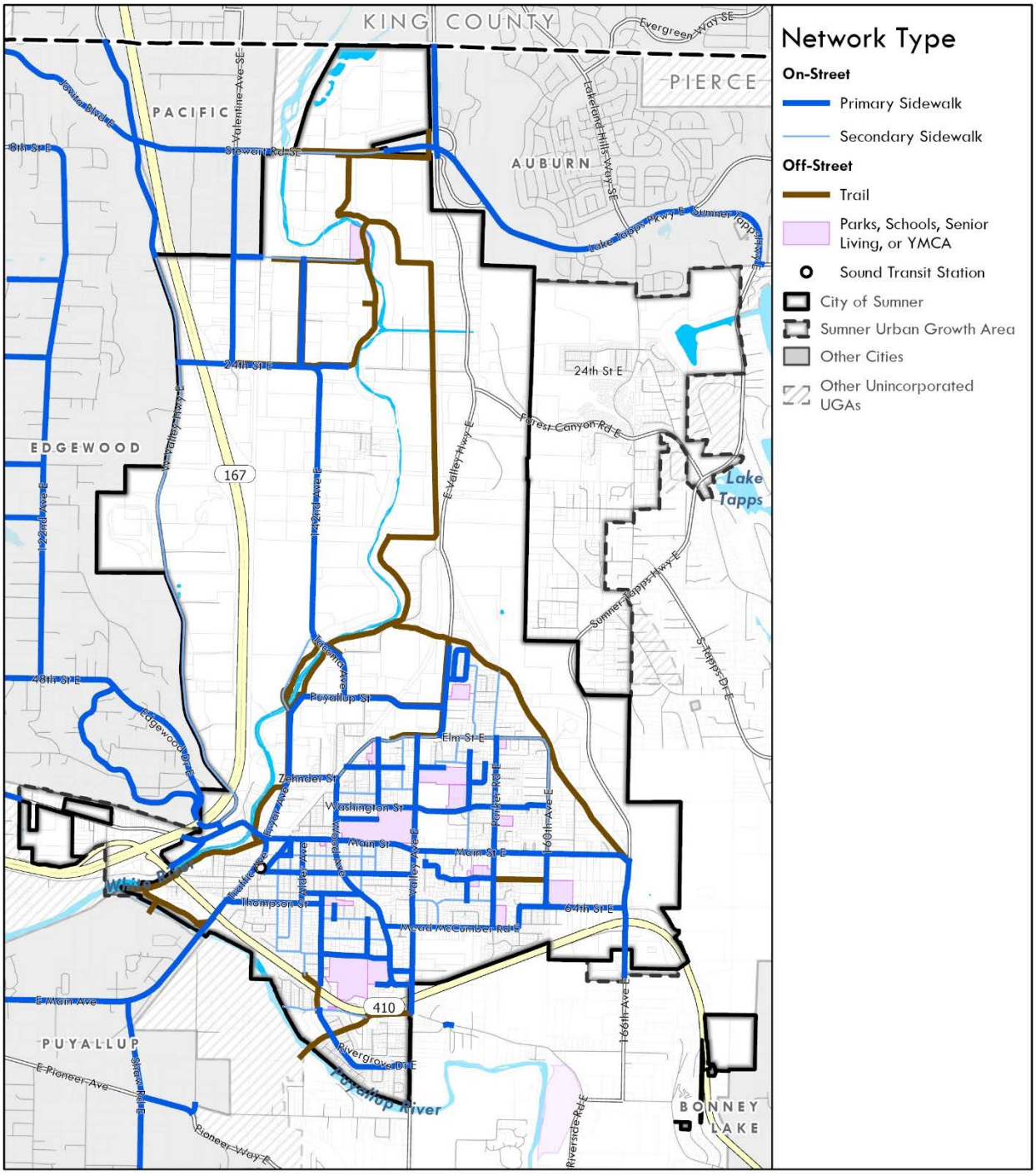
Exhibit 4-3. 2044 Baseline Transportation Improvements

Location	Project Description
SR 167: SR 410 to City of Auburn	Add southbound high occupancy or toll (HOT) lane
Butte Avenue SE/Stewart Road SW	Construct a traffic signal with additional capacity including: -Northbound and southbound left-turn lanes -Eastbound left-turn lane and right-turn lane
Stewart Road SW: Butte Avenue SE to 140th Avenue Court E	Widen to 5 lanes including a center two-way left-turn lane

Location	Project Description
Main Street/Wood Avenue	Pedestrian and signal improvements
SR 410 WB Ramps/166th Avenue E	Construct roundabout
SR 410/SR 162 Interchange	Construct roundabouts
64th Street/164th Avenue E	Construct roundabout
Sumner Tapps Highway/60th Street E	Construct signal. Remove eastbound left-turning movement restrictions
166th Avenue E: SR 410 Ramps to 64th Street E	Widen to 4 to 5 lanes
SR 167/I-5 Connection: Puyallup to Fife	Construct remaining 4 miles of SR 167 between Meridian and I-5

As part of the Baseline Transportation Improvements, the city also defined a desired future 2044 pedestrian and bike network as shown on Exhibits 4-4 and 4-5. This desired non-motorized network follows locations where heavy non-motorized use is expected, such as routes connecting residential areas to recreational facilities and schools, and places of employment. Trails are included in both the pedestrian and bike network since these are used by both pedestrians and bicyclists, and these trails help complete the network.

Exhibit 4-4. Future Pedestrian Network



CITY OF SUMNER

Future Pedestrian Network

N

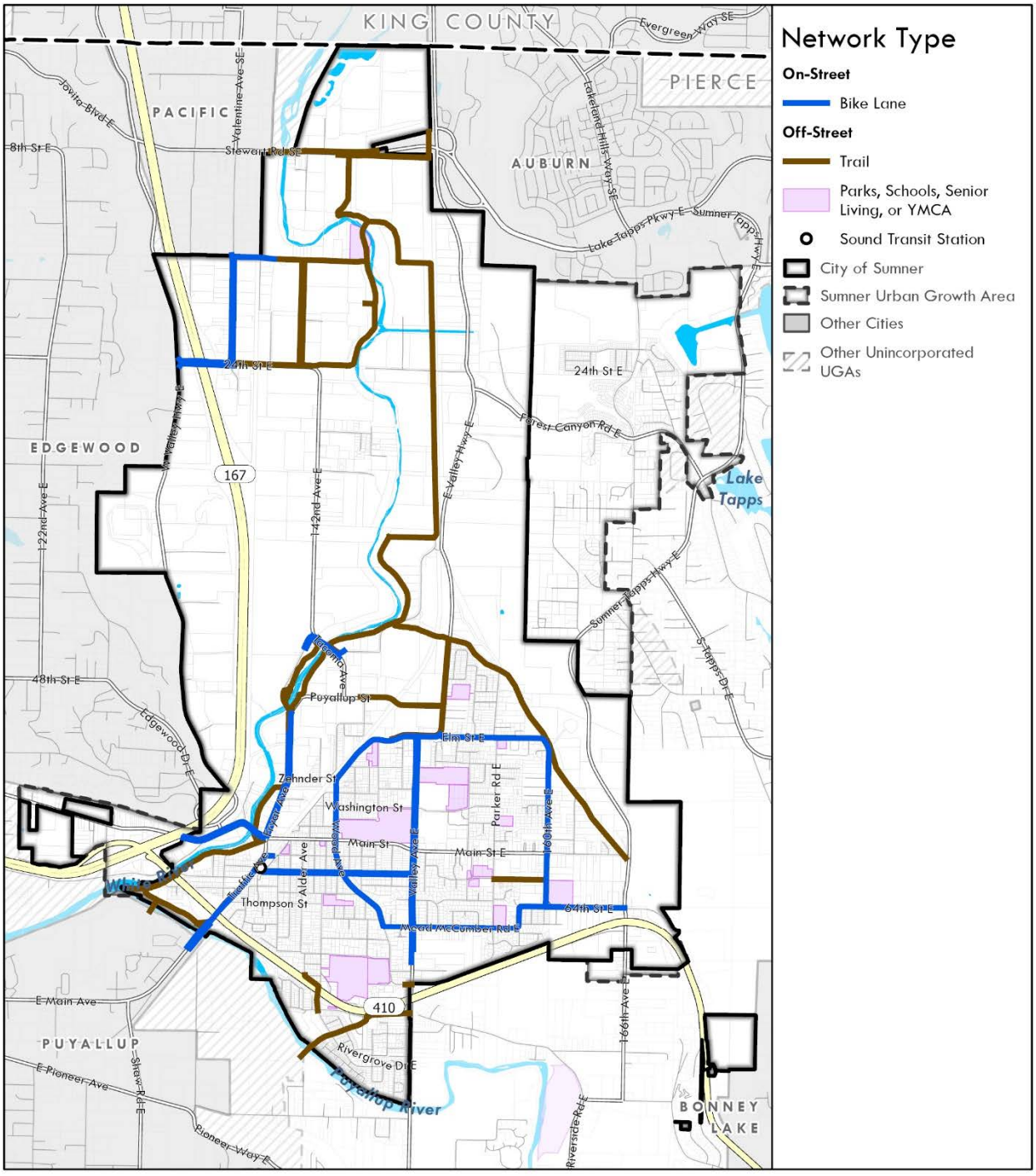
0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Exhibit 4-5. Future Bike Network



CITY OF SUMNER

Future Bike Network

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

CITY OF SUMNER WASHINGTON

Map Date: February 2024

Alternatives Analysis

The alternative analysis is based on the four alternatives described in the EIS and Land Use Element of the Comprehensive Plan. It is used to identify transportation needs for Sumner and develop the framework for the transportation network and ultimately the transportation improvement plan. The evaluation is completed using the City's travel demand model to forecast transportation demands as well as the identified future pedestrian and bike networks and then applying the level of service (LOS) standards to determine transportation needs for vehicle, bicycle, and pedestrian modes. The results of the alternatives analyses are used to develop a recommended 2044 transportation network with improvements.

Traffic Forecasts

Trip generation was developed through the modeling process, which converts estimates of housing and employment (by category) into daily person trips by trip purpose for each Traffic Analysis Zone (TAZ). The daily person trips are then converted into weekday PM peak hour vehicle trips based on factors from the PSRC regional travel demand model. Exhibit 4-6 summarizes the weekday PM peak hour trip generation for the alternatives.

Exhibit 4-6. Weekday PM Peak Hour Vehicle Trips by Alternative

Alternative 1	Alternative 2	Alternative 3	Preferred Alternative
12,544	13,626	13,542	12,550

Source: Transpo Group, 2023

The additional housing and employment under Alternatives 2 and 3 result in 8 to 9 percent more weekday PM peak hour trips generated compared to Alternative 1 (no action). Alternative 3 trip generation is slightly less than Alternative 2 (i.e., 0.6 percent or 84 vehicle trips less). As described previously, Alternatives 2 and 3 represent the same level of development but differ slightly in the allocation of the development.

Similarly, Alternatives 1 and the Preferred Alternative represent the same level of development but in the allocation of the development within the City. The Preferred Alternative is anticipated to result in a similar number of trips as Alternative 1.

The remainder of the alternatives analysis related to the assessment of vehicle needs focusses on Alternatives 1 and 2 representing the no action/Preferred Alternative and action conditions. Because Alternative 2 trip generation is only 84 weekday PM peak hour vehicle trips higher than Alternative 3 and this difference is very small considering it is distributed throughout the entire city transportation system, the resulting analysis of transportation needs is essentially the same for the two action alternatives. Similarly, the Preferred Alternative is 6 weekday PM peak hour vehicle trips higher than Alternative 1. As such, the findings and recommendations for Alternative 3 are anticipated to be the same as Alternative 2, and Alternative 1 the same as the Preferred Alternative.

The weekday PM peak hour traffic forecasts and average annual growth rate for the 2044 alternatives are summarized in Exhibit 4-7 for key intersections.

Exhibit 4-7. Alternative 1 and 2 Weekday PM Peak Hour Traffic Volumes

Intersection	2023 Existing	2044 Alternative 1		2044 Alternative 2	
	PM Peak Volumes	PM Peak Volumes	Average Annual Growth	PM Peak Volumes	Average Annual Growth
Stewart Road SE/Butte Avenue SE	1,675	2,315	2%	2,375	2%
E Valley Highway E/Forest Canyon Road E	1,525	1,860	1%	1,970	1%
Puyallup Street/Tacoma Avenue	860	1,090	1%	1,155	1%
E Valley Highway E/Elm Street E	1,425	1,710	1%	1,795	1%
Valley Avenue/Elm Street E	1,120	1,280	1%	1,330	1%
Sumner Heights Drive E/W Valley Highway E	820	1,085	1%	1,110	1%
Traffic Avenue/Main Street	2,080	2,520	1%	2,610	1%
Alter Avenue/Main Street	750	910	1%	955	1%
Valley Avenue/Main Street	1,810	2,235	1%	2,340	1%
Parker Road E/Main Street E	960	1,270	1%	1,310	1%
160th Avenue E/Main Street (60th Street E)	1,085	1,540	2%	1,605	2%
Sumner-Tapps Highway E/SR 410 WB Ramp	1,675	1,985	1%	2,025	1%
Valley Avenue/SR 410 EB Ramp	2,150	2,965	2%	3,025	2%
Valley Avenue/74th Street E	1,915	2,545	1%	2,590	1%

Source: Transpo Group, 2023

As shown in Exhibit 4-7, the average annual growth rate at the studies intersections is approximately 1 to 2 percent per year with both Alternatives 1 and 2. The growth overall represents an increase over existing traffic volumes at key study intersections of between 160 to 815 weekday PM peak hour trips under Alternative 1 and 205 to 875 PM peak hour trips under Alternative 2 by 2044. Alternative 2 results in approximately 25 to 100 more weekday PM peak hour trips at the study intersections compared to Alternative 1.

The growth in traffic volumes anticipated with both the alternatives will result in additional traffic congestion along city streets assuming similar driving behaviors as today. As traffic volumes increase, the number of hours during the day when congestion is experienced may also increase. A review of the roadway system capacity for Sumner shows that the existing streets are designed to handle this increase

in traffic volumes and maintain adopted LOS. Additional analysis is completed in the subsequent section to determine if improvements are needed to intersections with the growth in vehicle traffic projected with the Alternatives.

Level of Service Standards and Analysis

Multimodal level of service standards are required for non-motorized transportation facilities, locally owned arterials, and transit routes that serve urban growth areas, to serve as a gauge to judge system performance, and to help achieve the statewide goal of environmental justice. LOS standards establish the basis for the concurrency requirements in the GMA and are used to evaluate impacts as part of the State Environmental Protection Act (SEPA). Agencies are required to show concurrency—i.e., to "adopt and enforce ordinances which prohibit development approval if the development causes the level of service on a transportation facility to decline below the standards adopted in the transportation element of the comprehensive plan, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with development" (RCW 36.70A.070(6)(b)). Setting the LOS standard is an essential component of regulating development and identifying planned improvements for inclusion in the Transportation Plan.

The following sections describe the methodology for determining LOS by mode and provide an analysis of the 2044 forecasts for Sumner.

Vehicle

Level of service is both a qualitative and quantitative measure of roadway and intersection operations. Vehicle level of service uses an "A" to "F" scale to define the operation of roadways and intersections as follows:

LOS A: Primarily free flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delays at intersections are minimal.

LOS B: Reasonably unimpeded traffic flow operations at average travel speeds.

LOS C: Stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in

LOS B, and longer queues may contribute to lower-than-average travel speeds.

LOS D: Small increases in traffic flow may cause substantial increases in approach delays and decreases in speed.

LOS E: Significant delays in traffic flow operations and lower operating speeds.

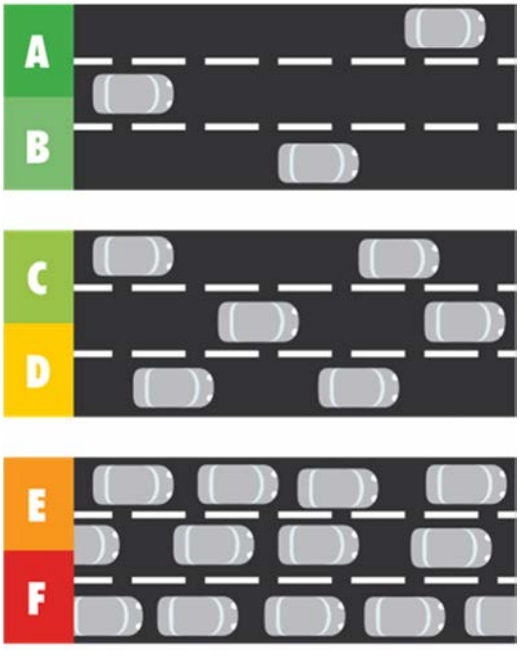


Exhibit 4-8. Illustration of Vehicle LOS

LOS F: Traffic flows at extremely low speeds. Intersection congestion is likely, with high delays and extensive vehicle queuing.

As described in Chapter 3, there are adopted LOS standards for the facilities serving Sumner.

Sumner LOS Standards

Sumner has established intersection LOS standards. The standards are applied to the weekday PM peak hour and to other time periods as appropriate based on the type and location of development. The LOS standards are:

- **Signalized, Roundabout, and All-way Stop Controlled Intersections**
  - LOS D based on average performance of all movements consistent with the current HCM method
  - Exception is LOS F at Traffic Avenue/Main Street/Fryar Avenue, Main Street/Alder Avenue, Valley Avenue East/Main Street, West Valley Highway East/Valley Avenue/Sumner Heights Drive
- **Two-way, Stop Controlled, Unsignalized Intersections**
  - LOS D or better based on the average delay per vehicle for each approach or separate traffic movement at the intersection using the latest HCM method
  - Exception allows left turns and through movements on side streets intersecting with arterials to operate below the adopted LOS D standard when the LOS affects relatively low traffic volumes and may not meet warrants for traffic signals.

State Highway LOS Standards

The City of Sumner is served by SR 167 and SR 410. SR 167 is classified as a Highway of Statewide Significance (HSS). Per WSDOT's Highway Systems Plan, the LOS standards for HSS facilities are set forth by State law. State law sets LOS D for HSS facilities in urban areas and LOS C for HSS facilities in rural areas. Since SR 167 is located within the Sumner urban area, the LOS D standard applies. GMA concurrency requirements do not apply to HSS facilities, per State legislation.

SR 410 is a State Highway of Regional Significance, Tier 2. The level of service standard for regionally significant state highways in the central Puget Sound region is set by PSRC in consultation with WSDOT and the region's cities and counties. PSRC established LOS D for SR 410 in Sumner. PSRC notes that it will measure the level of service for regionally significant state highways on a one-hour PM peak period basis. Furthermore, PSRC notes that local agencies will need to decide whether to apply concurrency to state highways of regional significance.

Traffic Operations

Traffic operations were evaluated based on intersection operations and the HCM methodology consistent with the existing conditions analysis. Intersection improvements were assumed based on the transportation improvement list outlined at the beginning of this. Traffic signal timing was optimized for each alternative in consideration of changes that would occur with intersection maintenance to address growth in traffic volumes.

Overall, the analysis finds that most of the study intersections operate at LOS D or better during the weekday PM peak hour with the projected growth under the alternatives. Exhibit 4-9 summarizes the existing, Alternative 1, and Alternative 2 operations at intersections where further review and potential improvements may be needed. The key finding of the analysis is that the city should consider potentially changing the adopted LOS standards. The 2015 Comprehensive Plan LOS policy changed the LOS standard to F at several intersections where operations were forecast to be LOS F with little or no feasible improvement projects. Due to shifts in traffic patterns and decreases in traffic volumes, operations at some intersections have improved. In addition, feasible improvements can be identified at intersections that are projected to operate at LOS E or F. A summary table of all the study intersection LOS and delay for Alternatives 1 and 2 is provided in Appendix B. As described previously, the trip generation for Alternatives 2 and 3 is similar with Alternative 2 being slightly higher. Similarly, Alternative 1 and the Preferred Alternative are similar. As such, intersection operations between Alternatives 2 and 3 and Alternative 1 and the Preferred Alternative are anticipated to be the same and would in the same recommended improvements.

Exhibit 4-9. Weekday PM Peak Hour LOS Summary

		2023 Existing			2044 Alternative 1			2044 Alternative 2		
Intersection	Current LOS Standard	LOS[1]	Delay[2]	V/C[3] or WM[4]	LOS	Delay	V/C or WM	LOS	Delay	V/C or WM
Stewart Road SE/Butte Avenue SE	D	F	186	SB	C	33	-	D	36	-
E Valley Highway E/Forest Canyon Road E	D	F	>180	WB	F	>180	WB	F	>180	WB
Puyallup Street/Tacoma Avenue	D	C	19	-	F	84	-	F	106	-
E Valley Highway E/Elm Street E	D	D	30	NBL	F	57	NBL	F	64	NBL
Valley Avenue/Elm Street E	D	D	31	NBL	E	43	NBL	E	45	NBL
Sumner Heights Drive E/W Valley Highway E	F	C	29	-	D	41	-	D	43	-
Traffic Avenue/Main Street	F	D	43	-	E	58	-	E	60	-
Alder Avenue/Main Street	F	B	11	-	B	14	-	B	15	-
Valley Avenue/Main Street	F	C	23	-	C	32	-	D	37	-
Parker Road E/Main Street E	D	C	24	SB	F	56	SB	F	66	SB
160th Avenue E/Main Street (60th Street E)	D	C	16	-	E	47	-	F	56	-
Sumner-Tapps Highway E/SR 410 WB Ramp	D	F	61	WB	A	7	0.54	A	8	0.55
Valley Avenue/SR 410 EB Ramp	D	F	80	-	B	12	0.87	B	13	0.88
Valley Avenue/74th Street E	D	F	110	EB	F	>180	EB	F	>180	WB

Notes:

1. Level of service, based on 2010 Highway Capacity Manual methodology.
2. Average delay in seconds per vehicle.
3. Volume-to-capacity ratio reported for signalized intersections.
4. Worst movement reported for unsignalized intersections.

As shown in Exhibit 4-9, the following intersections are anticipated to improve with the action Alternatives compared to existing conditions during weekday PM peak hour with the planned and funded improvements:

- **Stewart Road SE/Butte Avenue SE** – Completion of the traffic signal is anticipated to improve operations to LOS D
- **Sumner-Tapps Highway E/SR 410 WB Ramp** – The planned roundabout results in LOS A conditions
- **Valley Avenue/SR 410 EB Ramp** – The planned roundabout results in LOS B conditions

There are currently three intersections (Sumner Heights Drive E/W Valley Highway E, Alder Avenue/Main Street, and Valley Avenue/Main Street) that have a LOS F standard but are forecast to operate at LOS D or better with the alternatives during the weekday PM peak hour. One intersection, Traffic Avenue/Main Street, has a LOS F standard but is forecast to operate at LOS E.

The remaining intersections summarized in Exhibit 4-9 are forecast to degrade below LOS D during the weekday PM peak hour with the alternatives. Most of the poor intersection operations during the weekday PM peak hour under the Alternatives is projected along E Valley Highway and Valley Avenue. This is consistent with the observed regional cut-through traffic, which avoids congestion along SR 167 and uses routes through Sumner. Other intersections impacted by shifts in traffic and growth in the City of Sumner are the Parker Road E/Main Street E and 160th Avenue E/Main Street E intersections. Potential improvements at these intersections and the Traffic Avenue/Main Street intersection are discussed in Chapter 5.

Pedestrian

Non-motorized transportation LOS standards were developed based on the future network presented previously on Exhibit 4-4. The pedestrian network has been identified through a series of Primary or Secondary Routes. Corridors identified as Primary or Secondary Routes are not indicative of a hierarchy or priority for future non-motorized transportation sidewalk facility development, rather they are used to make a distinction between routes that are more regional or that extend completely through the community (primary), and those that serve to make the second leg of the journey to connect to destinations, extend into neighborhoods, or complete a loop (secondary).

The sidewalk LOS standards shown in Exhibit 4-10 emphasize system completion of sidewalks, pathways, or multi-use trails on arterial and collector roadways. The LOS designations are shown in green, orange, and red.

A green LOS indicates a facility meets adopted roadway standards. An orange LOS indicates a facility has sidewalks on only one side of the roadway, when both sides are the standard. A red LOS indicates no designated facilities are provided for sidewalk users and is considered unacceptable.

Exhibit 4-10. Pedestrian LOS Standard

LOS	Primary Route	Secondary Route
	Meets City standards, facilities on both sides	Meets City standards, facilities on one or both sides
	Facilities exist, but only on one side	N/A
	No facilities exist, does not meet standards	No facilities exist, does not meet standards

Source: Transpo Group, 2023

The City has established level of service standards for its pedestrian network based on the methodology in Exhibit 4-10 and the future network identified on Exhibit 4-4. A green LOS is the standard for secondary routes, while an orange LOS is the standard for primary routes. The city utilizes these standards to prioritize investments in the non-motorized transportation network and identify where significant gaps in the system need to be addressed to serve the Sumner land use plan.

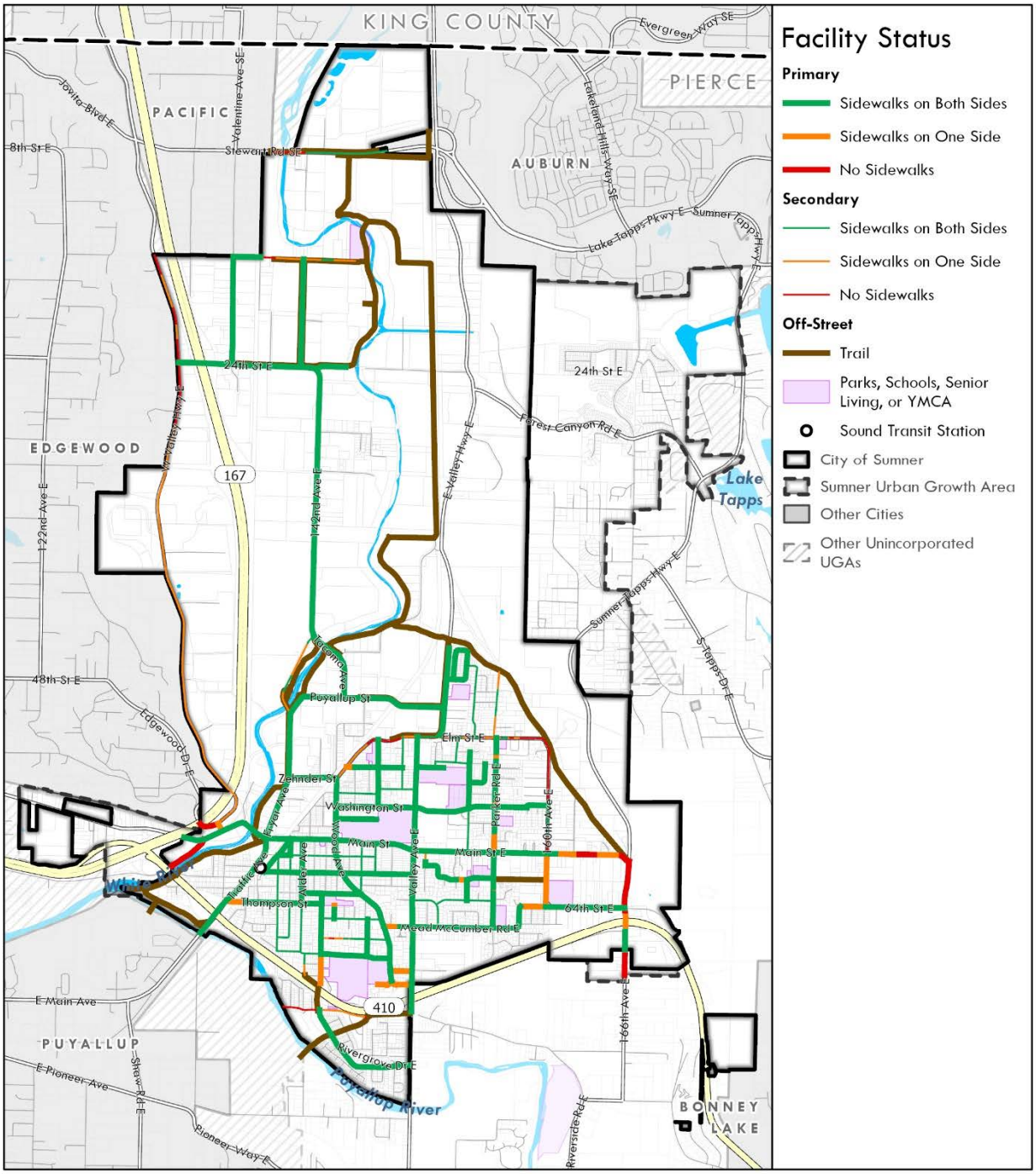
Applying the standards described above, the pedestrian LOS analysis is shown on Exhibit 4-11. The LOS is determined by comparing the 2044 future pedestrian network to the existing, planned, and funded pedestrian network. The pedestrian LOS analysis shows most of the future pedestrian network meets standard. There are some key connections to trails south of SR 410 that are missing as well as corridors such as Elm Street and 160th Avenue E that have missing sidewalks. The long-term project list identified in the Transportation Plan Chapter 5 would implement the orange LOS for primary routes and green LOS for secondary routes.

Bike

A future bike network was identified and is shown on Exhibit 4-5, presented previously. The bike LOS identified through an understanding of the availability of bike facilities along designated routes. Bike facilities could include sharrows, dedicated bike lanes, or protected bike lanes. A green LOS is the standard for the bike routes. Like the pedestrian LOS, Sumner utilizes these bike standards to prioritize investments in the non-motorized transportation network and identify where significant gaps in the system need to be addressed to serve the City's land use plan.

The LOS analysis for the bike network is shown on Exhibit 4-12. The LOS is determined by comparing the 2044 future bike network to the existing, planned, and funded bike network. The bike LOS analysis shows that bike connectivity east-west is limited and there is a lack of facilities within the east part of Sumner. The East Sumner Subarea Plan envisioned additional bike connectivity in this area as development occurred. The long-term project list identified in the Transportation Plan Chapter 5 would implement the green LOS for bike routes.

Exhibit 4-11. Future Pedestrian Level of Service



CITY OF SUMNER

Future Pedestrian Level of Service

N

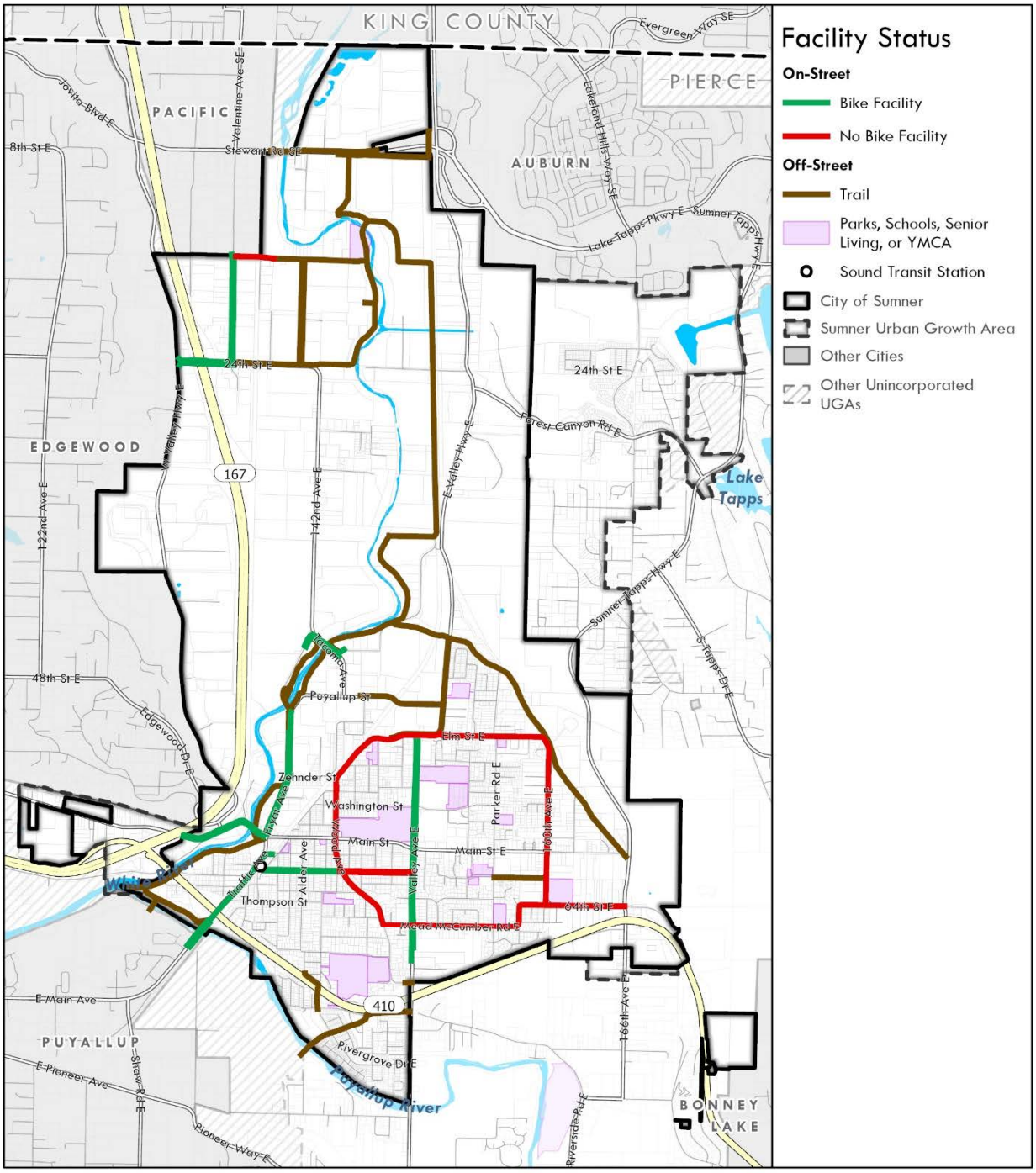
0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Exhibit 4-12. Future Bike Level of Service



Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

5. Transportation Improvement Program

The alternatives analysis, financing, and goals and policies were used to develop a comprehensive transportation improvement program (TIP) for the City. The program addresses existing and forecast needs through 2044 based on the projected growth in and around the City of Sumner. The transportation improvement program is organized by travel mode, although the improvement projects and programs may overlap between modes (e.g., sidewalks are included as part of a roadway widening project).

The Plan focuses on recommendations for five components of the transportation system:

- Streets and Highways
- Public Transit and Travel Demand Management
- Pedestrians and Bicycles
- Rail Service
- Air Transportation

Based on the plans/programs, goals, and policies for the five components, an overall multimodal long-range list of transportation projects is recommended to support the transportation needs within the 20-year horizon.

Recommendation 1: Monitor the transportation system against the Transportation Plan to track land use development against the progress of improvements to the transportation system as well as assist in updating the Transportation Improvement Program (TIP) and identifying budget needs.

Streets and Highways

Streets and highways serving the City of Sumner provide for the general movement of people and goods. They also serve other travel modes, including pedestrians and bicyclists. The street and highway element provides the core system of the Sumner Transportation Improvement Program. The key components of the street and highway element and recommendations are:

- Functional classification
- Design standards
- Truck routes
- Local Street
- Maintenance and operations - **Recommendation 2:** Add a signal replacement program to the maintenance and operations program.
- Neighborhood traffic control

Functional Classification

Roadway functional classification provides for a hierarchy of roadways. These classifications also act as a guide for future development of the overall street system. The classifications range from limited access freeways that support regional through traffic movements to local streets that primarily serve access to individual properties. The system is used to identify the desired function of each roadway regarding the type and level of traffic it would carry, design standards, and eligibility for a range of funding programs.

Exhibit 5-1 provides guidelines for the classifications used in the City of Sumner. There are no proposed changes to the guidelines from the 2015 Transportation Plan.

Exhibit 5-1. Functional Classification Guidelines

Classification	Definition	Typical Range of Daily Traffic Volumes[1]
Freeway/ Limited Access	Inter-regional divided highways connecting major activity centers. Typically, freeways have two or more lanes for traffic in each direction; access is limited to interchanges designed for higher speed merging/diverging traffic.	>30,000
Principal Arterial	Inter-community roadways connecting community centers or major facilities. Principal arterials are generally intended to serve predominantly "through" traffic with minimum direct service to abutting land uses. Spacing between parallel principal arterials is generally 2 miles or greater.	5,000 – 40,000
Minor Arterial	Provides intra-community travel for areas bound by the principal arterial system. Minor arterials serve trips of moderate length and provide more direct access to abutting properties than principal arterials. Spacing of minor arterials is typically less than 2 miles.	3,000 – 15,000
Collector	Provides for movement within a community, including connecting neighborhoods with smaller community centers. Collector arterials also provide connections to minor and principal arterials. Property access is generally a higher priority for collector arterials with a lower priority for through traffic movements. Spacing of collector arterials is generally 1 mile or less.	1,000 – 5,000
Local Access	The primary function of local/access streets is access to abutting properties. Local streets include a variety of designs and spacing depending on access needs.	0 – 1,000
Alley	Provide direct property access to residential or commercial properties. Also provide for service vehicles.	0 – 300

Notes:
1. Average daily traffic volumes.
Source: 2015 Sumner Transportation Plan

Washington State has also classified some highways that provide transportation functions that promote and maintain statewide travel and economic linkages as being of statewide significance or Highways of

Statewide Significance (HSS). In the Sumner planning area, SR 167 is designated as an HSS. Because of its designation as an HSS, the State is responsible for setting the level of service standard for the SR 167 freeway. Furthermore, the city cannot include SR 167 in its concurrency program.

Similarly, SR 410 is a State Highway of Regional Significance. Level of service standards for SR 410 are established by the Puget Sound Regional Council (PSRC), in consultation with WSDOT. The city also cannot include SR 410 in its concurrency program.

Exhibit 5-2 summarizes the functional classification plan for Sumner.

Design Standards

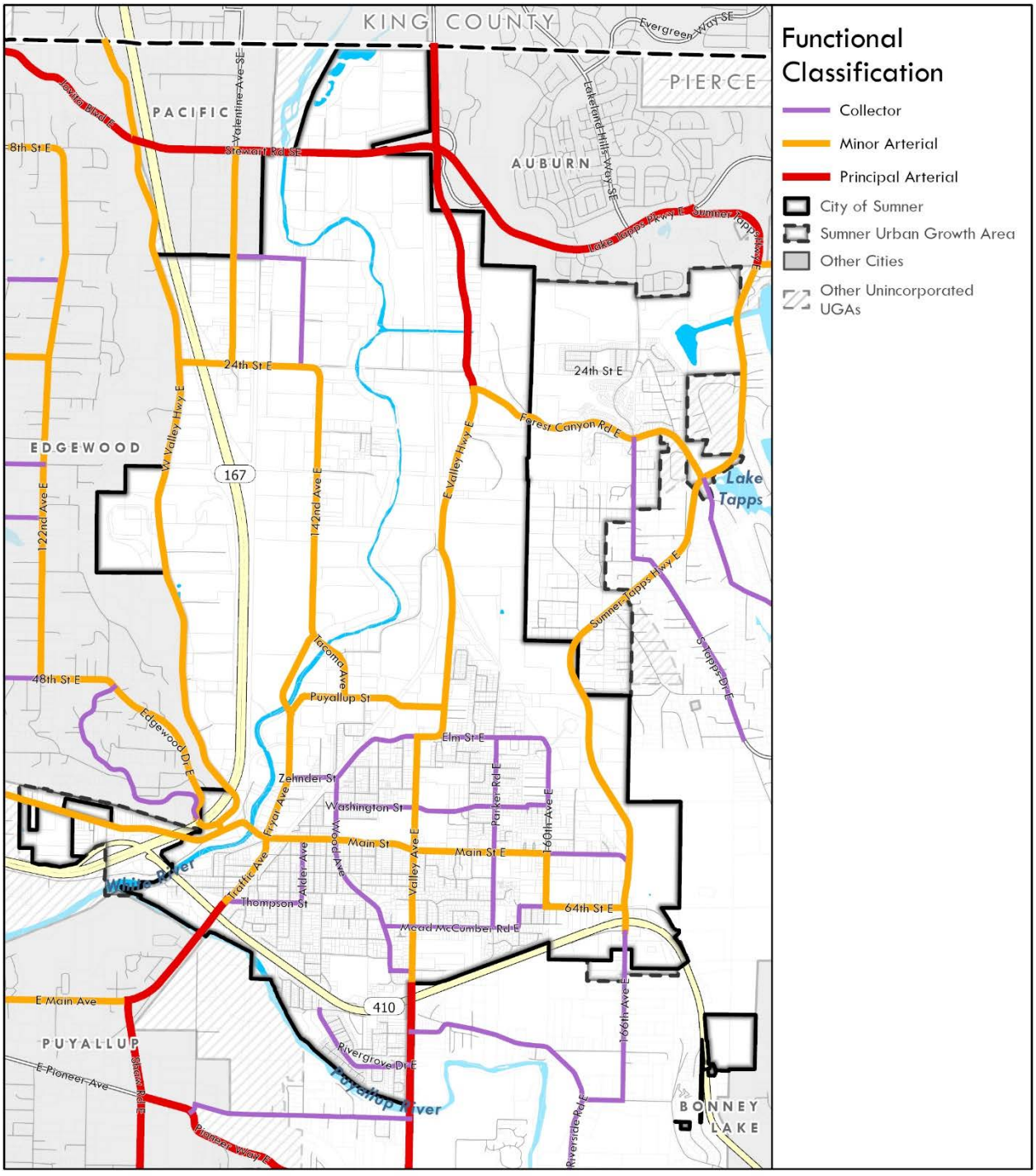
The City of Sumner continues to update Development Specifications and Standard Details (DSSD), which sets specific and consistent road design elements. To accommodate the different design needs in different parts of the City, the DSSD includes conceptual street standards. The design standards cover right-of-way needs, pavement width, type and width of pedestrian and bicycle facilities, and roadway and intersection radii.

The City has determined that one size and/or design does not fit all situations. For example, minor arterial needs in the industrial area require specific standards to accommodate trucks, while minor arterials serving the Town Center commercial district may require wider sidewalks to accommodate higher levels of pedestrian activity.

The standards support the City's goals in providing adequate facilities to meet the mobility and safety needs of the community, as well as complying with storm water management, sensitive areas, and other regulations. The standards are intended to assist design professionals and developers for all new and reconstructed roadways and right-of-way facilities, both public and private, within the City.

The City will continue to maintain and update the conceptual street design standards. The Development Specifications are refined periodically by the City to adhere to the guidelines, goals, and policies of this Transportation Plan and to meet current design practices.

Exhibit 5-2. Functional Classification Plan



CITY OF SUMNER

Functional Classification Plan

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Truck Routes

A significant amount of trucking activity occurs in the City consisting of distribution centers, warehousing, and light industrial activity located primarily in the northern part the city. Trucks have a significant impact on traffic operations, safety, and roadway maintenance. They also impact air quality and noise levels in the City. The City has designated only principal arterials and minor arterials as truck routes. The design standards addressed in the previous section are defined to support truck use along freight routes and in industrial areas.

Exhibit 5-3 shows the truck routes for Sumner. The truck routes are the same as the 2015 Transportation Plan and would continue to support future transportation needs. The primary routes for trucks traveling through the city are the two state highways: SR 167 and SR 410. Secondary (T-2) truck routes include 142nd Avenue E, Puyallup Street, Fryar Avenue, Traffic Avenue. Other truck routes are E Valley Highway E, Forest Canyon Road, and Sumner-Tapps Highway E, which are classified as T-3. These routes provide connections from the surrounding land uses to the regional transportation system. Collectors and local streets are not to be used by freight trucks unless essential for access to a local origin/destination and travel is limited to the shortest practical travel route.

Collector and Local Streets

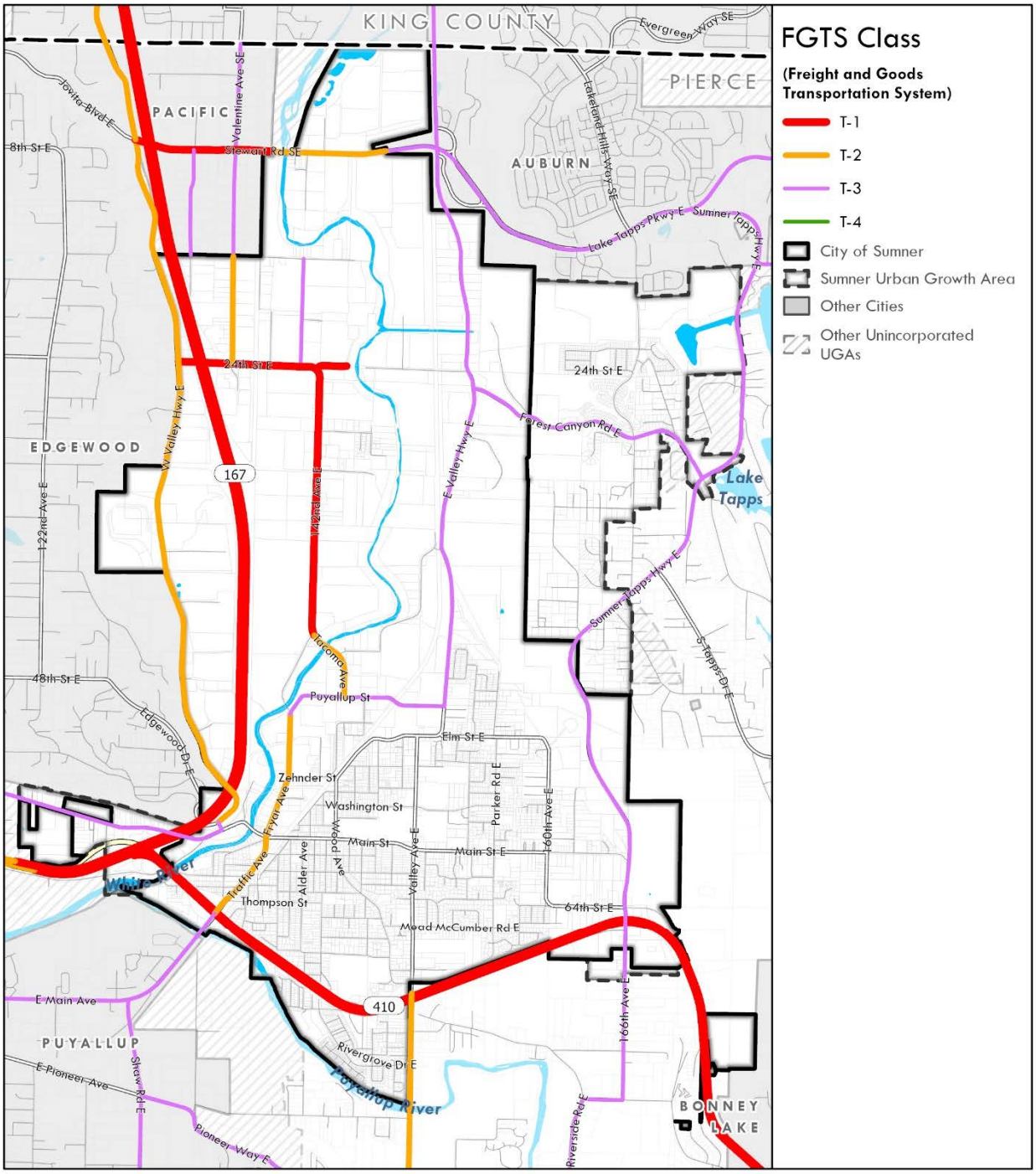
The goals and policies of this Transportation Plan emphasize expansion of the City's roadway network as a flexible grid. A grid is the most efficient arrangement of arterials and secondary access streets, and is intended to provide travel options for drivers, bicyclists, and pedestrians as well as reduce the practical distance and travel time between points in Sumner. Cul-de-sacs, dead-end streets, and loop roads create barriers in the network, increase travel distances, and, in residential areas, increase dependence on the automobile for daily activities.

The grid model differs in its application to various land uses. In residential areas, non-motorized movement must be accommodated, and the land is platted into smaller units. Therefore, the distance between streets should be smaller than in industrial areas, where efficient movement of vehicles, particularly freight vehicles, is emphasized and development generally occurs on large tracts of land.

The older residential neighborhoods in the vicinity of the downtown represent the general prototype for future residential development. Land is arranged into blocks of about 250 by 500 feet. This pattern should be maintained, to the extent practical, for future residential development. Blocks of this size encourage pedestrian movement and provide opportunities for alley access. In addition to the subdivision of land into a regular system of blocks, existing arterials should be extended to provide continuous transportation corridors and, where possible, to connect to other arterials. This benefits the community by reducing the volume of pass-through traffic on local streets.

New local streets are not explicitly defined in the Transportation Plan and are assumed to be built according to developer mitigation requirements (e.g., construction of sidewalks or payment of impact fees at time of development). Local street system plans may be prepared as part of future neighborhood or subarea studies. For example, increased commercial and residential development within the Town Center or East Sumner subareas will need to be balanced with appropriate circulation corridors to allow alternate access routes and provide acceptable levels of vehicular and non-motorized transportation connectivity. The actual alignment of the future circulation corridors will be determined based on property boundaries, environmental impacts, and engineering considerations.

Exhibit 5-3. Truck Route Plan



CITY OF SUMNER

Truck Route Plan

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

Maintenance and Operations Program

To maximize the use and efficiency of the existing and future transportation infrastructure, the City will continue with a comprehensive, systematic street maintenance program. The program will evaluate arterials and local roadways for pavement condition, signage, sight distance restrictions (such as vegetation blocking sight lines), trail maintenance and non-motorized facilities, and neighborhood safety impacts. Traffic control devices, including traffic signals, should be monitored, and serviced regularly. The program will also be used to evaluate speed limits based on functional classification, design, and roadway conditions.

The program should continue to use a Pavement Management System (PMS) to provide a consistent and systematic approach for identifying overlay projects each year. The PMS provides input regarding the need to rebuild existing streets or overlay. These programs should systematically cover all city arterials on a regular schedule with immediate response to potential safety issues that are observed.

In addition, the city should undertake a signal replacement program to review aging traffic control equipment and develop a systematic approach for upgrading and replacing signal systems or other related roadway technology. Replacing outdated equipment will ensure continued operations and allow for integration and communication to better manage traffic flows within the city, and to increase safety at crossings for pedestrians and bikes.

To assure that the existing and future transportation infrastructure is preserved in a cost-effective manner, the city will allocate annual budget resources to maintaining existing infrastructure. The city should develop a system to monitor traffic and land use changes, and to evaluate social and environmental justice impacts, for use in setting project priorities (see Recommendation 1 at the beginning of the chapter). The operations budget will need to provide time and staff resources to develop and submit grant applications and to coordinate with other jurisdictions.

Neighborhood Traffic Control

Providing safe and convenient local streets is an important element of the Transportation Plan. This includes keeping travel speeds at or below adopted/posted limits, improving safety for pedestrians and bicyclists, and minimizing the intrusion of non-local traffic on collectors and local streets. The Plan acknowledges that congestion on the arterial system can result in traffic diverting to collector and local access streets, resulting in undesirable impacts on neighborhoods. Much emphasis in the project list focuses on providing additional capacity to arterial streets and intersections. Until these and other improvements on the principal and minor arterials are implemented, some traffic may choose to divert onto neighborhood streets. Sumner should continue to implement neighborhood traffic control as an important element of the Transportation Plan.

Public Transit and Travel Demand Management

The City of Sumner recognizes the importance of transit and travel demand management programs as key elements of a multimodal transportation system. These programs build on regional programs and plans with some refinements to reflect the specific needs of the city. No changes are recommended

related to the travel demand management program. The transportation element includes policy related to exploring service with Pierce Transit and the transit plan included herein supports this direction.

Transit

Projects are incorporated into the overall TIP to support connectivity and access to transit. Transit objectives for Sumner focuses on multimodal connectivity to the Sounder Station. There is no public local transit service within the City. Consistent with the goals and policies of the Transportation Element, the city should explore local transit opportunities including coordinating with Pierce Transit to support the anticipated 20-year growth.

Recommendation 3: Explore additional transit service for Sumner.

- **North-South Transit Across County Line.** Continue to evaluate local routes or shuttle programs to provide north-south transit service between Sumner and the employment centers in the Green River Valley and the Sumner MIC.
- **Coordinate with Transit Agencies and Local Jurisdictions on Service.** The City of Sumner should also coordinate with transit agencies and work with other east Pierce County jurisdictions, such as Bonney Lake, to evaluate future transit routes to serve downtown Sumner and the region. The City of Sumner should participate in Pierce Transit's long-range planning efforts to ensure that policy is in place to move forward on studies and plans to return to the Pierce Transit benefit area if desired.
- **Evaluate Increased Service for Existing Routes.** Sound Transit Route 596 serves both Sumner and Bonney Lake but is only a weekday peak period route. Increased frequency of bus service between neighboring residential communities should be evaluated as Sumner is an employment center.
- **Coordinate with Regional Agencies.** In addition, the city should continue to coordinate with agencies on regional transit projects that serve the community. Successful use of transit and other HOV modes in the city is largely tied to the development of a regional system of HOV facilities and programs. Near the City, the Washington State Highway Statewide Improvement Program (2023-2026) identifies development of the SR 167 southbound high occupancy or toll (HOT) between Auburn and SR 410.

Recommendation 4: If public transit service is provided within Sumner in the future, the City should adopt a transit LOS.

Transportation Demand Management Program

Continued implementation of the Sumner TDM programs is recommended as part of the TIP. The goal of the TDM programs is to reduce the overall amount of travel by single occupant vehicles (SOVs) within the city. The City of Sumner TDM program builds on State, Pierce County, and other local legislation.

The Washington Commute Trip Reduction Law (RCW 70.94.521) requires TDM performance targets for firms with over 100 employees. The City of Sumner has adopted a CTR program. The CTR program establishes goals consistent with State legislation. The individual demand management strategies that are typical elements of the CTR and TDM programs are different for employment and residential developments. The key elements of a TDM program are listed below. These TDM elements should be

considered a starting point, and the city, employers or applicant may implement other measures to reduce reliance on SOV travel:

- Assign transportation coordinator
- Transit Incentives
- Parking Management
- Bike Racks and Facilities.
- Telecommuting
- Compressed Work Week
- Flexible Work Schedules
- Site and Street Design
- Rideshare and shuttle services
- Incentives
- Commuter information

Pedestrians and Bicycles

Bicycle, pedestrian, and trail facilities play a vital role in the city's transportation environment. The Sumner non-motorized transportation system is comprised of facilities that promote mobility without the aid of motorized vehicles. A well-established system encourages healthy recreational activities, reduces vehicle demand on roadways, and enhances safety within the community.

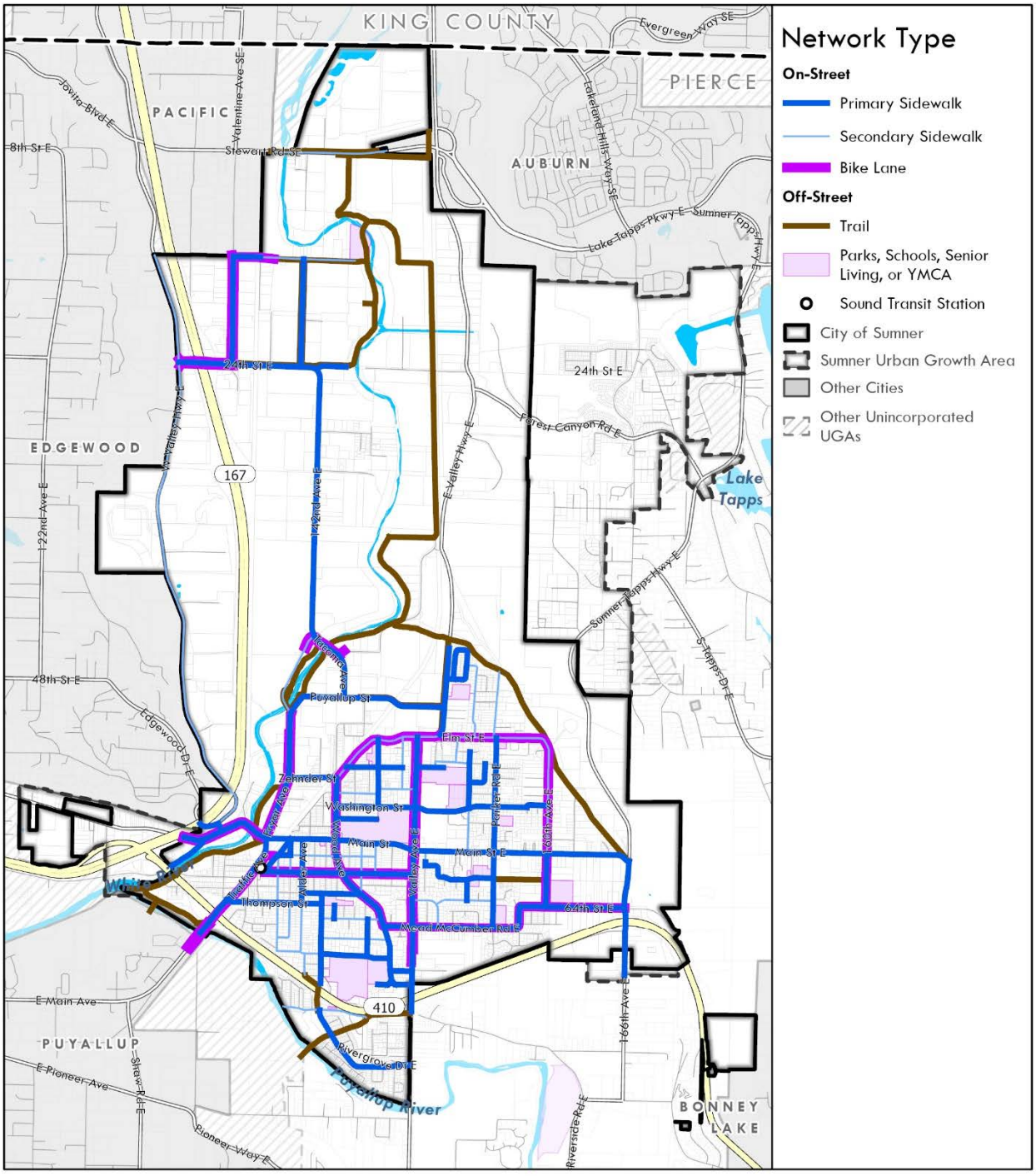
Recommendation 5: Adopt the non-motorized system and LOS standards. Monitor implementation and performance of the non-motorized system as an important component of the overall transportation system.

The pedestrian and bicycle network identified in the previous chapter was used to confirm specific LOS standards for non-motorized transportation facilities and to identify and develop the long-term non-motorized project list. The future non-motorized transportation system, shown in Exhibit 5-4, provides a comprehensive network of non-motorized transportation facilities for Sumner. The Plan shows the interconnected system of on-road and off-road facilities, which include sidewalks, pathways, shared-use trails, and bike facilities (e.g., bicycle routes, sharrows or bike lanes). The system is designed to facilitate non-motorized travel to key destinations within Sumner. The non-motorized projects to achieve the Plan are described in a subsequent section.

The non-motorized plan contains a series of primary or secondary sidewalk routes. Corridors identified as primary or secondary routes are not indicative of a hierarchy for future non-motorized transportation facility development, rather they are used to make a distinction between routes that are more regional or that extend completely through the community (primary), and those that serve to make the second leg of the journey to connect to destinations, extend into neighborhoods, or complete a loop (secondary).

Along with the project list, the City has established two sidewalk funding programs, the Sidewalk Maintenance Program and ADA Transition Plan, that will help maintain the existing sidewalk system by adding more wheelchair ramps and completing missing or damaged sidewalk sections. The City works with neighboring property owners on sidewalk construction and maintenance. The sidewalk funding programs help maintain and improve the existing sidewalks already found throughout the city.

Exhibit 5-4. Non-Motorized Plan



Freight Rail Service

The City of Sumner is traversed by both BNSF and UPRR railroad lines. These lines generally travel north-south. As described in the transit section, Sound Transit's Sounder commuter rail service provides public transit service from the Sumner Train Station on Traffic Avenue. Most of the use of the rail links is for regional freight movement through the city. The rail lines do not provide any significant local rail access for businesses in Sumner. There are no changes to freight rail as part of this Plan.

Air Transportation

There are no airports in the immediate Sumner planning area. Regional, national, and international air travel for Sumner is provided via Sea-Tac International Airport, located approximately 20 miles northwest of Sumner. The airport is accessed via SR 167 in Sumner. North of Sumner, Auburn Municipal Airport provides for local general aviation. It is accessed from Sumner via SR 167 or East Valley Highway. There are no changes to air transportation as part of this Plan.

Transportation Improvement Projects

Based on the existing and future transportation needs analysis and the proposed modal plans for the components described above, a list of multimodal transportation improvement projects was defined.

Recommendation 6: Adopt the list of multimodal transportation improvements and continue to monitor the establishment LOS by mode (such as the 6-year TIP) to ensure the improvements continue to support the goals and policies.

The improvements address safety, capacity, trail connections, expanded non-motorized transportation facilities, and roadway preservation needs. They also cover upgrades to existing roads and construction of new roadways and interconnected street systems to support the forecast economic development and growth in the city and its UGA. The roadway and intersection projects incorporate needs for pedestrians, bicyclists, and transit riders that will use the same corridors. The projects were categorized into three primary types:

- Spot or intersection improvements
- Roadway improvements
- Non-motorized improvements

Spot/Intersection Improvements

Spot or intersection improvements were identified where existing or forecast operational deficiencies are anticipated with growth in and around the City of Sumner. The projects are intended to improve operations at the identified intersections to meet the City's LOS standard. Some of the spot/intersection improvements were previously identified as a need in the 6-year transportation improvement program (TIP) and/or the 2015 Comprehensive Plan and should continue to be considered to support growth into 2044. There are also new intersection improvements identified to support the Sumner land use plan.

Roadway Improvements

The roadway improvements were previously identified as part of the 2023-2029 TIP and evaluation of the alternatives indicated continued need for the projects based on operations and safety, and completion of motorized and non-motorized networks. No new roadway improvement projects are proposed beyond what was already identified on the TIP.

Non-Motorized Improvements

While non-motorized improvements will be incorporated into both the spot/intersection and roadway improvements, separate non-motorized improvements have been identified. Non-motorized projects have been identified to increase accessibility and connectivity by completing missing links in the current trail, pedestrian, and bike system and to increase opportunities for alternative modes of transportation such as walking and biking and reducing reliance on SOVs. The non-motorized improvements include both projects that are already on the TIP as well as new improvements to support the Sumner land use plan.

A description and cost estimate for each project is presented in Exhibit 5-5. New projects are shown in bold in Exhibit 5-5. Exhibit 5-6 shows the location of each project. A map identification number is included in Exhibit 5-5 to assist in referencing the projects shown on Exhibit 5-6.

Planning level cost estimates were prepared for each project based on typical per unit costs, type of roadway and scope of the improvement. Where costs had been calculated as part of ongoing design projects or projects listed in the current City's 6-year TIP, the original estimate was adjusted for cost escalation or inflation, as needed. The cost estimates include allowances for right-of-way acquisition based on generalized needs to meet the City's Street standards. Construction costs were adjusted, as needed, to reflect any specific implementation issues, such as environmental impacts or impacts on adjacent properties.

Exhibit 5-5. 20-Year Transportation Improvement Projects and Costs

Map ID[1]	Title and Location	Description	Project Cost[2]
SP1	**E Valley Highway E/Forest Canyon Road E**	**Construction of a new signal or roundabout**	**$3,000,000**
SP2	Puyallup Street/Tacoma Avenue and overlay	Plane, repair, and overlay, complete intersection channelization improvements, add an eastbound left-turn pocket on Puyallup Street at Tacoma Avenue. Add	$2,600,000

Map ID[1]	Title and Location	Description	Project Cost[2]
	Puyallup Street to White River Bridge (WSDOT SUM-30)	a signal at the Puyallup Street/Tacoma Avenue intersection	
SP3	**E Valley Highway E/Elm Street E**	**New signal when warranted**	**$1,500,000**
SP4	**Valley Avenue/Elm Street E**	**New signal when warranted**	**$1,500,000**
SP5	**Traffic Avenue/Main Street**	**Add EB right-turn overlap. Convert W Main Street to one-way facility westbound.**	**$150,000**
SP6	Parker Road E/Main Street E	New signal when warranted	$1,650,000
SP7	160th Avenue E/Main Street (60th Street E)	New signal or RAB when warranted	$3,000,000
SP8	**Valley Avenue/74th Street E**	**Add EB/WB left-turn restrictions. Shift WB left-turns to U-turning movement at Valley Avenue/SR 410 EB Ramp RAB**	**$75,000**
SP9	Sumner Tapps Highway/60th Street E	Signalization of the intersection. Construct EB right-turn lane	$3,400,000
		Sport/Intersection Subtotal	*$16,875,000*
RW1	166th Avenue E Widening; SR 410 WB ramps to 64th St E (WSDOT SUM-24)	Widen to 4-5 lanes, includes new roundabouts at WB ramp and 64th Street E	$19,000,000
RW2	160th Avenue E; Main Street to 64th Street E	Improve and widen streets to minor arterial standards with bike paths and sidewalks	$500,000
RW3	Valley Avenue; South City Limits to Main Street	Overlay existing roadway surface, ADA upgrades	$1,850,750
RW4	Stewart Rd Corridor ITS improvements; SR 167 to Lakeland Hills (WSDOT SUM-27)	Connect traffic signals and railroad crossings to coordinate signal timing	$3,500,000
RW5	160th Avenue E; Elm St to Main Street	Improve to collector standards with curb, gutter, sidewalks on both sides, and bike facilities	$2,900,000
RW6	Elm Street; E Valley Hwy to 160th Avenue E	Improve to collector standards with curb, gutter, sidewalks on both sides, and bike facilities	$2,600,000
RW7	Parker Road E; 62nd Street to 63rd Street	Construct curb, gutter, and sidewalk on east side of street	$250,000
RW8	Parker Road E; Main Street to Elm Street	Improve to collector standards with curb, gutter, and sidewalks on both sides	$1,300,000
RW9	Zehnder Street; Pease Avenue to Wood Avenue	Railroad Crossing Improvements	$1,000,000

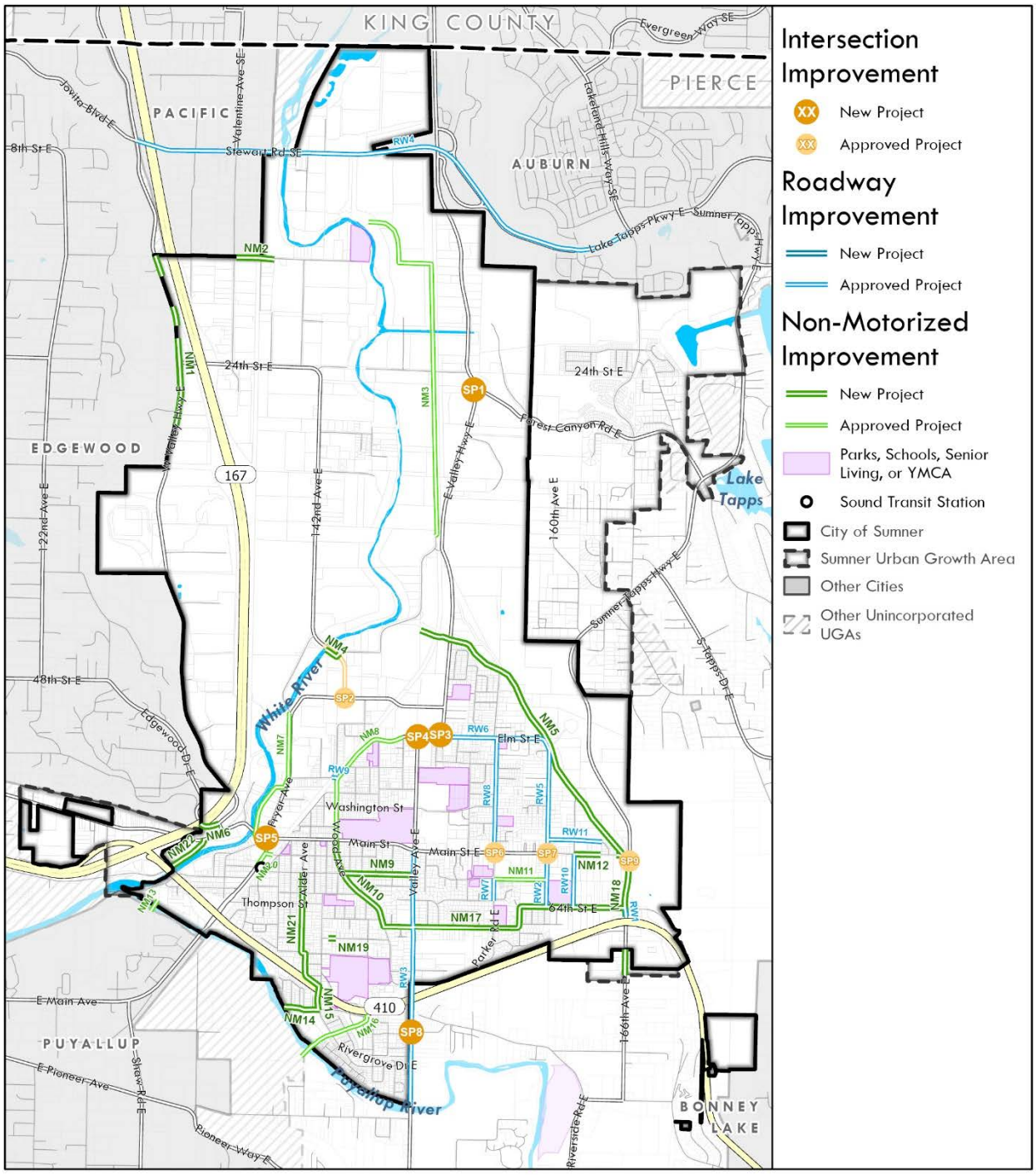
Map ID[1]	Title and Location	Description	Project Cost[2]
RW10	162nd Avenue E Segment Extension; 64th Street to 60th Street	Construct 2-lane facility	$3,000,000
RW11	164th Avenue Court E Segment Extension; 160th Avenue E to existing 164th Avenue Court E	Construct 2-lane facility	$2,000,000
RW12	Systemic Horizontal Curve and Roadway Departure Safety Improvements (WSDOT SUM-28)	East Valley Highway, West Valley Highway, Sumner-Tapps Highway/166th Avenue E, 142nd Avenue E/24th Street E. Install static and/or dynamic curve warning signs, speed feedback signs, centerline and edge lie profiled striping, rumble strips, reflective markers on-pavement as appropriate to delineate roadside objects, channelization, guardrail/roadway shouldering, and street lighting	$903,000
-	Stewart Road SW: Butte Avenue SE to 140th Avenue Court E[4]	Widen to 5 lanes including a center two-way left-turn lane	-
		Roadway Subtotal	*$38,803,750*
NM1	**West Valley Highway Sidewalks**	**Complete missing sidewalk facilities on the east side between 16th Street E and SR 167 SB Ramps**	**$1,000,000**
NM2	**16th Street E Ped/Bike**	**Construct ped/bike facilities between Valentine Avenue and 138th Avenue E**	**$2,000,000**
NM3	White River Restoration Tail	#9 Ditch to area north of 16th Street	$3,000,000
NM4	**Tacoma Avenue Trail**	**New trail facilities between the White River and 45th Street E**	**$150,000**
NM5	**Salmon Creek Trail**	**New trail between current end at 149th Avenue E and Sumner-Tapps Highway E**	**$3,000,000**
NM6	**Edgewood Drive Sidewalks**	**Complete missing sidewalk facilities between SR 167 and Sumner Heights Drive E**	**$550,000**
NM7	Fryar Avenue Trail (WSDOT SUM-17)	West Main Street to Puyallup Street	$7,200,000
NM8	Zehnder Street/Elm Street Sidewalks	"Construct pedestrian and bike facilities. Bike lanes from Valley Avenue to Main Street Complete missing sidewalk facilities between Pease Avenue and Wright Avenue"	$1,600,000
NM9	**Academy Street Bike Facilities**	**Construct bike facilities between Wood Avenue and Valley Avenue E**	**$800,000**
NM10	**Wood Avenue/Meade McCumber Road**	**Construct bike facilities between Main Street E and Valley Avenue**	**$1,800,000**

Map ID[1]	Title and Location	Description	Project Cost[2]
NM11	62nd Street Court E Trail	Construct trail east of 62nd Street Court E between Parker Road and 160th Avenue E	$1,000,000
NM12	**Main Street E Sidewalks**	**Construct missing sidewalk facilities between 162nd Avenue E and Sumner-Tapps Highway E**	**$575,000**
NM13	Puyallup River Crossing	Over White River. Two-part project: 1. Study best location for trail crossing 2. Construct ped/bike trail crossing	$4,000,000
NM14	**Construct sidewalks on one side of 72nd Street E**	**Between River Street and 143rd Avenue E**	**$250,000**
NM15	Rivergrove Pedestrian Bridge (WSDOT SUM-29)	Trail overpass connecting the vicinity of Alder Ave. to 143rd Ave. E over SR 410	$11,200,000
NM16	Puyallup River Trail Bridge	Bridge and trail connections to the Foothills Trail. Trail overpass connecting 144th Ave E to 143rd Ave E	$6,000,000
NM17	**Mead McCumber Road/64th Street E Non-motor**	**Construct pedestrian and bike facilities between Valley Avenue E and Sumner-Tapps Highway**	**$900,000**
NM18	**Sumner-Tapps Highway Sidewalks**	**Construct missing sidewalk facilities between Main Street E and the southern City Limits**	**$1,000,000**
NM19	**Rainier Street Sidewalks**	**Construct missing sidewalk facilities between Sumner Avenue and Guptil Avenue**	**$150,000**
NM20	Traffic Avenue Pedestrian Signal (WSDOT SUM-25)	Replace existing pedestrian rectangular rapid flashing beacon with pedestrian signal	$616,753
NM21	**Alder Avenue Sidewalks**	**Construct pedestrian and bike facilities between SR 410 and Academy Street**	**$950,000**
NM22	**Houston Road E Sidewalks**	**Construct pedestrian facilities between Valley Avenue E and the west City limits**	**$850,000**
		Non-Motorized Subtotal	*$48,591,753*
		Total	***$104,270,503***

Notes:
BOLD indicates a **new** project that has been identified based on the transportation analysis of land use alternatives.
1. Map identification references to Exhibit 5-6, 20-Year Transportation Improvement Projects.
2. Project cost represents 2023 dollars. Source:
Transpo Group 2023
3. Identifies current WSDOT or grant funding.
4. This project is fully funded and will be completed before 2044; however, to remain eligible for transportation impact fees already set aside for the project, it is included on the 20-year project list.

The following chapter discusses how to finance the implement the modal plans.

Exhibit 5-6. 20-Year Transportation Improvement Projects



CITY OF SUMNER

20-Year Improvement Projects

N

0 ½ Miles

CITY OF SUMNER WASHINGTON

Disclaimer: Map features are approximate only. The City of Sumner does not guarantee the accuracy of this map nor assume any liability from the use of or reliance on the information herein.

Map Date: February 2024

6. Finance and Implementation Program

The transportation improvement projects must be funded and implemented to meet existing and future travel demands in and around the City of Sumner. A summary of project costs and a strategy for funding the projects over the life of the Transportation Plan are presented. In addition, implementation strategies are discussed, including continuing coordination with WSDOT and other agencies to prioritize and fund regional improvements. Other strategies call for monitoring and refining the City's transportation impact fee programs to ensure development addresses multimodal needs and does not out pace transportation system investments. The implementation plan provides the framework for the City to prioritize and fund the improvements identified in the transportation improvement program. It also addresses the City's development review program covering LOS standards and concurrency.

Financing Program

The GMA requires the Transportation Plan to include a multi-year financing plan based on the identified needs in the transportation improvement program. The financing plan for the Transportation Plan provides a basis for the City's annual Six-Year Transportation Improvement Program (TIP). As required by the GMA, the financing program also includes a discussion of how additional funds will be raised and/or level of service standards will be reassessed to assure that the Transportation Plan can adequately support the Land Use Element. Alternatively, the city may reassess its Land Use Element.

The transportation financing program becomes a subset of the City's Capital Facilities Plan (CFP) Element. The GMA requires the CFP Element to include at least a six-year plan for financing capital facilities and identifies the sources of public money for the projects.

Project Cost Summary

Planning level project cost estimates have been prepared to determine the magnitude of the transportation investments needed over the life of the Plan. Exhibit 5-5, in the previous chapter, summarizes the list of capital transportation improvement projects based on the analyses of existing and future 2044 conditions. Exhibit 6-1 summarizes the planning level capital costs into three primary improvement categories: Spot/Intersections, Roadway Improvements, and Non-Motorized Improvements. In addition, Exhibit 6-1 includes a summary of transportation programs and administration costs allocated to the City of Sumner to implement the Plan through 2044.

Exhibit 6-1. Transportation Projects and Programs Cost Summary

	Cost (2023 Dollars)[1]
Transportation Capital Projects	
Spot/Intersection Improvements	$16,875,000
Roadway Improvements	$38,803,750
Non-Motorized Improvements	$48,591,753
Total	**$104,270,503**
Citywide Transportation Programs	
Arterial Maintenance/Street Overlay	$3,000,000
Roadway Paint Line Application	$800,000
Pavement Repairs	$1,323,000
Roadway Plastic Marking Application	$1,122,000
Chip Seal Application	$2,730,000
Crack Seal Application	$1,575,000
Neighborhood Traffic Control Program	$560,000
Signal Replacement Program (NEW)	$2,000,000
ADA Transition Plan	$800,000
Sidewalk Maintenance Program	$2,500,000
Total	**$16,410,000**
Total Cost (Capital and Programs)	$120,680,503
Cost/Year	**$6,034,025**

Notes:
1. Planning level costs in 2023 dollars.
Source: Transpo Group and City of Sumner 2023

Approximately $104 million (2023 dollars) will be needed to fully fund the capital improvements over the 20-year horizon of the Plan. Of these costs, over $16.8 million are related to intersection improvements, $38.8 million are related to roadway improvements, and over $48.5 million are related to non-motorized improvements. In addition, $16.4 million is anticipated to implement the citywide transportation programs over the life of the Plan. Combined, the total costs for the Sumner Transportation Plan is estimated at approximately $120.6 million. This equates to an average of approximately $6 million each year for the life of the Plan through 2044. Funding the transportation projects and programs will require Sumner to seek outside sources, which is consistent with current practices. Ultimately, the portion of funding that is solely the responsibility of Sumner will vary by project and program and will depend on the availability of grants, partnerships, and other sources. The following section describes the Sumner funding strategy for implementing this Transportation Plan.

Funding Strategy

The City of Sumner utilizes fees and tax revenues to construct and maintain their transportation facilities. Funding sources include local tax revenues, fees, grants, partnerships with other agencies, and developer impact fees. The City also uses fuel taxes and can direct revenues from its General Fund to transportation capital projects, as needed, to balance its Six-Year Transportation Improvement Program (TIP).

Developer mitigation includes transportation impact fees and/or construction of frontage improvements at the time of development. Other agencies such as WSDOT are expected to share in the cost of state highway improvements to meet regional transportation needs.

The City identifies the most appropriate potential funding sources for each of the improvement projects. For example, grants or other agency funding are assumed to be a greater share of the revenues for funding improvements on SR 167 or SR 410 than on the local arterial improvements. While it is unlikely that implementation of the Transportation Plan projects will match the city's funding assumptions at a project-by-project level, this process does provide for a reasonable estimate of anticipated revenues needed for the overall capital improvement program. It also establishes a level of funding needed through transportation impact fees.

Exhibit 6-2 summarizes the anticipated sources of revenues used by the city to fund transportation improvements and programs. Key strategies related to funding transportation include:

- **Grants**. The city has been successful in applying for State and Federal grants. Partial grant funding was allocated to projects based on the type and location of the improvement. Projects that would serve Sumner as well as regional traffic and provided multimodal solutions are excellent candidates for grants. Projects that also support economic development are also good candidates.
- **Local Improvement District (LIDs) and Developer Funding.** LIDs or developer improvements would cover the cost of curb, gutter, sidewalks, planter strips, and a portion of the street lighting that are not included in the impact fee program. Other improvements would also be covered by developers based on SEPA mitigation or frontage improvement requirements. While the City has rarely used LIDs, the City could use this approach to set up LIDs that fund improvements and benefit the adjacent property owners. The City could pursue low interest loans from the Public Works Trust Fund (PWTF) and then pay off the loans with annual proceeds from the LIDs.
- **Transportation Impact Fee (TIF) Update.** The city will update the TIF based on the 20-Year project list and the allowance of multimodal fees. Additional details on the TIF are provided in the second following Exhibit 6-2.

Exhibit 6-2. Existing and Projected Revenues

	Annual Revenue (2023 Dollars)	2023-2044 20-Year Revenues (2023 Dollars)
General Revenue Source		
Motor Vehicle Fuel – City	$210,000	$4,200,000
Local Parking Tax	$58,000	$1,160,000
Street & Curb Permits	$27,500	$550,000
Plan Check Fees	$430,000	$8,600,000
Subtotal	**$725,500**	**$14,510,000**
Grants or Other Funding		
Federal State, or Other Grants/Funding Partnership	$5,810,000	$116,200,000
Local Improvement District/Developer Funded	$100,000	$2,000,000
Transportation Impact Fees[1]	$500,000	$10,000,000
Subtotal	**$6,410,000**	**$128,200,000**
Total Existing Revenue and Other Funding	**$7,135,500**	**$142,710,000**

Source: City of Sumner 2023
Notes:
1. Based review of historic Transportation Impact Fee (TIF) revenue data.

Transportation Impact Fees Update

The GMA allows agencies to develop and implement a transportation impact fee (TIF) program to help fund some of the costs of transportation facilities needed to accommodate growth. State law (Chapter 82.02 RCW) requires that TIFs are:

- Related to improvements to serve new developments and not existing deficiencies.
- Assessed proportional to the impacts of new developments.
- Allocated for improvements that reasonably benefit new development.
- Spent on facilities identified in the CFP.

TIFs can only be used to help fund improvements that are needed to serve new growth. The projects can include recently completed projects to the extent that they serve future growth and do not solely resolve existing deficiencies. The cost of projects needed to resolve existing deficiencies cannot be included.

State Bill 5452 effective July 23, 2023, amends 82.02.090(7) RCW to include bike and pedestrian facilities designed with the intent of multimodal commuting as part of the definition of public facilities where impact fees are allowed. With this amendment, the City intends to adopt a multimodal transportation impact fee to help fund improvements.

The City implemented and adopted a transportation impact fee program in 2003. The program is defined in Chapter 12.36 of the Sumner Municipal Code (SMC). As part of the Transportation Plan, the City would amend SMC Chapter 12.36 to include pedestrian and bike facilities in the TIF program consistent with the State law.

The funding strategy assumes the TIF program is updated based on the 20-year list of improvement projects, as identified in Exhibit 5-5. An evaluation and update of the TIF rates has been conducted as part of the Transportation Plan to reflect changes in land use plans, funding, level of service standards, and the new State legislation allowing funding to be directed towards non-motorized transportation projects. The TIF eligible projects are a subset of the long-term transportation projects identified in Chapter 5 Exhibit 5-5. Appendix C provides a more detailed summary of the traffic impact fee eligibility and the amount of the project cost that was applied in the development of the TIF.

The current TIF program divides Sumner into districts. The district approach was used due to the large amount of growth in jobs that was anticipated in the MIC area with implementation of the 2015 Comprehensive Plan and to help incentivize development in the Town Center. The growth allocation for the current plan does not anticipate significant growth in jobs and residential growth is spread more evenly throughout the City, within the Town Center and other residential areas. The current TIF approach recommends eliminating the three districts and having one fee schedule for the entire City. This approach simplifies the fee structure and provides ease in understanding fees. Exhibit 6-3 summarizes the potential transportation impact fee based on the Preferred Alternative land use plan and cost for the TIF applied to the projects. The application of the TIF was reduced from the eligible amount based on anticipated grant funding or developer contributions to improvement projects. Appendix C provides a breakdown of the TIF eligible and the applied TIF percentages for each of the improvement projects.

Alternative 1 and the Preferred Alternative have a higher TIF per PM peak hour trip since there is less growth, but the system needs are similar to that of Alternative 2. Alternative 3 has approximately the same amount of growth in trips as Alternative 2 so the TIF per PM peak hour trip would be about the same as Alternative 2. The Preferred Alternative is used as the basis of the TIF calculations presented below.

Exhibit 6-3. Potential Transportation Impact Fee Rates

Applied TIF Share[1]	Total New PM Peak Hour Trips (Passenger car equivalents)	Cost Per New PM Peak Hour Trip (Passenger car equivalents)
$26,515,384	2,479	$7,452

Notes:
1. Total cost share in 2023 dollars, based on relative impact of the 2023 – 2044 traffic growth on each capacity-added project on a passenger car equivalent basis.

The transportation impact fees are estimated to account for almost 26.5 million (2023 dollars) in revenues. This represents approximately 22 percent of the total funding program, including the contributions related to expected debt service.

The current fee per weekday PM peak hour trip for the City ranges between $1,900 to $3,400 depending on the location of the development. The proposed fee estimate, including non-motorized transportation improvements, will be a significant increase over current fees. Staff will review the TIF with City Council who will determine the fee that is ultimately selected.

The following section describes the reassessment strategy that can be used in the case the TIF proportion or other funding source are less than estimated in this initial funding strategy.

Reassessment Strategy

The funding strategy is partially based on grants and other outside funding that the City does not control. The City may be able to shift revenues from other funding programs to address specific needs as yearly budgets are prepared or consider other revenue options such as increasing the vehicle license tab fee. In addition, the City is committed to reassessing their transportation needs and funding sources each year as part of their annual Six-Year Transportation Improvement Program (TIP). This allows the City to match the financing program with the shorter-term improvement projects and funding. The Transportation Plan also includes goals and policies to periodically review land use growth, adopted level of service standards, and funding sources to ensure they support one another and meet concurrency requirements.

To maintain the vitality of Sumner's transportation system, the City should adhere to the following principles in its funding program:

- As part of the development of the annual Six-Year Transportation Improvement Program, the City will balance improvement costs with available revenues.
- Review project design during the development review process to determine whether costs could be reduced through reasonable changes in scope or deviations from design standards.
- Coordinate and partner with WSDOT and other agencies to vigorously pursue grants from state, federal, and regional agencies to help fund and implement improvements along SR 167 and SR 410.
- Work with regional and local agencies to develop multi-agency grant applications for projects that serve regional travel.
- Review transportation impact fee revenues each year to determine whether the impact fees should be adjusted to account for project cost increases and/or decreases in grants or WSDOT cost sharing.
- If the actions above are not sufficient, consider changes in the level of service standards and/or limit the rate of growth.

Implementation Program

Implementation of the Transportation Plan involves several strategies. These include coordination with developers and partnering with other agencies to construct the transportation improvement projects. Partnering with other agencies and use of grants will be especially critical in the implementation of safety, capacity, and operational improvements along SR 167 and SR 410. This may include re-prioritizing roadway projects as new funding sources become available or by focusing on areas most impacted by new development. The City will also continue to review strategies for phasing improvements allowing

funding to be spread over a longer period. In addition, the City will need to review, maintain, and update its concurrency management, Transportation Impact Fee, and other development review processes to account for the revised multimodal LOS standards and assure that the impacts of growth are mitigated, and transportation improvements are completed concurrent with new development.

Partnering with Other Agencies

The Transportation Plan supports the City's role in the regional transportation strategy (in PSRCs Vision 2050) through its policies to support and expand use of transit, transportation demand management, and active travel to reduce the number of vehicle trips generated by development in the city. Sumner will need to coordinate with Sound Transit, other transit providers, and other nearby cities to implement facilities and services to meet those objectives. Coordination will also help assure consistency in plans and implementation programs between agencies to meet the goals of the regional plan.

The City will continue to partner with WSDOT to implement improvements along both SR 167 and SR 410 consistent with the Transportation Plan project list. Projects along both state highways serve regional travel patterns as well as provide local access within the City of Sumner. Without WSDOT as a partner, the City is unable to put a high priority on major capacity improvements along both state highways since the improvements serve significant levels of regional traffic and the projects will cost more than the City can reasonably fund on their own. These projects should be considered for joint submittal of grants, with the local match being combined from benefiting agencies. Partnering with WSDOT will be critical in the implementation of the Transportation Element project list.

Project Priorities and Timing

The City of Sumner will use the annual update of the Six-Year TIP to re-evaluate priorities and timing of projects. Throughout the planning period, projects will be completed, and priorities will be revised. The development of the TIP will also be used to identify potential phasing options to fit within available revenues during that six-year time horizon. The city will monitor traffic volumes and the location and intensity of land use growth in the city. The city will also need to monitor traffic growth from other adjacent communities. Based on this information, the city will then be able to direct funding to areas that are most impacted by growth or may fall below the City's level of service standard. The development of the TIP will be an ongoing process over the life of the plan and will be reviewed and amended annually.

Concurrency Management and Development Review

Concurrency refers to the ongoing process of coordinating infrastructure needs with community development. This concept was formalized in the GMA to ensure that adequate public facilities are provided in concert with population and employment growth. For transportation facilities, the GMA requirement is fulfilled if its level of service standards will continue to be met including the additional travel demand generated by each development.

As part of the review of developments applications, the city will apply its level of service standards, street classifications and conceptual street designs, and other regulations related to transportation. The City has options for implementing its concurrency requirements. Development permit applications are evaluated for vehicle trips generated, and Transportation Impact Fees (TIF) are assessed. Alternatively, depending on the scale of a proposed project, the City may also review concurrency through the SEPA

review process. The SEPA process also ties the concurrency to specific development applications, instead of applying it citywide or to subareas of the city. This process is consistent with the 2015 Transportation Plan.

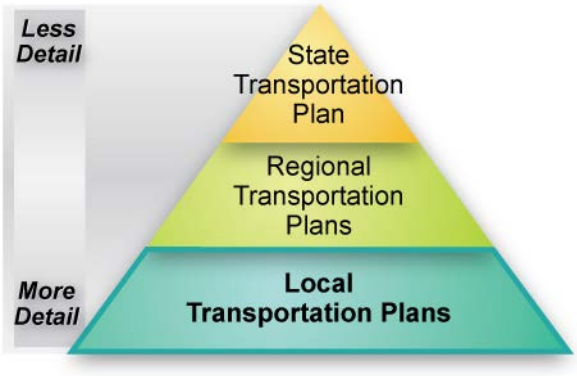
The following summarizes the City's framework for the SEPA-based concurrency review:

- Baseline traffic forecasts to be developed and based on existing traffic, historical growth rates, and pipeline development traffic.
- Project traffic based on trip generation, distribution, and assignment.
- Future conditions evaluated based on city or other agency improvements that are funded for construction within six years.
- Assess project impacts at locations that fall below the city's adopted LOS standard.
- Require mitigation to resolve LOS deficiencies, unless exempt from concurrency based on policies.
- If deficient location is exempt from concurrency, require appropriate mitigation (such as payment of impact fees or proportionate share mitigation, construct partial improvements to offset project impacts, or reduce development impacts through phasing or TDM programs)
- If adequate mitigation is not defined to resolve the LOS deficiency, then the city will deny the development.
- Identified LOS deficiencies will be used to seek grants or other funding and as an input to the annual Six-Year TIP process.

7. Consistency With Other Agencies

Sumner's transportation system is part of, and connected to, a broader regional highway and arterial system. The GMA works to increase coordination and compatibility between the various agencies that are responsible for the overall transportation system. Since transportation improvements need to be coordinated across jurisdictional boundaries, the Transportation Plan needs to be consistent with and supportive of the objectives identified in the Washington State Transportation Plan, PSRC's Vision 2050, and the transportation plans or capital improvement plans of the surrounding agencies. Developing the Transportation Plan is primarily a bottoms-up approach to planning, with the city exploring its needs based on the land use plan. Eventually, local projects are incorporated into regional and state plans. A schematic of this approach is shown below in Exhibit 7-1. The following sections provide a review of this Plan's consistent with neighboring jurisdictions.

Exhibit 7-1. Transportation Plan Approach



Washington State Department of Transportation

As required by the 1998 amendments to the GMA, the Sumner Transportation Plan addresses the state highway system. Specifically, the Transportation Plan addresses the following elements related to the state highway system:

- Inventory of existing facilities – see Chapter 3
- Level of service standards – see Chapter 3 and 4
- Concurrency on state facilities – see Chapters 4 and 5
- Analysis of traffic impacts on state facilities – see Chapter 4
- Consistency with the State Highway Systems Plan – see Chapter 5 and Exhibit 7-2

Exhibit 7-2 summarizes the improvements on state facilities listed in the Statewide Transportation Improvement Program (STIP) 2023 – 2026, which are consistent with the Plan identified in chapter 5.

Exhibit 7-2. State Highway Improvement Plan

State Route (limits)[1]	State Project ID (Sumner Project ID)	State Highway System Plan Project Description
166th Avenue E SR 410 WB Ramp Intersection to 64th Street E	SUM-24 (RW1)	Widen 166th Avenue E to a 4-lane facility with roundabouts at the SR 410 WB Ramp and 64th Street E
Fryar Avenue W Main Street to Puyallup Street	SUM-17 (NM7)	Shared Use Trail W Main Street to Puyallup Street
Main Street/Traffic Avenue	SUM-25 (NM21)	Replace existing pedestrian rectangular rapid flashing beacon with pedestrian signal
Rivergrove Community Pedestrian Bridge Alder Avenue and Maybelle Street to 143rd Avenue E	SUM-29 (NM16)	Construct a non-motorized pedestrian bridge over SR 410 with approach ramp, shared use path and sidewalk connections to Alder Avenue, 143rd Avenue E, and 72nd Street E
Stewart Road Corridor Completion Butte Avenue E to 140th Avenue Curt E	SUM-16	Replace and widen existing bridge to accommodate 4 travel lanes and separate shared use path
Stewart Road ITS W Valley Highway E – SR 167/Stewart Road Interchange to Future signal at Golf Course Entrance west of East Valley Highway	SUM-27 (RW4)	Add/replace/upgrade interconnected conduit/cabling and signal hardware to coordinate traffic signals and devices along Stewart Road
Systemic Horizontal Curve and Roadway Departure Safety Improvements East Valley Highway, West Valley Highway, Sumner-Tapps Highway/166th Avenue E, 142nd Avenue E/24th Street E	SUM-28 (RW12)	Install static and/or dynamic curve warning signs, speed feedback signs, centerline and edge lie profiled striping, rumble strips, reflective markers on-pavement as appropriate to delineate roadside objects, channelization, guardrail/roadway shouldering, and street lighting
Tacoma Avenue Overlay Puyallup Street to the White River Bridge	SUM-30 (SP2)	Plane, repair, and overlay, complete intersection channelization improvements, add an eastbound left-turn pocket on Puyallup Street at Tacoma Avenue. Add a signal at the Puyallup Street/Tacoma Avenue intersection
Valley Ave Overlay Sumner City Limits to Meade McCumber Rd E	SUM-26 (RW3 in part)	Grinde and overlay Valey Avenue

Notes:
1. Based on the WSDOT Statewide Transportation Improvement Program (STIP) 2023-2026.

Pierce County

The recommendations and functional classifications of arterials and collectors are consistent between the City's and County's Plans.

The most significant improvement project in the Transportation Plan involving Pierce County is the widening of Stewart Road SE Bridge over the White (Stuck) River (SUM-16). This project is fully funded and is being led by the City of Sumner with participation by Pierce County and the Cities of Auburn and Pacific. It provides the principal east-west route in the north part of the City of Sumner connecting with Stewart Road from the SR 167 interchange to Lake Tapps Parkway.

Sound Transit

The future transit recommendations in the Sumner Transportation Plan are consistent with Sound Transit's short and long-term plans for the area.

City of Auburn

Auburn is planning on widening East Valley Highway between Lakeland Hills Way and E Valley Access Road to four to five lanes including storm water, illumination, and intelligent transportation system (ITS) improvements. A separate non-motorized trail would also be constructed on the east side of East Valley Highway. This project provides a continuation of the Auburn Way principal arterial to connect to the Stewart Road/Lake Tapps Parkway corridor.

City of Pacific

The Cities of Sumner and Pacific transportation systems connect in the northwest part of Sumner. The City of Pacific is also participating in Pierce County's expansion of the Stewart Road SE Bridge. The Sumner Regional Trail system along the White (Stuck) River also will connect with segments in Pacific. The trail project is being coordinated between the two cities and Pierce County.

City of Edgewood

The City of Edgewood is located west of Sumner. The primary transportation system interface is in the Pacific Avenue/West Valley Highway corridor. Traffic using Sumner Heights Drive or Edgewood Drive E in southeast Edgewood access either Valley Avenue or Pacific Avenue. Traffic using Pacific Avenue can access SR 410 via Bridge Street and Traffic Avenue. Traffic to/from Edgewood is also able to use the North Sumner interchange with SR 167 at 24th Street E.

City of Puyallup

The City of Puyallup is located southwest of Sumner. The primary transportation system interface is in the E Main Avenue (Traffic Avenue) corridor and SR 162 via Pioneer Way E. City of Puyallup has acknowledged the need for working with Sumner.

Appendix A LOS Definition

Highway Capacity Manual 2010/6th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* and 6th Edition (Transportation Research Board, 2010 and 2016, respectively).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F[1]	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F[1]	>50

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

Appendix A LOS Definition

Highway Capacity Manual, 2000

Signalized intersection level of service (LOS) is defined in terms of the average total vehicle delay of all movements through an intersection. Vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average delay per vehicle during a specified time period (for example, the PM peak hour). Vehicle delay is a complex measure based on many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, and traffic volumes with respect to intersection capacity. Table 1 shows LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* (Transportation Research Board, Special Report 209, 2000).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table 2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Sumner Comp Plan Update - 2024
PM Peak Hour

Intersection	Traffic Control	2023 Existing			2044 Alt 1			2044 Alt 2		
		LOS	Delay	WM	LOS	Delay	WM or v/c	LOS	Delay	WM or v/c
1. Stewart Rd SE/Butte Ave SE	TWSC	F	186.4	SB	C	32.5	-	D	35.6	-
2. 140th Ave Ct E/Stewart Rd SE	Signal	B	10	-	A	7.3	-	A	7.4	-
3. W Valley Hwy E/24th St E	Signal	C	21.6	-	C	26.6	-	C	25.8	-
4. SR 167 NB Ramps/24th St E	Signal	D	35.8	-	C	33.6	-	C	33.6	-
5. 136th Ave E/24th St E	Signal	C	25.1	-	C	27.9	-	C	28.1	-
6. 142nd Ave E/24th St E	TWSC	B	13.9	WB	C	15.3	WB	C	16.4	WB
7. E Valley Hwy E/Forest Canyon Rd E	TWSC	F	327.1	WB	F	1268.8	WB	F	2472.2	WB
8. W Valley Hwy E/SR 167 SB Ramps	Signal	B	18.5	-	C	20.9	-	C	21	-
9. 142nd Ave E/Costco Access	Signal	A	6.8	-	A	6.7	-	A	6.6	-
10. W Valley Hwy E/42nd St E	TWSC	B	11.3	WB	B	14.2	WB	B	14.4	WB
11. 142nd Avenue E/Tacoma Avenue	TWSC	B	13.1	EBL	C	16.3	EBL	C	16.9	EBL
12. Puyallup St/Tacoma Ave	AWSC	C	18.9	-	F	84.3	-	F	105.8	-
13. E Valley Hwy E/Puyallup St	Signal	B	14.4	-	B	16.1	-	B	17.5	-
14. E Valley Hwy E/Elm St E	TWSC	D	29.6	NBL	F	57.4	NBL	F	64.1	NBL
15. Valley Ave/Elm St E	TWSC	D	30.7	NBL	E	43.1	NBL	E	45.2	NBL
16. Fryar Ave/Zehnder St	TWSC	C	20.7	WB	C	24.6	WB	D	25.9	WB
17. Parker Rd E/Washington St	TWSC	B	10.3	EB	B	11	EB	B	11.2	EB
18. Sumner Heights Dr E/W Valley Hwy E	Signal	C	28.6	-	D	41.1	-	D	42.5	-
19. Sumner Heights Dr E/Valley Ave E/Cannery Way	Signal	C	20.5	-	C	30.7	-	C	31.8	-
20. Traffic Ave/Main St	Signal	D	43.1	-	E	58.1	-	E	59.5	-
21. Alder Ave/Main St	AWSC	B	11.1	-	B	13.6	-	B	14.6	-
22. Ryan St/Main St	TWSC	B	11.8	NB	B	12.4	NB	B	12.6	NB
23. Wood Ave/Main St	Signal	B	10.7	-	B	13	-	B	13.3	-
24. Valley Ave/Main St	Signal	C	22.7	-	C	32.4	-	D	36.7	-
25. Parker Rd E/Main St E	TWSC	C	24.4	SB	F	55.9	SB	F	66.2	SB
26. 160th Ave E/Main St (60th St E)	AWSC	C	15.8	-	E	46.5	-	F	56.3	-
27. Sumner Tapps Hwy E/60th St E	TWSC	C	18.9	EBR	C	27.7	-	C	30.8	-
28. Traffic Ave/Maple St	TWSC	C	22.3	EB	D	25.4	EB	D	26	EB
29. Traffic Ave/Thompson St	Signal	C	23.8	-	D	35.9	-	D	36.7	-
30. Station Ln/Thompson St	Signal	A	7.5	-	A	7.5	-	A	7.5	-
31. Alder Avenue/Thompson Street	TWSC	B	11.7	NB	B	11.8	NB	B	12.1	NB
32. E Main Ave/SR 410 EB Ramps	Signal	B	19	-	C	23.1	-	C	21.7	-
33. Valley Ave/Meade-McCumber Rd E	Signal	B	18.1	-	C	29.7	-	C	34.9	-
34. Parker Rd E/Meade-McCumber Rd E	TWSC	B	11	NB	B	11.3	SB	B	11.8	SB
35. 160th Ave E/64th St E	AWSC	B	11.8	-	C	17.8	-	C	19.7	-
36. Sumner-Tapps Hwy E/64th St E	Signal	C	22.3	-	A	6.7	0.398	A	6.9	0.414
37. Sumner-Tapps Hwy E/SR 410 WB Ramps	TWSC	F	61	WB	A	7.4	0.539	A	7.6	0.55
38. Sumner-Tapps Hwy E/SR 410 EB Ramps	Signal	C	21.2	-	B	18.4	-	B	18.4	-
39. Valley Ave/Gary St E	TWSC	B	12	EB	C	18.4	EB	C	20	EB
40. Valley Ave/SR 410 WB Ramps	Signal	C	27.7	-	A	8	0.597	A	8.5	0.628
41. Valley Ave/SR 410 EB Ramps	Signal	F	80.4	-	B	12.2	0.867	B	12.5	0.875
42. Valley Ave/74th St E	TWSC	F	110	EB	F	611.8	EB	F	685.5	WB
43. Valley Ave/Rivergrove Dr E	Signal	B	16.5	-	B	15.4	-	B	15.4	-

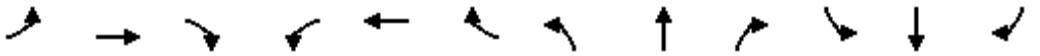
Intersection	
Int Delay, s/veh	20.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	885	5	5	525	20	15	0	10	75	0	95
Future Vol, veh/h	40	885	5	5	525	20	15	0	10	75	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	6	6	6	5	5	5	0	0	0	2	2	2
Mvmt Flow	42	922	5	5	547	21	16	0	10	78	0	99

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	568	0	0	927	0	0	1626	1587	925	1582	1579	558
Stage 1	-	-	-	-	-	-	1009	1009	-	568	568	-
Stage 2	-	-	-	-	-	-	617	578	-	1014	1011	-
Critical Hdwy	4.16	-	-	4.15	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.254	-	-	2.245	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	985	-	-	725	-	-	83	109	329	88	109	529
Stage 1	-	-	-	-	-	-	292	320	-	508	506	-
Stage 2	-	-	-	-	-	-	481	504	-	288	317	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	985	-	-	725	-	-	62	98	329	79	98	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	62	98	-	79	98	-
Stage 1	-	-	-	-	-	-	266	292	-	463	501	-
Stage 2	-	-	-	-	-	-	387	499	-	254	289	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	58.9	186.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	92	985	-	-	725	-	-	151
HCM Lane V/C Ratio	0.283	0.042	-	-	0.007	-	-	1.173
HCM Control Delay (s)	58.9	8.8	0	-	10	0	-	186.4
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q(veh)	1.1	0.1	-	-	0	-	-	9.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	970	10	5	490	0	45	0	20	5	0	10
Future Volume (veh/h)	5	970	10	5	490	0	45	0	20	5	0	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	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	1841	1841	1841	1811	1811	1811	1826	1826	1826	1811	1811	1811
Adj Flow Rate, veh/h	5	1000	10	5	505	0	46	0	21	5	0	10
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, %	4	4	4	6	6	6	5	5	5	6	6	6
Cap, veh/h	586	1169	12	254	1164	986	337	0	216	134	32	143
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.00	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	879	1819	18	540	1811	1535	1367	0	1543	278	231	1018
Grp Volume(v), veh/h	5	0	1010	5	505	0	46	0	21	15	0	0
Grp Sat Flow(s),veh/h/ln	879	0	1837	540	1811	1535	1367	0	1543	1528	0	0
Q Serve(g_s), s	0.1	0.0	22.1	0.4	7.0	0.0	1.0	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.1	0.0	22.1	22.5	7.0	0.0	1.4	0.0	0.6	0.4	0.0	0.0
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	0.33		0.67
Lane Grp Cap(c), veh/h	586	0	1181	254	1164	986	337	0	216	309	0	0
V/C Ratio(X)	0.01	0.00	0.86	0.02	0.43	0.00	0.14	0.00	0.10	0.05	0.00	0.00
Avail Cap(c_a), veh/h	707	0	1433	328	1412	1197	806	0	747	811	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.3	0.0	7.2	16.1	4.5	0.0	19.3	0.0	19.0	18.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	4.7	0.0	0.3	0.0	0.1	0.0	0.1	0.0	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	0.0	0.0	6.4	0.0	1.6	0.0	0.5	0.0	0.2	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	0.0	11.9	16.1	4.8	0.0	19.4	0.0	19.1	18.9	0.0	0.0
LnGrp LOS	A	A	B	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h		1015			510			67			15	
Approach Delay, s/veh		11.9			4.9			19.3			18.9	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		38.1		12.6		38.1		12.6				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		39.5		24.5		39.5		24.5				
Max Q Clear Time (g_c+I1), s		24.1		2.4		24.5		3.4				
Green Ext Time (p_c), s		8.4		0.0		3.4		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			10.0									
HCM 6th LOS			B									

Notes

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

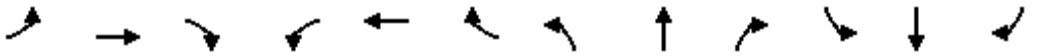
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	365	30	60	190	190	515
Future Volume (veh/h)	365	30	60	190	190	515
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1707	1707	1544	1544	1781	1781
Adj Flow Rate, veh/h	380	31	62	198	198	536
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	13	24	24	8	8
Cap, veh/h	476	219	818	715	234	1330
Arrive On Green	0.15	0.15	0.56	0.56	0.14	0.75
Sat Flow, veh/h	3155	1447	1544	1282	1697	1781
Grp Volume(v), veh/h	380	31	62	198	198	536
Grp Sat Flow(s),veh/h/ln	1577	1447	1467	1282	1697	1781
Q Serve(g_s), s	10.5	1.7	1.8	7.3	10.3	9.8
Cycle Q Clear(g_c), s	10.5	1.7	1.8	7.3	10.3	9.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	476	219	818	715	234	1330
V/C Ratio(X)	0.80	0.14	0.08	0.28	0.85	0.40
Avail Cap(c_a), veh/h	890	408	818	715	385	1330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	33.1	9.2	10.4	37.9	4.1
Incr Delay (d2), s/veh	2.2	0.2	0.2	1.0	7.1	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.6	0.6	2.1	4.6	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.0	33.3	9.4	11.4	45.0	5.0
LnGrp LOS	D	C	A	B	D	A
Approach Vol, veh/h	411		260			734
Approach Delay, s/veh	38.6		10.9			15.8
Approach LOS	D		B			B

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	17.0	54.8			71.8	18.2
Change Period (Y+Rc), s	4.6	4.6			4.6	4.6
Max Green Setting (Gmax), s	20.4	30.4			55.4	25.4
Max Q Clear Time (g_c+I1), s	12.3	9.3			11.8	12.5
Green Ext Time (p_c), s	0.3	1.5			3.7	1.1

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

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

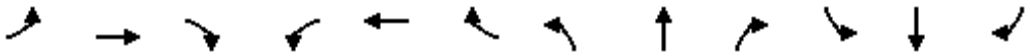


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	290	0	0	375	265	20	5	250	0	0	0
Future Volume (veh/h)	85	290	0	0	375	265	20	5	250	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1574	1574	0	0	1693	1693	1678	1678	1678			
Adj Flow Rate, veh/h	90	309	0	0	399	282	13	16	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	22	22	0	0	14	14	15	15	15			
Cap, veh/h	110	1090	0	0	772	345	852	895				
Arrive On Green	0.07	0.36	0.00	0.00	0.08	0.08	0.53	0.53	0.00			
Sat Flow, veh/h	1499	3069	0	0	3300	1434	1598	1678	1422			
Grp Volume(v), veh/h	90	309	0	0	399	282	13	16	0			
Grp Sat Flow(s),veh/h/ln	1499	1495	0	0	1608	1434	1598	1678	1422			
Q Serve(g_s), s	5.3	6.6	0.0	0.0	10.7	17.4	0.3	0.4	0.0			
Cycle Q Clear(g_c), s	5.3	6.6	0.0	0.0	10.7	17.4	0.3	0.4	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	110	1090	0	0	772	345	852	895				
V/C Ratio(X)	0.82	0.28	0.00	0.00	0.52	0.82	0.02	0.02				
Avail Cap(c_a), veh/h	157	1376	0	0	979	437	852	895				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.66	0.66	0.00	0.00	0.95	0.95	1.00	1.00	0.00			
Uniform Delay (d), s/veh	41.1	20.3	0.0	0.0	36.4	39.5	9.9	9.9	0.0			
Incr Delay (d2), s/veh	12.4	0.1	0.0	0.0	0.5	8.7	0.0	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			
%ile BackOfQ(50%),veh/ln	2.3	2.3	0.0	0.0	4.6	7.5	0.1	0.2	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	20.4	0.0	0.0	36.9	48.2	9.9	9.9	0.0			
LnGrp LOS	D	C	A	A	D	D	A	A				
Approach Vol, veh/h		399			681			29				
Approach Delay, s/veh		27.8			41.6			9.9				
Approach LOS		C			D			A				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		52.6		37.4			11.2	26.2				
Change Period (Y+Rc), s		4.6		4.6			4.6	4.6				
Max Green Setting (Gmax), s		39.4		41.4			9.4	27.4				
Max Q Clear Time (g_c+I1), s		2.4		8.6			7.3	19.4				
Green Ext Time (p_c), s		0.1		2.0			0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay			35.8									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR] 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 (veh/h)	115	345	75	35	355	60	70	20	60	210	20	220
Future Volume (veh/h)	115	345	75	35	355	60	70	20	60	210	20	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1648	1648	1648	1841	1841	1841	1693	1693	1693
Adj Flow Rate, veh/h	126	379	82	38	390	66	77	22	66	231	22	242
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	20	20	20	17	17	17	4	4	4	14	14	14
Cap, veh/h	477	1220	261	434	1250	210	221	76	227	380	26	283
Arrive On Green	0.02	0.16	0.16	0.04	0.47	0.47	0.06	0.19	0.19	0.08	0.21	0.21
Sat Flow, veh/h	1527	2496	534	1570	2682	450	1753	404	1213	1612	121	1328
Grp Volume(v), veh/h	126	230	231	38	226	230	77	0	88	231	0	264
Grp Sat Flow(s),veh/h/ln	1527	1523	1507	1570	1566	1566	1753	0	1618	1612	0	1449
Q Serve(g_s), s	3.8	12.0	12.2	1.1	8.1	8.3	3.1	0.0	4.2	7.5	0.0	15.8
Cycle Q Clear(g_c), s	3.8	12.0	12.2	1.1	8.1	8.3	3.1	0.0	4.2	7.5	0.0	15.8
Prop In Lane	1.00		0.35	1.00		0.29	1.00		0.75	1.00		0.92
Lane Grp Cap(c), veh/h	477	745	737	434	730	730	221	0	302	380	0	309
V/C Ratio(X)	0.26	0.31	0.31	0.09	0.31	0.31	0.35	0.00	0.29	0.61	0.00	0.85
Avail Cap(c_a), veh/h	558	745	737	501	730	730	268	0	530	380	0	475
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	24.3	24.4	11.8	15.0	15.0	28.0	0.0	31.5	29.5	0.0	34.1
Incr Delay (d2), s/veh	0.1	1.0	1.1	0.0	1.1	1.1	0.3	0.0	0.2	2.0	0.0	5.8
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	1.3	5.1	5.1	0.4	3.0	3.0	1.3	0.0	1.6	1.4	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.9	25.3	25.5	11.8	16.1	16.2	28.3	0.0	31.7	31.5	0.0	39.8
LnGrp LOS	B	C	C	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		587			494			165			495	
Approach Delay, s/veh		22.5			15.8			30.1			35.9	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	46.4	12.0	21.3	8.2	48.5	9.6	23.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	24.5	7.5	29.5	7.5	27.5	7.5	29.5
Max Q Clear Time (g_c+I1), s	5.8	10.3	9.5	6.2	3.1	14.2	5.1	17.8
Green Ext Time (p_c), s	0.1	3.2	0.0	0.3	0.0	3.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	25	390	15	35	750
Future Vol, veh/h	15	25	390	15	35	750
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	70	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	34	34	23	23	18	18
Mvmt Flow	16	27	424	16	38	815

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	918	433	0	0	441	0
Stage 1	433	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Critical Hdwy	7.11	6.71	-	-	4.37	-
Critical Hdwy Stg 1	5.91	-	-	-	-	-
Critical Hdwy Stg 2	6.31	-	-	-	-	-
Follow-up Hdwy	3.823	3.623	-	-	2.371	-
Pot Cap-1 Maneuver	241	547	-	-	1024	-
Stage 1	577	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	232	547	-	-	1023	-
Mov Cap-2 Maneuver	348	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	450	1023	-
HCM Lane V/C Ratio	-	-	0.097	0.037	-
HCM Control Delay (s)	-	-	13.9	8.7	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	23

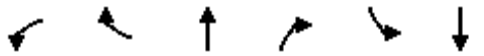
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	0	0	5	40	0	55	5	230	135	395	660	0
Future Vol, veh/h	0	0	5	40	0	55	5	230	135	395	660	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	55	-	-	65	-	-
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	6	6	6	2	2	2	3	3	3
Mvmt Flow	0	0	5	44	0	60	5	253	148	434	725	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1960	2004	725	1933	1930	327	725	0	0	401	0	0
Stage 1	1593	1593	-	337	337	-	-	-	-	-	-	-
Stage 2	367	411	-	1596	1593	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.56	6.26	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4.054	3.354	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	48	60	428	49	65	705	878	-	-	1152	-	-
Stage 1	136	168	-	669	634	-	-	-	-	-	-	-
Stage 2	657	598	-	131	163	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	31	37	428	~ 34	40	705	878	-	-	1152	-	-
Mov Cap-2 Maneuver	31	37	-	~ 34	40	-	-	-	-	-	-	-
Stage 1	135	105	-	665	630	-	-	-	-	-	-	-
Stage 2	597	594	-	81	102	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	$ 327.1	0.1	3.7
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	428	76	1152	-	-
HCM Lane V/C Ratio	0.006	-	-	0.013	1.374	0.377	-	-
HCM Control Delay (s)	9.1	-	-	13.5	$ 327.1	10	-	-
HCM Lane LOS	A	-	-	B	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	8.3	1.8	-	-

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	60	190	55	530	365
Future Volume (veh/h)	35	60	190	55	530	365
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1411	1411	1648	1648	1767	1767
Adj Flow Rate, veh/h	37	64	202	59	564	388
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	33	33	17	17	9	9
Cap, veh/h	128	200	533	151	639	0
Arrive On Green	0.09	0.09	0.22	0.22	0.38	0.00
Sat Flow, veh/h	1344	2104	2476	678	1682	564
Grp Volume(v), veh/h	37	64	130	131	564	19.5
Grp Sat Flow(s),veh/h/ln	1344	1052	1566	1506	1682	B
Q Serve(g_s), s	1.2	1.3	3.2	3.4	14.3	
Cycle Q Clear(g_c), s	1.2	1.3	3.2	3.4	14.3	
Prop In Lane	1.00	1.00		0.45	1.00	
Lane Grp Cap(c), veh/h	128	200	349	336	639	
V/C Ratio(X)	0.29	0.32	0.37	0.39	0.88	
Avail Cap(c_a), veh/h	454	710	1215	1169	937	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	19.2	19.3	15.0	15.1	13.2	
Incr Delay (d2), s/veh	1.1	0.8	0.6	0.7	6.3	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.0	1.1	5.3	
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.3	20.1	15.6	15.8	19.5	
LnGrp LOS	C	C	B	B	B	
Approach Vol, veh/h	101		261			
Approach Delay, s/veh	20.2		15.7			
Approach LOS	C		B			

Timer - Assigned Phs	1	2				8
Phs Duration (G+Y+Rc), s	21.9	14.8				8.9
Change Period (Y+Rc), s	4.6	4.6				4.6
Max Green Setting (Gmax), s	25.4	35.4				15.4
Max Q Clear Time (g_c+I1), s	16.3	5.4				3.3
Green Ext Time (p_c), s	1.1	1.5				0.2

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [SBT] 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 (veh/h)	5	0	15	5	0	5	5	280	5	0	610	5
Future Volume (veh/h)	5	0	15	5	0	5	5	280	5	0	610	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	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	477	477	477	1900	1900	1900	1722	1722	1722	1781	1781	1781
Adj Flow Rate, veh/h	5	0	16	5	0	5	5	295	5	0	642	5
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, %	96	96	96	0	0	0	12	12	12	8	8	8
Cap, veh/h	355	0	14	343	0	57	530	1919	32	749	1332	10
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.01	0.58	0.58	0.00	0.39	0.39
Sat Flow, veh/h	357	0	404	1419	0	1586	1640	3292	56	1697	3442	27
Grp Volume(v), veh/h	5	0	16	5	0	5	5	146	154	0	316	331
Grp Sat Flow(s),veh/h/ln	357	0	404	1419	0	1586	1640	1636	1712	1697	1692	1776
Q Serve(g_s), s	0.3	0.0	0.8	0.0	0.0	0.1	0.0	0.9	0.9	0.0	2.9	3.0
Cycle Q Clear(g_c), s	0.4	0.0	0.8	0.8	0.0	0.1	0.0	0.9	0.9	0.0	2.9	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	355	0	14	343	0	57	530	954	998	749	655	687
V/C Ratio(X)	0.01	0.00	1.11	0.01	0.00	0.09	0.01	0.15	0.15	0.00	0.48	0.48
Avail Cap(c_a), veh/h	614	0	308	1374	0	1210	833	1247	1305	1064	1290	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	10.1	10.5	0.0	9.8	3.4	2.0	2.0	0.0	4.8	4.8
Incr Delay (d2), s/veh	0.0	0.0	141.7	0.0	0.0	0.7	0.0	0.1	0.1	0.0	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	0.0	151.8	10.5	0.0	10.4	3.4	2.1	2.1	0.0	5.4	5.4
LnGrp LOS	A	A	F	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		21			10			305			647	
Approach Delay, s/veh		118.0			10.5			2.1			5.4	
Approach LOS		F			B			A			A	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		4.8	0.0	16.2		4.8	4.1	12.1				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		16.0	4.0	16.0		16.0	4.0	16.0				
Max Q Clear Time (g_c+I1), s		2.8	0.0	2.9		2.8	2.0	5.0				
Green Ext Time (p_c), s		0.0	0.0	1.4		0.1	0.0	3.0				

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

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	40	125	10	15	385
Future Vol, veh/h	25	40	125	10	15	385
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	-	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	20	29	29	11	11
Mvmt Flow	26	42	132	11	16	405

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	569	132	0	0	143	0
Stage 1	132	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.21	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.299	-
Pot Cap-1 Maneuver	455	871	-	-	1386	-
Stage 1	852	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	450	871	-	-	1386	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	641	1386	-
HCM Lane V/C Ratio	-	-	0.107	0.011	-
HCM Control Delay (s)	-	-	11.3	7.6	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	5	20	275	345	405
Future Vol, veh/h	10	5	20	275	345	405
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	170	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	46	46	22	22	12	12
Mvmt Flow	11	5	22	299	375	440

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	570	375	815	0	-	0
Stage 1	375	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	7.29	6.89	4.43	-	-	-
Critical Hdwy Stg 1	6.09	-	-	-	-	-
Critical Hdwy Stg 2	6.49	-	-	-	-	-
Follow-up Hdwy	3.937	3.737	2.409	-	-	-
Pot Cap-1 Maneuver	387	567	711	-	-	-
Stage 1	591	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	375	567	711	-	-	-
Mov Cap-2 Maneuver	456	-	-	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	711	-	456	567	-	-
HCM Lane V/C Ratio	0.031	-	0.024	0.01	-	-
HCM Control Delay (s)	10.2	-	13.1	11.4	-	-
HCM Lane LOS	B	-	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	50	95	115	335	135
Future Vol, veh/h	130	50	95	115	335	135
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	25	25	22	22	12	12
Mvmt Flow	143	55	104	126	368	148
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	12.9	12.3	24.1
HCM LOS	B	B	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	0%	71%
Vol Thru, %	28%	45%	0%
Vol Right, %	0%	55%	29%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	180	210	470
LT Vol	130	0	335
Through Vol	50	95	0
RT Vol	0	115	135
Lane Flow Rate	198	231	516
Geometry Grp	1	1	1
Degree of Util (X)	0.351	0.373	0.77
Departure Headway (Hd)	6.381	5.823	5.365
Convergence, Y/N	Yes	Yes	Yes
Cap	562	616	677
Service Time	4.432	3.873	3.401
HCM Lane V/C Ratio	0.352	0.375	0.762
HCM Control Delay	12.9	12.3	24.1
HCM Lane LOS	B	B	C
HCM 95th-tile Q	1.6	1.7	7.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	285	100	300	665	70
Future Volume (vph)	80	285	100	300	665	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1769	1863	1845	1534
Flt Permitted	0.95	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	445	1863	1845	1534
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	294	103	309	686	72
RTOR Reduction (vph)	0	262	0	0	0	7
Lane Group Flow (vph)	82	32	103	309	686	65
Confl. Peds. (#/hr)	2		1			1
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		6	4			8
Actuated Green, G (s)	8.5	8.5	58.5	58.5	44.3	44.3
Effective Green, g (s)	8.5	8.5	58.5	58.5	44.3	44.3
Actuated g/C Ratio	0.11	0.11	0.76	0.76	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	197	176	496	1415	1061	882
v/s Ratio Prot	c0.05		0.02	c0.17	c0.37	
v/s Ratio Perm		0.02	0.13			0.04
v/c Ratio	0.42	0.18	0.21	0.22	0.65	0.07
Uniform Delay, d1	31.9	31.1	5.4	2.7	11.1	7.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.4	0.2	0.1	1.2	0.0
Delay (s)	33.0	31.5	5.6	2.7	12.3	7.3
Level of Service	C	C	A	A	B	A
Approach Delay (s)	31.8			3.4	11.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	320	80	270	650	25	80
Future Vol, veh/h	320	80	270	650	25	80
Conflicting Peds, #/hr	0	0	0	0	1	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	45	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	333	83	281	677	26	83

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	416	0	1615	382
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	1240	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1143	-	115	670
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	276	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1143	-	87	666
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	208	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	172	666	-	-	1143	-
HCM Lane V/C Ratio	0.151	0.125	-	-	0.246	-
HCM Control Delay (s)	29.6	11.2	-	-	9.2	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	0.4	-	-	1	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	190	25	465	210	20	210
Future Vol, veh/h	190	25	465	210	20	210
Conflicting Peds, #/hr	0	1	1	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	198	26	484	219	21	219

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	225	0	1401	213
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	1189	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1350	-	155	830
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	290	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1349	-	99	829
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	186	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.3	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	161	829	-	-	1349	-
HCM Lane V/C Ratio	0.129	0.264	-	-	0.359	-
HCM Control Delay (s)	30.7	10.9	-	-	9.2	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	1.1	-	-	1.7	-

Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	120	5	215	185	70	500
Future Vol, veh/h	120	5	215	185	70	500
Conflicting Peds, #/hr	0	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	10	10	7	7
Mvmt Flow	130	5	234	201	76	543

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1032	338	0	0	437	0
Stage 1	337	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.17	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.263	-
Pot Cap-1 Maneuver	257	702	-	-	1097	-
Stage 1	721	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	239	700	-	-	1095	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.7	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	363	1095	-
HCM Lane V/C Ratio	-	-	0.374	0.069	-
HCM Control Delay (s)	-	-	20.7	8.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.2	-

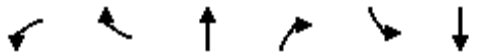
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	15	10	5	5	5	5	45	5	10	115	10
Future Vol, veh/h	15	15	10	5	5	5	5	45	5	10	115	10
Conflicting Peds, #/hr	4	0	4	4	0	4	3	0	1	1	0	3
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	2	2	2
Mvmt Flow	17	17	11	6	6	6	6	51	6	11	129	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	236	230	142	242	232	59	143	0	0	58	0	0
Stage 1	160	160	-	67	67	-	-	-	-	-	-	-
Stage 2	76	70	-	175	165	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.12	-	-
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	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	723	673	911	716	672	1012	1427	-	-	1546	-	-
Stage 1	847	769	-	948	843	-	-	-	-	-	-	-
Stage 2	938	841	-	832	766	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	703	663	906	684	662	1008	1423	-	-	1545	-	-
Mov Cap-2 Maneuver	703	663	-	684	662	-	-	-	-	-	-	-
Stage 1	842	761	-	943	839	-	-	-	-	-	-	-
Stage 2	920	837	-	794	758	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.9	0.7	0.5
HCM LOS	B	A		

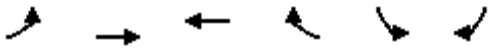
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1423	-	-	727	757	1545	-	-
HCM Lane V/C Ratio	0.004	-	-	0.062	0.022	0.007	-	-
HCM Control Delay (s)	7.5	0	-	10.3	9.9	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	90	10	135	445	15
Future Volume (vph)	125	90	10	135	445	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0		3.5	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.94		0.87		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1487		1612		1626	1712
Flt Permitted	0.97		1.00		0.66	1.00
Satd. Flow (perm)	1487		1612		1121	1712
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	139	100	11	150	494	17
RTOR Reduction (vph)	0	0	100	0	0	0
Lane Group Flow (vph)	239	0	61	0	494	17
Confl. Bikes (#/hr)		2		1		
Heavy Vehicles (%)	16%	16%	1%	1%	11%	11%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			4		1	8
Permitted Phases	2				8	
Actuated Green, G (s)	19.9		26.4		34.3	15.2
Effective Green, g (s)	19.9		26.4		34.3	15.2
Actuated g/C Ratio	0.25		0.33		0.43	0.19
Clearance Time (s)	5.0		5.0		3.5	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	375		539		609	329
v/s Ratio Prot			c0.04		c0.20	0.01
v/s Ratio Perm	c0.16				c0.16	
v/c Ratio	0.64		0.11		0.81	0.05
Uniform Delay, d1	26.3		18.2		18.8	26.0
Progression Factor	1.36		1.00		1.00	1.00
Incremental Delay, d2	3.5		0.1		8.1	0.1
Delay (s)	39.3		18.3		26.8	26.0
Level of Service	D		B		C	C
Approach Delay (s)	39.3		18.3			26.8
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	230	175	145	325	240
Future Volume (vph)	65	230	175	145	325	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.98	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.94	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1654	1743	1881	1561	1598	
Flt Permitted	0.44	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	767	1743	1881	1561	1598	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	69	245	186	154	346	255
RTOR Reduction (vph)	0	0	0	124	0	0
Lane Group Flow (vph)	69	245	186	30	601	0
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	9%	9%	1%	1%	8%	8%
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	26.4	26.4	15.2	15.2	42.5	
Effective Green, g (s)	26.4	26.4	15.2	15.2	42.5	
Actuated g/C Ratio	0.33	0.33	0.19	0.19	0.54	
Clearance Time (s)	3.5	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	343	583	362	300	860	
v/s Ratio Prot	0.02	c0.14	c0.10			
v/s Ratio Perm	0.05			0.02	c0.38	
v/c Ratio	0.20	0.42	0.51	0.10	0.70	
Uniform Delay, d1	18.5	20.3	28.5	26.2	13.5	
Progression Factor	1.00	1.00	1.00	1.00	1.03	
Incremental Delay, d2	0.3	0.5	1.2	0.1	2.3	
Delay (s)	18.7	20.8	29.8	26.4	16.3	
Level of Service	B	C	C	C	B	
Approach Delay (s)		20.4	28.2		16.3	
Approach LOS		C	C		B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	78.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	205	290	140	125	25	115	245	115	40	580	95
Future Volume (veh/h)	105	205	290	140	125	25	115	245	115	40	580	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.98	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	1885	1885	1885	1885	1885	1885	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	115	225	319	154	137	27	126	269	126	44	637	104
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	6	6	6	5	5	5
Cap, veh/h	556	450	378	475	368	73	283	322	267	408	739	120
Arrive On Green	0.16	0.24	0.24	0.17	0.24	0.24	0.16	0.18	0.18	0.23	0.25	0.25
Sat Flow, veh/h	1795	1885	1584	1795	1525	301	1725	1811	1505	1739	2979	486
Grp Volume(v), veh/h	115	225	319	154	0	164	126	269	126	44	370	371
Grp Sat Flow(s),veh/h/ln	1795	1885	1584	1795	0	1826	1725	1811	1505	1739	1735	1730
Q Serve(g_s), s	4.9	12.4	23.0	6.7	0.0	9.0	7.9	17.2	6.2	2.4	24.5	24.6
Cycle Q Clear(g_c), s	4.9	12.4	23.0	6.7	0.0	9.0	7.9	17.2	6.2	2.4	24.5	24.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	556	450	378	475	0	440	283	322	267	408	430	429
V/C Ratio(X)	0.21	0.50	0.84	0.32	0.00	0.37	0.44	0.84	0.47	0.11	0.86	0.86
Avail Cap(c_a), veh/h	779	699	587	694	0	677	496	823	683	500	788	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.3	39.5	43.6	24.1	0.0	37.9	45.2	47.6	20.9	36.0	43.1	43.2
Incr Delay (d2), s/veh	0.2	0.9	6.7	0.4	0.0	0.5	1.1	5.7	1.3	0.1	5.2	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.9	9.6	2.9	0.0	4.1	3.4	8.2	3.3	1.0	11.0	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	40.4	50.2	24.5	0.0	38.5	46.3	53.4	22.2	36.2	48.3	48.4
LnGrp LOS	C	D	D	C	A	D	D	D	C	D	D	D
Approach Vol, veh/h		659			318			521			785	
Approach Delay, s/veh		42.2			31.7			44.1			47.7	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.1	34.4	33.7	26.8	25.4	34.1	25.2	35.3
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	34.5	44.5	34.5	54.5	34.5	44.5	34.5	54.5
Max Q Clear Time (g_c+I1), s	6.9	11.0	4.4	19.2	8.7	25.0	9.9	26.6
Green Ext Time (p_c), s	0.4	0.7	0.1	1.6	0.6	2.4	0.3	3.2

Intersection Summary	
HCM 6th Ctrl Delay	43.1
HCM 6th LOS	D

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	45	75	250	25	25
Future Vol, veh/h	330	45	75	250	25	25
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	355	48	81	269	27	27
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	11.4	11.1	8.8
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	50%	0%	23%
Vol Thru, %	0%	88%	77%
Vol Right, %	50%	12%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	50	375	325
LT Vol	25	0	75
Through Vol	0	330	250
RT Vol	25	45	0
Lane Flow Rate	54	403	349
Geometry Grp	1	1	1
Degree of Util (X)	0.079	0.486	0.44
Departure Headway (Hd)	5.307	4.341	4.532
Convergence, Y/N	Yes	Yes	Yes
Cap	673	831	797
Service Time	3.359	2.364	2.557
HCM Lane V/C Ratio	0.08	0.485	0.438
HCM Control Delay	8.8	11.4	11.1
HCM Lane LOS	A	B	B
HCM 95th-tile Q	0.3	2.7	2.3

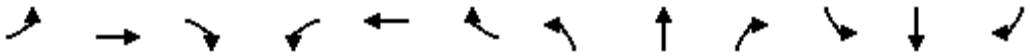
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	340	10	10	295	5	15
Future Vol, veh/h	340	10	10	295	5	15
Conflicting Peds, #/hr	0	20	20	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	366	11	11	317	5	16

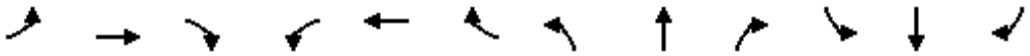
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	397	0	731	394
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	339	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1162	-	392	659
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1143	-	381	647
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	551	-	-	1143	-
HCM Lane V/C Ratio	0.039	-	-	0.009	-
HCM Control Delay (s)	11.8	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	285	35	10	185	35	10	35	15	60	160	105
Future Volume (veh/h)	45	285	35	10	185	35	10	35	15	60	160	105
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	0.99		0.98	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	1885	1885	1885	1885	1885	1885	1870	1945	1870	1900	1900	1900
Adj Flow Rate, veh/h	51	320	39	11	208	39	11	39	17	67	180	118
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
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	0	0	0
Cap, veh/h	174	502	57	132	513	93	169	369	137	201	288	167
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	126	1474	168	28	1506	273	108	1225	453	207	956	556
Grp Volume(v), veh/h	410	0	0	258	0	0	67	0	0	365	0	0
Grp Sat Flow(s),veh/h/ln	1768	0	0	1807	0	0	1786	0	0	1718	0	0
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	5.9	0.0	0.0	3.3	0.0	0.0	0.8	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.12		0.10	0.04		0.15	0.16		0.25	0.18		0.32
Lane Grp Cap(c), veh/h	734	0	0	738	0	0	675	0	0	657	0	0
V/C Ratio(X)	0.56	0.00	0.00	0.35	0.00	0.00	0.10	0.00	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	1014	0	0	1027	0	0	904	0	0	888	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	7.8	0.0	0.0	7.8	0.0	0.0	9.4	0.0	0.0
Incr Delay (d2), s/veh	2.4	0.0	0.0	1.0	0.0	0.0	0.2	0.0	0.0	2.7	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	2.1	0.0	0.0	1.1	0.0	0.0	0.3	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	0.0	0.0	8.8	0.0	0.0	8.0	0.0	0.0	12.1	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		410			258			67			365	
Approach Delay, s/veh		11.0			8.8			8.0			12.1	
Approach LOS		B			A			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		14.8		16.0		14.8		16.0				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		13.5		15.5		13.5		15.5				
Max Q Clear Time (g_c+I1), s		2.8		7.9		7.7		5.3				
Green Ext Time (p_c), s		0.3		2.5		1.8		1.8				
Intersection Summary												
HCM 6th Ctrl Delay			10.7									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	255	65	185	200	45	45	265	80	60	400	50
Future Volume (veh/h)	160	255	65	185	200	45	45	265	80	60	400	50
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	0.99		0.98	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1976	1900	1900	1900	1900	1961	1885	1885	1900	1976	1900
Adj Flow Rate, veh/h	168	268	68	195	211	47	47	279	84	63	421	53
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	1	1	1	0	0	0
Cap, veh/h	435	373	95	392	388	87	273	406	122	332	519	65
Arrive On Green	0.10	0.25	0.25	0.11	0.26	0.26	0.05	0.29	0.29	0.06	0.30	0.30
Sat Flow, veh/h	1810	1512	384	1810	1497	333	1867	1385	417	1810	1717	216
Grp Volume(v), veh/h	168	0	336	195	0	258	47	0	363	63	0	474
Grp Sat Flow(s),veh/h/ln	1810	0	1896	1810	0	1831	1867	0	1802	1810	0	1933
Q Serve(g_s), s	4.6	0.0	11.2	5.4	0.0	8.4	1.2	0.0	12.3	1.6	0.0	15.7
Cycle Q Clear(g_c), s	4.6	0.0	11.2	5.4	0.0	8.4	1.2	0.0	12.3	1.6	0.0	15.7
Prop In Lane	1.00		0.20	1.00		0.18	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	435	0	468	392	0	475	273	0	528	332	0	584
V/C Ratio(X)	0.39	0.00	0.72	0.50	0.00	0.54	0.17	0.00	0.69	0.19	0.00	0.81
Avail Cap(c_a), veh/h	652	0	1097	586	0	1060	582	0	1043	615	0	1119
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	23.8	17.1	0.0	22.1	16.9	0.0	21.6	16.1	0.0	22.3
Incr Delay (d2), s/veh	0.6	0.0	2.1	1.0	0.0	1.0	0.3	0.0	1.6	0.3	0.0	2.8
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	1.9	0.0	5.1	2.2	0.0	3.6	0.5	0.0	5.2	0.7	0.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	25.9	18.1	0.0	23.0	17.2	0.0	23.2	16.4	0.0	25.1
LnGrp LOS	B	A	C	B	A	C	B	A	C	B	A	C
Approach Vol, veh/h		504			453			410			537	
Approach Delay, s/veh		23.1			20.9			22.6			24.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	22.0	9.2	25.2	11.7	22.9	8.6	25.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	40.0	15.0	40.0	15.0	40.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	7.4	13.2	3.6	14.3	6.6	10.4	3.2	17.7
Green Ext Time (p_c), s	0.4	1.5	0.1	1.6	0.4	1.1	0.1	2.1

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	405	40	15	255	30	30	15	5	65	40	30
Future Vol, veh/h	30	405	40	15	255	30	30	15	5	65	40	30
Conflicting Peds, #/hr	5	0	10	10	0	5	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	235	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	1	1	1
Mvmt Flow	31	413	41	15	260	31	31	15	5	66	41	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	464	0	0	848	832	448	821	837	281
Stage 1	-	-	-	-	-	-	506	506	-	311	311	-
Stage 2	-	-	-	-	-	-	342	326	-	510	526	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1277	-	-	1108	-	-	284	307	615	295	304	760
Stage 1	-	-	-	-	-	-	552	543	-	702	660	-
Stage 2	-	-	-	-	-	-	677	652	-	548	530	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1272	-	-	1099	-	-	234	292	608	271	289	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	234	292	-	271	289	-
Stage 1	-	-	-	-	-	-	534	526	-	682	648	-
Stage 2	-	-	-	-	-	-	600	640	-	513	513	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	21.7	24.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	266	1272	-	-	1099	-	-	323
HCM Lane V/C Ratio	0.192	0.024	-	-	0.014	-	-	0.426
HCM Control Delay (s)	21.7	7.9	-	-	8.3	-	-	24.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	2

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	145	320	30	225	50	75	10	5	90	100	20
Future Vol, veh/h	15	145	320	30	225	50	75	10	5	90	100	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	0	0	0	0	0	0	1	1	1
Mvmt Flow	16	159	352	33	247	55	82	11	5	99	110	22
Number of Lanes	1	1	1	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	3
HCM Control Delay	14.3	18.7	12.8	16.3
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	83%	100%	0%	0%	100%	0%	43%
Vol Thru, %	11%	0%	100%	0%	0%	82%	48%
Vol Right, %	6%	0%	0%	100%	0%	18%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	15	145	320	30	275	210
LT Vol	75	15	0	0	30	0	90
Through Vol	10	0	145	0	0	225	100
RT Vol	5	0	0	320	0	50	20
Lane Flow Rate	99	16	159	352	33	302	231
Geometry Grp	7	7	7	7	8	8	7
Degree of Util (X)	0.217	0.032	0.287	0.564	0.07	0.59	0.467
Departure Headway (Hd)	7.889	6.994	6.483	5.769	7.672	7.029	7.287
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	455	515	558	629	467	514	494
Service Time	5.642	4.694	4.183	3.469	5.422	4.778	5.031
HCM Lane V/C Ratio	0.218	0.031	0.285	0.56	0.071	0.588	0.468
HCM Control Delay	12.8	9.9	11.8	15.7	11	19.5	16.3
HCM Lane LOS	B	A	B	C	B	C	C
HCM 95th-tile Q	0.8	0.1	1.2	3.5	0.2	3.8	2.4

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	275	180	535	455	105
Future Vol, veh/h	0	275	180	535	455	105
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	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	1	1	2	2
Mvmt Flow	0	293	191	569	484	112

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	540	596	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	4.11	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	2.209	-	-	-
Pot Cap-1 Maneuver	0	546	985	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	546	985	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	2.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	985	-	546	-	-
HCM Lane V/C Ratio	0.194	-	0.536	-	-
HCM Control Delay (s)	9.5	-	18.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.7	-	3.1	-	-

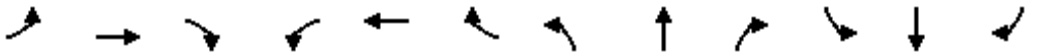
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	0	0	15	0	455	15	30	975	5
Future Vol, veh/h	5	0	10	0	0	15	0	455	15	30	975	5
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	45	-	115	55	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	7	7	7	5	5	5	4	4	4
Mvmt Flow	5	0	11	0	0	16	0	484	16	32	1037	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1348	1609	521	-	-	249	1042	0	0	505	0	0
Stage 1	1104	1104	-	-	-	-	-	-	-	-	-	-
Stage 2	244	505	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	-	7.04	4.2	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	-	3.37	2.25	-	-	2.24	-	-
Pot Cap-1 Maneuver	111	106	505	0	0	736	646	-	-	1042	-	-
Stage 1	229	289	-	0	0	-	-	-	-	-	-	-
Stage 2	744	544	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	106	102	505	-	-	732	646	-	-	1038	-	-
Mov Cap-2 Maneuver	106	102	-	-	-	-	-	-	-	-	-	-
Stage 1	229	280	-	-	-	-	-	-	-	-	-	-
Stage 2	727	542	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.3	10	0	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	646	-	-	224	732	1038	-	-
HCM Lane V/C Ratio	-	-	-	0.071	0.022	0.031	-	-
HCM Control Delay (s)	0	-	-	22.3	10	8.6	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	15	205	235	100	10	265	400	185	20	655	330
Future Volume (veh/h)	70	15	205	235	100	10	265	400	185	20	655	330
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	1841	1841	1841	1841	1841	1914	1841	1914	1914	1841	1841	1841
Adj Flow Rate, veh/h	76	16	0	188	203	0	288	435	0	22	712	359
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	104	109		245	257		400	2040		646	1175	592
Arrive On Green	0.06	0.06	0.00	0.14	0.14	0.00	0.10	0.56	0.00	0.06	0.52	0.52
Sat Flow, veh/h	1753	1841	1560	1753	1841	0	1753	3733	0	1753	2246	1132
Grp Volume(v), veh/h	76	16	0	188	203	0	288	435	0	22	554	517
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1753	1841	0	1753	1819	0	1753	1749	1629
Q Serve(g_s), s	4.3	0.8	0.0	10.3	10.7	0.0	7.5	6.0	0.0	0.5	22.1	22.2
Cycle Q Clear(g_c), s	4.3	0.8	0.0	10.3	10.7	0.0	7.5	6.0	0.0	0.5	22.1	22.2
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.69
Lane Grp Cap(c), veh/h	104	109		245	257		400	2040		646	915	852
V/C Ratio(X)	0.73	0.15		0.77	0.79		0.72	0.21		0.03	0.61	0.61
Avail Cap(c_a), veh/h	289	304		447	469		447	2040		725	915	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.98	0.98	0.00	0.87	0.87	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	44.6	0.0	41.4	41.6	0.0	14.1	11.0	0.0	7.5	16.7	16.7
Incr Delay (d2), s/veh	9.4	0.6	0.0	4.9	5.3	0.0	4.3	0.2	0.0	0.0	3.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.4	0.0	4.8	5.2	0.0	3.0	2.3	0.0	0.2	9.4	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	45.2	0.0	46.3	46.8	0.0	18.5	11.2	0.0	7.5	19.6	19.9
LnGrp LOS	E	D		D	D		B	B		A	B	B
Approach Vol, veh/h		92			391			723			1093	
Approach Delay, s/veh		53.8			46.6			14.1			19.5	
Approach LOS		D			D			B			B	

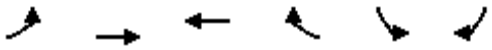
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.3	56.8		18.5	10.5	60.6		10.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.5	27.5		25.5	10.5	29.5		16.5				
Max Q Clear Time (g_c+I1), s	9.5	24.2		12.7	2.5	8.0		6.3				
Green Ext Time (p_c), s	0.3	1.7		1.3	0.0	1.9		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		23.8	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	205	270	5	5	70
Future Volume (veh/h)	10	205	270	5	5	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1885	1885	1737	1737
Adj Flow Rate, veh/h	11	228	300	6	6	78
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	1	1	11	11
Cap, veh/h	448	904	507	10	10	126
Arrive On Green	0.01	0.48	0.28	0.28	0.09	0.09
Sat Flow, veh/h	1781	1870	1840	37	104	1357
Grp Volume(v), veh/h	11	228	0	306	85	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1877	1479	0
Q Serve(g_s), s	0.1	1.9	0.0	3.7	1.4	0.0
Cycle Q Clear(g_c), s	0.1	1.9	0.0	3.7	1.4	0.0
Prop In Lane	1.00			0.02	0.07	0.92
Lane Grp Cap(c), veh/h	448	904	0	517	137	0
V/C Ratio(X)	0.02	0.25	0.00	0.59	0.62	0.00
Avail Cap(c_a), veh/h	1109	1767	0	1773	1397	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.8	3.9	0.0	8.1	11.3	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.4	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	1.0	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.9	4.0	0.0	8.5	13.0	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		239	306		85	
Approach Delay, s/veh		4.1	8.5		13.0	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.4	12.6				18.0	7.9
Change Period (Y+Rc), s	5.0	5.5				5.5	5.5
Max Green Setting (Gmax), s	10.0	24.5				24.5	24.5
Max Q Clear Time (g_c+I1), s	2.1	5.7				3.9	3.4
Green Ext Time (p_c), s	0.0	1.2				0.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

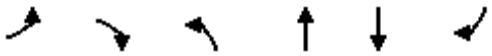
Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	105	5	5	125	5	5	10	5	5	15	200
Future Vol, veh/h	30	105	5	5	125	5	5	10	5	5	15	200
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	0	0	0	0	0	0	1	1	1
Mvmt Flow	32	112	5	5	133	5	5	11	5	5	16	213

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	120	0	0	442	330	118	333	330	136
Stage 1	-	-	-	-	-	-	182	182	-	146	146	-
Stage 2	-	-	-	-	-	-	260	148	-	187	184	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1421	-	-	1480	-	-	529	592	939	622	591	915
Stage 1	-	-	-	-	-	-	824	753	-	859	778	-
Stage 2	-	-	-	-	-	-	749	779	-	817	749	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1421	-	-	1476	-	-	388	574	937	596	573	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	574	-	596	573	-
Stage 1	-	-	-	-	-	-	803	733	-	838	775	-
Stage 2	-	-	-	-	-	-	561	776	-	781	730	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.3	11.7	10.7
HCM LOS			B	B

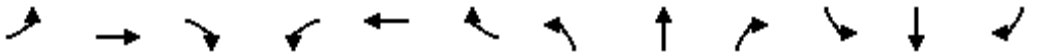
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	561	1421	-	-	1476	-	-	869
HCM Lane V/C Ratio	0.038	0.022	-	-	0.004	-	-	0.269
HCM Control Delay (s)	11.7	7.6	0	-	7.4	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1.1



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	215	545	210	600	935	190
Future Volume (vph)	215	545	210	600	935	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.98	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.92	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3012	1337	1770	3539	3416	
Flt Permitted	0.98	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	3012	1337	247	3539	3416	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	574	221	632	984	200
RTOR Reduction (vph)	241	246	0	0	12	0
Lane Group Flow (vph)	272	41	221	632	1172	0
Confl. Peds. (#/hr)		7				
Heavy Vehicles (%)	7%	7%	2%	2%	3%	3%
Turn Type	Prot	Perm	D.P+P	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases		8	2			
Actuated Green, G (s)	14.4	14.4	62.4	66.9	49.8	
Effective Green, g (s)	14.4	14.4	62.4	66.9	49.8	
Actuated g/C Ratio	0.14	0.14	0.62	0.67	0.50	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	433	192	346	2367	1701	
v/s Ratio Prot	c0.09		c0.08	0.18	c0.34	
v/s Ratio Perm		0.03	0.32			
v/c Ratio	0.63	0.22	0.64	0.27	0.69	
Uniform Delay, d1	40.3	37.8	12.9	6.7	19.2	
Progression Factor	1.00	1.00	1.00	1.00	0.48	
Incremental Delay, d2	2.8	0.6	3.8	0.3	1.6	
Delay (s)	43.1	38.4	16.8	6.9	10.8	
Level of Service	D	D	B	A	B	
Approach Delay (s)	41.4			9.5	10.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	75	105	70	50	10	30	350	95	5	595	35
Future Volume (veh/h)	20	75	105	70	50	10	30	350	95	5	595	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	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	1885	1885	1885	1870	1945	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	22	81	113	75	54	11	32	376	102	5	640	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	387	109	152	309	307	62	268	644	175	377	740	44
Arrive On Green	0.03	0.15	0.15	0.07	0.20	0.20	0.04	0.45	0.45	0.01	0.42	0.42
Sat Flow, veh/h	1795	710	990	1781	1567	319	1795	1428	387	1810	1773	105
Grp Volume(v), veh/h	22	0	194	75	0	65	32	0	478	5	0	678
Grp Sat Flow(s),veh/h/ln	1795	0	1699	1781	0	1886	1795	0	1815	1810	0	1878
Q Serve(g_s), s	0.6	0.0	6.2	1.9	0.0	1.6	0.6	0.0	11.2	0.1	0.0	18.8
Cycle Q Clear(g_c), s	0.6	0.0	6.2	1.9	0.0	1.6	0.6	0.0	11.2	0.1	0.0	18.8
Prop In Lane	1.00		0.58	1.00		0.17	1.00		0.21	1.00		0.06
Lane Grp Cap(c), veh/h	387	0	261	309	0	369	268	0	819	377	0	783
V/C Ratio(X)	0.06	0.00	0.74	0.24	0.00	0.18	0.12	0.00	0.58	0.01	0.00	0.87
Avail Cap(c_a), veh/h	523	0	686	368	0	761	385	0	1164	556	0	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	23.1	18.2	0.0	19.2	11.8	0.0	11.7	10.2	0.0	15.2
Incr Delay (d2), s/veh	0.1	0.0	4.2	0.4	0.0	0.2	0.2	0.0	0.7	0.0	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.7	0.8	0.0	0.7	0.2	0.0	4.1	0.0	0.0	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	27.3	18.6	0.0	19.4	12.0	0.0	12.4	10.3	0.0	19.6
LnGrp LOS	B	A	C	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		216			140			510			683	
Approach Delay, s/veh		26.5			19.0			12.4			19.5	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	30.3	8.7	13.3	6.9	28.4	6.3	15.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	36.7	6.1	23.1	6.1	36.7	6.1	23.1
Max Q Clear Time (g_c+I1), s	2.1	13.2	3.9	8.2	2.6	20.8	2.6	3.6
Green Ext Time (p_c), s	0.0	2.2	0.0	0.7	0.0	3.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	115	10	5	50	10	10	5	5	25	15	65
Future Vol, veh/h	40	115	10	5	50	10	10	5	5	25	15	65
Conflicting Peds, #/hr	10	0	2	2	0	10	0	0	5	5	0	0
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	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	2	2	2
Mvmt Flow	43	124	11	5	54	11	11	5	5	27	16	70

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	75	0	0	137	0	0	331	303	137	306	303	70
Stage 1	-	-	-	-	-	-	218	218	-	80	80	-
Stage 2	-	-	-	-	-	-	113	85	-	226	223	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1531	-	-	1447	-	-	626	613	917	646	610	993
Stage 1	-	-	-	-	-	-	789	726	-	929	828	-
Stage 2	-	-	-	-	-	-	897	828	-	777	719	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1518	-	-	1445	-	-	553	585	912	613	583	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	553	585	-	613	583	-
Stage 1	-	-	-	-	-	-	763	702	-	893	818	-
Stage 2	-	-	-	-	-	-	814	818	-	740	695	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.6	11	10.3
HCM LOS			B	B

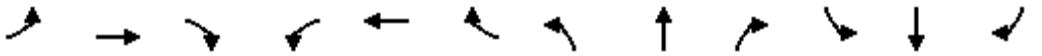
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	623	1518	-	-	1445	-	-	792
HCM Lane V/C Ratio	0.035	0.028	-	-	0.004	-	-	0.143
HCM Control Delay (s)	11	7.4	0	-	7.5	0	-	10.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	110	5	5	50	60	5	0	0	370	5	15
Future Vol, veh/h	10	110	5	5	50	60	5	0	0	370	5	15
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
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	0	0	0
Mvmt Flow	11	120	5	5	54	65	5	0	0	402	5	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	8.9	8.4	13.5
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	8%	4%	95%
Vol Thru, %	0%	88%	43%	1%
Vol Right, %	0%	4%	52%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	125	115	390
LT Vol	5	10	5	370
Through Vol	0	110	50	5
RT Vol	0	5	60	15
Lane Flow Rate	5	136	125	424
Geometry Grp	1	1	1	1
Degree of Util (X)	0.008	0.193	0.169	0.555
Departure Headway (Hd)	5.275	5.113	4.855	4.712
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	672	698	734	763
Service Time	3.357	3.175	2.919	2.763
HCM Lane V/C Ratio	0.007	0.195	0.17	0.556
HCM Control Delay	8.4	9.4	8.9	13.5
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0	0.7	0.6	3.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	5	410	20	10	5	160	590	15	0	675	50
Future Volume (veh/h)	120	5	410	20	10	5	160	590	15	0	675	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1722	1722	1722	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	126	5	432	21	11	5	168	621	16	0	711	53
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	12	12	12	1	1	1	2	2	2
Cap, veh/h	419	6	482	90	39	10	228	1161	33	0	1024	76
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.79	0.79	0.79	0.00	0.60	0.60
Sat Flow, veh/h	1408	18	1582	88	127	34	279	1950	55	0	1719	128
Grp Volume(v), veh/h	126	0	437	37	0	0	312	0	493	0	0	764
Grp Sat Flow(s),veh/h/ln	1408	0	1600	249	0	0	579	0	1706	0	0	1847
Q Serve(g_s), s	0.0	0.0	23.5	0.8	0.0	0.0	22.9	0.0	8.8	0.0	0.0	25.7
Cycle Q Clear(g_c), s	8.3	0.0	23.5	24.3	0.0	0.0	48.5	0.0	8.8	0.0	0.0	25.7
Prop In Lane	1.00		0.99	0.57		0.14	0.54		0.03	0.00		0.07
Lane Grp Cap(c), veh/h	419	0	487	139	0	0	406	0	1016	0	0	1100
V/C Ratio(X)	0.30	0.00	0.90	0.27	0.00	0.00	0.77	0.00	0.49	0.00	0.00	0.69
Avail Cap(c_a), veh/h	498	0	578	201	0	0	406	0	1016	0	0	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	0.0	29.9	25.0	0.0	0.0	16.5	0.0	4.7	0.0	0.0	12.6
Incr Delay (d2), s/veh	0.4	0.0	14.8	0.9	0.0	0.0	13.1	0.0	1.7	0.0	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	10.9	0.6	0.0	0.0	6.5	0.0	2.6	0.0	0.0	10.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	0.0	44.7	26.0	0.0	0.0	29.6	0.0	6.4	0.0	0.0	16.2
LnGrp LOS	C	A	D	C	A	A	C	A	A	A	A	B
Approach Vol, veh/h		563			37			805			764	
Approach Delay, s/veh		40.3			26.0			15.4			16.2	
Approach LOS		D			C			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.1		31.9		58.1		31.9				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		48.5		32.5		48.5		32.5				
Max Q Clear Time (g_c+I1), s		27.7		26.3		50.5		25.5				
Green Ext Time (p_c), s		5.0		0.1		0.0		1.9				

Intersection Summary												
HCM 6th Ctrl Delay			22.3									
HCM 6th LOS			C									

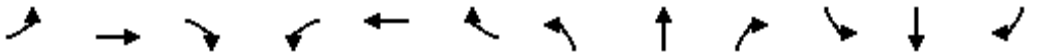
Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	35	0	280	105	485	0	0	770	340
Future Vol, veh/h	0	0	0	35	0	280	105	485	0	0	770	340
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	2	2	1	1	1	2	2	2
Mvmt Flow	0	0	0	36	0	286	107	495	0	0	786	347

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	1669	1843	495	1134	0	-	-	-	0
Stage 1	709	709	-	-	-	-	-	-	-
Stage 2	960	1134	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.11	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.209	-	-	-	-	-
Pot Cap-1 Maneuver	106	75	575	620	-	0	0	-	-
Stage 1	488	437	-	-	-	0	0	-	-
Stage 2	372	278	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	88	0	575	620	-	-	-	-	-
Mov Cap-2 Maneuver	88	0	-	-	-	-	-	-	-
Stage 1	404	0	-	-	-	-	-	-	-
Stage 2	372	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	61	2.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR
Capacity (veh/h)	620	-	356	-	-
HCM Lane V/C Ratio	0.173	-	0.903	-	-
HCM Control Delay (s)	12	-	61	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.6	-	9	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	330	0	195	0	0	0	0	265	80	355	450	0
Future Volume (veh/h)	330	0	195	0	0	0	0	265	80	355	450	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	344	0	203				0	276	83	370	469	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2				0	1	1	1	1	0
Cap, veh/h	416	0	370				0	939	796	717	1256	0
Arrive On Green	0.23	0.00	0.23				0.00	0.50	0.50	0.04	0.22	0.00
Sat Flow, veh/h	1781	0	1585				0	1885	1598	1795	1885	0
Grp Volume(v), veh/h	344	0	203				0	276	83	370	469	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1885	1598	1795	1885	0
Q Serve(g_s), s	16.5	0.0	10.1				0.0	7.7	2.5	7.8	19.0	0.0
Cycle Q Clear(g_c), s	16.5	0.0	10.1				0.0	7.7	2.5	7.8	19.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	416	0	370				0	939	796	717	1256	0
V/C Ratio(X)	0.83	0.00	0.55				0.00	0.29	0.10	0.52	0.37	0.00
Avail Cap(c_a), veh/h	663	0	590				0	939	796	914	1256	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	30.3				0.0	13.3	12.0	8.9	19.1	0.0
Incr Delay (d2), s/veh	4.8	0.0	1.3				0.0	0.8	0.3	0.5	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	3.9				0.0	3.4	0.9	3.4	9.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.5	0.0	31.6				0.0	14.1	12.2	9.4	20.0	0.0
LnGrp LOS	D	A	C				A	B	B	A	B	A
Approach Vol, veh/h		547						359			839	
Approach Delay, s/veh		35.3						13.6			15.3	
Approach LOS		D						B			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.1	49.3		25.5		64.5
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	20.5	22.5		33.5		47.5
Max Q Clear Time (g_c+I1), s	9.8	9.7		18.5		21.0
Green Ext Time (p_c), s	0.8	1.6		2.5		3.3

Intersection Summary			
HCM 6th Ctrl Delay			21.2
HCM 6th LOS			C

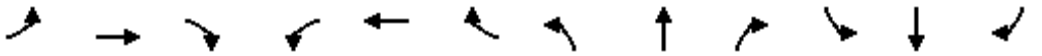
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	60	5	0	5	140	475	5	5	750	10
Future Vol, veh/h	0	0	60	5	0	5	140	475	5	5	750	10
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	-	-	0	-	-	0	175	-	-	175	-	175
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, %	2	2	2	0	0	0	1	1	1	0	0	0
Mvmt Flow	0	0	67	6	0	6	156	528	6	6	833	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	422	1272	-	531	844	0	0	534	0	0
Stage 1	-	-	-	843	-	-	-	-	-	-	-	-
Stage 2	-	-	-	429	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.93	7.3	-	6.2	4.115	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	3.5	-	3.3	2.2095	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	581	136	0	552	796	-	-	1044	-	-
Stage 1	0	0	-	361	0	-	-	-	-	-	-	-
Stage 2	0	0	-	580	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	581	102	-	552	796	-	-	1044	-	-
Mov Cap-2 Maneuver	-	-	-	102	-	-	-	-	-	-	-	-
Stage 1	-	-	-	290	-	-	-	-	-	-	-	-
Stage 2	-	-	-	510	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	11.6	2.4	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	796	-	-	581	552	1044	-	-
HCM Lane V/C Ratio	0.195	-	-	0.115	0.01	0.005	-	-
HCM Control Delay (s)	10.6	-	-	12	11.6	8.5	-	-
HCM Lane LOS	B	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	0.4	0	0	-	-



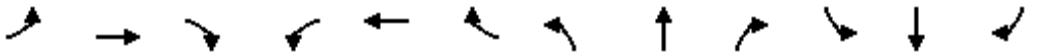
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	115	0	200	215	425	0	0	655	160
Future Volume (veh/h)	0	0	0	115	0	200	215	425	0	0	655	160
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1900	1900
Adj Flow Rate, veh/h				125	0	217	234	462	0	0	712	174
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				1	1	1	1	1	0	0	0	0
Cap, veh/h				291	0	258	509	1387	0	0	763	646
Arrive On Green				0.16	0.00	0.16	0.57	1.00	0.00	0.00	0.40	0.40
Sat Flow, veh/h				1795	0	1593	1795	1885	0	0	1900	1610
Grp Volume(v), veh/h				125	0	217	234	462	0	0	712	174
Grp Sat Flow(s),veh/h/ln				1795	0	1593	1795	1885	0	0	1900	1610
Q Serve(g_s), s				5.6	0.0	11.9	6.9	0.0	0.0	0.0	32.3	6.5
Cycle Q Clear(g_c), s				5.6	0.0	11.9	6.9	0.0	0.0	0.0	32.3	6.5
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				291	0	258	509	1387	0	0	763	646
V/C Ratio(X)				0.43	0.00	0.84	0.46	0.33	0.00	0.00	0.93	0.27
Avail Cap(c_a), veh/h				447	0	396	509	1387	0	0	790	669
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.50	0.50	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.0	0.0	36.6	15.5	0.0	0.0	0.0	25.8	18.1
Incr Delay (d2), s/veh				0.4	0.0	5.7	0.4	0.3	0.0	0.0	19.9	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	5.0	2.4	0.1	0.0	0.0	18.2	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				34.3	0.0	42.3	15.9	0.3	0.0	0.0	45.7	19.1
LnGrp LOS				C	A	D	B	A	A	A	D	B
Approach Vol, veh/h					342			696			886	
Approach Delay, s/veh					39.4			5.5			40.5	
Approach LOS					D			A			D	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		70.8			30.1	40.7		19.2				
Change Period (Y+Rc), s		4.6			4.6	* 4.6		4.6				
Max Green Setting (Gmax), s		58.4			16.5	* 37		22.4				
Max Q Clear Time (g_c+I1), s		2.0			8.9	34.3		13.9				
Green Ext Time (p_c), s		4.4			0.5	1.8		0.6				

Intersection Summary		
HCM 6th Ctrl Delay	27.7	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	0	600	0	0	0	0	480	115	95	690	0
Future Volume (veh/h)	170	0	600	0	0	0	0	480	115	95	690	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1870	1870	1885	1885	0
Adj Flow Rate, veh/h	181	0	638				0	511	122	101	734	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3				0	2	2	1	1	0
Cap, veh/h	558	0	496				0	460	110	387	1098	0
Arrive On Green	0.32	0.00	0.32				0.00	0.32	0.32	0.43	1.00	0.00
Sat Flow, veh/h	1767	0	1572				0	1458	348	1795	1885	0
Grp Volume(v), veh/h	181	0	638				0	0	633	101	734	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	0	1806	1795	1885	0
Q Serve(g_s), s	7.0	0.0	28.4				0.0	0.0	28.4	3.2	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	28.4				0.0	0.0	28.4	3.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.19	1.00		0.00
Lane Grp Cap(c), veh/h	558	0	496				0	0	570	387	1098	0
V/C Ratio(X)	0.32	0.00	1.29				0.00	0.00	1.11	0.26	0.67	0.00
Avail Cap(c_a), veh/h	558	0	496				0	0	570	389	1098	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	0.66	0.66	0.00
Uniform Delay (d), s/veh	23.5	0.0	30.8				0.0	0.0	30.8	21.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	143.2				0.0	0.0	71.7	0.2	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
%ile BackOfQ(50%),veh/ln	2.9	0.0	30.1				0.0	0.0	23.0	1.3	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	0.0	174.0				0.0	0.0	102.5	21.2	2.2	0.0
LnGrp LOS	C	A	F				A	A	F	C	A	A
Approach Vol, veh/h		819						633			835	
Approach Delay, s/veh		140.8						102.5			4.5	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.0	33.0		33.0		57.0
Change Period (Y+Rc), s	4.6	* 4.6		4.6		4.6
Max Green Setting (Gmax), s	19.5	* 28		28.4		52.4
Max Q Clear Time (g_c+I1), s	5.2	30.4		30.4		2.0
Green Ext Time (p_c), s	0.2	0.0		0.0		6.0

Intersection Summary		
HCM 6th Ctrl Delay		80.4
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

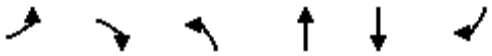
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	5	0	70	0	505	20	280	965	60
Future Vol, veh/h	5	0	5	5	0	70	0	505	20	280	965	60
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	1	1	2	2	2	2	2	2
Mvmt Flow	5	0	5	5	0	71	0	515	20	286	985	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2150	2124	1017	2115	2144	525	1047	0	0	535	0	0
Stage 1	1589	1589	-	525	525	-	-	-	-	-	-	-
Stage 2	561	535	-	1590	1619	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.11	6.51	6.21	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.509	4.009	3.309	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	35	51	291	37	49	554	665	-	-	1033	-	-
Stage 1	137	169	-	538	531	-	-	-	-	-	-	-
Stage 2	516	527	-	136	163	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	24	37	291	29	35	554	664	-	-	1033	-	-
Mov Cap-2 Maneuver	24	37	-	29	35	-	-	-	-	-	-	-
Stage 1	137	122	-	538	531	-	-	-	-	-	-	-
Stage 2	449	527	-	97	118	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	110	25.5	0	2.1
HCM LOS	F	D		

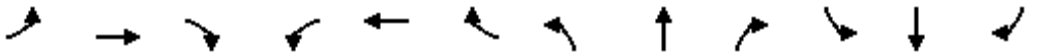
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	664	-	-	44	251	1033	-	-
HCM Lane V/C Ratio	-	-	-	0.232	0.305	0.277	-	-
HCM Control Delay (s)	0	-	-	110	25.5	9.8	-	-
HCM Lane LOS	A	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	1.2	1.1	-	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	20	25	450	865	90
Future Volume (veh/h)	75	20	25	450	865	90
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	20	25	455	874	91
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	170	151	43	1307	955	99
Arrive On Green	0.09	0.09	0.02	0.70	0.57	0.57
Sat Flow, veh/h	1810	1610	1781	1870	1666	173
Grp Volume(v), veh/h	76	20	25	455	0	965
Grp Sat Flow(s),veh/h/ln	1810	1610	1781	1870	0	1839
Q Serve(g_s), s	1.8	0.5	0.6	4.3	0.0	20.9
Cycle Q Clear(g_c), s	1.8	0.5	0.6	4.3	0.0	20.9
Prop In Lane	1.00	1.00	1.00			0.09
Lane Grp Cap(c), veh/h	170	151	43	1307	0	1054
V/C Ratio(X)	0.45	0.13	0.59	0.35	0.00	0.92
Avail Cap(c_a), veh/h	1037	923	221	2338	0	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	18.4	21.4	2.7	0.0	8.5
Incr Delay (d2), s/veh	1.8	0.4	12.2	0.2	0.0	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.4	0.0	8.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.8	18.8	33.6	2.8	0.0	22.1
LnGrp LOS	C	B	C	A	A	C
Approach Vol, veh/h	96			480	965	
Approach Delay, s/veh	20.4			4.4	22.1	
Approach LOS	C			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		35.6		8.8	5.6	30.0
Change Period (Y+Rc), s		4.6		4.6	4.5	4.6
Max Green Setting (Gmax), s		55.4		25.4	5.5	25.4
Max Q Clear Time (g_c+I1), s		6.3		3.8	2.6	22.9
Green Ext Time (p_c), s		3.1		0.2	0.0	1.6

Intersection Summary		
HCM 6th Ctrl Delay		16.5
HCM 6th LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1320	5	5	710	20	15	0	10	80	0	105
Future Volume (veh/h)	45	1320	5	5	710	20	15	0	10	80	0	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		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	1811	1811	1811	1826	1826	1826	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	47	1375	5	5	740	21	16	0	10	83	0	109
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	5	5	5	0	0	0	2	2	2
Cap, veh/h	269	1453	5	110	1424	40	386	0	339	380	0	338
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	683	3517	13	383	3445	98	1810	0	1589	1781	0	1585
Grp Volume(v), veh/h	47	673	707	5	372	389	16	0	10	83	0	109
Grp Sat Flow(s),veh/h/ln	683	1721	1809	383	1735	1808	1810	0	1589	1781	0	1585
Q Serve(g_s), s	4.1	28.2	28.3	1.0	12.0	12.0	0.5	0.0	0.4	2.9	0.0	4.4
Cycle Q Clear(g_c), s	16.2	28.2	28.3	29.2	12.0	12.0	0.5	0.0	0.4	2.9	0.0	4.4
Prop In Lane	1.00		0.01	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	711	748	110	717	747	386	0	339	380	0	338
V/C Ratio(X)	0.18	0.95	0.95	0.05	0.52	0.52	0.04	0.00	0.03	0.22	0.00	0.32
Avail Cap(c_a), veh/h	269	711	748	110	717	747	386	0	339	380	0	338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	21.2	21.2	35.3	16.4	16.4	23.4	0.0	23.4	24.3	0.0	24.9
Incr Delay (d2), s/veh	0.3	21.5	20.8	0.1	0.6	0.6	0.2	0.0	0.2	1.3	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.5	15.1	0.1	4.4	4.6	0.2	0.0	0.2	1.3	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	42.7	42.0	35.4	17.0	17.0	23.6	0.0	23.5	25.7	0.0	27.4
LnGrp LOS	C	D	D	D	B	B	C	A	C	C	A	C
Approach Vol, veh/h		1427			766			26			192	
Approach Delay, s/veh		41.7			17.1			23.6			26.7	
Approach LOS		D			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		35.0		20.0		35.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		31.0		16.0		31.0				
Max Q Clear Time (g_c+I1), s		2.5		30.3		6.4		31.2				
Green Ext Time (p_c), s		0.0		0.6		0.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			32.5									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1405	15	5	665	0	50	0	25	5	0	15
Future Volume (veh/h)	10	1405	15	5	665	0	50	0	25	5	0	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	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	1841	1841	1841	1811	1811	1811	1826	1826	1826	1811	1811	1811
Adj Flow Rate, veh/h	10	1448	15	5	686	0	52	0	26	5	0	15
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, %	4	4	4	6	6	6	5	5	5	6	6	6
Cap, veh/h	429	2164	22	272	1106	937	371	0	244	122	33	182
Arrive On Green	0.61	0.61	0.61	0.61	0.61	0.00	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	744	3545	37	351	1811	1535	1363	0	1545	174	211	1155
Grp Volume(v), veh/h	10	714	749	5	686	0	52	0	26	20	0	0
Grp Sat Flow(s),veh/h/ln	744	1749	1833	351	1811	1535	1363	0	1545	1540	0	0
Q Serve(g_s), s	0.4	12.7	12.8	0.5	11.3	0.0	0.9	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.7	12.7	12.8	13.2	11.3	0.0	1.4	0.0	0.7	0.5	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	0.25		0.75
Lane Grp Cap(c), veh/h	429	1068	1119	272	1106	937	371	0	244	338	0	0
V/C Ratio(X)	0.02	0.67	0.67	0.02	0.62	0.00	0.14	0.00	0.11	0.06	0.00	0.00
Avail Cap(c_a), veh/h	594	1456	1526	350	1508	1278	859	0	798	868	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	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.5	6.1	6.1	10.4	5.8	0.0	17.4	0.0	17.1	17.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.8	0.0	0.7	0.0	0.1	0.0	0.1	0.0	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	0.1	3.0	3.1	0.0	2.7	0.0	0.5	0.0	0.2	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.5	7.0	6.9	10.5	6.5	0.0	17.5	0.0	17.2	17.1	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h		1473			691			78			20	
Approach Delay, s/veh		7.0			6.5			17.4			17.1	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	34.5	13.0	34.5	13.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	39.5	24.5	39.5	24.5
Max Q Clear Time (g_c+I1), s	14.8	2.5	15.2	3.4
Green Ext Time (p_c), s	14.2	0.0	6.3	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	445	75	90	255	295	545
Future Volume (veh/h)	445	75	90	255	295	545
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1707	1707	1544	1544	1781	1781
Adj Flow Rate, veh/h	464	78	94	266	307	568
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	13	24	24	8	8
Cap, veh/h	566	260	684	598	341	1279
Arrive On Green	0.18	0.18	0.47	0.47	0.20	0.72
Sat Flow, veh/h	3155	1447	1544	1282	1697	1781
Grp Volume(v), veh/h	464	78	94	266	307	568
Grp Sat Flow(s),veh/h/ln	1577	1447	1467	1282	1697	1781
Q Serve(g_s), s	12.7	4.2	3.3	12.6	15.9	11.9
Cycle Q Clear(g_c), s	12.7	4.2	3.3	12.6	15.9	11.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	566	260	684	598	341	1279
V/C Ratio(X)	0.82	0.30	0.14	0.45	0.90	0.44
Avail Cap(c_a), veh/h	890	408	684	598	385	1279
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.5	32.0	13.7	16.2	35.1	5.2
Incr Delay (d2), s/veh	2.4	0.4	0.4	2.4	21.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	1.5	1.1	3.9	8.4	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.9	32.4	14.1	18.6	56.5	6.4
LnGrp LOS	D	C	B	B	E	A
Approach Vol, veh/h	542		360			875
Approach Delay, s/veh	37.1		17.4			24.0
Approach LOS	D		B			C

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	32.7	46.6				69.2	20.8
Change Period (Y+Rc), s	4.6	4.6				4.6	4.6
Max Green Setting (Gmax), s	20.4	30.4				55.4	25.4
Max Q Clear Time (g_c+I1), s	17.9	14.6				13.9	14.7
Green Ext Time (p_c), s	0.2	2.0				4.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	26.6
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)	75	475	0	0	450	170	70	5	260	0	0	0
Future Volume (veh/h)	75	475	0	0	450	170	70	5	260	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1574	1574	0	0	1693	1693	1678	1678	1678			
Adj Flow Rate, veh/h	80	505	0	0	479	181	78	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	22	22	0	0	14	14	15	15	15			
Cap, veh/h	98	948	0	0	646	288	1856	0				
Arrive On Green	0.07	0.32	0.00	0.00	0.07	0.07	0.58	0.00	0.00			
Sat Flow, veh/h	1499	3069	0	0	3300	1434	3196	0	1422			
Grp Volume(v), veh/h	80	505	0	0	479	181	78	0	0			
Grp Sat Flow(s),veh/h/ln	1499	1495	0	0	1608	1434	1598	0	1422			
Q Serve(g_s), s	4.7	12.5	0.0	0.0	13.2	11.1	0.9	0.0	0.0			
Cycle Q Clear(g_c), s	4.7	12.5	0.0	0.0	13.2	11.1	0.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	98	948	0	0	646	288	1856	0				
V/C Ratio(X)	0.82	0.53	0.00	0.00	0.74	0.63	0.04	0.00				
Avail Cap(c_a), veh/h	157	1376	0	0	979	437	1856	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.48	0.48	0.00	0.00	0.96	0.96	1.00	0.00	0.00			
Uniform Delay (d), s/veh	41.6	25.3	0.0	0.0	39.7	38.7	8.1	0.0	0.0			
Incr Delay (d2), s/veh	6.7	0.2	0.0	0.0	1.5	2.0	0.0	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			
%ile BackOfQ(50%),veh/ln	1.9	4.3	0.0	0.0	5.8	4.4	0.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	25.5	0.0	0.0	41.2	40.7	8.1	0.0	0.0			
LnGrp LOS	D	C	A	A	D	D	A	A				
Approach Vol, veh/h		585			660			78				
Approach Delay, s/veh		28.6			41.1			8.1				
Approach LOS		C			D			A				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	56.9	33.1	10.5	22.7
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	39.4	41.4	9.4	27.4
Max Q Clear Time (g_c+I1), s	2.9	14.5	6.7	15.2
Green Ext Time (p_c), s	0.2	3.4	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR] 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 (veh/h)	155	500	80	35	305	105	55	30	75	220	25	260
Future Volume (veh/h)	155	500	80	35	305	105	55	30	75	220	25	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1648	1648	1648	1841	1841	1841	1693	1693	1693
Adj Flow Rate, veh/h	170	549	88	38	335	115	60	33	82	242	27	286
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	20	20	20	17	17	17	4	4	4	14	14	14
Cap, veh/h	463	1217	194	334	970	328	209	100	247	391	31	324
Arrive On Green	0.03	0.15	0.15	0.04	0.42	0.42	0.05	0.21	0.21	0.08	0.24	0.24
Sat Flow, veh/h	1527	2631	420	1570	2298	775	1753	467	1161	1612	125	1325
Grp Volume(v), veh/h	170	317	320	38	226	224	60	0	115	242	0	313
Grp Sat Flow(s),veh/h/ln	1527	1523	1527	1570	1566	1507	1753	0	1628	1612	0	1450
Q Serve(g_s), s	5.3	17.0	17.2	1.2	8.8	9.1	2.3	0.0	5.4	7.5	0.0	18.7
Cycle Q Clear(g_c), s	5.3	17.0	17.2	1.2	8.8	9.1	2.3	0.0	5.4	7.5	0.0	18.7
Prop In Lane	1.00		0.28	1.00		0.51	1.00		0.71	1.00		0.91
Lane Grp Cap(c), veh/h	463	705	707	334	661	637	209	0	347	391	0	355
V/C Ratio(X)	0.37	0.45	0.45	0.11	0.34	0.35	0.29	0.00	0.33	0.62	0.00	0.88
Avail Cap(c_a), veh/h	518	705	707	400	661	637	265	0	534	391	0	475
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	27.7	27.8	14.4	17.6	17.6	26.7	0.0	30.0	28.0	0.0	32.7
Incr Delay (d2), s/veh	0.2	1.9	1.9	0.1	1.4	1.5	0.3	0.0	0.2	2.2	0.0	11.6
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	1.9	7.3	7.3	0.4	3.3	3.3	1.0	0.0	2.1	1.6	0.0	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.5	29.6	29.7	14.4	19.0	19.1	26.9	0.0	30.2	30.2	0.0	44.3
LnGrp LOS	B	C	C	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		807			488			175			555	
Approach Delay, s/veh		26.2			18.7			29.1			38.2	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	42.5	12.0	23.7	8.2	46.1	9.2	26.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	24.5	7.5	29.5	7.5	27.5	7.5	29.5
Max Q Clear Time (g_c+I1), s	7.3	11.1	9.5	7.4	3.2	19.2	4.3	20.7
Green Ext Time (p_c), s	0.1	3.1	0.0	0.4	0.0	3.3	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	25	390	15	35	1030
Future Vol, veh/h	20	25	390	15	35	1030
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	70	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	34	34	23	23	18	18
Mvmt Flow	22	27	424	16	38	1120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1070	433	0	0	441	0
Stage 1	433	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Critical Hdwy	7.11	6.71	-	-	4.37	-
Critical Hdwy Stg 1	5.91	-	-	-	-	-
Critical Hdwy Stg 2	6.31	-	-	-	-	-
Follow-up Hdwy	3.823	3.623	-	-	2.371	-
Pot Cap-1 Maneuver	190	547	-	-	1024	-
Stage 1	577	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	183	547	-	-	1023	-
Mov Cap-2 Maneuver	298	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	408	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	399	1023	-
HCM Lane V/C Ratio	-	-	0.123	0.037	-
HCM Control Delay (s)	-	-	15.3	8.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	111.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	0	0	5	60	0	100	5	295	180	400	815	0
Future Vol, veh/h	0	0	5	60	0	100	5	295	180	400	815	0
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	-	-	-	-	-	-	55	-	-	65	-	-
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	6	6	6	2	2	2	3	3	3
Mvmt Flow	0	0	5	66	0	110	5	324	198	440	896	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2264	2308	896	2212	2209	423	896	0	0	522	0	0
Stage 1	1776	1776	-	433	433	-	-	-	-	-	-	-
Stage 2	488	532	-	1779	1776	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.56	6.26	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4.054	3.354	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	29	39	342	~ 31	43	622	757	-	-	1039	-	-
Stage 1	107	137	-	593	575	-	-	-	-	-	-	-
Stage 2	565	529	-	102	132	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	22	342	~ 20	25	622	757	-	-	1039	-	-
Mov Cap-2 Maneuver	16	22	-	~ 20	25	-	-	-	-	-	-	-
Stage 1	106	79	-	589	571	-	-	-	-	-	-	-
Stage 2	462	525	-	~ 58	76	-	-	-	-	-	-	-

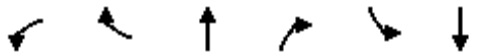
Approach	EB	WB	NB	SB
HCM Control Delay, s	15.7	$ 1268.8	0.1	3.6
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	757	-	-	342	51	1039	-	-
HCM Lane V/C Ratio	0.007	-	-	0.016	3.448	0.423	-	-
HCM Control Delay (s)	9.8	-	-	15.3	$ 1268.8	11	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0	19.1	2.1	-	-

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

HCM 6th Signalized Intersection Summary — Sumner Comp Plan Update

8: W Valley Highway E & SR-167 SB Ramps — Future (2044) PM Peak Hour - Alternative 1



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	95	85	260	60	545	445
Future Volume (veh/h)	95	85	260	60	545	445
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1411	1411	1648	1648	1767	1767
Adj Flow Rate, veh/h	101	90	277	64	580	473
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	33	33	17	17	9	9
Cap, veh/h	155	242	534	121	650	0
Arrive On Green	0.12	0.12	0.21	0.21	0.39	0.00
Sat Flow, veh/h	1344	2104	2605	572	1682	580
Grp Volume(v), veh/h	101	90	170	171	580	22.0
Grp Sat Flow(s),veh/h/ln	1344	1052	1566	1529	1682	C
Q Serve(g_s), s	3.5	1.9	4.6	4.8	15.5	
Cycle Q Clear(g_c), s	3.5	1.9	4.6	4.8	15.5	
Prop In Lane	1.00	1.00		0.37	1.00	
Lane Grp Cap(c), veh/h	155	242	331	324	650	
V/C Ratio(X)	0.65	0.37	0.51	0.53	0.89	
Avail Cap(c_a), veh/h	431	674	1153	1126	889	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	20.3	19.7	16.7	16.8	13.8	
Incr Delay (d2), s/veh	4.2	0.9	1.1	1.2	8.2	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	1.2	0.5	1.6	1.6	6.2	
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.5	20.5	17.9	18.0	22.0	
LnGrp LOS	C	C	B	B	C	
Approach Vol, veh/h	191		341			
Approach Delay, s/veh	22.6		17.9			
Approach LOS	C		B			

Timer - Assigned Phs	1	2				8
Phs Duration (G+Y+Rc), s	23.1	14.8				10.1
Change Period (Y+Rc), s	4.6	4.6				4.6
Max Green Setting (Gmax), s	25.4	35.4				15.4
Max Q Clear Time (g_c+I1), s	17.5	6.8				5.5
Green Ext Time (p_c), s	1.0	2.0				0.4

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [SBT] 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 (veh/h)	5	0	15	5	0	5	5	260	5	0	915	5
Future Volume (veh/h)	5	0	15	5	0	5	5	260	5	0	915	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.98	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	477	477	477	1900	1900	1900	1722	1722	1722	1781	1781	1781
Adj Flow Rate, veh/h	5	0	16	5	0	5	5	274	5	0	963	5
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, %	96	96	96	0	0	0	12	12	12	8	8	8
Cap, veh/h	309	0	14	297	0	56	443	2086	38	790	1601	8
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.01	0.63	0.63	0.00	0.46	0.46
Sat Flow, veh/h	357	0	404	1419	0	1586	1640	3287	60	1697	3453	18
Grp Volume(v), veh/h	5	0	16	5	0	5	5	136	143	0	472	496
Grp Sat Flow(s),veh/h/ln	357	0	404	1419	0	1586	1640	1636	1711	1697	1692	1778
Q Serve(g_s), s	0.3	0.0	0.9	0.0	0.0	0.1	0.0	0.8	0.8	0.0	5.0	5.0
Cycle Q Clear(g_c), s	0.4	0.0	0.9	0.9	0.0	0.1	0.0	0.8	0.8	0.0	5.0	5.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	309	0	14	297	0	56	443	1038	1086	790	785	825
V/C Ratio(X)	0.02	0.00	1.12	0.02	0.00	0.09	0.01	0.13	0.13	0.00	0.60	0.60
Avail Cap(c_a), veh/h	532	0	267	1184	0	1047	705	1080	1130	1063	1118	1174
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	11.7	12.1	0.0	11.3	3.5	1.8	1.8	0.0	4.8	4.8
Incr Delay (d2), s/veh	0.0	0.0	147.1	0.0	0.0	0.7	0.0	0.1	0.1	0.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	0.0	158.8	12.1	0.0	12.0	3.5	1.8	1.8	0.0	5.6	5.5
LnGrp LOS	B	A	F	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		21			10			284			968	
Approach Delay, s/veh		123.7			12.1			1.9			5.6	
Approach LOS		F			B			A			A	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	4.9	0.0	19.4	4.9	4.1	15.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	4.0	16.0	16.0	4.0	16.0
Max Q Clear Time (g_c+I1), s	2.9	0.0	2.8	2.9	2.0	7.0
Green Ext Time (p_c), s	0.0	0.0	1.3	0.1	0.0	4.1

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	185	10	25	520
Future Vol, veh/h	40	50	185	10	25	520
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	-	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	20	29	29	11	11
Mvmt Flow	42	53	195	11	26	547

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	794	195	0	0	206	0
Stage 1	195	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.21	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.299	-
Pot Cap-1 Maneuver	333	803	-	-	1313	-
Stage 1	797	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	326	803	-	-	1313	-
Mov Cap-2 Maneuver	326	-	-	-	-	-
Stage 1	797	-	-	-	-	-
Stage 2	505	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	487	1313	-
HCM Lane V/C Ratio	-	-	0.195	0.02	-
HCM Control Delay (s)	-	-	14.2	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	5	20	255	610	450
Future Vol, veh/h	10	5	20	255	610	450
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	170	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	46	46	22	22	12	12
Mvmt Flow	11	5	22	277	663	489

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	847	663	1152	0	-	0
Stage 1	663	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	7.29	6.89	4.43	-	-	-
Critical Hdwy Stg 1	6.09	-	-	-	-	-
Critical Hdwy Stg 2	6.49	-	-	-	-	-
Follow-up Hdwy	3.937	3.737	2.409	-	-	-
Pot Cap-1 Maneuver	252	375	519	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	725	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	241	375	519	-	-	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	725	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	0.9	0
HCM LOS	C		

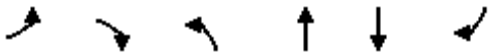
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	519	-	330	375	-	-
HCM Lane V/C Ratio	0.042	-	0.033	0.014	-	-
HCM Control Delay (s)	12.2	-	16.3	14.7	-	-
HCM Lane LOS	B	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	84.3
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	150	55	90	65	465	265
Future Vol, veh/h	150	55	90	65	465	265
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	25	25	22	22	12	12
Mvmt Flow	165	60	99	71	511	291
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	15.3	12.9	118.8
HCM LOS	C	B	F

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	0%	64%
Vol Thru, %	27%	58%	0%
Vol Right, %	0%	42%	36%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	205	155	730
LT Vol	150	0	465
Through Vol	55	90	0
RT Vol	0	65	265
Lane Flow Rate	225	170	802
Geometry Grp	1	1	1
Degree of Util (X)	0.418	0.301	1.188
Departure Headway (Hd)	7.233	6.929	5.333
Convergence, Y/N	Yes	Yes	Yes
Cap	500	523	690
Service Time	5.233	4.929	3.333
HCM Lane V/C Ratio	0.45	0.325	1.162
HCM Control Delay	15.3	12.9	118.8
HCM Lane LOS	C	B	F
HCM 95th-tile Q	2	1.3	27



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	345	65	380	850	60
Future Volume (vph)	100	345	65	380	850	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1770	1863	1845	1534
Flt Permitted	0.95	1.00	0.15	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	272	1863	1845	1534
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	103	356	67	392	876	62
RTOR Reduction (vph)	0	313	0	0	0	5
Lane Group Flow (vph)	103	43	67	392	876	57
Confl. Peds. (#/hr)	2		1			1
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		6	4			8
Actuated Green, G (s)	9.1	9.1	56.7	56.7	45.5	45.5
Effective Green, g (s)	9.1	9.1	56.7	56.7	45.5	45.5
Actuated g/C Ratio	0.12	0.12	0.75	0.75	0.60	0.60
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	214	191	325	1393	1107	920
v/s Ratio Prot	c0.06		0.02	c0.21	c0.47	
v/s Ratio Perm		0.03	0.14			0.04
v/c Ratio	0.48	0.22	0.21	0.28	0.79	0.06
Uniform Delay, d1	31.1	30.2	8.6	3.0	11.5	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	0.4	0.2	0.1	3.8	0.0
Delay (s)	32.4	30.6	8.8	3.1	15.4	6.3
Level of Service	C	C	A	A	B	A
Approach Delay (s)	31.0			4.0	14.8	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	380	65	400	760	25	80
Future Vol, veh/h	380	65	400	760	25	80
Conflicting Peds, #/hr	0	0	0	0	1	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	45	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	396	68	417	792	26	83

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	464	0	2057	437
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	1627	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1097	-	61	624
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	178	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1097	-	38	620
Mov Cap-2 Maneuver	-	-	-	-	94	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	110	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	94	620	-	-	1097	-
HCM Lane V/C Ratio	0.277	0.134	-	-	0.38	-
HCM Control Delay (s)	57.4	11.7	-	-	10.3	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1	0.5	-	-	1.8	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	210	30	545	240	20	235
Future Vol, veh/h	210	30	545	240	20	235
Conflicting Peds, #/hr	0	1	1	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	219	31	568	250	21	245

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	251	0	1624	237
Stage 1	-	-	-	-	236	-
Stage 2	-	-	-	-	1388	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1320	-	113	804
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	232	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1319	-	64	803
Mov Cap-2 Maneuver	-	-	-	-	115	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	132	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.8	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	115	803	-	-	1319	-
HCM Lane V/C Ratio	0.181	0.305	-	-	0.43	-
HCM Control Delay (s)	43.1	11.4	-	-	9.8	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	1.3	-	-	2.2	-

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	5	240	165	90	655
Future Vol, veh/h	95	5	240	165	90	655
Conflicting Peds, #/hr	0	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	10	10	7	7
Mvmt Flow	103	5	261	179	98	712

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1261	354	0	0	442	0
Stage 1	353	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.17	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.263	-
Pot Cap-1 Maneuver	187	688	-	-	1092	-
Stage 1	709	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	686	-	-	1090	-
Mov Cap-2 Maneuver	282	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	357	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.6	0	1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	291	1090	-
HCM Lane V/C Ratio	-	-	0.374	0.09	-
HCM Control Delay (s)	-	-	24.6	8.6	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.7	0.3	-

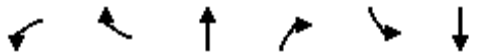
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	20	10	5	5	5	5	40	5	30	130	10
Future Vol, veh/h	20	20	10	5	5	5	5	40	5	30	130	10
Conflicting Peds, #/hr	4	0	4	4	0	4	3	0	1	1	0	3
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	2	2	2
Mvmt Flow	22	22	11	6	6	6	6	45	6	34	146	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	293	287	159	301	289	53	160	0	0	52	0	0
Stage 1	223	223	-	61	61	-	-	-	-	-	-	-
Stage 2	70	64	-	240	228	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.12	-	-
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	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	663	626	892	655	624	1020	1407	-	-	1554	-	-
Stage 1	784	723	-	955	848	-	-	-	-	-	-	-
Stage 2	945	846	-	768	719	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	637	607	887	612	605	1016	1403	-	-	1553	-	-
Mov Cap-2 Maneuver	637	607	-	612	605	-	-	-	-	-	-	-
Stage 1	779	704	-	950	844	-	-	-	-	-	-	-
Stage 2	927	842	-	714	700	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	10.3	0.8	1.3
HCM LOS	B	B		

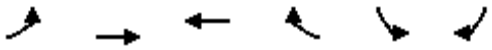
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1403	-	-	661	702	1553	-	-
HCM Lane V/C Ratio	0.004	-	-	0.085	0.024	0.022	-	-
HCM Control Delay (s)	7.6	0	-	11	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	-	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	140	135	20	180	580	30
Future Volume (vph)	140	135	20	180	580	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0		3.5	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		0.88		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1475		1621		1626	1712
Flt Permitted	0.98		1.00		0.62	1.00
Satd. Flow (perm)	1475		1621		1061	1712
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	156	150	22	200	644	33
RTOR Reduction (vph)	0	0	143	0	0	0
Lane Group Flow (vph)	306	0	79	0	644	33
Confl. Bikes (#/hr)		2		1		
Heavy Vehicles (%)	16%	16%	1%	1%	11%	11%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			4		1	8
Permitted Phases	2				8	
Actuated Green, G (s)	28.8		30.8		54.7	19.7
Effective Green, g (s)	28.8		30.8		54.7	19.7
Actuated g/C Ratio	0.27		0.28		0.51	0.18
Clearance Time (s)	5.0		5.0		3.5	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	392		461		719	311
v/s Ratio Prot			c0.05		c0.29	0.02
v/s Ratio Perm	c0.21				c0.16	
v/c Ratio	0.78		0.17		0.90	0.11
Uniform Delay, d1	36.7		29.1		23.2	36.9
Progression Factor	1.36		1.00		1.00	1.00
Incremental Delay, d2	9.2		0.2		13.7	0.2
Delay (s)	59.2		29.2		36.9	37.0
Level of Service	E		C		D	D
Approach Delay (s)	59.2		29.2			36.9
Approach LOS	E		C			D

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	295	220	195	480	280
Future Volume (vph)	80	295	220	195	480	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1655	1743	1881	1559	1608	
Flt Permitted	0.30	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	529	1743	1881	1559	1608	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	314	234	207	511	298
RTOR Reduction (vph)	0	0	0	169	0	0
Lane Group Flow (vph)	85	314	234	38	809	0
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	9%	9%	1%	1%	8%	8%
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	30.8	30.8	19.7	19.7	67.3	
Effective Green, g (s)	30.8	30.8	19.7	19.7	67.3	
Actuated g/C Ratio	0.28	0.28	0.18	0.18	0.62	
Clearance Time (s)	3.5	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	229	496	342	284	1001	
v/s Ratio Prot	0.03	c0.18	0.12			
v/s Ratio Perm	0.08			0.02	c0.50	
v/c Ratio	0.37	0.63	0.68	0.13	0.81	
Uniform Delay, d1	29.8	33.7	41.3	37.0	15.5	
Progression Factor	1.00	1.00	1.00	1.00	1.19	
Incremental Delay, d2	1.0	2.6	5.6	0.2	3.7	
Delay (s)	30.8	36.4	46.9	37.3	22.2	
Level of Service	C	D	D	D	C	
Approach Delay (s)		35.2	42.4		22.2	
Approach LOS		D	D		C	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	295	415	145	125	25	215	250	75	110	615	115
Future Volume (veh/h)	135	295	415	145	125	25	215	250	75	110	615	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.98	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	1885	1885	1885	1885	1885	1885	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	148	324	456	159	137	27	236	275	82	121	676	126
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	6	6	6	5	5	5
Cap, veh/h	578	566	476	403	458	90	262	311	258	418	758	141
Arrive On Green	0.14	0.30	0.30	0.14	0.30	0.30	0.15	0.17	0.17	0.24	0.26	0.26
Sat Flow, veh/h	1795	1885	1586	1795	1526	301	1725	1811	1504	1739	2912	542
Grp Volume(v), veh/h	148	324	456	159	0	164	236	275	82	121	402	400
Grp Sat Flow(s),veh/h/ln	1795	1885	1586	1795	0	1827	1725	1811	1504	1739	1735	1720
Q Serve(g_s), s	7.4	21.2	41.2	8.0	0.0	10.1	19.6	21.6	5.2	8.3	32.6	32.7
Cycle Q Clear(g_c), s	7.4	21.2	41.2	8.0	0.0	10.1	19.6	21.6	5.2	8.3	32.6	32.7
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	578	566	476	403	0	548	262	311	258	418	452	448
V/C Ratio(X)	0.26	0.57	0.96	0.39	0.00	0.30	0.90	0.88	0.32	0.29	0.89	0.89
Avail Cap(c_a), veh/h	757	575	484	582	0	558	408	677	562	418	648	643
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	43.1	50.1	27.4	0.0	39.2	60.8	59.0	29.2	45.2	51.9	52.0
Incr Delay (d2), s/veh	0.2	1.3	30.2	0.6	0.0	0.3	15.7	8.2	0.7	0.4	10.8	11.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	10.3	20.1	3.6	0.0	4.7	9.7	10.6	2.6	3.6	15.4	15.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	44.5	80.4	28.0	0.0	39.5	76.5	67.2	29.9	45.6	62.7	63.0
LnGrp LOS	C	D	F	C	A	D	E	E	C	D	E	E
Approach Vol, veh/h		928			323			593			923	
Approach Delay, s/veh		59.1			33.8			65.7			60.6	
Approach LOS		E			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.5	49.3	40.5	30.6	25.5	49.2	27.6	43.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	24.5	44.5	34.5	54.5	34.5	44.5	34.5	54.5
Max Q Clear Time (g_c+I1), s	9.4	12.1	10.3	23.6	10.0	43.2	21.6	34.7
Green Ext Time (p_c), s	0.5	0.7	0.3	1.4	0.6	0.6	0.5	3.3

Intersection Summary	
HCM 6th Ctrl Delay	58.1
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	365	140	85	250	25	45
Future Vol, veh/h	365	140	85	250	25	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	392	151	91	269	27	48
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	15.3	12	9.3
HCM LOS	C	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	36%	0%	25%
Vol Thru, %	0%	72%	75%
Vol Right, %	64%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	70	505	335
LT Vol	25	0	85
Through Vol	0	365	250
RT Vol	45	140	0
Lane Flow Rate	75	543	360
Geometry Grp	1	1	1
Degree of Util (X)	0.115	0.654	0.474
Departure Headway (Hd)	5.494	4.338	4.741
Convergence, Y/N	Yes	Yes	Yes
Cap	647	831	756
Service Time	3.571	2.377	2.789
HCM Lane V/C Ratio	0.116	0.653	0.476
HCM Control Delay	9.3	15.3	12
HCM Lane LOS	A	C	B
HCM 95th-tile Q	0.4	5	2.6

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	395	10	10	310	5	15
Future Vol, veh/h	395	10	10	310	5	15
Conflicting Peds, #/hr	0	20	20	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	425	11	11	333	5	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	456	0	806	453
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1105	-	354	611
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	714	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1087	-	344	600
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	506	-	-	1087	-
HCM Lane V/C Ratio	0.043	-	-	0.01	-
HCM Control Delay (s)	12.4	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	345	20	10	185	60	10	70	30	105	170	130
Future Volume (vph)	55	345	20	10	185	60	10	70	30	105	170	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	10	12	12	16	12	12	10	11
Total Lost time (s)	5.5	5.5			5.5			5.5			5.5	4.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.97			0.96			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.98	1.00
Satd. Flow (prot)	1715	1863			1684			2024			1740	1561
Flt Permitted	0.65	1.00			0.98			0.95			0.82	1.00
Satd. Flow (perm)	1177	1863			1651			1939			1457	1561
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	62	388	22	11	208	67	11	79	34	118	191	146
RTOR Reduction (vph)	0	5	0	0	26	0	0	23	0	0	0	146
Lane Group Flow (vph)	62	405	0	0	260	0	0	101	0	0	309	0
Confl. Peds. (#/hr)	9		11	11		9	1					1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	NA
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.0	17.0			17.0			13.2			13.2	0.0
Effective Green, g (s)	17.0	17.0			17.0			13.2			13.2	0.0
Actuated g/C Ratio	0.41	0.41			0.41			0.32			0.32	0.00
Clearance Time (s)	5.5	5.5			5.5			5.5			5.5	
Vehicle Extension (s)	6.0	6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)	485	768			681			621			466	0
v/s Ratio Prot		c0.22										
v/s Ratio Perm	0.05				0.16			0.05			c0.21	
v/c Ratio	0.13	0.53			0.38			0.16			0.66	0.00
Uniform Delay, d1	7.5	9.1			8.4			10.0			12.1	20.6
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.3	1.6			1.0			0.3			5.5	0.0
Delay (s)	7.8	10.7			9.4			10.4			17.6	20.6
Level of Service	A	B			A			B			B	C
Approach Delay (s)		10.3			9.4			10.4			18.6	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	41.2	Sum of lost time (s)	11.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	380	65	185	255	65	15	305	105	65	585	55
Future Volume (veh/h)	155	380	65	185	255	65	15	305	105	65	585	55
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	0.99		0.98	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	1900	1976	1900	1900	1900	1900	1961	1885	1885	1900	1976	1900
Adj Flow Rate, veh/h	163	400	68	195	268	68	16	321	111	68	616	58
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	1	1	1	0	0	0
Cap, veh/h	377	458	78	305	426	108	158	459	159	310	670	63
Arrive On Green	0.09	0.28	0.28	0.10	0.29	0.29	0.02	0.34	0.34	0.05	0.38	0.38
Sat Flow, veh/h	1810	1640	279	1810	1455	369	1867	1333	461	1810	1776	167
Grp Volume(v), veh/h	163	0	468	195	0	336	16	0	432	68	0	674
Grp Sat Flow(s),veh/h/ln	1810	0	1919	1810	0	1824	1867	0	1794	1810	0	1943
Q Serve(g_s), s	5.7	0.0	21.0	6.8	0.0	14.4	0.5	0.0	18.8	2.1	0.0	29.9
Cycle Q Clear(g_c), s	5.7	0.0	21.0	6.8	0.0	14.4	0.5	0.0	18.8	2.1	0.0	29.9
Prop In Lane	1.00		0.15	1.00		0.20	1.00		0.26	1.00		0.09
Lane Grp Cap(c), veh/h	377	0	536	305	0	534	158	0	618	310	0	733
V/C Ratio(X)	0.43	0.00	0.87	0.64	0.00	0.63	0.10	0.00	0.70	0.22	0.00	0.92
Avail Cap(c_a), veh/h	520	0	850	424	0	808	427	0	795	513	0	861
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	31.0	22.5	0.0	27.7	22.4	0.0	25.5	19.0	0.0	26.8
Incr Delay (d2), s/veh	0.8	0.0	6.2	2.2	0.0	1.2	0.3	0.0	1.9	0.4	0.0	13.6
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	2.4	0.0	10.5	3.0	0.0	6.4	0.2	0.0	8.2	0.9	0.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	37.2	24.8	0.0	28.9	22.7	0.0	27.4	19.4	0.0	40.4
LnGrp LOS	C	A	D	C	A	C	C	A	C	B	A	D
Approach Vol, veh/h		631			531			448			742	
Approach Delay, s/veh		33.2			27.4			27.3			38.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	30.2	9.9	36.1	12.9	31.4	7.0	39.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	40.0	15.0	40.0	15.0	40.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	7.8	23.0	4.1	20.8	7.7	16.4	2.5	31.9
Green Ext Time (p_c), s	0.4	1.9	0.1	1.9	0.3	1.4	0.0	2.2

Intersection Summary	
HCM 6th Ctrl Delay	32.4
HCM 6th LOS	C

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	20	625	40	15	340	30	30	15	5	55	65	30
Future Vol, veh/h	20	625	40	15	340	30	30	15	5	55	65	30
Conflicting Peds, #/hr	5	0	10	10	0	5	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	235	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	1	1	1
Mvmt Flow	20	638	41	15	347	31	31	15	5	56	66	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	383	0	0	689	0	0	1150	1122	673	1111	1127	368
Stage 1	-	-	-	-	-	-	709	709	-	398	398	-
Stage 2	-	-	-	-	-	-	441	413	-	713	729	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1187	-	-	915	-	-	177	208	459	187	205	680
Stage 1	-	-	-	-	-	-	428	440	-	630	605	-
Stage 2	-	-	-	-	-	-	599	597	-	424	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1182	-	-	907	-	-	121	199	454	168	196	677
Mov Cap-2 Maneuver	-	-	-	-	-	-	121	199	-	168	196	-
Stage 1	-	-	-	-	-	-	417	429	-	617	592	-
Stage 2	-	-	-	-	-	-	499	584	-	396	419	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	40.9	55.9
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	1182	-	-	907	-	-	213
HCM Lane V/C Ratio	0.34	0.017	-	-	0.017	-	-	0.719
HCM Control Delay (s)	40.9	8.1	-	-	9	-	-	55.9
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0.1	-	-	4.7

Intersection	
Intersection Delay, s/veh	46.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	280	410	30	290	35	105	45	15	180	110	20
Future Vol, veh/h	20	280	410	30	290	35	105	45	15	180	110	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	0	0	0	0	0	0	1	1	1
Mvmt Flow	22	308	451	33	319	38	115	49	16	198	121	22
Number of Lanes	1	1	1	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	3
HCM Control Delay	45.9	58.6	21.6	47.1
HCM LOS	E	F	C	E

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	64%	100%	0%	0%	100%	0%	58%
Vol Thru, %	27%	0%	100%	0%	0%	89%	35%
Vol Right, %	9%	0%	0%	100%	0%	11%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	20	280	410	30	325	310
LT Vol	105	20	0	0	30	0	180
Through Vol	45	0	280	0	0	290	110
RT Vol	15	0	0	410	0	35	20
Lane Flow Rate	181	22	308	451	33	357	341
Geometry Grp	7	7	7	7	8	8	7
Degree of Util (X)	0.491	0.054	0.714	0.955	0.092	0.936	0.857
Departure Headway (Hd)	9.75	8.877	8.357	7.628	10.038	9.433	9.054
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	370	402	431	473	356	382	399
Service Time	7.526	6.653	6.132	5.403	7.823	7.217	6.815
HCM Lane V/C Ratio	0.489	0.055	0.715	0.953	0.093	0.935	0.855
HCM Control Delay	21.6	12.2	29.5	58.7	13.8	62.7	47.1
HCM Lane LOS	C	B	D	F	B	F	E
HCM 95th-tile Q	2.6	0.2	5.5	11.7	0.3	10.1	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	260	275	160	505	605	175
Future Volume (veh/h)	260	275	160	505	605	175
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1885	1870	1870
Adj Flow Rate, veh/h	277	293	170	537	644	186
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	1	2	2
Cap, veh/h	387	344	191	1253	694	200
Arrive On Green	0.21	0.21	0.11	0.66	0.50	0.50
Sat Flow, veh/h	1810	1610	1795	1885	1395	403
Grp Volume(v), veh/h	277	293	170	537	0	830
Grp Sat Flow(s),veh/h/ln	1810	1610	1795	1885	0	1798
Q Serve(g_s), s	9.3	11.5	6.2	8.8	0.0	28.4
Cycle Q Clear(g_c), s	9.3	11.5	6.2	8.8	0.0	28.4
Prop In Lane	1.00	1.00	1.00			0.22
Lane Grp Cap(c), veh/h	387	344	191	1253	0	894
V/C Ratio(X)	0.72	0.85	0.89	0.43	0.00	0.93
Avail Cap(c_a), veh/h	440	391	191	1318	0	956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	24.9	29.0	5.2	0.0	15.4
Incr Delay (d2), s/veh	4.7	14.8	36.4	0.2	0.0	14.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	1.4	4.4	2.3	0.0	12.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.7	39.6	65.4	5.4	0.0	29.8
LnGrp LOS	C	D	E	A	A	C
Approach Vol, veh/h	570			707	830	
Approach Delay, s/veh	34.3			19.8	29.8	
Approach LOS	C			B	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		47.7		18.1	11.0	36.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		46.0		16.0	7.0	35.0
Max Q Clear Time (g_c+I1), s		10.8		13.5	8.2	30.4
Green Ext Time (p_c), s		3.7		0.6	0.0	2.4

Intersection Summary			
HCM 6th Ctrl Delay		27.7	
HCM 6th LOS		C	

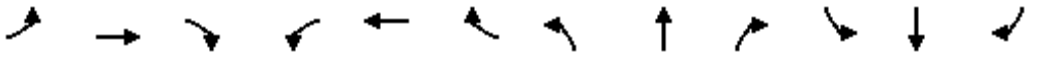
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	0	0	20	0	495	80	40	1035	5
Future Vol, veh/h	5	0	10	0	0	20	0	495	80	40	1035	5
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	45	-	115	55	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	7	7	7	5	5	5	4	4	4
Mvmt Flow	5	0	11	0	0	21	0	527	85	43	1101	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1456	1807	553	-	-	271	1106	0	0	617	0	0
Stage 1	1190	1190	-	-	-	-	-	-	-	-	-	-
Stage 2	266	617	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	-	7.04	4.2	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	-	3.37	2.25	-	-	2.24	-	-
Pot Cap-1 Maneuver	93	80	482	0	0	712	610	-	-	945	-	-
Stage 1	202	263	-	0	0	-	-	-	-	-	-	-
Stage 2	722	484	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	87	76	482	-	-	708	610	-	-	941	-	-
Mov Cap-2 Maneuver	87	76	-	-	-	-	-	-	-	-	-	-
Stage 1	202	251	-	-	-	-	-	-	-	-	-	-
Stage 2	699	482	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	10.2	0	0.3
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	192	708	941	-	-
HCM Lane V/C Ratio	-	-	-	0.083	0.03	0.045	-	-
HCM Control Delay (s)	0	-	-	25.4	10.2	9	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	20	310	260	65	10	325	480	255	25	795	305
Future Volume (veh/h)	140	20	310	260	65	10	325	480	255	25	795	305
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	1841	1841	1841	1841	1841	1914	1841	1914	1914	1841	1841	1841
Adj Flow Rate, veh/h	152	22	0	182	212	0	353	522	0	27	864	332
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	187	197		253	266		357	1850		546	1095	419
Arrive On Green	0.11	0.11	0.00	0.14	0.14	0.00	0.13	0.51	0.00	0.06	0.44	0.44
Sat Flow, veh/h	1753	1841	1560	1753	1841	0	1753	3733	0	1753	2467	945
Grp Volume(v), veh/h	152	22	0	182	212	0	353	522	0	27	611	585
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1753	1841	0	1753	1819	0	1753	1749	1663
Q Serve(g_s), s	8.5	1.1	0.0	9.9	11.1	0.0	12.2	8.2	0.0	0.7	29.9	30.1
Cycle Q Clear(g_c), s	8.5	1.1	0.0	9.9	11.1	0.0	12.2	8.2	0.0	0.7	29.9	30.1
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.57
Lane Grp Cap(c), veh/h	187	197		253	266		357	1850		546	776	738
V/C Ratio(X)	0.81	0.11		0.72	0.80		0.99	0.28		0.05	0.79	0.79
Avail Cap(c_a), veh/h	289	304		447	469		357	1850		625	776	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.98	0.98	0.00	0.83	0.83	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	40.4	0.0	40.8	41.4	0.0	23.1	14.1	0.0	9.8	23.8	23.9
Incr Delay (d2), s/veh	9.5	0.2	0.0	3.7	5.3	0.0	40.7	0.3	0.0	0.0	8.0	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.5	0.0	4.6	5.4	0.0	8.6	3.3	0.0	0.3	13.7	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	40.6	0.0	44.6	46.7	0.0	63.8	14.4	0.0	9.8	31.8	32.4
LnGrp LOS	D	D		D	D		E	B		A	C	C
Approach Vol, veh/h		174			394			875			1223	
Approach Delay, s/veh		51.6			45.7			34.3			31.6	
Approach LOS		D			D			C			C	

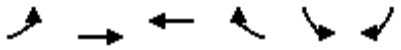
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.0	48.9		18.9	10.5	55.4		15.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.5	27.5		25.5	10.5	29.5		16.5				
Max Q Clear Time (g_c+I1), s	14.2	32.1		13.1	2.7	10.2		10.5				
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	2.3		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		35.9	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	270	255	5	20	70
Future Volume (veh/h)	25	270	255	5	20	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1885	1885	1737	1737
Adj Flow Rate, veh/h	28	300	283	6	22	78
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	1	1	11	11
Cap, veh/h	472	907	483	10	34	120
Arrive On Green	0.04	0.48	0.26	0.26	0.10	0.10
Sat Flow, veh/h	1781	1870	1838	39	328	1162
Grp Volume(v), veh/h	28	300	0	289	101	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1877	1504	0
Q Serve(g_s), s	0.3	2.6	0.0	3.6	1.7	0.0
Cycle Q Clear(g_c), s	0.3	2.6	0.0	3.6	1.7	0.0
Prop In Lane	1.00			0.02	0.22	0.77
Lane Grp Cap(c), veh/h	472	907	0	493	155	0
V/C Ratio(X)	0.06	0.33	0.00	0.59	0.65	0.00
Avail Cap(c_a), veh/h	1076	1716	0	1722	1380	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.9	4.2	0.0	8.6	11.5	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.4	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.4	0.0	1.0	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.3	0.0	9.0	13.2	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		328	289		101	
Approach Delay, s/veh		4.4	9.0		13.2	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.9	12.5				18.4	8.3
Change Period (Y+Rc), s	5.0	5.5				5.5	5.5
Max Green Setting (Gmax), s	10.9	24.5				24.5	24.5
Max Q Clear Time (g_c+I1), s	2.3	5.6				4.6	3.7
Green Ext Time (p_c), s	0.0	1.1				1.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

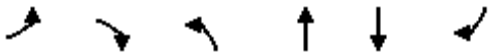
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	70	160	5	5	125	5	0	10	5	5	15	200
Future Vol, veh/h	70	160	5	5	125	5	0	10	5	5	15	200
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	0	0	0	0	0	0	1	1	1
Mvmt Flow	74	170	5	5	133	5	0	11	5	5	16	213

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	178	0	0	584	472	176	475	472	136
Stage 1	-	-	-	-	-	-	324	324	-	146	146	-
Stage 2	-	-	-	-	-	-	260	148	-	329	326	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1421	-	-	1410	-	-	426	493	872	502	492	915
Stage 1	-	-	-	-	-	-	692	653	-	859	778	-
Stage 2	-	-	-	-	-	-	749	779	-	686	650	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1421	-	-	1406	-	-	302	461	870	467	461	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	302	461	-	467	461	-
Stage 1	-	-	-	-	-	-	650	614	-	809	775	-
Stage 2	-	-	-	-	-	-	561	776	-	631	611	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0.3	11.8	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	547	1421	-	-	1406	-	-	840
HCM Lane V/C Ratio	0.029	0.052	-	-	0.004	-	-	0.279
HCM Control Delay (s)	11.8	7.7	0	-	7.6	0	-	10.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.1



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	225	660	255	835	1075	290
Future Volume (vph)	225	660	255	835	1075	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.98	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.91	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	2998	1339	1770	3539	3393	
Flt Permitted	0.98	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	2998	1339	170	3539	3393	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	695	268	879	1132	305
RTOR Reduction (vph)	276	293	0	0	19	0
Lane Group Flow (vph)	309	54	268	879	1418	0
Confl. Peds. (#/hr)		7				
Heavy Vehicles (%)	7%	7%	2%	2%	3%	3%
Turn Type	Prot	Perm	D.P+P	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases		8	2			
Actuated Green, G (s)	15.6	15.6	61.2	65.7	43.9	
Effective Green, g (s)	15.6	15.6	61.2	65.7	43.9	
Actuated g/C Ratio	0.16	0.16	0.61	0.66	0.44	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	467	208	380	2325	1489	
v/s Ratio Prot	c0.10		c0.12	0.25	c0.42	
v/s Ratio Perm		0.04	0.31			
v/c Ratio	0.66	0.26	0.71	0.38	0.95	
Uniform Delay, d1	39.7	37.1	25.0	7.8	27.0	
Progression Factor	1.00	1.00	1.00	1.00	0.52	
Incremental Delay, d2	3.5	0.7	5.9	0.5	4.9	
Delay (s)	43.2	37.8	30.9	8.3	18.9	
Level of Service	D	D	C	A	B	
Approach Delay (s)	41.2			13.6	18.9	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.1%	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)	20	95	120	60	65	10	30	370	90	5	795	35
Future Volume (veh/h)	20	95	120	60	65	10	30	370	90	5	795	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	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	1885	1885	1885	1870	1945	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	22	102	129	65	70	11	32	398	97	5	855	38
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	363	126	159	246	323	51	188	765	186	427	886	39
Arrive On Green	0.03	0.17	0.17	0.06	0.20	0.20	0.04	0.52	0.52	0.01	0.49	0.49
Sat Flow, veh/h	1795	754	953	1781	1640	258	1795	1464	357	1810	1803	80
Grp Volume(v), veh/h	22	0	231	65	0	81	32	0	495	5	0	893
Grp Sat Flow(s),veh/h/ln	1795	0	1707	1781	0	1897	1795	0	1821	1810	0	1884
Q Serve(g_s), s	0.7	0.0	9.7	2.2	0.0	2.7	0.6	0.0	13.2	0.1	0.0	34.0
Cycle Q Clear(g_c), s	0.7	0.0	9.7	2.2	0.0	2.7	0.6	0.0	13.2	0.1	0.0	34.0
Prop In Lane	1.00		0.56	1.00		0.14	1.00		0.20	1.00		0.04
Lane Grp Cap(c), veh/h	363	0	285	246	0	374	188	0	951	427	0	925
V/C Ratio(X)	0.06	0.00	0.81	0.26	0.00	0.22	0.17	0.00	0.52	0.01	0.00	0.97
Avail Cap(c_a), veh/h	458	0	533	286	0	592	266	0	951	562	0	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.2	0.0	29.7	23.6	0.0	24.9	16.5	0.0	11.6	10.1	0.0	18.2
Incr Delay (d2), s/veh	0.1	0.0	5.5	0.6	0.0	0.3	0.4	0.0	0.5	0.0	0.0	21.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	4.3	0.9	0.0	1.2	0.3	0.0	5.0	0.0	0.0	18.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	0.0	35.2	24.2	0.0	25.2	17.0	0.0	12.1	10.1	0.0	39.6
LnGrp LOS	C	A	D	C	A	C	B	A	B	B	A	D
Approach Vol, veh/h		253			146			527			898	
Approach Delay, s/veh		34.3			24.8			12.4			39.4	
Approach LOS		C			C			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	43.2	8.9	16.9	7.4	40.9	6.7	19.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	36.7	6.1	23.1	6.1	36.7	6.1	23.1
Max Q Clear Time (g_c+I1), s	2.1	15.2	4.2	11.7	2.6	36.0	2.7	4.7
Green Ext Time (p_c), s	0.0	2.2	0.0	0.7	0.0	0.4	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	135	5	5	55	10	5	5	5	55	20	70
Future Vol, veh/h	40	135	5	5	55	10	5	5	5	55	20	70
Conflicting Peds, #/hr	10	0	2	2	0	10	0	0	5	5	0	0
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	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	2	2	2
Mvmt Flow	43	145	5	5	59	11	5	5	5	59	22	75

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	152	0	0	359	326	155	329	323	75
Stage 1	-	-	-	-	-	-	236	236	-	85	85	-
Stage 2	-	-	-	-	-	-	123	90	-	244	238	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1524	-	-	1429	-	-	600	596	896	624	595	986
Stage 1	-	-	-	-	-	-	772	713	-	923	824	-
Stage 2	-	-	-	-	-	-	886	824	-	760	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1511	-	-	1427	-	-	523	569	891	592	568	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	523	569	-	592	568	-
Stage 1	-	-	-	-	-	-	747	689	-	887	814	-
Stage 2	-	-	-	-	-	-	793	814	-	723	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.5	10.9	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	626	1511	-	-	1427	-	-	726
HCM Lane V/C Ratio	0.026	0.028	-	-	0.004	-	-	0.215
HCM Control Delay (s)	10.9	7.5	0	-	7.5	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.8

Intersection	
Intersection Delay, s/veh	17.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	155	5	5	45	135	5	0	0	460	5	25
Future Vol, veh/h	20	155	5	5	45	135	5	0	0	460	5	25
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
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	0	0	0
Mvmt Flow	22	168	5	5	49	147	5	0	0	500	5	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.4	10.6	9.2	23
HCM LOS	B	B	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	11%	3%	94%
Vol Thru, %	0%	86%	24%	1%
Vol Right, %	0%	3%	73%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	180	185	490
LT Vol	5	20	5	460
Through Vol	0	155	45	5
RT Vol	0	5	135	25
Lane Flow Rate	5	196	201	533
Geometry Grp	1	1	1	1
Degree of Util (X)	0.009	0.311	0.297	0.765
Departure Headway (Hd)	6.083	5.723	5.311	5.169
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	628	676	703
Service Time	4.14	3.768	3.356	3.197
HCM Lane V/C Ratio	0.009	0.312	0.297	0.758
HCM Control Delay	9.2	11.4	10.6	23
HCM Lane LOS	A	B	B	C
HCM 95th-tile Q	0	1.3	1.2	7.2

MOVEMENT SUMMARY

Site: 101 [Sumner-Tapps Hwy E/64th St E (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 166th Ave E														
3	L2	253	1.0	253	1.0	0.326	5.5	LOS A	0.8	19.4	0.19	0.08	0.19	33.6
8	T1	653	1.0	653	1.0	0.326	5.4	LOS A	0.8	19.7	0.19	0.07	0.19	34.6
18	R2	16	1.0	16	1.0	0.326	5.3	LOS A	0.8	19.7	0.19	0.07	0.19	34.0
Approach		921	1.0	921	1.0	0.326	5.4	LOS A	0.8	19.7	0.19	0.07	0.19	34.3
East: 64th St E														
1	L2	21	12.0	21	12.0	0.047	5.1	LOS A	0.1	1.7	0.49	0.44	0.49	28.4
6	T1	11	12.0	11	12.0	0.047	5.1	LOS A	0.1	1.7	0.49	0.44	0.49	33.4
16	R2	5	12.0	5	12.0	0.047	5.1	LOS A	0.1	1.7	0.49	0.44	0.49	32.4
Approach		37	12.0	37	12.0	0.047	5.1	LOS A	0.1	1.7	0.49	0.44	0.49	31.0
North: Sumner Tapps Hwy E														
7	L2	1	2.0	1	2.0	0.382	7.0	LOS A	0.8	20.7	0.45	0.33	0.45	34.4
4	T1	868	2.0	868	2.0	0.382	6.7	LOS A	0.8	21.1	0.44	0.32	0.44	29.4
14	R2	58	2.0	58	2.0	0.382	6.5	LOS A	0.8	21.1	0.44	0.31	0.44	33.4
Approach		927	2.0	927	2.0	0.382	6.7	LOS A	0.8	21.1	0.44	0.32	0.44	29.8
West: 64th St E														
5	L2	42	1.0	42	1.0	0.398	9.2	LOS A	0.8	21.0	0.65	0.70	0.78	32.8
2	T1	5	1.0	5	1.0	0.398	9.2	LOS A	0.8	21.0	0.65	0.70	0.78	32.7
12	R2	695	1.0	695	1.0	0.398	8.4	LOS A	0.9	21.5	0.64	0.68	0.75	27.6
Approach		742	1.0	742	1.0	0.398	8.4	LOS A	0.9	21.5	0.64	0.68	0.75	28.2
All Vehicles		2627	1.5	2627	1.5	0.398	6.7	LOS A	0.9	21.5	0.41	0.34	0.44	31.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [166th Ave/SR 410 WB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 166th Ave E														
3	L2	107	1.0	107	1.0	0.445	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	37.9
8	T1	541	1.0	541	1.0	0.445	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		648	1.0	648	1.0	0.445	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	35.4
East: SR 410 WB Off Ramp														
1	L2	41	2.0	41	2.0	0.050	4.8	LOS A	0.1	2.7	0.61	0.46	0.61	32.7
6	T1	1	2.0	1	2.0	0.050	4.8	LOS A	0.1	2.7	0.61	0.46	0.61	32.7
16	R2	352	2.0	352	2.0	0.296	5.8	LOS A	0.8	20.0	0.67	0.55	0.67	29.8
Approach		394	2.0	394	2.0	0.296	5.7	LOS A	0.8	20.0	0.66	0.54	0.66	30.3
North: 166th Ave E														
4	T1	1020	2.0	1020	2.0	0.539	8.3	LOS A	1.8	45.8	0.47	0.28	0.47	33.4
14	R2	515	2.0	515	2.0	0.539	7.7	LOS A	1.8	45.8	0.45	0.26	0.45	32.6
Approach		1536	2.0	1536	2.0	0.539	8.1	LOS A	1.8	45.8	0.47	0.28	0.47	33.1
All Vehicles		2578	1.7	2578	1.7	0.539	7.4	LOS A	1.8	45.8	0.38	0.25	0.38	33.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	345	0	195	0	0	0	0	290	115	455	585	0
Future Volume (veh/h)	345	0	195	0	0	0	0	290	115	455	585	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	359	0	203				0	302	120	474	609	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2				0	1	1	1	1	0
Cap, veh/h	431	0	384				0	836	709	703	1240	0
Arrive On Green	0.24	0.00	0.24				0.00	0.44	0.44	0.16	0.66	0.00
Sat Flow, veh/h	1781	0	1585				0	1885	1598	1795	1885	0
Grp Volume(v), veh/h	359	0	203				0	302	120	474	609	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1885	1598	1795	1885	0
Q Serve(g_s), s	17.2	0.0	10.0				0.0	9.6	4.1	11.9	14.7	0.0
Cycle Q Clear(g_c), s	17.2	0.0	10.0				0.0	9.6	4.1	11.9	14.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	431	0	384				0	836	709	703	1240	0
V/C Ratio(X)	0.83	0.00	0.53				0.00	0.36	0.17	0.67	0.49	0.00
Avail Cap(c_a), veh/h	663	0	590				0	836	709	817	1240	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.4	0.0	29.6				0.0	16.6	15.1	9.8	7.8	0.0
Incr Delay (d2), s/veh	5.4	0.0	1.1				0.0	1.2	0.5	1.7	1.4	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
%ile BackOfQ(50%),veh/ln	7.9	0.0	3.9				0.0	4.3	1.6	4.5	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	0.0	30.8				0.0	17.8	15.6	11.5	9.2	0.0
LnGrp LOS	D	A	C				A	B	B	B	A	A
Approach Vol, veh/h		562						422			1083	
Approach Delay, s/veh		35.3						17.2			10.2	
Approach LOS		D						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	19.3	44.4	26.3	63.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	22.5	33.5	47.5
Max Q Clear Time (g_c+I1), s	13.9	11.6	19.2	16.7
Green Ext Time (p_c), s	0.9	1.7	2.6	4.9

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	200	15	0	25	155	470	5	5	965	5
Future Vol, veh/h	0	0	200	15	0	25	155	470	5	5	965	5
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	-	-	0	-	-	0	175	-	-	175	-	175
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, %	2	2	2	0	0	0	1	1	1	0	0	0
Mvmt Flow	0	0	222	17	0	28	172	522	6	6	1072	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	539	1417	-	525	1078	0	0	528	0	0
Stage 1	-	-	-	869	-	-	-	-	-	-	-	-
Stage 2	-	-	-	548	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.93	7.3	-	6.2	4.115	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	3.5	-	3.3	2.2095	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	488	107	0	556	650	-	-	1049	-	-
Stage 1	0	0	-	349	0	-	-	-	-	-	-	-
Stage 2	0	0	-	493	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	488	46	-	556	650	-	-	1049	-	-
Mov Cap-2 Maneuver	-	-	-	46	-	-	-	-	-	-	-	-
Stage 1	-	-	-	257	-	-	-	-	-	-	-	-
Stage 2	-	-	-	267	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	11.8	3.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	650	-	-	488	556	1049	-	-
HCM Lane V/C Ratio	0.265	-	-	0.455	0.05	0.005	-	-
HCM Control Delay (s)	12.5	-	-	18.4	11.8	8.4	-	-
HCM Lane LOS	B	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	1.1	-	-	2.3	0.2	0	-	-

MOVEMENT SUMMARY

Site: 101 [Valley Ave/SR 410 WB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Valley Ave														
3	L2	397	1.0	397	1.0	0.264	4.5	LOS A	0.0	0.0	0.00	0.00	0.00	35.2
8	T1	478	1.0	478	1.0	0.264	4.1	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		875	1.0	875	1.0	0.264	4.3	LOS A	0.0	0.0	0.00	0.00	0.00	36.8
East: SR 410 WB Off Ramp														
1	L2	207	1.0	207	1.0	0.197	5.2	LOS A	0.3	8.3	0.55	0.51	0.55	27.0
6	T1	1	1.0	1	1.0	0.197	5.2	LOS A	0.3	8.3	0.55	0.51	0.55	32.5
16	R2	207	1.0	207	1.0	0.239	6.7	LOS A	0.4	10.0	0.58	0.58	0.58	33.2
Approach		414	1.0	414	1.0	0.239	5.9	LOS A	0.4	10.0	0.57	0.54	0.57	30.7
North: Valley Ave														
4	T1	1136	0.0	1136	0.0	0.597	11.3	LOS B	2.8	70.3	0.85	0.87	1.12	26.4
14	R2	147	0.0	147	0.0	0.597	10.2	LOS B	2.8	70.3	0.84	0.81	1.06	31.7
Approach		1283	0.0	1283	0.0	0.597	11.2	LOS B	2.8	70.3	0.85	0.86	1.11	27.3
All Vehicles		2572	0.5	2572	0.5	0.597	8.0	LOS A	2.8	70.3	0.52	0.52	0.64	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Valley Ave/SR 410 EB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Valley Ave														
8	T1	665	2.0	665	2.0	0.422	8.4	LOS A	1.1	28.6	0.66	0.57	0.66	28.2
18	R2	186	2.0	186	2.0	0.422	7.9	LOS A	1.1	28.6	0.66	0.55	0.66	32.7
Approach		851	2.0	851	2.0	0.422	8.3	LOS A	1.1	28.6	0.66	0.57	0.66	29.6
North: Valley Ave														
7	L2	293	1.0	293	1.0	0.397	5.9	LOS A	0.0	0.0	0.00	0.00	0.00	36.8
4	T1	1021	1.0	1021	1.0	0.397	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	37.7
Approach		1314	1.0	1314	1.0	0.397	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	37.5
West: SR 410 EB Off Ramp														
5	L2	191	3.0	191	3.0	0.330	10.8	LOS B	0.6	15.0	0.70	0.73	0.80	24.1
2	T1	1	3.0	1	3.0	0.330	10.8	LOS B	0.6	15.0	0.70	0.73	0.80	30.1
12	R2	798	3.0	798	3.0	0.867	27.5	LOS C	5.4	137.9	0.89	1.43	2.47	25.3
Approach		990	3.0	990	3.0	0.867	24.3	LOS C	5.4	137.9	0.86	1.29	2.14	25.2
All Vehicles		3155	1.9	3155	1.9	0.867	12.2	LOS B	5.4	137.9	0.45	0.56	0.85	31.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	32.6

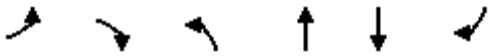
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	5	0	5	15	0	110	0	670	20	320	1340	60
Future Vol, veh/h	5	0	5	15	0	110	0	670	20	320	1340	60
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	1	1	2	2	2	2	2	2
Mvmt Flow	5	0	5	15	0	112	0	684	20	327	1367	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2803	2757	1399	2748	2777	694	1429	0	0	704	0	0
Stage 1	2053	2053	-	694	694	-	-	-	-	-	-	-
Stage 2	750	704	-	2054	2083	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.11	6.51	6.21	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.509	4.009	3.309	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	12	20	174	~ 13	19	444	476	-	-	894	-	-
Stage 1	73	99	-	435	446	-	-	-	-	-	-	-
Stage 2	407	443	-	73	95	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	6	13	174	~ 9	12	444	476	-	-	894	-	-
Mov Cap-2 Maneuver	6	13	-	~ 9	12	-	-	-	-	-	-	-
Stage 1	73	63	-	435	446	-	-	-	-	-	-	-
Stage 2	304	443	-	45	60	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 611.8	$ 586.4	0	2.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	476	-	-	12	65	894	-	-
HCM Lane V/C Ratio	-	-	-	0.85	1.962	0.365	-	-
HCM Control Delay (s)	0	-	-	-$ 611.8	$ 586.4	11.3	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.8	11.9	1.7	-	-

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	45	35	635	1260	80
Future Volume (veh/h)	55	45	35	635	1260	80
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	45	35	641	1273	81
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	85	75	45	1644	1423	91
Arrive On Green	0.05	0.05	0.02	0.88	0.82	0.82
Sat Flow, veh/h	1810	1610	1781	1870	1740	111
Grp Volume(v), veh/h	56	45	35	641	0	1354
Grp Sat Flow(s),veh/h/ln	1810	1610	1781	1870	0	1850
Q Serve(g_s), s	3.8	3.4	2.4	7.8	0.0	61.7
Cycle Q Clear(g_c), s	3.8	3.4	2.4	7.8	0.0	61.7
Prop In Lane	1.00	1.00	1.00			0.06
Lane Grp Cap(c), veh/h	85	75	45	1644	0	1513
V/C Ratio(X)	0.66	0.60	0.79	0.39	0.00	0.89
Avail Cap(c_a), veh/h	294	262	65	1665	0	1513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.2	58.1	60.2	1.4	0.0	7.7
Incr Delay (d2), s/veh	8.5	7.3	31.6	0.2	0.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.2	1.5	1.1	0.0	19.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.7	65.4	91.9	1.5	0.0	16.2
LnGrp LOS	E	E	F	A	A	B
Approach Vol, veh/h	101			676	1354	
Approach Delay, s/veh	66.1			6.2	16.2	
Approach LOS	E			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		113.8		10.4	7.6	106.2
Change Period (Y+Rc), s		4.6		4.6	4.5	4.6
Max Green Setting (Gmax), s		110.6		20.2	4.5	101.6
Max Q Clear Time (g_c+I1), s		9.8		5.8	4.4	63.7
Green Ext Time (p_c), s		5.0		0.2	0.0	20.2

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1355	5	5	735	20	15	0	10	80	0	105
Future Volume (veh/h)	45	1355	5	5	735	20	15	0	10	80	0	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		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	1811	1811	1811	1826	1826	1826	1900	1900	1900	1870	1870	1870
Adj Flow Rate, veh/h	47	1411	5	5	766	21	16	0	10	83	0	109
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	6	6	6	5	5	5	0	0	0	2	2	2
Cap, veh/h	260	1454	5	103	1426	39	386	0	339	380	0	338
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.21	0.00	0.21	0.21	0.00	0.21
Sat Flow, veh/h	666	3517	12	370	3449	95	1810	0	1589	1781	0	1585
Grp Volume(v), veh/h	47	690	726	5	385	402	16	0	10	83	0	109
Grp Sat Flow(s),veh/h/ln	666	1721	1809	370	1735	1809	1810	0	1589	1781	0	1585
Q Serve(g_s), s	4.3	29.5	29.5	1.0	12.6	12.6	0.5	0.0	0.4	2.9	0.0	4.4
Cycle Q Clear(g_c), s	16.9	29.5	29.5	30.5	12.6	12.6	0.5	0.0	0.4	2.9	0.0	4.4
Prop In Lane	1.00		0.01	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	711	748	103	717	748	386	0	339	380	0	338
V/C Ratio(X)	0.18	0.97	0.97	0.05	0.54	0.54	0.04	0.00	0.03	0.22	0.00	0.32
Avail Cap(c_a), veh/h	260	711	748	103	717	748	386	0	339	380	0	338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	21.6	21.6	36.5	16.6	16.6	23.4	0.0	23.4	24.3	0.0	24.9
Incr Delay (d2), s/veh	0.3	26.5	25.8	0.2	0.7	0.7	0.2	0.0	0.2	1.3	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	16.0	16.7	0.1	4.6	4.8	0.2	0.0	0.2	1.3	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	48.1	47.3	36.7	17.3	17.3	23.6	0.0	23.5	25.7	0.0	27.4
LnGrp LOS	C	D	D	D	B	B	C	A	C	C	A	C
Approach Vol, veh/h		1463			792			26			192	
Approach Delay, s/veh		46.9			17.4			23.6			26.7	
Approach LOS		D			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		35.0		20.0		35.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		31.0		16.0		31.0				
Max Q Clear Time (g_c+I1), s		2.5		31.5		6.4		32.5				
Green Ext Time (p_c), s		0.0		0.0		0.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			35.6									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1440	15	5	685	0	50	0	25	5	0	15
Future Volume (veh/h)	10	1440	15	5	685	0	50	0	25	5	0	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	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	1841	1841	1841	1811	1811	1811	1826	1826	1826	1811	1811	1811
Adj Flow Rate, veh/h	10	1485	15	5	706	0	52	0	26	5	0	15
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, %	4	4	4	6	6	6	5	5	5	6	6	6
Cap, veh/h	420	2185	22	264	1116	946	366	0	241	120	33	180
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.00	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	730	3546	36	339	1811	1535	1363	0	1545	175	210	1155
Grp Volume(v), veh/h	10	732	768	5	706	0	52	0	26	20	0	0
Grp Sat Flow(s),veh/h/ln	730	1749	1833	339	1811	1535	1363	0	1545	1539	0	0
Q Serve(g_s), s	0.4	13.4	13.4	0.5	11.9	0.0	1.0	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	12.3	13.4	13.4	13.9	11.9	0.0	1.5	0.0	0.7	0.5	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	0.25		0.75
Lane Grp Cap(c), veh/h	420	1077	1130	264	1116	946	366	0	241	334	0	0
V/C Ratio(X)	0.02	0.68	0.68	0.02	0.63	0.00	0.14	0.00	0.11	0.06	0.00	0.00
Avail Cap(c_a), veh/h	567	1429	1498	332	1480	1254	844	0	783	852	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	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.7	6.1	6.1	10.7	5.8	0.0	17.8	0.0	17.5	17.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.9	0.0	0.7	0.0	0.1	0.0	0.1	0.0	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	0.1	3.2	3.3	0.0	2.9	0.0	0.5	0.0	0.2	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	7.1	7.1	10.7	6.6	0.0	17.9	0.0	17.6	17.4	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	B	B	A	A
Approach Vol, veh/h		1510			711			78			20	
Approach Delay, s/veh		7.1			6.6			17.8			17.4	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	35.3	13.1	35.3	13.1
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	39.5	24.5	39.5	24.5
Max Q Clear Time (g_c+I1), s	15.4	2.5	15.9	3.5
Green Ext Time (p_c), s	14.4	0.0	6.5	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	455	80	90	260	275	560
Future Volume (veh/h)	455	80	90	260	275	560
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1707	1707	1544	1544	1781	1781
Adj Flow Rate, veh/h	474	83	94	271	286	583
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	13	13	24	24	8	8
Cap, veh/h	577	265	696	608	321	1274
Arrive On Green	0.18	0.18	0.47	0.47	0.19	0.71
Sat Flow, veh/h	3155	1447	1544	1282	1697	1781
Grp Volume(v), veh/h	474	83	94	271	286	583
Grp Sat Flow(s),veh/h/ln	1577	1447	1467	1282	1697	1781
Q Serve(g_s), s	13.0	4.5	3.2	12.7	14.8	12.5
Cycle Q Clear(g_c), s	13.0	4.5	3.2	12.7	14.8	12.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	577	265	696	608	321	1274
V/C Ratio(X)	0.82	0.31	0.13	0.45	0.89	0.46
Avail Cap(c_a), veh/h	890	408	696	608	385	1274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	31.9	13.3	15.7	35.6	5.4
Incr Delay (d2), s/veh	2.5	0.4	0.4	2.4	18.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.6	1.1	3.9	7.7	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.9	32.3	13.7	18.1	54.5	6.6
LnGrp LOS	D	C	B	B	D	A
Approach Vol, veh/h	557		365			869
Approach Delay, s/veh	37.1		17.0			22.4
Approach LOS	D		B			C

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	21.6	47.3				68.9	21.1
Change Period (Y+Rc), s	4.6	4.6				4.6	4.6
Max Green Setting (Gmax), s	20.4	30.4				55.4	25.4
Max Q Clear Time (g_c+I1), s	16.8	14.7				14.5	15.0
Green Ext Time (p_c), s	0.2	2.0				4.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	25.8
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)	75	460	0	0	465	175	70	5	260	0	0	0
Future Volume (veh/h)	75	460	0	0	465	175	70	5	260	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1574	1574	0	0	1693	1693	1678	1678	1678			
Adj Flow Rate, veh/h	80	489	0	0	495	186	78	0	0			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	22	22	0	0	14	14	15	15	15			
Cap, veh/h	98	964	0	0	663	296	1839	0				
Arrive On Green	0.07	0.32	0.00	0.00	0.07	0.07	0.58	0.00	0.00			
Sat Flow, veh/h	1499	3069	0	0	3300	1434	3196	0	1422			
Grp Volume(v), veh/h	80	489	0	0	495	186	78	0	0			
Grp Sat Flow(s),veh/h/ln	1499	1495	0	0	1608	1434	1598	0	1422			
Q Serve(g_s), s	4.7	11.9	0.0	0.0	13.6	11.4	1.0	0.0	0.0			
Cycle Q Clear(g_c), s	4.7	11.9	0.0	0.0	13.6	11.4	1.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	98	964	0	0	663	296	1839	0				
V/C Ratio(X)	0.82	0.51	0.00	0.00	0.75	0.63	0.04	0.00				
Avail Cap(c_a), veh/h	157	1376	0	0	979	437	1839	0				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.50	0.50	0.00	0.00	0.94	0.94	1.00	0.00	0.00			
Uniform Delay (d), s/veh	41.6	24.7	0.0	0.0	39.6	38.6	8.3	0.0	0.0			
Incr Delay (d2), s/veh	6.9	0.2	0.0	0.0	1.5	1.9	0.0	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			
%ile BackOfQ(50%),veh/ln	1.9	4.1	0.0	0.0	6.0	4.5	0.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	24.9	0.0	0.0	41.1	40.5	8.4	0.0	0.0			
LnGrp LOS	D	C	A	A	D	D	A	A				
Approach Vol, veh/h		569			681			78				
Approach Delay, s/veh		28.2			41.0			8.4				
Approach LOS		C			D			A				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	56.4	33.6	10.5	23.2
Change Period (Y+Rc), s	4.6	4.6	4.6	4.6
Max Green Setting (Gmax), s	39.4	41.4	9.4	27.4
Max Q Clear Time (g_c+I1), s	3.0	13.9	6.7	15.6
Green Ext Time (p_c), s	0.2	3.3	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR] 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 (veh/h)	155	485	80	40	320	105	55	35	80	220	25	265
Future Volume (veh/h)	155	485	80	40	320	105	55	35	80	220	25	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1604	1604	1648	1648	1648	1841	1841	1841	1693	1693	1693
Adj Flow Rate, veh/h	170	533	88	44	352	115	60	38	88	242	27	291
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	20	20	20	17	17	17	4	4	4	14	14	14
Cap, veh/h	453	1193	196	341	974	314	209	106	247	387	31	329
Arrive On Green	0.03	0.15	0.15	0.04	0.42	0.42	0.05	0.22	0.22	0.08	0.25	0.25
Sat Flow, veh/h	1527	2618	431	1570	2328	749	1753	492	1140	1612	123	1327
Grp Volume(v), veh/h	170	309	312	44	235	232	60	0	126	242	0	318
Grp Sat Flow(s),veh/h/ln	1527	1523	1526	1570	1566	1512	1753	0	1632	1612	0	1450
Q Serve(g_s), s	5.4	16.6	16.8	1.4	9.2	9.5	2.3	0.0	5.9	7.5	0.0	19.0
Cycle Q Clear(g_c), s	5.4	16.6	16.8	1.4	9.2	9.5	2.3	0.0	5.9	7.5	0.0	19.0
Prop In Lane	1.00		0.28	1.00		0.50	1.00		0.70	1.00		0.92
Lane Grp Cap(c), veh/h	453	694	695	341	655	633	209	0	353	387	0	359
V/C Ratio(X)	0.37	0.45	0.45	0.13	0.36	0.37	0.29	0.00	0.36	0.63	0.00	0.88
Avail Cap(c_a), veh/h	507	694	695	402	655	633	264	0	535	387	0	475
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	27.9	27.9	14.4	17.9	18.0	26.5	0.0	29.9	28.0	0.0	32.6
Incr Delay (d2), s/veh	0.2	1.9	1.9	0.1	1.5	1.6	0.3	0.0	0.2	2.4	0.0	12.2
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	1.9	7.1	7.2	0.5	3.5	3.5	1.0	0.0	2.3	1.6	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	29.8	29.8	14.5	19.4	19.6	26.8	0.0	30.2	30.3	0.0	44.8
LnGrp LOS	B	C	C	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		791			511			186			560	
Approach Delay, s/veh		26.4			19.1			29.1			38.5	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	42.2	12.0	24.0	8.5	45.5	9.2	26.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	24.5	7.5	29.5	7.5	27.5	7.5	29.5
Max Q Clear Time (g_c+I1), s	7.4	11.5	9.5	7.9	3.4	18.8	4.3	21.0
Green Ext Time (p_c), s	0.1	3.2	0.0	0.4	0.0	3.3	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.1
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	25	420	20	35	1055
Future Vol, veh/h	25	25	420	20	35	1055
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	70	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	34	34	23	23	18	18
Mvmt Flow	27	27	457	22	38	1147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1120	469	0	0	480	0
Stage 1	469	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Critical Hdwy	7.11	6.71	-	-	4.37	-
Critical Hdwy Stg 1	5.91	-	-	-	-	-
Critical Hdwy Stg 2	6.31	-	-	-	-	-
Follow-up Hdwy	3.823	3.623	-	-	2.371	-
Pot Cap-1 Maneuver	176	520	-	-	989	-
Stage 1	554	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	169	520	-	-	988	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	401	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	369	988	-
HCM Lane V/C Ratio	-	-	0.147	0.039	-
HCM Control Delay (s)	-	-	16.4	8.8	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	234.6

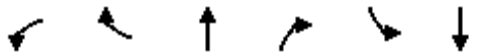
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↱		↰	↱	
Traffic Vol, veh/h	0	0	5	85	0	100	5	330	200	405	840	0
Future Vol, veh/h	0	0	5	85	0	100	5	330	200	405	840	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	55	-	-	65	-	-
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	6	6	6	2	2	2	3	3	3
Mvmt Flow	0	0	5	93	0	110	5	363	220	445	923	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2351	2406	923	2299	2296	473	923	0	0	583	0	0
Stage 1	1813	1813	-	483	483	-	-	-	-	-	-	-
Stage 2	538	593	-	1816	1813	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.56	6.26	4.12	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4.054	3.354	2.218	-	-	2.227	-	-
Pot Cap-1 Maneuver	25	34	330	~ 26	38	583	740	-	-	986	-	-
Stage 1	101	131	-	557	546	-	-	-	-	-	-	-
Stage 2	531	497	-	97	127	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	13	19	330	~ 16	21	583	740	-	-	986	-	-
Mov Cap-2 Maneuver	13	19	-	~ 16	21	-	-	-	-	-	-	-
Stage 1	100	72	-	553	542	-	-	-	-	-	-	-
Stage 2	428	494	-	~ 52	70	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	$ 2472.2	0.1	3.8
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	740	-	-	330	34	986	-	-
HCM Lane V/C Ratio	0.007	-	-	0.017	5.979	0.451	-	-
HCM Control Delay (s)	9.9	-	-	16.3	$ 2472.2	11.6	-	-
HCM Lane LOS	A	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	24.3	2.4	-	-

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	85	265	65	555	480
Future Volume (veh/h)	75	85	265	65	555	480
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1411	1411	1648	1648	1767	1767
Adj Flow Rate, veh/h	80	90	282	69	590	511
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	33	33	17	17	9	9
Cap, veh/h	150	235	525	126	659	0
Arrive On Green	0.11	0.11	0.21	0.21	0.39	0.00
Sat Flow, veh/h	1344	2104	2573	598	1682	590
Grp Volume(v), veh/h	80	90	175	176	590	22.5
Grp Sat Flow(s),veh/h/ln	1344	1052	1566	1523	1682	C
Q Serve(g_s), s	2.7	1.9	4.8	5.0	15.9	
Cycle Q Clear(g_c), s	2.7	1.9	4.8	5.0	15.9	
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	150	235	330	321	659	
V/C Ratio(X)	0.53	0.38	0.53	0.55	0.90	
Avail Cap(c_a), veh/h	429	672	1149	1118	886	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	20.2	19.9	16.9	17.0	13.8	
Incr Delay (d2), s/veh	2.7	0.9	1.2	1.3	8.7	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.9	0.5	1.6	1.6	6.4	
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.9	20.8	18.1	18.3	22.5	
LnGrp LOS	C	C	B	B	C	
Approach Vol, veh/h	170		351			
Approach Delay, s/veh	21.8		18.2			
Approach LOS	C		B			

Timer - Assigned Phs	1	2				8
Phs Duration (G+Y+Rc), s	23.5	14.8				10.0
Change Period (Y+Rc), s	4.6	4.6				4.6
Max Green Setting (Gmax), s	25.4	35.4				15.4
Max Q Clear Time (g_c+I1), s	17.9	7.0				4.7
Green Ext Time (p_c), s	1.0	2.1				0.4

Intersection Summary			
HCM 6th Ctrl Delay		21.0	
HCM 6th LOS		C	

Notes

Unsignalized Delay for [SBT] 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 (veh/h)	5	0	15	5	0	5	5	285	5	0	960	5
Future Volume (veh/h)	5	0	15	5	0	5	5	285	5	0	960	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.98	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	477	477	477	1900	1900	1900	1722	1722	1722	1781	1781	1781
Adj Flow Rate, veh/h	5	0	16	5	0	5	5	300	5	0	1011	5
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, %	96	96	96	0	0	0	12	12	12	8	8	8
Cap, veh/h	303	0	14	292	0	56	431	2110	35	783	1634	8
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.01	0.64	0.64	0.00	0.47	0.47
Sat Flow, veh/h	357	0	404	1419	0	1586	1640	3293	55	1697	3454	17
Grp Volume(v), veh/h	5	0	16	5	0	5	5	149	156	0	495	521
Grp Sat Flow(s),veh/h/ln	357	0	404	1419	0	1586	1640	1636	1712	1697	1692	1778
Q Serve(g_s), s	0.3	0.0	0.9	0.0	0.0	0.1	0.0	0.9	0.9	0.0	5.4	5.4
Cycle Q Clear(g_c), s	0.4	0.0	0.9	0.9	0.0	0.1	0.0	0.9	0.9	0.0	5.4	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	303	0	14	292	0	56	431	1048	1097	783	801	841
V/C Ratio(X)	0.02	0.00	1.12	0.02	0.00	0.09	0.01	0.14	0.14	0.00	0.62	0.62
Avail Cap(c_a), veh/h	522	0	262	1162	0	1028	688	1061	1110	1051	1097	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	0.0	11.9	12.3	0.0	11.5	3.5	1.8	1.8	0.0	4.8	4.8
Incr Delay (d2), s/veh	0.0	0.0	147.8	0.0	0.0	0.7	0.0	0.1	0.1	0.0	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.7	0.0	159.7	12.4	0.0	12.2	3.5	1.8	1.8	0.0	5.6	5.6
LnGrp LOS	B	A	F	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		21			10			310			1016	
Approach Delay, s/veh		124.5			12.3			1.8			5.6	
Approach LOS		F			B			A			A	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	4.9	0.0	19.8	4.9	4.1	15.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	16.0	4.0	16.0	16.0	4.0	16.0
Max Q Clear Time (g_c+I1), s	2.9	0.0	2.9	2.9	2.0	7.4
Green Ext Time (p_c), s	0.0	0.0	1.4	0.1	0.0	4.2

Intersection Summary	
HCM 6th Ctrl Delay	6.6
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	50	190	10	25	530
Future Vol, veh/h	40	50	190	10	25	530
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	-	-	100	200	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	20	20	29	29	11	11
Mvmt Flow	42	53	200	11	26	558

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	810	200	0	0	211	0
Stage 1	200	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.21	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.299	-
Pot Cap-1 Maneuver	326	797	-	-	1308	-
Stage 1	792	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	319	797	-	-	1308	-
Mov Cap-2 Maneuver	319	-	-	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	478	1308	-
HCM Lane V/C Ratio	-	-	0.198	0.02	-
HCM Control Delay (s)	-	-	14.4	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	5	20	280	645	465
Future Vol, veh/h	10	5	20	280	645	465
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	170	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	46	46	22	22	12	12
Mvmt Flow	11	5	22	304	701	505

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	898	701	1206	0	-	0
Stage 1	701	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Critical Hdwy	7.29	6.89	4.43	-	-	-
Critical Hdwy Stg 1	6.09	-	-	-	-	-
Critical Hdwy Stg 2	6.49	-	-	-	-	-
Follow-up Hdwy	3.937	3.737	2.409	-	-	-
Pot Cap-1 Maneuver	233	354	494	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	354	494	-	-	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.4	0.8	0
HCM LOS	C		

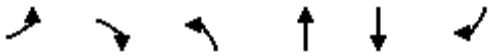
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	494	-	313	354	-	-
HCM Lane V/C Ratio	0.044	-	0.035	0.015	-	-
HCM Control Delay (s)	12.6	-	16.9	15.3	-	-
HCM Lane LOS	B	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	105.8
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	155	60	90	85	490	275
Future Vol, veh/h	155	60	90	85	490	275
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	25	25	22	22	12	12
Mvmt Flow	170	66	99	93	538	302
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	16.2	13.7	152.1
HCM LOS	C	B	F

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	72%	0%	64%
Vol Thru, %	28%	51%	0%
Vol Right, %	0%	49%	36%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	215	175	765
LT Vol	155	0	490
Through Vol	60	90	0
RT Vol	0	85	275
Lane Flow Rate	236	192	841
Geometry Grp	1	1	1
Degree of Util (X)	0.441	0.34	1.271
Departure Headway (Hd)	7.46	7.098	5.441
Convergence, Y/N	Yes	Yes	Yes
Cap	487	510	673
Service Time	5.46	5.098	3.441
HCM Lane V/C Ratio	0.485	0.376	1.25
HCM Control Delay	16.2	13.7	152.1
HCM Lane LOS	C	B	F
HCM 95th-tile Q	2.2	1.5	32.2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	125	340	85	440	870	55
Future Volume (vph)	125	340	85	440	870	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1599	1770	1863	1845	1534
Flt Permitted	0.95	1.00	0.12	1.00	1.00	1.00
Satd. Flow (perm)	1787	1599	227	1863	1845	1534
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	129	351	88	454	897	57
RTOR Reduction (vph)	0	304	0	0	0	5
Lane Group Flow (vph)	129	47	88	454	897	52
Confl. Peds. (#/hr)	2		1			1
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		6	4			8
Actuated Green, G (s)	10.3	10.3	57.4	57.4	45.5	45.5
Effective Green, g (s)	10.3	10.3	57.4	57.4	45.5	45.5
Actuated g/C Ratio	0.13	0.13	0.74	0.74	0.59	0.59
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)	236	211	304	1376	1080	898
v/s Ratio Prot	c0.07		0.03	c0.24	c0.49	
v/s Ratio Perm		0.03	0.19			0.03
v/c Ratio	0.55	0.22	0.29	0.33	0.83	0.06
Uniform Delay, d1	31.5	30.1	10.5	3.5	13.0	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.4	0.4	0.1	5.4	0.0
Delay (s)	33.6	30.5	10.9	3.6	18.4	6.9
Level of Service	C	C	B	A	B	A
Approach Delay (s)	31.3			4.8	17.7	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	420	65	415	765	25	105
Future Vol, veh/h	420	65	415	765	25	105
Conflicting Peds, #/hr	0	0	0	0	1	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	45	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	438	68	432	797	26	109

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	506	0	2134	479
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	1662	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1059	-	55	591
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	171	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1059	-	33	588
Mov Cap-2 Maneuver	-	-	-	-	86	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	101	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	22.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	588	-	-	1059	-
HCM Lane V/C Ratio	0.303	0.186	-	-	0.408	-
HCM Control Delay (s)	64.1	12.5	-	-	10.7	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1.1	0.7	-	-	2	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	235	35	555	235	20	250
Future Vol, veh/h	235	35	555	235	20	250
Conflicting Peds, #/hr	0	1	1	0	2	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	275	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	245	36	578	245	21	260

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	282	0	1667	265
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	1403	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1286	-	107	776
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	229	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1285	-	59	775
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	126	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.1	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	110	775	-	-	1285	-
HCM Lane V/C Ratio	0.189	0.336	-	-	0.45	-
HCM Control Delay (s)	45.2	12	-	-	10.1	-
HCM Lane LOS	E	B	-	-	B	-
HCM 95th %tile Q(veh)	0.7	1.5	-	-	2.4	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	10	245	190	95	680
Future Vol, veh/h	95	10	245	190	95	680
Conflicting Peds, #/hr	0	1	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	10	10	7	7
Mvmt Flow	103	11	266	207	103	739

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1317	373	0	0	475	0
Stage 1	372	-	-	-	-	-
Stage 2	945	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.17	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.263	-
Pot Cap-1 Maneuver	173	671	-	-	1061	-
Stage 1	695	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	156	669	-	-	1059	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	340	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.9	0	1.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	284	1059	-
HCM Lane V/C Ratio	-	-	0.402	0.098	-
HCM Control Delay (s)	-	-	25.9	8.8	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	1.9	0.3	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	30	10	5	5	5	5	40	5	30	135	10
Future Vol, veh/h	15	30	10	5	5	5	5	40	5	30	135	10
Conflicting Peds, #/hr	4	0	4	4	0	4	3	0	1	1	0	3
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	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	2	2	2
Mvmt Flow	17	34	11	6	6	6	6	45	6	34	152	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	299	293	165	313	295	53	166	0	0	52	0	0
Stage 1	229	229	-	61	61	-	-	-	-	-	-	-
Stage 2	70	64	-	252	234	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.12	-	-
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	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.218	-	-
Pot Cap-1 Maneuver	657	621	885	643	620	1020	1400	-	-	1554	-	-
Stage 1	778	718	-	955	848	-	-	-	-	-	-	-
Stage 2	945	846	-	757	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	631	602	880	592	601	1016	1397	-	-	1553	-	-
Mov Cap-2 Maneuver	631	602	-	592	601	-	-	-	-	-	-	-
Stage 1	773	699	-	950	844	-	-	-	-	-	-	-
Stage 2	927	842	-	692	696	-	-	-	-	-	-	-

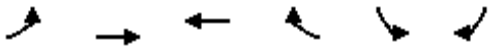
Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	10.3	0.8	1.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1397	-	-	647	692	1553	-	-
HCM Lane V/C Ratio	0.004	-	-	0.096	0.024	0.022	-	-
HCM Control Delay (s)	7.6	0	-	11.2	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	145	135	20	180	595	35
Future Volume (vph)	145	135	20	180	595	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0		3.5	5.0
Lane Util. Factor	1.00		1.00		1.00	1.00
Frpb, ped/bikes	0.99		0.98		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.93		0.88		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1476		1621		1626	1712
Flt Permitted	0.97		1.00		0.62	1.00
Satd. Flow (perm)	1476		1621		1061	1712
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	150	22	200	661	39
RTOR Reduction (vph)	0	0	144	0	0	0
Lane Group Flow (vph)	311	0	78	0	661	39
Confl. Bikes (#/hr)		2		1		
Heavy Vehicles (%)	16%	16%	1%	1%	11%	11%
Turn Type	Perm		NA		pm+pt	NA
Protected Phases			4		1	8
Permitted Phases	2				8	
Actuated Green, G (s)	29.4		31.2		57.2	20.1
Effective Green, g (s)	29.4		31.2		57.2	20.1
Actuated g/C Ratio	0.26		0.28		0.51	0.18
Clearance Time (s)	5.0		5.0		3.5	5.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	390		454		734	309
v/s Ratio Prot			c0.05		c0.30	0.02
v/s Ratio Perm	c0.21				c0.16	
v/c Ratio	0.80		0.17		0.90	0.13
Uniform Delay, d1	38.1		30.2		23.5	38.2
Progression Factor	1.35		1.00		1.00	1.00
Incremental Delay, d2	10.2		0.2		14.2	0.2
Delay (s)	61.8		30.4		37.6	38.4
Level of Service	E		C		D	D
Approach Delay (s)	61.8		30.4			37.7
Approach LOS	E		C			D

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	80	300	225	200	490	285
Future Volume (vph)	80	300	225	200	490	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.95	
Flt Protected	0.95	1.00	1.00	1.00	0.97	
Satd. Flow (prot)	1655	1743	1881	1559	1608	
Flt Permitted	0.29	1.00	1.00	1.00	0.97	
Satd. Flow (perm)	502	1743	1881	1559	1608	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	85	319	239	213	521	303
RTOR Reduction (vph)	0	0	0	174	0	0
Lane Group Flow (vph)	85	319	239	39	824	0
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	9%	9%	1%	1%	8%	8%
Turn Type	pm+pt	NA	NA	Perm	Perm	
Protected Phases	7	4	8			
Permitted Phases	4			8	6	
Actuated Green, G (s)	31.2	31.2	20.1	20.1	70.0	
Effective Green, g (s)	31.2	31.2	20.1	20.1	70.0	
Actuated g/C Ratio	0.28	0.28	0.18	0.18	0.63	
Clearance Time (s)	3.5	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	219	489	340	281	1012	
v/s Ratio Prot	0.03	c0.18	0.13			
v/s Ratio Perm	0.08			0.02	c0.51	
v/c Ratio	0.39	0.65	0.70	0.14	0.81	
Uniform Delay, d1	31.1	35.2	42.7	38.3	15.7	
Progression Factor	1.00	1.00	1.00	1.00	1.19	
Incremental Delay, d2	1.1	3.1	6.5	0.2	3.8	
Delay (s)	32.2	38.3	49.2	38.5	22.4	
Level of Service	C	D	D	D	C	
Approach Delay (s)		37.1	44.2		22.4	
Approach LOS		D	D		C	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	305	420	145	145	25	215	260	75	125	625	120
Future Volume (veh/h)	150	305	420	145	145	25	215	260	75	125	625	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.98	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	1885	1885	1885	1885	1885	1885	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	165	335	462	159	159	27	236	286	82	137	687	132
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	6	6	6	5	5	5
Cap, veh/h	556	566	476	393	471	80	261	322	267	415	767	147
Arrive On Green	0.13	0.30	0.30	0.13	0.30	0.30	0.15	0.18	0.18	0.24	0.26	0.26
Sat Flow, veh/h	1795	1885	1586	1795	1567	266	1725	1811	1505	1739	2896	556
Grp Volume(v), veh/h	165	335	462	159	0	186	236	286	82	137	411	408
Grp Sat Flow(s),veh/h/ln	1795	1885	1586	1795	0	1834	1725	1811	1505	1739	1735	1717
Q Serve(g_s), s	8.5	22.4	42.6	8.1	0.0	11.7	19.9	22.9	5.2	9.6	33.9	33.9
Cycle Q Clear(g_c), s	8.5	22.4	42.6	8.1	0.0	11.7	19.9	22.9	5.2	9.6	33.9	33.9
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	556	566	476	393	0	550	261	322	267	415	460	455
V/C Ratio(X)	0.30	0.59	0.97	0.40	0.00	0.34	0.90	0.89	0.31	0.33	0.89	0.90
Avail Cap(c_a), veh/h	732	566	476	569	0	551	402	666	553	415	638	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	44.1	51.2	28.2	0.0	40.4	61.8	59.5	29.5	46.6	52.5	52.5
Incr Delay (d2), s/veh	0.3	1.6	33.4	0.7	0.0	0.4	16.5	8.3	0.6	0.5	11.8	12.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	10.9	21.2	3.7	0.0	5.5	9.9	11.2	2.7	4.3	16.1	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	45.8	84.6	28.8	0.0	40.7	78.3	67.8	30.1	47.1	64.3	64.6
LnGrp LOS	C	D	F	C	A	D	E	E	C	D	E	E
Approach Vol, veh/h		962			345			604			956	
Approach Delay, s/veh		61.2			35.3			66.8			61.9	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.5	50.0	40.9	31.8	25.5	50.0	28.0	44.8
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	24.5	44.5	34.5	54.5	34.5	44.5	34.5	54.5
Max Q Clear Time (g_c+I1), s	10.5	13.7	11.6	24.9	10.1	44.6	21.9	35.9
Green Ext Time (p_c), s	0.6	0.7	0.3	1.5	0.6	0.0	0.5	3.3

Intersection Summary	
HCM 6th Ctrl Delay	59.5
HCM 6th LOS	E

Intersection	
Intersection Delay, s/veh	14.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	370	160	85	265	30	45
Future Vol, veh/h	370	160	85	265	30	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	0	0	2	2	0	0
Mvmt Flow	398	172	91	285	32	48
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	16.7	12.6	9.5
HCM LOS	C	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	40%	0%	24%
Vol Thru, %	0%	70%	76%
Vol Right, %	60%	30%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	75	530	350
LT Vol	30	0	85
Through Vol	0	370	265
RT Vol	45	160	0
Lane Flow Rate	81	570	376
Geometry Grp	1	1	1
Degree of Util (X)	0.126	0.691	0.501
Departure Headway (Hd)	5.616	4.365	4.789
Convergence, Y/N	Yes	Yes	Yes
Cap	632	826	749
Service Time	3.706	2.41	2.844
HCM Lane V/C Ratio	0.128	0.69	0.502
HCM Control Delay	9.5	16.7	12.6
HCM Lane LOS	A	C	B
HCM 95th-tile Q	0.4	5.7	2.8

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	405	10	10	320	5	15
Future Vol, veh/h	405	10	10	320	5	15
Conflicting Peds, #/hr	0	20	20	0	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	2	2	0	0
Mvmt Flow	435	11	11	344	5	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	466	0	827	463
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	366	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1095	-	344	603
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	706	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1077	-	334	592
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	628	-
Stage 2	-	-	-	-	697	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	496	-	-	1077	-
HCM Lane V/C Ratio	0.043	-	-	0.01	-
HCM Control Delay (s)	12.6	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	355	25	10	195	55	10	75	35	115	165	130
Future Volume (vph)	50	355	25	10	195	55	10	75	35	115	165	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	10	12	12	16	12	12	10	11
Total Lost time (s)	5.5	5.5			5.5			5.5			5.5	4.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00			0.99			1.00			1.00	1.00
Flpb, ped/bikes	0.99	1.00			1.00			1.00			1.00	1.00
Frt	1.00	0.99			0.97			0.96			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.98	1.00
Satd. Flow (prot)	1716	1859			1691			2020			1738	1561
Flt Permitted	0.64	1.00			0.98			0.96			0.81	1.00
Satd. Flow (perm)	1163	1859			1657			1940			1429	1561
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	56	399	28	11	219	62	11	84	39	129	185	146
RTOR Reduction (vph)	0	6	0	0	23	0	0	27	0	0	0	146
Lane Group Flow (vph)	56	421	0	0	269	0	0	107	0	0	314	0
Confl. Peds. (#/hr)	9		11	11		9	1					1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	2%	2%	2%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	NA
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.3	17.3			17.3			13.3			13.3	0.0
Effective Green, g (s)	17.3	17.3			17.3			13.3			13.3	0.0
Actuated g/C Ratio	0.42	0.42			0.42			0.32			0.32	0.00
Clearance Time (s)	5.5	5.5			5.5			5.5			5.5	
Vehicle Extension (s)	6.0	6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)	483	773			689			620			456	0
v/s Ratio Prot		c0.23										
v/s Ratio Perm	0.05				0.16			0.06			c0.22	
v/c Ratio	0.12	0.54			0.39			0.17			0.69	0.00
Uniform Delay, d1	7.5	9.2			8.5			10.2			12.3	20.8
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.3	1.8			1.0			0.4			6.5	0.0
Delay (s)	7.8	11.0			9.5			10.6			18.8	20.8
Level of Service	A	B			A			B			B	C
Approach Delay (s)		10.6			9.5			10.6			19.4	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	41.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	390	80	185	250	70	15	345	100	75	605	65
Future Volume (veh/h)	160	390	80	185	250	70	15	345	100	75	605	65
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	1.00		0.98	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	1900	1976	1900	1900	1900	1900	1961	1885	1885	1900	1976	1900
Adj Flow Rate, veh/h	168	411	84	195	263	74	16	363	105	79	637	68
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	1	1	1	0	0	0
Cap, veh/h	379	459	94	288	426	120	141	494	143	291	676	72
Arrive On Green	0.09	0.29	0.29	0.10	0.30	0.30	0.02	0.35	0.35	0.05	0.39	0.39
Sat Flow, veh/h	1810	1586	324	1810	1419	399	1867	1400	405	1810	1752	187
Grp Volume(v), veh/h	168	0	495	195	0	337	16	0	468	79	0	705
Grp Sat Flow(s),veh/h/ln	1810	0	1910	1810	0	1819	1867	0	1805	1810	0	1939
Q Serve(g_s), s	6.2	0.0	24.2	7.2	0.0	15.5	0.5	0.0	22.0	2.6	0.0	34.1
Cycle Q Clear(g_c), s	6.2	0.0	24.2	7.2	0.0	15.5	0.5	0.0	22.0	2.6	0.0	34.1
Prop In Lane	1.00		0.17	1.00		0.22	1.00		0.22	1.00		0.10
Lane Grp Cap(c), veh/h	379	0	552	288	0	546	141	0	637	291	0	748
V/C Ratio(X)	0.44	0.00	0.90	0.68	0.00	0.62	0.11	0.00	0.73	0.27	0.00	0.94
Avail Cap(c_a), veh/h	502	0	786	391	0	749	389	0	743	472	0	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.1	0.0	33.1	24.1	0.0	29.2	24.2	0.0	27.5	20.5	0.0	28.8
Incr Delay (d2), s/veh	0.8	0.0	9.8	2.8	0.0	1.1	0.4	0.0	3.2	0.5	0.0	18.8
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	2.7	0.0	12.5	3.3	0.0	6.9	0.2	0.0	9.9	1.1	0.0	19.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	0.0	42.9	26.9	0.0	30.3	24.5	0.0	30.7	21.0	0.0	47.6
LnGrp LOS	C	A	D	C	A	C	C	A	C	C	A	D
Approach Vol, veh/h		663			532			484			784	
Approach Delay, s/veh		37.8			29.1			30.5			44.9	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	33.1	10.3	39.3	13.4	34.2	7.1	42.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	40.0	15.0	40.0	15.0	40.0	15.0	40.0
Max Q Clear Time (g_c+I1), s	9.2	26.2	4.6	24.0	8.2	17.5	2.5	36.1
Green Ext Time (p_c), s	0.3	1.9	0.1	1.9	0.3	1.4	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	36.7
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	650	40	15	345	30	30	15	10	55	70	30
Future Vol, veh/h	20	650	40	15	345	30	30	15	10	55	70	30
Conflicting Peds, #/hr	5	0	10	10	0	5	0	0	4	4	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	235	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	1	1	1
Mvmt Flow	20	663	41	15	352	31	31	15	10	56	71	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	388	0	0	714	0	0	1183	1152	698	1143	1157	373
Stage 1	-	-	-	-	-	-	734	734	-	403	403	-
Stage 2	-	-	-	-	-	-	449	418	-	740	754	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1182	-	-	895	-	-	168	199	444	178	197	675
Stage 1	-	-	-	-	-	-	415	429	-	626	601	-
Stage 2	-	-	-	-	-	-	593	594	-	410	419	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1177	-	-	888	-	-	109	190	439	158	188	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	190	-	158	188	-
Stage 1	-	-	-	-	-	-	405	418	-	613	588	-
Stage 2	-	-	-	-	-	-	489	582	-	378	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	44.3	66.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	146	1177	-	-	888	-	-	203
HCM Lane V/C Ratio	0.384	0.017	-	-	0.017	-	-	0.779
HCM Control Delay (s)	44.3	8.1	-	-	9.1	-	-	66.2
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0.1	-	-	5.4

Intersection	
Intersection Delay, s/veh	56.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	285	415	30	290	45	110	55	15	185	120	20
Future Vol, veh/h	35	285	415	30	290	45	110	55	15	185	120	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	1	1	1	0	0	0	0	0	0	1	1	1
Mvmt Flow	38	313	456	33	319	49	121	60	16	203	132	22
Number of Lanes	1	1	1	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	3
HCM Control Delay	56.1	72	24.1	57
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	61%	100%	0%	0%	100%	0%	57%
Vol Thru, %	31%	0%	100%	0%	0%	87%	37%
Vol Right, %	8%	0%	0%	100%	0%	13%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	35	285	415	30	335	325
LT Vol	110	35	0	0	30	0	185
Through Vol	55	0	285	0	0	290	120
RT Vol	15	0	0	415	0	45	20
Lane Flow Rate	198	38	313	456	33	368	357
Geometry Grp	7	7	7	7	8	8	7
Degree of Util (X)	0.541	0.099	0.761	1.015	0.094	0.992	0.91
Departure Headway (Hd)	10.084	9.276	8.742	8.011	10.499	9.871	9.365
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	360	389	417	456	344	372	389
Service Time	7.784	6.976	6.454	5.723	8.199	7.571	7.065
HCM Lane V/C Ratio	0.55	0.098	0.751	1	0.096	0.989	0.918
HCM Control Delay	24.1	13	34.4	74.7	14.3	77.2	57
HCM Lane LOS	C	B	D	F	B	F	F
HCM 95th-tile Q	3.1	0.3	6.3	13.5	0.3	11.5	9.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	275	280	165	510	615	185
Future Volume (veh/h)	275	280	165	510	615	185
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1885	1870	1870
Adj Flow Rate, veh/h	293	298	176	543	654	197
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	1	2	2
Cap, veh/h	390	347	187	1255	693	209
Arrive On Green	0.22	0.22	0.10	0.67	0.50	0.50
Sat Flow, veh/h	1810	1610	1795	1885	1380	416
Grp Volume(v), veh/h	293	298	176	543	0	851
Grp Sat Flow(s),veh/h/ln	1810	1610	1795	1885	0	1796
Q Serve(g_s), s	10.2	12.0	6.5	9.1	0.0	30.2
Cycle Q Clear(g_c), s	10.2	12.0	6.5	9.1	0.0	30.2
Prop In Lane	1.00	1.00	1.00			0.23
Lane Grp Cap(c), veh/h	390	347	187	1255	0	901
V/C Ratio(X)	0.75	0.86	0.94	0.43	0.00	0.94
Avail Cap(c_a), veh/h	431	383	187	1290	0	935
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	25.4	29.9	5.3	0.0	15.8
Incr Delay (d2), s/veh	6.6	16.4	49.1	0.2	0.0	17.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	1.6	5.2	2.5	0.0	14.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.3	41.8	79.0	5.5	0.0	33.1
LnGrp LOS	C	D	E	A	A	C
Approach Vol, veh/h	591			719	851	
Approach Delay, s/veh	36.6			23.5	33.1	
Approach LOS	D			C	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		48.7		18.5	11.0	37.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		46.0		16.0	7.0	35.0
Max Q Clear Time (g_c+I1), s		11.1		14.0	8.5	32.2
Green Ext Time (p_c), s		3.8		0.5	0.0	1.6

Intersection Summary			
HCM 6th Ctrl Delay		30.8	
HCM 6th LOS		C	

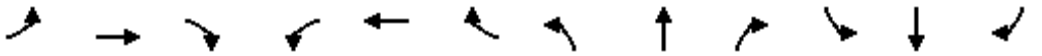
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	0	0	20	0	500	80	45	1040	5
Future Vol, veh/h	5	0	10	0	0	20	0	500	80	45	1040	5
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	45	-	115	55	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	7	7	7	5	5	5	4	4	4
Mvmt Flow	5	0	11	0	0	21	0	532	85	48	1106	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1473	1827	556	-	-	273	1111	0	0	622	0	0
Stage 1	1205	1205	-	-	-	-	-	-	-	-	-	-
Stage 2	268	622	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	-	-	7.04	4.2	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	-	-	3.37	2.25	-	-	2.24	-	-
Pot Cap-1 Maneuver	90	78	480	0	0	710	607	-	-	941	-	-
Stage 1	198	259	-	0	0	-	-	-	-	-	-	-
Stage 2	720	482	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	74	480	-	-	706	607	-	-	937	-	-
Mov Cap-2 Maneuver	84	74	-	-	-	-	-	-	-	-	-	-
Stage 1	198	246	-	-	-	-	-	-	-	-	-	-
Stage 2	697	480	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26	10.3	0	0.4
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	607	-	-	187	706	937	-	-
HCM Lane V/C Ratio	-	-	-	0.085	0.03	0.051	-	-
HCM Control Delay (s)	0	-	-	26	10.3	9	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.2	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	20	315	265	65	15	325	475	260	25	815	300
Future Volume (veh/h)	140	20	315	265	65	15	325	475	260	25	815	300
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	1841	1841	1841	1841	1841	1914	1841	1914	1914	1841	1841	1841
Adj Flow Rate, veh/h	152	22	0	188	212	0	353	516	0	27	886	326
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	187	197		253	266		353	1849		549	1109	406
Arrive On Green	0.11	0.11	0.00	0.14	0.14	0.00	0.13	0.51	0.00	0.06	0.44	0.44
Sat Flow, veh/h	1753	1841	1560	1753	1841	0	1753	3733	0	1753	2501	916
Grp Volume(v), veh/h	152	22	0	188	212	0	353	516	0	27	619	593
Grp Sat Flow(s),veh/h/ln	1753	1841	1560	1753	1841	0	1753	1819	0	1753	1749	1668
Q Serve(g_s), s	8.5	1.1	0.0	10.3	11.1	0.0	12.5	8.1	0.0	0.7	30.5	30.7
Cycle Q Clear(g_c), s	8.5	1.1	0.0	10.3	11.1	0.0	12.5	8.1	0.0	0.7	30.5	30.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.55
Lane Grp Cap(c), veh/h	187	197		253	266		353	1849		549	776	740
V/C Ratio(X)	0.81	0.11		0.74	0.80		1.00	0.28		0.05	0.80	0.80
Avail Cap(c_a), veh/h	289	304		447	469		353	1849		627	776	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.97	0.97	0.00	0.84	0.84	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	40.4	0.0	41.0	41.3	0.0	23.8	14.1	0.0	9.8	24.0	24.0
Incr Delay (d2), s/veh	9.5	0.2	0.0	4.1	5.2	0.0	44.0	0.3	0.0	0.0	8.4	9.0
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	4.2	0.5	0.0	4.7	5.4	0.0	9.0	3.2	0.0	0.3	14.1	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	40.6	0.0	45.1	46.6	0.0	67.8	14.4	0.0	9.8	32.3	33.0
LnGrp LOS	D	D		D	D		F	B		A	C	C
Approach Vol, veh/h		174			400			869			1239	
Approach Delay, s/veh		51.6			45.9			36.1			32.2	
Approach LOS		D			D			D			C	

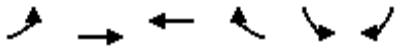
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.0	48.8		19.0	10.5	55.3		15.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	12.5	27.5		25.5	10.5	29.5		16.5				
Max Q Clear Time (g_c+I1), s	14.5	32.7		13.1	2.7	10.1		10.5				
Green Ext Time (p_c), s	0.0	0.0		1.3	0.0	2.2		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		36.7
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	280	265	5	20	70
Future Volume (veh/h)	20	280	265	5	20	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1885	1885	1737	1737
Adj Flow Rate, veh/h	22	311	294	6	22	78
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	1	1	11	11
Cap, veh/h	460	906	495	10	34	120
Arrive On Green	0.03	0.48	0.27	0.27	0.10	0.10
Sat Flow, veh/h	1781	1870	1840	38	328	1162
Grp Volume(v), veh/h	22	311	0	300	101	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1877	1504	0
Q Serve(g_s), s	0.2	2.7	0.0	3.7	1.7	0.0
Cycle Q Clear(g_c), s	0.2	2.7	0.0	3.7	1.7	0.0
Prop In Lane	1.00			0.02	0.22	0.77
Lane Grp Cap(c), veh/h	460	906	0	505	155	0
V/C Ratio(X)	0.05	0.34	0.00	0.59	0.65	0.00
Avail Cap(c_a), veh/h	1077	1717	0	1724	1381	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	5.9	4.2	0.0	8.5	11.5	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.4	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	1.1	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.3	0.0	8.9	13.2	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		333	300		101	
Approach Delay, s/veh		4.4	8.9		13.2	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.8	12.7				18.4	8.3
Change Period (Y+Rc), s	5.0	5.5				5.5	5.5
Max Green Setting (Gmax), s	10.8	24.5				24.5	24.5
Max Q Clear Time (g_c+I1), s	2.2	5.7				4.7	3.7
Green Ext Time (p_c), s	0.0	1.1				1.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

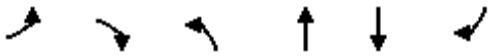
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	75	175	5	5	135	5	0	10	5	5	15	200
Future Vol, veh/h	75	175	5	5	135	5	0	10	5	5	15	200
Conflicting Peds, #/hr	0	0	3	3	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	6	6	6	0	0	0	0	0	0	1	1	1
Mvmt Flow	80	186	5	5	144	5	0	11	5	5	16	213

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	194	0	0	623	511	192	514	511	147
Stage 1	-	-	-	-	-	-	352	352	-	157	157	-
Stage 2	-	-	-	-	-	-	271	159	-	357	354	-
Critical Hdwy	4.16	-	-	4.1	-	-	7.1	6.5	6.2	7.11	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.11	5.51	-
Follow-up Hdwy	2.254	-	-	2.2	-	-	3.5	4	3.3	3.509	4.009	3.309
Pot Cap-1 Maneuver	1408	-	-	1391	-	-	401	469	855	473	467	903
Stage 1	-	-	-	-	-	-	669	635	-	848	770	-
Stage 2	-	-	-	-	-	-	739	770	-	663	632	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1408	-	-	1388	-	-	282	436	853	438	434	903
Mov Cap-2 Maneuver	-	-	-	-	-	-	282	436	-	438	434	-
Stage 1	-	-	-	-	-	-	625	593	-	794	767	-
Stage 2	-	-	-	-	-	-	551	767	-	606	590	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0.3	12.1	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	1408	-	-	1388	-	-	823
HCM Lane V/C Ratio	0.031	0.057	-	-	0.004	-	-	0.284
HCM Control Delay (s)	12.1	7.7	0	-	7.6	0	-	11.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	1.2



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	220	660	250	840	1100	295
Future Volume (vph)	220	660	250	840	1100	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frpb, ped/bikes	0.97	0.97	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	0.91	0.85	1.00	1.00	0.97	
Flt Protected	0.98	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	2995	1339	1770	3539	3394	
Flt Permitted	0.98	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	2995	1339	166	3539	3394	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	232	695	263	884	1158	311
RTOR Reduction (vph)	283	294	0	0	18	0
Lane Group Flow (vph)	297	53	263	884	1451	0
Confl. Peds. (#/hr)		7				
Heavy Vehicles (%)	7%	7%	2%	2%	3%	3%
Turn Type	Prot	Perm	D.P+P	NA	NA	
Protected Phases	8		1	6	2	
Permitted Phases		8	2			
Actuated Green, G (s)	15.3	15.3	61.5	66.0	44.8	
Effective Green, g (s)	15.3	15.3	61.5	66.0	44.8	
Actuated g/C Ratio	0.15	0.15	0.62	0.66	0.45	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	458	204	369	2335	1520	
v/s Ratio Prot	c0.10		c0.12	0.25	c0.43	
v/s Ratio Perm		0.04	0.32			
v/c Ratio	0.65	0.26	0.71	0.38	0.95	
Uniform Delay, d1	39.8	37.4	25.3	7.7	26.6	
Progression Factor	1.00	1.00	1.00	1.00	0.52	
Incremental Delay, d2	3.2	0.7	6.4	0.5	2.0	
Delay (s)	43.0	38.0	31.7	8.2	15.8	
Level of Service	D	D	C	A	B	
Approach Delay (s)	41.1			13.6	15.8	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	95	125	65	65	10	30	380	85	5	820	40
Future Volume (veh/h)	25	95	125	65	65	10	30	380	85	5	820	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	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	1885	1885	1885	1870	1945	1870	1885	1885	1885	1900	1900	1900
Adj Flow Rate, veh/h	27	102	134	70	70	11	32	409	91	5	882	43
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	0	0	0
Cap, veh/h	370	125	164	247	322	51	166	778	173	421	879	43
Arrive On Green	0.03	0.17	0.17	0.06	0.20	0.20	0.04	0.52	0.52	0.01	0.49	0.49
Sat Flow, veh/h	1795	737	968	1781	1640	258	1795	1493	332	1810	1795	87
Grp Volume(v), veh/h	27	0	236	70	0	81	32	0	500	5	0	925
Grp Sat Flow(s),veh/h/ln	1795	0	1704	1781	0	1897	1795	0	1825	1810	0	1882
Q Serve(g_s), s	0.9	0.0	10.0	2.4	0.0	2.7	0.6	0.0	13.5	0.1	0.0	36.7
Cycle Q Clear(g_c), s	0.9	0.0	10.0	2.4	0.0	2.7	0.6	0.0	13.5	0.1	0.0	36.7
Prop In Lane	1.00		0.57	1.00		0.14	1.00		0.18	1.00		0.05
Lane Grp Cap(c), veh/h	370	0	289	247	0	373	166	0	951	421	0	922
V/C Ratio(X)	0.07	0.00	0.82	0.28	0.00	0.22	0.19	0.00	0.53	0.01	0.00	1.00
Avail Cap(c_a), veh/h	455	0	525	282	0	585	242	0	951	554	0	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.1	0.0	30.0	23.8	0.0	25.3	17.5	0.0	11.8	10.3	0.0	19.1
Incr Delay (d2), s/veh	0.1	0.0	5.6	0.6	0.0	0.3	0.6	0.0	0.5	0.0	0.0	30.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	4.5	1.0	0.0	1.2	0.3	0.0	5.2	0.0	0.0	22.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	0.0	35.6	24.4	0.0	25.5	18.0	0.0	12.4	10.3	0.0	49.6
LnGrp LOS	C	A	D	C	A	C	B	A	B	B	A	F
Approach Vol, veh/h		263			151			532			930	
Approach Delay, s/veh		34.4			25.0			12.7			49.4	
Approach LOS		C			C			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	43.5	9.1	17.2	7.4	41.2	7.1	19.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	36.7	6.1	23.1	6.1	36.7	6.1	23.1
Max Q Clear Time (g_c+I1), s	2.1	15.5	4.4	12.0	2.6	38.7	2.9	4.7
Green Ext Time (p_c), s	0.0	2.3	0.0	0.7	0.0	0.0	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	145	5	5	65	10	10	5	5	65	20	75
Future Vol, veh/h	40	145	5	5	65	10	10	5	5	65	20	75
Conflicting Peds, #/hr	10	0	2	2	0	10	0	0	5	5	0	0
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	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	2	2	2	0	0	0	2	2	2
Mvmt Flow	43	156	5	5	70	11	11	5	5	70	22	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	91	0	0	163	0	0	384	348	166	351	345	86
Stage 1	-	-	-	-	-	-	247	247	-	96	96	-
Stage 2	-	-	-	-	-	-	137	101	-	255	249	-
Critical Hdwy	4.11	-	-	4.12	-	-	7.1	6.5	6.2	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.12	5.52	-
Follow-up Hdwy	2.209	-	-	2.218	-	-	3.5	4	3.3	3.518	4.018	3.318
Pot Cap-1 Maneuver	1510	-	-	1416	-	-	578	579	884	604	578	973
Stage 1	-	-	-	-	-	-	761	706	-	911	815	-
Stage 2	-	-	-	-	-	-	871	815	-	749	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1497	-	-	1414	-	-	499	553	879	573	552	965
Mov Cap-2 Maneuver	-	-	-	-	-	-	499	553	-	573	552	-
Stage 1	-	-	-	-	-	-	735	682	-	875	805	-
Stage 2	-	-	-	-	-	-	774	805	-	712	677	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.5	11.5	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	575	1497	-	-	1414	-	-	704
HCM Lane V/C Ratio	0.037	0.029	-	-	0.004	-	-	0.244
HCM Control Delay (s)	11.5	7.5	0	-	7.6	0	-	11.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	1

Intersection	
Intersection Delay, s/veh	19.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	170	5	5	55	145	5	0	0	470	5	25
Future Vol, veh/h	25	170	5	5	55	145	5	0	0	470	5	25
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
Heavy Vehicles, %	0	0	0	1	1	1	0	0	0	0	0	0
Mvmt Flow	27	185	5	5	60	158	5	0	0	511	5	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.1	11.3	9.4	26.3
HCM LOS	B	B	A	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	12%	2%	94%
Vol Thru, %	0%	85%	27%	1%
Vol Right, %	0%	3%	71%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	200	205	500
LT Vol	5	25	5	470
Through Vol	0	170	55	5
RT Vol	0	5	145	25
Lane Flow Rate	5	217	223	543
Geometry Grp	1	1	1	1
Degree of Util (X)	0.01	0.353	0.337	0.801
Departure Headway (Hd)	6.303	5.841	5.44	5.307
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	565	613	657	679
Service Time	4.374	3.897	3.496	3.343
HCM Lane V/C Ratio	0.009	0.354	0.339	0.8
HCM Control Delay	9.4	12.1	11.3	26.3
HCM Lane LOS	A	B	B	D
HCM 95th-tile Q	0	1.6	1.5	8.1

MOVEMENT SUMMARY

Site: 101 [Sumner-Tapps Hwy E/64th St E (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 166th Ave E														
3	L2	258	1.0	258	1.0	0.331	5.6	LOS A	0.8	19.8	0.22	0.09	0.22	33.5
8	T1	653	1.0	653	1.0	0.331	5.4	LOS A	0.8	20.1	0.21	0.09	0.21	34.6
18	R2	16	1.0	16	1.0	0.331	5.4	LOS A	0.8	20.1	0.21	0.09	0.21	34.0
Approach		926	1.0	926	1.0	0.331	5.5	LOS A	0.8	20.1	0.22	0.09	0.22	34.3
East: 64th St E														
1	L2	26	12.0	26	12.0	0.055	5.3	LOS A	0.1	1.9	0.50	0.45	0.50	28.2
6	T1	11	12.0	11	12.0	0.055	5.3	LOS A	0.1	1.9	0.50	0.45	0.50	33.2
16	R2	5	12.0	5	12.0	0.055	5.3	LOS A	0.1	1.9	0.50	0.45	0.50	32.2
Approach		42	12.0	42	12.0	0.055	5.3	LOS A	0.1	1.9	0.50	0.45	0.50	30.5
North: Sumner Tapps Hwy E														
7	L2	1	2.0	1	2.0	0.387	7.1	LOS A	0.8	21.2	0.46	0.35	0.46	34.3
4	T1	868	2.0	868	2.0	0.387	6.8	LOS A	0.9	21.7	0.45	0.34	0.45	29.3
14	R2	63	2.0	63	2.0	0.387	6.6	LOS A	0.9	21.7	0.45	0.33	0.45	33.4
Approach		933	2.0	933	2.0	0.387	6.8	LOS A	0.9	21.7	0.45	0.34	0.45	29.7
West: 64th St E														
5	L2	53	1.0	53	1.0	0.414	9.5	LOS A	0.9	22.8	0.66	0.72	0.82	32.6
2	T1	5	1.0	5	1.0	0.414	9.5	LOS A	0.9	22.8	0.66	0.72	0.82	32.5
12	R2	711	1.0	711	1.0	0.414	8.6	LOS A	0.9	23.5	0.65	0.70	0.79	27.4
Approach		768	1.0	768	1.0	0.414	8.7	LOS A	0.9	23.5	0.65	0.70	0.79	28.0
All Vehicles		2669	1.5	2669	1.5	0.414	6.9	LOS A	0.9	23.5	0.43	0.36	0.47	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [166th Ave/SR 410 WB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: 166th Ave E														
3	L2	117	1.0	117	1.0	0.455	6.8	LOS A	0.0	0.0	0.00	0.00	0.00	37.9
8	T1	546	1.0	546	1.0	0.455	6.8	LOS A	0.0	0.0	0.00	0.00	0.00	34.5
Approach		663	1.0	663	1.0	0.455	6.8	LOS A	0.0	0.0	0.00	0.00	0.00	35.4
East: SR 410 WB Off Ramp														
1	L2	41	2.0	41	2.0	0.051	4.9	LOS A	0.1	2.7	0.62	0.46	0.62	32.7
6	T1	1	2.0	1	2.0	0.051	4.9	LOS A	0.1	2.7	0.62	0.46	0.62	32.7
16	R2	352	2.0	352	2.0	0.298	5.8	LOS A	0.8	20.4	0.68	0.56	0.68	29.8
Approach		394	2.0	394	2.0	0.298	5.7	LOS A	0.8	20.4	0.67	0.55	0.67	30.3
North: 166th Ave E														
4	T1	1046	2.0	1046	2.0	0.550	8.5	LOS A	1.9	47.1	0.49	0.30	0.49	33.3
14	R2	510	2.0	510	2.0	0.550	8.0	LOS A	1.9	47.1	0.47	0.28	0.47	32.5
Approach		1556	2.0	1556	2.0	0.550	8.4	LOS A	1.9	47.1	0.49	0.29	0.49	33.0
All Vehicles		2613	1.7	2613	1.7	0.550	7.6	LOS A	1.9	47.1	0.39	0.26	0.39	33.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	0	195	0	0	0	0	310	115	455	610	0
Future Volume (veh/h)	340	0	195	0	0	0	0	310	115	455	610	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	354	0	203				0	323	120	474	635	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2				0	1	1	1	1	0
Cap, veh/h	426	0	379				0	843	715	691	1246	0
Arrive On Green	0.24	0.00	0.24				0.00	0.45	0.45	0.16	0.66	0.00
Sat Flow, veh/h	1781	0	1585				0	1885	1598	1795	1885	0
Grp Volume(v), veh/h	354	0	203				0	323	120	474	635	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1885	1598	1795	1885	0
Q Serve(g_s), s	17.0	0.0	10.1				0.0	10.3	4.0	11.8	15.5	0.0
Cycle Q Clear(g_c), s	17.0	0.0	10.1				0.0	10.3	4.0	11.8	15.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	426	0	379				0	843	715	691	1246	0
V/C Ratio(X)	0.83	0.00	0.54				0.00	0.38	0.17	0.69	0.51	0.00
Avail Cap(c_a), veh/h	663	0	590				0	843	715	807	1246	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.5	0.0	29.9				0.0	16.6	14.9	9.9	7.8	0.0
Incr Delay (d2), s/veh	5.2	0.0	1.2				0.0	1.3	0.5	1.9	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	3.9				0.0	4.7	1.5	4.5	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	31.0				0.0	17.9	15.4	11.8	9.3	0.0
LnGrp LOS	D	A	C				A	B	B	B	A	A
Approach Vol, veh/h		557						443			1109	
Approach Delay, s/veh		35.3						17.2			10.4	
Approach LOS		D						B			B	

Timer - Assigned Phs	1	2	4	6
Phs Duration (G+Y+Rc), s	19.2	44.8	26.0	64.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	22.5	33.5	47.5
Max Q Clear Time (g_c+I1), s	13.8	12.3	19.0	17.5
Green Ext Time (p_c), s	0.9	1.8	2.6	5.1

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	220	15	0	25	160	490	5	5	980	5
Future Vol, veh/h	0	0	220	15	0	25	160	490	5	5	980	5
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	-	-	0	-	-	0	175	-	-	175	-	175
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, %	2	2	2	0	0	0	1	1	1	0	0	0
Mvmt Flow	0	0	244	17	0	28	178	544	6	6	1089	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	548	1460	-	547	1095	0	0	550	0	0
Stage 1	-	-	-	903	-	-	-	-	-	-	-	-
Stage 2	-	-	-	557	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.93	7.3	-	6.2	4.115	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	6.1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.319	3.5	-	3.3	2.2095	-	-	2.2	-	-
Pot Cap-1 Maneuver	0	0	481	100	0	541	640	-	-	1030	-	-
Stage 1	0	0	-	335	0	-	-	-	-	-	-	-
Stage 2	0	0	-	487	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	481	38	-	541	640	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	38	-	-	-	-	-	-	-	-
Stage 1	-	-	-	242	-	-	-	-	-	-	-	-
Stage 2	-	-	-	238	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	12	3.1	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	640	-	-	481	541	1030	-	-
HCM Lane V/C Ratio	0.278	-	-	0.508	0.051	0.005	-	-
HCM Control Delay (s)	12.8	-	-	20	12	8.5	-	-
HCM Lane LOS	B	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	1.1	-	-	2.8	0.2	0	-	-

MOVEMENT SUMMARY

Site: 101 [Valley Ave/SR 410 WB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Valley Ave														
3	L2	408	1.0	408	1.0	0.273	4.6	LOS A	0.0	0.0	0.00	0.00	0.00	35.2
8	T1	495	1.0	495	1.0	0.273	4.2	LOS A	0.0	0.0	0.00	0.00	0.00	38.2
Approach		902	1.0	902	1.0	0.273	4.4	LOS A	0.0	0.0	0.00	0.00	0.00	36.8
East: SR 410 WB Off Ramp														
1	L2	217	1.0	217	1.0	0.209	5.4	LOS A	0.4	8.9	0.56	0.52	0.56	27.0
6	T1	1	1.0	1	1.0	0.209	5.4	LOS A	0.4	8.9	0.56	0.52	0.56	32.4
16	R2	217	1.0	217	1.0	0.254	6.9	LOS A	0.4	10.8	0.59	0.59	0.59	33.1
Approach		436	1.0	436	1.0	0.254	6.2	LOS A	0.4	10.8	0.58	0.56	0.58	30.6
North: Valley Ave														
4	T1	1163	0.0	1163	0.0	0.628	12.3	LOS B	3.2	80.9	0.88	0.93	1.22	25.8
14	R2	158	0.0	158	0.0	0.628	11.1	LOS B	3.2	80.9	0.87	0.88	1.16	31.3
Approach		1321	0.0	1321	0.0	0.628	12.2	LOS B	3.2	80.9	0.88	0.92	1.21	26.8
All Vehicles		2659	0.5	2659	0.5	0.628	8.5	LOS A	3.2	80.9	0.53	0.55	0.70	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Valley Ave/SR 410 EB Ramps (Site Folder: General)]

Network: N101 [Network1 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Valley Ave														
8	T1	676	2.0	676	2.0	0.436	8.7	LOS A	1.2	30.0	0.69	0.60	0.69	27.9
18	R2	186	2.0	186	2.0	0.436	8.2	LOS A	1.2	30.0	0.68	0.58	0.68	32.6
Approach		862	2.0	862	2.0	0.436	8.6	LOS A	1.2	30.0	0.68	0.59	0.69	29.4
North: Valley Ave														
7	L2	298	1.0	298	1.0	0.409	6.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.8
4	T1	1053	1.0	1053	1.0	0.409	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	37.7
Approach		1351	1.0	1351	1.0	0.409	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	37.5
West: SR 410 EB Off Ramp														
5	L2	207	3.0	207	3.0	0.355	11.3	LOS B	0.7	16.9	0.71	0.75	0.85	23.9
2	T1	1	3.0	1	3.0	0.355	11.3	LOS B	0.7	16.9	0.71	0.75	0.85	30.0
12	R2	798	3.0	798	3.0	0.875	28.6	LOS C	5.6	142.2	0.90	1.46	2.55	25.0
Approach		1006	3.0	1006	3.0	0.875	25.0	LOS C	5.6	142.2	0.86	1.31	2.20	24.9
All Vehicles		3219	1.9	3219	1.9	0.875	12.5	LOS B	5.6	142.2	0.45	0.57	0.87	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection	
Int Delay, s/veh	38.3

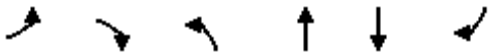
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	5	0	5	15	0	115	0	680	20	335	1355	60
Future Vol, veh/h	5	0	5	15	0	115	0	680	20	335	1355	60
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	25	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	1	1	1	2	2	2	2	2	2
Mvmt Flow	5	0	5	15	0	117	0	694	20	342	1383	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2862	2813	1415	2804	2833	704	1445	0	0	714	0	0
Stage 1	2099	2099	-	704	704	-	-	-	-	-	-	-
Stage 2	763	714	-	2100	2129	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.11	6.51	6.21	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.509	4.009	3.309	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	11	18	170	~ 12	18	439	469	-	-	886	-	-
Stage 1	69	94	-	429	441	-	-	-	-	-	-	-
Stage 2	400	438	-	68	90	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	6	11	170	~ 8	11	439	469	-	-	886	-	-
Mov Cap-2 Maneuver	6	11	-	~ 8	11	-	-	-	-	-	-	-
Stage 1	69	58	-	429	441	-	-	-	-	-	-	-
Stage 2	293	438	-	40	55	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 611.8	$ 685.5	0	2.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	469	-	-	12	61	886	-	-
HCM Lane V/C Ratio	-	-	-	0.85	2.175	0.386	-	-
HCM Control Delay (s)	0	-	-	$ 611.8	$ 685.5	11.6	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.8	12.8	1.8	-	-

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	45	35	635	1280	70
Future Volume (veh/h)	55	45	35	635	1280	70
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	45	35	641	1293	71
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	0	2	2	2	2
Cap, veh/h	85	75	45	1644	1437	79
Arrive On Green	0.05	0.05	0.02	0.88	0.82	0.82
Sat Flow, veh/h	1810	1610	1781	1870	1757	96
Grp Volume(v), veh/h	56	45	35	641	0	1364
Grp Sat Flow(s),veh/h/ln	1810	1610	1781	1870	0	1853
Q Serve(g_s), s	3.8	3.4	2.4	7.8	0.0	63.1
Cycle Q Clear(g_c), s	3.8	3.4	2.4	7.8	0.0	63.1
Prop In Lane	1.00	1.00	1.00			0.05
Lane Grp Cap(c), veh/h	85	75	45	1644	0	1516
V/C Ratio(X)	0.66	0.60	0.79	0.39	0.00	0.90
Avail Cap(c_a), veh/h	294	262	65	1665	0	1516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.2	58.1	60.2	1.4	0.0	7.8
Incr Delay (d2), s/veh	8.5	7.3	31.6	0.2	0.0	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.2	1.5	1.1	0.0	20.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.7	65.4	91.9	1.5	0.0	16.7
LnGrp LOS	E	E	F	A	A	B
Approach Vol, veh/h	101			676	1364	
Approach Delay, s/veh	66.1			6.2	16.7	
Approach LOS	E			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		113.8		10.4	7.6	106.2
Change Period (Y+Rc), s		4.6		4.6	4.5	4.6
Max Green Setting (Gmax), s		110.6		20.2	4.5	101.6
Max Q Clear Time (g_c+I1), s		9.8		5.8	4.4	65.1
Green Ext Time (p_c), s		5.0		0.2	0.0	20.1

Intersection Summary						
HCM 6th Ctrl Delay			15.7			
HCM 6th LOS			B			

Appendix C Transportation Impact Fee Detail

Sumner Transportation Plan January 2025

Map ID	Intersection	Project	Estimated Total Cost	Funding: Grants	Funding: WSDOT	Sumner Cost / Additional Funds Needed	TIF Eligible %	Applied TIF %	TIF Cost
	Spot Improvements								
SP1	***E Valley Hwy E/Forest Canyon Rd E***	***New signal or RAB when warranted***	***$3,000,000***			***$3,000,000***	***15%***	***15%***	***$450,000***
SP2	Puyallup St/Tacoma Ave Puyallup Street to the White River Bridge (WSDOT SUM-30)	Plane, repair, and overlay ,complete intersection channelization improvements, add an eastbound left-turn pocket on Puyallup Street at Tacoma Avenue. Add a signal at the Puyallup Street/Tacoma Avenue intersection	$2,600,000	$328,700		$2,271,300	40%	20%	$520,000
SP3	***E Valley Hwy E/Elm St E***	***New signal when warranted***	***$1,500,000***			***$1,500,000***	***50%***	***50%***	***$750,000***
SP4	***Valley Ave/Elm St E***	***New signal when warranted***	***$1,500,000***			***$1,500,000***	***50%***	***50%***	***$750,000***
SP5	***Traffic Ave/Main St***	***Add EB right-turn overlap. Convert W Main Street to one-way facility westbound.***	***$150,000***			***$150,000***	***10%***	***10%***	***$15,000***
SP6	Parker Rd E/Main St E	New signal when warranted	$1,650,000			$1,650,000	50%	50%	$825,000
SP7	160th Ave E/Main St (60th St E)	New signal or RAB when warranted	$3,000,000			$3,000,000	50%	50%	$1,500,000
SP8	***Valley Ave/74th St E***	***Add EB/WB left-turn restrictions. Shift WB left-turns to U-turning movement at Valley Avenue/SR 410 EB Ramp RAB***	***$75,000***			***$75,000***	***10%***	***10%***	***$7,500***
SP9	Sumner Tapps Hwy/60th St E	Signalization of the intersection. Construct EB right-turn lane	$3,400,000			$3,400,000	50%	50%	$1,700,000
SP10	***Signal replacement program***	***Replace and modernize all signals in Sumner (15 City owned signals)***					***0%***	***0%***	***$0***
		Spot Improvements Subtotal	**$16,875,000**	**$328,700**	**$0**	$16,546,300			**$6,517,500**
	Roadway								
RW1	166th Ave E Widening; SR 410 WB ramps to 64th St E (WSDOT SUM-24)	Widen to 4-5 lanes, includes new roundabouts at WB ramp and 64th Street E	$19,000,000	$2,249,000	$500,000	$16,251,000	40%	20%	$3,800,000
RW2	160th Ave E; Main Street to 64th St E	Improve and widen streets to minor arterial standards with bike paths and sidewalks	$500,000			$500,000	40%	40%	$200,000
RW3	Valley Ave; South City Limits to Main St	Overlay existing roadway surface, ADA upgrades	$1,850,750			$1,850,750	0%	0%	$0
RW4	Stewart Rd Corridor ITS improvements; SR 167 to Lakeland Hills (WSDOT SUM-27)	Connect traffic signals and railroad crossings to coordinate signal timing	$3,500,000	$495,285		$3,004,715	20%	20%	$700,000
RW5	160th Ave E; Elm St to Main St	Improve to collector standards with curb, gutter and sidewalks on both sides, and bike facilities	$2,900,000			$2,900,000	20%	20%	$580,000
RW6	Elm St; E Valley Hwy to 160th Ave E	Improve to collector standards with curb, gutter and sidewalks on both sides, and bike facilities	$2,600,000			$2,600,000	20%	20%	$520,000
RW7	Parker Rd E; 62nd St to 63rd St	Construct curb, gutter, and sidewalk on east side of street	$250,000			$250,000	20%	20%	$50,000
RW8	Parker Rd E; Main St to Elm St	Improve to collector standards with curb, gutter and sidewalks on both sides	$1,300,000			$1,300,000	20%	20%	$260,000
RW9	Zehnder St; Pease Ave to Wood Ave	Railroad Crossing Improvements	$1,000,000			$1,000,000	20%	20%	$200,000
RW10	162nd Ave E Segment Extension; 64th St to 60th St	Construct 2-lane facility	$3,000,000			$3,000,000	50%	0%	$0
RW11	164th Ave Ct E Segment Extension; 160th Ave E to existing 164th Ave Ct E	Construct 2-lane facility	$2,000,000			$2,000,000	50%	0%	$0
RW12	Systemic Horizontal Curve and Roadway Departure Safety Improvements (WSDOT SUM-28)	East Valley Highway, West Valley Highway, Sumner-Tapps Highway/166th Avenue E, 142nd Avenue E/24th Street E. Install static and/or dynamic curve warning signs, speed feedback signs, centerline and edge lie profiled striping, rumble strips, reflective markers on-pavement as appropriate to delineate roadside objects, channelization, guardrail/roadway shouldering, and street lighting	$903,000	$903,000		$0	0%	0%	$0
-	Stewart Road SW: Butte Avenue SE to 140th Avenue Court E [1]	Widen to 5 lanes including a center two-way left-turn lane	-	-	-	-	-	-	-
		Roadway Improvements Subtotal	**$38,803,750**	**$3,647,285**	**$500,000**	**$34,656,465**			**$6,310,000**
	Non-Motorized								
NM1	***West Valley Highway Sidewalks***	***Complete missing sidewalk facilities on the east side between 16th Street E and SR 167 SB Ramps***	***$1,000,000***			***$1,000,000***	***60%***	***15%***	***$150,000***
NM2	***16th Street E Ped/Bike***	***Construct ped/bike facilities between Valentine Avenue and 138th Avenue E***	***$2,000,000***			***$2,000,000***	***60%***	***15%***	***$300,000***
NM3	White River Restoration Tail	#9 Ditch to area north of 16th Street	$3,000,000			$3,000,000	60%	0%	$0
NM4	***Tacoma Avenue Trail***	***New trail facilities between the White River and 45th Street E***	***$150,000***			***$150,000***	***60%***	***15%***	***$22,500***
NM5	***Salmon Creek Trail***	***New trail between current end at 149th Avenue E and Sumner-Tapps Highway E***	***$3,000,000***			***$3,000,000***	***60%***	***0%***	***$0***
NM6	***Edgewood Drive Sidewalks***	***Complete missing sidewalk facilities between SR 167 and Sumner Heights Drive E***	***$550,000***			***$550,000***	***60%***	***15%***	***$82,500***
NM7	Fyar Avenue Trail (WSDOT SUM-17)	West Main Street to Puyallup Street	$7,200,000	$655,143		$6,544,857	60%	15%	$1,080,000
NM8	***Zehnder Street/Elm Street Non-Motor***	***Construct pedestrian and bike facilities. Bike lanes from Valley Avenue to Main Street Complete missing sidewalk facilities between Pease Avenue and Wright Avenue***	***$1,600,000***	***$346,000***		***$1,254,000***	***60%***	***15%***	***$240,000***
NM9	***Academy Street Bike Facilities***	***Construct bike facilities between Wood Avenue and Valley Avenue E***	***$800,000***			***$800,000***	***60%***	***15%***	***$120,000***
NM10	***Wood Avenue/Meade McCumber Road***	***Construct bike facilities between Main Street E and Valley Avenue***	***$1,800,000***			***$1,800,000***	-	***15%***	***$270,000***
NM11	62nd Street Court E Trail	Construct trail east of 62nd Street Court E between Parker Road and 160th Avenue E	$1,000,000			$1,000,000	60%	0%	$0
NM12	***Main Street E Sidewalks***	***Construct missing sidewalk facilities between 162nd Avenue E and Sumner-Tapps Highway E***	***$575,000***			***$575,000***	***60%***	***0%***	***$0***
NM13	Puyallup River Crossing	Over White River. Two part project: 1. Study best location for trail crossing 2. Construct ped/bike trail crossing	$4,000,000			$4,000,000	60%	15%	$600,000
NM14	***Construct sidewalks on one side of 72nd Street E***	***Between River Street and 143rd Avenue E***	***$250,000***			***$250,000***	***60%***	***0%***	***$0***
NM15	Rivergrove Pedestrian Bridge (WSDOT SUM-29)	Trail overpass connecting the vicinity of Alder Ave. to 143rd Ave. E over SR 410	$11,200,000	$5,000,000		$6,200,000	60%	15%	$1,680,000
NM16	Puyallup River Trail Bridge	Bridge and trail connections to the Foothills Trail. Trail overpass connecting 144th Ave E to 143rd Ave E	$6,000,000			$6,000,000	60%	15%	$900,000
NM17	***Mead McCumber Road/64th Street E Non-motor***	***Construct pedestrian and bike facilities between Balley Avenue E and Sumner-Tapps Highway***	***$900,000***			***$900,000***	***60%***	***0%***	***$0***
NM18	***Sumner-Tapps Highway Sidewalks***	***Construct missing sidewalk facilities between Main Street E and the southern City Limits***	***$1,000,000***			***$1,000,000***	***60%***	***0%***	***$0***
NM19	***Rainier Street Sidewalks***	***Construct missing sidewalk facilities between Sumner Avenue and Guptil Avenue***	***$150,000***			***$150,000***	***60%***	***0%***	***$0***
NM20	Traffic Avenue Pedestrian Signal (WSDOT SUM-25)	Replace existing pedestrian rectangular rapid flashing beacon with pedestrian signal	$616,753	$531,753		$85,000	10%	10%	$61,675
NM21	***Alder Avenue Sidewalks***	***Construct pedestrian and bike facilities between SR 410 and Academy Street***	***$950,000***			***$950,000***	***60%***	***15%***	***$142,500***
NM22	***Houston Road E Sidewalks***	***Construct pedestrian facilities between Valley Avenue E and the west City limits***	***$850,000***			***$850,000***	***60%***	***0%***	***$0***
		Non-Motorized Improvements	**$48,591,753**	**$6,532,896**	**$0**	**$42,058,857**			**$5,649,175**

1. This project is fully funded and will be completed before 2044; however, to remain eligible for transportation impact fees already set aside for the project, it is included on the 20-year project list.