City of Arlington

Transportation 2035 Plan, 2017 Update

City of Arlington
Public Works Department

September 25, 2017

Recommended citation: As follows:

- Transportation 2035 Plan, 2016 Update (*April 11, 2016*) prepared by SCJ Alliance with assistance from City of Arlington Public Works Department.
- Transportation 2035 Plan, 2017 Update (*September 25, 2017*) prepared City of Arlington Public Works Departments with assistance from Perteet, Inc and Shockey Planning Group.

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Executive Summary

Over the past decade the City of Arlington has seen dramatic changes throughout the city; these changes involve a growing population, a changing economic base, and evolving transportation modes. The City's 2005 Transportation Plan was critical to providing the transportation needs over the past decade. The future changes to Arlington, as outlined in the City's current GMA Comprehensive Plan, will bring an ever increasing demand for transportation infrastructure and services necessary to support the City's and the region's growing population. This Transportation 2035 Plan, 2017 Update, provides the framework for meeting Arlington's future transportation needs.

The Puget Sound Regional Council (PSRC) serves as the Metropolitan Planning Organization (MPO) for Pierce, King, Kitsap, and Snohomish counties; Arlington is a city in this MPO. Arlington's Transportation 2035 Plan, 2017 Update follows PSRC's integrated long-range growth management, environmental, economic, and transportation strategy contained in VISION 2040. It implements the strategies developed in TRANSPORTATION 2040 focusing on congestion and mobility, environment, and funding.

Arlington's Transportation 2035 Plan, 2017 Update was developed based on the future growth and development forecasts contained in the City's current GMA Comprehensive Plan. The Transportation 2035 Plan, 2017 Update first looks at the City's existing surface transportation system – a system of roads, sidewalks, trails, and busses – and its ability to meet current transportation needs. The Plan then uses VISUM and Synchro transportation software to model where future transportation improvements will be required. The plan does not rely solely on motorized transportation using personal vehicles, but envisions a system that links Arlington's various urban centers and residential communities by a system that is pedestrian and bike friendly to promote livable communities, and a multimodal transportation system that will link all of Arlington's urban and residential centers.

PSRC's review of Arlington's 2015 GMA Comprehensive Plan identified an inconsistency between the Arlington and the Snohomish County comprehensive plans regarding UGA expansion west of I-5. The City filed a petition in 2014 to expand the UGA west of I-5 and included this proposed expansion area in its 2015 GMA Comprehensive Plan. After meeting with Snohomish County Planning and Development Services in 2016, this petition was withdrawn.

Population growth previously targeted for the proposed UGA expansion area west of I-5 has been reallocated throughout the much of the City through a Mixed Use zoning overlay. The Arlington Transportation 2035 Plan, 2017 Update includes projected transportation and pedestrian movements and needs associated with this population redistribution.

In addition to addressing use of consistent land use assumptions across all plan elements, the Transportation 2035 Plan, 2017 Update also addresses identified gaps in nonmotorized transportation planning and in the multiyear transportation financing plan.

Transportation 2035 Plan, 2017 Update recommendations include more than 50 specific roadway and intersection projects that improve arterial capacity, circulation, and safety. The Plan also relies heavily on non-motorized improvements by expanding its network of sidewalks, trails, and bike lanes, and expanding use of ADA-approved transitions. It also includes a financial plan that details how these transportation projects will be funded, and summarizes Arlington's capabilities to maintain and preserve these infrastructure improvements into the future.

1 Introduction

1.1 PURPOSE

The Arlington Transportation 2035 Plan, 2017 Update serves as the transportation element for the City of Arlington's current GMA Comprehensive Plan. The City began drafting a Comprehensive Transportation Plan in 2011, however work on that plan was halted in 2012 as major changes to City land use and City goals emerged. The 2012 Transportation Comprehensive Plan *(DRAFT)* was adopted into the City of Arlington 2015 GMA Comprehensive Plan by reference knowing that an updated transportation plan would be produced. This Transportation 2035 Plan, 2017 Update addresses the new land use and City goals while also meeting the most current goals and transportation policies established by the Puget Sound Regional Council (PSRC).

This Transportation 2035 Plan, 2017 Update addresses a multimodal transportation system designed to meet the future transportation needs of Arlington though 2035. This plan is the basis for the City's long-range transportation capital improvement program and provides the framework for City decisions pertaining to future growth and management of the transportation system.

Washington State's 1990 Growth Management Act (GMA) requires that transportation planning be directly tied to the City's land use decisions and fiscal planning. GMA requires, at a minimum, that a transportation plan contain:

- Land use assumptions to estimate travel, including impacts to state-owned facilities;
- An inventory of air, water, and land transportation facilities and services, including transit alignments, to define existing capital facilities and travel levels as a basis for future planning;

- Level of service (LOS) standards for all arterials, transit routes, and state-owned facilities as a gauge for evaluating system performance. These standards should be regionally coordinated;
- Specific actions and requirements for bringing into compliance locally owned transportation facilities or services that are below an established level of service standard;
- Forecasts of traffic for at least ten years based on the adopted land use plan to provide information on the location, timing, and capacity needs of future growth;
- Identification of system expansion needs and transportation system management needs to meet current and future demands;
- An analysis of funding capacity to judge needs against probable funding resources;
- A multi-year transportation financing plan;
- If probable funding falls short of meeting identified needs, a discussion of how additional funding will be raised or how land use assumptions will be reassessed to ensure that level of service standards will be met;
- Intergovernmental coordination efforts, including an assessment of the impacts of the transportation plan and land use assumptions on the transportation systems of adjacent jurisdictions; and
- Demand-management strategies.

The City of Arlington is a member of the Puget Sound Regional Council (PSRC), the Metropolitan Planning Organization (MPO) and Regional Transportation Planning Organization (RTPO) for King, Kitsap, Pierce and Snohomish Counties. PSRC is required to certify the transportation-related provisions in local comprehensive plans. By doing so, PSRC assures consistency with the multicounty planning policies in VISION 2040, the adopted regional transportation plan (Transportation 2040), and the requirements listed above for conformity with GMA.

1.2 LAND USE AND TRANSPORTATION

Current transportation patterns and needs are affected by the density, mix and location of land uses. Travel demand is greatly influenced by the pattern of development and current land use in the City of Arlington and the surrounding area (**Figure 1-1**). Changes in land use can create new travel demand or modify existing patterns. The length of trips, transportation mode choices, and connections are all affected by growth, which is controlled by land use plans. The future zoning for the City of Arlington and its urban growth area (UGA), including the Mixed Use overlay, is illustrated in **Figure 1-2.**

As stated in its current GMA Comprehensive Plan, the City of Arlington is taking a proactive role in attracting developments to meet the needs of the citizens, prioritizing alternative uses of land and public resources and identifying in explicit terms the impact proposed developments will have on the community. Population is expected to grow to almost 25,000

people by 2035, an increase of almost 40%. Jobs are forecasted to grow by nearly 13,000; although if the proposed Manufacturing Industrial Center (MIC) develops to its potential, up to 80,000 jobs will exist between Arlington's airport and central Marysville.

This Transportation 2035 Plan, 2017 Update addresses the increased demand that will be placed on Arlington's transportation network resulting from growth and land use planning/zoning changes outlined in the City's GMA Comprehensive Plan. Five focus areas are identified in Arlington's current GMA Comprehensive Plan as being the most suitable for future residential, industrial and retail growth; specific attention was placed on impacts to the transportation systems passing through these areas (**Figure 1-3**).

This Transportation 2035 Plan, 2017 Update also looked at transportation studies that addressed the specific needs of the West Arlington neighborhoods (near Interstate 5), the residential growth projected for the Brekhus/Beach area on the City's east side, commuter growth along the state routes through the City (SR-9, SR-530 and SR-531), and the industrial areas at the airport and south of SR-531. These studies are incorporated into this plan by reference.

The State Growth Management Act requires land use assumptions be used to estimate future travel. Data provided by the City of Arlington, Snohomish County, Office of Financial Management (OFM), Washington State Employment Security Department, Census Bureau, and Bureaus of Labor Statistics and Economic Analysis were incorporated into the City's transportation model. The assumptions in this plan are consistent with those in the Regional Transportation Plan (Transportation 2040) and accommodate the anticipated employment growth and population growth.

1.3 EXISTING PLAN RECOMMENDATIONS

The 2035 Transportation Plan identifies the transportation system that is needed to support the existing and proposed land uses identified in the City of Arlington's 2015 GMA Comprehensive Plan and in the following studies and plans:

- West Arlington Sub-Area Plan *(to be replaced by the Mixed Use Development Regulations)*
- Arterial Circulation Study for the Southeast Arlington Urban Growth Area and Vicinity
- Preliminary Practical Design VE Study Report SR-531 43rd to 67th Widening Project
- Arlington Municipal Airport Layout Plan Update
- State Route 9 Corridor Planning Study

1.3.1 West Arlington Sub Area Plan (WASAP)

The West Arlington Sub Area Plan encompasses three neighborhoods in the western region of the City: Smokey Point, West Bluff, and Island Crossing. The objective of the plan is to provide an organized blueprint for growth and development and correct the discontinuity of land uses and lack of transportation connectivity that had been inherited with annexation of this area in 2005. The Smokey Point and Island Crossing neighborhoods serve as gateways to Arlington from Interstate 5, and the entire sub area lies within the City's Airport Protection District. Existing land uses are primarily urban sprawl with auto-oriented and service-type businesses. Approximately 65% of the roads within the subarea do not meet urban standards, and neighborhoods are fragmented by a network of meandering streets dominated by cul-de-sacs.

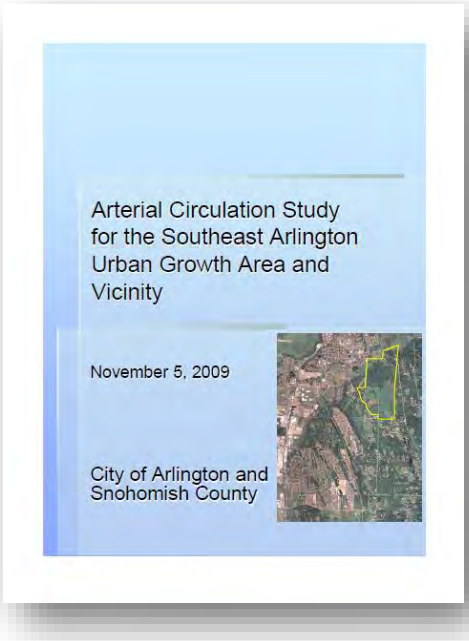
The West Arlington Sub Area Plan was adopted on February 7, 2011, but did not include a regulating plan to allow implementation. The City is replacing the WASA Plan with Mixed Use Development Regulations guided by a Form Based Code Regulating Plan to correctly enable both current and future development of the West Arlington neighborhoods. Recommendations in the plan relating to transportation are provided below. The recommended Road and Pedestrian Network Plan for the West Arlington Sub Area is shown in **Figure 1-4**.

- Incorporate the principles of New Urbanism (walkability, connectivity, mix of land uses, sustainability, quality architecture and urban design);
- Roundabouts are recommended along 172nd Street NE/SR-531, at 43rd and 51st Avenues, at the east leg of the "Y" intersection of Smokey Point Boulevard and SR-531, as well as other key intersections throughout the subarea as shown on the map;
- New thoroughfare options and standards should be developed that address movement type, design speed, pedestrian crossing time, ROW crossing width, curb-face to curb-face width, number of traffic lanes, presence of bicycle lanes, presence of on-street parking, curb type, park strips, landscaping, walkway type, illumination, and curb radius;
- Streetscapes should be designed to emphasize functionality, aesthetics, pedestrian comfort and safety. Street trees and tree lined medians are a priority in the development of the West Arlington neighborhoods;
- Cul-de-sacs should be prohibited with new development;
- A connectivity index standard should be set for all new subdivisions to ensure a grid network and connectivity, where feasible, to undeveloped parcels;
- New roadway improvements shall follow recommendations per the SR-531 Corridor Recommendations document from WSDOT;
- Intersection spacing should not exceed 495 feet on pedestrian-oriented thoroughfares;

- Bicycle lanes should be provided on all new or improved streets with a design speed of 30 mph or greater (except where an adjacent paved trail exists or is planned);
- Bicycle lanes should be installed on the already improved section of Smokey Point Boulevard (16400-17400 blocks);
- Appropriate Frontage Types sidewalk width should shall be prescribed to each thoroughfare type and associated building types through the Mixed Use Development Regulations;

1.3.2 Arterial Circulation Study for the Southeast Arlington Urban Growth Area and Vicinity

In 2005, the Arlington Urban Growth Area (UGA) was expanded by about 337 acres to include the Brekhus Beach area. The expansion area was annexed into the City of Arlington in 2006. The Brekhus Beach vicinity lacks a developed arterial road network, and before the area can develop, the infrastructure must be in place to support urban development.



The City of Arlington and Snohomish County Public Works Department completed the Arterial Circulation Study for the Southwest Arlington Urban Growth Area and Vicinity in November, 2009. The study confirmed that arterial connections and circulation within the Brekhus-Beach vicinity are limited by the physical environment and availability of right-of-way. The study offers the following potential transportation improvements likely needed to provide effective arterial circulation:

- 186th Street Extension NE – Arlington city limit to Crown Ridge Boulevard
- Crown Ridge Boulevard – 186th Street NE Extension to SR-9
- Burn/McElroy Roads – 95th Avenue NE to 186th Avenue NE
- 186th Street NE – McElroy Road to Arlington city limit
- McElroy Road – 172nd to 186th Streets NE
- 172nd Street NE Extension – 91st Avenue to McElroy Road
- 172nd Street NE – SR-9 to 91st Avenue NE

1.3.3 Preliminary Practical Design VE Study Report SR-531 43rd to 67th Widening Project

SR-531 is a state highway that serves as a key city arterial in south Arlington. It serves the communities surrounding Arlington and Marysville, as well as the Arlington Airport. In January 2010, Washington State Department of Transportation (WSDOT) with assistance from the City of Arlington and a stakeholder's group, completed the State Route 531/43rd to 67th Corridor Pre-Design Analysis final report. The report identifies current and future safety and mobility needs on SR-531 between 43rd Avenue and 67th Avenue, an area that is planned as a regionally-significant commercial and industrial center. Growth forecasts indicate that by 2025, Arlington and Marysville will see significant increase in employment and in population. In addition, rising congestion on the corridor has led to more frequent collisions, primarily during afternoon peak traffic times.

In 2015 WSDOT completed the Preliminary Practical Design VE Study Report SR-531 43rd to 67th Widening Project. The Practical Design and Value Engineering Study resulted in the development of four alternatives and, while it is possible for all alternatives to be implemented, it was a combination of the alternatives that provided the best solution for the SR-531 Widening Project. The recommended Practical Design VE strategy provided roughly $6.7M in project cost savings, over 3 months in project schedule critical path savings, and a 9% improvement in overall project performance.

In combination, the four alternatives of the team recommended strategy represent an overall value increase of 20%. It was the results of this VE Study that helped get this project included and fully funded in the 2015 Washington State Transportation Funding Bill (Connecting Washington). SR-531 Widening Project funding and WSDOT preliminary schedule is as follows:

SR-531 Widening (43rd - 67th)		***Start***	***Finish***	***Funding***
PE / RW	Funded	01-Jan-20	30-Jun-22	$12,000,000.00
Construction	Funded	01-Jul-22	31-Mar-25	$27,300,000.00
			TOTAL	$39,300,000.00

1.3.4 Arlington Municipal Airport Layout Plan

The existing master plan for the airport, *Arlington Municipal Airport Master Plan Update* was completed in 1996. An Airport Layout Plan Update (ALP Update) was completed in June, 2002 and again updated in 2012. Land use planning recommendations in the ALP Update provide guidance and zoning recommendations to prevent or minimize land use incompatibilities within the defined Airport Influence Area (AIA) boundary. The plan provides recommendations for types of development permitted in each of the zones within the AIA (Runway Protection Zone, Inner Safety Zone, Outer Safety Zone, etc.), and also designates

areas in the SW quadrant of the Airport where the Airport Business Park will be developed. The Airport Layout Plan is shown in Chapter 3, Figure 3-4.

1.3.5 State Route 9 Corridor Planning Study


Washington State Department of Transportation

SR 9 Corridor Planning Study

Spring 2010

Learn about the future of SR 9

The Washington State Department of Transportation (WSDOT) has worked with local partners to develop a corridor plan for State Route 9 (SR 9) that establishes a list of recommended improvements for a 30-mile stretch of SR 9 from State Route 522 to Schloman Road, just north of State Route 530 in Arlington. A full spectrum of projects have been identified, ranging from a new signal at SR 530 to the replacement of the Snohomish River Bridge.

This work is a continuation of Snohomish County's (2006-2007) transportation assessment study. The recommendations included in the SR 9 corridor plan built upon the 2003 and 2005 gas-tax funded package improvements currently being implemented and incorporates many improvements identified in the unfunded 2007 Proposition 1 or Regional Transportation Investment District (RTID) package.

Recommendations include building a wider bridge over the Snohomish River on SR 9

What is a corridor study?

A corridor study is an examination of the transportation needs on a particular stretch of road. They identify safety and mobility issues on state highways and propose specific improvements to be implemented over the next 20 or more years, as funding becomes available. Corridor studies are typically the first step toward obtaining funding for highway improvement projects.

Why are SR 9 improvements needed?

SR 9 is an important commuter route and the only major north-south alternative to Interstate 5 in Snohomish County. Rapid growth in recent decades has contributed to increased traffic congestion (particularly during peak commuting hours), and the projects funded through the gas tax packages will not be enough to fully address traffic conditions due to anticipated population and economic growth.

How much will these projects cost?

WSDOT estimates the planning level cost for improvements included in the draft corridor plan would total approximately $373 million* in 2007 dollars.

*These costs are not based on detailed engineering design and do not completely account for material costs or other unforeseen expenditures that may occur during design or construction.

Local input helps shape the plan.

The SR 9 Corridor Study has benefited from the involvement of and input from the general public and representatives from cities along the corridor, the County, and interested agencies. Input was provided through:

- SR 9 Corridor Working Group (CWG)
- Information booths at local community events (the project team talked to over 1,100 people)
- Project Web site, mail and e-mails
- Agency briefings

What is the SR 9 Corridor Working Group?

The SR 9 Corridor Working Group (CWG) was formed to advise WSDOT on the needs, priorities and potential improvements on SR 9. The group is comprised of staff and representatives from:

City of Arlington
City of Lake Stevens
City of Marysville
City of Snohomish
Snohomish County
Community Transit
Puget Sound Regional Council
WSDOT

WSDOT completed the SR-9 Corridor Planning Study (CPS) in January 2011 with input from the cities of Arlington, Lake Stevens, Snohomish and Marysville, along with Snohomish County, Community Transit, and Puget Sound Regional Council. The corridor plan establishes a list of recommended improvements for a 30-mile stretch of SR-9 from State Route 522 to Schloman Road.

SR-9 is the only major north-south alternative to Interstate 5 in Snohomish County and an important commuter route. From 2001 to 2005, traffic on SR-9 increased by 25%. The CPS builds upon improvements funded through the 2003 and 2005 gas-tax packages to further reduce or eliminate traffic bottlenecks and chokepoints and improve the flow of people and goods through the corridor. If all the recommended improvements are funded, SR-9 will be widened to a four- to five-lane highway from SR-522 to SR-92. North of SR-92, proposed improvements will be made at key intersections. In the Arlington area, recommended improvements are:

- SR-530 (Burke Avenue) - addition of traffic signal and minor shoulder widening
- SR-530 (Division Street) - Widen roadway for two left-turn lanes eastbound and add receiving lane to Burke Avenue.

1.4 COORDINATION WITH OTHER AGENCIES

1.4.1 Capital Facilities Plan and Transportation Improvement Program

The City uses the Transportation Improvement Program (TIP) to fulfill the GMA requirement of having a multiyear financing plan based on identified transportation needs. The City's long range (20 year) TIP is included in chapters six and seven of this document, and adopted by reference as part of the Transportation Element of the City's current GMA Comprehensive Plan.

Short-term planned improvements to the City's transportation system are included in the Six-Year TIP; this Plan identifies transportation capital facility improvements scheduled for the coming six years along with funding sources for each improvement. The Six-Year TIP is updated annually as project priorities and funding resources evolve and is also adopted by Arlington City Council annually.

1.4.2 Policy Development and Regional Coordination

The City of Arlington works in collaboration with other governmental and non-governmental organizations. This plan calls for inter-jurisdictional actions to address cross-border issues and mitigate the impact of new development. The Arlington Transportation Plan is intended to be consistent and compatible with the plans and programs of the Washington State Department of Transportation (WSDOT), Puget Sound Regional Council (PSRC), Snohomish County and Community Transit, as discussed below.

1.4.3 Consistency with TRANSPORTATION 2040 and VISION 2040

Regional transportation planning organizations (RTPO) are required to develop a regional transportation plan that looks at least 20 years into the future to project the region's needs, conditions and resources. The RTPO also develops a six-year transportation improvement program, which identifies funding for transportation projects and programs. The Puget Sound Regional Council is the RTPO for Snohomish County, as well as King, Kitsap and Pierce counties. PSRC has developed a regional planning document, VISION 2040, that provides a regional framework for achieving GMA goals by building on local, county, regional and state planning efforts. PSRC has established a set of regional guidelines and principles, or *Multicounty Planning Policies,* found in VISION 2040. VISION 2040 has four sections: a sustainable environment framework, the *Regional Growth Strategy,* Multicounty Planning Policies, and implementation.

The Growth Management Act requires PSRC to formally certify transportation-related provisions in local transportation plans, addressing consistency with the Multicounty Planning Policies in VISION 2040*,* the regional transportation plan (TRANSPORTATION 2040), and requirements in the Growth Management Act. A new requirement in VISION 2040 is that all local comprehensive plans include a brief statement in the plan itself on how the plan addresses VISION 2040.

> *The City of Arlington's Transportation 2035 Plan, 2017 Update supports the goals and strategies presented in PSRC's VISION 2040 and Destination 2030 Update. Regional Growth Strategies, Multicounty Planning Policies and specific projects identified in the Destination 2030 Update have been incorporated in this document, and include:*
>
> - *Sustainable transportation, including transit and non-motorized improvements*
> - *Higher density land use near transportation centers*
> - *Improvements to support freight mobility*

- *Multiple east-west and north-south corridors to address disaster response*
- *Access management*
- *Context sensitive road standards*
- *Implementation of improvements of regional significance (trails, transit centers, park and rides)*
- *Complete streets providing for multi-modal transportation*
- *Connectivity with adjacent jurisdictions*
- *Transportation funding strategies*

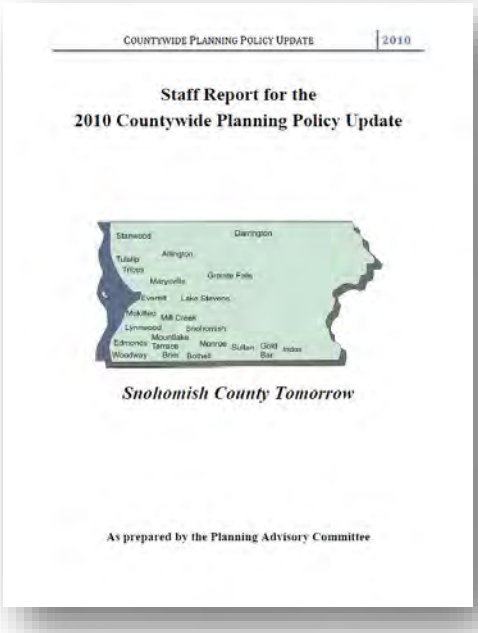
1.4.4 Washington State Department of Transportation

The Washington State Multimodal Transportation Plan (SMTP) is the state's overall transportation plan that will include an analysis of facilities the state owns and those in which the state has an interest. The Highway System Plan (HSP) is a component of the state's long-range transportation plan, which guides investments on state routes in Washington. State projects must be included in the HSP before they can receive funding and move forward. The HSP is updated every two years and serves as the basis for the six-year highway program and the two-year biennial budget request to the State Legislature.

The City's Transportation 2035 Plan, 2017 Update is consistent with the WSDOT SMTP through the goals and policies within the plan that support and encourage alternative transportation modes, such as carpool, vanpool, transit, biking or walking.

Continued

1.4.5 Snohomish County and Adjacent Cities



Countywide Planning Policies (CPPs) establish a countywide framework for developing and adopting county and city comprehensive plans. The role of the CPPs is to coordinate comprehensive plans of jurisdictions in the same county for regional issues or issues affecting common borders. The multicounty planning policies for transportation call for better integrated land use and transportation planning, with a priority placed on cleaner operations, dependable financing mechanisms, alternatives to driving alone, and lower transportation-related energy consumption. CPPs were last updated in June, 2011. The County's and cities' comprehensive plans will be made consistent with the vision and policies in the Countywide Planning Policy Update.

The City works closely with adjacent jurisdictions to address transportation issues and mitigate impacts. Snohomish County and the City established an interlocal agreement in 1999 to address joint transportation system planning and traffic impact mitigation. The City of Arlington, WSDOT, Snohomish County and Marysville coordinate in the Smokey Point/Island Crossing corridor to monitor development and plan improvements within the West Arlington Sub Area Plan.

1.4.6 Community Transit

Community Transit is a regional transportation provider that operates 30 local routes and 23 commuter routes to Seattle. Three routes provide bus service for the City of Arlington. The City supports Community Transit's strategic plans and coordinates with the agency to identify how transit needs should be addressed, particularly as new development occurs.

1.4.7 Federal and State Air Quality Regulations

The City of Arlington is required to adopt a transportation plan that conforms with the State Implementation Plan for Air Quality. The City has included the Puget Sound Clean Air Agency (PSCAA) policies in its comprehensive plan to address federal and state clean air legislation, and has goals and policies in place to reduce travel demand, reduce vehicle emissions of carbon monoxide and ozone air pollutants. These include support of transportation alternatives through Commute Trip Reduction (CTR) programs for major employers, construction of bikeways, walkways and trails, as well as intersection and signal improvements that reduce vehicle idling.

The U.S. Environmental Protection Agency has set federal standards for seven air pollutants: fine particulate matter, larger particulate matter, ozone, carbon monoxide, sulfur dioxide,

nitrogen dioxide and lead. The City of Arlington and all of Snohomish County are in an attainment area for all federally monitored air pollutants.

1.5 CONCURRENCY

The Growth Management Act requires that transportation facilities are to be in place at the time development is completed or that a commitment has been made to complete the facilities within six years. For transportation facilities, the City has adopted a transportation impact fee to be assessed to all development projects within the city based upon the PM peak hour trips generated by the project and to be used for system improvements reasonably related to the new development. As a part of the SEPA review of a project, potential impacts to the transportation network are identified and mitigation is required to ensure the City's LOS standards are met concurrent with the additional travel demand generated by each development project. Non-motorized, pedestrian, and other multimodal options are considered and are included in required mitigation. The City of Arlington also has entered into an interlocal agreement with Snohomish County for reciprocal mitigation of transportation impacts.

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City of Arlington

Figure 1-1
Current Zoning

Zoning

- SR = Suburban Residential
- RLMD = Low to Moderate Density Residential
- RMD = Moderate Density Residential
- RHD = High Density Residential
- OTRD = Old Town Residential District
- NC = Neighborhood Commercial
- OTBD - 1 = Old Town Business District 1
- OTBD - 2 = Old Town Business District 2
- OTBD - 3 = Old Town Business District 3
- GC = General Commercial
- HC = Highway Commercial
- BP = Business Park
- LI = Light Industrial
- GI = General Industrial
- P/SP = Public/Semi-Public
- MS = Medical Services
- AF = Aviation Flightline

Legend

- Arlington City Limits
- Arlington UGA
- Airport
- Rail line
- Rest area
- City of Marysville

N W E S

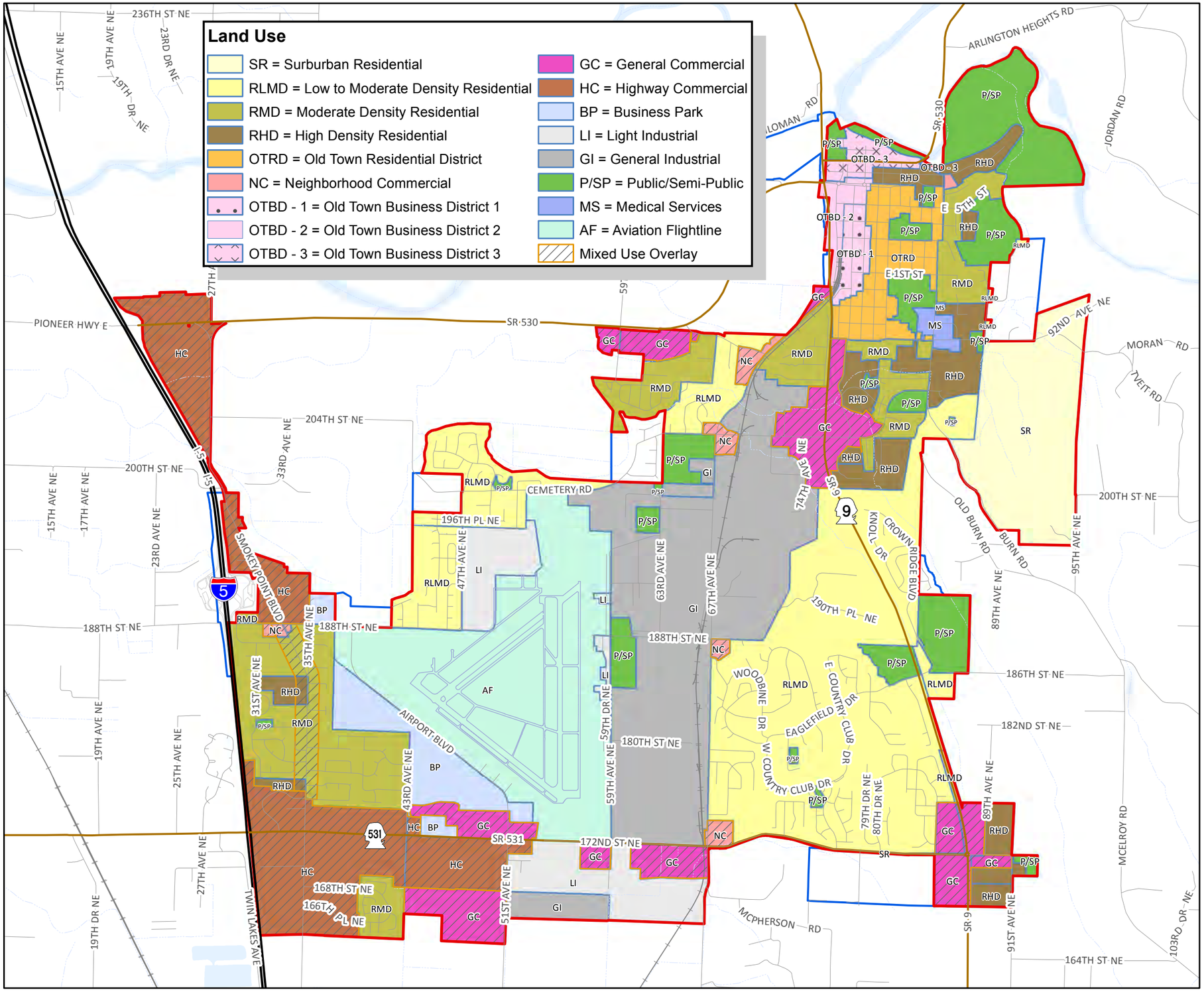
Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

0 0.25 0.5 1 Miles

6/7/2017

Figure1-1Zoning11x17_17

kdh



City of Arlington

Figure 1-2
Future Zoning
(Land Use)

2017 Update

Legend

- Arlington City Limits
- Arlington UGA
- Airport
- Rail line
- Rest area

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

0 0.25 0.5 1 Miles

6/7/2017

Figure1-2LandUse11x17_17

kdh

City of Arlington

Figure 1-3
Planning Focus Areas

2017 Update

Legend

Focus Areas (primary ones outlined in yellow)

- Airport Business Park
- Hilltop
- Kent Prairie
- Brekhus/Beach
- Island Crossing
- MIC (South of 172nd)

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.225 0.45 0.9 Miles

6/7/2017

Figure1-3FocusAreas11x17_17

kdh

Network Plan

- Roundabout, 2 lane
- Signal/Turn lanes
- Proposed Trails
- Local
- Local Collector
- Collector Arterial (3 lane); Collector (3 lane)
- Arterial (5 lane)
- New Local
- New Local Collector
- New Collector Arterial (3 lane)
- New Arterial (4 lane)

NOTE: Improvement presented here reflect what is presented in the West Arlington Sub-Area Plan (February 7, 2011). Some projects may have been completed.

River Trail

View Deck

35th Ave/Smokey Point Blvd Improvements

Possible Future Freeway Interchange See CIP project R31

SR-530

204TH ST NE

HIGH CLOVER BLVD NE

CEMETERY RD

59TH AVE NE

23RD AVE NE

45TH DR NE

47TH AVE NE

62ND AVE NE

63RD AVE NE

59TH DR NE

188TH ST NE

WOODLANDS WAY

180TH ST NE

UPLAND DR

SMOKEY POINT BLVD

35TH AVE NE

31ST AVE NE

31ST DR NE

177TH PL NE

AIRPORT BLVD

43RD AVE NE

19TH AVE NE

25TH AVE NE

SPRING LAKE AVE

LAKEWOOD RD HWY 531

SR-531

172ND ST NE

168TH ST NE

51ST AVE NE

TWIN LAKES AVE

11TH AVE NE

19TH DR NE

City of Arlington

Figure 1-4
West Arlington Proposed Road and Pedestrian Network Plan

Legend

- West Arlington Sub-Area
- Arlington City Limits
- Arlington UGA
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.175 0.35 0.7 Miles

Date: 2/29/2016

File: Figure1-4_11x17_16

Cartographer: kdh

2 Goals and Policies

The Transportation Goals and Policies comprise the plan for providing the transportation system needed to accommodate the growth and development expected to be in place by 2035 and meet the requirements of the GMA. Since this Plan is consistent with the policy elements identified in VISION 2040, it identifies regional goals and policies that will be implemented through the actions of the Washington State Department of Transportation, Puget Sound Regional Council, and other regional agencies or local jurisdictions.

2.1 TRANSPORTATION GOALS AND POLICIES

A general goal statement is followed by policies which will help achieve the goal. Goals and policies are applicable to all land use designations unless otherwise indicated.

Goal T-1 ***System Development***: Plan, develop, and maintain a balanced transportation system for the efficient movement of people, goods, and services within the city and between the community and other activity centers in the region.

Policies:

PT- 1.1 The City of Arlington's most current Comprehensive Transportation Plan adopted by City Council contains the City's official goals and policies, roadway classifications, rights-of-way, and levels of transportation service.

PT-1.2 The City of Arlington's most current Comprehensive Transportation Plan adopted by City Council contains the City's official plan for pedestrian movement via trails and walkways.

PT-1.3 Ensure that safe, convenient, and efficient transportation facilities are provided for all residents of and visitors to the City. This will include improvements to existing facilities as well as extensions to serve growth areas.

PT-1.4 Design the street system to enable walkability, encourage alternative modes of transportation and distribute traffic evenly throughout the City. Explore opportunities to improve the operational and energy efficiency of the existing system through investments in operations and system management.

PT-1.5 Sign and maintain Truck Route(s) and enforce their use.

PT-1.6 Encourage the use and growth of the Arlington Airport by ensuring easy access to the Airport via City streets by both automobiles and trucks.

PT-1.7 Encourage the use of the railroad by ensuring easy access to railroad loading stations via City streets by both automobiles and trucks and by ensuring efficient travel of the railroad where it crosses City streets.

PT-1.8 Provide opportunities for public review and comment in significant transportation decision making.

PT-1.9 Require developers to construct those streets directly serving new development and to pay a fair-share fee for specific off-site improvements necessary to mitigate any adverse impacts determined through the review to be created by the development.

PT-2.0 Develop and implement a Complete Streets Program to ensure that all transportation projects include safe and appropriate facilities for pedestrians, bicyclists, transit users accommodating persons of all ages and abilities. This plan should also identify locations for park and ride facilities.

Goal T-2 ***Land Use Coordination:*** Ensure that new road development meets the goals of the Transportation Plan and land-use identified in the City's current GMA Comprehensive Plan.

Policies:

PT-2.1 Coordinate land use proposals and density of development identified in the Land Use Element of the GMA Comprehensive Plan with transportation centers within the City to support and encourage the use of public transit.

PT-2.2 Encourage land use patterns that facilitate multi-purpose trips and reduce the number and length of trips by single-occupancy vehicles.

PT-2.3 Prepare long-range plans for future highway and arterial roadways providing direct connections and adequate rights-of-way in consideration for existing and future development.

Goal T-3 ***Concurrency*:** Ensure concurrency by providing an effective roadway network with adequate capacity to meet the demand for travel within the City at the adopted Level of Service (LOS) standard.

Policies:

PT-3.1 Periodically review and revise, if necessary, existing levels of service and the concurrency management system as part of the Comprehensive Plan update.

PT-3.2 Review all development proposals to ensure coordination with the Transportation Element.

PT-3.3 Ensure that all development permits that are approved require transportation improvements that are in accordance with Arlington's ability to provide and/or maintain the adopted levels of service. Transportation dedications and improvements for projects that exceed the existing level of service shall be in place with the final approval of a subdivision or short plat or at the time of final building inspection for non-subdivision projects. In lieu of immediate installation of such improvements, and as a condition of permit approval by the City, a performance bond or other security mechanism may be provided by the developer guaranteeing installation within six years of final approval.

PT-3.4 Traffic impacts of proposed projects shall be determined through project-provided impact assessment reports, which shall be required of every project for which the concurrency test must be applied. The City may waive this requirement where such impacts may be determined administratively and/or the project applicant agrees to mitigate any administratively determined impacts.

PT-3.5 Final acceptance of a project cannot be granted until and unless the transportation facilities identified in this plan are in place, or some form of security is in place guaranteeing its completion. This includes roads (including curb, gutter, sidewalks, and planter strips), trails, or other transportation facilities described in this Transportation Plan within the confines of that property.

Goal T-4 ***Sub-Area Standards for Traffic Facilities:*** Consider the special needs of subarea transportation facilities including appearance and safety.

Policies:

PT-4.1 Improving the appearance of existing corridors shall be a primary objective in designing and maintaining the street system in Arlington. Appropriate design standards, including landscape requirements, for the construction of new streets shall be maintained.

PT-4.2 The City will, to the extent feasible, preserve existing street trees where they don't adversely affect roadway capacity, safety, or structural integrity.

PT-4.3 In order to preserve the character of neighborhoods, City Council may adopt reduced road standards for built neighborhoods, where necessary, for the provision of safer pedestrian or bicycle access.

PT-4.4 Private streets are prohibited and shall not be created for subdivided residential development. Private streets in commercial and Multi-Family development will be allowed on a case-by-case basis upon approval of the City Engineer. The City will accept existing private streets for ownership and maintenance only if they are consistent with City of Arlington adopted design standards and their acceptance will result in a benefit to Arlington.

PT-4.5 Residential development access is restricted to local or collector streets. Direct access from any new residential lot is not allowed to an arterial road unless the Council determines there are no other practical options. (Applicable to SR, R-LMD, R-MD, R-HD, and OT land use designations only.)

PT-4.6 The following guidelines shall be used in the review of all proposed plats:

(a) Design local residential streets in such a manner so as to prevent or discourage through traffic.
(b) Access to all new residential development is required to be made onto local or collector streets, and is not allowed directly from any new residential lot to an arterial road.
(c) Cul-de-sacs will only be allowed when there is no alternative. If a cul-de-sac is approved for use, they should meet these standards:

(1) they should be no longer than 600 feet in length.
(2) two access points are required if the area attracts 150 people or more (including employees and customers) at any one time (new or a combination of new and existing).
(3) development of the road will be limited to 24 units, or 49 units if a fire hydrant exists on the street.

PT-4.7 Maintain access standards for all development to limit the number and location of curb cuts on arterial streets.

PT- 4.8 All developments in all zoning districts shall provide a sufficient number of parking spaces to accommodate the number of vehicles that ordinarily are likely to be attracted to the development.

PT-4.9 In residential areas, sidewalks shall be installed on both sides of the street to improve pedestrian safety.

PT-4.10 Require new construction to include the construction of sidewalks, bicycle storage/parking facilities, and access to mass transit where possible and in proportion to the need generated by the proposal.

PT-4.11 Sidewalks shall be at least five feet in width, on both sides of streets, and constructed according to specifications set forth in administrative policies. This does not apply to areas that are controlled by the Mixed Use Design Regulations and prescribed Frontage Types.

PT-4.12 Encourage new development to provide pedestrian access from the development to schools, parks, playgrounds, or other roads or facilities if such access is not conveniently provided by sidewalks adjacent to the streets as required above. In such a case, the developer may be required to reserve an unobstructed easement of at least 10 feet in width to provide this access.

PT-4.13 All public streets shall be constructed with curb, gutter, sidewalk, and landscape strips and street trees unless otherwise approved by city engineer due to site constraints or where the use of Low Impact Design (LID) storm water facilities are to be utilized.

Goal T-5 ***Non-motorized system development:*** Develop transportation strategies that encourage the use of pedestrian, bicycle, and mass transit facilities that will lead to savings of nonrenewable energy sources.

Policies:

PT-5.1 Provide for safe and efficient movement of bicycles and pedestrians along streets and highways by constructing sidewalks and other footpath systems as well as bicycle paths.

PT-5.2 Encourage the use of bicycles as a transportation alternative by providing bicycle lanes on arterial and collector streets.

PT-5.3 Provide adequate traffic signs to assist in safeguarding pedestrians, bicycle riders, and especially children on streets near schools and playgrounds.

PT-5.4 Construct a bicycle path and pedestrian trail that connects the schools and downtown area with athletic fields/parks near the airport.

PT-5.5 Revenue designated to sidewalk improvements should be prioritized to first facilitate safe movement for elderly and handicapped persons between residences and shopping/social activity centers, and facilitate safe movement for children to and from school facilities and school bus stops.

PT-5.6 Provide ramps and curb cuts that comply with the Americans with Disabilities Act.

PT-5.7 Provide street lighting along sidewalks to encourage nighttime use and for safety.

PT-5.8 Coordinate bicycle/pedestrian facility improvements, including the Centennial and Airport Trails, with neighboring jurisdictions to connect routes where possible.

PT-5.9 Encourage private development to incorporate measures or facilities that encourage alternate modes of transportation, such as showers/dressing rooms, locker, and bike lockers.

PT-5.10 All new public facilities should incorporate measures or facilities that encourage alternate modes of transportation, such as showers/dressing rooms, locker, and bike lockers.

PT-5.11 Protect existing mass transit rights-of-way.

PT-5.12 Develop and implement a Crosswalk Program that standardizes crosswalks and crossing devices at all locations where pedestrians, bicycles, trails or other non-motorized traffic cross a road.

PT- 5.13 Develop a bicycle commuter strategy, involve local users of all levels to define all needs. Update standards to improve bike safety and mobility.

Goal T-6 ***Transit system development:*** Support the use of transit and work with transit agencies to improve service in order to control traffic demand.

Policies:

PT-6.1 Continue to coordinate with all agencies and neighboring jurisdictions involved with public transportation, whether they be bus, HOV lanes, light rail, heavy rail, ride sharing, vanpooling, or other forms, to identify what is of best use to the citizens of the City and participate in those ventures and proposals which are of general and/or specific benefit to the citizens of the City.

PT-6.2 Coordinate with surrounding communities to support public education programs and land use strategies to encourage the use of public transportation.

PT-6.3 The City hereby adopts the transit levels of service used by Community Transit.

PT-6.4 Encourage developers to consider public transportation in transportation plans submitted as part of development permit approval consideration. New developments should encourage van and carpooling, public transit use, and other alternatives to reduce single-occupancy vehicular travel.

PT-6.5 Encourage major employers to develop carpools, commuter routes, and provide company incentives if carpools are used.

PT-6.6 Encourage and plan for "pedestrian-scale" neighborhoods and centers to enhance access and mobility for public transportation users.

PT-6.7 Identify locations to encourage safe and convenient modes of transportation (e.g. Uber, Lyft, etc.).

Goal T-7 ***Roadway system safety and maintenance:*** Maintain and enhance the safety of the transportation system.

Policies:

PT-7.1 Maintain necessary traffic data such as traffic counts and accident data to support planning of traffic safety improvements.

PT-7.2 Prioritize safety improvements based on data collected per PT-7.1, above.

PT-7.3 Prioritize the maintenance of roads according to condition, putting the roads in poor condition ahead of others.

PT-7.4 Develop design criteria for the signing of streets, including uniform lettering, colors and placement of all new street signs.

PT-7.5 Adopt appropriate guidelines from the most current WSDOT adopted version of the Manual on Uniform Traffic Control Devices (MUTCD) regarding maintenance of traffic control devices and perform regular and requested maintenance activities related to traffic control devices and roadway material within those guidelines.

PT-7.6 Identify specific high accident intersections on both the collector and arterial system and develop and implement appropriate plans to effectively lower the accident rate, with a goal of achieving the state's goal of zero deaths and disabling injuries.

Goal T-8 ***Non-motorized system safety:*** Develop transportation and safety policies that encourage the use of non-motorized transportation (i.e., walking and biking) and reduce the chance of accidents.

Policies:

PT-8.1 Prioritize sidewalk and shoulder improvements in areas of high traffic volumes or pedestrian activity to improve safety of pedestrians and drivers.

PT-8.2 Under special circumstances, the City Council and/or City Engineer may install temporary safety improvements (such as widened asphalt shoulders, etc.) in lieu of full improvements where they are able to make at least the following findings:

(a) There is a significant overwhelming public need to improve pedestrian safety along the road on which the project is proposed, and the project will substantially do so.
(b) The project is intended to be a temporary solution until a full street improvement project can be funded.
(c) The project is designed in such a way as to not preclude eventual full-standard development.
(d) If the full street improvement project is listed on the City's 6-year Transportation Improvement Plan, it will not be removed from the TIP because of the temporary improvements.

Goal T-9. ***Critical areas and transportation*****:** Design and build roads to minimize environmental impacts to natural areas and critical areas.

Policies:

PT-9.1 Minimize and mitigate the adverse impacts of transportation facilities and services on designated critical areas, resource lands, cultural resources, or parks through the implementation of performance standards.

PT-9.2 Discourage roadway construction in critical areas.

PT-9.3 Develop the transportation system in a manner that encourages conservation of energy and natural resources.

PT-9.4 Route new roads so as to avoid traversing publicly-owned natural preserves, parks and recreation areas, and areas identified as critical wildlife habitat, except in cases of overriding public interest.

PT-9.5 Roads should follow a grid system as best possible; though should meander so as to avoid environmentally critical areas.

PT-9.6 Any culverts, bridges, or other road crossings over or through critical areas shall be designed to meet WDFW current Fish Passage guidelines.

PT-9.7 Avoid building roads in areas prone to natural hazards.

PT-9.8 Reduce air pollution emissions associated with land uses and transportation in accordance with national, state, regional, and local policies and standards.

Goal T-10 ***Surface water and transportation:*** Allow for alternative design standards and/or materials to reduce impervious surfaces and improve more natural forms of drainage.

Policies:

PT-10.1 Explore the feasibility of reducing the amount of total impervious surface used in right-of-ways, sidewalks, parking lots and roads by using new pervious materials (e.g., grasscrete, EssentialSoil, etc.) Applications of these technologies will be approved on a case-by-case basis by the City Engineer.

PT-10.2 Investigate modifications to detention requirements, including the use of new designs and/or materials that improve drainage.

PT-10.3 All road construction projects shall meet or exceed the minimum requirements for stormwater runoff.

PT-10.4 Evaluate and utilize the use of L.I.D techniques in lieu of conventional methods of stormwater treatment/control wherever possible.

PT-10.5 Create programs to evaluate, monitor and maintain existing and new Low Impact Design facilities.

PT-10.6 Partner with Snohomish County and other local jurisdictions to promote public outreach related to pollution reduction programs.

PT-10.7 Retrofit existing roadways to meet or exceed current stormwater requirements where possible.

Goal T-11 ***Interjurisdictional Coordination:*** Coordinate transportation planning efforts with adjacent and regional jurisdictions.

Policies:

PT-11.1 Work with WSDOT, Snohomish County and Marysville in planning transportation-related facilities within and adjacent to the UGA.

PT-11.2 Maintain a working relationship with regional planning agencies to assure that regional transportation plans are consistent with Arlington's current GMA Comprehensive Plan. The City has executed an interlocal agreement with Snohomish County to address traffic mitigation and standardized methodologies for evaluating transportation systems and a Memorandum of Understanding (MOU) with the City of Marysville regarding transportation improvement of mutual benefit. The City of Arlington will pursue updates to these agreements consistent with on-going planning and development.

PT-11.3 Coordinate with the PSRC Regional Transportation Planning Organization to ensure consistency and compatibility between transportation plans.

PT-11.4 Review impacts to the City created by the actions of other agencies. Actively solicit action by the State of Washington and Snohomish County to implement those improvements necessary to their respective facilities to maintain the level of service standards adopted by the City. Such improvements shall be built to conform to State and County standards, as appropriate.

Goal T-12 ***Transportation System Priorities and Financing:*** Prioritize and finance transportation improvements consistently with the capital facilities estimate, and investigate all possible avenues of paying for the improvements for availability and fairness.

Policies:

PT-12.1 Adopt the Six-Year Transportation Improvement Program (TIP), correlated with improvements identified in the Transportation Element and the Capital Facilities Element, as part of the Transportation Element of the

comprehensive Plan. The City will update the TIP annually as projects are completed and re-prioritized on an annual basis.

PT-12.2 Require developers to pay for improvements related to new developments, including upgrading of existing facilities, on a proportionate share basis and according to calculated impacts to LOS.

PT-12.3 Update transportation improvement cost estimates annually to determine appropriate shares from developers and users as established.

PT-12.4 Investigate alternative methods of obtaining financing for transportation improvements, including: local option taxes, bonding, Local Improvement Districts, combining efforts with other agencies, investigating all possible grant and loan opportunities such as the Intermodal Surface Transportation Efficiency Act funding, and interlocal agreements for mitigation costs with Snohomish County.

PT-12.5 If funding is unavailable, or if development is progressing beyond the ability to provide sufficient transportation facilities, the City should consider development moratoriums, as necessary, until the transportation facilities can be brought into alignment with approved LOS.

PT-12.6 Direct resources to ensure that existing transportation system is maintained adequately.

PT-12.7 Create a Multimodal LOS program that evaluates and addresses the movement of people and goods using multiple transportation modes.

Goal T-13 ***Air Quality****:* Minimize air quality impacts caused by the transportation system.

Policies:

PT-13.1 The quality of air in and around the Puget Sound region is an important factor in the high quality of life enjoyed by residents living in our community. To help enhance and maintain high air quality standards, Arlington commits to meeting federal and state air quality requirements and will work with the state, region and local agencies or jurisdictions to develop transportation control measures and/or similar mobile source emission reduction programs that may be warranted to attain or maintain air quality requirements.

PT-13.2 The City's transportation system shall conform to the federal and state Clear Air Acts by maintaining its conformity with the Metropolitan Transportation Plan of the Puget Sound Regional Council and by following the requirements of

Chapter 173-240 of the Washington Administrative Code, which may include development of transportation control measures and air quality programs.

PT-13.3 The City supports regional and localized efforts to encourage environmentally sustainable transportation practices, including:
(a) Promotion of cleaner travel choices;
(b) Promotion of alternatives to driving alone – including carpooling, biking, telecommuting and using transit.

2.2 MULTICOUNTY PLANNING POLICIES

The Multicounty Planning Policies that were adopted in *Vision 2040* serve as the regional guidelines and principles used for certification of local policies and plans. The Arlington 2035 Transportation Plan, 2017 Update is consistent with *Vision 2040* and includes the adopted regional goals and policies in this Transportation Plan.

Environment

Goal: The region will safeguard the natural environment by meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Policies:

MPP-En-3 Maintain and, where possible, improve air and water quality, soils, and natural systems to ensure the health and well-being of people, animals and plants. Reduce the impacts of transportation on air and water quality, and climate change.

MPP-En-7 Mitigate noise caused by traffic, industries, and other sources.

Goal: The region will reduce its overall production of harmful elements that contribute to climate change.

Policies:

MPP-En-19 Continue efforts to reduce pollutants from transportation activities, including through the use of cleaner fuels and vehicles and increasing alternatives to driving alone, as well as design and land use.

Goal: The region will reduce its overall production of harmful elements that contribute to climate change.

Policies:

MPP-En-20 Address the central Puget Sound region's contribution to climate change by, at a minimum, committing to comply with state initiatives and directives regarding climate change and the reduction of greenhouse gases. Work to include an analysis of climate change impacts when conducting an environmental review process under the State Environmental Policy Act.

MPP-En-21 Reduce the rate of energy use per capita, both in building use and in transportation activities.

MPP-En-23 Reduce greenhouse gases by expanding the use of conservation and alternative energy sources and by reducing vehicle miles traveled by increasing alternatives to driving alone.

MPP-EN-24 Create a public outreach program that provides education, promotes awareness and emphasizes the importance of these goals.

Goal: The region will use design to shape the physical environment in order to create more livable communities, better integrate land use and transportation systems, and improve efforts to restore the environment.

Policies:

MPP-DP-41 Allow natural boundaries to help determine the routes and placement of infrastructure connections and improvements.

Goal: The region's communities will be planned and designed to promote physical, social, and mental well-being so that all people can live healthier and more active lives.

Policies:

MPP-DP-43 Design communities to provide an improved environment for walking and bicycling.

MPP-DP-45 Promote cooperation and coordination among transportation providers, local government, and developers to ensure that joint- and mixed-use developments are designed to promote and improve physical, mental, and social health and reduce the impacts of climate change on the natural and built environments.

MPP-DP-54 Develop concurrency programs and methods that fully consider growth targets, service needs, and level-of-service standards. Focus level-of-service standards for transportation on the movement of people and goods instead of only on the movement of vehicles.

MPP-DP-55 Address non-motorized, pedestrian, and other multimodal types of transportation options in concurrency programs – both in assessment and mitigation.

Goal: As a high priority, the region will maintain, preserve, and operate its existing transportation system in a safe and usable state.

Policies:

MPP-T-1 Maintain and operate transportation systems to provide safe, efficient, and reliable movement of people, goods and services.

MPP-T-2 Protect the investment in the existing system and lower overall life-cycle costs through effective maintenance and preservation programs.

MPP-T-3 Reduce the need for new capital improvements through investments in operations, pricing programs, demand management strategies, and system management activities that improve the efficiency of the current system.

MPP-T-4 Improve safety of the transportation system and, in the long term, achieve the state's goal of zero deaths and disabling injuries.

MPP-T-5 Foster a less polluting system that reduces the negative effects of transportation infrastructure and operation on the climate and natural environment.

MPP-T-6 Seek the development and implementation of transportation modes and technologies that are energy-efficient and improve system performance.

MPP-T-7 Develop a transportation system that minimizes negative impacts to human health.

MPP-T-8 Protect the transportation system against disaster, develop prevention and recovery strategies, and plan for coordinated responses.

Goal: The future transportation system will support the regional growth strategy by focusing on connecting centers with a highly efficient multimodal transportation network.

Policies:

MPP-T-11 Prioritize investments in transportation facilities and services in the urban growth area that support compact, pedestrian- and transit-oriented densities and development.

MPP-T-13 Make transportation investments that improve economic and living conditions so that industries and skilled workers continue to be retained and attracted to the region.

MPP-T-14 Design, construct, and operate transportation facilities to serve all users safely and conveniently, including motorists, pedestrians, bicyclists, and transit users, while accommodating the movement of freight and goods, as suitable to each facility's function and context.

MPP-T-15 Improve local street patterns – including their design and how they are used – for walking, bicycling, and transit use to enhance communities, connectivity, physical activity, and discourage auto dependency.

MPP-T-16 Promote and incorporate bicycle and pedestrian travel as important modes of transportation by providing facilities and reliable connections.

MPP-T-20 Design transportation facilities to fit within the context of the built or natural environments in which they are located.

MPP-T-22 Implement transportation programs and projects in ways that prevent or minimize negative impacts to low-income, minority, and special needs population.

MPP-T-23 Emphasize transportation investments that provide and encourage alternatives to single-occupancy vehicle travel and increase travel options, especially to and within centers and along corridors connecting centers.

MPP-T-24 Increase the proportion of trips made by transportation modes that are alternatives to driving alone.

MPP-T-25 Ensure mobility choices for people with special transportation needs, including persons with disabilities, the elderly, the young, and low-income populations.

MPP-T-26 Strategically expand capacity and increase efficiency of the transportation system to move goods, services, and people to and within the urban growth area. Focus on investments that produce the greatest net benefits to people and minimize the environmental impacts of transportation.

MPP-T-29 Promote the preservation of existing rights-of-way for future high-capacity transit.

MPP-T-30 Encourage public and private sector partnerships to identify and implement improvements to personal mobility and freight movement.

MPP-T-31 Support effective management of existing air transportation capacity and ensure that future capacity needs are addressed in cooperation with responsible agencies, affected communities, and users.

MPP-T-32 Integrate transportation systems to make it easy for people and freight to move from one mode or technology to another.

Goal: The region will support development with adequate public facilities and services in a coordinated, efficient, and cost-effective manner that supports local and regional growth planning objectives.

Policies:

MPP-PS-1 Protect and enhance the environment and public health and safety when providing services and facilities.

MPP-PS-2 Time and phase services and facilities to guide growth and development in a manner that supports the regional vision.

MPP-PS-3 Promote demand management and the conservation of services and facilities prior to developing new facilities.

2.3 COUNTYWIDE PLANNING POLICIES FOR SNOHOMISH COUNTY

Countywide Planning Policies (CPPs) establish a countywide framework for developing county and city comprehensive plans. The CPPs coordinate comprehensive plans of jurisdictions for regional issues or issues affecting common borders, and are required by law to be consistent with Multicounty Planning Policies. Snohomish County, the cities within the county, and the Tulalip Tribes have recently updated the county's CPPs to ensure the policies are consistent with *Vision 2040.* The County Wide Planning Policies for Snohomish County, adopted June 1, 2011, include the transportation goals and policies that are intended to guide transportation planning by the City of Arlington and provide the basis for regional coordination with WSDOT, PSRC and transportation operating agencies.

3 Existing Conditions

3.1 ROADWAY SYSTEM

Under the GMA, comprehensive plans are required to include inventories for each transportation system, including roadways, transit, bicycles, pedestrians, freight, and airports within the borders of the jurisdiction. Cities are required to adopt level of service (LOS) standards to ensure the transportation improvements and services are available to serve existing communities as well as proposed development *(see Section 3-11 and Appendix C for greater explanation on LOS)*.

GMA requires that transportation capacity be evaluated concurrent with development. The City has adopted a concurrency ordinance to ensure the provision of adequate transportation facilities to serve development at the time it is to be occupied, or within six years. The Growth Management Act was amended in 2005 to include walking, bicycling and transit in addressing concurrency.

The City of Arlington's transportation system is multimodal and encompasses different modes of travel for moving people and freight throughout the City and region. Although the automobile remains the principal mode of travel and the roadway system provides the primary means for travel throughout the Arlington area, City goals and policies take into account people-moving capacity in addition to the automobile.

3.1.1 Functional Classification

Streets function as a network. Functional classification groups streets and highways into classes according to the type of service they are intended to provide. These classifications are directly related to road characteristics such as Average Daily Traffic (ADT), number of lanes, lane width, posted speed limit, and pavement thickness/design.

The City of Arlington uses a four level functional classification system. A description of the classifications and their characteristics are presented in the text and table below. A map of the City's roadway system and City Functional Classification is shown on **Figure 3-1.**

- **Arterials** provide for movement across and between large subareas of the city or for movement within large subareas of the city. They may also serve secondary traffic generators and traffic from neighborhood to neighborhood within a large community. ADT volumes typically range from 1,000 to 2,000 vehicles.

- **Collectors** promote the flow of vehicles, bicycles and pedestrians from arterial roads to lower-order roads. Secondary functions are to serve abutting land uses and accommodate public transit. ADT volumes typically range from 1,000 to 2,000 vehicles.

- **Local Access/Residential Roads** are designed to convey vehicles, pedestrians and bicycles to and from destination points (centers, neighborhoods) to higher-order roads. Local access roads do not carry through traffic. Traffic volumes of 250 ADT or less are typical.

- **Alleys** are access roads, paved or unpaved, that do not carry any through traffic. Alleys allow direct access to a property or building from a higher level road. Traffic volumes of 250 ADT or less are typical.

Arlington Functional Classification	ADT	Speed (mph)	ROW
Arterial	2,000 +	35 mph	60-110 feet
Collector	250 – 2,000	25 mph	60 feet
Residential/Local	250 or less	25 mph	50 feet
Alley	250 or less	15 mph	24 feet

In the State of Washington, roadway classification is also based upon guidelines prepared by the Federal Highway Administration (FHWA) and administered by WSDOT. Some of Arlington's primary roadways are classified under the stated/federal functional classification system as principal arterials, minor arterials, collectors, and local access roads. Classification under this state/federal system allows the City to coordinate traffic and freight movement with the state and also opens these classified roads for state and federal funding. A map of the City's roadways that are classified under the sate/federal functional classification system is shown on **Figure 3-2**.

3.1.2 State-Owned Facilities

The state highway system provides access to and through Arlington. Four major transportation routes run along the City on four sides: I-5 to the west, SR-9 on the east, SR-530 to the north, and SR-531 to the south. In addition to serving as a primary transportation corridor on Arlington's northern border, SR-530 serves to connect the communities of Oso and Darrington to I-5. The location of these state-owned facilities are shown on **Figure 3-3**. Classifications of these state owned facilities along with 2014 average traffic volumes are as follows:

Route	Classification	Average Traffic Volume (2014)
I-5	Interstate	40,001 - 80,000
SR-9	Other Fwy Expwy	10,001 - 20,000
SR-530	Other Principal Arterial	10,001 - 20,000
SR-531	Minor Arterial	10,001 - 20,000

3.1.3 Highways of Statewide Significance

Highways of Statewide Significance (HSS) include interstate highways and other principal arterials that connect major communities in the state. The designation helps assist with the allocation and direction of funding. The HSS was mandated by the 1998 legislature, and in 1999, legislation was passed that WSDOT update the HSS at least every five years.

Interstate 5, SR-9 from SR 522 near Woodinville to SR-530, and SR-530 from I-5 to SR-9 are classified as HSS routes. WSDOT is responsible to plan for improvements to facilities and services of statewide significance in the statewide multimodal transportation plan. Although it consults with local governments when setting level of service standards, WSDOT retains the authority to establish the standard.

3.2 PUBLIC TRANSPORTATION

3.2.1 Public Transit

Community Transit has served the City of Arlington since 1980. The agency operates 30 local routes, including Swift bus rapid transit and 23 commuter routes to Seattle. *Swift* was the State's first bus rapid transit line, running between Everett Station and Aurora Village. The 2015-2020 Transit Development Plan proposes adding 67,000 hours of new bus service over the next six years. However, the planned increases are still less than the services that were cut during the recent recession.

The agency's Long Range Transit Plan draft was completed in 2011. The plan proposes Transit Emphasis Corridors, which are principal arterials and/or state routes with a mixture of core commercial, high-density residential, suburban and rural development. These transit-emphasis corridors include high densities of housing and jobs in proximity with one another, pedestrian scale and design, connection to major growth centers and roadway features that facilitate transit service. The corridors have been included in the draft Countywide Planning Policies and in TRANSPORTATION 2040.

Three different types of service will be established along the transit corridors. The 2030 anticipated service level for Arlington is community based-local service level. Local services will operate along corridors that do not have the density or orientation to support more frequent service. It is assumed that hours of service will be 6:00 a.m. to 10:00 p.m. with 20 minute service on weekdays. Weekend service will usually be provided at 30-60 minute intervals.

Community Transit and the City of Arlington will assess the appropriate time to include the SR-9 Corridor in Community Transit's taxing area. When demand warrants, commute hour express services will be provided to link Arlington and Bothell, with intermediate stops at nodes of development along the corridor.

Five bus routes currently serve the Arlington area, both for travel within the city and for commuting:

- Routes 201 and 202 travel on I-5 between the Lynnwood Transit Center and the Smokey Point Transit Center, with multiple stops between. Service is provided Monday through Saturday between approximately 5:00 a.m. and 11:00 p.m.

- Route 220 runs daily between the Smokey Point Transit Center and downtown Arlington with a stop at 204th NE/67th NE. The route runs generally between 6 AM and 8 PM.

- Route 227 provides commuter service between the Arlington Park and Ride and the Everett Boeing plant, with two trips in the early morning and two in the late afternoon. Service is provided Monday through Friday.

- Route 230 travels between Smokey Point Transit Center and Darrington on SR-530. It provides early morning and late afternoon service Monday through Friday.

- Route 240 provides approximate one-hour service daily between downtown Arlington and Stanwood.

Figure 3-4 illustrates the bus routes serving the City. Community Transit also operates 22 park and ride centers with more than 7,355 parking stalls, including three lots in Arlington. The Smokey Point Transit Center is in operation at 3326 Smokey Point Drive.

Community Transit also offers a vanpool program for commuter trips beginning or ending in Snohomish County. The Dial-A-Ride-Transportation (DART) system serves individuals with special needs who are unable to use regular fixed routes. It provides transportation between locations that are within three-fourths of a mile of a local fixed route service. As Community Transit expands its geographic coverage, the number of individuals with disabilities who are eligible for Americans with Disabilities Act requirements will grow. Community Transit will expand its DART services to meet demand.

3.3 AIR TRANSPORTATION

The Arlington Municipal Airport is owned and operated by the City of Arlington. It consists of 1,189 acres within the city limits of Arlington. Uses at the airport include general aviation facilities as well as industrial, commercial and public uses. The airport accommodates a variety of users, ranging from single engine aircraft to business jets, and includes activity by helicopters, gliders, and ultralights. The airport does not have scheduled passenger flights.

The airport currently operates with two runways. Runway 16/34 is the primary runway at 5,332 feet in length and 100 feet in width. Runway 11/29 is 3,500 feet in length and 75 feet wide. As of June 2011, 582 aircraft were based on the field as follows: 447 single engine airplanes, 7 multi engine airplanes, 10 jet airplanes, 13 helicopters, 45 glider airplanes, and 60 ultralights. Operations were 57% local

general aviation and 42% transient general aviation, with less than 1% each of air taxi and military operations. Aircraft operations averaged 367 per day for the 12-month period ending September 30, 2010.

Vehicle access to the airport from downtown Arlington is provided by 188th Street NE and 67th Avenue NE. 172nd Street/SR-531 NE is adjacent to the southern boundary of the airport, and provides direct access to I-5.

Planning efforts for the Arlington Municipal Airport are being completed separately, and are included in the plan by reference. The City of Arlington adopted the Arlington Municipal Airport Layout Plan Update in June 2012, which provides for anticipated growth in airport activity. The Airport Protection District (AP) was established as an overlay zoning district to protect the viability of the airport and discourage siting of incompatible land uses. The AP District modifies density and land use requirements of the underlying zoning districts based on guidelines within the WSDOT Aviation Division's "Airports and Compatible Land use, Volume 1". The overlay is shown outside of the current city limits as advisory to adjacent jurisdictions. The Airport Layout Plan is shown in **Figure 3-5.**

3.4 TRIBAL TRANSPORTATION PROGRAM ROAD SYSTEM

As noted by the Puget Sound Regional Planning Council, Washington State Indian Tribes are interested in coordinating with other jurisdictions throughout the region on transportation, they are aware that the transportation network does not stop at the reservation boundary. The Stillaguamish Tribe (Tribe) and the City of Arlington have been partners in the planning, maintenance and preservation of Arlington's surface transportation network.

The 2012 transportation act, Moving Ahead for Progress in the 21st Century (MAP-21), replaced the Indian Reservation Road (IRR) program with the federal Tribal Transportation Program (TTP). The 2015 transportation program, Fixing America's Surface Transportation (FAST), retained the TTP program. The TPP program is a federal program jointly administered by the Federal Highway Administration's Federals Lands Highway Office and the Bureau of Indian Affairs (BIA) that provides funding for planning, design, construction, and maintenance activities of TPP listed roads. The Tribe and Arlington have identified roads within Arlington city limits that are classified under the TTP program. **Figure 3-6** shows the TPP roads in the City of Arlington.

3.5 RAIL TRANSPORTATION

The Burlington Northern Santa Fe Railway Company (BNSF) I-5 corridor carries both freight and passenger rail traffic. The mainline in the I-5 corridor, from Vancouver, WA to Vancouver, B.C. is owned by BNSF. Amtrak has rights to operate passenger service on this mainline. Everett is the nearest railroad terminal to Arlington and is principally used to classify

inbound cars for assignment to outbound trains. The rail segment between Everett and Seattle operated at 80% capacity in 2008 and is anticipated to be at 100% or more of capacity by 2028.

Amtrak Cascades provides passenger service between Eugene, Oregon and Vancouver, B.C. on the same tracks as the freight trains. It makes a limited number of stops, with Everett and Stanwood being the closest stops to Arlington.

Sound Transit's Sounder Commuter Train offers commuter rail service between Seattle and Everett and between Everett and Tacoma during weekday morning and evening commute hours. It shares the same railroad tracks as freight trains and Amtrak. **Figure 3-7** identifies rail facilities within the City of Arlington.

3.6 TRUCK ROUTES

The Washington State Freight and Goods Transportation System (FGTS) is a ranking of state highways, county roads, and city streets by the estimated gross annual truck tonnage carried. The FGTS identifies the routes most heavily used by trucks. Freight corridors that are designated as Strategic Freight Corridors are those routes that carry an average of four million or more gross tons by truck annually. The FGTS 2015 Update provides classification information for T-1 through T-5 roadways. The freight tonnage classifications are:

- T-1: more than 10 million tons per year
- T-2: 4 million to 10 million tons per year
- T-3: 300,000 to 4 million tons per year
- T-4: 100,000 to 300,000 tons per year
- T-5: at least 20,000 tons in 60 days

Table 3-1 below shows the 2015 FGTS classifications for state facilities and local roadways in the City of Arlington. **Figure 3-8** shows the FGTS route classification map for Arlington and **Figure 3-9** illustrates truck routes in the City of Arlington.

Table 3-1. FGTS Classifications

Roadway Segment	2015 FGTS Class	Annual Tonnage	Average Annual Daily Truck Volume
I-5 from King/Snohomish County line to SR 521	T-1	50,140,000	12,000
I-5 from SR-531 to Snohomish/Skagit County line	T-1	36,090,000	7,100
SR-9 from SR-92 to SR-530	T-2	4,010,000	1,400
SR-530 from I-5 (Arlington) to SR-9	T-2	7,900,000	2,100
SR-531 from I-5 (Smokey Point) to 67th Avenue NE	T-2	3,470,000	1,300

Table 3-1. FGTS Classifications (cont'd)

Roadway Segment	2015 FGTS Class	Annual Tonnage	Average Annual Daily Truck Volume
SR-531 from 67th Avenue NE to SR-9	T-3		
67th Avenue NE	T-3		
211 Street NE from SR-530 to 67th Avenue NE	T-3		
Burn Road from 83rd Avenue N to east city limits	T-3		
204th Street NE from 67th Avenue NE to SR-9	T-3		
Smokey Point Boulevard from SR-530 to south city limits	T-3		
188th St. NE from Smoky Point Boulevard to 47th Ave NE	T-3		
47th Avenue NE from 188th St. NE to 204th Street NE	T-3		
Cemetery Rd from 47th Ave NW to 67th Ave NE	T-3		
Olympic Ave from 67th Ave NE to Division St	T-3		
E 5th St from Olympic Ave east to end	T-5		
E 5th St from Olympic Ave east to Stillaguamish Ave	T-5		
N Stillaguamish Ave between Highland Dr and 1st St	T-3		
N Stillaguamish Ave between 1st St and 5th Ave	T5		
Highland Dr between SR-9 and Stillaguamish Ave	T-3		
59th Ave NE from 192ns St south to City Limits	T-3		
63rd Ave NE between 188th St and 197th St	T-3		
197th St between 63rd Ave NE and 67th Ave NE	T-3		
188th St between 59th Ave NE and 67th Ave NE	T-3		
51st Ave NE between Airport Blvd and south City Limits	T3		
Airport Blvd between 51st Ave NE and 188th St NE	T4		

3.7 NON-MOTORIZED FACILITIES

The City of Arlington's non-motorized transportation facilities include bike lanes, multiuse trails, sidewalks and crosswalks. With today's changing societal attitudes moving away from strict reliance on a cars and more to a non-motorized transportation scenario, Arlington is making sure non-motorized transportation facilities are developed for bicycles and pedestrians. The City will develop and implement a Complete Streets program to ensure that streets are designed to incorporate or be retrofitted to address the needs of all travelers of the transportation network.

Arlington's current and planned non-motorized facilities will connect all of Arlington's urban centers, job centers, residential neighborhoods, parks, and transit. The primary pedestrian and bicycle connection will be on multiuse trails and then on sidewalks in the residential neighborhoods and urban centers. The City's Non-motorized Facilities Inventory is shown in **Figure 3-10.**

3.7.1 Bicycle

RCW 47.26.300 states that the establishment, improvement, and upgrading of bicycle routes is necessary to promote public mobility, conserve energy, and provide for the safety of the bicycling and motoring public. The City currently has a total of 3 miles of dedicated bike lanes; it is imperative that a connectivity plan be developed, with the input of bicycle groups, to evaluate the needs and requirements for a safe and efficient bicycle environment. At 114 years old, Arlington is a well-established City where creating safe bike lanes within existing roadways is challenging. Arlington's first choice is to create a multiuse trail separate from roadways for both bicycle and pedestrian.

The City incorporates the design of multiuse trails with all new road planning, design and construction. The City also coordinates bicycle/pedestrian improvements with neighboring jurisdictions to connect routes where possible. Exact locations and widths of bike lanes are determined on a project specific basis by the City and consistent with the roadway section standards referenced in this plan.

PSRC Regional Bicycle Network

The City of Arlington worked cooperatively with PSRC and other stakeholder groups to coordinate City trail programs and planning while the PSRC Regional Bicycle Network was still in its development stage. The 2014 Active Transportation Plan identifies Arlington in the regions East Snohomish 1 area. The City continues to coordinate with Bicycle and Pedestrian Advisory Committee (BPAC) with multiuse trail map updates, trail construction funding sources and opportunities, and other trainings/webinars provided by the BPAC to enhance the City's multimodal system

3.7.2 Multiuse Trails

A multi-use trail allows for two-way, off-street pedestrian and bicycle use. Wheelchairs, joggers, skaters and other non-motorized users are also welcome. Arlington's multi-use trails link neighborhoods to business districts, parks and schools; they create connections with recreational and natural areas within the City of Arlington. Arlington's multi-use trails also contribute to City's goal to provide a safe, reliable, efficient, and socially equitable transportation system that enhances Arlington's environment and economic vitality.

The City of Arlington has constructed 26 miles of multiuse trails within the City limits and the UGA, and Snohomish County has three regional trails in the Arlington area, totaling 17.6 miles. Additional information about the trails and their features is included in **Table 3-2**. Trails

described below connect to the Centennial Trail to link residential, commercial, recreational, industrial and public areas.

Centennial Trail

Development of the Centennial Trail began in 1989 during the state's centennial. The Centennial Trail is constructed on the original railway right-of-way built north of Snohomish by the Seattle, Lake Shore, and Eastern Railroad in 1889. It currently connects Snohomish, Lake Stevens and Arlington with a 10-foot wide multi-purpose paved trail for walking, bicycling, hiking and horseback riding. The trail is accessible for those of all levels of physical ability and provides a safe alternative transportation route.

To date, 23 miles of the trail have been completed. The northern section of the trail between Haller Park and Bryant was opened in September 2010, and trail sections from Haller Park south to 172nd Street and Bryant to Skagit County were recently constructed. The Centennial Trail is owned and operated by Snohomish County, except for the portion within the Arlington city limits.

The Centennial Trail through Arlington city limits serves as the primary north-south multiuse trail crossing through Arlington and providing direct bicycle and pedestrian connection between the Stillaguamish River and Historic Old-Town Arlington, and to businesses, industries and residential neighborhoods located along the 67th Ave corridor. The 188th St trail connects Centennial Trail to the Airport Trail, which in turn provides bicycle and pedestrian access to Arlington sports fields, the Airport, the Boys and Girls Club, and other industries and business around the Airport.

Airport Trail

The Airport Trail is a 5.5-mile unimproved walking path that circumnavigates the Arlington Airport.

188th Trail

The 188th Trail is a paved trail connecting Centennial Trail to Arlington's Quake and Evans ball fields and to the Airport Trail. The City is continuing to work with BNSF to install a safe at-grade pedestrian crossing on this trail segment.

Zimmerman Trail

This trail connects the south end of Crown Ridge Boulevard and the Farmstead Neighborhood off of 204th Street. The feature of this trail is a stair climb approximately 0.2 miles in length.

County Trails

The Whitehorse Trail is a 27-mile long corridor between Arlington and Darrington. Six miles of the trail is open to the public, and the remainder of the trail is closed until bridge railings

and decking can be installed. No date has been determined for project completion. River Meadows Park contains 1.6 miles of trails.

3.7.3 Sidewalks

There is a total of 85 miles of sidewalks in Arlington, this represents that approximately 80% of Arlington roads have sidewalks on one or both sides. The network of sidewalks in the City of Arlington is more complete in heavily urbanized sections of the City. There are some older residential developments that have no sidewalks or gaps between sidewalks, there are also some commercial and industrial areas that have limited or no sidewalks. These areas will be the focus of the City's pending Multimodal Plan.

The City recognizes the importance of safely accommodating pedestrians and promoting healthy living and requires that sidewalks or paths be constructed with new development. The City is in the process of developing a Multimodal Plan that prioritizes sidewalk construction by location and land use, primarily to facilitate safe movement between homes, work, shopping/activity centers, and transit facilities, and to facilitate safe movement for children to and from schools and bus stops. The completion of the Multimodal Plan will include a program for completing Arlington's missing sidewalks.

3.7.4 Non-motorized Level of Service

Most conventional Level of Service (LOS) measures and policies focus almost exclusively on a singular, motor vehicle LOS, typically in some form of a volume-capacity (V/C) ratio. These singular LOS measures for long-range planning have favored preserving motor vehicle LOS and targeting auto-related capacity improvements to mitigate impacts. There has been little to no development in LOS standards and guidance for non-motorized facilities.

The City of Arlington's proposed 2035 Non-motorized Improvement Projects (**Figure 6-2**) will provide complete connectivity to all of Arlington's centers and neighborhoods and provide for the completion of missing sidewalks within centers and neighborhoods. The City of Arlington is in the process of completing a Multimodal Plan that will develop a LOS measure for non-motorized facilities consistent with developing PSRC guidance. In the interim, the city uses the percentage of completed sidewalks and multiuse trails as a measure of non-motorized facility LOS.

Continued

Non-motorized Element	Constructed Facility Elements	Planned Facility Elements	Percentage Complete
Multiuse Trails	26 miles	21 miles	55%
Sidewalks	85 miles	56 miles	60%

3.8 ROADWAY SECTIONS

The City of Arlington utilizes seven types of roadway sections, **Appendix H** contains the City of Arlington planning standards for various types of roadway sections, construction details for each section is included in the Public Works Engineering and Design Standards. These seven basic road sections provide the minimum road section requirements; modifications or additions to the road sections may be allowed by the City on a case-by-case basis.

- **Section 1 – 5 Lane Urban.** Provides a right of way that ranges between 90-100', there are four paved travel lanes, a center median or optional turn lane, a 5-foot bike lane along with 8-foot sidewalks on each side of the road. Curb and gutter required.
- **Section 2 – 3 Lane Urban (standard).** Provides a minimum 60' right-of-way with two 14' travel lanes, a 12' wide center median or optional turn lane, with 8-foot planter strips on each side of the road. Curb and gutter required.
- **Section 3 – 3 Lane Urban (LID).** Provides a right-of-way of 70' (+/-), with two 14' travel lanes, a 12' wide center median or optional turn lane, with 10' wide bio-swales (rain garden) on each side of the road and a 10-12 wide multiuse trail on one side of the road. Curb and gutter with scuppers at 25' spacing required on both sides of the road.
- **Section 4 – 2 Lane Urban (High Traffic).** Provides a minimum 60' right-of-way with two 12' travel lanes, no median or turn lane, a 5-foot bike lane, 8' planter strips along with 5' wide sidewalks on each side of the road. Curb and gutter required.
- **Section 5 – 2 Lane Urban (Residential).** Provides a minimum 60' right-of-way with two 12' travel lanes, no median or center turn lane, a 10' wide parking lane on one side of the road, 8' planter strips along with 5' wide sidewalks on each side of the road. Curb and gutter required.
- **Section 6 – 2 Lane Rural.** Provides a minimum 46' right-of-way with two 11' travel lanes, no median or center turn lane, 4' wide shoulders and 8' wide bio-swales (rain garden) on each side of the road. No sidewalk or curb and gutter required.
- **Section 7 – Alley.** A 24' right-of-way channelizing stormwater toward the alley centerline and then to a catch basin at the low end of the alley. Alley road surface can either be asphalt paved or compacted gravel.

Illustrations of each of the above roadway sections are provided in **Appendix H**.

3.9 TRANSPORTATION DEMAND MANAGEMENT

3.9.1 Commute Trip Reduction

The City of Arlington has adopted a Commute Trip Reduction (CTR) program in order to comply with the Washington State Commute Trip Reduction Law of 1991, as amended by the Commute Trip Reduction Efficiency Act in 2006, which requires local jurisdictions to develop and implement plans to reduce drive-alone trips and vehicle miles traveled per capita. The purpose of the CTR program is to reduce traffic congestion, improve air quality, preserve roadway capacity, and reduce dependency on fossil fuels. The City's CTR program applies to any major employer at a single worksite within the city limits. A major employer is one that employs 100 or more full-time employees who are scheduled to begin their work day during the morning commute times of 6:00 a.m. and 9:00 a.m. Employers who have implemented a CTR program include Cascade Valley Hospital, AMT Aerospace and Arlington Public Schools.

City staff attends CTR trainings and participates in bike to work and other events that encourage use of alternative transportation modes. The need for appropriate transit stops is considered during development review. Centennial Trail is the main N-S trail crossing through the City. Many other City trails connect to the Centennial Trail, these connector trails lead to parks and City Centers – a strong encouragement to bicycling and walking.

The most recent CTR survey was completed in June 2016. To achieve results, the City collaborates with Community Transit, Snohomish County, WSDOT and major employers to develop meaningful transportation solutions. Some additional tools have been identified to promote commute trip reduction, including:

- Rideshare-on-line
- Identifying potential ride share opportunities through neighborhood groups or contacts
- Staggered work hours
- Payment-in-lieu of CTR

- Identification of major employers at City Business License application
- Growth and Transportation Efficiency Centers (GTEC)
- Bus stop and trail connections.

The CTR Efficiency Act allows jurisdictions to designate Growth and Transportation Efficiency Centers. A GTEC is a defined, mixed-use urban area that contains employment or housing and supports multiple modes of transportation. This would allow the City to coordinate complimentary employment sites into one program and allow greater flexibility in administering programs. The City of Arlington may designate activity centers as GTECs and establish a transportation demand management program for the designated area. The State CTR Board has established minimum criteria for GTECs and the center must be certified by the PSRC.

3.9.2 Transportation Demand Management

Rather than increasing capacity, Transportation Demand Management (TDM) measures are aimed at reducing the transportation demand generated. In addition to physical improvements to the multi-modal network, the City has TDM measures in place that will use existing capacity more efficiently, increase capacity for motorized transportation, or reduce the peak period transportation demands, such as:

- Encouraging land use patterns that facilitate multi-purpose trips and reduce trips by single-occupancy vehicles
- Requiring new construction to include sidewalks, bicycle storage/parking, and access to mass transit where possible
- Providing bicycle lanes on arterial and collector streets
- Constructing a bicycle path and pedestrian trail that connects schools and downtown area with athletic fields and parks
- Working with Community Transit to encourage transit compatibility for new development
- Encouraging pedestrian-scale neighborhoods to enhance access and mobility

Examples include redevelopment of the West Arlington Subarea with increased pedestrian orientation and pedestrian paths. The Highway Commercial zoning designation also allows for mixed zoning. The City gives a high priority to bicycle and pedestrian trails to reduce energy consumption and promote better health.

3.10 COLLISION HISTORY

Below is the list of intersections that have seen a minimum of 5 accidents over a 5 year period between January 1, 2006 and December 31st, 2010:

- 67th Ave/204th St
- 67th Ave/188th St
- 172nd St (SR-531)/Smokey Point Blvd
- 172nd St (SR-531)/West Safeway Driveway
- 172nd St (SR-531)/East Safeway Driveway
- 172nd St (SR-531)/43rd Ave
- 172nd St (SR-531)/Edgecomb Rd
- 172nd St (SR-531)/51st Ave
- 172nd St (SR-531)/59th Ave
- 172nd St (SR-531)/67th Ave
- 172nd St (SR-531)/Smokey Point Dr
- 172nd St (SR-531)/I-5 NB Ramps
- 172nd St (SR-531)/I-5 SB Ramps
- SR-530/Broadway Ave
- SR-9/172nd St
- SR-9/Crown Ridge Blvd
- SR-9/204th St
- SR-9/Highland Ave
- SR-9/Division (SR-530)
- SR-9/4th Ave
- West Ave/4th St
- Smokey Point Blvd/168th St
- Smokey Point Blvd/169th St
- Smokey Point Blvd/177th St
- Smokey Point Blvd/188th St
- Smokey Point Blvd/Rite Aid Driveway

This information is contained in a collision history report generated by the Washington State Department of Transportation. The full detailed report is on file with the City of Arlington.

3.11 TRAFFIC VOLUMES AND OPERATIONS

3.11.1 Adopted Levels of Service

The GMA requires the City to establish service levels for the street network and to provide a means for correcting current deficiencies and meeting future needs. Level(s) of Service (LOS) is a term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. There are LOS defined separately for roadways and for intersections. The City adopts target LOS for each type of transportation facility which range alphabetically from A (very little delay) to F (long delays and congestion). Any facility, including City arterials and transit routes, that functions below the adopted standard is considered to be failing.

Roadway LOS

LOS thresholds for roadways are determined by comparing the volume of vehicles using a roadway to the design capacity for the roadway. Lower traffic volumes on a road result in a better LOS designation. The volume/capacity ratios used to define the range of LOS designations are shown below:

Volume/Capacity Ratio	LOS
0.60<	A
0.60 - 0.69	B
0.70 - 0.79	C
0.80 - 0.89	D
0.90 - 0.99	E
>1.00	F

Source: Transportation Research Board: Highway Capacity Manual

For highways of statewide significance (HSS), the LOS is set by law. For Regionally Significant State Highways (non-HSS), the LOS adopted by the local Metropolitan Planning Organization/Regional Transportation Planning Organization applies. The Puget Sound Regional Council has adopted a LOS D for Tier 2 routes. Tier 2 routes serve the outer urban area outside of a three-mile buffer around the most heavily traveled freeways.

The City of Arlington has adopted the following levels of service:

- City arterials = LOS D
- All other city streets = LOS C
- Highways of Statewide Significance = LOS D
- Regionally Significant State Highways = LOS D

The City of Marysville has adopted LOS D for all intersections, with exceptions for designated segments along State Avenue and 67th Avenue NE, where LOS E is acceptable. Snohomish County's LOS standard varies depending on whether an arterial is within an urban center, urban area, or rural area. For urban areas, county arterials should not operate below LOS E for one hour or more except where they are transit compatible, and then the LOS standard is D.

In addition to establishing level of service standards for city arterials and local streets, the City of Arlington also supports Community Transit's 2030 anticipated community based local service level for the city. The City is also establishing street section standards that incorporate bike lanes, sidewalks and trails to provide a comprehensive multi-modal transportation network and improve level of service across all travel modes.

Intersection LOS

LOS at intersections are determined by measuring the delay experienced by drivers as they move through the intersection. Delay at signalized intersections can be caused by waiting for the green phase of the signal or by waiting for the queue ahead of a vehicle to clear the signal. Delay at an unsignalized intersection can also be caused by waiting for the queue ahead or by waiting for a break in the traffic. Below is a summary of the amount of delay used to measure LOS for signalized and unsignalized intersections.

LOS	Signalized Delay per Vehicle (sec/veh)	Unsignalized Delay per Vehicle (sec/veh)
A	0 - 10	0 - 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Source: Transportation Research Board: Highway Capacity Manual

3.11.2 Existing Operations

Traffic operations were evaluated based on the level of service methodologies of the Highway Capacity Manual. The methodology used to analyze roadway segments and signalized, unsignalized, or roundabout intersections is different for each type of facility. The definitions of level of service criteria and methodologies are provided in **Appendix C** of this plan.

Intersection levels of service were evaluated for 31 intersections. Traffic Count Consultants, a traffic data collection firm, collected evening peak period turning movement counts for the study intersections No. 1-18 between 4:00 PM and 6:00 PM on June 7, 8 and 9, 2011. Evening peak period turning movement counts for study intersections No. 19-31 were collected by Traffic Data Gathering in 2010. These traffic volumes were used for our base year operations analysis and as the basis for future year traffic volume projections. The capacity analysis worksheets are provided in **Appendix D**.

Intersection LOS was calculated for both signalized intersections and unsignalized intersections. For intersections under minor street stop-sign control, the LOS of the most difficult movement (typically the minor street left-turn) represents the intersection level of service for purposes of assessing potential impacts. The intersection average LOS is commonly used as the concurrency threshold for reviewing new development impacts.

Figure 3-11 shows the 2011 base year traffic movements and volumes for the study intersections, **Figure 3-12** shows the associated Level of Service (LOS) for the study intersections. Intersection LOS data is also summarized in **Table 3-2**.

Figure 3-13 provides peak-hour traffic volumes and volume-to-capacity ratios for select roadway sections as measured in the base year (2011) travel demand model.

Table 3-2. Existing 2011 Level of Service Summary

Number	Intersection	Intersection Control	2011 Base Year	
			LOS (Delay)	Worst v/c
1	Burke Avenue (SR-530) /Manhattan Ave	Stop Sign	C (17.3)	0.49
2	W Burke Avenue (SR-530)/SR-9	Stop Sign	C (21.0)	0.60
3	E Division Street/N Olympic Avenue	Stop Sign	C (15.1)	N/A[1]
4	W Division Street/SR-9	Signal	B (17.0)	0.76
5	E Maple Street/S Olympic Avenue	Stop Sign	A (9.3)	N/A
6	Lebanon Street/67th Avenue NE	Stop Sign	B (12.3)	N/A
7	E Highland Dr/S Stillaguamish Avenue	Stop Sign	B (11.0)	0.54
8	211th Place NE/67th Avenue NE	Stop Sign	C (16.2)	0.41
9	204th Street NE/SR-9	Signal	C (22.6)	0.81
10	204th Street NE/67th Avenue NE	Signal	B (15.5)	0.60
11	211th Place NE/SR-530	Stop Sign	F (>100)	1.22
12	SR-530/I-5 NB Ramps	Signal	B (18.2)	0.84
13	SR-530/I-5 SB Ramps	Signal	B (14.9)	0.69
14	Crown Ridge Blvd/Eaglefield Drive/SR-9	Signal	B (12.9)	0.69
15	67th Avenue NE/188th Street NE	Stop Sign	C (20.0)	0.38
16	188th St NE/Smokey Point Blvd.	Stop Sign	D (27.3)	0.59
17	172nd Street NE (SR-531)/SR-9	Signal	B (11.8)	0.54
18	172nd Street (SR-531)/Gleneagle Blvd	Stop Sign	B (13.1)	0.28
19	172nd Street (SR-531)/67th Avenue NE	Signal	C (22.9)	0.80
20	172nd Street (SR-531)/59th Avenue NE	Signal	C (29.4)	0.91
21	172nd Street (SR-531)/51st Avenue NE	Signal	C (26.4)	0.93

[1] Analysis methodology does not provide worst v/c for all-way stop intersections.

Table 3-2. Existing 2011 Level of Service Summary (cont'd)

Number	Intersection	Intersection Control	2011 Base Year	
			LOS (Delay)	Worst v/c
22	172nd Street (SR-531)/43rd Avenue NE	Signal	B (12.9)	0.84
23	172nd Street(SR-531)/Smokey Point Blvd	Signal	D (35.7)	0.74
24	Smokey Point Blvd/Smokey Point Drive	Signal	A (5.2)	0.28
25	172nd Street NE (SR-531)/I-5 NB Ramps	Signal	A (9.8)	0.63
26	172nd Street NE (SR-531)/I-5 SB Ramps	Signal	A (7.5)	0.58
27	200th St/Smokey Point Blvd	Stop Sign	B (11.4)	4.47
~~28~~	~~200th St/23rd Ave~~ ***(REMOVED)***	~~Stop Sign~~	~~A (8.8)~~	~~0.42~~
29	SR 530/Smokey Point Blvd – W. Leg	Stop Sign	F (277)	1.38
30	SR 530/Smokey Point Blvd – East Leg	Stop Sign	F (26)	0.53
31	Smokey Point Y/Smokey Point Blvd	Stop Sign	A (10)	0.23

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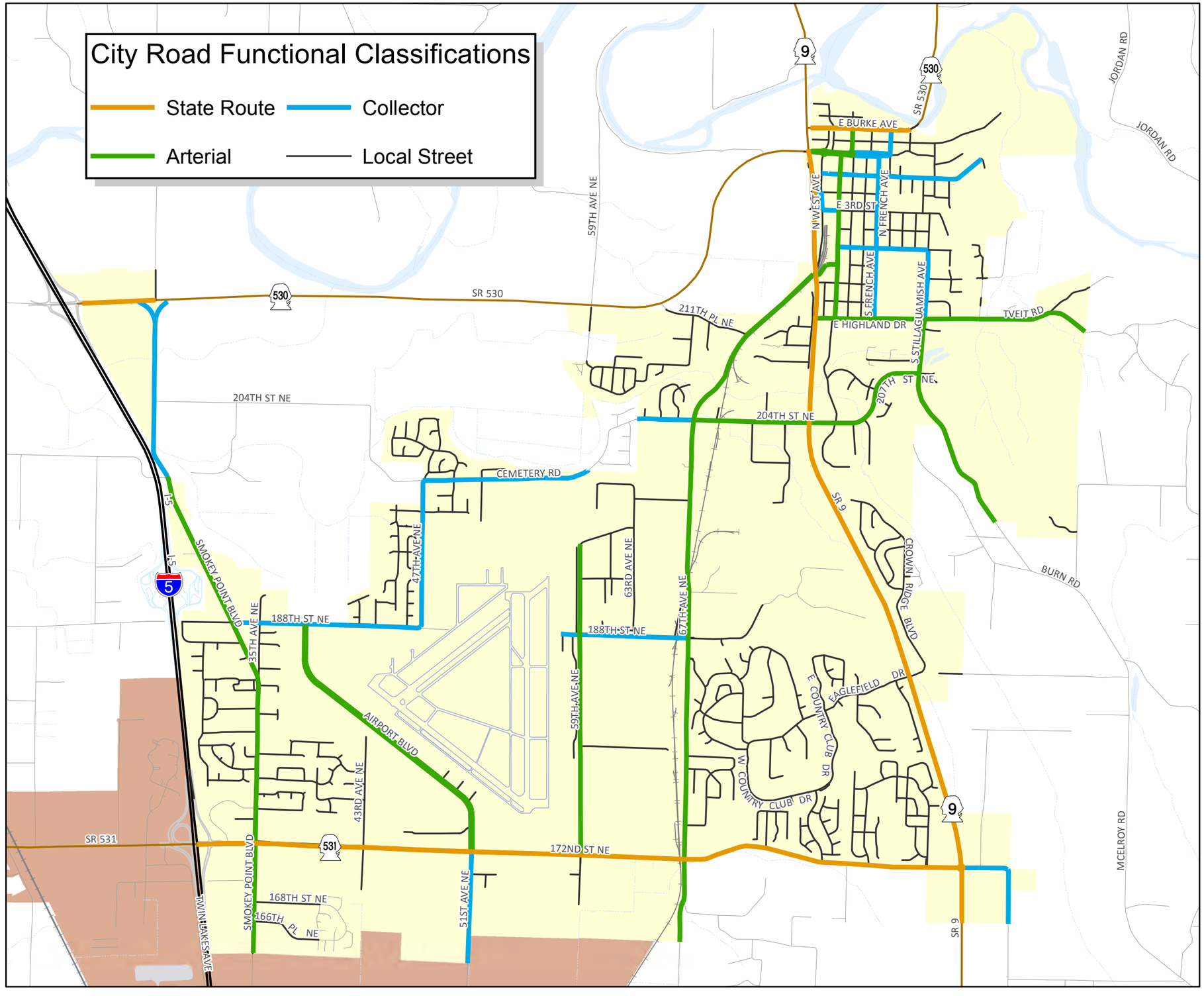
City of Arlington

Figure 3-1
City Street Classifications



Legend

- Arlington City Limits
- State Highway
- State Route
- Roads
- Airport
- Off ramp
- Rail line
- Rest area
- City of Marysville

N
W E
S

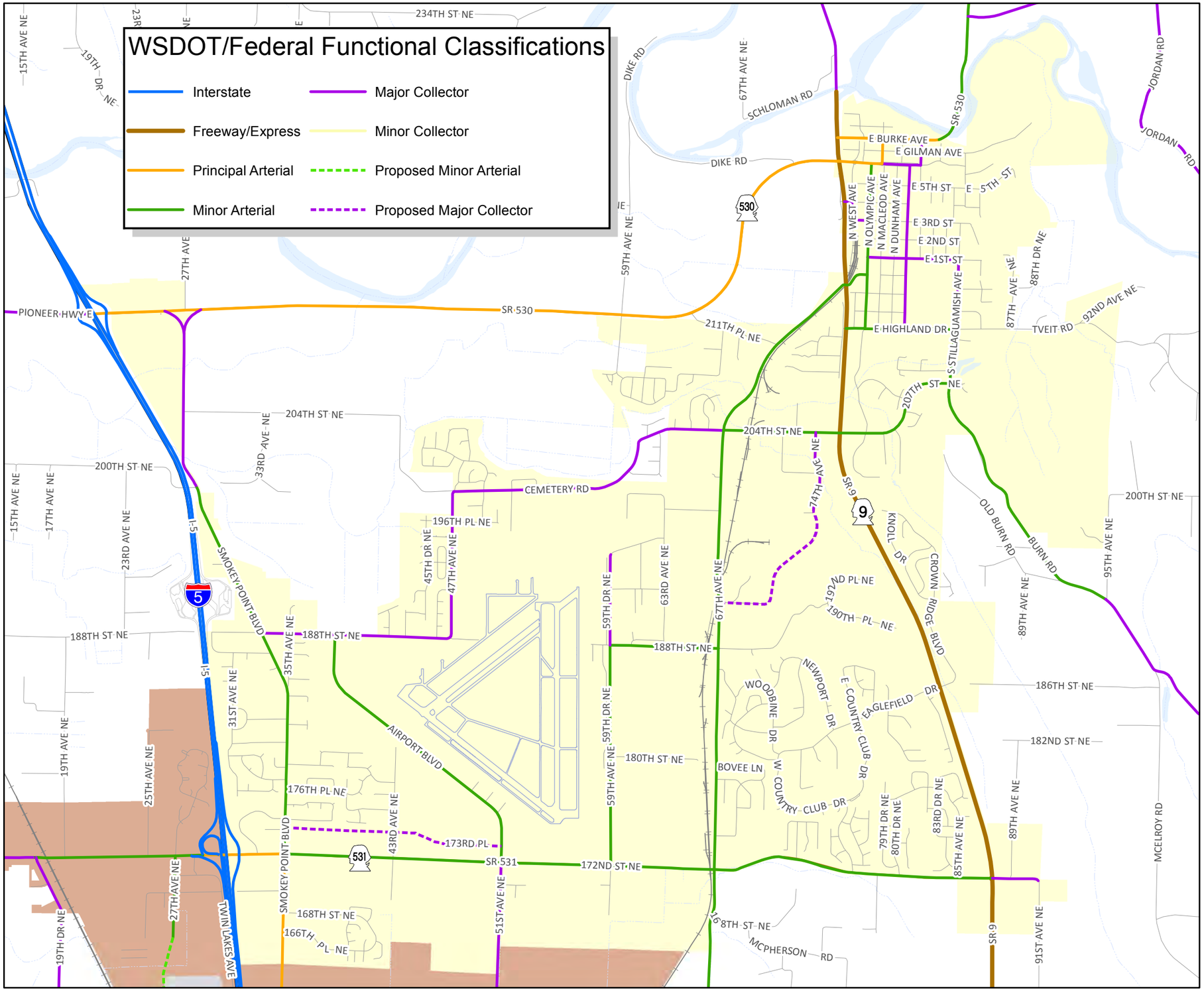
Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/9/2017

Figure3-1FuncClass11x17_17

kdh



City of Arlington

Figure 3-2 WSDOT/Federal Functional Classifications

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-2FuncClass11x17_17

kdh

City of Arlington

Figure 3-3
State Owned Facilities within City Limits

Legend

- WSDOT Limited Access
- WSDOT Managed Access
- Arlington City Limits
- State Highway
- State Route
- Streets; Gravel Road
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

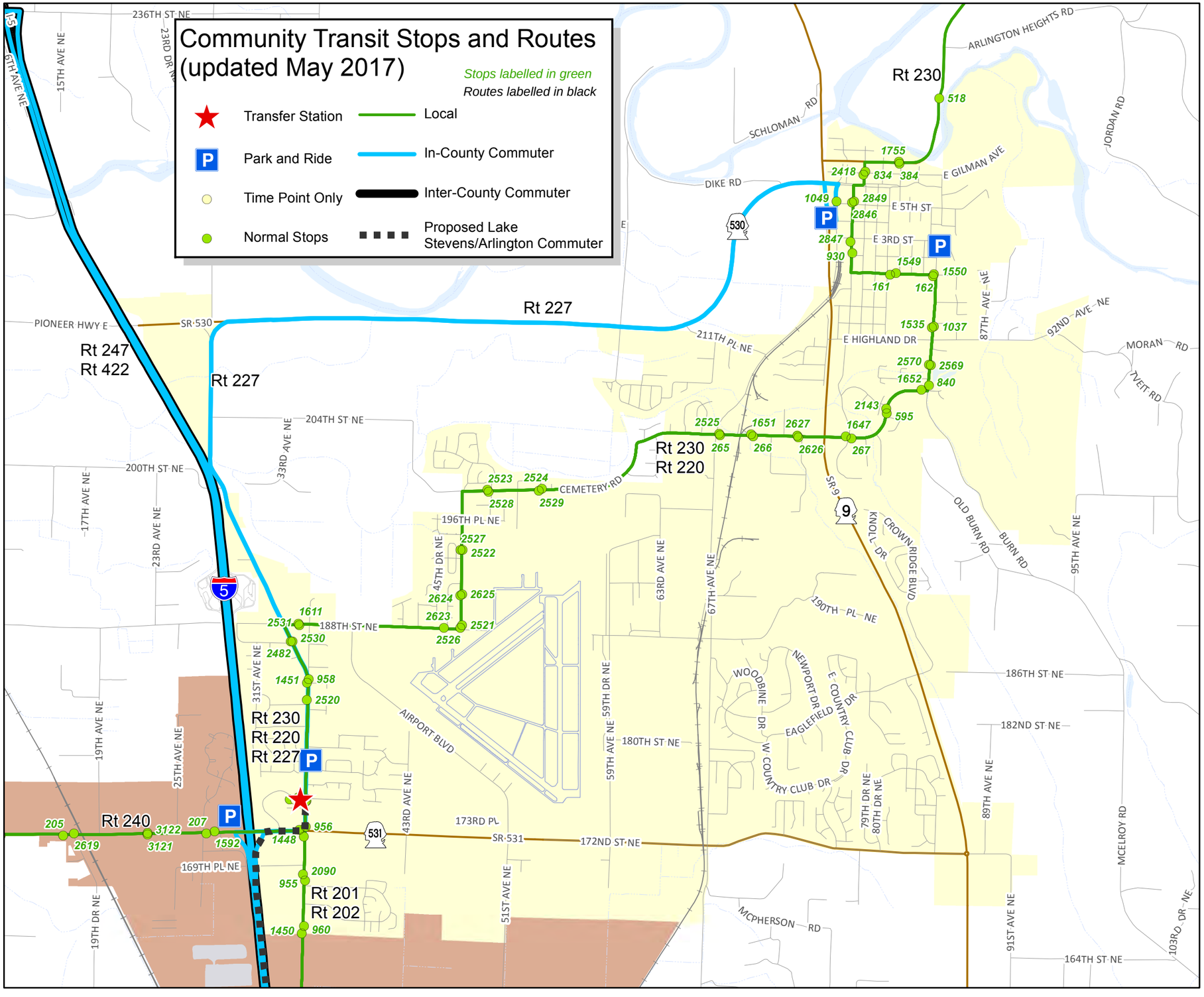
Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-3StateFac11x17_17

kdh



City of Arlington

Figure 3-4
Community Transit Routes Serving Arlington

2017 Update

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

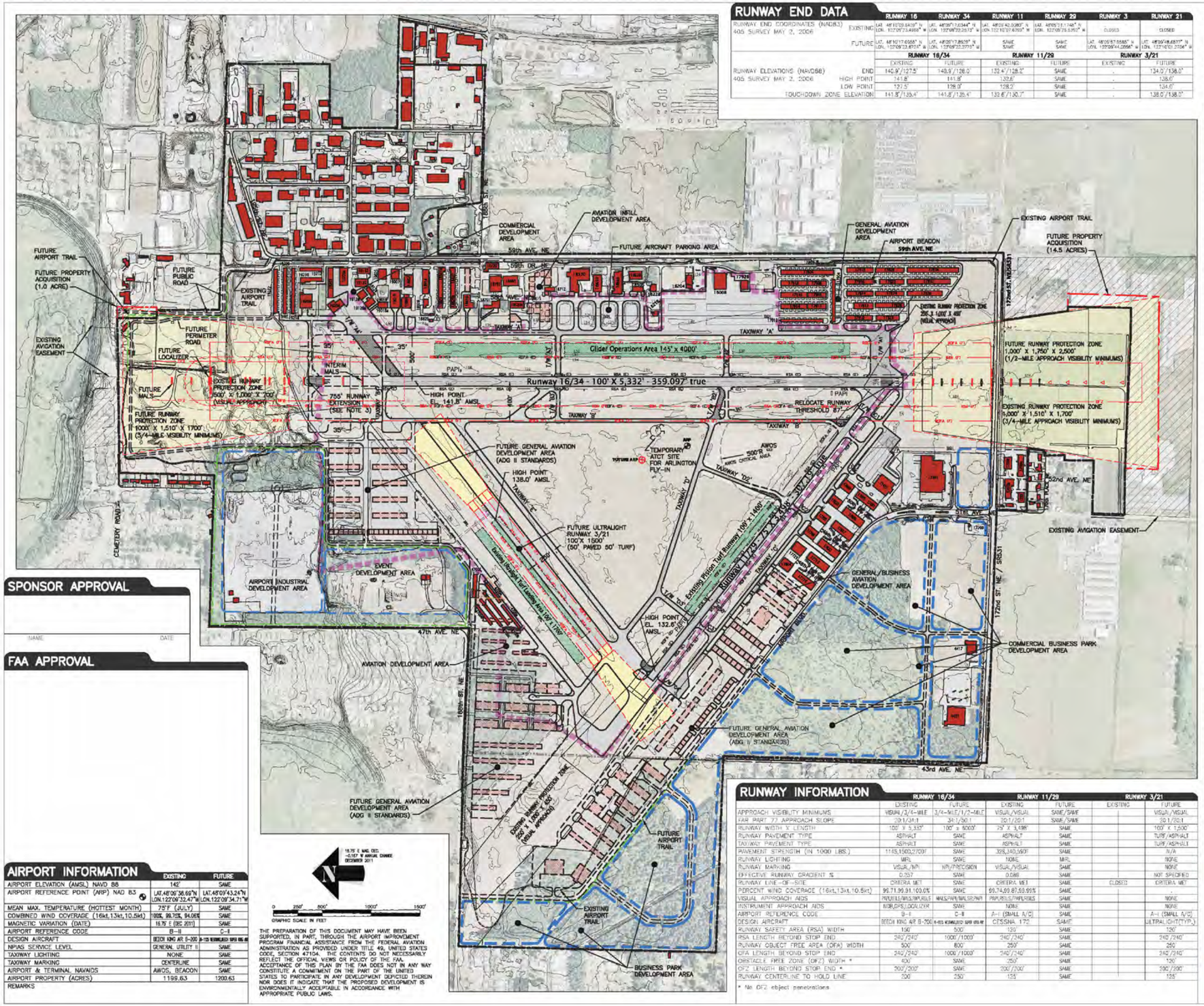
0 0.25 0.5 1 Miles

6/7/2017

Figure3-4CommTransit11x17_17

kdh

Figure 3-4



RUNWAY END DATA

		RUNWAY 16	RUNWAY 34	RUNWAY 11	RUNWAY 29	RUNWAY 3	RUNWAY 21
RUNWAY END COORDINATES (NAD83) 405 SURVEY MAY 2, 2006	EXISTING	LAT. 48°10'09.6439" N LON. 122°09'33.4898" W	LAT. 48°09'17.6344" N LON. 122°09'50.0513" W	LAT. 48°10'42.0380" N LON. 122°10'01.6700" W	LAT. 48°09'51.1748" N LON. 122°09'39.6707" W	CLOSED	CLOSED
	FUTURE	LAT. 48°10'17.6585" N LON. 122°09'33.8704" W	LAT. 48°09'17.8928" N LON. 122°09'32.3773" W	SAME SAME	SAME SAME	LAT. 48°09'57.6585" N LON. 122°09'44.0956" W	LAT. 48°09'18.6577" N LON. 122°10'01.2056" W
		RUNWAY 16/34		RUNWAY 11/29		RUNWAY 3/21	
RUNWAY ELEVATIONS (NAVD88) 405 SURVEY MAY 2, 2006		EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
	END	142.9'/127.5'	140.9'/126.0'	132.4'/128.2'	SAME	-	134.0'/136.0'
	HIGH POINT	141.8'	141.8'	132.6'	SAME	-	138.0'
	LOW POINT	127.5'	126.0'	128.2'	SAME	-	134.0'
	TOUCHDOWN ZONE ELEVATION	141.8'/135.4'	141.8'/135.4'	132.6'/130.7'	SAME	-	138.0'/138.0'

BUILDING LEGEND

NO.	DESCRIPTION	ELEVATION	NO.	DESCRIPTION	ELEVATION
1	ROTATING BEACON W/OBS. LIGHT (GL)	186.0'@0.L.	17916	T-HANGAR	152.2'
2	BUILDING	161.9'	17918	T-HANGAR	152.4'
4407	WESTON	143.6'			
4417	ATHLETIC CLUB	152.5'	17928	NAVY HANGAR	171.8'
4700c	ULTRALIGHT T-HANGAR	149.5'	18008	NAVY HANGAR	168.6'
4700b	ULTRALIGHT T-HANGAR	151.5'	18204	AIRPORT OFFICE/WSDOT AVIATION	143.2'
4700c	ULTRALIGHT T-HANGAR	148.5'	18215	RESTAURANT	154.0'
4700d	ULTRALIGHT T-HANGAR	148.7'	18228	WILD BLUE AVIATION	181.1'
4700e	ULTRALIGHT T-HANGAR	150.5'	18306	OUT OF THE BLUE AVIATION	156.6'
4700f	BUILDING	155.4'			
5200c	CAR WASH	139.0'			
5200b	GAS STATION	151.0'	18530	GLASAIR	164.1'
5200d	RESTAURANT	150.0'	18615	-	-
5200e	MOTEL	152.0'	18620	UNIVERSAL AEROSPACE BUILDING	161.0'
5200f	BUILDING	145.0'	18620a	CASCADE AVIATION	158.2'
17200	HENKENS RV	139.5'	18640	UNIVERSAL AEROSPACE BUILDING	161.0'
17301	BOWMAN	157.6'	18650	HANGAR	161.3'
17415	CONCO HANGAR	157.4'	18660	STODDARD HAMILTON	160.4'
17600	HANGAR	155.0'	18701	HANGAR	159.8'
17601	HANGAR	155.0'	18712	AVIATION COVER, INC.	158.8'
17605	HANGAR	155.0'	18722	THE POINT CHURCH OFFICES	165.0'
17609	HANGAR	155.0'	18781	STODDARD HAMILTON	159.3'
17617	HANGAR	155.0'	18810	HANGAR	169.4'
17620	HANGAR	155.0'	18820	AERONAUTICAL TESTING SERVICES	162.0'
17622	HANGAR	155.0'	18820a	WRANGELL ELECTRONICS	162.0'
			18824	GPS SURVEYING	162.0'
17705	HANGAR	155.0'	18824a	-	162.0'
17708	HANGAR	155.0'	18826	CASTLE AND COOKE/BIG SKY AVIATION	145.5'
17713	HANGAR		18914	GOLD AERO	
17716	HANGAR		18928	AVIATION INSPECTION & REPAIR	170.1'
17725	HANGAR		19002	METAL MOTION	160.0'
17604	T-HANGAR		19003	METAL MOTION	163.8'
17808	PUMP HOUSE		19007	VACANT	161.2'
17810	T-HANGAR	151.8'	19010	HANGAR	165.7'
17812	T-HANGAR	158.1'	19018	PRIVATE HANGAR	160.3'
17814	T-HANGAR	161.8'	19018a	PARA-PHERNALIA	160.3'
17816	T-HANGAR	151.9'	19026	ARLINGTON GLASS	161.5'
17818	T-HANGAR	151.7'	19124	GLOBAL MACHINE WORKS	161.7'
17820	T-HANGAR	150.5'	19128	CITY HANGAR	167.0'
17822	T-HANGAR	150.5'	19128a	CITY HANGAR	167.5'
17824	T-HANGAR	150.6'	19130	GLOBAL MACHINE WORKS	162.5'
17826	T-HANGAR	150.6'	19132	HANGAR	163.6'
17828	T-HANGAR	148.4'	19200	PRIVATE HANGAR	172.5'
17830	T-HANGAR	146.0'	19203a	CASCADE ENGINE SERVICE	158.2'
17832	T-HANGAR	146.0'	19203	CONDO HANGARS	162.3'
17834	T-HANGAR	146.0'	19208	PRIVATE HANGAR	180.8'
17904	T-HANGAR	151.6'	19210	CONDO HANGARS	
17906	T-HANGAR	154.3'	19212	CONDO HANGARS	
17908	T-HANGAR	155.1'	19218	T-HANGAR	
17910	T-HANGAR	154.9'	19220	T-HANGAR	159.8'
17912	T-HANGAR	147.1'	19222	T-HANGAR	160.0'(E)
17914	T-HANGAR	152.0'			

REVISIONS & NOTES

NO.	DESCRIPTION	DATE

NOTES:

1. THIS DRAWING REFLECTS PLANNING STANDARDS SPECIFIC TO THIS AIRPORT, AND IS NOT A PRODUCT OF DETAILED ENGINEERING DESIGN ANALYSIS. IT IS NOT INTENDED TO BE USED FOR CONSTRUCTION DOCUMENTATION OR NAVIGATION.
2. COORDINATE/ELEVATION INFORMATION IS NAD83/NAVD88.
3. RUNWAY 16/34 EXTENSION IS A LONG-TERM PLAN AND WILL REQUIRE ADDITIONAL PLANNING AND FAA REVIEW.

SPONSOR APPROVAL

NAME DATE

FAA APPROVAL

AIRPORT INFORMATION

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL) NAVD 88	142'	SAME
AIRPORT REFERENCE POINT (ARP) NAD 83	LAT.48°09'38.69"N LON.122°09'32.47"W	LAT.48°09'43.24"N LON.122°09'34.71"W
MEAN MAX. TEMPERATURE (HOTTEST MONTH)	75°F (JULY)	SAME
COMBINED WIND COVERAGE (16kt,13kt,10.5kt)	100%, 99.75%, 94.06%	SAME
MAGNETIC VARIATION (DATE)	16.75° E (DEC 2011)	SAME
AIRPORT REFERENCE CODE	B-II	C-II
DESIGN AIRCRAFT	BEECH KING AIR B-200	
NPIAS SERVICE LEVEL	GENERAL UTILITY II	SAME
TAXIWAY LIGHTING	NONE	SAME
TAXIWAY MARKING	CENTERLINE	SAME
AIRPORT & TERMINAL NAVAIDS	AWOS, BEACON	SAME
AIRPORT PROPERTY (ACRES)	1199.63	1200.63
REMARKS		

THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECCESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS PLAN BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

RUNWAY INFORMATION

	RUNWAY 16/34		RUNWAY 11/29		RUNWAY 3/21	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL/3/4-MILE	3/4-MILE/1/2-MILE	VISUAL/VISUAL	SAME/SAME		VISUAL/VISUAL
FAR PART 77 APPROACH SLOPS	20:1/34:1	34:1/50:1	20:1/20:1	SAME/SAME		20:1/20:1
RUNWAY WIDTH X LENGTH	100' X 5,332'	100' x 5000'	75' X 3,998'	SAME		100' X 1,500'
RUNWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT	SAME		TURF/ASPHALT
TAXIWAY PAVEMENT TYPE	ASPHALT	SAME	ASPHALT	SAME		TURF/ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	115S,150D,270T	SAME	30S,34D,56DT	SAME		N/A
RUNWAY LIGHTING	MIRL	SAME	NONE	MIRL		NONE
RUNWAY MARKING	VISUAL/NPI	NPI/PRECISION	VISUAL/VISUAL	SAME		NONE
EFFECTIVE RUNWAY GRADIENT %	0.35T	SAME	0.08T	SAME		NOT SPECIFIED
RUNWAY LINE-OF-SITE	CRITERIA MET	SAME	CRITERIA MET	SAME	CLOSED	CRITERIA MET
PERCENT WIND COVERAGE (16kt,13kt,10.5kt)	99.71,99.91,100.0%	SAME	99.74,99.87,99.99%	SAME		-
VISUAL APPROACH AIDS	PAPI(R/W16,R/W34)	MALSF(R/W16),MALSR(R/W34)	PAPI(R/W11),PAPI(R/W29)	SAME		NONE
INSTRUMENT APPROACH AIDS	NDB,GPS,LOCALIZER	SAME	NONE	SAME		NONE
AIRPORT REFERENCE CODE	B-II	C-II	A-I (SMALL A/C)	SAME		A-I (SMALL A/C)
DESIGN AIRCRAFT	BEECH KING AIR B-200		CESSNA 172	SAME		ULTRALIGHT(T/C)
RUNWAY SAFETY AREA (RSA) WIDTH	150'	500'	120'	SAME		120'
RSA LENGTH BEYOND STOP END	240'/240'	1000'/1000'	240'/240'	SAME		240'/240'
RUNWAY OBJECT FREE AREA (OFA) WIDTH	500'	800'	250'	SAME		250'
OFA LENGTH BEYOND STOP END	240'/240'	1000'/1000'	240'/240'	SAME		240'/240'
OBSTACLE FREE ZONE (OFZ) WIDTH *	400'	SAME	250'	SAME		120'
OFZ LENGTH BEYOND STOP END *	200'/200'	SAME	200'/200'	SAME		200'/200'
RUNWAY CENTERLINE TO HOLD LINE	200'	250'	125'	SAME		125'

* No OFZ object penetrations

DRAWING LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE		
AIRPORT SECURITY FENCE	X	XX
AIRPORT BUILDINGS		
AIRFIELD PAVEMENT		
AIRFIELD PAVEMENT REMOVED		
PAVED ROADS		
RUNWAY PROTECTION ZONE		
AVIGATION EASEMENT		
BUILDING RESTRICTION LINE	BRL	BRL
OBSTACLE FREE ZONE	OFZ	OFZ (F)
RUNWAY SAFETY AREA	RSA	RSA (F)
RUNWAY OBJECT FREE AREA	ROFA	ROFA (F)
FUEL STORAGE AREA		
AIRPORT BEACON		
LIGHTED WIND CONE & SEGMENTED CIRCLE		
PRECISION APPROACH PATH INDICATOR (PAPI)		
RUNWAY END IDENTIFIER LIGHTS (REIL)		
AIRPORT REFERENCE POINT (ARP)		
NATIONAL HISTORIC PROPERTY BOUNDARY		
DEVELOPMENT AREA BOUNDARY		

Arlington Municipal Airport
Arlington, Washington

AIRPORT LAYOUT DRAWING

Barnard Dunkelberg & Company

TULSA
1616 East 15th Street
Tulsa, Oklahoma 74120
918.585.8844

DENVER
1743 Wazee Street, Suite 400
Denver, Colorado 80202
303.825.8844

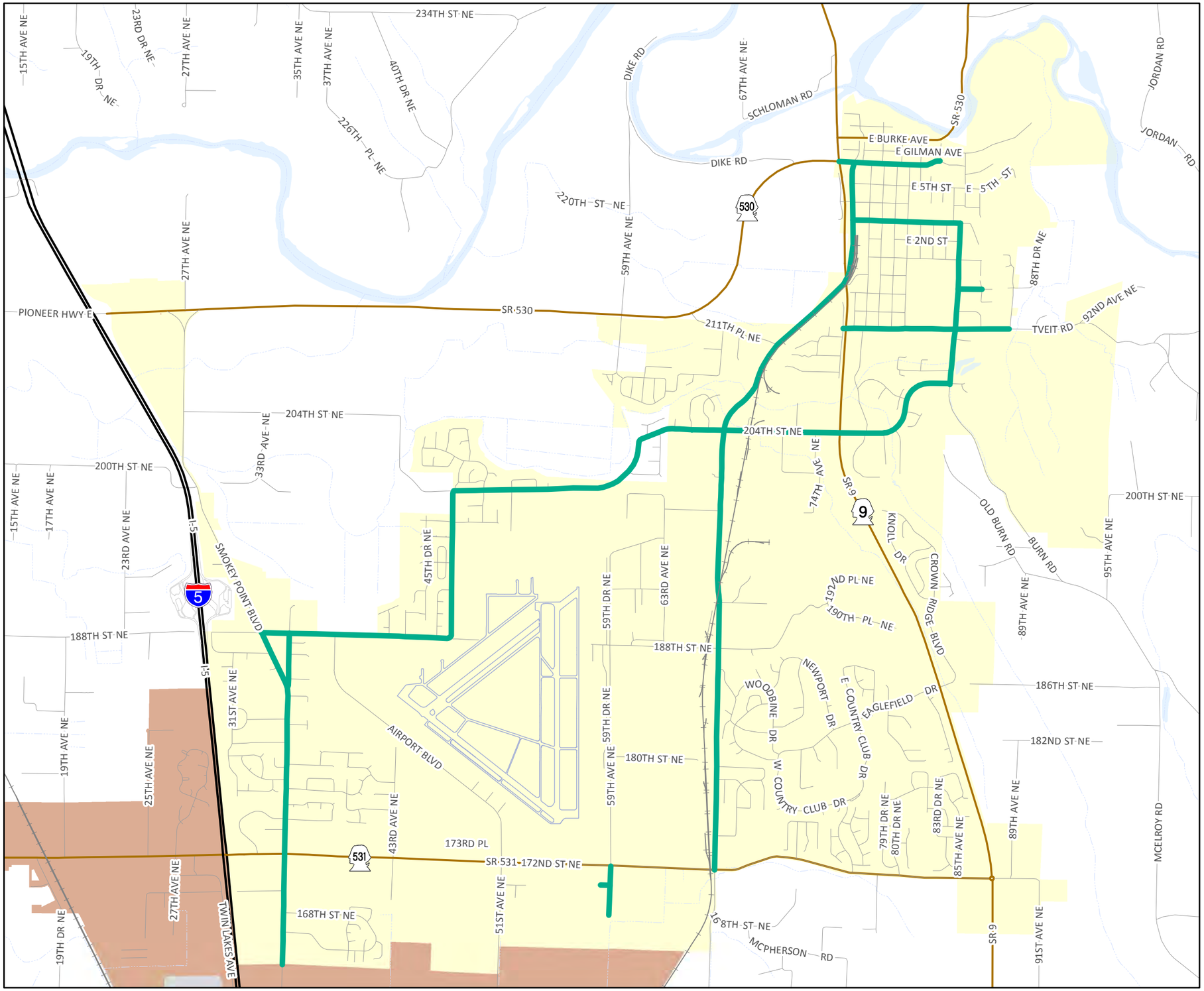
DATE
July 2012

SCALE
1" = 500'

SHEET NO.
2 OF 16

City of Arlington

Figure 3-6
Tribal Transportation Program Road (TTP) Inventory



Legend

- TTP Roads
- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-6TribalRd11x17_17

kdh

City of Arlington

Figure 3-7
Rail Facilities

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

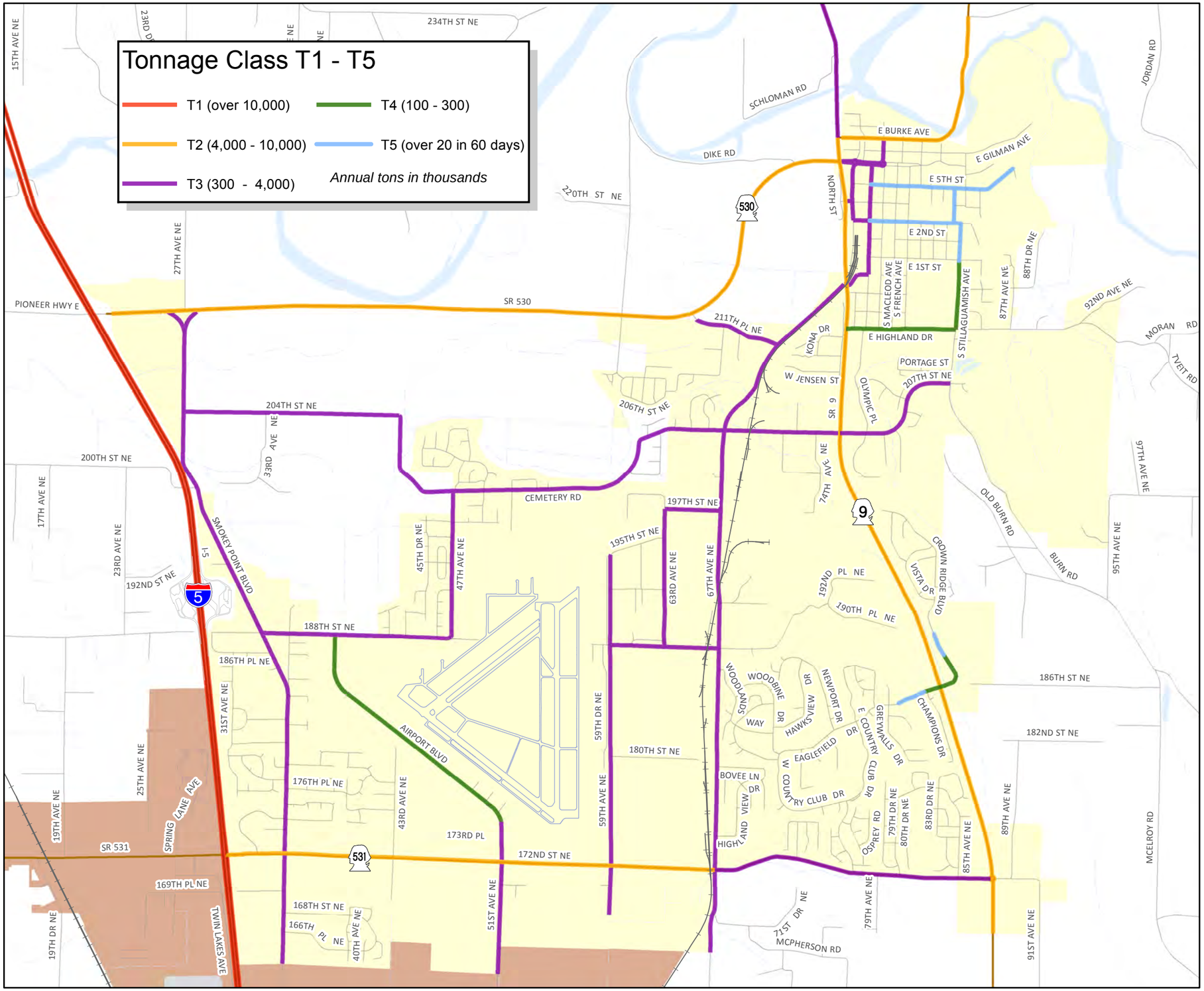
Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-7Rail11x17_17

kdh



City of Arlington

Figure 3-8
2015 WSDOT Freight and Goods Route Classification

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-8FGTS11x17_17

kdh

City of Arlington

Figure 3-9
Arlington Truck Routes

Legend

- Truck Routes
- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.25 0.5 1 Miles

6/7/2017

Figure3-9TruckRt11x17_17

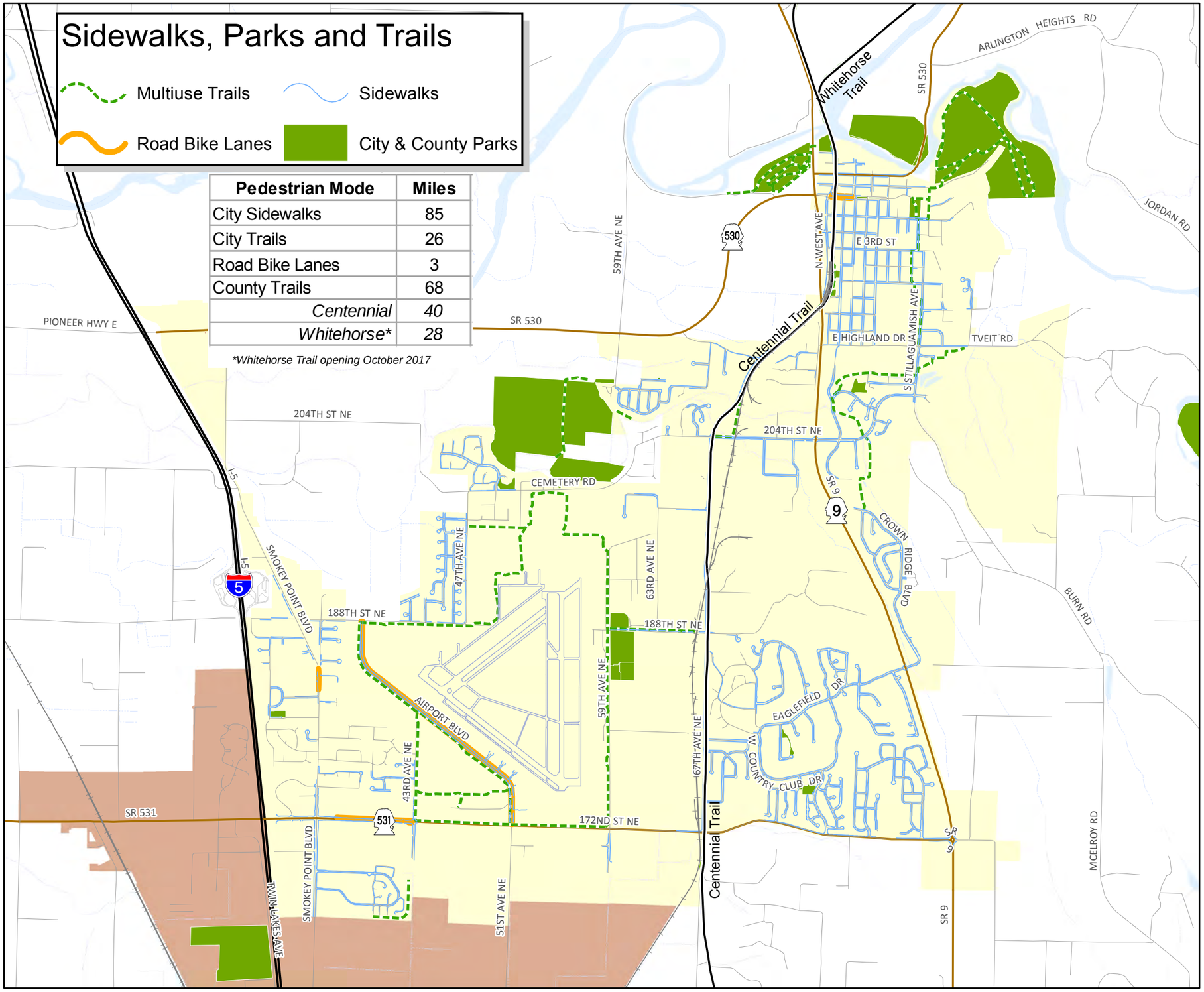
kdh

Sidewalks, Parks and Trails

Multiuse Trails
Sidewalks
Road Bike Lanes
City & County Parks

Pedestrian Mode	Miles
City Sidewalks	85
City Trails	26
Road Bike Lanes	3
County Trails	68
Centennial	*40*
*Whitehorse**	*28*

**Whitehorse Trail opening October 2017*



City of Arlington

Figure 3-10 Non-Motorized Facilities Inventory

2017 Update

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.275 0.55 1.1 Miles

6/13/2017

Figure3-10Non-Motorized11x17_17

kdh

City of Arlington

Figure 3-11
Existing 2011 PM Peak Hour Traffic Volumes

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets

N
W E
S

Scale:
0 0.225 0.45 0.9 Miles

Date:
6/22/2017

File:
Figure3-10new_11x17_16

Cartographer:
kdh/akc

1) E Burke Ave at N Manhattan Ave
2) W Burke Ave at Hazel St
3) E Division St at N Olympic Ave
4) W Division St at Hazel St
5) E Maple St at S Olympic Ave
6) Lebanon St at 67th Ave NE
7) E Highland Dr at S Stillaguamish Ave
8) 211th Pl NE at 67th Ave NE
9) 204th St NE at SR-9
10) 204th St NE at 67th Ave NE
11) 211th Pl NE at SR-530
12) SR-530 at I-5 NB Ramps
13) SR-530 at I-5 SB Ramps
14) Crown Ridge Blvd at SR-9
15) 188th St NE at 67th Ave NE
16) 188th St NE at Smokey Point Blvd
17) 172nd St NE at SR-9
18) 172nd St NE at Gleneagle Blvd
19) 172nd St NE at 67th Ave NE
20) 172nd St NE at 59th Ave NE
21) 172nd St NE at 51st Ave NE
22) 172nd St NE at 43rd Ave NE
23) 172nd St NE at Smokey Point Blvd
24) Smokey Point Dr at Smokey Point Blvd
25) 172nd St NE at I-5 NB Ramps
26) 172nd St NE at I-5 SB Ramps
27) 200th St at Smokey Point Blvd
28) 200th St at 23rd Ave
29) SR 530 at Smokey Point Blvd West
30) SR 530 at Smokey Point Blvd East
31) Smokey Point Y at Smokey Point Blvd

City of Arlington

Figure 3-12
Existing 2011 PM Peak Hour Intersection LOS

Study Intersections

Signalized Level of Service		Unsignalized Level of Service	
A	Meets Standard	A	Meets Standard
E	Fails Standard	E	Fails Standard

Legend

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

Date: 2/4/2016

File: Figure3-11_11x17_16

Cartographer: kdh

City of Arlington

Figure 3-13
Existing 2011 PM Peak Hour Road Volumes

Legend

XXX-XX% labels: Road volume and volume capacity %

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

Date: 2/5/2016

File: Figure3-12_11x17_16

Cartographer: kdh

4 Improvement Projects Referenced in Other Plans

Since changes in land use or projected growth patterns affect the future transportation system, some previously planned improvements may no longer be needed or specific improvements that were not included in future planning may now be needed. Transportation planning must evaluate conditions as they evolve. Planned improvements in the City of Arlington transportation system include short term needs identified in the City's Six-Year TIP as well as long-term needs based on conditions expected to develop over the next 20 years and contained in the City's Transportation Improvement Plan. Other agencies develop similar transportation plans for roads that impact Arlington's transportation system. A description of these plans is presented in this chapter, a summary of all the projects offered in all these plans is included in Appendix A.

4.1 SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM

The City of Arlington's Six-Year TIP (2016-2021) provides information on project locations, funding and schedule. A number of the roadway and intersection deficiencies identified in the previous section are included in the TIP, and some are currently underway or planned for construction. The City updates its TIP annually, and the TIP is adopted as part of the Transportation Element of the City's current GMA Comprehensive Plan. A copy of the current Six-Year TIP is available from the Public Works Department.

4.2 SNOHOMISH COUNTY SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM

Snohomish County's Six-Year TIP (2016-2021) includes two projects near the Arlington area: widening 140th St NE from 23rd Ave NE to 34th Ave NE, and intersection improvements on 67th Ave NE at 152nd St NE and 132nd St NE.

4.3 PUGET SOUND REGIONAL COUNCIL TRANSPORTATION IMPROVEMENT PROGRAM

PSRC creates a new Regional Transportation Improvement Program (TIP) every two years, following the project selection process for the federal funds awarded through the Regional Council. The TIP ensures that transportation projects meet regional transportation, growth and economic development goals and policies, as well clean air requirements. In order to qualify, projects must meet the following criteria:

- A project is using federal and/or state funds, or
- The project is funded locally AND is considered regionally significant, and
- The project's funds are scheduled for use within the three-year time span of the current TIP.

The 2015-2018 TIP includes two projects within the City of Arlington:

- Smokey Point Boulevard Pavement Preservation (*completed 2015*)
- 67th Ave Pavement Preservation (scheduled for completion in Summer 2017)

4.4 WASHINGTON STATE DEPARTMENT OF TRANSPORTATION HIGHWAY IMPROVEMENT PROGRAM AND SIX-YEAR TRANSPORTATION IMPROVEMENT PROGRAM

WSDOT uses a priority programming process that first identifies needs for a 20-year period that can be accomplished within financial constraints. This is done through the State Highway System Plan (HSP). In order to be eligible for programming, a need must be first identified in the HSP. The needs contained in the HSP do not have start dates and can occur anytime during the 20-year period. From the HSP, a six-year implementation plan is developed.

The Six-Year Transportation Improvement Program (STIP) contains federally funded projects plus state and local regionally significant projects programmed for six calendar years. These projects have been identified through the planning process as the highest priority for the

available funding to the state's transportation program. Projects listed in the STIP are the only projects that will be approved by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) to utilize federal funds.

The 2016 to 2019 Washington State STIP includes 67th Ave pavement preservation and the Smokey Point Blvd pavement preservation project.

4.5 CONNECTING WASHINGTON TRANSPORTATION IMPROVEMENT

In 2015 Governor Inslee and Washington's Legislators made an important investment in our state's multimodal transportation system, they passed the Connecting Washington funding package. This funding package is a $16 billion investment spread over 16 years. This project funds needed transportation safety and highway maintenance improvements across the state. An Arlington project, widening of SR-531 from 43rd Ave to 67th Ave, received $39 million in funding that is scheduled to be released in 2019.

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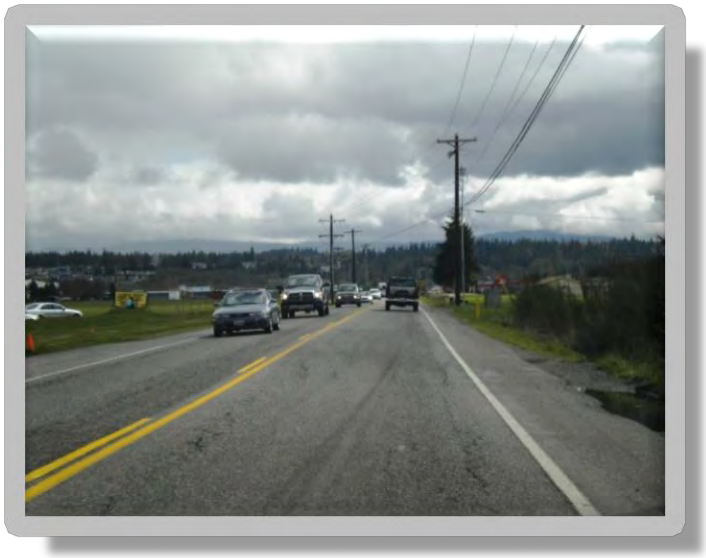
5 Future Conditions—2035

5.1 MODEL DEVELOPMENT



In 2015 the Arlington study area was modeled using the Sidra and Synchro software packages. Existing and future land use and demographic information was provided by the City of Arlington, Snohomish County, and PSRC. The Arlington model was developed to be consistent with current modeling efforts by PSRC and Snohomish County. Discussions with staff of each agency helped define the modeling process for the Arlington model.

The modeling process developed for the 2015 studies involved the following major steps:

- Construction of a computerized street network system of the Arlington transportation system;
- Developing a computerized land use zone system of 67 Traffic Analysis Zones (TAZ's) within the Arlington UGA in addition to detailed representation of the Marysville UGA and surrounding influence area.
- Compiling a database inventory of households and employment;
- Preparing base year model traffic volumes using trip generation factors and land use types to calibrate the model to current conditions;
- Developing future (2035) traffic volumes using projected land use.

The change not to expand west of I-5 required a redistribution of population in Arlington. The City contracted with Perteet, Inc. to reanalyze traffic movement consistent with the new population distribution. Perteet revised 2015 TAZ information on the two existing 2015 traffic models to accommodate the redistributed populations per the City's new Mixed Use zoning. The database was then modeled using Synchro and Sidra software programs. One model shows projected 2035 traffic conditions "**without transportation improvements**" and the other shows projected 2035 traffic conditions "**with transportation improvements**" as contained in this Plan. Each model reevaluated the future level of service (LOS) of 31

intersections and recalculated road capacity percentages of roadway segments. A copy of the 2017 Perteet traffic modeling update is in **Appendix M**.

In addition to being used to support the Arlington Transportation 2035 Plan, 2017 Update, the transportation model will continue to be a valuable tool for the City in assessing future roadway needs. The model will also be used to assess the traffic potential of larger developments that may have significant impacts to City roadways. The transportation model will continue to be refined and updated as necessary to accurately reflect existing transportation characteristics and to remain consistent with long-range land use planning efforts.

5.1.1 Travel Demand Forecast

The base year 2010 Arlington model was used as the basis for preparing updated 2035 travel demand forecasts for the Arlington UGA and environs. Preparing the updated 2035 model included adding household and employment growth and adjustments to the Traffic Analysis Zones (TAZ's) and reusing the capacity projects already included in the existing model roadway network.

5.1.2 Future Employment and Household Projections

The 2035 household and employment data represents the PSRC growth forecast for the greater model area as reconciled with population and employment forecasts that were developed by Snohomish County in modeling Arlington's buildable lands 2016 reconciliation. Household and employment growth planned for the Marysville UGA was provided by the City of Marysville in 2015. For the Arlington UGA, the household and employment growth totals reflect the land-use forecast described in the Land Use Element (Chapter 5) of the Arlington GMA Comprehensive Plan. The total growth anticipated in the Arlington UGA was hand-allocated to the Arlington TAZ's based on available land calculations and proposed zoning. The household and employment projections in the Arlington UGA also align very closely with the 2035 LUT land-use forecast for the Arlington area (FAZ #8500) provided by PSRC.

5.1.3 Model Roadway Network Updates

The Arlington 2035 baseline model ("Without Improvements") included all major capacity improvements anticipated by adjacent jurisdictions, but assumed no new improvements within the Arlington UGA. For the 2035 "With Improvements" scenario the roadway and intersection capacity projects identified in Section 6 of the Plan were added to the model roadway network to identify potential local and regional shifts in travel patterns.

5.1.4 Traffic Volume Projections

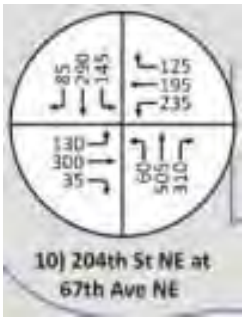
The 2015 transportation model was calibrated to a high degree of accuracy for the system-wide roadway network. However, the accuracy of model volumes for particular roadway segments may vary based on a variety of factors. To account for the occurrence of local variation, a "post-process" calibration was applied to the model-generated traffic volumes.

The post-process calibration involved calculating the difference between the model-generated volumes for the 2010 base year and for the 2035 horizon year. This difference is considered the model volume growth increment. The model volume growth increment was then added to the actual traffic volume counts for each roadway segment. The post process calculation used to generate future year traffic volume estimates for the 2015 study is shown in **Appendix G**, TAZ model plots are contained in **Appendix I.**

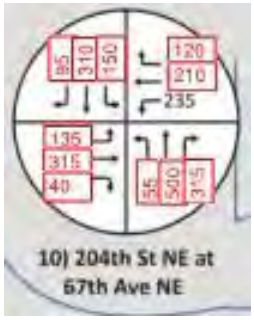
The 2017 Perteet study reused the existing TAZ and base population developed in the 2015 traffic model. The amount of redistributed population was added to the established TAZ, was minor and did not warrant a post-process traffic volume calibration.

5.2 FUTURE INTERSECTION OPERATIONS

In the 2015 model the intersection levels of service were evaluated for 31 study intersections for 2035 operational analysis based upon the network described above. In the 2017 the transportation model was processed using the redistributed populations and the elimination of Intersection #28 because it was located west of I-5. In general traffic movement volumes changes were minor, typically ranging from 5 to 10 vehicles per movement. An example of adjusted movements is shown in the below figure.



2015 Analysis



2017 Analysis

In 2035, 12 of the 30 intersections analyzed are projected to fail to meet current level of service standards with no transportation network improvements. Half of the intersections failing to meet the standard are stop-controlled intersections, typically having minor movements that are restricted by major traffic on the free approaches. All of the failing signalized intersections are along 172nd Street NE (SR-531), a corridor that not only serves commuters to and from major residential areas on the east side of the City, but also serves commercial and industrial areas anticipated to grow significantly on both the north and south sides of the corridor.

The 2035 traffic volume projections and intersection turning movements with no improvements are shown on **Figure 5-1**, **Figure 5-2** illustrates the associated LOS for those intersections, and **Figure 5-3** presents select roadway sections with projected peak-hour traffic flow along with Volume/Capacity percentage for 2035 projections with no improvements.

Table 5-1 shows the corresponding LOS results for the analyzed intersections with failing intersections highlighted, Operational reports are included in **Appendix M**.

Table 5-1. Projected 2035 Level of Service Summary (no improvements)

Number	Intersection	Intersection Control	Projected 2035 Baseline	
			LOS (Delay)	Worst v/c
1	E Burke Ave/N Manhattan Ave	Stop Sign	C (17)	0.24
2	E Burke Ave (SR 530)/Hazel (SR 9)	Stop Sign	F (178)	1.28
3	E Division St/N Olympic Ave	All Way Stop	B (12)	0.47
4	W Division St/SR 530/SR 9	Signal	C (23)	0.90
5	E Maple St/S Olympic Ave	All Way Stop	B (12)	0.45
6	Lebanon St/67th Ave NE	All Way Stop	E (39)	1.14
7	E Highland Dr/S Stillaguamish Ave	Signal	B (17)	0.73
8	211th Pl NE/67th Ave NE	Signal	A (9)	0.78
9	204th St NE/SR 9	Signal	C (33)	0.92
10	204th St NE/67th Ave NE	Signal	C (25)	0.84
11	211th Pl NE/SR 530	Stop Sign	F (300+)	2.12
12	SR 530/I-5 NB Ramps	Signal	C (22)	0.92
13	SR 530/I-5 SB Ramps	Signal	C (32)	1.09
14	Crown Ridge Blvd/SR 9	Signal	B (15)	0.79
15	188th St NE/67th Ave NE	Stop Sign	F (158)	1.18
16	188th St NE/Smokey Point Blvd	Stop Sign	F (300+)	4.53
17	Greenwood Rd/SR 9	Roundabout	D (50)	1.16
18	172nd Ave NE/Gleneagle Blvd	Stop Sign	C (15)	0.27
19	172nd St NE/67th Ave NE	Signal	E (61)	1.07
20	172nd St NE /59th Ave NE	Signal	F (176)	1.55
21	172nd St NE /51st Ave NE	Signal	F (94)	1.21
22	172nd St NE /43rd Ave NE	Signal	B (17)	0.99
23	172nd St NE /Smokey Point Blvd	Signal	E (62)	1.03

Table 5-1. Projected 2035 Level of Service Summary (no improvements), Continued

Number	Intersection	Intersection Control	Projected 2035 Baseline	
			LOS (Delay)	Worst v/c
24	Smokey Point Dr/Smokey Point Blvd	Signal	A (2)	0.34
25	172nd St NE /I-5 NB Ramps	Signal	C (33)	0.99
26	172nd St NE /I-5 SB Ramps	Signal	B (12)	0.94
27	200th St/Smokey Point Blvd	Stop Sign	F (300+)	4.47
~~28~~	~~200th St/23rd Ave~~ ***(REMOVED)***	~~Stop Sign~~	~~A (18)~~	~~0.42~~
29	SR 530/Smokey Point Blvd – W. Leg	Stop Sign	F (228)	1.40
30	SR 530/Smokey Point Blvd – East Leg	Stop Sign	F (127)	1.16
31	Smokey Point Y/Smokey Point Blvd	Stop Sign	B (14)	0.47

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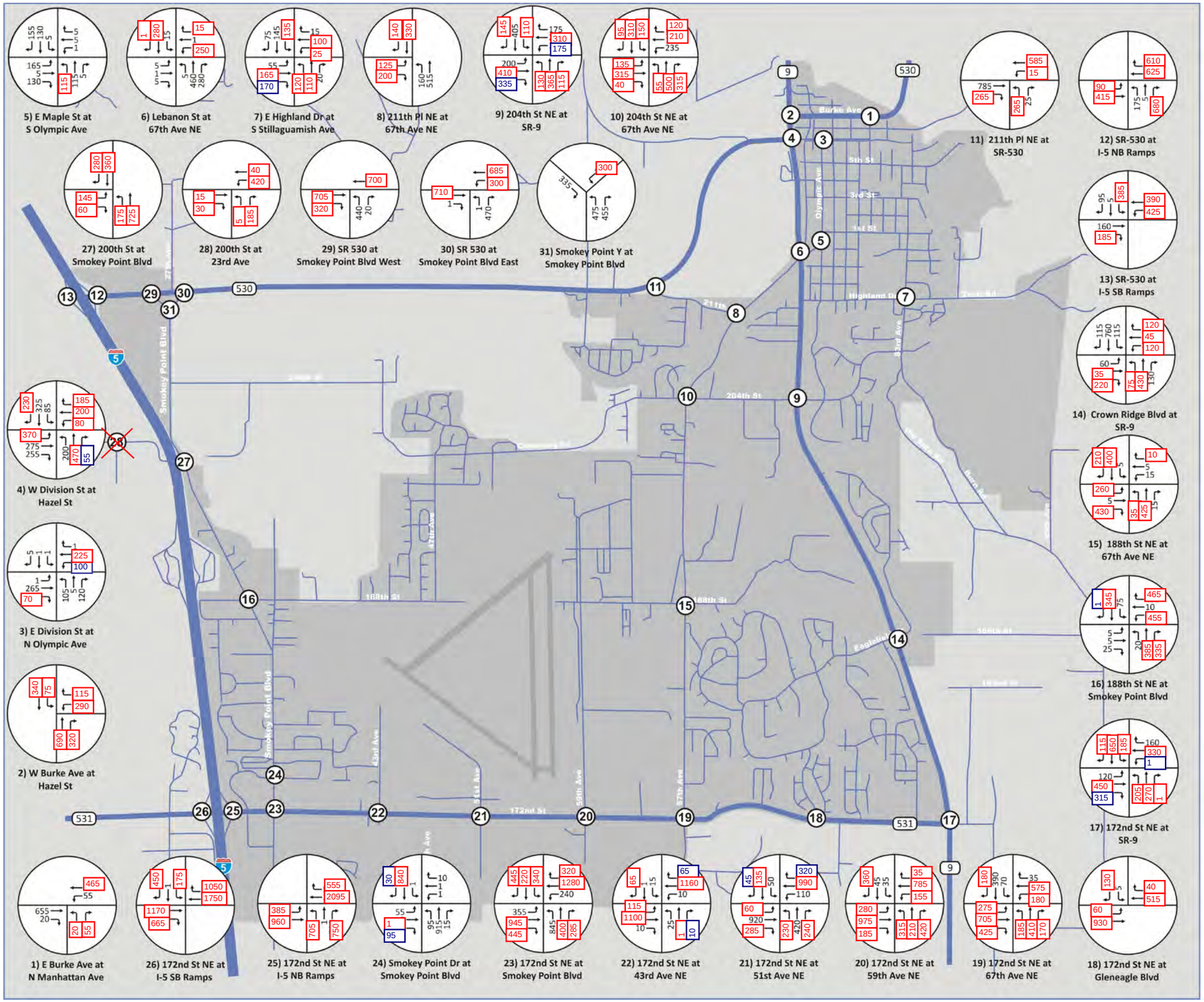
City of Arlington

Figure 5-1
Projected 2035 PM Peak Hour Traffic Volumes - No Improvements



Legend

- Arlington City Limits
- State Highway
- State Route
- Streets

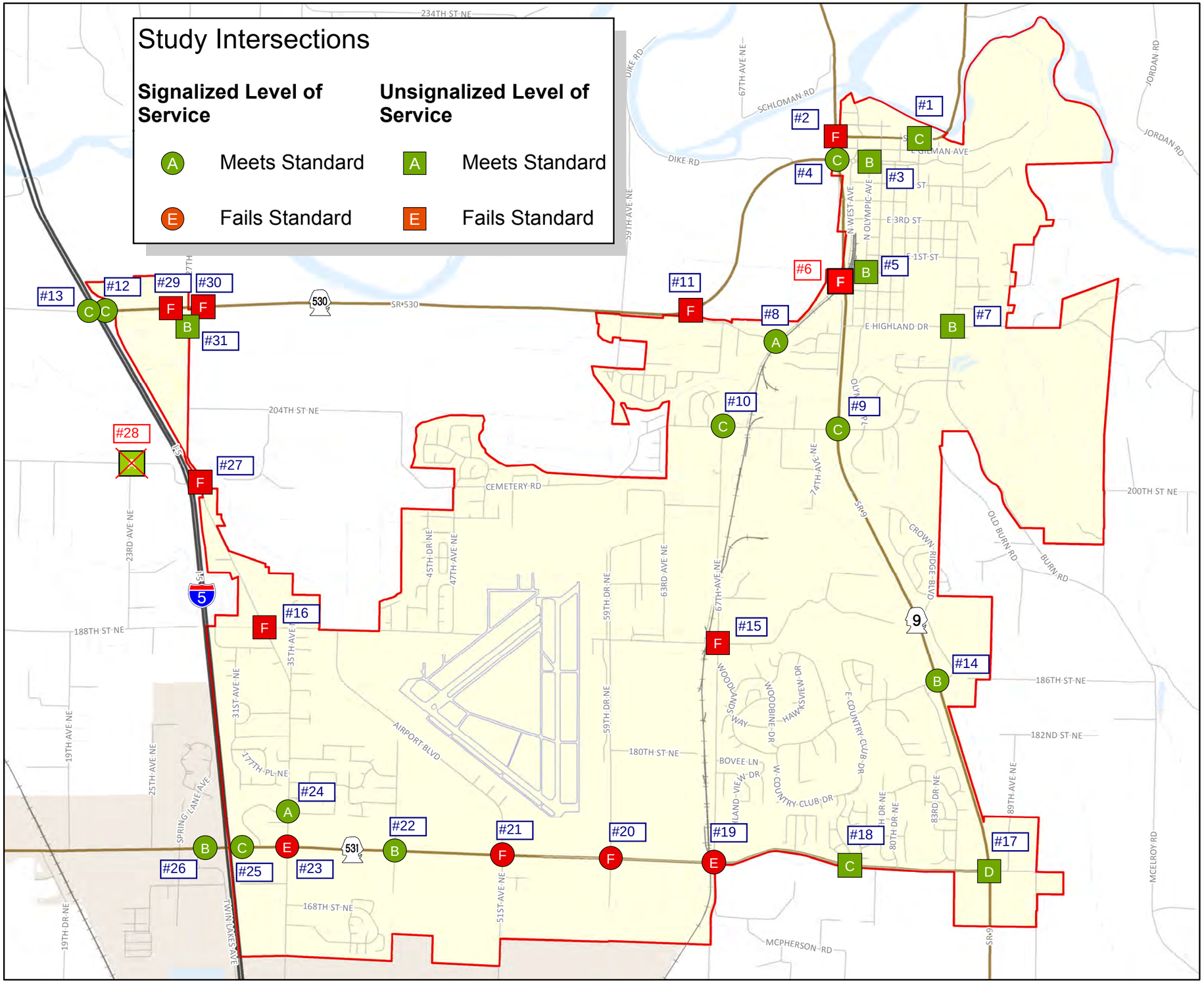
N
W E
S

Scale: 0 0.25 0.5 1 Miles

Date: 2/2/2016

File: Figure5-1new_11x17_16

Cartographer: kdh



City of Arlington

Figure 5-2
Projected 2035 PM Peak Hour Intersection LOS - No Improvements

Legend

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

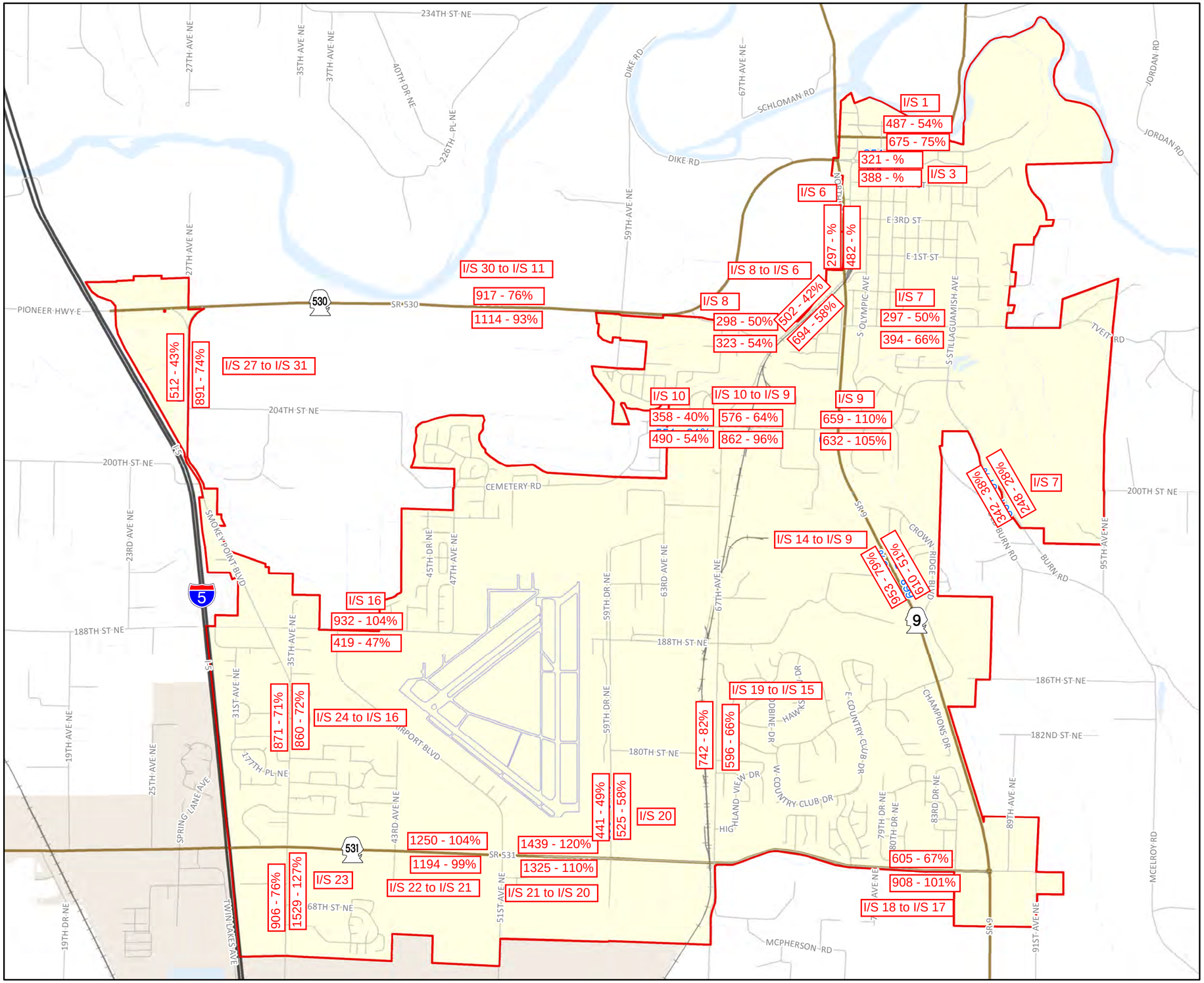
Date: 3/2/2016

File: Figure5_2_11x17_16

Cartographer: kdh

City of Arlington

Figure 5-3
Projected 2035 PM Peak Hour Road Volumes - No Improvements



Legend

XXX-XX% labels: Road volume and volume capacity %

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

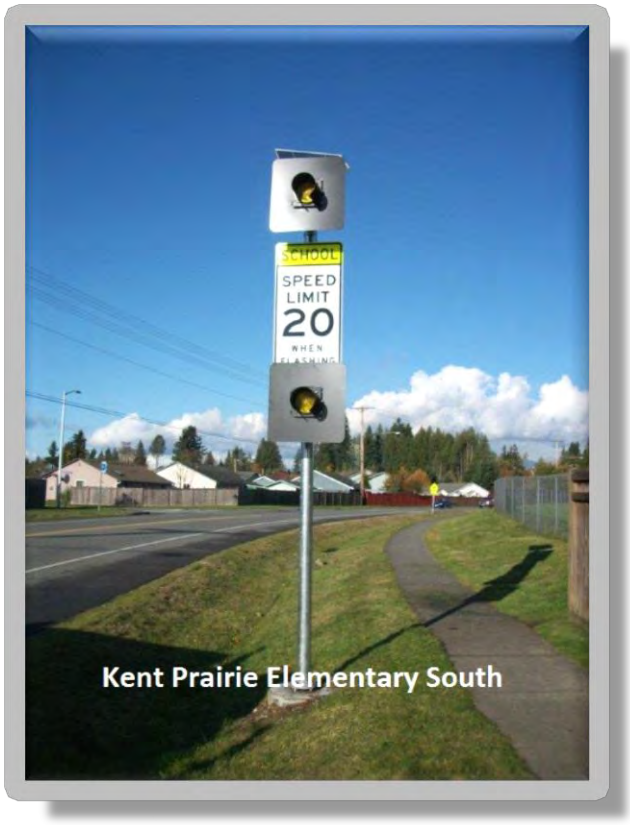
Date: 3/2/2016

File: Figure5_3_11x17_16

Cartographer: kdh

6 Plan Recommendations

The traffic modeling conducted in 2015 led to a list of projects to implement by the planning horizon of 2035 in an effort to achieve the goals identified in Section 2 of this plan. The Arlington Transportation Improvement Plan (TIP) is a 20 year plan that includes projects constructing new roadways, improving existing roadways, and providing improved pedestrian and bicycle (non-motorized) facilities. As specific development projects are proposed, the City will assess impacts during review of the proposal and determine whether additional improvements may be needed.



6.1 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

The recommended 20 year TIP projects include the following types:

Arterial Capacity Improvements

Many of the projects listed were identified based on the need for added vehicle capacity. Capacity projects include widening the existing roadway to accommodate higher traffic volumes and, depending on the roadway type and location, may also include other improvements such as bike lanes, landscaping, multiuse trails, and sidewalks.

There are a number of improvement options to add capacity at intersections that operate below the adopted level of service. Generally, the City will analyze both roundabout and signal options before deciding on the specific improvements. Depending on the specific situation, one or several of the following improvements may be considered to improve local safety or circulation needs:

- Re-designating existing traffic lanes
- Adding additional lanes
- Road realignment
- Installing a traffic signal system
- Installing a modern roundabout
- Improving pedestrian and bicycle safety
- All way stop control

Circulation Improvements
This category includes new roadways needed to enhance circulation or provide improved access to areas of high growth potential, as well as the extension of existing roads to close gaps in the system.

Safety Improvements
Often improvements are needed to increase safety at an intersection, at crosswalks, or along a roadway segment, sometimes in coordination with capacity improvements. Safety improvements may take several forms:

- Improve sight lines
- Adding lane width
- Adding storage lanes
- Realignment
- Installing a traffic signal system
- Installing a modern roundabout
- Adding pedestrian and bicycle amenities

Table 6-1 and **Table 6-2** summarizes the road projects and intersection projects included in the Arlington 2035 Transportation Plan, Updated 2017. These projects are depicted graphically in **Figure 6-1**.

Table 6-1: 2035 Transportation Improvement Project List: Roadways

Proposed Project ID	Project Name	Project Limits	Project Description
R1	Smokey Pt. Blvd-North	188th St – SR 530	Reconstruct Smokey Point Blvd from 188th St to SR 530 from a 2 lane roadway to a 3 lane roadway
R2	Cross Town Connector	Cemetery Rd. - 47th Ave - 188th St.	Reconstruct Cemetery Rd from 47th Ave to 188th St from a 2 lane roadway to a 3 lane roadway
R3	45th Drive Extension	45th Drive NE - Cemetery Rd	New 2 lane roadway connecting the existing terminus of 45th Dr with Cemetery Rd
R4	211th Place	67th - SR-530	Reconstruct 211th Pl from 67th Ave to SR 530 from a 2 lane roadway to a 3 lane roadway
R5	Highland Drive	SR-9 - Stillaguamish Ave	Reconstruct Highland Dr from SR 9 to Stillaguamish Ave from a 2 lane roadway to a 3 lane roadway
R6	74th & 71st	Internal Roads at former furniture manufacturer	Construct new 2 lanes roadways from Hazel St to 204th St. These roadways will tie into 71st Ave and 74th Ave, with 71st Ave tying into 74th Ave

Table 6-1: 2035 Transportation Improvement Project List: Roadways (continued)

Proposed Project ID	Project Name	Project Limits	Project Description
R7	Arlington Valley Rd.	67th Ave - 204th St	Construct new 3 lane roadway from southern terminus of 74th Ave to 191st Pl, connecting 67th Ave and 204th St
R8	197th St Extension	67th Ave - Arlington Valley Rd.	Construct new 2 lane roadway connecting 67th Ave to Arlington Valley Rd (Project 18)
~~R9~~	~~Future Rd~~	~~Arlington Valley Rd. - 188th St.~~	~~Construct new 2 lane roadway connecting Arlington Valley Rd (Project 18) to 67th Ave at 188th St~~ ***REMOVED***
R10	59th Dr. Extension	59th Dr - Cemetery Rd	Construct 2 lane extension of 59th Dr from northern terminus to Cemetery Rd
R11	186th St	Crown Ridge Blvd – CL	Construct new 2 lane roadway from Crown Ridge Blvd to eastern city limits
R12	89th Ave	172nd St - 186th St	Reconstruct/Extend 89th Ave from 172nd St to 186th St (Project 24)
R13	172nd St/91st Ave	SR-9 roundabout-CL	Reconstruct 172nd St from SR 9 to eastern city limits from a 2 lane roadway to a 5 lane roadway
R14A	SR-531 Widening	43rd Ave - 67th Ave	Reconstruct SR 531 (172nd St) from 43rd Ave to 67th Ave from a 2 lane roadway to a 4 lane roadway. Install roundabouts at the intersections of 43rd Ave, 51st Ave, 59th Ave and 67th Ave
R14B	SR-531 Rehabilitation	Smokey Point Blvd - 43rd Ave	Perform roadway and corridor improvements. Eliminate Left Turn pockets, install solid median.
R15	59th Ave	172nd St - 192nd St	Reconstruct 59th Ave from SR 531 (172nd St) to northern terminus from a 2 lane to a 3 lane roadway
R16A	63rd Ave – North	188th St - SR 531	Construct new 3 lane roadway from SR 531 (172nd St) to 188th St. Construct right-in-right-out intersection control at intersection with SR 531
R16B	63rd Ave – South	SR 531 - 168th St	Construct new 3 lane roadway from SR 531 (172nd St) to 168th St. Construct right-in-right-out intersection control at intersection with SR 531
R17	180th St	59th Ave - 63rd Ave	Construct new 2 lane roadway from 59th Ave to the BNSF railroad tracks
R18	59th Ave	172nd South – C.L.	Extend 59th Ave from SR 531 (172nd St) to southern city limits from a 2 lane roadway to a 3 lane roadway

Table 6-1: 2035 Transportation Improvement Project List: Roadways (continued)

Proposed Project ID	Project Name	Project Limits	Project Description
R19	168th St	43rd Ave E to BNSF RR Tracks	Construct new 3 lane roadway from 47th Ave to BNSF railroad tracks
R20	51st Ave	172nd St - South C.L.	Reconstruct 51st Ave from SR 531 (172nd St) to southern city limits from a 2 lane to a 5 lane roadway
R21	47th Ave	172nd St - South City Limits	Construct 3 lane roadway from SR 531 (172nd St) to southern city limits. Install right-in-right-out intersection control at intersection with SR 531
R22	43rd Ave	172nd St - South C.L.	Construct 3 lane roadway from SR 531 (172nd St) to southern city limits
R23	39th Ave Extension	162nd Pl - South C.L.	Construction of 2 lane extension of 39th Ave from 162nd Pl to southern city limits
R24	38th Ave Extension	168nd Pl - 168th St	Construct 2 lane extension of 38th Ave from 168th Pl to 168th St (Project 50)
R25	39th Ave	168th St - 172nd St	Construct 2 lane roadway from 168th St (Project 50) to SR 531 (172nd St)
R26	39th Ave	172nd St - 173rd St	Construct 2 lane roadway from 173rd St (Project 43) to SR 531 (172nd St)
R27	173rd St (PH3)	43rd Ave - 51st Ave	Construct 2 lane roadway from Airport Blvd (51st Ave) to 43rd Ave
R28	173rd (PH 1&2)	Smokey Point Blvd - Airport Blvd	Construct 2 lane roadway from 43rd Ave to Smokey Point Blvd
R29	43rd Ave Extension	North end of 43rd Ave - Airport Blvd	Construct 2 lane extension of 43rd Ave from northern terminus of 43rd Ave to Airport Blvd
R30	Smokey Point Blvd	172nd St - 188th St	Reconstruct Smokey Point Blvd from SR 531 (172nd St) to 188th St from a 2 lane roadway to a 5 lane roadway
R31	WSDOT rest area connector roads (E&W)		Conduct a study of the viability of constructing roadways to connect the local street system to the rest area interchange

Table 6-1: 2035 Transportation Improvement Project List: Roadways (continued)

Proposed Project ID	Project Name	Project Limits	Project Description
R32	188th I-5 Bridge	Smokey Point Blvd-27th Ave	Construct 2 lane bridge over I-5 from 188th St terminus to 27th Ave. Reconstruct 188th St.
R33	23rd Ave	200th St-188th St	Reconstruct 23rd Ave from 200th St to 188th St
R34	188th St	I-5 bridge - 19th Ave	Reconstruct 188th St from 19th Ave to I-5 bridge (Project 47)
R35	168th St	43rd Ave - Smokey Point Blvd	Construct 3 lane roadway from Smokey Point Blvd to 47th Ave (Project 36)
R36	188th St	67th Ave - 59th Ave	Reconstruct 188th St from 59th Ave to 67th Ave from a 2 lane roadway to a 3 lane roadway
R37	172nd St NE	67th Ave NE - SR-9	Reconstruct SR 531 (172nd St) from 67th Ave to SR 9 from a 2 lane roadway to a 4 lane roadway.
R38	Tveit Rd	Stillaguamish Ave - City Limits	20 years+
R39	186th St	City Limits ease - 186th (paved road surface)	20 years+
R40	Cross Airport Tunnel	188th St NE - 47th Ave NE	20 Years+

Table 6-2: 2035 Transportation Improvement Project List: Intersections

Proposed Project ID	Project Name	Project Description
I1	Smokey Point Blvd at SR-530	Install a roundabout at Smokey Point Blvd east/SR 530. Reconstruct 27th Ave to align with roundabout. Convert Smokey Point Blvd west/SR 530 to right turn.
I2	Smokey Point Blvd at 188th St	Install a roundabout at Smokey Point Blvd/188th St
I3	Airport Blvd at188th St	Install a roundabout at Airport Blvd/188th St
I4	SR-530 at 59th Ave	Install a roundabout at SR 530/59th Ave
I5	SR 530 at 211th St	Install a roundabout at SR 530/211th St
I6	SR-530/SR-9 /Division	Add a 2nd EB left-turn lane at SR 530/SR 9/Division
I7	SR-530/SR-9 /Burke	Install a traffic signal at SR 530/SR 9/Burke Ave
I8	204th St at Olympic Pl	Install a roundabout at 204th St/Olympic Pl
I9	204th St at 74th Ave	Install Traffic Signal at 204th St/74th Ave
I10	204th St at 71st Ave	Install Traffic Signal at 204th St/71st Ave
I11	67th Ave at 188th St	Install traffic signal at 67th Ave/Future Rd (Project R9)
I12	67th Ave at Arlington Valley Rd	Install traffic signal at 67th Ave/Arlington Valley Rd (Project R7)
I13	40th Ave and 172nd St	Install Traffic Signal at 40th Ave/SR 530 (Project R14B)

6.1.1 Future Traffic Operations with Improvement Projects

Intersection levels of service were re-evaluated for the 30 study intersections for the 2035 horizon with the transportation improvement projects in place. These improvements vary by location, but typically include conversion to signalized intersections or roundabouts and associated widening.

The 2035 improvement plan results in improved operations at all locations where deficiencies were previously shown. The 172nd Street NE (SR-531) corridor is projected to have a significant increase in traffic due in part to industrial/commercial growth along the corridor and significant residential growth to the east that must use this route to Interstate 5. The level of service along the corridor will be at or near the City's standard at multiple locations along this route. The coordinated development of a grid system with the City of Marysville is a key strategy in this area, and should provide additional capacity as it is developed. An alternate route to the residential areas would also alleviate some of the congestion, and there are projects that will add that capacity along Cemetery Road. However, the SR-531/I-5 interchange will still handle most of this traffic unless a new interchange is constructed.

Figure 6-2 presents projected 2035 PM Peak Hour traffic movements and volumes with planned improvements, **Figure 6-3** illustrates the associated LOS for those intersections, and **Figure 6-4** presents select roadway sections with projected peak-hour traffic flow along with Volume/Capacity percentage.

Table 6-3 below summarizes PM peak hour intersection operations at the 31 study intersections. Intersections projected to fall short of the level of service standard in 2035 without improvements are highlighted and shown with improvements in place. Operational reports are included in **Appendix F**.

Table 6-3. Projected 2035 LOS - Summary - with Improvements

Number	Intersection	Intersection Control	Projected 2035 with Imp	
			LOS (Delay)	Worst v/c
1	E Burke Ave/N Manhattan Ave	Stop Sign	C (17)	0.22
2	E Burke Ave (SR 530)/ SR 9	Signal	C (21)	0.89
3	E Division St/N Olympic Ave	All Way Stop	B (12)	0.48
4	W Division St / (SR 530) / (SR 9)	Signal	C (34)	0.84
5	E Maple St/S Olympic Ave	All Way Stop	B (11)	0.41
6	Lebanon St/67th Ave NE	All Way Stop	E (39)	1.12
7	E Highland Dr/S Stillaguamish Ave	Signal	B (12)	0.64
8	211th Pl NE/67th Ave NE	Signal	A (8)	0.72
9	204th St NE/SR 9	Signal	C (30)	0.86
10	204th St NE/67th Ave NE	Signal	C (26)	0.83
11	211th Pl NE/SR 530	Roundabout	A (9)	0.82

Table 6-3. Projected 2035 LOS Summary - with Improvements (*cont'd)*

Number	Intersection	Intersection Control	Projected 2035 with Imp	
			LOS (Delay)	Worst v/c
12	SR 530/I-5 NB Ramps	Signal	C (25)	0.93
13	SR 530/I-5 SB Ramps	Signal	C (21)	0.79
14	Crown Ridge Blvd/SR 9	Signal	B (12)	0.79
15	188th St NE/67th Ave NE	Signal	B (16)	0.86
16	188th St NE/Smokey Point Blvd	Roundabout	C (34)	1.19
17	172nd St/SR 9	Roundabout	E (57)	1.16
18	172nd Ave NE/Gleneagle Blvd	Stop Sign	C (21)	0.28
19	172nd St NE/67th Ave NE	Roundabout	C (26)	1.16
20	172nd St NE /59th Ave NE	Roundabout	C (23)	1.34
21	172nd St NE /51st Ave NE	Roundabout	C (24)	1.14
22	172nd St NE /43rd Ave NE	Roundabout	A (10)	0.75
23	172nd St NE /Smokey Point Blvd	Signal	D (55)	1.04
24	Smokey Point Dr/Smokey Point Blvd	Signal	A (3)	0.38
25	172nd St NE /I-5 NB Ramps	Signal	C (29)	0.96
26	172nd St NE /I-5 SB Ramps	Signal	B (16)	0.95
27	200th St/Smokey Point Blvd	Stop Sign	C (22)	0.21
~~28~~	~~200th St/23rd Ave~~ ***REMOVED***	~~Stop Sign~~	~~A (10)~~	~~0.09~~
29	SR 530/Smokey Point Blvd – W Leg	Stop Sign	B (13)	0.01
30	SR 530/Smokey Point Blvd – E Leg	Roundabout	B (13)	0.76
31	Smokey Point Y/Smokey Point Blvd	Stop Sign	B (13)	0.44

6.2 NON-MOTORIZED IMPROVEMENTS

The City's planned non-motorized improvements include sidewalks, crosswalks, trails, and bicycle lanes. The City is in the process of developing crosswalk standards that will match the level and type of non-motorized traffic with the classification of street being crossed (arterial, collector, residential, etc.).

The City's proposed Non-motorized Facility Projects are shown in **Figure 6-2.** The City is in the process of developing a complete streets program that prioritizes sidewalk construction by location and land use. The developing sidewalk construction program will utilize the input of a complete streets program to better provide full connectivity for pedestrians. The road sections in **Appendix H** illustrate where sidewalks and trails will be required to be installed with new development. The City has been strategically planning and implementing a multi-use trail system for pedestrians and bicyclists. Future expansion of this system are detailed below in **Table 6-4.**

Table 6-4: 2035 Non-motorized Improvement Project List - Trails

Proposed Project ID	Project Name	Project Limits	Project Description
T01	168th Trail	51st Ave to 43rd Ave	12-ft wide, 3,650-ft long paved multiuse trail to be completed as part of road project R19
T02	173rd Trail	Smokey Pt Blvd to Airport Blvd	12-ft wide, 2,210-ft long paved multiuse trail to be completed as part of road project R28A & R28B
T03	188th Trail	Smokey Pt Blvd to Airport Blvd	12-ft wide, 1,550-ft long paved multiuse trail to be completed as part of road project R2
T04	204th Trail	Centennial Trail at 69th Ave to SR-9	12-ft wide, 2,075-ft long paved multiuse trail, trail under planning & design (partially funded)
T05	43rd Trail	172nd St to 168th St	12-ft wide, 1,820-ft long paved multiuse trail to be completed as part of road project R2
T06	51st St Trail	172nd St to City Limits	12-ft wide, 1,590-ft long paved multiuse trail to be completed as part of road project R20
T07A	63rd Trail #1	Cemetery Rd to 188th St	12-ft wide, 5,240-ft long paved multiuse trail
T07B	63rd Trail #2	188th St to SR-531	12-ft wide, 5,200-ft long paved multiuse trail to be completed as part of road project R16A
T08	188th Trail	67th Ave to 66th Ave	12-ft wide, 360-ft long paved trail connecting existing 188th St trail to Centennial Trail

Table 6-4: 2035 Non-motorized Improvement Project List – Trails *(cont'd)*

Proposed Project ID	Project Name	Project Limits	Project Description
T09	172nd Trail #1	43rd Ave to 67th Ave	12-ft wide, 7, 710-ft long paved multiuse trail with 2020 construction start, part of project R14A
T10	74th Trail	200th St to 204th St	12-ft wide, 2,000-ft long paved multiuse trail to be completed as part of road project R7
T11	Arl. Valley Road Trail	67th Ave to 200th St	12-ft wide, 4,000-ft long paved multiuse trail to be completed as part of AVR project R7
T12	Bluff Trail	188th St to Smokey Pt Blvd	12-ft wide, 2,900-ft long unpaved trail along bluff in natural setting with overlook
T13	Burke Trail	Trail to trail connection	From Centennial Trail to Eagle Trail, construct with Haller Park project
T14	Gilman Trail	Trail to Park connection	12-ft wide, 2,500-ft long paved trail from Centennial Trail to Country Charm Park
T15	Country Charm Access	Trail to Park connection	10-ft wide, 800-ft long unpaved trail connecting Country Charm Park to Twin Rivers Trail (T17)
T16	Cemetery connector	Centennial Trail to SPB Trail	10-ft wide, 15,140-ft multiuse trail from Cent. Trail at 204th St to Smokey point Blvd
T17	Twin Rivers Trail	Trail to Park connection	10-ft wide, 1,100-ft paved trail connecting Country Charm trail (T15) to Twin Rivers Park
T18	Edgecombe Trail (A)	172nd St to Marysville	2,100-ft long unpaved trail connecting Centennial &172nd St trails, parallels realigned Edgecombe Crk
T19	Edgecombe Trail (M)	Marysville Trail	Marysville's extension of Edgecombe Trail (T18) starting in Arlington *(see Marysville plan)*
T20	Frontage Trail	Trail to Park connection	10-ft wide, 5,475-ft paved trail connecting Centennial Trail to Portage Creek Wildlife Refuge
T21	Gleneagle Trail	Neighborhood Trail	10-ft wide, 6,100-ft trail connecting Centennial Trail thru Gleneagle neighborhood, passing two schools
T22	172nd Trail #2	67th Ave to 89th Ave	12-ft wide, 7,250-ft long trail connecting 172nd Ave #1 (T09) trail to 89th Ave Trail (T29), part of projects R37 & R13
T23	Highland Dr	S Olympic to Hospital	12-ft wide, 2,200-ft long trail connecting Hospital to S Olympic Trail (T28), included with project R5
T24	Island Crossing Trail	Trail & SW system	Combined paved trail and sidewalk system within City and state right-of-way, included with project I1
T25	S Olympic Trail	204th St to Highland Dr	12- ft wide, 2,575-ft long paved trail from 204th St Trail (T04) to Highland Dr Trail (T26)

Table 6-4: 2035 Non-motorized Improvement Project List – Trails *(cont'd)*

Proposed Project ID	Project Name	Project Limits	Project Description
T26	Smokey Pt Blvd Trail #1	35th Ave to SR 530	12-ft wide, 9,150-ft long paved trail from SPB Trail #2 at 35th Ave and extending to trail and to Island Crossing Trail (T24), part of road project R1
T27	Smokey Pt Blvd Trail #2	172nd St to 35th Ave	12-ft wide, 4,000-ft long paved trail from SPB Trail #1 to Smky Pt Transit Center, 173rd St Trail (T02), and S. City Trail (T28), part of road project R30
T28	South City Trail	172nd St to 164th St	12-ft wide, 4,000-ft long paved trail connecting SPB Trail #2 to Country Manor trail
T29	89th Trail	172nd St to Crownridge Blvd	12-ft wide, 5,950-ft paved trail from 172nd St to Crownridge, part of projects R12, R39, and R11

6.3 ADA TRANSITION PLAN

The Americans with Disabilities Act (ADA) extended comprehensive civil rights protections to people with disabilities. Title II of the ADA addresses the law's requirements of local governments in their interactions with people with disabilities. Local governments are required to identify barriers that may limit accessibility for people with disabilities and develop transition plans describing how they will address identified barriers.

The City of Arlington anticipates that roadway and pavement preservation projects will correct a number of intersections annually. Every development project, both City and private, is required to correct all deficiencies within the project limits and upgrade all ADA facilities to current standards to the maximum feasible extent. The City is committed to making all sidewalk, crosswalks, and curb ramp areas accessible to everyone within as short a time as possible in order to ensure improved mobility for those with special needs. The City's ADA Transition Plan and the Crosswalk Standards being developed concurrently with this document prioritize areas with higher pedestrian traffic levels, including school zones, hospitals and areas with a high level of retail uses.

6.4 TRANSPORTATION DEMAND MANAGEMENT

The City of Arlington Transportation Demand Management (TDM) strategy is multi-pronged and will reduce both local and regional vehicle trips. Projects recently or currently under way in the City include:

- **New Non-Motorized Trails.** The City has been constructing the regional Centennial Trail as well as local trail networks to encourage increased non-motorized access throughout the City.
- **Transit Station.** A transit station was recently opened at Smokey Point Boulevard and 174th Street. This will be a key component of the regional transit system, reducing vehicles on I-5.
- **Park & Ride in Old Town.** A park and ride in Old Town provides regional benefits as commuters can transfer to public transit or carpool from this location to destinations further west or south along SR-9, SR-530, SR-531 and I-5.
- **Commercial Development with Transit**. The City is encouraging commercial areas to include transit facilities as they develop, especially along the well-traveled SR 531 and Smokey Point Boulevard corridors.

City of Arlington

Figure 6-1
Proposed 2035 Transportation Improvement Projects

2017 Update

Intersection Improvements
- Right In/Right Out
- Roundabout
- Signal

New Infrastructure
- Off/On Ramps
- Overpass
- Tunnel

Street Improvements
- 2 Lanes
- 3 Lanes
- 4 Lanes
- 5 Lanes

New Roads
- 2 Lanes
- 3 Lanes

Projects labeled by project number
R = road project
I = intersection project

Roundabout intesection improvements extend to I-5, down Smokey Point Blvd and up 27th Ave

Legend
- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N W E S

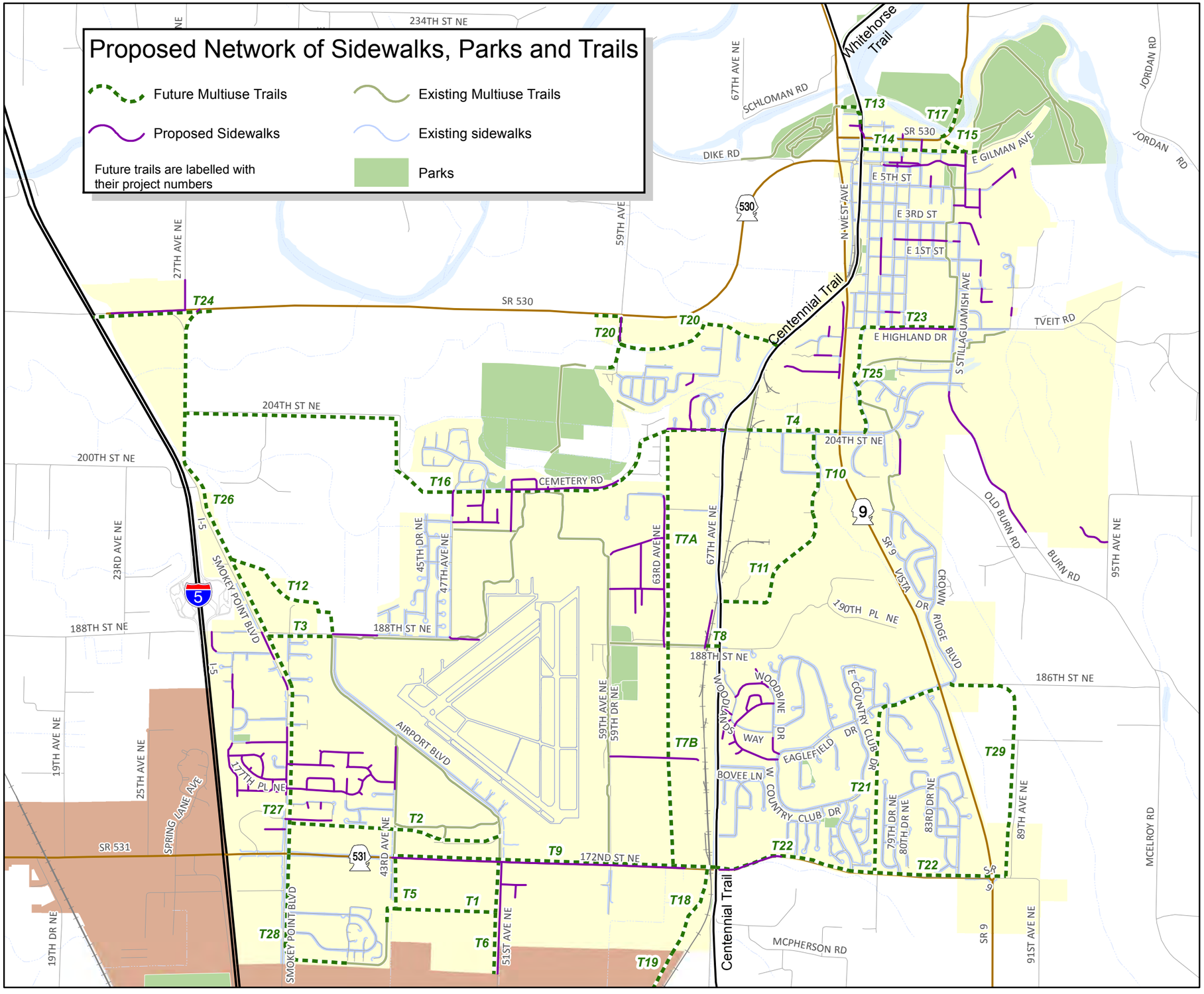
Waterbodies and streams provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.275 0.55 1.1 Miles

Date: 6/15/2017

File: Figure6-1TransProj11x17_17

Cartographer: kdh



City of Arlington

Figure 6-2 Proposed Non-Motorized Network

2017 Update

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- City of Marysville

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

0 0.225 0.45 0.9 Miles

6/13/2017

Figure6-2PlannedNon-Motorized11x17_17

kdh

City of Arlington

Figure 6-3
Projected 2035 PM Peak Hour Traffic Volumes - with Improvements

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets

N
W E
S

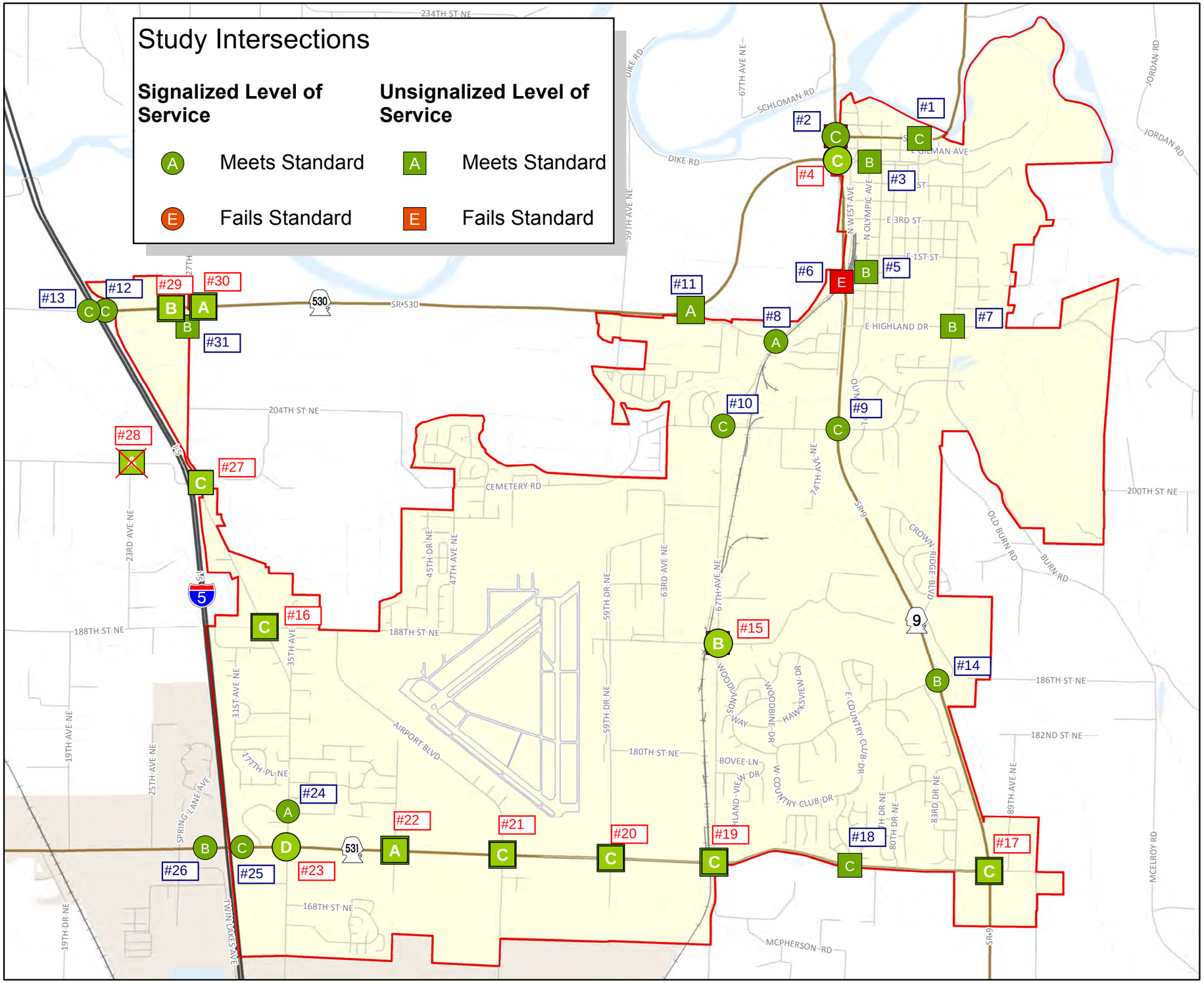
Scale: 0 0.25 0.5 1 Miles

Date: 3/2/2016

File: Figure6_2_11x17_16

Cartographer: kdh

5) E Maple St at S Olympic Ave
6) Lebanon St at 67th Ave NE
7) E Highland Dr at S Stillaguamish Ave
8) 211th Pl NE at 67th Ave NE
9) 204th St NE at SR-9
10) 204th St NE at 67th Ave NE
11) 211th Pl NE at SR-530
12) SR-530 at I-5 NB Ramps
13) SR-530 at I-5 SB Ramps
14) Crown Ridge Blvd at SR-9
15) 188th St NE at 67th Ave NE
16) 188th St NE at Smokey Point Blvd
17) 172nd St NE at SR-9
18) 172nd St NE at Gleneagle Blvd
19) 172nd St NE at 67th Ave NE
20) 172nd St NE at 59th Ave NE
21) 172nd St NE at 51st Ave NE
22) 172nd St NE at 43rd Ave NE
23) 172nd St NE at Smokey Point Blvd
24) Smokey Point Dr at Smokey Point Blvd
25) 172nd St NE at I-5 NB Ramps
26) 172nd St NE at I-5 SB Ramps
27) 200th St at Smokey Point Blvd
28) 200th St at 23rd Ave
29) SR 530 at Smokey Point Blvd West
30) SR 530 at Smokey Point Blvd East
31) Smokey Point Y at Smokey Point Blvd
1) E Burke Ave at N Manhattan Ave
2) W Burke Ave at Hazel St
3) E Division St at N Olympic Ave
4) W Division St at Hazel St



City of Arlington

Figure 6-4
Projected 2035 PM Peak Hour Intersection LOS - With Improvements

Legend

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

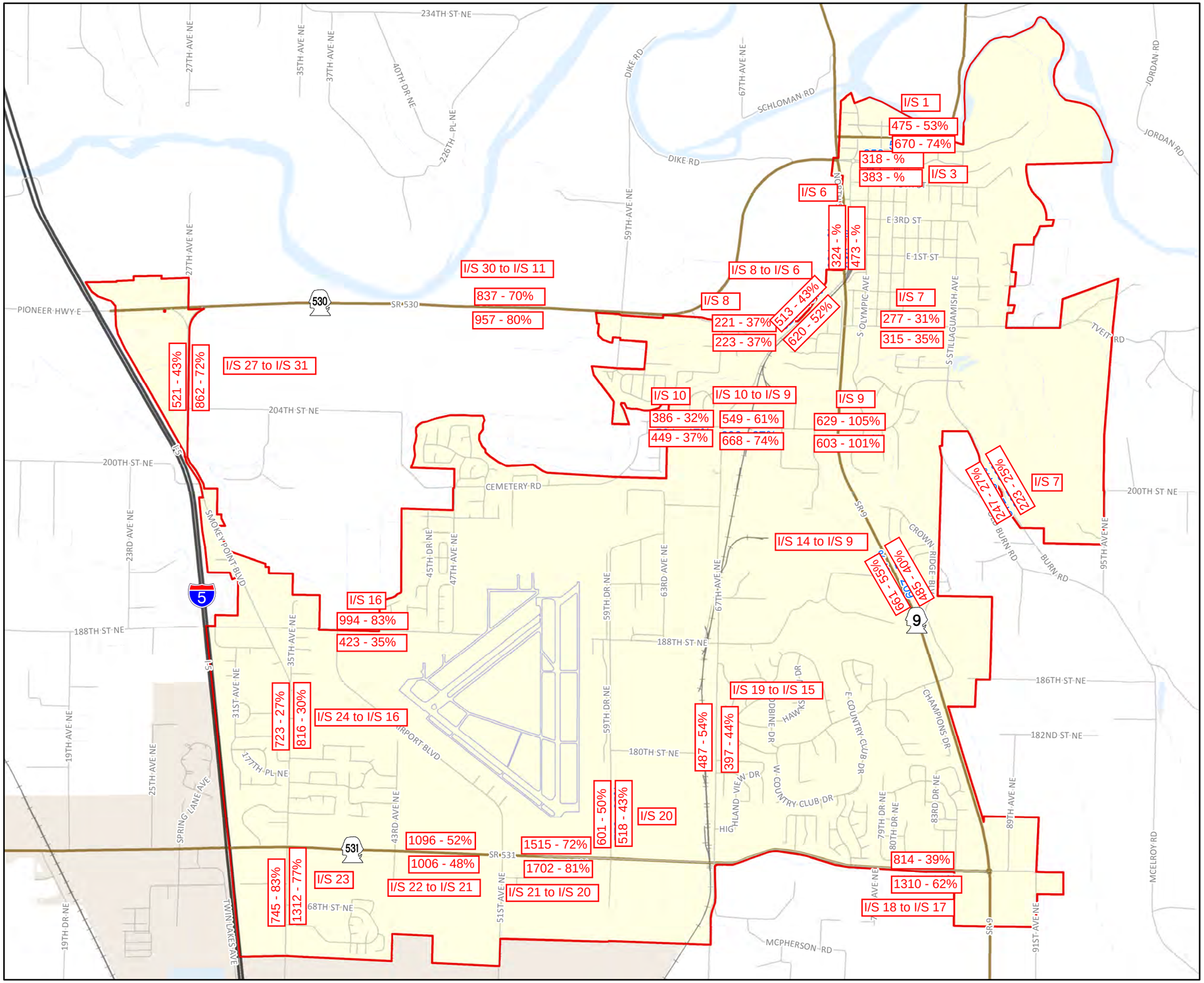
Date: 3/2/2016

File: Figure6_3_11x17_16

Cartographer: kdh

City of Arlington

Figure 6-5
Projected 2035 PM Peak Hour Road Volumes - With Improvements



Legend

XXX-XX% labels: Road volume and volume capacity %

- Arlington City Limits
- City of Marysville
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area

N W E S

Waterbodies provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

Date: 3/2/2016

File: Figure6_4_11x17_16

Cartographer: kdh

7 Financial Analysis

7.1 TRANSPORTATION CIP FUNDING

The City of Arlington is required to analyze the financial practicality of its 2035 Transportation Improvement Program. The analysis should include needs and resources, and contain a multi-year financing plan. If a funding analysis shows that a plan is not affordable or achievable, the plan must discuss how additional funds will be raised, or how land use assumptions will be reassessed. This section demonstrates that the 2035 Arlington Transportation Plan, 2017 Update is financially constrained and in compliance with state and federal laws.

State and federal legislation requires that the transportation plan be financially constrained. Only projects that the City can afford to complete with existing revenues or with revenues that are reasonably expected to be available are included. This requirement helps to ensure that the long-range plan is a realistic plan for transportation policy and investment. The financial forecast must consider the cost to maintain the existing system, as well as the cost to expand the transportation system to meet future demand.

Major capacity projects cannot be funded unless they are specifically identified in the Regional Transportation Plan. Regionally significant projects cannot be included in comprehensive plans and Capital Facilities Plans unless they are also in the long-range transportation plan. If not, the City is unable to seek development fees, federal grants, or most state grants.

7.2 FINANCIAL PLANNING AND PROGRAMMING

The City uses a variety of criteria to prioritize transportation projects, including safety, mobility, and overall community benefit. The City must also consider the availability of funding and ability to leverage city dollars to raise additional funds. Project prioritization for capital improvements is therefore often partially dependent on the ability to secure outside funding, and maintenance and preservation costs are dependent on the limited tax revenues

available to the City. When establishing project costs the City must consider a number of issues:

- Cost Estimates: Costs provided are planning level estimates. Estimates will be more fully developed during subsequent planning efforts, including development of the Six-Year Transportation Improvement Program (TIP).
- Historic Precedence: Assessment of historical trends, such as local revenue attributed to development fees, annual growth rates, etc.
- WSDOT Programming: Projects that include improvements to WSDOT facilities must also be included in WSDOT's 10-year Improvement Program.
- Growth: Private sector project contributions assume that the forecasted growth will occur.

7.3 FUNDING STRATEGIES

Transportation infrastructure construction or rehabilitation is very costly and a surface transportation project is seldom funded from a single source. To fund transportation improvement projects the City of Arlington, as other municipalities and jurisdictions, looks for funding from various sources. Funding mechanisms the City has identified to fund the 2035 TIP are summarized below.

7.3.1 Traffic Mitigation Fees

The Transportation Improvement Fund (TIF) is the City's source for transportation system funding. The TIF is primarily financed by Traffic Mitigation fees, though other City funds (REET 1, REET 2, General Fund, etc.) can be used to finance this fund. The Growth Management Act allows cities and jurisdictions to collect traffic impact fees relative to the proportionate share of the cost of public facilities that benefit the new development (*RCW 82.02.050-110*). The City of Arlington allows for the assessment of traffic impact fees in accordance with Arlington Municipal Code 20.90.

Collected impact fees are used to mitigate impacts to existing facilities caused by the development; impact fees, however, cannot be used to correct existing deficiencies in public facilities. The City of Arlington allows traffic impact fees to be used for costs associated with City street system capacity improvements, including, but not limited to, planning, design, engineering, right-of-way acquisition, financing, project administration, construction, and construction engineering.

7.3.2 Transportation Benefit District Funding

The State of Washington created an option for local governments to fund transportation maintenance and capital improvements through the creation of a Transportation Benefit District (TBD). A TBD is a quasi-municipal corporation with taxing powers that is created for the sole purpose of acquiring, constructing, improving, providing, and funding transportation

improvements within the defined district. The many municipalities have formed TBDs to keep pace with the rising costs of maintaining and constructing transportation infrastructure.

The citizens of Arlington voted to create a Transportation Benefit District (TBD) in 2013 for the purpose of maintaining and preserving existing surface transportation infrastructure. The governing board ("Board") of the transportation benefit district is the members of the Arlington City Council acting in an ex officio and independent capacity that has the authority to exercise the statutory powers set forth in chapter 36.73 RCW. The Mayor serves as chairperson of the Board.

While at the current time TBD funding is limited to preservation and reconstruction of existing roads, TBD funds may be available in the future to fund capital improvements. As such, it is included in this plan as a viable source of future funding.

7.3.3 Private Development

In addition to traffic impact fees, there are other forms of transportation system funding from private development. Developers and property owners may elect to form a Local Improvement District (LID) as a method of financing capital improvements that provide a special benefit to the properties within the boundary of the LID. Transportation improvements (roads, trails, sidewalks, etc.) constructed can be privately owned and maintained, or they can be dedicated to the City for long term maintenance and operation. If dedicated to the City, they will need to be constructed and inspected in accordance with City standards.

Developers may also have a responsibility for constructing partial roads and sidewalks that abut the development as well as roads internal to the development. Internal roads constructed to City standards and inspected by the City may be dedicated to the City for long term operation and maintenance.

7.3.4 State Funding

State transportation funding can come from varied sources; the Transportation Improvement Board (TIB), the Community and Economic Redevelopment Board (CERB), WSDOT appropriated funding, and state bond measures are a few. Each of the funding sources carries with it a list of requirements specific to the state funding program and it is the City's responsibility to match each selected City transportation project with the funding source.

7.3.5 Federal Funding

Federal transportation funding is mostly offered through a locality's Regional Transportation Planning Organization (RTPO); with Arlington the funding would be offered through one of the many transportation programs administered by the PSRC. Other federal funding is offered through the Federal Highways Administration (FHWA) or from a special federal allocation and administered by WSDOT. Federal funding requirements are different than state funding

requirements and can be more cumbersome as they require a lot more project reporting. However, as with state transportation funding, it is the City's responsibility to match the select City transportation project with the funding source.

7.3.6 Other Funding

There are other transportation funding sources, but these sources are limited and typically reserved for specific transportation system components such as complete sidewalks, trails, education, and trip reduction. Though small, these funds, when applied correctly, can contribute to the complete funding of a transportation project.

7.4 FINANCIAL ANALYSIS FOR RECOMMENDED IMPROVEMENT PROGRAM

Planning level capital costs for the 2035 recommended transportation and nonmotorized improvement program along with a proposed funding strategy is summarized in **Table 7-1** for Intersection Projects, in **Table 7-2** for Road Projects, and in **Table 7-3** for Nonmotorized Projects (these larger tables can be found at the back of this chapter). All costs are provided as planning-level cost estimates in 2015 dollars, costs will be more fully developed through the annual Six-Year TIP development and as projects move into the planning and design phase.

Tables 7-1 and **7-2** include a total of 52 projects. Twelve are intersection projects and 40 are roadway projects. However, some of the projects listed are not assumed to be constructed by the 2035 horizon of this plan, and the costs are therefore not included in the total. The total improvement cost ($218,662,000) also includes elements that will fall outside of the City's regular transportation revenue and expenditure stream. Specifically this refers to project costs attributed to developer driven improvements and to the SR 531 Widening Project (project R14) as described below:

Developer Funded -Some of the roadways and intersection improvements, or portions of them, are required specifically to serve developments, i.e. a new roadway constructed within a development to serve that development. Some or all of the cost of such improvements would be borne by the project developer at the time it is needed. Neither the revenue nor expense of these types of improvements would pass through the City's revenue stream. These developer costs, as identified in **Table 7-1**, are therefore removed from the revenue requirement of the City.

SR 531 Widening (R14) - This improvement has already been earmarked all necessary funds ($39.3 million) through the 2015 Connecting Washington funding package. The cost of this improvement doesn't factor into the revenue or expenditure side of the city's revenue forecast and has been removed from City's expenditure requirement for the 2035 Recommended Improvement Program, and the $39.3 million in secured funds is not included in the revenue forecast.

Tables 7-3 includes a total of 30 non-motorized trail projects totaling 21 miles. There are 19 projects in the list that are included with other road or intersection projects; 11 projects require the development of a nonmotorized funding scenario. As will be discussed in the next section, the City has been successful and has a good record in obtaining funding for road projects; however, nonmotorized and multimodal funding is a relatively new area of funding for the City of Arlington. In the past the City has only been awarded two grants under the nonmotorized funding category. Funding sources have been identified for each of the unfunded and will be explored further as the funding programs become available.

7.4.1 Revenue and Expenditure Forecast Methodology

Transportation general expenditures and revenue for transportation projects that the City of Arlington could expect over the life of this transportation planning period (2015-2035) have been forecasted. The forecast is based on historical trends exhibited by the city of Arlington over the previous 10 years. The forecasted expenditures have been summarized into the following three major categories: Maintenance, Operations and Capital Improvements. The future maintenance and operations expenditures and future revenues were forecasted based on historical trends. The total forecasted revenue is derived from the various sources listed previously in this section of the report. The net forecasted revenue available for capital improvements was calculated as the total forecasted revenue less the sum of forecasted expenditures on maintenance and operations.

7.4.2 Revenue and Expenditure Forecast Summary

Over the previous three years (2012 -2014) the City of Arlington has averaged approximately $8 million in total revenue (less policing) in 2015 dollars. Based on historical trends, the revenue is expected to increase by approximately 7% per year. Based on this calculation the City is forecasted to have a total revenue over the life of this Transportation Plan (2016 through 2035) of approximately $278.4 million. The future maintenance and operations expenditures were also forecasted based on historical trends and subtracted from the total revenue forecast to estimate the total revenue available for capital improvements. **Table 7-4** summarizes the revenue forecast and **Table 7-5** summarizes the city portion of the funding requirement for the Recommended Improvement Program. The revenue and expenditure forecast calculations based on historic data are included in **Appendix L**.

Table 7-4. 2016-2035 Revenue Forecast Summary

Forecasted Revenue	Amount (*in 1,000s*)
Total Revenue	$278, 401
Less Maintenance Cost	-$27,273
Less Operation Cost	-$85,475
Net Revenue for Roadway and Intersection Construction	**$165,653**

Table 7-5. 2016-2035 Project Cost Summary

Recommended Projects	Amount (*in $1,000s*)
Intersection Projects	$28,212
Roadway Projects	$190,450
Project Cost Total	***$218,662***
Less Developer Cost	-$23,108
Less (R14) SR 531 widening	-$39,300
Total Estimated City Funding for Recommended Improvement Program	**$156,254**

Based on historical trends, the revenue forecast shows that the City of Arlington should have sufficient revenue to construct the 2035 Recommended Improvement Program. This forecast will be updated periodically between now and 2035, during which the underlying assumptions will be revisited and revised as warranted.

7.5 REASSESSMENT STRATEGY

Although the financing summary recognizes the potential for a $350 to $460 million (in 2015 dollars) shortfall over the life of the plan, the City is committed to reassessing their transportation needs and funding sources each year as part of its Six-Year Transportation Improvement Program (TIP). This allows the City to match the financing program with the short term improvement projects and funding. The 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 requirement. In order to implement the Transportation Element, the City will consider the following principals in its transportation 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 standards to determine whether costs could be reduced through reasonable changes in scope or deviations from design standards;
- Fund improvements or require developer improvements as they become necessary to maintain LOS standards to meet concurrency;
- Explore ways to obtain more developer contributions to fund the improvements;

- Coordinate and partner with WSDOT, Tulalip Tribes, Snohomish County and local cities and vigorously pursue grants from state and federal agencies to fund and implement improvements to I-5 and SR 9.
- Work with Snohomish County to develop multi-agency grant applications for projects that serve growth in the City and its UGA;
- Review funding strategy to see if the transportation impact fees should be revised to account for the updated capital improvement project list and revised project cost estimates;
- If the actions above are not sufficient, the City could consider changes in its level of service standards and/or possibly limit the rate of growth in the City as part of future updates of its Comprehensive Plan;
- Lower priority projects in the Transportation Element may be slid to beyond 2035 or deleted from the program.

The City of Arlington will use the annual update of the Six-Year Transportation Improvement Program (TIP) to re-evaluate priorities and timing of projects. Throughout the planning period, projects will be completed and priorities will be revised. This will be accomplished by annually reviewing traffic growth and the location and intensity of land use growth in the City and the UGA. The City will then be able to direct funding to areas that are most impacted by growth or to arterials that may fall below the City's level of service (LOS) standards. The development of the TIP will be an ongoing process over the life of the Plan and will be reviewed and amended annually.

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Table 7-1. Proposed Funding Scenario For Intersection Projects

Project ID	Project Name	Est Project Cost	Project Description	TIF	Developer	State	Federal	Other
I1	Smokey Point Blvd/SR-530	$9,250,000	Install a roundabout at Smokey Point Blvd (SPB) east/SR 530. Reconstruct 27th Ave and SPB-west to align with roundabout. Convert SPB-west @ SR 530 to right only. Reconstruct SR-530 from I-5 to 250' past new roundabout.	$150,000	$1,850,000	$7,250,000		
I2	Smokey Point Blvd/ 188th St	$3,350,000	Install a roundabout at Smokey Point Blvd/188th St	$452,250			$2,897,750	
I3	Airport Blvd/188th St	$1,770,000	Install a roundabout at Airport Blvd/188th St	$238,950		$1,531,050		
I4	SR-530/59th Ave	$2,690,000	Install a roundabout at SR 530/59th Ave	$363,150			$2,326,850	
I5	SR 530/211th St	$2,750,000	Install a roundabout at SR 530/211th St			$2,750,000		
I6	SR-530/SR-9/Division	$3,501,085	Add a 2nd EB left-turn lane at SR 530/SR 9/Division St			$3,501,085		
I7	SR-530/SR-9/Burke	$1,120,465	Install a traffic signal at SR 530/SR 9/Burke Ave			$1,120,465		
I8	204th St/Olympic Place	$1,080,000	Install a roundabout at 204th St/Olympic Pl	$145,800		$934,200		
I9	204th St/74th Ave		Install Traffic Signal at 204th St/74th Ave	$0			$0	
I10	204th St/ 71st Ave	$490,000	Install Traffic Signal at 204th St/71st Ave	$66,150			$423,850	
I11	67th Ave/188th St	$480,000	Install traffic signal at 67th Ave/Future Rd (Project R9)	$96,000			$384,000	
I12	67th Ave/Arlington Valley Rd	$660,000	Install traffic signal at 67th Ave/Arlington Valley Rd (Project R7)	$89,100		$570,900		
I13	40th Ave and 172nd St (SR-531)	$1,070,000	Install Traffic Signal at 40th Ave/172nd St (SR-531)	$144,450		$925,550		
		$28,211,550	***TOTAL***	***$1,745,850***	***$1,850,000***	***$16,765,535***	***$7,850,165***	

Table 7-2. Proposed Funding Scenario For Road Projects

Project ID	Project Name	Est Project Cost	Project Description	TIF	Developer	State	Federal	Other
R1	Smokey Point Blvd	$9,700,000	Reconstruct Smokey Point Blvd from 188th St to SR 530 from a 2 lane roadway to a 3 lane roadway	$970,000	$970,000	$7,275,000		$485,000
R2	Cross Town Connector	$7,500,000	Reconstruct Cemetery Rd from 47th Ave to 188th St from a 2 lane roadway to a 3 lane roadway	$1,125,000		$3,375,000	$3,000,000	
R3	45th Drive Extension	$0	New 2 lane roadway connecting the existing terminus of 45th Dr with Cemetery Rd *(Beyond 20 year plan)*	---	---	---	---	---
R4	211th Place	$2,550,000	Reconstruct 211th Pl from 67th Ave to SR 530 from a 2 lane roadway to a 3 lane roadway	$255,000	$255,000	$2,040,000		
R5	Highland Drive	$4,000,000	Reconstruct Highland Dr from SR 9 to Stillaguamish Ave from a 2 lane roadway to a 3 lane roadway					
R6	74th & 71st	$2,010,000	Construct new 2 lanes roadways from Hazel St to 204th St. These roadways will tie into 71st Ave and 74th Ave, with 71st Ave connecting into 74th Ave		$2,010,000			
R7	Arlington Valley Rd.	$4,279,047	Construct new 3 lane roadway from southern terminus of 74th Ave to 191st Pl, connecting 67th Ave and 204th St	$747,000			$2,410,000	$1,122,447
R8	197th St Extension	$2,220,000	Construct new 2 lane roadway connecting 67th Ave to Arlington Valley Rd (Project R7)		$2,220,000			
R9	Future Rd	$0	Construct new 2 lane roadway connecting Arlington Valley Rd (Project R7) to 67th Ave at 188th St *(Beyond 20 year plan)*	---	---	---	---	---
R10	59th Dr. Extension	$1,750,000	Construct 2 lane extension of 59th Dr from northern terminus to Cemetery Rd	$262,500			$1,487,500	
R11	186th St	$1,310,000	Construct new 2 lane roadway from Crown Ridge Blvd to eastern city limits	$327,500	$982,500			
R12	89th Ave	$7,610,000	Reconstruct/Extend 89th Ave from 172nd St to 186th St (Project R11)	$1,141,500	$1,522,000	$4,946,500		
R13	172nd St/91st Ave	$1,690,000	Reconstruct 172nd St from SR 9 to eastern city limits from a 2 lane roadway to a 3 lane roadway		$1,690,000			
R14A	SR-531 Widening	$39,300,000	Reconstruct SR 531 (172nd St) from 43rd Ave to 67th Ave from a 2 lane roadway to a 4 lane roadway. Install roundabouts at the intersections of 43rd Ave, 51st Ave, 59th Ave and 67th Ave				$39,300,000	
R14B	SR-531 Improvements	$1,300,000	Reconstruct SR 531 (172nd St) from 67th Ave to SR-9 from a 2/3 lane roadway to a 4 lane roadway with signal at Gleneagle Blvd.	$260,000		$1,040,000		
R15	59th Ave	$7,410,000	Reconstruct 59th Ave from SR 531 (172nd St) to northern terminus from a 2 lane roadway to a 3 lane roadway	$1,482,000		$5,928,000		
R16A	63rd Ave	$7,860,000	Construct new 3 lane roadway from SR 531 (172nd St) to 188th St. with right-in-right-out intersection control at SR 531	$393,000	$5,502,000		$1,965,000	
R16B	63rd Ave	$2,120,000	Construct new 3 lane roadway from SR 531 (172nd St) to 168th St. with right-in-right-out intersection control at the intersection with SR 531	$424,000	$1,696,000			
R17	180th St	$2,920,000	Construct new 2 lane roadway from 59th Ave to the BNSF railroad tracks	$292,000	$1,314,000	$1,314,000		
R18	59th Ave	$950,000	Extend 59th Ave from SR 531 (172nd St) to southern city limits from a 2 lane roadway to a 3 lane roadway	$47,500	$237,500	$665,000		

Table 7-2. Proposed Funding Scenario For Road Projects (cont'd)

Project ID	Project Name	Est Project Cost	Project Description	TIF	Developer	State	Federal	Other
R19	168th St	$12,470,000	Construct new 3 lane roadway from 47th Ave to BNSF RR tracks	$623,500	$1,247,000	$10,599,500		
R20	51st Ave	$8,260,000	Reconstruct 51st Ave from SR 531 (172nd St) to southern city limits from a 2 lane roadway to a 5 lane roadway	$413,000		$1,239,000	$6,608,000	
R21	47th Ave	$3,290,000	Construct 3 lane roadway from SR 531 (172nd St) to southern city limits. Install right-in-right-out intersection control at intersection with SR 531	$493,500			$2,796,500	
R22	43rd Ave	$3,130,000	Construct 3 lane roadway from SR 531 (172nd St) to S. city limits	$626,000		$2,504,000		
R23	39th Ave Extension	$0	Construction of 2 lane extension of 39th Ave from 162nd Pl to southern city limits *(Beyond 20 year plan)*					
R24	38th Ave Extension	$0	Construct 2 lane extension of 38th Ave from 168Pl St to 168th St *(Beyond 20 year plan)*					
R25	39th Ave	$1,360,000	Construct 2 lane roadway from 168th St to SR 531 (172nd St)	$272,000			$1,088,000	
R26	39th Ave	$1,300,000	Construct 2 lane roadway from 173rd St to SR 531 (172nd St)	$260,000			$1,040,000	
R27	173rd St (PH3)	$1,685,270	Construct 2 lane roadway from Airport Blvd (51st Ave) to 43rd Ave	$421,318		$842,635		$421,318
R28A	173rd (PH 1)	$1,866,175	Construct 2 lane roadway from Smokey Point Blvd to Phase 2	$419,426			$2,376,749	
R28B	173rd (PH 2)	$930,000	Construct 2 lane roadway from Phase 1 to 43rd Ave	$127,500			$255,000	$127,500
R29	43rd Ave Extension	$510,000	Construct 2 lane extension of 43rd Ave from northern terminus of 43rd Ave to Airport Blvd	$2,596,000		$4,543,000	$4,543,000	$1,298,000
R30	Smokey Point Blvd	$12,980,000	Reconstruct Smokey Point Blvd from SR 531 (172nd St) to 188th St from a 2 lane roadway to a 5 lane roadway	$60,000				
R31	WSDOT rest area connector roads	$60,000	Conduct a study of the viability of constructing roadways to connect the local street system to the rest area interchange			$6,320,000		
R32	188th I-5 Bridge	$6,320,000	Construct 2 lane bridge over I-5 from 188th St terminus to 27th Ave. Reconstruct 188th St.					
R33	23rd Ave	$8,130,000	Reconstruct 23rd Ave from 200th St to 188th St					
R34	188th St	$5,630,000	Reconstruct 188th St from 19th Ave to I-5 bridge (Project 47)	$1,314,000	$1,971,000		$3,285,000	
R35	168th St	$6,570,000	Construct 3 lane roadway from Smokey Point Blvd to 47th Ave	$1,098,000			$4,392,000	
R36	188th St	$5,490,000	Reconstruct 188th St from 59th Ave to 67th Ave from a 2 lane roadway to a 3 lane roadway					$17,750,000
R37	172nd St NE	$17,750,000	Reconstruct SR 531 (172nd St) from 67th Ave to SR 9 from a 2 lane roadway to a 4 lane roadway.	$623,500	$1,247,000	$10,599,500		
R38	Tveit Rd	$0	Widen & Expand Road from Stillaguamish Ave to City Limits *(Beyond 20 year plan)*	---	---	---	---	---
R39	186th St	$0	Extend 186th St from end of development east to City Limits *(Beyond 20 year plan)*	---	---	---	---	---
R40	Cross Airport Tunnel	$0	Install tunnel beneath Airport along 186th St alignment *(Beyond 20 year plan)*	---	---	---	---	---
		$190,450,492	***TOTAL***	***$16,985,744***	***$21,257,500***	***$54,431,635***	***$76,146,749***	***$21,628,865***

Table 7-3. Proposed Funding Scenario For Non-Motorized Projects

Project ID	Project Name	Trail Length (ft)	Est Project Cost	Project Description	City Funds	RTC	STP	CMAQ	SRTS	NHPP	Ped Safety	TIB	Comments
T-1	168th Trail	3,650	----	12-ft wide, 3,650-ft long paved multiuse trail									To be completed as part of road project R19
T-2	173rd Trail	2,210	----	12-ft wide, 2,210-ft long paved multiuse trail									To be completed as part of road project R28A & R28B
T-3	188th Trail	1,550	----	12-ft wide, 1,550-ft long paved multiuse trail									To be completed as part of road project R2
T-4	204th Trail	2,075	----	12-ft wide, 2,075-ft long paved multiuse trail,									Trail under planning & design (partially funded)
T-5	43rd Trail	1,820	----	12-ft wide, 1,820-ft long paved multiuse trail									To be completed as part of road project R2
T-6	51st St Trail	1,590	----	12-ft wide, 1,590-ft long paved multiuse trail									To be completed as part of road project R20
T-7A	63rd Trail #1	5,240	$1,670,000	12-ft wide, 5,240-ft long paved multiuse trail	✓	✓	✓	✓				✓	
T-7B	63rd Trail #2	5,200	----	12-ft wide, 5,200-ft long paved multiuse trail									To be completed as part of road project R16A
T-8	188th Trail	360	$200,000	12-ft wide, 360-ft long paved trail connecting existing 188th St trail to Centennial Trail	✓								To be funded by City Funds
T-9	172nd Trail #1	7,710	----	12-ft wide, 7, 710-ft long paved multiuse trail with 2020 construction start,									To be completed as part of road project R14A
T-10	74th Trail	2,000	----	12-ft wide, 2,000-ft long paved multiuse trail to be completed as									To be completed as part of road project R7
T-11	Arl. Valley Road Trail	4,000	----	12-ft wide, 4,000-ft long paved multiuse trail to be completed as									To be completed as part of road project AVR project R7
T-12	Bluff Trail	3,500	$660,000	12-ft wide, 2,900-ft long unpaved trail along bluff in natural setting with overlook	✓				✓	✓	✓		
T-13	Burke Trail	450	----	From Centennial Trail to Eagle Trail, construct with Haller Park project									To be completed as part of Haller Park project
T-14	Gilman Trail	2,500	$530,000	12-ft wide, 2,500-ft long paved trail from Centennial Trail to Country Charm Park	✓	✓	✓					✓	
T-15	Country Charm Access	1,100	$250,000	10-ft wide, 800-ft long unpaved trail connecting Country Charm Park to Twin Rivers Trail (T17)	✓		✓	✓	✓	✓	✓	✓	
T-16	Cemetery connector	15,140	$4,130,000	10-ft wide, 15,140-ft multiuse trail from Cent. Trail at 204th St to Smokey point Blvd	✓	✓	✓					✓	
T-17	Twin Rivers Trail	895	$600,000	10-ft wide, 1,100-ft paved trail connecting Country Charm trail (T15) to Twin Rivers Park	✓	✓	✓					✓	
T-18	Edgecombe Trail (A)	2,150	$730,000	2,100-ft long unpaved trail connecting to Centennial &172nd St trails, parallels realigned Edgecombe Crk	✓		✓	✓	✓	✓	✓	✓	
T-19	Edgecombe Trail (M)	0	----	Marysville's extension of Edgecombe Trail (T18) starting in Arlington *(see Marysville plan)*									To be completed by City of Marysville
T-20	Frontage Trail	5,475	----	10-ft wide, 5,475-ft paved trail connecting Centennial Trail to Portage Creek Wildlife Refuge	✓		✓	✓	✓				
T-21	Gleneagle Trail	6,100	$2,420,000	10-ft wide, 6,100-ft trail connecting Centennial Trail thru Gleneagle neighborhood, passing two schools	✓		✓	✓	✓		✓		

Table 7-3. Proposed Funding Scenario For Non-Motorized Projects (cont'd)

Project ID	Project Name	Trail Length (ft)	Est Project Cost	Project Description	RTC	STP	CMAQ	SRTS	NHPP	Ped Safety	TIB	Comments
T-22	172nd Trail #2	7,250		12-ft wide, 7,250-ft long trail connecting 172nd Ave #1 (T09) trail to 89th Ave Trail (T29)								To be completed as part of projects R37 & R13
T-23	Highland Dr	2,200	----	12-ft wide, 2,200-ft long trail connecting Hospital to S Olympic Trail (T28),								To be completed as part of project R5
T-23	Highland Dr	2,200	----	12-ft wide, 2,200-ft long trail connecting Hospital to S Olympic Trail (T28),								To be completed as part of project R5
T-24	Island Crossing Trail	750	----	Combined paved trail and sidewalk system within City and state right-of-way,								To be completed as part of project I1
T-25	S Olympic Trail	2,610	$1,500,000	12- ft wide, 2,575-ft long paved trail from 204th St Trail (T04) to Highland Dr Trail (T26)	✓		✓	✓	✓	✓	✓	
T-26	Smokey Pt Blvd Trail-1	9,150	----	12-ft wide, 9,150-ft long paved trail from SPB Trail #2 at 35th Ave and extending to trail and to Island Crossing Trail (T24),								To be completed as part of project R1
T-27	Smokey Pt Blvd Trail-2	4,000	----	12-ft wide, 4,000-ft long paved trail from SPB Trail #1 to Smky Pt Transit Center, 173rd St Trail (T02), and S. City Trail (T28),								To be completed as part of project R30
T-28	South City Trail	4,000	$2,550,000	12-ft wide, 4,000-ft long paved trail connecting SPB Trail #2 to Country Manor trail	✓		✓		✓	✓	✓	
T-29	89th Trail	5,950	----	12-ft wide, 5,950-ft paved trail from 172nd St to Crownridge,								To be completed as part of projects R12, R39, and R11
		20.95 miles	***$15,240,000***									***$21,628,865***

RTC – Rural Town Centers and Corridor funding program, administered by PSRC
STP – Surface Transportation Projects funding program, administered by PSRC
CMAQ – Congestion Management Air Quality funding program, administered by PSRC
SRTS – Safe Routes to School funding program, administered by WSDOT
NHPP – Hational Highway Performance Program, administered by WSDOT
Ped Sfty – Pedestrian and Bicycle Safety funding program, administered by WSDOT
TIB – Transportation Improvement Board Sidewalks Program

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A Summary Of Previous Transportation Planning

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SUMMARY OF PREVIOUS TRANSPORTATION PLANNING

The 2035 Transportation Plan update inventoried previous transportation planning efforts in and around the City of Arlington. Recommended transportation improvements from these plans were considered in the development of the proposed improvements for the City of Arlington 2035 project list. Significant planning efforts included in this study inventory and analysis are listed below:

- City of Arlington Transportation Plan (2005)
- West Arlington Sub-Area Plan (2010)
- Arlington Municipal Airport Master Plan (2012)
- SR 531/ (43rd Avenue NE to 67th Avenue NE) Corridor Pre-Design Analysis (2010)
- Arterial Circulation Study for the Southeast Arlington Urban Growth Area and Vicinity (2009)
- SR 9 Corridor Planning Study (2011)
- City of Marysville Transportation Plan (2015)
- Snohomish County Transportation Plan (2015)

Projects identified in these plans that could significantly affect the transportation network in the City of Arlington are identified in **Table A1** and on the following **Figure A1**.

Table A1. Planned and Recommended Improvements

Project		**Source**								
		City of Arlington 2016-2021 Six-Year TIP	City of Arlington 2005 Transportation Plan	SR 531/43rd to 67th Corridor Pre-Design Analysis	Arterial Circulation Study for the SE Arlington UGA &Vicinity	West Arlington Subarea Plan	2015 Snohomish County Transportation Element	PSRC 2015-2018 TIP	2012 Arlington Municipal Airport Layout Plan Update	SR 9 Corridor Planning Study
Arlington 2005 Transportation Element Baseline CIP Projects										
1	172nd St NE (SR 531) – 43rd Ave to 67th Ave		✓	✓						
2	67th Ave NE – 204th St NE to Lebanon St.		✓					✓		
3	Smokey Point Blvd – 183rd St NE to 175th St NE		✓							
4	51st Ave Extension – 43rd Ave NE to 67th Ave NE		✓						✓	
5	188th St NE – 59th Ave NE to 67th Ave NE		✓							

Project		Source								
		City of Arlington 2016-2021 Six-Year TIP	City of Arlington 2005 Transportation Plan	SR 531/43rd to 67th Corridor Pre-Design Analysis	Arterial Circulation Study for the SE Arlington UGA &Vicinity	West Arlington Subarea Plan	2015 Snohomish County Transportation Element	PSRC 2015-2018 TIP	2012 Arlington Municipal Airport Layout Plan Update	SR 9 Corridor Planning Study
6	Arlington Valley Land Road – 67th Ave NE to 204th St NE	✓	✓							
7	SR 531 ramp improvements – WB SR 531 to SB I-5		✓							
Arlington 2005 Transportation Element Tier 1 Projects										
8	Smokey Point Blvd – 116th St NE to SR 530	✓	✓			✓				
9	SR 531-67th Ave NE to SR 9		✓							
10	SR 9 – 108th St. NE to north of SR 530		✓							
11	SR 530 – SR 5 to SR 9		✓							
Arlington 2005 Transportation Element Tier 2 Projects										
12	188th St NE –Smokey Point Blvd to 47th Ave NE		✓							
13	47th Ave NE – 188th St NE to Cemetery Road		✓							
14	51st Avenue NE – SR 531 to 164th St NE		✓							
15	186th St NE – SR 9 to 99th Ave NE	✓	✓		✓					
16	Cemetery Road Extension – 47th Ave NE to 67th Ave NE		✓							
17	211th Place NE – SR 530 to 67th Ave		✓							
18	59th Ave NE – SR 531 to 195th Ave		✓							
19	74th Ave NE extension – 204th to Jensen		✓							
20	63rd Ave NE – SR 531 to 59th Ave NE extension		✓							
21	92nd/Tveit Road to west of 92nd/Burn Road		✓							
Arlington 2005 Transportation Element Tier 3 Projects										
22	43rd Ave NE (new alignment) – 172nd St to 162nd St.		✓			✓				
23	Tveit Rd – 92nd St NE to Highland Drive				✓					
24	Hamlin/Maple Connection		✓							
25	Clara extension s of 4th St to 88th Ave NE, connection at 218th		✓							
26	180th St. NE – 59th Ave to 67th Ave NE		✓							
27	63rd Ave NE – SR 531 to 188th St NE		✓							
28	SR 531 – 91st Ave to McElroy		✓		✓					
29	38th Ave NE – 162nd St. NE to 165th St NE		✓							
30	36th Ave NE – 178th St. NE to 183rd St NE		✓							

Project		Source								
		City of Arlington 2016-2021 Six-Year TIP	City of Arlington 2005 Transportation Plan	SR 531/43rd to 67th Corridor Pre-Design Analysis	Arterial Circulation Study for the SE Arlington UGA &Vicinity	West Arlington Subarea Plan	2015 Snohomish County Transportation Element	PSRC 2015-2018 TIP	2012 Arlington Municipal Airport Layout Plan Update	SR 9 Corridor Planning Study
31	180th St NE – Smokey Point Blvd. to 36th Ave NE		✓							
32	45th Drive NE – 196th Pl to Cemetery Road		✓							
33	59th Ave – 195th St to Cemetery Road		✓						✓	
34	189th Place – 43rd Pl to 188th St		✓							
35	185th Pl – 31st Ave to Smoky Point Blvd/186th Pl – 31st Ave to Smokey Point Blvd/32nd Pl – 186th to 184th Pl		✓							
36	173rd Pl – Smokey Point Blvd to 43rd Ave 39th Ave – 172nd St. to 162nd St.		✓							
37	47th Ave -172nd St. to 162nd St.		✓							
38	74th Ave 204th to 67th		✓							
39	162nd St – Smokey Point Blvd to 63rd Ave.		✓							
Arlington 2005 Transportation Element Tier 3 Projects										
40	SR 9/SR 531		✓							✓
41	204th St NE/207th St NE – 67th Ave to Burn Rd		✓							
42	SR 530/SR 9		✓							✓
43	SR 9/4th St		✓							
44	SR 9/Burke Ave	✓	✓							✓
45	67th Ave NE – SR 531 to Upland Dr		✓							
46	67th Ave NE/SR 531		✓	✓						
47	188th St/67th Ave NE		✓							
48	204th St/SR 9	✓	✓							
49	Burn Rd/Highland Ave		✓							
50	SR 530 – Manhattan St to External		✓							
51	172nd St (SR 531)/I-5 NB Ramps		✓							
52	Burke Ave/Broadway St		✓							
53	Burn Rd/207th St		✓							
54	172nd St (SR 531)/Smokey Point Blvd		✓			✓				
55	SR 530/211th Pl		✓							
56	204th St/74th Ave		✓							
Other										
57	173rd St NE (new alignment)	✓				✓				

Project		Source								
		City of Arlington 2016-2021 Six-Year TIP	City of Arlington 2005 Transportation Plan	SR 531/43rd to 67th Corridor Pre-Design Analysis	Arterial Circulation Study for the SE Arlington UGA &Vicinity	West Arlington Subarea Plan	2015 Snohomish County Transportation Element	PSRC 2015-2018 TIP	2012 Arlington Municipal Airport Layout Plan Update	SR 9 Corridor Planning Study
58	169th St NE (new alignment)					✓				
59	35th Ave NE/Smokey Point Blvd					✓				
60	172nd St NE (SR 531)/43rd Avenue			✓		✓				
61	172nd St NE (SR 531)/51st Avenue			✓		✓				
62	172nd St NE (SR 531)/59th Avenue			✓						
63	188th Street Interchange					✓				
64	Smokey Point Blvd/188th St.	✓	✓			✓				
65	Burn/McElroy Road – 95th Avenue NE to 186th Street NE				✓					
66	McElroy Road – 172nd to 186th Streets NE				✓					
67	172nd Street NE – SR 9 to 91st Avenue NE				✓					
68	SR 530/Smokey Point Intersection	✓								
69	67th Ave NE/152 St NE						✓			
70	211th Place NE – Extension to 59th Ave/SR 530	✓								

City of Arlington
2035 Transportation Plan

Figure A1

Transportation Improvement Projects from Previous Studies

Arlington 2005 Transportation Element Baseline CIP Projects
1 172nd St NE (SR 531) - 43rd Ave to 67th Ave
2 67th Ave NE - 204th St to Lebanon St
3 Smokey Point Blvd - 183rd St to 175th St
4 51st Ave Extension - 43rd Ave to 67th Ave
5 188th St NE - 59th Ave to 67th Ave
6 Arlington Valley Land Rd - 67th Ave to 204th St
7 SR 531 Ramp Improvements - WB SR 531 to SB I-5

Arlington 2005 Transportation Element Tier 1 Projects
8 Smokey Point Blvd - 116th St to SR 530
9 SR 531 - 67th Ave to SR 9
10 SR 9 - 108th St to North of SR 530
11 SR 530 - SR 5 to SR 9

Arlington 2005 Transportation Element Tier 2 Projects
12 188th St NE - Smokey Point Blvd to 47th Ave
13 47th Ave NE - 188th St to Cemetery Rd
14 51st Ave NE - SR 531 to 164th St
15 186th St NE - SR 9 to 99th Ave
16 Cemetery Rd Extension - 47th Ave to 67th Ave
17 211th Pl NE - SR 530 to 67th Ave
18 59th Ave NE - SR 531 to 195th Ave
19 74th Ave NE Extension - 204th St to Jensen St
20 63rd Ave NE - SR 531 to 59th Ave Extension
21 92nd/Tveit Rd to West of 92nd/Burn Rd

Arlington 2005 Transportation Element Tier 3 Projects
22 43rd Ave NE (New Alignment) - 172nd St to 162nd St
23 Tveit Rd - 92nd St to 83rd Ave (Highland Dr)
24 Hamlin/Maple Connection
25 Clara Extension S of 4th St to 88th Ave, Connection at 218th
26 180th St NE - 59th Ave to 67th Ave
27 63rd Ave NE - SR 531 to 188th St
28 SR 531 - 91st Ave to McElroy Rd
29 38th Ave NE - 162nd St to 165th St (not shown)
30 36th Ave NE - 178th St to 183rd St
31 180th St NE - Smokey Point Blvd to 36th Ave
32 45th Dr NE - 196th Pl to Cemetery Rd
33 59th Ave NE - 195th St to Cemetery Rd
34 189th Pl - 43rd Pl to 188th St
35 185th Pl - 31st Ave to Smokey Point Blvd/186th Pl
36 173rd Pl - Smokey Point Blvd to 43rd Ave/39th Ave
37 47th Ave - 172nd St to 162nd St
38 74th Ave - 204th to 67th Ave
39 162nd St - Smokey Point Blvd to 63rd Ave (not shown)

Arlington 2005 Transportation Element - Alternative 2 Operational Needs
40 SR 9/SR 531
41 204th St NE/207th St NE - 67th Ave to Burn Rd
42 SR 530/SR 9
43 SR 9/4th St
44 SR 9/Burke Ave
45 67th Ave NE - SR 531 to Upland Dr
46 67th Ave/SR 531
47 188th St/67th Ave
48 204th St/SR 9
49 Burn Rd/Highland Dr
50 SR 530 - Manhattan St to External
51 172nd St (SR 531)/I-5 NB Ramp
52 Burke Ave/Broadway St
53 Burn Rd/207th St
54 172nd St (SR 531)/Smokey Point Blvd
55 SR 530/211th Pl
56 204th St/74th Ave

Projects From Other Sources
57 173rd St NE New Alignment (not shown)
58 169th St NE New Alignment (not shown)
59 35th Ave/Smokey Point Blvd
60 172nd St (SR 531)/43rd Ave
61 172nd St (SR 531)/51st Ave
62 172nd St (SR 531)/59th Ave
63 188th Street Interchange
64 Smokey Point Blvd/188th St
65 McElroy Rd/Burn Rd - 95th Ave to 186th St Extension
66 McElroy Rd - 172nd St NE to 186th St Extension
67 172nd St NE - SR 9 to 91st Ave NE
68 SR 530/Smokey Point Intersection
69 67th Ave NE/152nd St NE (not shown)
70 211th Pl NE - Extension to 59th Ave/SR 530

FINAL - 2017

B Traffic Count Locations

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City of Arlington
2035 Transportation Plan

Figure B1

Traffic Counts

	Intersection TMC Location	Date of Count
1	E Burke Ave at N Manhattan Ave	Thursday, June 9th 2011
2	W Burke Ave at Hazel St	Thursday, June 9th 2011
3	E Division St at N Olympic Ave	Thursday, June 9th 2011
4	W Division St at Hazel St	Thursday, June 9th 2011
5	E Maple St at S Olympic Ave	Wednesday, June 8th 2011
6	Lebanon St at 67th Ave NE	Wednesday, June 8th 2011
7	E Highland Dr at S Stillaguamish Ave	Tuesday, June 7th 2011
8	211th Pl NE at 67th Ave NE	Thursday, June 9th 2011
9	204th St NE at SR-9	Tuesday, June 7th 2011
10	204th St NE at 67th Ave NE	Wednesday, June 8th 2011
11	211th Pl NE at SR-530	Thursday, June 9th 2011
12	SR-530 at I-5 NB Ramps	Wednesday, June 8th 2011
13	SR-530 at I-5 SB Ramps	Wednesday, June 8th 2011
14	Crown Ridge Blvd at SR-9	Wednesday, June 8th 2011
15	188th St NE at 67th Ave NE	Tuesday, June 7th 2011
16	188th St NE at Smokey Point Blvd	Wednesday, June 8th 2011
17	172nd St NE at SR-9	Tuesday, June 7th 2011
18	172nd St NE at Gleneagle Blvd	Tuesday, June 7th 2011
19	172nd St NE at 67th Ave NE	Wednesday, June 16th 2010
20	172nd St NE at 59th Ave NE	Wednesday, June 16th 2010
21	172nd St NE at 51st Ave NE	Thursday, September 1st 2008
22	172nd St NE at 43rd Ave NE	Wednesday, June 16th 2010
23	172nd St NE at Smokey Point Blvd	Wednesday, July 20th 2011
24	Smokey Point Dr at Smokey Point Blvd	Thursday, August 10th 2010
25	172nd St NE at I-5 NB Ramps	Wednesday, July 20th 2011
26	172nd St NE at I-5 SB Ramps	Wednesday, July 20th 2011
27	200th St NE at Smokey Point Blvd	Tuesday, March 31st, 2015
28	200th St NE at 23rd Ave NE	Tuesday, March 31st, 2015
29	SR-530 at Smokey Point Blvd - West Leg	Wednesday, July 25th, 2012
30	SR-530 at Smokey Point Blvd - East Leg	Tuesday, April 24th, 2007
31	Smokey Point Y at Smokey Point Blvd	Thursday, October 16th, 2008

	Tube Location	Year of Count
1	3rd St - 100ft East of Dunham Ave	2008
2	31st Ave - North of Church of Christ on Pole #3	2006
3	38th Dr - at 17625 38th Dr NE	2004
4	66th Ave - Ronning Rd, 1 Block South of 211th Pl	2008
5	80th Dr - Light Pole Between 17332 and 17321	2006
6	87th Ave - On Phone Pole Across From 21406	2004
7	176th Pl - Tied to 25mph Sign at 3612	2004
8	177th Pl - Tied to Phone Pole at 3716	2004
9	188th St - 200 Feet West of Fire Station #2	2008
10	208th St - Tied to Fence Post at 6426 208th St	2004
11	211th Pl - Pole 500 Feet East of Intx on South Side	2007
12	Broadway St - Phone Pole Across from Windermere	2004
13	Gilman St - Between RR Alley and Broadway St	2002
14	Gilman St - 211 Gilman St Tied to Phone Pole	2004
15	Highland View Dr - 17713 Tied to Light Pole	2004
16	MacLeod St - 100 Block South MecLeod St Below Hill Crest	2004
17	Oxford St - 7321 Eaglefield Dr, Tied to Light Pole	2004
18	RR Alley - Hydrant Between Gilman St and Division St	2002
19	Smokey Point Blvd - Light Pole West of Intx on 178th Pl and 37th Ave	2001
20	Smokey Point Blvd - 1000 Feet North of 166th Pl	2006
21	Smokey Point Dr - Stillaguamish Tribes Admin Building	2008
22	Stillaguamish Ave - 139 Haller Field	2008
23	Upland Dr - 17725, Tied to Light Pole	2004
24	West Ave - Pedestrian Pole North of Roundabout	2002
25	Woodbine Dr - Set at 18522 Woodbine on Light Pole	2007
26	Woodlands Way - East of 67th Ave on 25mph Sign	2001
27	172nd St East of SR-9	2011
28	SR-9 North of 204th St	2011
29	SR-9 South of Highland Dr	2011
30	SR-531 East of 59th Ave	2011
31	164th St - East of 91st ave	2009
32	164th St - West of McElroy Rd	2009
33	186th St - West of McElroy Rd	2009
34	186th St - East of SR-9	2001
35	204th St - Between 67th Ave and SR-9	2009
36	204th St - South of Jensen Farm Ln	2002
37	67th Ave - Between 185th St and Woodlands Way	2008
38	67th Ave - Between 204th St and 211th Pl	2009
39	67th Ave - Between 211th Pl and SR-9	2009
40	67th Ave - North of SR-531	2004
41	67th Ave - South of SR-531	2008
42	67th Ave - Between Woodlands Way and 204th St	2009
43	91st Ave - North of 164th St	2009
44	91st Ave - South of 164th St	2009
45	95th Ave - North of Burn Rd	2009
46	Burn Rd - Between 196th St and 95th Ave	2009
47	Burn Rd - Between 204th St and 196th St	2007
48	Burn Rd - Between 95th Ave and McElroy Rd	2009
49	Burn Rd - East of McElroy Rd	2009
50	Cemetery Rd - West of 67th Ave	2008
51	Highland Dr - East of French Ave	2008
52	McElroy Rd - Between Burn Rd and 186th St	2009
53	McElroy Rd - North of 164th St	2009
54	McElroy Rd - South of 164th St	2009
55	McElroy Rd - South of 186th St	2009
56	SR-531 - West of 67th Ave	2007
57	SR-531 - West of SR-9	2005
58	SR-531 - East of 67th Ave	2007
59	SR-9 - South of SR-531	2007
60	SR-9 - North of SR-531	2005

C Traffic Operations Analysis Definitions

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LEVEL OF SERVICE

Level of Service (LOS) means the capacity standard for traffic flow through a specified area as defined in the latest edition of the *Highway Capacity Manual (HCM).* The *HCM* uses Level of Service to describe the operating conditions at an intersection. LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion).

Intersection Level of Service Methodologies

The following sections describe the methodologies used in assessing traffic operations and impacts of project traffic. The acknowledged source for determining overall capacity for arterial segments and independent intersections is the current edition of the *Highway Capacity Manual* (*HCM*). Analysis techniques are found in Chapters 18, 19 and 20 for unsignalized and signalized intersections.

Observed peak hour factors (PHF) were used for the analyses. The intersection average values were applied with a maximum PHF of 0.95. Observed intersection average truck percentages were also used for the analyses.

Unsignalized Intersections

Stop sign-controlled intersections were analyzed using the Synchro software that uses the methodology in the 2010 *HCM*. The *HCM* uses Level of Service (LOS) to describe the operating conditions at an intersection. LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion).

Level of Service calculations for intersections determine the amount of "control delay" (in seconds) that drivers will experience while proceeding through an intersection. Control delay includes all deceleration delay, stopped delay and acceleration delay caused by the traffic control device. The Level of Service is directly related to the amount of delay experienced.

For intersections under minor street stop sign control, the LOS of the most difficult movement (typically the minor street left-turn) represents the intersection Level of Service. The table below shows the Level of Service criteria for unsignalized intersections.

Level of Service Criteria for Stop Sign-Controlled Intersections

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

Signalized Intersections

Signalized intersection analysis was performed using the Synchro software package. The software implements the methods of the 2010 *Highway Capacity Manual*.

The *Highway Capacity Manual* also presents capacity analysis results in terms of LOS for signalized intersections. The *HCM* bases the LOS criteria in terms of overall average delay a vehicle may experience at the intersection during the analysis period (for this study, the evening peak hour). LOS delay criteria for signalized intersections are shown in the table below.

Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Roundabout Intersections

The roundabout analysis was prepared using the SIDRA software package. The table below lists LOS Delay criteria used to assess roundabout intersections.

Level of Service Criteria for Roundabout Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Volume to Capacity Ratio

Another measure of the function of a signalized intersection is the "degree of saturation" which is typically presented as the "volume to capacity" (v/c) ratio. Many factors affect the volume of traffic an intersection can accommodate during a specific time interval. These factors include the number of lanes, lane widths, the type of signal phasing, the number of parking maneuvers on the adjacent street, etc. Based on these factors, the intersection (or individual lane group) is determined to have a total vehicle carrying capacity "c" for the analysis period. The analysis period volume "v" is compared to the calculated carrying capacity and presented as a ratio. If the v/c ratio is below 1.0, the demand volume is less than the maximum capacity. If the v/c ratio is over 1.0, the demand volume is exceeding the available capacity.

Vehicle Queuing

The vehicle queue is the number of stopped vehicles waiting to travel through an intersection. The queue length includes all vehicles that stop at an intersection even after vehicles at the front begin to move forward. The 95th percentile queue value reflects the "peak typical" queue that occurs during the analysis period, discarding the highest 5 percent of queue occurrences.

Vehicle queues at Smokey Point Blvd and SR 531

D Capacity Analysis Worksheets - 2011

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PERTEET

MEMORANDUM

505 5th Avenue S, Suite 300, Seattle, WA 98104 | P 206.436.0515

To: James Kelly, PE, Public Works Director, City of Arlington

From: Mike Hendrix, PE, PTOE, Project Manager

Date: June 8, 2017

Re: Comprehensive Plan Trip Redistribution Study

1.0 INTRODUCTION

A traffic model completed for the development of the City of Arlington's comprehensive plan was developed which forecast traffic volumes and distribution for the Transportation Element of the 2035 Comprehensive Plan. This included land uses and proposed population for the forecast year. Based on comments from the Puget Sound Regional Council (PSRC), 824 projected dwelling units proposed for west of Interstate 5 will be removed and be reallocated throughout the City. This change requires revisions to the traffic model, and reevaluation of future level of service (LOS) of 31 intersections in the City. Revisions were made to two 2035 traffic models; one model that assumes no completed transportation improvement projects, and another model that assumes transportation improvement projects are completed. This memorandum presents a summary of the traffic model revisions and any notable changes to results.

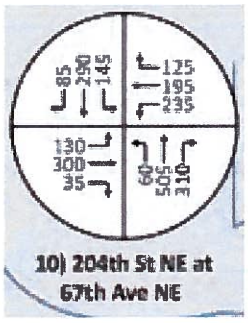
2.0 TRAFFIC MODEL REVISIONS

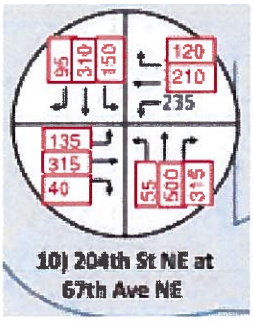
The two 2035 traffic models (with/without improvements) are revised using traffic numbers based on reallocation of 824 dwelling units throughout the City. The traffic volume projections were also used to recalculate road capacity percentages of roadway segments throughout the City. The intersection LOS for all 31 intersections were reanalyzed with the revised traffic volume projections using Synchro 9 for signalized and stop controlled intersections and Sidra software for roundabout intersections.

2.1 Model Revisions – 2035 Without Improvements

The reallocation of 824 projected dwelling units adjusted traffic volumes for all intersections in the traffic model. In general traffic movement volumes changes were minor, typically ranging from 5 to 10 vehicles per movement. An example of adjusted movements is shown in Figure 1 below.

Figure 1. Before and After Revised Traffic Volumes (Intersection 10).





Under the 2035 No Improvements scenario, there were two intersections that changed LOS from the original model when using the revised traffic volumes. They are shown below in Table 1.

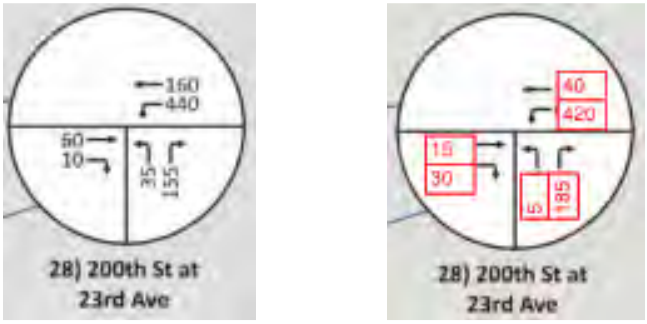
Table 1. Summary of Changes.

Projected 2035 PM Peak Hour Intersection LOS - Without Improvements			LOS	
Intersection #	Intersection Streets	Intersection Control	Original	Revised
6	Lebanon Street and 67th Avenue NE	All-way Stop Control	E*	F
28	200th Street and 23rd Avenue	Two-way Stop Control	C	A

*Synchro worksheet indicated a LOS F in this scenario.

The traffic volumes at Lebanon Street and 67th Avenue NE had some minor modifications; however, as noted in the table, the LOS of the original study showed a LOS E in the figure but was LOS F in the data. When reviewed by this study, the overall intersection delay only increased by 0.3 seconds. The intersection of 200th Street and 23rd Avenue experienced a notable change due to the reallocated homes. This is shown in Figure 2 below. Because of the reduction in traffic volumes, the LOS increased to LOS A.

Figure 2. Before and After Revised Traffic Volumes (Intersection 28).



Synchro and Sidra outputs evaluating level of service for the intersections in this scenario are compiled in Appendix A.

2.2 Model Revisions – 2035 With Improvements

Similar to the traffic model revisions without transportation improvements, the reallocation of 824 projected dwelling units adjusted traffic volumes for all intersections in the traffic model. Again, traffic movement volumes changes were minor, typically ranging from 5 to 10 vehicles per movement.

During our review of the analysis, we found ten discrepancies between Figure 6-3 in the draft Comprehensive Plan and its supporting data found in the appendix. This documentation was originally done by the SCJ Alliance. This supporting data is called "SCJ" in Table 2. A summary of these discrepancies is summarized below in Table 2. Note that the delay (in seconds) and volume to capacity ratio (v/c) is also shown in Table 2 for informational purposes. It was assumed that the analysis data was correct compared to the draft figure. This was used to determine if there were any substantial changes to the LOS of the intersections analyzed.

Table 2. City Figure 6-3 and SCJ Data Discrepancies.

Intersection Number	Intersection	Intersection Control	City Figure LOS	SCJ	
				LOS (Delay)	Worst v/c
4	Hazel Street and Division Street	Signal	D	C (34.0)	0.84
15	67th Avenue and 188th Street	Signal	F	B (15.7)	0.86
16	Smokey Point Blvd and 188th Street	Two-way Stop Control	F	B (928)	2.96
18	172nd Street NE and Gleneagle Boulevard	One-way Stop Control	C	F (77.8)	0.78
21	172nd Street NE and 51st Avenue NE	Signal	B	D (21.3)	0.98
22	43rd Avenue and 172nd Street	Signal	B	A (39.9)	0.94
23	Smokey Point Blvd and 172nd Street	Signal	E	D (54.8)	1.04
27	200th Street and Smokey Point Boulevard	One-way Stop Control	F	E (35.1)	0.53
~~28~~	~~200th Street and 23rd Avenue~~	~~One-way Stop Control~~	~~C~~	~~A (7.4)~~	~~0.09~~
29	SR 530 and Smokey Point Boulevard	One-way Stop Control	F	B (13.2)	0.01

Note: Intersection 28 is outside City Limits and denoted in Table 2 with a strikethrough.

The LOS data shown in Table 2 was then considered as the "original" data.

The revised trip distribution numbers following the removal of 824 homes was then analyzed. This is considered the "revised" data.

There were seven intersections that had a change in LOS from the "original" model when using the revised traffic volumes However, only two of the intersections experienced an increase in delay and, therefore, a decrease in LOS. These two intersections are 188th Street NE and Smokey Point Boulevard and 172nd Street NE and SR 9 which still meets LOS concurrency requirements. Both went from LOS B to LOS C. A summary of the changes in LOS is shown in Table 3. Note that the column labeled "Original" is the LOS shown in the Synchro or Sidra worksheets and not the LOS shown on Figure 6-3 in the draft Comprehensive Plan.

Table 3. Summary of LOS Revisions due to Redistributed Traffic Volumes.

Projected 2035 PM Peak Hour Intersection LOS - With Improvements					
Intersection Number	Intersection	Intersection Control	Original	Revised	
				LOS (Delay)	Worst v/c
16	188th Street NE and Smokey Point Boulevard	Roundabout	B	C (34.3)	1.19
17	172nd Street NE and SR 9	Roundabout	B	C (27.4)	0.97
18	172nd Street NE and Gleneagle Boulevard	One-way Stop Control	F	C (21.0)	0.28
19	172nd Street NE and 67th Avenue NE	Original: Signal Revised: Roundabout	D	C (25.9)	1.16
20	172nd Street NE and 59th Avenue NE	Roundabout	D	C (23.2)	1.34
21	172nd Street NE and 51st Avenue NE	Roundabout	D	C (23.8)	1.14
27	200th Street and Smokey Point Boulevard	Two-way Stop Control	E	C (21.5)	0.21

Of the seven intersections, five intersections changed LOS of only one letter. Due to the changes in volumes, this can be expected.

The LOS at 172nd Street NE and Gleneagle Boulevard went from F to C. Upon further investigation, this can be explained by the 33% decrease in traffic volume at the stop controlled approach of the intersection. Volumes decreased from 120 to 81 vehicles during the peak hour.

A similar change was present for the 200th Street and Smokey Point Boulevard intersection. The LOS at this intersection changed from E to C. This can be explained by the 56% decrease in traffic volume at the stop controlled approach of the intersection. Volumes decreased from 125 to 55 vehicles in the peak hour.

Synchro and Sidra outputs evaluating level of service for the intersections in this scenario are compiled in Appendix B.

E Capacity Analysis Worksheets – 2035 Baseline

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Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	685	15	20	400	5	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	5	5	8	8	0	0
Mvmt Flow	815	18	24	476	6	77

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	833	0	1348	824
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.18	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	774	-	168	376
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	598	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	774	-	163	376
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	434	-
Stage 2	-	-	-	-	579	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	369	-	-	774	-
HCM Lane V/C Ratio	0.226	-	-	0.031	-
HCM Control Delay (s)	17.6	-	-	9.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	6.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	235	75	380	435	60	245
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	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	5	5	4	4	2	2
Mvmt Flow	250	80	404	463	64	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	792	404	0	0	404	0
Stage 1	404	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	354	640	-	-	1155	-
Stage 1	668	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	334	640	-	-	1155	-
Mov Cap-2 Maneuver	451	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.6	0	1.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	486	1155	-
HCM Lane V/C Ratio	-	-	0.679	0.055	-
HCM Control Delay (s)	-	-	26.6	8.3	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	5	0.2	-

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Vol, veh/h	0	305	90	0	90	200	0	95	130
Peak Hour Factor	0.92	0.91	0.91	0.92	0.91	0.91	0.92	0.91	0.91
Heavy Vehicles, %	2	1	1	2	1	1	2	0	0
Mvmt Flow	0	335	99	0	99	220	0	104	143
Number of Lanes	0	1	0	0	0	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	14.8	12.9	10.5
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	31%
Vol Thru, %	0%	0%	77%	69%
Vol Right, %	0%	100%	23%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	95	130	395	290
LT Vol	95	0	0	90
Through Vol	0	0	305	200
RT Vol	0	130	90	0
Lane Flow Rate	104	143	434	319
Geometry Grp	7	7	2	2
Degree of Util (X)	0.199	0.224	0.587	0.468
Departure Headway (Hd)	6.877	5.657	4.986	5.291
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	524	637	729	682
Service Time	4.591	3.371	2.986	3.307
HCM Lane V/C Ratio	0.198	0.224	0.595	0.468
HCM Control Delay	11.3	10	14.8	12.9
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	0.7	0.9	3.9	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	340	250	175	70	160	140	180	355	40	80	230	180
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	358	263	52	74	168	15	189	374	16	84	242	52
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	484	508	432	315	243	206	574	816	694	463	740	629
Arrive On Green	0.19	0.27	0.27	0.05	0.13	0.13	0.08	0.43	0.43	0.04	0.39	0.39
Sat Flow, veh/h	1774	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Grp Volume(v), veh/h	358	263	52	74	168	15	189	374	16	84	242	52
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Q Serve(g_s), s	13.2	9.6	2.0	2.8	6.8	0.7	4.8	11.2	0.5	2.2	7.2	1.6
Cycle Q Clear(g_c), s	13.2	9.6	2.0	2.8	6.8	0.7	4.8	11.2	0.5	2.2	7.2	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	484	508	432	315	243	206	574	816	694	463	740	629
V/C Ratio(X)	0.74	0.52	0.12	0.23	0.69	0.07	0.33	0.46	0.02	0.18	0.33	0.08
Avail Cap(c_a), veh/h	519	652	554	340	376	320	623	816	694	495	740	629
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	24.6	21.9	28.2	33.3	30.6	12.0	16.0	13.0	13.7	16.9	15.2
Incr Delay (d2), s/veh	5.2	0.8	0.1	0.4	3.5	0.1	0.3	1.9	0.1	0.2	1.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	5.0	0.9	1.4	3.8	0.3	2.4	6.2	0.2	1.1	3.9	0.8
LnGrp Delay(d),s/veh	27.3	25.4	22.0	28.6	36.9	30.8	12.3	17.9	13.0	13.9	18.1	15.5
LnGrp LOS	C	C	C	C	D	C	B	B	B	B	B	B
Approach Vol, veh/h		673			257			579			378	
Approach Delay, s/veh		26.2			34.1			15.9			16.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	38.7	7.9	25.8	10.8	35.5	19.4	14.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.6	26.0	5.0	28.0	9.0	22.0	17.0	16.0
Max Q Clear Time (g_c+I1), s	4.2	13.2	4.8	11.6	6.8	9.2	15.2	8.8
Green Ext Time (p_c), s	0.0	3.0	0.0	2.3	0.1	3.0	0.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	125	5	35	0	0	2	2	0	25	115	5	0	2	105	130
Peak Hour Factor	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95	0.92	0.95	0.95	0.95
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	132	5	37	0	0	2	2	0	26	121	5	0	2	111	137
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	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	9.3	7.8	8.8	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	76%	0%	1%
Vol Thru, %	79%	3%	50%	44%
Vol Right, %	3%	21%	50%	55%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	145	165	4	237
LT Vol	25	125	0	2
Through Vol	115	5	2	105
RT Vol	5	35	2	130
Lane Flow Rate	153	174	4	249
Geometry Grp	1	1	1	1
Degree of Util (X)	0.196	0.232	0.006	0.29
Departure Headway (Hd)	4.616	4.805	4.713	4.19
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	777	745	756	856
Service Time	2.651	2.844	2.765	2.22
HCM Lane V/C Ratio	0.197	0.234	0.005	0.291
HCM Control Delay	8.8	9.3	7.8	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.7	0.9	0	1.2

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL	NWT	NWR
Vol, veh/h	0	5	250	145	0	10	160	1	0	5	0	5	0	135	0	15
Peak Hour Factor	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94	0.92	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	1	1	1	2	25	25	25	2	0	0	0
Mvmt Flow	0	5	266	154	0	11	170	1	0	5	0	5	0	144	0	16
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	NB	SB	SE	NW
Opposing Approach	SB	NB	NW	SE
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SE	NW	SB	NB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NW	SE	NB	SB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.2	9.5	8.9	10.2
HCM LOS	B	A	A	B

Lane	NBLn1	NWLn1	SELn1	SBLn1
Vol Left, %	1%	90%	50%	6%
Vol Thru, %	62%	0%	0%	94%
Vol Right, %	36%	10%	50%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	400	150	10	171
LT Vol	5	135	5	10
Through Vol	250	0	0	160
RT Vol	145	15	5	1
Lane Flow Rate	426	160	11	182
Geometry Grp	1	1	1	1
Degree of Util (X)	0.52	0.238	0.017	0.245
Departure Headway (Hd)	4.402	5.379	5.847	4.856
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	817	662	616	735
Service Time	2.447	3.455	3.847	2.915
HCM Lane V/C Ratio	0.521	0.242	0.018	0.248
HCM Control Delay	12.2	10.2	8.9	9.5
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	3.1	0.9	0.1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	60	75	5	65	5	65	80	15	10	75	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1881	1900	1845	1845	1900	1900	1881	1900
Adj Flow Rate, veh/h	55	66	38	5	71	5	71	88	11	11	82	60
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
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, %	4	4	4	1	1	1	3	3	3	1	1	1
Cap, veh/h	145	117	56	72	248	17	1011	1152	144	100	600	409
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.05	0.72	0.72	0.60	0.60	0.60
Sat Flow, veh/h	422	795	382	44	1685	114	1757	1608	201	57	998	681
Grp Volume(v), veh/h	159	0	0	81	0	0	71	0	99	153	0	0
Grp Sat Flow(s),veh/h/ln	1599	0	0	1842	0	0	1757	0	1809	1736	0	0
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	2.3	0.0	0.0	0.8	0.0	1.0	2.2	0.0	0.0
Prop In Lane	0.35		0.24	0.06		0.06	1.00		0.11	0.07		0.39
Lane Grp Cap(c), veh/h	318	0	0	337	0	0	1011	0	1296	1110	0	0
V/C Ratio(X)	0.50	0.00	0.00	0.24	0.00	0.00	0.07	0.00	0.08	0.14	0.00	0.00
Avail Cap(c_a), veh/h	880	0	0	996	0	0	1169	0	1296	1110	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.5	0.0	0.0	22.3	0.0	0.0	3.1	0.0	2.5	5.1	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.3	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	2.5	0.0	0.0	1.2	0.0	0.0	0.4	0.0	0.5	1.1	0.0	0.0
LnGrp Delay(d),s/veh	24.7	0.0	0.0	22.7	0.0	0.0	3.1	0.0	2.6	5.4	0.0	0.0
LnGrp LOS	C			C			A		A	A		
Approach Vol, veh/h		159			81			170			153	
Approach Delay, s/veh		24.7			22.7			2.8			5.4	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		46.0		12.6	6.7	39.3		12.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		42.0		30.0	8.0	30.0		30.0
Max Q Clear Time (g_c+I1), s		3.0		7.4	2.8	4.2		4.3
Green Ext Time (p_c), s		1.7		1.4	0.1	1.6		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	5

Movement	SBR	SEL	SER	NEL
Vol, veh/h	205	45	140	255
Conflicting Peds, #/hr	0	0	0	0
Sign Control	Free	Stop	Stop	Free
RT Channelized	-	-	None	None
Storage Length	0	0	-	0
Veh in Median Storage, #	0	0	-	0
Grade, %	0	0	-	0
Peak Hour Factor	82	82	82	82
Heavy Vehicles, %	8	7	7	4
Mvmt Flow	250	55	171	311

Major/Minor	Major2	Minor2		Major1
Conflicting Flow All	0	847	268	287
Stage 1	-	268	-	-
Stage 2	-	579	-	-
Critical Hdwy	-	6.47	6.27	4.14
Critical Hdwy Stg 1	-	5.47	-	-
Critical Hdwy Stg 2	-	5.47	-	-
Follow-up Hdwy	-	3.563	3.363	2.236
Pot Cap-1 Maneuver	-	326	759	1264
Stage 1	-	766	-	-
Stage 2	-	551	-	-
Platoon blocked, %	-			
Mov Cap-1 Maneuver	-	284	759	1264
Mov Cap-2 Maneuver	-	284	-	-
Stage 1	-	766	-	-
Stage 2	-	480	-	-

Approach	SB	SE	NE
HCM Control Delay, s	0	16.4	2.5
HCM LOS		C	

Minor Lane/Major Mvmt	NEL2	NEL	SELn1	SBR	SBR2
Capacity (veh/h)	1264	-	540	-	-
HCM Lane V/C Ratio	0.106	-	0.418	-	-
HCM Control Delay (s)	8.2	0	16.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	175	245	155	160	220	150	80	295	115	70	255	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1881	1881	1900	1792	1792	1792
Adj Flow Rate, veh/h	188	263	22	172	237	21	86	317	108	75	274	65
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	0	0	0	0	1	1	1	6	6	6
Cap, veh/h	245	321	273	217	292	248	609	504	172	490	672	571
Arrive On Green	0.04	0.06	0.06	0.12	0.15	0.15	0.14	0.38	0.38	0.14	0.38	0.38
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1792	1343	458	1707	1792	1524
Grp Volume(v), veh/h	188	263	22	172	237	21	86	0	425	75	274	65
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1792	0	1800	1707	1792	1524
Q Serve(g_s), s	8.2	11.0	1.0	7.4	9.7	0.9	0.0	0.0	15.4	0.0	9.0	2.2
Cycle Q Clear(g_c), s	8.2	11.0	1.0	7.4	9.7	0.9	0.0	0.0	15.4	0.0	9.0	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	245	321	273	217	292	248	609	0	675	490	672	571
V/C Ratio(X)	0.77	0.82	0.08	0.79	0.81	0.08	0.14	0.00	0.63	0.15	0.41	0.11
Avail Cap(c_a), veh/h	294	404	343	294	404	343	609	0	675	490	672	571
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)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	36.6	31.9	34.2	32.7	29.0	15.8	0.0	20.5	20.2	18.4	16.3
Incr Delay (d2), s/veh	9.3	9.8	0.1	10.0	8.5	0.1	0.1	0.0	4.4	0.1	1.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	6.6	0.5	4.3	5.8	0.4	1.3	0.0	8.5	1.2	4.8	1.0
LnGrp Delay(d),s/veh	46.2	46.3	32.0	44.3	41.3	29.2	15.9	0.0	24.9	20.4	20.3	16.7
LnGrp LOS	D	D	C	D	D	C	B		C	C	C	B
Approach Vol, veh/h		473			430			511			414	
Approach Delay, s/veh		45.6			41.9			23.4			19.7	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	34.0	13.6	17.5	14.9	34.0	14.8	16.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	30.0	13.0	17.0	4.0	30.0	13.0	17.0
Max Q Clear Time (g_c+I1), s	2.0	17.4	9.4	13.0	2.0	11.0	10.2	11.7
Green Ext Time (p_c), s	0.1	1.8	0.4	0.6	0.1	1.6	0.3	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	90	25	190	130	105	30	275	185	115	180	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1900	1845	1845	1900	1863	1863	1863	1743	1743	1900
Adj Flow Rate, veh/h	76	105	12	221	151	75	35	320	70	134	209	64
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	9	9	9
Cap, veh/h	248	169	19	375	216	107	628	936	796	559	686	210
Arrive On Green	0.05	0.11	0.11	0.09	0.12	0.12	0.03	0.50	0.50	0.06	0.54	0.54
Sat Flow, veh/h	1723	1595	182	1757	1164	578	1774	1863	1583	1660	1281	392
Grp Volume(v), veh/h	76	0	117	221	0	226	35	320	70	134	0	273
Grp Sat Flow(s),veh/h/ln	1723	0	1777	1757	0	1743	1774	1863	1583	1660	0	1674
Q Serve(g_s), s	3.1	0.0	5.0	8.5	0.0	10.0	0.8	8.3	1.8	3.0	0.0	7.2
Cycle Q Clear(g_c), s	3.1	0.0	5.0	8.5	0.0	10.0	0.8	8.3	1.8	3.0	0.0	7.2
Prop In Lane	1.00		0.10	1.00		0.33	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	248	0	188	375	0	323	628	936	796	559	0	896
V/C Ratio(X)	0.31	0.00	0.62	0.59	0.00	0.70	0.06	0.34	0.09	0.24	0.00	0.30
Avail Cap(c_a), veh/h	266	0	378	407	0	523	669	936	796	585	0	896
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.90	0.00	0.90	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	34.2	26.5	0.0	32.9	9.2	11.9	10.4	8.6	0.0	10.3
Incr Delay (d2), s/veh	0.7	0.0	3.3	1.7	0.0	2.5	0.0	1.0	0.2	0.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	2.6	4.3	0.0	5.0	0.4	4.4	0.8	1.4	0.0	3.6
LnGrp Delay(d),s/veh	30.5	0.0	37.6	28.3	0.0	35.4	9.2	12.9	10.6	8.8	0.0	11.2
LnGrp LOS	C		D	C		D	A	B	B	A		B
Approach Vol, veh/h		193			447			425			407	
Approach Delay, s/veh		34.8			31.9			12.2			10.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	44.2	14.5	12.5	6.2	46.8	8.2	18.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.8	29.0	12.0	17.0	4.0	31.0	5.0	24.0
Max Q Clear Time (g_c+I1), s	5.1	10.3	10.5	7.0	2.8	9.2	5.1	12.0
Green Ext Time (p_c), s	0.0	3.6	0.1	1.4	0.0	3.8	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	16.6

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Vol, veh/h	660	225	5	485	170	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	5	5	3	3	3	3
Mvmt Flow	725	247	5	533	187	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	725	0	1269	725
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	544	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	0	873	-	~ 185	423
Stage 1	-	0	-	-	478	-
Stage 2	-	0	-	-	580	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	873	-	~ 184	423
Mov Cap-2 Maneuver	-	-	-	-	~ 184	-
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0.1	125.2
HCM LOS			F

Minor Lane/Major Mvmt	NWLn1	EBT	WBL	WBT
Capacity (veh/h)	187	-	873	-
HCM Lane V/C Ratio	1.028	-	0.006	-
HCM Control Delay (s)	125.2	-	9.2	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	8.8	-	0	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	390	0	0	425	440	135	5	635	0	0	0
Number	7	4	14	3	8	18	5	2	12			
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			
Adj Sat Flow, veh/h/ln	1792	1792	0	0	1863	1863	1900	1810	1810			
Adj Flow Rate, veh/h	34	438	0	0	478	118	152	6	567			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	6	6	0	0	2	2	5	5	5			
Cap, veh/h	173	661	0	0	545	463	882	35	817			
Arrive On Green	0.01	0.12	0.00	0.00	0.29	0.29	0.53	0.53	0.53			
Sat Flow, veh/h	1707	1792	0	0	1863	1583	1661	66	1538			
Grp Volume(v), veh/h	34	438	0	0	478	118	158	0	567			
Grp Sat Flow(s),veh/h/ln	1707	1792	0	0	1863	1583	1726	0	1538			
Q Serve(g_s), s	1.1	18.7	0.0	0.0	19.5	4.6	3.8	0.0	21.9			
Cycle Q Clear(g_c), s	1.1	18.7	0.0	0.0	19.5	4.6	3.8	0.0	21.9			
Prop In Lane	1.00		0.00	0.00		1.00	0.96		1.00			
Lane Grp Cap(c), veh/h	173	661	0	0	545	463	917	0	817			
V/C Ratio(X)	0.20	0.66	0.00	0.00	0.88	0.25	0.17	0.00	0.69			
Avail Cap(c_a), veh/h	213	739	0	0	582	495	917	0	817			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.85	0.85	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.0	30.4	0.0	0.0	26.9	21.6	9.7	0.0	13.9			
Incr Delay (d2), s/veh	0.5	1.6	0.0	0.0	13.7	0.3	0.4	0.0	4.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.5	9.6	0.0	0.0	12.0	2.0	1.9	0.0	10.2			
LnGrp Delay(d),s/veh	21.4	32.0	0.0	0.0	40.6	21.9	10.1	0.0	18.8			
LnGrp LOS	C	C			D	C	B		B			
Approach Vol, veh/h		472			596			725				
Approach Delay, s/veh		31.2			36.9			16.9				
Approach LOS		C			D			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		46.5		33.5			6.1	27.4
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		39.0		33.0			4.0	25.0
Max Q Clear Time (g_c+I1), s		23.9		20.7			3.1	21.5
Green Ext Time (p_c), s		2.9		4.6			0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	105	85	325	245	0	0	0	0	355	1	50
Number	7	4	14	3	8	18				1	6	16
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
Adj Sat Flow, veh/h/ln	0	1681	1681	1827	1827	0				1900	1792	1900
Adj Flow Rate, veh/h	0	113	5	349	263	0				382	1	49
Adj No. of Lanes	0	1	1	1	1	0				0	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	0	13	13	4	4	0				0	6	0
Cap, veh/h	0	179	152	485	646	0				814	2	104
Arrive On Green	0.00	0.11	0.11	0.20	0.35	0.00				0.55	0.55	0.55
Sat Flow, veh/h	0	1681	1429	1740	1827	0				1489	4	191
Grp Volume(v), veh/h	0	113	5	349	263	0				432	0	0
Grp Sat Flow(s),veh/h/ln	0	1681	1429	1740	1827	0				1684	0	0
Q Serve(g_s), s	0.0	5.2	0.3	13.5	8.7	0.0				12.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.2	0.3	13.5	8.7	0.0				12.5	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.88		0.11
Lane Grp Cap(c), veh/h	0	179	152	485	646	0				920	0	0
V/C Ratio(X)	0.00	0.63	0.03	0.72	0.41	0.00				0.47	0.00	0.00
Avail Cap(c_a), veh/h	0	336	286	534	868	0				920	0	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)	0.00	1.00	1.00	0.38	0.38	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	34.2	32.1	23.0	19.5	0.0				11.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.6	0.1	1.6	0.2	0.0				1.7	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
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.1	6.6	4.4	0.0				6.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	37.9	32.1	24.6	19.7	0.0				12.8	0.0	0.0
LnGrp LOS		D	C	C	B					B		
Approach Vol, veh/h		118			612						432	
Approach Delay, s/veh		37.6			22.5						12.8	
Approach LOS		D			C						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			19.8	12.5		47.7		32.3
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			18.0	16.0		34.0		38.0
Max Q Clear Time (g_c+I1), s			15.5	7.2		14.5		10.7
Green Ext Time (p_c), s			0.3	1.4		2.7		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	30	25	80	20	105	35	325	110	105	450	80
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1827	1827	1827	1845	1845	1845
Adj Flow Rate, veh/h	58	32	5	84	21	6	37	342	63	111	474	58
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	4	4	4	3	3	3
Cap, veh/h	228	75	12	233	92	26	614	1123	955	141	1375	1169
Arrive On Green	0.04	0.05	0.05	0.06	0.06	0.06	0.61	0.61	0.61	0.08	0.75	0.75
Sat Flow, veh/h	1810	1605	251	1810	1422	406	852	1827	1553	1757	1845	1568
Grp Volume(v), veh/h	58	0	37	84	0	27	37	342	63	111	474	58
Grp Sat Flow(s),veh/h/ln	1810	0	1856	1810	0	1828	852	1827	1553	1757	1845	1568
Q Serve(g_s), s	2.4	0.0	1.6	3.5	0.0	1.1	1.4	7.1	1.3	5.0	7.0	0.8
Cycle Q Clear(g_c), s	2.4	0.0	1.6	3.5	0.0	1.1	1.4	7.1	1.3	5.0	7.0	0.8
Prop In Lane	1.00		0.14	1.00		0.22	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	87	233	0	118	614	1123	955	141	1375	1169
V/C Ratio(X)	0.25	0.00	0.43	0.36	0.00	0.23	0.06	0.30	0.07	0.78	0.34	0.05
Avail Cap(c_a), veh/h	246	0	371	241	0	389	614	1123	955	242	1375	1169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	37.1	33.6	0.0	35.5	6.2	7.3	6.2	36.1	3.5	2.7
Incr Delay (d2), s/veh	0.6	0.0	3.3	0.9	0.0	1.0	0.2	0.7	0.1	9.2	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.9	1.8	0.0	0.6	0.4	3.7	0.6	2.8	3.8	0.4
LnGrp Delay(d),s/veh	35.1	0.0	40.4	34.6	0.0	36.5	6.4	8.0	6.3	45.3	4.2	2.8
LnGrp LOS	D		D	C		D	A	A	A	D	A	A
Approach Vol, veh/h		95			111			442			643	
Approach Delay, s/veh		37.1			35.0			7.6			11.1	
Approach LOS		D			D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	10.4	53.2	8.6	7.7		63.6	7.2	9.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	32.0	5.0	16.0		47.0	4.0	17.0
Max Q Clear Time (g_c+I1), s	4.4	9.1	5.5	3.6		9.0	4.4	3.1
Green Ext Time (p_c), s	0.1	5.0	0.0	0.2		5.5	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	90	1	75	15	0	10	25	390	15	5	340	75
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	100	-	-	100	-	-	100	-	-	150	-	0
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, %	2	2	2	0	0	0	9	9	9	2	2	2
Mvmt Flow	99	1	82	16	0	11	27	429	16	5	374	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	882	885	374	918	877	437	374	0	0	445	0	0
Stage 1	385	385	-	492	492	-	-	-	-	-	-	-
Stage 2	497	500	-	426	385	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.5	6.2	4.19	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4	3.3	2.281	-	-	2.218	-	-
Pot Cap-1 Maneuver	267	284	672	254	289	624	1147	-	-	1115	-	-
Stage 1	638	611	-	562	551	-	-	-	-	-	-	-
Stage 2	555	543	-	610	614	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	257	276	672	217	281	624	1147	-	-	1115	-	-
Mov Cap-2 Maneuver	257	276	-	217	281	-	-	-	-	-	-	-
Stage 1	623	608	-	549	538	-	-	-	-	-	-	-
Stage 2	532	530	-	532	611	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	18.1	0.5	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1147	-	-	257	660	217	624	1115	-	-
HCM Lane V/C Ratio	0.024	-	-	0.385	0.127	0.076	0.018	0.005	-	-
HCM Control Delay (s)	8.2	-	-	27.5	11.2	22.9	10.9	8.2	-	-
HCM Lane LOS	A	-	-	D	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.7	0.4	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	5	25	190	5	10	25	180	185	10	190	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	-	-	-	-	-	-	-	-	-	-	-	-
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, %	9	9	9	4	4	4	2	2	2	0	0	0
Mvmt Flow	5	5	27	209	5	11	27	198	203	11	209	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	599	692	214	607	596	299	220	0	0	401	0	0
Stage 1	236	236	-	354	354	-	-	-	-	-	-	-
Stage 2	363	456	-	253	242	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.14	6.54	6.24	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.536	4.036	3.336	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	403	359	809	406	414	736	1349	-	-	1169	-	-
Stage 1	752	697	-	659	627	-	-	-	-	-	-	-
Stage 2	642	556	-	747	702	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	382	345	809	376	398	736	1349	-	-	1169	-	-
Mov Cap-2 Maneuver	382	345	-	376	398	-	-	-	-	-	-	-
Stage 1	732	689	-	641	610	-	-	-	-	-	-	-
Stage 2	610	541	-	708	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	26.6	0.5	0.4
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1349	-	-	598	386	1169	-	-
HCM Lane V/C Ratio	0.02	-	-	0.064	0.584	0.009	-	-
HCM Control Delay (s)	7.7	0	-	11.4	26.6	8.1	0	-
HCM Lane LOS	A	A	-	B	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	3.6	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	85	210	5	30	15	145	245	2	20	325	105
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1759	1759	1900	1727	1727	1900	1792	1792	1900
Adj Flow Rate, veh/h	128	90	90	5	32	5	154	261	2	21	346	101
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	8	8	8	10	10	10	6	6	6
Cap, veh/h	267	127	127	145	223	35	448	899	7	790	833	243
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.08	0.52	0.52	0.18	0.62	0.62
Sat Flow, veh/h	1352	848	848	1133	1486	232	1645	1712	13	1707	1334	389
Grp Volume(v), veh/h	128	0	180	5	0	37	154	0	263	21	0	447
Grp Sat Flow(s),veh/h/ln	1352	0	1695	1133	0	1718	1645	0	1725	1707	0	1724
Q Serve(g_s), s	7.3	0.0	8.1	0.3	0.0	1.5	4.1	0.0	6.8	0.0	0.0	10.5
Cycle Q Clear(g_c), s	8.8	0.0	8.1	8.4	0.0	1.5	4.1	0.0	6.8	0.0	0.0	10.5
Prop In Lane	1.00		0.50	1.00		0.14	1.00		0.01	1.00		0.23
Lane Grp Cap(c), veh/h	267	0	254	145	0	257	448	0	906	790	0	1077
V/C Ratio(X)	0.48	0.00	0.71	0.03	0.00	0.14	0.34	0.00	0.29	0.03	0.00	0.42
Avail Cap(c_a), veh/h	437	0	466	287	0	473	529	0	906	790	0	1077
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	33.4	0.0	32.4	36.4	0.0	29.6	12.2	0.0	10.6	8.3	0.0	7.6
Incr Delay (d2), s/veh	1.3	0.0	3.6	0.1	0.0	0.3	0.5	0.0	0.8	0.0	0.0	1.2
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	2.8	0.0	4.1	0.1	0.0	0.7	1.9	0.0	3.4	0.2	0.0	5.3
LnGrp Delay(d),s/veh	34.7	0.0	36.0	36.4	0.0	29.8	12.7	0.0	11.5	8.3	0.0	8.8
LnGrp LOS	C		D	D		C	B		B	A		A
Approach Vol, veh/h		308			42			417			468	
Approach Delay, s/veh		35.4			30.6			11.9			8.8	
Approach LOS		D			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.0	46.0		16.0	10.0	54.0		16.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	4.0	42.0		22.0	10.0	36.0		22.0
Max Q Clear Time (g_c+I1), s	2.0	8.8		10.8	6.1	12.5		10.4
Green Ext Time (p_c), s	0.0	1.3		1.2	0.1	3.0		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	130	435	255	15	15	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	141	473	277	16	16	71

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	293	0	-	0	1040	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	755	-
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	1269	-	-	-	257	759
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	468	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1269	-	-	-	228	759
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	416	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1269	-	-	-	528
HCM Lane V/C Ratio	0.111	-	-	-	0.165
HCM Control Delay (s)	8.2	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	260	455	95	40	305	45	75	160	65	80	195	230
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1759	1759	1900	1792	1792	1900	1827	1827	1900
Adj Flow Rate, veh/h	277	484	37	43	324	43	80	170	48	85	207	192
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	8	8	8	6	6	6	4	4	4
Cap, veh/h	377	654	556	302	374	50	347	454	128	499	295	273
Arrive On Green	0.28	0.71	0.71	0.03	0.25	0.25	0.08	0.34	0.34	0.08	0.34	0.34
Sat Flow, veh/h	1757	1845	1568	1675	1522	202	1707	1346	380	1740	874	810
Grp Volume(v), veh/h	277	484	37	43	0	367	80	0	218	85	0	399
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1675	0	1724	1707	0	1725	1740	0	1684
Q Serve(g_s), s	9.1	12.9	0.4	1.5	0.0	16.3	0.0	0.0	7.7	0.0	0.0	16.5
Cycle Q Clear(g_c), s	9.1	12.9	0.4	1.5	0.0	16.3	0.0	0.0	7.7	0.0	0.0	16.5
Prop In Lane	1.00		1.00	1.00		0.12	1.00		0.22	1.00		0.48
Lane Grp Cap(c), veh/h	377	654	556	302	0	423	347	0	582	499	0	568
V/C Ratio(X)	0.74	0.74	0.07	0.14	0.00	0.87	0.23	0.00	0.37	0.17	0.00	0.70
Avail Cap(c_a), veh/h	395	669	568	334	0	452	347	0	582	499	0	568
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.1	9.4	4.0	21.6	0.0	28.9	27.3	0.0	20.1	20.0	0.0	23.0
Incr Delay (d2), s/veh	3.0	1.9	0.0	0.2	0.0	15.5	0.3	0.0	1.8	0.2	0.0	7.1
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	4.6	6.5	0.2	0.7	0.0	9.6	1.6	0.0	3.9	1.4	0.0	8.8
LnGrp Delay(d),s/veh	19.1	11.3	4.0	21.8	0.0	44.4	27.7	0.0	21.9	20.2	0.0	30.1
LnGrp LOS	B	B	A	C		D	C		C	C		C
Approach Vol, veh/h		798			410			298			484	
Approach Delay, s/veh		13.7			42.0			23.5			28.4	
Approach LOS		B			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	31.0	6.5	32.3	10.2	31.0	15.2	23.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	27.0	4.0	29.0	4.0	27.0	12.0	21.0
Max Q Clear Time (g_c+I1), s	2.0	9.7	3.5	14.9	2.0	18.5	11.1	18.3
Green Ext Time (p_c), s	0.1	1.1	0.0	4.4	0.1	1.6	0.1	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	100	760	15	5	570	35	25	1	5	35	5	285
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1900	1827	1827	1900	1776	1776	1900	1776	1776	1900
Adj Flow Rate, veh/h	105	800	16	5	600	32	26	1	5	37	5	84
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	7	7	7
Cap, veh/h	131	783	16	54	684	36	458	77	385	531	32	541
Arrive On Green	0.15	0.89	0.89	0.02	0.27	0.27	0.30	0.30	0.30	0.03	0.38	0.38
Sat Flow, veh/h	1723	1768	35	1740	1719	92	1242	258	1290	1691	86	1437
Grp Volume(v), veh/h	105	0	816	5	0	632	26	0	6	37	0	89
Grp Sat Flow(s),veh/h/ln	1723	0	1803	1740	0	1811	1242	0	1548	1691	0	1522
Q Serve(g_s), s	4.7	0.0	35.4	0.2	0.0	26.7	1.2	0.0	0.2	1.2	0.0	3.1
Cycle Q Clear(g_c), s	4.7	0.0	35.4	0.2	0.0	26.7	1.3	0.0	0.2	1.2	0.0	3.1
Prop In Lane	1.00		0.02	1.00		0.05	1.00		0.83	1.00		0.94
Lane Grp Cap(c), veh/h	131	0	799	54	0	720	458	0	462	531	0	573
V/C Ratio(X)	0.80	0.00	1.02	0.09	0.00	0.88	0.06	0.00	0.01	0.07	0.00	0.16
Avail Cap(c_a), veh/h	151	0	902	87	0	837	458	0	462	568	0	573
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.00	0.45	0.55	0.00	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.4	0.0	4.6	38.1	0.0	27.5	20.2	0.0	19.8	17.2	0.0	16.5
Incr Delay (d2), s/veh	11.8	0.0	25.5	0.4	0.0	5.5	0.2	0.0	0.1	0.1	0.0	0.6
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	2.6	0.0	19.8	0.1	0.0	14.4	0.4	0.0	0.1	0.5	0.0	1.4
LnGrp Delay(d),s/veh	45.2	0.0	30.1	38.5	0.0	33.0	20.5	0.0	19.8	17.3	0.0	17.1
LnGrp LOS	D		F	D		C	C		B	B		B
Approach Vol, veh/h		921			637			32			126	
Approach Delay, s/veh		31.8			33.0			20.3			17.2	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	6.2	27.2	5.4	41.1		33.5	10.1	36.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	4.3	16.0	4.0	40.0		24.0	7.0	37.0
Max Q Clear Time (g_c+I1), s	2.2	3.3	2.2	37.4		5.1	6.7	28.7
Green Ext Time (p_c), s	0.0	0.4	0.7	1.3		0.5	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	805	140	15	850	90	155	5	85	30	20	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1759	1759	1759	1810	1810	1900
Adj Flow Rate, veh/h	16	847	136	16	895	90	163	5	15	32	21	5
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	8	8	8	5	5	5
Cap, veh/h	117	889	143	136	945	95	417	461	392	440	370	88
Arrive On Green	0.01	0.57	0.57	0.01	0.57	0.57	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1757	1552	249	1757	1650	166	1302	1759	1495	1347	1414	337
Grp Volume(v), veh/h	16	0	983	16	0	985	163	5	15	32	0	26
Grp Sat Flow(s),veh/h/ln	1757	0	1801	1757	0	1815	1302	1759	1495	1347	0	1750
Q Serve(g_s), s	0.3	0.0	41.1	0.0	0.0	40.5	8.6	0.2	0.6	1.4	0.0	0.9
Cycle Q Clear(g_c), s	0.3	0.0	41.1	0.0	0.0	40.5	9.5	0.2	0.6	1.6	0.0	0.9
Prop In Lane	1.00		0.14	1.00		0.09	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	117	0	1032	136	0	1040	417	461	392	440	0	458
V/C Ratio(X)	0.14	0.00	0.95	0.12	0.00	0.95	0.39	0.01	0.04	0.07	0.00	0.06
Avail Cap(c_a), veh/h	179	0	1080	198	0	1089	417	461	392	440	0	458
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)	0.47	0.00	0.47	0.52	0.00	0.52	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	16.1	37.2	0.0	15.9	25.7	21.9	22.0	22.4	0.0	22.1
Incr Delay (d2), s/veh	0.2	0.0	9.8	0.2	0.0	9.7	2.7	0.0	0.2	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	23.0	0.4	0.0	22.8	3.4	0.1	0.3	0.6	0.0	0.5
LnGrp Delay(d),s/veh	19.9	0.0	25.8	37.4	0.0	25.6	28.4	21.9	22.2	22.8	0.0	22.4
LnGrp LOS	B		C	D		C	C	C	C	C		C
Approach Vol, veh/h		999			1001			183			58	
Approach Delay, s/veh		25.7			25.8			27.7			22.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.0	5.2	49.8		25.0	5.2	49.8
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	48.0		16.0	4.0	48.0
Max Q Clear Time (g_c+I1), s		11.5	2.0	43.1		3.6	2.3	42.5
Green Ext Time (p_c), s		0.3	1.3	2.8		0.6	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	895	10	10	880	15	25	1	10	10	0	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900	1484	1484	1900	1900	1759	1900
Adj Flow Rate, veh/h	42	942	6	11	926	11	26	1	6	11	0	5
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	5	5	5	28	28	28	8	8	8
Cap, veh/h	207	1014	862	109	912	11	403	51	308	328	13	121
Arrive On Green	0.06	0.56	0.56	0.02	1.00	1.00	0.28	0.28	0.28	0.28	0.00	0.28
Sat Flow, veh/h	1723	1810	1538	1723	1785	21	1120	184	1105	906	47	433
Grp Volume(v), veh/h	42	942	6	11	0	937	26	0	7	16	0	0
Grp Sat Flow(s),veh/h/ln	1723	1810	1538	1723	0	1806	1120	0	1289	1386	0	0
Q Serve(g_s), s	0.0	38.2	0.1	0.3	0.0	40.0	1.0	0.0	0.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	38.2	0.1	0.3	0.0	40.0	1.3	0.0	0.3	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		0.86	0.69		0.31
Lane Grp Cap(c), veh/h	207	1014	862	109	0	923	403	0	359	462	0	0
V/C Ratio(X)	0.20	0.93	0.01	0.10	0.00	1.02	0.06	0.00	0.02	0.03	0.00	0.00
Avail Cap(c_a), veh/h	207	1086	923	176	0	1083	403	0	359	462	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.43	0.00	0.43	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	35.0	16.1	7.8	19.5	0.0	0.0	21.3	0.0	20.9	21.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	13.0	0.0	0.2	0.0	21.3	0.3	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	0.9	22.5	0.1	0.1	0.0	5.4	0.5	0.0	0.1	0.3	0.0	0.0
LnGrp Delay(d),s/veh	35.5	29.1	7.8	19.6	0.0	21.3	21.6	0.0	21.0	21.0	0.0	0.0
LnGrp LOS	D	C	A	B		F	C		C	C		
Approach Vol, veh/h		990			948			33			16	
Approach Delay, s/veh		29.3			21.2			21.5			21.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.4	4.9	49.7		25.4	7.6	47.0
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	48.0		16.0	4.0	48.0
Max Q Clear Time (g_c+I1), s		3.3	2.3	40.2		2.6	2.0	42.0
Green Ext Time (p_c), s		0.1	0.0	3.8		0.1	1.2	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	330	805	340	155	755	125	555	355	180	215	210	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	347	847	84	163	795	21	584	374	36	226	221	42
Adj No. of Lanes	1	2	1	1	3	1	2	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	1009	451	200	941	293	602	889	398	268	805	360
Arrive On Green	0.07	0.09	0.09	0.11	0.19	0.19	0.17	0.25	0.25	0.05	0.08	0.08
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	347	847	84	163	795	21	584	374	36	226	221	42
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	15.6	18.8	3.9	7.2	12.1	0.9	13.5	7.1	1.4	10.1	4.7	2.0
Cycle Q Clear(g_c), s	15.6	18.8	3.9	7.2	12.1	0.9	13.5	7.1	1.4	10.1	4.7	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	377	1009	451	200	941	293	602	889	398	268	805	360
V/C Ratio(X)	0.92	0.84	0.19	0.82	0.84	0.07	0.97	0.42	0.09	0.84	0.27	0.12
Avail Cap(c_a), veh/h	377	1009	451	244	1017	317	602	889	398	288	805	360
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	36.5	34.4	27.7	34.7	31.5	26.9	32.8	25.1	22.9	37.1	30.8	29.5
Incr Delay (d2), s/veh	25.6	5.9	0.2	16.1	6.3	0.1	29.1	1.5	0.4	18.6	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	10.3	10.0	1.7	4.4	6.2	0.4	8.8	3.6	0.7	6.4	2.4	0.9
LnGrp Delay(d),s/veh	62.1	40.3	27.9	50.8	37.8	27.0	61.9	26.5	23.4	55.7	31.6	30.2
LnGrp LOS	E	D	C	D	D	C	E	C	C	E	C	C
Approach Vol, veh/h		1278			979			994			489	
Approach Delay, s/veh		45.4			39.7			47.2			42.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.1	24.1	13.0	26.8	18.0	22.2	21.0	18.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	18.0	11.0	22.0	14.0	17.0	17.0	16.0
Max Q Clear Time (g_c+I1), s	12.1	9.1	9.2	20.8	15.5	6.7	17.6	14.1
Green Ext Time (p_c), s	0.1	2.6	0.1	1.0	0.0	2.8	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	44.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	1	95	0	0	10	90	655	15	0	500	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900	1900	1900	1900	1863	1863	1900	1845	1845	1900
Adj Flow Rate, veh/h	58	1	5	0	0	6	95	689	11	0	526	27
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	88	4	1	50	0	538	795	3047	49	90	2899	149
Arrive On Green	0.05	0.05	0.05	0.00	0.00	0.05	1.00	1.00	1.00	0.00	0.85	0.85
Sat Flow, veh/h	43	94	12	0	0	1615	852	3565	57	736	3393	174
Grp Volume(v), veh/h	64	0	0	0	0	6	95	342	358	0	271	282
Grp Sat Flow(s),veh/h/ln	148	0	0	0	0	1615	852	1770	1853	736	1752	1814
Q Serve(g_s), s	2.3	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	2.1	2.1
Cycle Q Clear(g_c), s	2.3	0.0	0.0	0.0	0.0	0.2	2.5	0.0	0.0	0.0	2.1	2.1
Prop In Lane	0.91		0.08	0.00		1.00	1.00		0.03	1.00		0.10
Lane Grp Cap(c), veh/h	0	0	0	0	0	0	795	1512	1583	90	1497	1550
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.23	0.23	0.00	0.18	0.18
Avail Cap(c_a), veh/h	0	0	0	0	0	0	795	1512	1583	90	1497	1550
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	0.00	0.00	0.00	1.00	0.75	0.75	0.75	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	1.1	1.1
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.0	1.3	1.3
LnGrp LOS							A	A	A		A	A
Approach Vol, veh/h		64			6			795			553	
Approach Delay, s/veh		0.0			0.0			0.3			1.3	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.4		7.6		72.4		7.6
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		40.0		24.0		40.0		24.0
Max Q Clear Time (g_c+I1), s		4.5		4.3		4.1		2.2
Green Ext Time (p_c), s		9.6		0.3		9.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	220	795	0	0	1230	420	575	0	775	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	0	1881			
Adj Flow Rate, veh/h	232	837	0	0	1295	0	605	0	0			
Adj No. of Lanes	1	2	0	0	3	1	2	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	1	1	0	0	1	1	1	0	1			
Cap, veh/h	513	2475	0	0	1830	570	721	0	332			
Arrive On Green	0.57	1.00	0.00	0.00	0.12	0.00	0.21	0.00	0.00			
Sat Flow, veh/h	1792	3668	0	0	5305	1599	3476	0	1599			
Grp Volume(v), veh/h	232	837	0	0	1295	0	605	0	0			
Grp Sat Flow(s),veh/h/ln	1792	1787	0	0	1712	1599	1738	0	1599			
Q Serve(g_s), s	6.0	0.0	0.0	0.0	19.4	0.0	13.4	0.0	0.0			
Cycle Q Clear(g_c), s	6.0	0.0	0.0	0.0	19.4	0.0	13.4	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	513	2475	0	0	1830	570	721	0	332			
V/C Ratio(X)	0.45	0.34	0.00	0.00	0.71	0.00	0.84	0.00	0.00			
Avail Cap(c_a), veh/h	513	2475	0	0	1830	570	912	0	420			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.82	0.82	0.00	0.00	0.50	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	13.5	0.0	0.0	0.0	31.3	0.0	30.4	0.0	0.0			
Incr Delay (d2), s/veh	0.5	0.3	0.0	0.0	1.2	0.0	5.7	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			
%ile BackOfQ(50%),veh/ln	2.9	0.1	0.0	0.0	9.4	0.0	7.0	0.0	0.0			
LnGrp Delay(d),s/veh	14.0	0.3	0.0	0.0	32.5	0.0	36.1	0.0	0.0			
LnGrp LOS	B	A			C		D					
Approach Vol, veh/h		1069			1295			605				
Approach Delay, s/veh		3.3			32.5			36.1				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		59.4			26.9	32.5		20.6
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		51.0			18.5	28.5		21.0
Max Q Clear Time (g_c+I1), s		2.0			8.0	21.4		15.4
Green Ext Time (p_c), s		7.8			4.6	4.5		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	775	450	0	1245	560	0	0	0	240	1	215
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1845	1845				1900	1810	1810
Adj Flow Rate, veh/h	0	816	0	0	1311	389				253	1	179
Adj No. of Lanes	0	2	0	0	2	1				0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3				5	5	5
Cap, veh/h	0	2528	0	0	2503	1120				319	1	286
Arrive On Green	0.00	0.71	0.00	0.00	1.00	1.00				0.19	0.19	0.19
Sat Flow, veh/h	0	3725	0	0	3597	1568				1717	7	1538
Grp Volume(v), veh/h	0	816	0	0	1311	389				254	0	179
Grp Sat Flow(s),veh/h/ln	0	1770	0	0	1752	1568				1724	0	1538
Q Serve(g_s), s	0.0	6.9	0.0	0.0	0.0	0.0				11.3	0.0	8.6
Cycle Q Clear(g_c), s	0.0	6.9	0.0	0.0	0.0	0.0				11.3	0.0	8.6
Prop In Lane	0.00		0.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2528	0	0	2503	1120				320	0	286
V/C Ratio(X)	0.00	0.32	0.00	0.00	0.52	0.35				0.79	0.00	0.63
Avail Cap(c_a), veh/h	0	2528	0	0	2503	1120				517	0	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	0.67	0.67				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.2	0.0	0.0	0.0	0.0				31.1	0.0	30.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.5	0.6				4.4	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	0.2	0.2				5.8	0.0	3.8
LnGrp Delay(d),s/veh	0.0	4.6	0.0	0.0	0.5	0.6				35.5	0.0	32.3
LnGrp LOS		A			A	A				D		C
Approach Vol, veh/h		816			1700						433	
Approach Delay, s/veh		4.6			0.5						34.2	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		61.1		18.9		61.1		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		48.0		24.0		48.0		
Max Q Clear Time (g_c+I1), s		8.9		13.3		2.0		
Green Ext Time (p_c), s		25.6		1.6		28.3		

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	25	25	25	235	190	30
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	27	27	27	255	207	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	533	223	239	0	-	0
Stage 1	223	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.13	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.227	-	-	-
Pot Cap-1 Maneuver	507	817	1322	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	495	817	1322	-	-	-
Mov Cap-2 Maneuver	495	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	726	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1322	-	616	-	-
HCM Lane V/C Ratio	0.021	-	0.088	-	-
HCM Control Delay (s)	7.8	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	15	2	25	35	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	7	7	7	7	8	8
Mvmt Flow	17	2	29	41	12	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	20	0	118	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	99	-
Critical Hdwy	-	-	4.17	-	6.48	6.28
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.263	-	3.572	3.372
Pot Cap-1 Maneuver	-	-	1564	-	864	1042
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1564	-	848	1042
Mov Cap-2 Maneuver	-	-	-	-	848	-
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	986	-	-	1564	-
HCM Lane V/C Ratio	0.047	-	-	0.019	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	27.8

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Vol, veh/h	785	195	0	650	155	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	853	212	0	707	168	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	853	0	1560	853
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	707	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	786	-	~ 123	359
Stage 1	-	0	-	-	418	-
Stage 2	-	0	-	-	489	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	786	-	~ 123	359
Mov Cap-2 Maneuver	-	-	-	-	~ 123	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	489	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	277.5
HCM LOS			F

Minor Lane/Major Mvmt	NWLn1	EBT	WBL	WBT
Capacity (veh/h)	126	-	786	-
HCM Lane V/C Ratio	1.38	-	-	-
HCM Control Delay (s)	277.5	-	0	-
HCM Lane LOS	F	-	A	-
HCM 95th %tile Q(veh)	11.6	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NEL	NER
Vol, veh/h	785	5	90	640	0	175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	853	5	98	696	0	190

Major/Minor	Major1			Major2		Minor1	
Conflicting Flow All	0	0		859	0	1747	856
Stage 1	-	-		-	-	856	-
Stage 2	-	-		-	-	891	-
Critical Hdwy	-	-		4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-		-	-	5.42	-
Critical Hdwy Stg 2	-	-		-	-	5.42	-
Follow-up Hdwy	-	-		2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-		782	-	95	357
Stage 1	-	-		-	-	416	-
Stage 2	-	-		-	-	401	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-		782	-	76	357
Mov Cap-2 Maneuver	-	-		-	-	76	-
Stage 1	-	-		-	-	416	-
Stage 2	-	-		-	-	319	-

Approach	EB	WB	NE
HCM Control Delay, s	0	1.3	26
HCM LOS			D

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	357	-	-	782	-
HCM Lane V/C Ratio	0.533	-	-	0.125	-
HCM Control Delay (s)	26	-	-	10.3	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	3	-	-	0.4	-

Intersection	
Int Delay, s/veh	5.2

Movement	NBL	NBT	SBT	SBR	SEL	SER
Vol, veh/h	175	165	95	0	0	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	190	179	103	0	0	212

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	103	0	-	0	663	103
Stage 1	-	-	-	-	103	-
Stage 2	-	-	-	-	560	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1489	-	-	-	426	952
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1489	-	-	-	366	952
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	491	-

Approach	NB	SB	SE
HCM Control Delay, s	4	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	1489	-	952	-	-
HCM Lane V/C Ratio	0.128	-	0.223	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.9	-	-

F Capacity Analysis Worksheets – 2035 With Improvements

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Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	655	20	55	465	20	55
Future Vol, veh/h	655	20	55	465	20	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	8	8	0	0
Mvmt Flow	689	21	58	489	21	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	711	0	1305	700
Stage 1	-	-	-	-	700	-
Stage 2	-	-	-	-	605	-
Critical Hdwy	-	-	4.18	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	861	-	178	443
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	549	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	861	-	166	443
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	512	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	396	-	-	861	-
HCM Lane V/C Ratio	0.199	-	-	0.067	-
HCM Control Delay (s)	16.3	-	-	9.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	39.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	290	115	690	320	75	340
Future Vol, veh/h	290	115	690	320	75	340
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	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	4	4	2	2
Mvmt Flow	305	121	726	337	79	358

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1242	726	0	0	726	0
Stage 1	726	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.12	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.218	-
Pot Cap-1 Maneuver	~ 190	420	-	-	877	-
Stage 1	474	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 173	420	-	-	877	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	178.3	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	334	877	-
HCM Lane V/C Ratio	-	-	1.276	0.09	-
HCM Control Delay (s)	-	-	178.3	9.5	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	19.7	0.3	-

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

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	265	70	0	100	225	0	105	120
Future Vol, veh/h	0	265	70	0	100	225	0	105	120
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	1	1	2	1	1	2	0	0
Mvmt Flow	0	279	74	0	105	237	0	111	126
Number of Lanes	0	1	0	0	0	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	12.6	13	10.3
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	31%
Vol Thru, %	0%	0%	79%	69%
Vol Right, %	0%	100%	21%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	120	335	325
LT Vol	105	0	0	100
Through Vol	0	0	265	225
RT Vol	0	120	70	0
Lane Flow Rate	111	126	353	342
Geometry Grp	7	7	2	2
Degree of Util (X)	0.207	0.193	0.487	0.49
Departure Headway (Hd)	6.729	5.511	4.97	5.156
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	534	652	726	701
Service Time	4.462	3.244	2.98	3.166
HCM Lane V/C Ratio	0.208	0.193	0.486	0.488
HCM Control Delay	11.2	9.6	12.6	13
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	0.8	0.7	2.7	2.7

HCM 2010 Signalized Intersection Summary
4: Hazel St (SR-9) & Division St (SR-530)/Division St

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	275	255	80	200	185	200	470	55	85	325	230
Future Volume (veh/h)	370	275	255	80	200	185	200	470	55	85	325	230
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	389	289	71	84	211	26	211	495	19	89	342	75
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
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, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	437	470	400	337	322	273	470	698	593	346	605	514
Arrive On Green	0.14	0.25	0.25	0.05	0.17	0.17	0.10	0.37	0.37	0.05	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Grp Volume(v), veh/h	389	289	71	84	211	26	211	495	19	89	342	75
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Q Serve(g_s), s	8.0	8.1	2.1	2.3	6.2	0.8	4.4	13.3	0.4	1.9	8.9	2.0
Cycle Q Clear(g_c), s	8.0	8.1	2.1	2.3	6.2	0.8	4.4	13.3	0.4	1.9	8.9	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	437	470	400	337	322	273	470	698	593	346	605	514
V/C Ratio(X)	0.89	0.61	0.18	0.25	0.66	0.10	0.45	0.71	0.03	0.26	0.57	0.15
Avail Cap(c_a), veh/h	437	630	536	361	509	433	470	698	593	374	605	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	19.5	17.3	18.7	22.9	20.6	11.6	15.9	11.8	13.2	16.6	14.3
Incr Delay (d2), s/veh	19.6	1.3	0.2	0.4	2.3	0.1	0.7	6.0	0.1	0.4	3.8	0.6
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	4.8	4.3	0.9	1.1	3.4	0.4	2.2	8.0	0.2	1.0	5.2	0.9
LnGrp Delay(d),s/veh	38.9	20.9	17.5	19.1	25.2	20.8	12.3	21.9	11.9	13.6	20.4	14.9
LnGrp LOS	D	C	B	B	C	C	B	C	B	B	C	B
Approach Vol, veh/h		749			321			725			506	
Approach Delay, s/veh		29.9			23.2			18.8			18.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	25.9	7.2	18.9	10.0	23.0	12.0	14.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	21.0	4.0	20.0	6.0	19.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	3.3	15.3	4.3	10.1	6.4	10.9	10.0	8.2
Green Ext Time (p_c), s	0.0	2.6	0.0	2.2	0.0	3.3	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			✣				✣				✣				✣	
Traffic Vol, veh/h	0	165	5	130	0	1	5	5	0	115	115	5	0	5	130	155
Future Vol, veh/h	0	165	5	130	0	1	5	5	0	115	115	5	0	5	130	155
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	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	174	5	137	0	1	5	5	0	121	121	5	0	5	137	163
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	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	12.4	8.8	11.4	11.3
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	55%	9%	2%
Vol Thru, %	49%	2%	45%	45%
Vol Right, %	2%	43%	45%	53%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	235	300	11	290
LT Vol	115	165	1	5
Through Vol	115	5	5	130
RT Vol	5	130	5	155
Lane Flow Rate	247	316	12	305
Geometry Grp	1	1	1	1
Degree of Util (X)	0.365	0.453	0.018	0.414
Departure Headway (Hd)	5.306	5.162	5.609	4.878
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	678	698	636	742
Service Time	3.337	3.194	3.66	2.878
HCM Lane V/C Ratio	0.364	0.453	0.019	0.411
HCM Control Delay	11.4	12.4	8.8	11.3
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.7	2.4	0.1	2

Intersection	
Intersection Delay, s/veh	66.6
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations			↕				↕				↕				↕	
Traffic Vol, veh/h	0	5	1	5	0	250	1	15	0	5	460	280	0	15	280	1
Future Vol, veh/h	0	5	1	5	0	250	1	15	0	5	460	280	0	15	280	1
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	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	25	25	25	2	0	0	0	2	2	2	2	2	1	1	1
Mvmt Flow	0	5	1	5	0	263	1	16	0	5	484	295	0	16	295	1
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	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	11.3	17	105.4	15.5
HCM LOS	B	C	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	45%	94%	5%
Vol Thru, %	62%	9%	0%	95%
Vol Right, %	38%	45%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	745	11	266	296
LT Vol	5	5	250	15
Through Vol	460	1	1	280
RT Vol	280	5	15	1
Lane Flow Rate	784	12	280	312
Geometry Grp	1	1	1	1
Degree of Util (X)	1.153	0.025	0.511	0.508
Departure Headway (Hd)	5.295	8.086	6.963	6.212
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	690	445	521	583
Service Time	3.297	6.086	4.963	4.212
HCM Lane V/C Ratio	1.136	0.027	0.537	0.535
HCM Control Delay	105.4	11.3	17	15.5
HCM Lane LOS	F	B	C	C
HCM 95th-tile Q	24.8	0.1	2.9	2.9

HCM 2010 Signalized Intersection Summary
7: Stillaguamish Ave/Stilliguamish Ave & Highland Dr

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	165	170	25	100	15	120	110	20	135	145	75
Future Volume (veh/h)	55	165	170	25	100	15	120	110	20	135	145	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1881	1900	1845	1845	1900	1900	1881	1900
Adj Flow Rate, veh/h	58	174	140	26	105	10	126	116	14	142	153	68
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	1	1	1	3	3	3	1	1	1
Cap, veh/h	108	234	171	111	392	34	756	984	119	343	359	146
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.06	0.61	0.61	0.50	0.50	0.50
Sat Flow, veh/h	177	843	616	183	1413	122	1757	1615	195	549	722	293
Grp Volume(v), veh/h	372	0	0	141	0	0	126	0	130	363	0	0
Grp Sat Flow(s),veh/h/ln	1636	0	0	1718	0	0	1757	0	1810	1564	0	0
Q Serve(g_s), s	9.2	0.0	0.0	0.0	0.0	0.0	2.3	0.0	2.1	7.1	0.0	0.0
Cycle Q Clear(g_c), s	14.9	0.0	0.0	4.2	0.0	0.0	2.3	0.0	2.1	10.2	0.0	0.0
Prop In Lane	0.16		0.38	0.18		0.07	1.00		0.11	0.39		0.19
Lane Grp Cap(c), veh/h	513	0	0	538	0	0	756	0	1102	848	0	0
V/C Ratio(X)	0.72	0.00	0.00	0.26	0.00	0.00	0.17	0.00	0.12	0.43	0.00	0.00
Avail Cap(c_a), veh/h	727	0	0	755	0	0	757	0	1102	848	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	19.9	0.0	0.0	6.7	0.0	5.8	11.4	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.2	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	0.0	0.0	2.2	0.0	0.0	1.1	0.0	1.1	4.9	0.0	0.0
LnGrp Delay(d),s/veh	25.8	0.0	0.0	20.2	0.0	0.0	6.8	0.0	6.0	13.0	0.0	0.0
LnGrp LOS	C			C			A		A	B		
Approach Vol, veh/h		372			141			256			363	
Approach Delay, s/veh		25.8			20.2			6.4			13.0	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		47.0		23.6	7.9	39.1		23.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		43.0		29.0	4.0	35.0		29.0
Max Q Clear Time (g_c+I1), s		4.1		16.9	4.3	12.2		6.2
Green Ext Time (p_c), s		3.7		2.7	0.0	3.4		3.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
8: 67th Ave & 211th Pl

Projected 2035
PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	200	160	515	330	140
Future Volume (veh/h)	125	200	160	515	330	140
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1827	1827	1759	1900
Adj Flow Rate, veh/h	132	39	168	542	347	122
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	7	4	4	8	8
Cap, veh/h	194	173	217	1210	530	186
Arrive On Green	0.11	0.11	0.12	0.66	0.43	0.43
Sat Flow, veh/h	1691	1509	1740	1827	1244	438
Grp Volume(v), veh/h	132	39	168	542	0	469
Grp Sat Flow(s),veh/h/ln	1691	1509	1740	1827	0	1682
Q Serve(g_s), s	2.7	0.8	3.4	5.1	0.0	8.0
Cycle Q Clear(g_c), s	2.7	0.8	3.4	5.1	0.0	8.0
Prop In Lane	1.00	1.00	1.00			0.26
Lane Grp Cap(c), veh/h	194	173	217	1210	0	717
V/C Ratio(X)	0.68	0.23	0.78	0.45	0.00	0.65
Avail Cap(c_a), veh/h	755	674	437	1835	0	1079
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	15.2	14.4	15.2	2.9	0.0	8.2
Incr Delay (d2), s/veh	4.2	0.7	5.9	0.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.8	1.9	2.5	0.0	3.9
LnGrp Delay(d),s/veh	19.4	15.1	21.1	3.2	0.0	9.2
LnGrp LOS	B	B	C	A		A
Approach Vol, veh/h	171			710	469	
Approach Delay, s/veh	18.4			7.4	9.2	
Approach LOS	B			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		27.7		8.1	8.5	19.3		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	9.0	23.0		
Max Q Clear Time (g_c+I1), s		7.1		4.7	5.4	10.0		
Green Ext Time (p_c), s		7.4		0.3	0.1	5.3		

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
9: 204th St/204th Ave & SR-9

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	410	335	175	310	175	130	365	115	110	405	145
Future Volume (veh/h)	200	410	335	175	310	175	130	365	115	110	405	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1881	1881	1900	1792	1792	1792
Adj Flow Rate, veh/h	211	432	136	184	326	33	137	384	103	116	426	39
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
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	6	6	6
Cap, veh/h	298	496	421	201	394	335	314	453	122	270	568	483
Arrive On Green	0.16	0.26	0.26	0.11	0.21	0.21	0.06	0.32	0.32	0.06	0.32	0.32
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1792	1430	384	1707	1792	1524
Grp Volume(v), veh/h	211	432	136	184	326	33	137	0	487	116	426	39
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1792	0	1814	1707	1792	1524
Q Serve(g_s), s	7.0	13.7	4.3	6.4	10.4	1.0	0.0	0.0	15.8	0.0	13.4	1.1
Cycle Q Clear(g_c), s	7.0	13.7	4.3	6.4	10.4	1.0	0.0	0.0	15.8	0.0	13.4	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	298	496	421	201	394	335	314	0	575	270	568	483
V/C Ratio(X)	0.71	0.87	0.32	0.92	0.83	0.10	0.44	0.00	0.85	0.43	0.75	0.08
Avail Cap(c_a), veh/h	298	542	461	201	482	409	325	0	575	280	568	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	22.3	18.8	27.8	23.9	20.2	25.7	0.0	20.1	27.0	19.3	15.1
Incr Delay (d2), s/veh	7.5	13.6	0.4	41.0	9.7	0.1	1.0	0.0	14.4	1.1	8.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	9.1	2.0	5.5	6.5	0.5	2.3	0.0	10.1	2.0	8.0	0.5
LnGrp Delay(d),s/veh	32.4	35.9	19.3	68.7	33.6	20.4	26.6	0.0	34.5	28.1	28.1	15.4
LnGrp LOS	C	D	B	E	C	C	C		C	C	C	B
Approach Vol, veh/h		779			543			624			581	
Approach Delay, s/veh		32.0			44.7			32.8			27.3	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	24.0	11.0	20.5	7.6	24.0	14.4	17.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	20.0	7.0	18.0	4.0	20.0	9.0	16.0
Max Q Clear Time (g_c+I1), s	2.0	17.8	8.4	15.7	2.0	15.4	9.0	12.4
Green Ext Time (p_c), s	0.1	0.6	0.0	0.7	0.1	1.1	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: 67th Ave & 204th St

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	315	40	235	210	120	55	500	315	150	310	95
Future Volume (veh/h)	135	315	40	235	210	120	55	500	315	150	310	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1900	1845	1845	1900	1863	1863	1863	1743	1743	1900
Adj Flow Rate, veh/h	142	332	35	247	221	89	58	526	116	158	326	84
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	9	9	9
Cap, veh/h	335	383	40	316	337	136	358	666	566	292	508	131
Arrive On Green	0.06	0.24	0.24	0.09	0.27	0.27	0.04	0.36	0.36	0.06	0.38	0.38
Sat Flow, veh/h	1723	1610	170	1757	1252	504	1774	1863	1583	1660	1338	345
Grp Volume(v), veh/h	142	0	367	247	0	310	58	526	116	158	0	410
Grp Sat Flow(s),veh/h/ln	1723	0	1780	1757	0	1756	1774	1863	1583	1660	0	1682
Q Serve(g_s), s	4.0	0.0	12.7	6.0	0.0	10.1	1.3	16.3	3.3	3.9	0.0	12.9
Cycle Q Clear(g_c), s	4.0	0.0	12.7	6.0	0.0	10.1	1.3	16.3	3.3	3.9	0.0	12.9
Prop In Lane	1.00		0.10	1.00		0.29	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	335	0	423	316	0	472	358	666	566	292	0	639
V/C Ratio(X)	0.42	0.00	0.87	0.78	0.00	0.66	0.16	0.79	0.20	0.54	0.00	0.64
Avail Cap(c_a), veh/h	335	0	443	316	0	491	397	666	566	292	0	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	23.5	19.8	0.0	20.9	13.1	18.5	14.3	14.6	0.0	16.4
Incr Delay (d2), s/veh	0.8	0.0	16.0	12.0	0.0	3.0	0.2	9.2	0.8	2.0	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	8.1	2.5	0.0	5.2	0.6	10.0	1.6	1.9	0.0	6.8
LnGrp Delay(d),s/veh	18.7	0.0	39.5	31.8	0.0	23.9	13.3	27.7	15.1	16.6	0.0	21.3
LnGrp LOS	B		D	C		C	B	C	B	B		C
Approach Vol, veh/h		509			557			700			568	
Approach Delay, s/veh		33.7			27.4			24.4			20.0	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	27.0	10.0	19.3	6.6	28.4	8.0	21.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	23.0	6.0	16.0	4.0	23.0	4.0	18.0
Max Q Clear Time (g_c+I1), s	5.9	18.3	8.0	14.7	3.3	14.9	6.0	12.1
Green Ext Time (p_c), s	0.0	2.6	0.0	0.6	0.0	3.9	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	101.3

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	785	265	15	585	265	25
Future Vol, veh/h	785	265	15	585	265	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	3	3	3	3
Mvmt Flow	826	279	16	616	279	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	826	0	1473	826
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	647	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	0	800	-	~ 139	370
Stage 1	-	0	-	-	428	-
Stage 2	-	0	-	-	519	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	800	-	~ 135	370
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	503	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0.2	$ 584.4
HCM LOS			F

Minor Lane/Major Mvmt	NWLn1	EBT	WBL	WBT
Capacity (veh/h)	143	-	800	-
HCM Lane V/C Ratio	2.135	-	0.02	-
HCM Control Delay (s)	$ 584.4	-	9.6	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	24.9	-	0.1	-

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

HCM 2010 Signalized Intersection Summary
12: I-5 NB Ramps & SR-530

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	415	0	0	625	610	175	5	680	0	0	0
Future Volume (veh/h)	90	415	0	0	625	610	175	5	680	0	0	0
Number	7	4	14	3	8	18	5	2	12			
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			
Adj Sat Flow, veh/h/ln	1792	1792	0	0	1863	1863	1900	1810	1810			
Adj Flow Rate, veh/h	95	437	0	0	658	238	184	5	434			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	6	6	0	0	2	2	5	5	5			
Cap, veh/h	224	913	0	0	726	617	600	16	550			
Arrive On Green	0.07	0.68	0.00	0.00	0.39	0.39	0.36	0.36	0.36			
Sat Flow, veh/h	1707	1792	0	0	1863	1583	1680	46	1538			
Grp Volume(v), veh/h	95	437	0	0	658	238	189	0	434			
Grp Sat Flow(s),veh/h/ln	1707	1792	0	0	1863	1583	1726	0	1538			
Q Serve(g_s), s	0.0	7.0	0.0	0.0	20.0	6.5	4.7	0.0	15.2			
Cycle Q Clear(g_c), s	0.0	7.0	0.0	0.0	20.0	6.5	4.7	0.0	15.2			
Prop In Lane	1.00		0.00	0.00		1.00	0.97		1.00			
Lane Grp Cap(c), veh/h	224	913	0	0	726	617	617	0	550			
V/C Ratio(X)	0.42	0.48	0.00	0.00	0.91	0.39	0.31	0.00	0.79			
Avail Cap(c_a), veh/h	247	986	0	0	776	660	617	0	550			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.83	0.83	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	26.3	5.9	0.0	0.0	17.3	13.2	13.9	0.0	17.3			
Incr Delay (d2), s/veh	1.1	0.3	0.0	0.0	13.8	0.4	1.3	0.0	11.0			
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	1.5	3.5	0.0	0.0	13.0	2.9	2.5	0.0	8.1			
LnGrp Delay(d),s/veh	27.4	6.2	0.0	0.0	31.1	13.6	15.2	0.0	28.3			
LnGrp LOS	C	A			C	B	B		C			
Approach Vol, veh/h		532			896			623				
Approach Delay, s/veh		10.0			26.4			24.3				
Approach LOS		A			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		25.4		34.6			7.2	27.4
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		19.0		33.0			4.0	25.0
Max Q Clear Time (g_c+I1), s		17.2		9.0			2.0	22.0
Green Ext Time (p_c), s		0.6		3.1			0.6	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
13: I-5 SB Ramps & SR-530

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	160	185	425	390	0	0	0	0	385	5	95
Future Volume (veh/h)	0	160	185	425	390	0	0	0	0	385	5	95
Number	7	4	14	3	8	18				1	6	16
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
Adj Sat Flow, veh/h/ln	0	1681	1681	1827	1827	0				1900	1792	1900
Adj Flow Rate, veh/h	0	168	38	447	411	0				405	5	86
Adj No. of Lanes	0	1	1	1	1	0				0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	13	13	4	4	0				0	6	0
Cap, veh/h	0	231	196	420	677	0				677	8	144
Arrive On Green	0.00	0.14	0.14	0.28	0.62	0.00				0.50	0.50	0.50
Sat Flow, veh/h	0	1681	1429	1740	1827	0				1366	17	290
Grp Volume(v), veh/h	0	168	38	447	411	0				496	0	0
Grp Sat Flow(s),veh/h/ln	0	1681	1429	1740	1827	0				1673	0	0
Q Serve(g_s), s	0.0	5.7	1.4	10.0	8.2	0.0				12.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	5.7	1.4	10.0	8.2	0.0				12.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.82		0.17
Lane Grp Cap(c), veh/h	0	231	196	420	677	0				830	0	0
V/C Ratio(X)	0.00	0.73	0.19	1.07	0.61	0.00				0.60	0.00	0.00
Avail Cap(c_a), veh/h	0	448	381	420	913	0				830	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.35	0.35	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	24.8	22.9	20.1	8.8	0.0				10.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.3	0.5	45.3	0.3	0.0				3.2	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	0.0	2.9	0.6	10.7	4.0	0.0				6.5	0.0	0.0
LnGrp Delay(d),s/veh	0.0	29.1	23.4	65.4	9.1	0.0				14.0	0.0	0.0
LnGrp LOS		C	C	F	A					B		
Approach Vol, veh/h		206			858						496	
Approach Delay, s/veh		28.1			38.4						14.0	
Approach LOS		C			D						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			14.0	12.2		33.8		26.2
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			10.0	16.0		22.0		30.0
Max Q Clear Time (g_c+I1), s			12.0	7.7		14.7		10.2
Green Ext Time (p_c), s			0.0	0.5		1.9		4.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
14: SR-9 & Eaglefield Dr/Crown Ridge Blvd

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	35	220	120	45	120	75	430	130	115	760	115
Future Volume (veh/h)	60	35	220	120	45	120	75	430	130	115	760	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1827	1827	1827	1845	1845	1845
Adj Flow Rate, veh/h	63	37	71	126	47	20	79	453	51	121	800	35
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	4	4	4	3	3	3
Cap, veh/h	380	64	123	357	183	78	296	726	617	154	1044	888
Arrive On Green	0.05	0.11	0.11	0.08	0.14	0.14	0.40	0.40	0.40	0.09	0.57	0.57
Sat Flow, veh/h	1810	583	1119	1810	1266	539	643	1827	1553	1757	1845	1568
Grp Volume(v), veh/h	63	0	108	126	0	67	79	453	51	121	800	35
Grp Sat Flow(s),veh/h/ln	1810	0	1702	1810	0	1805	643	1827	1553	1757	1845	1568
Q Serve(g_s), s	1.5	0.0	3.0	3.0	0.0	1.6	5.3	9.8	1.0	3.3	16.4	0.5
Cycle Q Clear(g_c), s	1.5	0.0	3.0	3.0	0.0	1.6	13.4	9.8	1.0	3.3	16.4	0.5
Prop In Lane	1.00		0.66	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0	188	357	0	260	296	726	617	154	1044	888
V/C Ratio(X)	0.17	0.00	0.58	0.35	0.00	0.26	0.27	0.62	0.08	0.79	0.77	0.04
Avail Cap(c_a), veh/h	441	0	551	357	0	584	296	726	617	213	1044	888
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	20.9	17.5	0.0	18.8	16.5	11.9	9.3	22.1	8.2	4.8
Incr Delay (d2), s/veh	0.2	0.0	2.8	0.6	0.0	0.5	2.2	4.0	0.3	12.2	5.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.5	1.5	0.0	0.8	1.1	5.7	0.5	2.1	9.8	0.2
LnGrp Delay(d),s/veh	18.4	0.0	23.7	18.1	0.0	19.3	18.7	15.9	9.5	34.3	13.6	4.8
LnGrp LOS	B		C	B		B	B	B	A	C	B	A
Approach Vol, veh/h		171			193			583			956	
Approach Delay, s/veh		21.7			18.5			15.8			15.9	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	8.3	23.7	8.0	9.5		32.0	6.3	11.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	6.6	18.0	4.0	16.0		28.0	4.0	16.0
Max Q Clear Time (g_c+I1), s	5.3	15.4	5.0	5.0		18.4	3.5	3.6
Green Ext Time (p_c), s	0.0	1.8	0.0	0.7		5.5	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	34.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	260	5	430	15	5	10	35	425	15	5	400	210
Future Vol, veh/h	260	5	430	15	5	10	35	425	15	5	400	210
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	100	-	-	100	-	-	100	-	-	150	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	0	0	0	9	9	9	2	2	2
Mvmt Flow	274	5	453	16	5	11	37	447	16	5	421	221

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	969	969	421	1190	961	455	421	0	0	463	0	0
Stage 1	432	432	-	529	529	-	-	-	-	-	-	-
Stage 2	537	537	-	661	432	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.5	6.2	4.19	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4	3.3	2.281	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 233	254	632	166	258	609	1102	-	-	1098	-	-
Stage 1	602	582	-	537	530	-	-	-	-	-	-	-
Stage 2	528	523	-	455	586	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 219	244	632	45	248	609	1102	-	-	1098	-	-
Mov Cap-2 Maneuver	~ 219	244	-	45	248	-	-	-	-	-	-	-
Stage 1	582	579	-	519	512	-	-	-	-	-	-	-
Stage 2	496	505	-	127	583	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	86.5	68.7	0.6	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1102	-	-	219	621	45	410	1098	-	-
HCM Lane V/C Ratio	0.033	-	-	1.25	0.737	0.351	0.039	0.005	-	-
HCM Control Delay (s)	8.4	-	-	189	25.3	123.2	14.1	8.3	-	-
HCM Lane LOS	A	-	-	F	D	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	14.1	6.4	1.2	0.1	0	-	-

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

Intersection	
Int Delay, s/veh	695

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	5	25	455	10	465	20	385	335	75	345	1
Future Vol, veh/h	5	5	25	455	10	465	20	385	335	75	345	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	9	9	9	4	4	4	2	2	2	0	0	0
Mvmt Flow	5	5	26	479	11	489	21	405	353	79	363	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1396	1322	364	1161	1146	582	364	0	0	758	0	0
Stage 1	522	522	-	624	624	-	-	-	-	-	-	-
Stage 2	874	800	-	537	522	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.14	6.54	6.24	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.536	4.036	3.336	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	114	151	666	~ 171	198	509	1195	-	-	862	-	-
Stage 1	525	520	-	~ 470	475	-	-	-	-	-	-	-
Stage 2	335	387	-	524	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 4	129	666	~ 142	169	509	1195	-	-	862	-	-
Mov Cap-2 Maneuver	~ 4	129	-	~ 142	169	-	-	-	-	-	-	-
Stage 1	508	460	-	~ 454	459	-	-	-	-	-	-	-
Stage 2	12	374	-	~ 440	467	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 548.9	$ 1567.2	0.2	1.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1195	-	-	26	223	862	-	-
HCM Lane V/C Ratio	0.018	-	-	1.417	4.39	0.092	-	-
HCM Control Delay (s)	8.1	0	-	$ 548.9	$ 1567.2	9.6	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	4.5	98.2	0.3	-	-

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

DELAY (CONTROL)

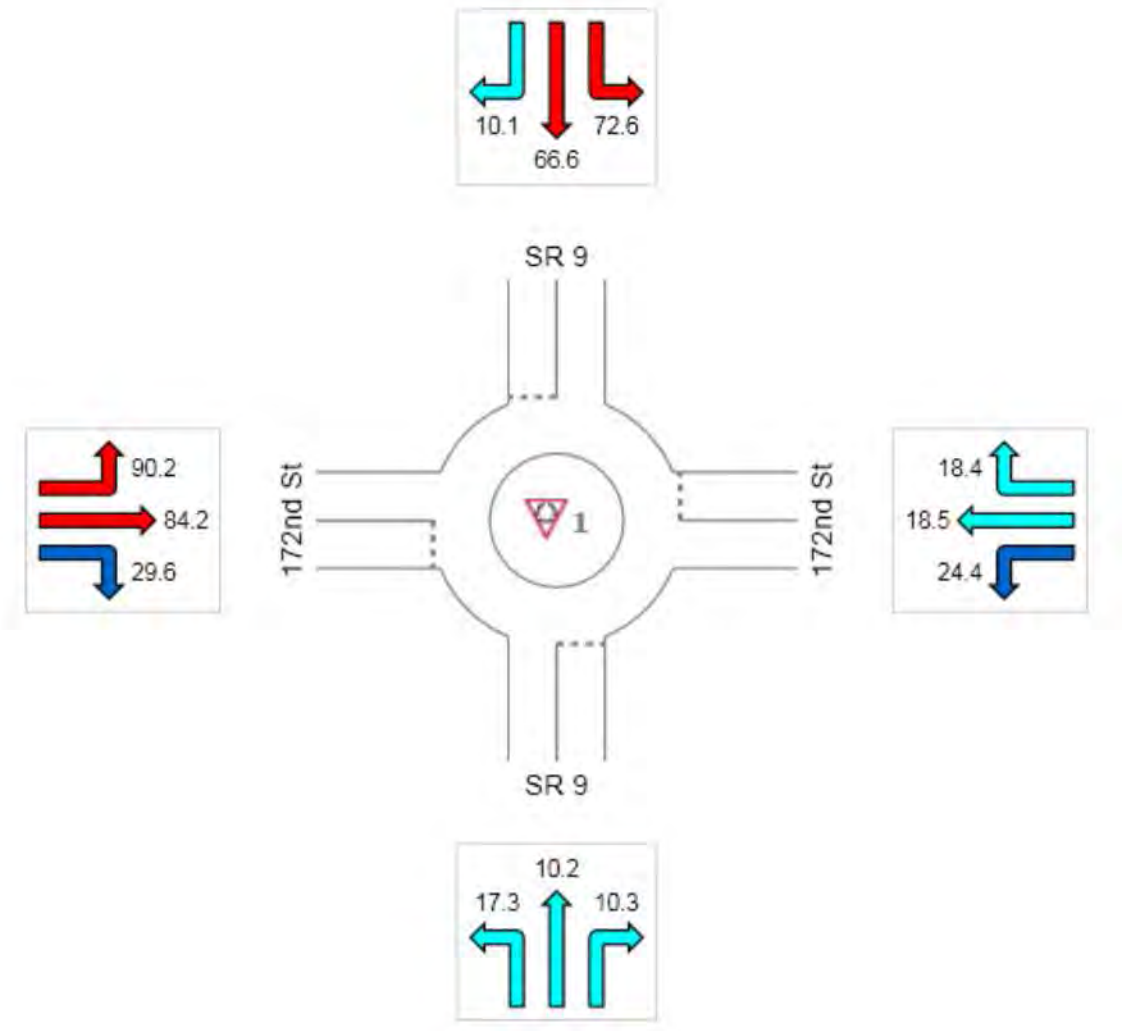
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: SR 9 at 172nd St - Perteet Revised

Projected 2035 Baseline
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	13.2	18.5	61.0	65.6	46.7
LOS	B	B	E	E	D



Colour code based on Level of Service

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\17 - SR 9 at 172nd.sip6

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	930	515	40	5	130
Future Vol, veh/h	60	930	515	40	5	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	63	979	542	42	5	137

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	584	0	-	0	1668	563
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	1105	-
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	991	-	-	-	107	530
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	320	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	991	-	-	-	100	530
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	300	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	991	-	-	-	457
HCM Lane V/C Ratio	0.064	-	-	-	0.311
HCM Control Delay (s)	8.9	-	-	-	16.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.3

HCM 2010 Signalized Intersection Summary
19: 67th Ave & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	705	425	180	575	35	185	410	170	70	390	180
Future Volume (veh/h)	275	705	425	180	575	35	185	410	170	70	390	180
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1759	1759	1900	1792	1792	1900	1827	1827	1900
Adj Flow Rate, veh/h	289	742	351	189	605	35	195	432	165	74	411	172
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	8	8	8	6	6	6	4	4	4
Cap, veh/h	250	722	614	172	577	33	181	464	177	150	418	175
Arrive On Green	0.11	0.39	0.39	0.07	0.35	0.35	0.07	0.38	0.38	0.03	0.34	0.34
Sat Flow, veh/h	1757	1845	1568	1675	1647	95	1707	1237	472	1740	1224	512
Grp Volume(v), veh/h	289	742	351	189	0	640	195	0	597	74	0	583
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1675	0	1742	1707	0	1709	1740	0	1737
Q Serve(g_s), s	13.0	47.0	21.1	8.0	0.0	42.0	8.0	0.0	40.3	3.3	0.0	39.9
Cycle Q Clear(g_c), s	13.0	47.0	21.1	8.0	0.0	42.0	8.0	0.0	40.3	3.3	0.0	39.9
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.28	1.00		0.30
Lane Grp Cap(c), veh/h	250	722	614	172	0	610	181	0	641	150	0	593
V/C Ratio(X)	1.15	1.03	0.57	1.10	0.00	1.05	1.08	0.00	0.93	0.49	0.00	0.98
Avail Cap(c_a), veh/h	250	722	614	172	0	610	181	0	641	150	0	593
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)	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.8	36.5	28.6	30.1	0.0	39.0	30.4	0.0	36.0	30.5	0.0	39.1
Incr Delay (d2), s/veh	74.1	17.9	0.1	98.2	0.0	50.1	89.1	0.0	22.2	2.5	0.0	32.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	27.5	9.1	10.4	0.0	28.6	4.5	0.0	22.9	1.7	0.0	24.5
LnGrp Delay(d),s/veh	110.9	54.4	28.7	128.4	0.0	89.1	119.5	0.0	58.2	33.0	0.0	72.1
LnGrp LOS	F	F	C	F		F	F		E	C		E
Approach Vol, veh/h		1382			829			792			657	
Approach Delay, s/veh		59.7			98.0			73.3			67.7	
Approach LOS		E			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	49.0	12.0	51.0	12.0	45.0	17.0	46.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	45.0	8.0	47.0	8.0	41.0	13.0	42.0
Max Q Clear Time (g_c+I1), s	5.3	42.3	10.0	49.0	10.0	41.9	15.0	44.0
Green Ext Time (p_c), s	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	72.8
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
20: 59th Ave & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	975	185	155	785	35	315	210	420	35	45	360
Future Volume (veh/h)	280	975	185	155	785	35	315	210	420	35	45	360
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1900	1827	1827	1900	1776	1776	1900	1776	1776	1900
Adj Flow Rate, veh/h	295	1026	189	163	826	35	332	221	380	37	47	184
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	7	7	7
Cap, veh/h	187	657	121	101	682	29	382	202	346	100	127	496
Arrive On Green	0.11	0.44	0.44	0.06	0.39	0.39	0.34	0.34	0.34	0.02	0.40	0.40
Sat Flow, veh/h	1723	1487	274	1740	1740	74	1091	587	1010	1691	317	1240
Grp Volume(v), veh/h	295	0	1215	163	0	861	332	0	601	37	0	231
Grp Sat Flow(s),veh/h/ln	1723	0	1761	1740	0	1814	1091	0	1597	1691	0	1557
Q Serve(g_s), s	13.0	0.0	53.0	7.0	0.0	47.0	35.5	0.0	41.2	1.7	0.0	12.5
Cycle Q Clear(g_c), s	13.0	0.0	53.0	7.0	0.0	47.0	41.2	0.0	41.2	1.7	0.0	12.5
Prop In Lane	1.00		0.16	1.00		0.04	1.00		0.63	1.00		0.80
Lane Grp Cap(c), veh/h	187	0	778	101	0	710	382	0	548	100	0	623
V/C Ratio(X)	1.58	0.00	1.56	1.61	0.00	1.21	0.87	0.00	1.10	0.37	0.00	0.37
Avail Cap(c_a), veh/h	187	0	778	101	0	710	382	0	548	116	0	623
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)	0.09	0.00	0.09	0.09	0.00	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	33.5	56.5	0.0	36.5	42.8	0.0	39.4	31.1	0.0	25.4
Incr Delay (d2), s/veh	263.4	0.0	253.5	276.9	0.0	96.6	22.5	0.0	67.5	2.3	0.0	1.7
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	19.8	0.0	80.5	11.2	0.0	42.6	13.4	0.0	28.4	0.8	0.0	5.7
LnGrp Delay(d),s/veh	316.9	0.0	287.0	333.4	0.0	133.1	65.3	0.0	106.9	33.4	0.0	27.1
LnGrp LOS	F		F	F		F	E		F	C		C
Approach Vol, veh/h		1510			1024			933			268	
Approach Delay, s/veh		292.8			165.0			92.1			27.9	
Approach LOS		F			F			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	6.8	45.2	11.0	57.0		52.0	17.0	51.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	4.8	40.0	7.0	53.0		48.0	13.0	47.0
Max Q Clear Time (g_c+I1), s	3.7	43.2	9.0	55.0		14.5	15.0	49.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		8.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	188.6
HCM 2010 LOS	F

HCM 2010 Signalized Intersection Summary
21: 51st Ave & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	920	285	110	990	320	230	420	240	50	135	45
Future Volume (veh/h)	60	920	285	110	990	320	230	420	240	50	135	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1759	1759	1759	1810	1810	1900
Adj Flow Rate, veh/h	63	968	289	116	1042	326	242	442	153	53	142	36
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	8	8	8	5	5	5
Cap, veh/h	119	865	258	119	854	267	226	410	349	60	325	82
Arrive On Green	0.03	0.63	0.63	0.04	0.84	0.84	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1757	1365	408	1757	1348	422	1135	1759	1495	796	1394	353
Grp Volume(v), veh/h	63	0	1257	116	0	1368	242	442	153	53	0	178
Grp Sat Flow(s),veh/h/ln	1757	0	1773	1757	0	1770	1135	1759	1495	796	0	1747
Q Serve(g_s), s	0.1	0.0	76.0	3.8	0.0	76.0	17.6	28.0	10.5	0.0	0.0	10.4
Cycle Q Clear(g_c), s	0.1	0.0	76.0	3.8	0.0	76.0	28.0	28.0	10.5	28.0	0.0	10.4
Prop In Lane	1.00		0.23	1.00		0.24	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	119	0	1123	119	0	1121	226	410	349	60	0	408
V/C Ratio(X)	0.53	0.00	1.12	0.98	0.00	1.22	1.07	1.08	0.44	0.88	0.00	0.44
Avail Cap(c_a), veh/h	119	0	1123	119	0	1121	226	410	349	60	0	408
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.00	0.56	0.09	0.00	0.09	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.1	0.0	22.0	56.3	0.0	9.5	53.5	46.0	39.3	60.0	0.0	39.3
Incr Delay (d2), s/veh	2.5	0.0	61.2	19.7	0.0	99.9	79.8	66.5	4.0	86.1	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	55.9	4.5	0.0	66.0	12.5	21.2	4.7	3.2	0.0	5.4
LnGrp Delay(d),s/veh	58.6	0.0	83.2	76.0	0.0	109.3	133.3	112.5	43.3	146.1	0.0	42.6
LnGrp LOS	E		F	E		F	F	F	D	F		D
Approach Vol, veh/h		1320			1484			837			231	
Approach Delay, s/veh		82.1			106.7			105.9			66.4	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		32.0	8.0	80.0		32.0	8.0	80.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		28.0	4.0	76.0		28.0	4.0	76.0
Max Q Clear Time (g_c+I1), s		30.0	5.8	78.0		30.0	2.1	78.0
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	95.7
HCM 2010 LOS	F

HCM 2010 Signalized Intersection Summary
22: 43rd Ave & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1100	10	10	1160	65	25	1	10	15	1	65
Future Volume (veh/h)	115	1100	10	10	1160	65	25	1	10	15	1	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1810	1810	1810	1900	1484	1484	1900	1900	1759	1900
Adj Flow Rate, veh/h	121	1158	9	11	1221	67	26	1	0	16	1	6
Adj No. of Lanes	1	1	1	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	5	5	5	28	28	28	8	8	8
Cap, veh/h	132	1354	1151	183	1218	67	222	210	0	180	17	52
Arrive On Green	0.04	0.75	0.75	0.01	0.95	0.95	0.14	0.14	0.00	0.14	0.14	0.14
Sat Flow, veh/h	1723	1810	1538	1723	1700	93	1118	1484	0	915	121	366
Grp Volume(v), veh/h	121	1158	9	11	0	1288	26	1	0	23	0	0
Grp Sat Flow(s),veh/h/ln	1723	1810	1538	1723	0	1793	1118	1484	0	1401	0	0
Q Serve(g_s), s	4.2	53.7	0.2	0.2	0.0	86.0	0.5	0.1	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	4.2	53.7	0.2	0.2	0.0	86.0	2.0	0.1	0.0	1.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.00	0.70		0.26
Lane Grp Cap(c), veh/h	132	1354	1151	183	0	1285	222	210	0	249	0	0
V/C Ratio(X)	0.92	0.86	0.01	0.06	0.00	1.00	0.12	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	132	1354	1151	222	0	1285	222	210	0	249	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.00	0.09	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	56.1	10.6	3.8	18.6	0.0	2.8	45.0	44.2	0.0	44.8	0.0	0.0
Incr Delay (d2), s/veh	54.1	5.6	0.0	0.0	0.0	8.1	1.1	0.0	0.0	0.2	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	6.0	28.5	0.1	0.2	0.0	35.7	0.8	0.0	0.0	0.7	0.0	0.0
LnGrp Delay(d),s/veh	110.1	16.2	3.8	18.6	0.0	10.9	46.1	44.3	0.0	45.0	0.0	0.0
LnGrp LOS	F	B	A	B		F	D	D		D		
Approach Vol, veh/h		1288			1299			27			23	
Approach Delay, s/veh		24.9			11.0			46.0			45.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.0	5.2	93.8		21.0	9.0	90.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		17.0	4.0	87.0		17.0	5.0	86.0
Max Q Clear Time (g_c+I1), s		4.0	2.2	55.7		3.5	6.2	88.0
Green Ext Time (p_c), s		0.1	0.0	11.8		0.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
23: Smokey Point Blvd & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	355	945	445	240	1280	320	845	400	285	340	220	445
Future Volume (veh/h)	355	945	445	240	1280	320	845	400	285	340	220	445
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	374	995	152	253	1347	105	889	421	58	358	232	152
Adj No. of Lanes	1	2	1	1	3	1	2	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	370	1121	501	266	1314	409	860	659	295	379	531	237
Arrive On Green	0.42	0.63	0.63	0.15	0.26	0.26	0.25	0.19	0.19	0.36	0.25	0.25
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	374	995	152	253	1347	105	889	421	58	358	232	152
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	25.0	28.3	2.8	17.0	31.0	3.9	30.0	13.2	3.7	23.5	6.6	10.3
Cycle Q Clear(g_c), s	25.0	28.3	2.8	17.0	31.0	3.9	30.0	13.2	3.7	23.5	6.6	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	370	1121	501	266	1314	409	860	659	295	379	531	237
V/C Ratio(X)	1.01	0.89	0.30	0.95	1.03	0.26	1.03	0.64	0.20	0.94	0.44	0.64
Avail Cap(c_a), veh/h	370	1121	501	266	1314	409	860	659	295	399	531	237
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	35.0	20.2	4.6	50.6	44.5	13.7	45.0	45.1	41.3	37.9	40.7	42.1
Incr Delay (d2), s/veh	47.5	8.1	0.3	41.8	31.5	0.3	39.5	4.7	1.5	29.3	2.5	11.9
Initial Q Delay(d3),s/veh	0.1	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	17.0	14.5	1.2	11.4	18.3	1.7	18.9	6.9	1.7	14.5	3.4	5.3
LnGrp Delay(d),s/veh	82.5	28.3	4.9	92.3	76.0	14.0	84.5	49.8	42.7	67.1	43.2	54.0
LnGrp LOS	F	C	A	F	F	B	F	D	D	E	D	D
Approach Vol, veh/h		1521			1705			1368			742	
Approach Delay, s/veh		39.3			74.6			72.1			57.0	
Approach LOS		D			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	39.7	26.3	22.0	42.0	34.0	22.0	29.0	35.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	27.6	21.0	18.0	38.0	30.0	18.0	25.0	31.0
Max Q Clear Time (g_c+I1), s	25.5	15.2	19.0	30.3	32.0	12.3	27.0	33.0
Green Ext Time (p_c), s	0.2	3.1	0.0	4.8	0.0	0.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	61.4
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
24: Smokey Point Blvd & Smokey Point Dr

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1	95	1	1	10	95	915	15	1	840	30
Future Volume (veh/h)	55	1	95	1	1	10	95	915	15	1	840	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900	1900	1900	1900	1863	1863	1900	1845	1845	1900
Adj Flow Rate, veh/h	58	1	5	1	1	0	100	963	16	1	884	32
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	183	1	6	123	67	0	574	2893	48	580	2802	101
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.00	1.00	1.00	1.00	0.81	0.81	0.81
Sat Flow, veh/h	1263	22	109	606	1226	0	607	3563	59	567	3450	125
Grp Volume(v), veh/h	64	0	0	2	0	0	100	478	501	1	449	467
Grp Sat Flow(s),veh/h/ln	1394	0	0	1832	0	0	607	1770	1852	567	1752	1823
Q Serve(g_s), s	2.7	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	3.9	3.9
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.1	0.0	0.0	4.9	0.0	0.0	0.0	3.9	3.9
Prop In Lane	0.91		0.08	0.50		0.00	1.00		0.03	1.00		0.07
Lane Grp Cap(c), veh/h	190	0	0	190	0	0	574	1437	1504	580	1423	1480
V/C Ratio(X)	0.34	0.00	0.00	0.01	0.00	0.00	0.17	0.33	0.33	0.00	0.32	0.32
Avail Cap(c_a), veh/h	508	0	0	564	0	0	574	1437	1504	580	1423	1480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.60	0.60	0.60	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	0.0	0.0	26.8	0.0	0.0	0.2	0.0	0.0	1.1	1.4	1.4
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.6	0.6
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	1.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	2.0	2.0
LnGrp Delay(d),s/veh	29.1	0.0	0.0	26.9	0.0	0.0	0.6	0.4	0.4	1.1	2.0	2.0
LnGrp LOS	C			C			A	A	A	A	A	A
Approach Vol, veh/h		64			2			1079			917	
Approach Delay, s/veh		29.1			26.9			0.4			2.0	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.7		7.3		52.7		7.3
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		35.0		17.0		35.0		17.0
Max Q Clear Time (g_c+I1), s		6.9		4.7		5.9		2.1
Green Ext Time (p_c), s		15.5		0.2		15.8		0.2

Intersection Summary		
HCM 2010 Ctrl Delay		2.0
HCM 2010 LOS		A

HCM 2010 Signalized Intersection Summary
25: I-5 NB Ramps & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	960	0	0	2095	555	705	1	750	0	0	0
Future Volume (veh/h)	385	960	0	0	2095	555	705	1	750	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1900	1881			
Adj Flow Rate, veh/h	405	1011	0	0	2205	0	742	1	0			
Adj No. of Lanes	1	2	0	0	3	1	2	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	403	2562	0	0	2354	733	753	0	346			
Arrive On Green	0.45	1.00	0.00	0.00	0.46	0.00	0.22	0.22	0.00			
Sat Flow, veh/h	1792	3668	0	0	5305	1599	3476	0	1599			
Grp Volume(v), veh/h	405	1011	0	0	2205	0	742	0	0			
Grp Sat Flow(s),veh/h/ln	1792	1787	0	0	1712	1599	1738	0	1599			
Q Serve(g_s), s	27.0	0.0	0.0	0.0	48.9	0.0	25.5	0.0	0.0			
Cycle Q Clear(g_c), s	27.0	0.0	0.0	0.0	48.9	0.0	25.5	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	403	2562	0	0	2354	733	753	0	346			
V/C Ratio(X)	1.00	0.39	0.00	0.00	0.94	0.00	0.99	0.00	0.00			
Avail Cap(c_a), veh/h	403	2562	0	0	2354	733	753	0	346			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.30	0.30	0.00	0.00	0.09	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	33.0	0.0	0.0	0.0	30.8	0.0	46.8	0.0	0.0			
Incr Delay (d2), s/veh	25.8	0.1	0.0	0.0	1.0	0.0	29.0	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	16.1	0.0	0.0	0.0	23.3	0.0	15.3	0.0	0.0			
LnGrp Delay(d),s/veh	58.8	0.1	0.0	0.0	31.8	0.0	75.8	0.0	0.0			
LnGrp LOS	F	A			C		E					
Approach Vol, veh/h		1416			2205			742				
Approach Delay, s/veh		16.9			31.8			75.8				
Approach LOS		B			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		90.0			31.0	59.0		30.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		86.0			27.0	55.0		26.0
Max Q Clear Time (g_c+I1), s		2.0			29.0	50.9		27.5
Green Ext Time (p_c), s		63.7			0.0	4.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
26: I-5 SB Ramps & 172nd St (SR-531)

Projected 2035
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1170	665	0	1750	1050	0	0	0	175	1	450
Future Volume (veh/h)	0	1170	665	0	1750	1050	0	0	0	175	1	450
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1845	1845				1900	1810	1810
Adj Flow Rate, veh/h	0	1232	0	0	1842	716				184	1	463
Adj No. of Lanes	0	2	0	0	2	1				0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3				5	5	5
Cap, veh/h	0	2185	0	0	2164	968				542	3	486
Arrive On Green	0.00	0.62	0.00	0.00	1.00	1.00				0.32	0.32	0.32
Sat Flow, veh/h	0	3725	0	0	3597	1568				1714	9	1538
Grp Volume(v), veh/h	0	1232	0	0	1842	716				185	0	463
Grp Sat Flow(s),veh/h/ln	0	1770	0	0	1752	1568				1724	0	1538
Q Serve(g_s), s	0.0	24.5	0.0	0.0	0.0	0.0				9.9	0.0	35.4
Cycle Q Clear(g_c), s	0.0	24.5	0.0	0.0	0.0	0.0				9.9	0.0	35.4
Prop In Lane	0.00		0.00	0.00		1.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	2185	0	0	2164	968				544	0	486
V/C Ratio(X)	0.00	0.56	0.00	0.00	0.85	0.74				0.34	0.00	0.95
Avail Cap(c_a), veh/h	0	2185	0	0	2164	968				560	0	500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	0.21	0.21				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.5	0.0	0.0	0.0	0.0				31.5	0.0	40.2
Incr Delay (d2), s/veh	0.0	1.1	0.0	0.0	1.0	1.1				0.4	0.0	28.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.3	0.0	0.0	0.3	0.3				4.7	0.0	18.9
LnGrp Delay(d),s/veh	0.0	14.5	0.0	0.0	1.0	1.1				31.8	0.0	68.6
LnGrp LOS		B			A	A				C		E
Approach Vol, veh/h		1232			2558						648	
Approach Delay, s/veh		14.5			1.0						58.1	
Approach LOS		B			A						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		78.1		41.9		78.1		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		73.0		39.0		73.0		
Max Q Clear Time (g_c+I1), s		26.5		37.4		2.0		
Green Ext Time (p_c), s		42.0		0.5		61.1		

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	81.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	145	60	175	725	360	280
Future Vol, veh/h	145	60	175	725	360	280
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	153	63	184	763	379	295

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1658	526	674	0	-	0
Stage 1	526	-	-	-	-	-
Stage 2	1132	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 107	552	917	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	308	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 70	552	917	-	-	-
Mov Cap-2 Maneuver	~ 70	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	201	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 687.7	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	917	-	94	-	-
HCM Lane V/C Ratio	0.201	-	2.296	-	-
HCM Control Delay (s)	9.9	0	$ 687.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.7	-	19.4	-	-

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

Intersection	
Int Delay, s/veh	7.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	30	420	40	5	185
Future Vol, veh/h	15	30	420	40	5	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	32	442	42	5	195

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	47	0	958	32
Stage 1	-	-	-	-	32	-
Stage 2	-	-	-	-	926	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1560	-	285	1042
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	386	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1560	-	202	1042
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	274	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.5	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	939	-	-	1560	-
HCM Lane V/C Ratio	0.213	-	-	0.283	-
HCM Control Delay (s)	9.9	-	-	8.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	1.2	-

Intersection	
Int Delay, s/veh	56.2

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	705	320	0	700	440	20
Future Vol, veh/h	705	320	0	700	440	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	742	337	0	737	463	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1479	742
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	737	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	~ 138	416
Stage 1	-	0	0	-	471	-
Stage 2	-	0	0	-	473	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	~ 138	416
Mov Cap-2 Maneuver	-	-	-	-	~ 342	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	473	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	228
HCM LOS			F

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	345	-	-
HCM Lane V/C Ratio	1.404	-	-
HCM Control Delay (s)	228	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	24.7	-	-

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

Intersection	
Int Delay, s/veh	32.3

Movement	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations	↑		↖	↑		↱
Traffic Vol, veh/h	710	1	300	685	1	470
Future Vol, veh/h	710	1	300	685	1	470
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	300	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	747	1	316	721	1	495

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	748	0	2101	748
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	1353	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	861	-	57	~ 412
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	241	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	861	-	36	~ 412
Mov Cap-2 Maneuver	-	-	-	-	36	-
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	153	-

Approach	EB	WB	NE
HCM Control Delay, s	0	3.5	141.2
HCM LOS			F

Minor Lane/Major Mvmt	NELn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	412	-	-	861	-
HCM Lane V/C Ratio	1.201	-	-	0.367	-
HCM Control Delay (s)	141.2	-	-	11.6	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	19.7	-	-	1.7	-

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

Intersection	
Int Delay, s/veh	6.1

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	475	455	300	0	0	335
Future Vol, veh/h	475	455	300	0	0	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	500	479	316	0	0	353

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	316	0	-	0	-	316
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	-	3.318
Pot Cap-1 Maneuver	1244	-	-	0	0	724
Stage 1	-	-	-	0	0	-
Stage 2	-	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1244	-	-	-	-	724
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	NB	SB	SE
HCM Control Delay, s	5	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT
Capacity (veh/h)	1244	-	724	-
HCM Lane V/C Ratio	0.402	-	0.487	-
HCM Control Delay (s)	9.8	0	14.6	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	2	-	2.7	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	1084	1622	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	1	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	-	-	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

Approach	WB	SE	NW
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	WBLn1	SEL	SET
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	361.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	365	710	415	280	255
Future Vol, veh/h	105	365	710	415	280	255
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	384	747	437	295	268

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1184	0	-	0	1571	966
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	605	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	590	-	-	-	~ 122	309
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	545	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	590	-	-	-	~ 93	309
Mov Cap-2 Maneuver	-	-	-	-	~ 93	-
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	$ 1437.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	590	-	-	-	139
HCM Lane V/C Ratio	0.187	-	-	-	4.051
HCM Control Delay (s)	12.5	0	-		$ 1437.6
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.7	-	-	-	56.7

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

Intersection	
Int Delay, s/veh	104.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	770	250	15	600	265	30
Future Vol, veh/h	770	250	15	600	265	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	811	263	16	632	279	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	811	0	1474	811
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	815	-	~ 139	379
Stage 1	-	0	-	-	437	-
Stage 2	-	0	-	-	512	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	815	-	~ 135	379
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	$ 593.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	144	-	815	-
HCM Lane V/C Ratio	2.156	-	0.019	-
HCM Control Delay (s)	$ 593.5	-	9.5	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	25.4	-	0.1	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	2	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	1	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1020	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1622	-	-	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0	0
HCM Lane LOS	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-	-

G Transportation Model Post-Process Calculations

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Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	655	15	55	465	10	70
Future Vol, veh/h	655	15	55	465	10	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	5	8	8	0	0
Mvmt Flow	689	16	58	489	11	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	705	0	1302	697
Stage 1	-	-	-	-	697	-
Stage 2	-	-	-	-	605	-
Critical Hdwy	-	-	4.18	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.272	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	866	-	179	444
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	549	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	866	-	167	444
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	512	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	-	-	866	-
HCM Lane V/C Ratio	0.2	-	-	0.067	-
HCM Control Delay (s)	15.7	-	-	9.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

HCM 2010 Signalized Intersection Summary
2: Hazel St (SR-9) & Burke Ave (SR-530)

Projected 2035 with Improvements
PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	275	120	710	315	75	335
Future Volume (veh/h)	275	120	710	315	75	335
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1827	1827	1863	1863
Adj Flow Rate, veh/h	289	101	747	140	79	353
Adj No. of Lanes	0	0	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	4	4	2	2
Cap, veh/h	327	114	852	725	282	1099
Arrive On Green	0.26	0.26	0.47	0.47	0.05	0.59
Sat Flow, veh/h	1235	432	1827	1553	1774	1863
Grp Volume(v), veh/h	391	0	747	140	79	353
Grp Sat Flow(s),veh/h/ln	1672	0	1827	1553	1774	1863
Q Serve(g_s), s	12.4	0.0	20.3	2.9	1.1	5.3
Cycle Q Clear(g_c), s	12.4	0.0	20.3	2.9	1.1	5.3
Prop In Lane	0.74	0.26		1.00	1.00	
Lane Grp Cap(c), veh/h	442	0	852	725	282	1099
V/C Ratio(X)	0.88	0.00	0.88	0.19	0.28	0.32
Avail Cap(c_a), veh/h	486	0	929	790	321	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.4	0.0	13.3	8.6	10.9	5.7
Incr Delay (d2), s/veh	16.4	0.0	8.9	0.1	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	12.3	1.3	0.6	2.7
LnGrp Delay(d),s/veh	35.9	0.0	22.2	8.7	11.4	5.9
LnGrp LOS	D		C	A	B	A
Approach Vol, veh/h	391		887			432
Approach Delay, s/veh	35.9		20.1			6.9
Approach LOS	D		C			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.8	29.7				36.5		18.6
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	4.0	28.0				36.0		16.0
Max Q Clear Time (g_c+I1), s	3.1	22.3				7.3		14.4
Green Ext Time (p_c), s	0.0	3.4				8.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	270	65	0	95	225	0	110	115
Future Vol, veh/h	0	270	65	0	95	225	0	110	115
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	1	1	2	1	1	2	0	0
Mvmt Flow	0	284	68	0	100	237	0	116	121
Number of Lanes	0	1	0	0	0	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	12.6	12.9	10.4
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	30%
Vol Thru, %	0%	0%	81%	70%
Vol Right, %	0%	100%	19%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	115	335	320
LT Vol	110	0	0	95
Through Vol	0	0	270	225
RT Vol	0	115	65	0
Lane Flow Rate	116	121	353	337
Geometry Grp	7	7	2	2
Degree of Util (X)	0.216	0.185	0.487	0.482
Departure Headway (Hd)	6.718	5.5	4.974	5.156
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	535	652	726	701
Service Time	4.449	3.231	2.983	3.166
HCM Lane V/C Ratio	0.217	0.186	0.486	0.481
HCM Control Delay	11.3	9.5	12.6	12.9
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	0.8	0.7	2.7	2.6

HCM 2010 Signalized Intersection Summary
4: Hazel St (SR-9) & Division St (SR-530)/Division St

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	275	170	65	210	195	150	475	55	85	305	240
Future Volume (veh/h)	375	275	170	65	210	195	150	475	55	85	305	240
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	395	289	28	68	221	28	158	500	22	89	321	77
Adj No. of Lanes	2	1	1	1	1	1	1	1	1	1	1	1
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, %	2	2	2	1	1	1	1	1	1	1	1	1
Cap, veh/h	478	452	384	88	288	245	192	961	817	442	840	714
Arrive On Green	0.14	0.24	0.24	0.05	0.15	0.15	0.11	0.51	0.51	0.04	0.45	0.45
Sat Flow, veh/h	3442	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Grp Volume(v), veh/h	395	289	28	68	221	28	158	500	22	89	321	77
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1792	1881	1599	1792	1881	1599	1792	1881	1599
Q Serve(g_s), s	11.6	14.4	1.4	3.9	11.7	1.6	9.0	18.4	0.7	2.8	11.8	2.9
Cycle Q Clear(g_c), s	11.6	14.4	1.4	3.9	11.7	1.6	9.0	18.4	0.7	2.8	11.8	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	478	452	384	88	288	245	192	961	817	442	840	714
V/C Ratio(X)	0.83	0.64	0.07	0.77	0.77	0.11	0.82	0.52	0.03	0.20	0.38	0.11
Avail Cap(c_a), veh/h	697	593	504	207	435	370	363	961	817	469	840	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	35.2	30.3	48.7	42.1	37.8	45.3	16.9	12.6	15.0	19.1	16.7
Incr Delay (d2), s/veh	5.4	1.5	0.1	13.1	4.5	0.2	8.5	2.0	0.1	0.2	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	7.6	0.6	2.2	6.4	0.7	4.9	10.0	0.3	1.4	6.5	1.3
LnGrp Delay(d),s/veh	48.8	36.7	30.3	61.9	46.6	38.1	53.9	18.9	12.6	15.2	20.5	17.0
LnGrp LOS	D	D	C	E	D	D	D	B	B	B	C	B
Approach Vol, veh/h		712			317			680			487	
Approach Delay, s/veh		43.2			49.1			26.8			18.9	
Approach LOS		D			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	57.0	9.1	29.2	15.1	50.3	18.4	19.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	53.0	12.0	33.0	21.0	38.0	21.0	24.0
Max Q Clear Time (g_c+I1), s	4.8	20.4	5.9	16.4	11.0	13.8	13.6	13.7
Green Ext Time (p_c), s	0.0	5.8	0.1	2.7	0.3	5.4	0.8	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	150	5	90	0	1	5	5	0	95	110	5	0	5	100	165
Future Vol, veh/h	0	150	5	90	0	1	5	5	0	95	110	5	0	5	100	165
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	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	158	5	95	0	1	5	5	0	100	116	5	0	5	105	174
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	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	10.8	8.4	10.3	10.1
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	45%	61%	9%	2%
Vol Thru, %	52%	2%	45%	37%
Vol Right, %	2%	37%	45%	61%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	210	245	11	270
LT Vol	95	150	1	5
Through Vol	110	5	5	100
RT Vol	5	90	5	165
Lane Flow Rate	221	258	12	284
Geometry Grp	1	1	1	1
Degree of Util (X)	0.306	0.356	0.017	0.355
Departure Headway (Hd)	4.984	4.963	5.298	4.498
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	714	717	680	793
Service Time	3.059	3.042	3.298	2.567
HCM Lane V/C Ratio	0.31	0.36	0.018	0.358
HCM Control Delay	10.3	10.8	8.4	10.1
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.3	1.6	0.1	1.6

Intersection	
Intersection Delay, s/veh	46.1
Intersection LOS	E

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations																
Traffic Vol, veh/h	0	5	1	5	0	245	1	15	0	5	450	220	0	25	300	1
Future Vol, veh/h	0	5	1	5	0	245	1	15	0	5	450	220	0	25	300	1
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	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	25	25	25	2	0	0	0	2	2	2	2	2	1	1	1
Mvmt Flow	0	5	1	5	0	258	1	16	0	5	474	232	0	26	316	1
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	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	11.2	16.8	72.2	16.7
HCM LOS	B	C	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	45%	94%	8%
Vol Thru, %	67%	9%	0%	92%
Vol Right, %	33%	45%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	675	11	261	326
LT Vol	5	5	245	25
Through Vol	450	1	1	300
RT Vol	220	5	15	1
Lane Flow Rate	711	12	275	343
Geometry Grp	1	1	1	1
Degree of Util (X)	1.053	0.025	0.508	0.565
Departure Headway (Hd)	5.334	7.983	6.871	6.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	682	451	527	594
Service Time	3.382	5.983	4.871	4.102
HCM Lane V/C Ratio	1.043	0.027	0.522	0.577
HCM Control Delay	72.2	11.2	16.8	16.7
HCM Lane LOS	F	B	C	C
HCM 95th-tile Q	18.6	0.1	2.8	3.5

HCM 2010 Signalized Intersection Summary
7: Stillaguamish Ave/Stilliguamish Ave & Highland Dr

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	135	125	5	80	15	110	95	20	80	105	85
Future Volume (veh/h)	55	135	125	5	80	15	110	95	20	80	105	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1827	1900	1900	1881	1900	1845	1845	1900	1900	1881	1900
Adj Flow Rate, veh/h	58	142	67	5	84	9	116	100	12	84	111	69
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	1	1	1	3	3	3	1	1	1
Cap, veh/h	158	223	93	96	369	38	853	948	114	275	345	180
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.07	0.59	0.59	0.42	0.42	0.42
Sat Flow, veh/h	244	990	413	31	1633	168	1757	1616	194	386	816	426
Grp Volume(v), veh/h	267	0	0	98	0	0	116	0	112	264	0	0
Grp Sat Flow(s),veh/h/ln	1648	0	0	1833	0	0	1757	0	1810	1628	0	0
Q Serve(g_s), s	3.4	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.2	0.1	0.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	0.0	1.8	0.0	0.0	1.4	0.0	1.2	4.2	0.0	0.0
Prop In Lane	0.22		0.25	0.05		0.09	1.00		0.11	0.32		0.26
Lane Grp Cap(c), veh/h	475	0	0	503	0	0	853	0	1062	800	0	0
V/C Ratio(X)	0.56	0.00	0.00	0.20	0.00	0.00	0.14	0.00	0.11	0.33	0.00	0.00
Avail Cap(c_a), veh/h	752	0	0	814	0	0	895	0	1062	800	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	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.1	0.0	0.0	13.5	0.0	0.0	4.8	0.0	3.9	8.3	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.2	1.1	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	3.0	0.0	0.0	1.0	0.0	0.0	0.7	0.0	0.6	2.3	0.0	0.0
LnGrp Delay(d),s/veh	16.2	0.0	0.0	13.7	0.0	0.0	4.9	0.0	4.1	9.4	0.0	0.0
LnGrp LOS	B			B			A		A	A		
Approach Vol, veh/h		267			98			228			264	
Approach Delay, s/veh		16.2			13.7			4.5			9.4	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		29.0		13.6	7.0	22.0		13.6
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		25.0		17.0	4.0	17.0		17.0
Max Q Clear Time (g_c+I1), s		3.2		8.3	3.4	6.2		3.8
Green Ext Time (p_c), s		2.4		1.5	0.0	1.7		1.9

Intersection Summary		
HCM 2010 Ctrl Delay		10.7
HCM 2010 LOS		B

HCM 2010 Signalized Intersection Summary
8: 67th Ave & 211th Pl

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	170	140	515	405	80
Future Volume (veh/h)	50	170	140	515	405	80
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1643	1643	1827	1827	1759	1900
Adj Flow Rate, veh/h	53	1	147	542	426	70
Adj No. of Lanes	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	7	7	4	4	8	8
Cap, veh/h	76	68	236	1237	596	98
Arrive On Green	0.05	0.05	0.14	0.68	0.40	0.40
Sat Flow, veh/h	1564	1396	1740	1827	1474	242
Grp Volume(v), veh/h	53	1	147	542	0	496
Grp Sat Flow(s),veh/h/ln	1564	1396	1740	1827	0	1717
Q Serve(g_s), s	1.0	0.0	2.3	4.0	0.0	7.1
Cycle Q Clear(g_c), s	1.0	0.0	2.3	4.0	0.0	7.1
Prop In Lane	1.00	1.00	1.00			0.14
Lane Grp Cap(c), veh/h	76	68	236	1237	0	694
V/C Ratio(X)	0.70	0.01	0.62	0.44	0.00	0.71
Avail Cap(c_a), veh/h	858	766	477	2255	0	1412
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	13.7	13.2	11.9	2.2	0.0	7.3
Incr Delay (d2), s/veh	10.9	0.1	2.7	0.2	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.3	2.0	0.0	3.6
LnGrp Delay(d),s/veh	24.6	13.3	14.6	2.4	0.0	8.7
LnGrp LOS	C	B	B	A		A
Approach Vol, veh/h	54			689	496	
Approach Delay, s/veh	24.4			5.0	8.7	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		23.8		5.4	8.0	15.8		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		36.0		16.0	8.0	24.0		
Max Q Clear Time (g_c+I1), s		6.0		3.0	4.3	9.1		
Green Ext Time (p_c), s		4.1		0.1	1.4	2.7		

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
9: 204th St/204th Ave & SR-9

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	405	220	130	320	175	100	285	105	95	275	195
Future Volume (veh/h)	205	405	220	130	320	175	100	285	105	95	275	195
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1881	1881	1900	1792	1792	1792
Adj Flow Rate, veh/h	216	426	18	137	337	42	105	300	89	100	289	49
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
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	6	6	6
Cap, veh/h	261	501	426	183	419	357	393	402	119	318	517	440
Arrive On Green	0.14	0.26	0.26	0.10	0.22	0.22	0.06	0.29	0.29	0.06	0.29	0.29
Sat Flow, veh/h	1810	1900	1615	1810	1900	1615	1792	1394	414	1707	1792	1524
Grp Volume(v), veh/h	216	426	18	137	337	42	105	0	389	100	289	49
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	1900	1615	1792	0	1808	1707	1792	1524
Q Serve(g_s), s	6.4	11.8	0.5	4.1	9.3	1.2	0.0	0.0	10.8	0.0	7.6	1.3
Cycle Q Clear(g_c), s	6.4	11.8	0.5	4.1	9.3	1.2	0.0	0.0	10.8	0.0	7.6	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	261	501	426	183	419	357	393	0	522	318	517	440
V/C Ratio(X)	0.83	0.85	0.04	0.75	0.80	0.12	0.27	0.00	0.75	0.31	0.56	0.11
Avail Cap(c_a), veh/h	261	583	495	228	548	466	418	0	522	342	517	440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	19.4	15.2	24.2	20.5	17.3	19.2	0.0	17.9	22.3	16.7	14.5
Incr Delay (d2), s/veh	19.3	10.2	0.0	9.9	6.5	0.1	0.4	0.0	9.3	0.6	4.3	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	4.6	7.6	0.2	2.5	5.6	0.5	1.4	0.0	6.8	1.5	4.3	0.6
LnGrp Delay(d),s/veh	42.4	29.6	15.2	34.1	26.9	17.4	19.6	0.0	27.2	22.9	21.0	15.0
LnGrp LOS	D	C	B	C	C	B	B		C	C	C	B
Approach Vol, veh/h		660			516			494			438	
Approach Delay, s/veh		33.4			28.1			25.6			20.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	20.0	9.6	18.6	7.2	20.0	12.0	16.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.6	16.0	7.0	17.0	4.0	16.0	8.0	16.0
Max Q Clear Time (g_c+I1), s	2.0	12.8	6.1	13.8	2.0	9.6	8.4	11.3
Green Ext Time (p_c), s	0.1	0.6	0.1	0.8	0.1	0.9	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: 67th Ave & 204th St

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	270	15	160	190	135	25	435	95	140	280	175
Future Volume (veh/h)	165	270	15	160	190	135	25	435	95	140	280	175
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1810	1900	1845	1845	1900	1863	1863	1863	1743	1743	1900
Adj Flow Rate, veh/h	174	284	11	168	200	95	26	458	16	147	295	147
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	9	9	9
Cap, veh/h	347	385	15	357	264	125	306	592	503	274	369	184
Arrive On Green	0.09	0.22	0.22	0.09	0.22	0.22	0.07	0.32	0.32	0.09	0.34	0.34
Sat Flow, veh/h	1723	1731	67	1757	1183	562	1774	1863	1583	1660	1099	548
Grp Volume(v), veh/h	174	0	295	168	0	295	26	458	16	147	0	442
Grp Sat Flow(s),veh/h/ln	1723	0	1798	1757	0	1745	1774	1863	1583	1660	0	1646
Q Serve(g_s), s	4.4	0.0	8.6	4.1	0.0	8.9	0.0	12.6	0.4	3.8	0.0	13.8
Cycle Q Clear(g_c), s	4.4	0.0	8.6	4.1	0.0	8.9	0.0	12.6	0.4	3.8	0.0	13.8
Prop In Lane	1.00		0.04	1.00		0.32	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	347	0	400	357	0	389	306	592	503	274	0	553
V/C Ratio(X)	0.50	0.00	0.74	0.47	0.00	0.76	0.08	0.77	0.03	0.54	0.00	0.80
Avail Cap(c_a), veh/h	347	0	508	357	0	493	306	592	503	274	0	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	20.5	15.6	0.0	20.6	22.2	17.5	13.3	16.5	0.0	17.1
Incr Delay (d2), s/veh	1.1	0.0	4.2	1.0	0.0	5.1	0.1	9.5	0.1	2.1	0.0	11.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	4.7	2.1	0.0	4.8	0.4	7.9	0.2	1.9	0.0	8.0
LnGrp Delay(d),s/veh	16.9	0.0	24.6	16.6	0.0	25.7	22.3	26.9	13.4	18.5	0.0	28.6
LnGrp LOS	B		C	B		C	C	C	B	B		C
Approach Vol, veh/h		469			463			500			589	
Approach Delay, s/veh		21.8			22.4			26.3			26.1	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	22.0	9.0	16.6	8.0	23.0	9.0	16.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	18.0	5.0	16.0	4.0	19.0	5.0	16.0
Max Q Clear Time (g_c+I1), s	6.9	14.6	6.1	10.6	2.0	15.8	6.4	10.9
Green Ext Time (p_c), s	0.0	0.9	0.0	1.7	0.6	0.8	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

DELAY (CONTROL)

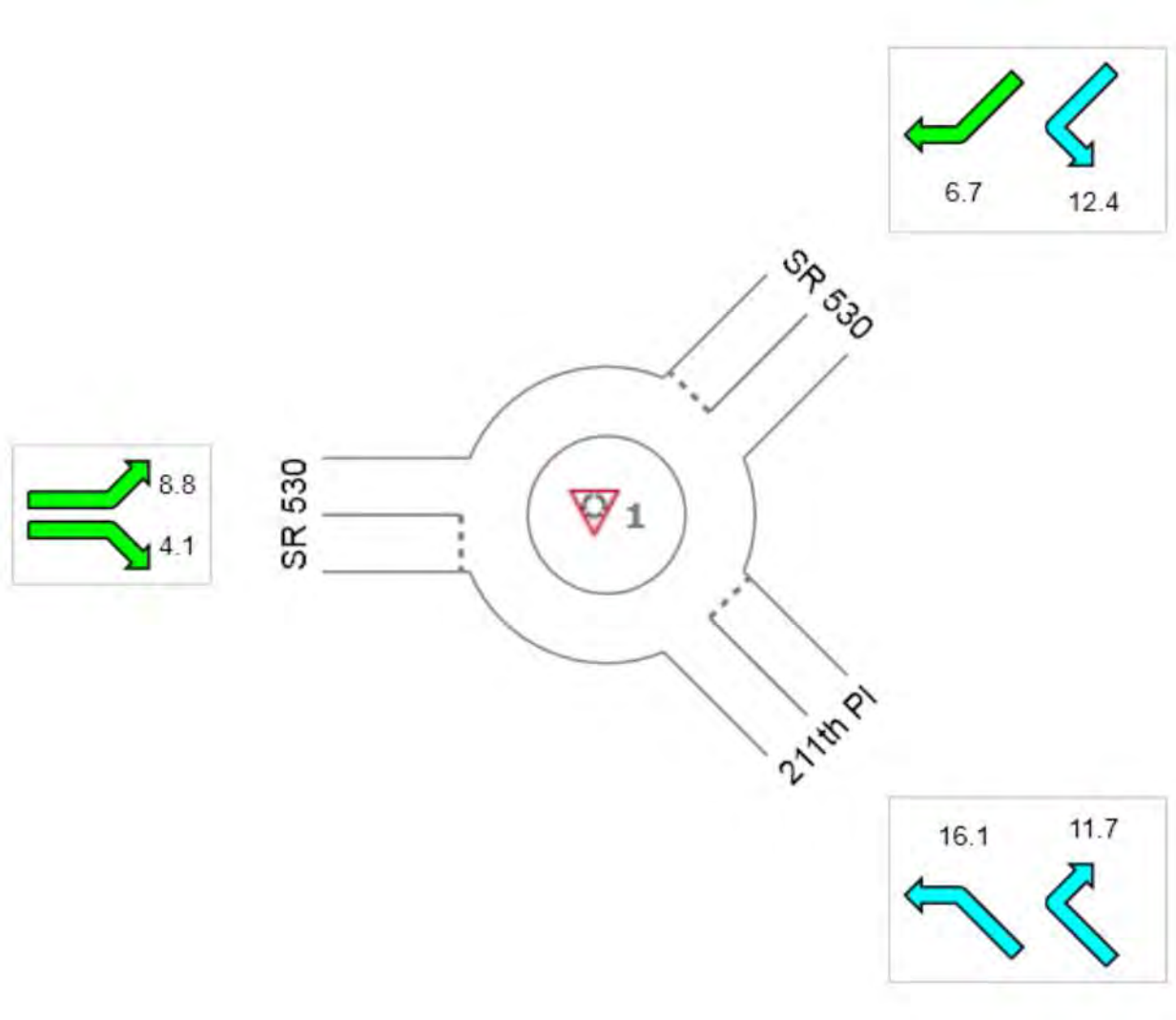
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 211th Pl at SR 530 - Perteet Edits

Projected 2035 with Improvements
Roundabout

All Movement Classes

	Southeast	Northeast	West	Intersection
	15.7	6.8	7.8	8.5
LOS	B	A	A	A



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F	Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

MOVEMENT SUMMARY

Site: 211th Pl at SR 530 - Perteet Edits

Projected 2035 with Improvements
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
SouthEast: 211th Pl											
3ax	L1	223	3.0	0.408	16.1	LOS B	2.8	72.7	0.85	0.96	31.4
18x	R2	22	3.0	0.408	11.7	LOS B	2.8	72.7	0.85	0.96	31.0
Approach		245	3.0	0.408	15.7	LOS B	2.8	72.7	0.85	0.96	31.4
NorthEast: SR 530											
1x	L2	11	3.0	0.632	12.4	LOS B	6.4	162.6	0.75	0.68	35.4
16ax	R1	609	3.0	0.632	6.7	LOS A	6.4	162.6	0.75	0.68	35.2
Approach		620	3.0	0.632	6.8	LOS A	6.4	162.6	0.75	0.68	35.2
West: SR 530											
5a	L1	766	5.0	0.805	8.8	LOS A	18.2	473.4	0.34	0.49	34.5
12a	R1	207	5.0	0.805	4.1	LOS A	18.2	473.4	0.34	0.49	34.7
Approach		973	5.0	0.805	7.8	LOS A	18.2	473.4	0.34	0.49	34.6
All Vehicles		1837	4.1	0.805	8.5	LOS A	18.2	473.4	0.55	0.62	34.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
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 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

HCM 2010 Signalized Intersection Summary
12: I-5 NB Ramps & SR-530

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	435	0	0	685	675	95	5	630	0	0	0
Future Volume (veh/h)	120	435	0	0	685	675	95	5	630	0	0	0
Number	7	4	14	3	8	18	5	2	12			
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			
Adj Sat Flow, veh/h/ln	1792	1792	0	0	1863	1863	1900	1810	1810			
Adj Flow Rate, veh/h	126	458	0	0	721	440	100	5	303			
Adj No. of Lanes	1	1	0	0	1	1	0	1	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	6	6	0	0	2	2	5	5	5			
Cap, veh/h	237	985	0	0	810	689	553	28	518			
Arrive On Green	0.02	0.18	0.00	0.00	0.43	0.43	0.34	0.34	0.34			
Sat Flow, veh/h	1707	1792	0	0	1863	1583	1645	82	1538			
Grp Volume(v), veh/h	126	458	0	0	721	440	105	0	303			
Grp Sat Flow(s),veh/h/ln	1707	1792	0	0	1863	1583	1727	0	1538			
Q Serve(g_s), s	2.6	16.0	0.0	0.0	25.0	15.2	3.0	0.0	11.4			
Cycle Q Clear(g_c), s	2.6	16.0	0.0	0.0	25.0	15.2	3.0	0.0	11.4			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	237	985	0	0	810	689	581	0	518			
V/C Ratio(X)	0.53	0.47	0.00	0.00	0.89	0.64	0.18	0.00	0.59			
Avail Cap(c_a), veh/h	237	1024	0	0	852	724	581	0	518			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.69	0.69	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.1	19.5	0.0	0.0	18.2	15.5	16.4	0.0	19.2			
Incr Delay (d2), s/veh	1.6	0.2	0.0	0.0	11.1	1.8	0.7	0.0	4.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.3	8.0	0.0	0.0	15.1	6.9	1.5	0.0	5.5			
LnGrp Delay(d),s/veh	17.7	19.7	0.0	0.0	29.4	17.2	17.1	0.0	24.0			
LnGrp LOS	B	B			C	B	B		C			
Approach Vol, veh/h		584			1161			408				
Approach Delay, s/veh		19.3			24.8			22.2				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		27.6		42.4			8.0	34.4
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		22.0		40.0			4.0	32.0
Max Q Clear Time (g_c+I1), s		13.4		18.0			4.6	27.0
Green Ext Time (p_c), s		1.1		9.5			0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	200	155	380	410	0	0	0	0	400	1	90
Future Volume (veh/h)	0	200	155	380	410	0	0	0	0	400	1	90
Number	7	4	14	3	8	18				1	6	16
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
Adj Sat Flow, veh/h/ln	0	1681	1681	1827	1827	0				1900	1792	1900
Adj Flow Rate, veh/h	0	211	163	400	432	0				421	1	95
Adj No. of Lanes	0	1	1	1	1	0				0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	13	13	4	4	0				0	6	0
Cap, veh/h	0	299	254	522	808	0				603	1	136
Arrive On Green	0.00	0.18	0.18	0.21	0.44	0.00				0.44	0.44	0.44
Sat Flow, veh/h	0	1681	1429	1740	1827	0				1360	3	307
Grp Volume(v), veh/h	0	211	163	400	432	0				517	0	0
Grp Sat Flow(s),veh/h/ln	0	1681	1429	1740	1827	0				1670	0	0
Q Serve(g_s), s	0.0	8.3	7.4	12.3	12.1	0.0				17.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	8.3	7.4	12.3	12.1	0.0				17.5	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.81		0.18
Lane Grp Cap(c), veh/h	0	299	254	522	808	0				741	0	0
V/C Ratio(X)	0.00	0.71	0.64	0.77	0.53	0.00				0.70	0.00	0.00
Avail Cap(c_a), veh/h	0	384	327	559	940	0				741	0	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)	0.00	1.00	1.00	0.35	0.35	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	27.1	26.7	16.8	14.3	0.0				15.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.1	2.7	2.1	0.2	0.0				5.4	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	0.0	4.2	3.1	6.1	6.0	0.0				9.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	31.2	29.4	18.9	14.5	0.0				21.1	0.0	0.0
LnGrp LOS		C	C	B	B					C		
Approach Vol, veh/h		374			832						517	
Approach Delay, s/veh		30.4			16.6						21.1	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			18.5	16.4		35.1		34.9
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			16.0	16.0		26.0		36.0
Max Q Clear Time (g_c+I1), s			14.3	10.3		19.5		14.1
Green Ext Time (p_c), s			0.3	2.2		1.9		4.4

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
14: SR-9 & Eaglefield Dr/Crown Ridge Blvd

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1	50	95	10	105	45	340	165	95	560	40
Future Volume (veh/h)	35	1	50	95	10	105	45	340	165	95	560	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1827	1827	1827	1845	1845	1845
Adj Flow Rate, veh/h	37	1	-44	100	11	2	47	358	65	100	589	10
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	1	1
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	4	4	4	3	3	3
Cap, veh/h	247	0	431	314	82	15	542	871	740	126	1181	1004
Arrive On Green	0.03	0.02	0.00	0.07	0.05	0.05	0.48	0.48	0.48	0.07	0.64	0.64
Sat Flow, veh/h	1810	1900	0	1810	1565	285	800	1827	1553	1757	1845	1568
Grp Volume(v), veh/h	37	-43	-43	100	0	13	47	358	65	100	589	10
Grp Sat Flow(s),veh/h/ln	1810	1900	1615	1810	0	1850	800	1827	1553	1757	1845	1568
Q Serve(g_s), s	0.9	0.0	0.0	2.3	0.0	0.3	1.4	5.6	1.0	2.4	7.4	0.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	2.3	0.0	0.3	1.7	5.6	1.0	2.4	7.4	0.1
Prop In Lane	1.00		0.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	247	0	0	314	0	97	542	871	740	126	1181	1004
V/C Ratio(X)	0.15	0.00	0.00	0.32	0.00	0.13	0.09	0.41	0.09	0.79	0.50	0.01
Avail Cap(c_a), veh/h	352	0	0	353	0	677	542	871	740	241	1181	1004
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	0.0	19.4	0.0	19.8	6.5	7.4	6.3	20.0	4.2	2.9
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.6	0.0	0.6	0.3	1.4	0.2	10.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.2	0.0	0.2	0.4	3.1	0.5	1.5	4.1	0.0
LnGrp Delay(d),s/veh	20.5	0.0	0.0	19.9	0.0	20.4	6.8	8.9	6.5	30.4	5.7	2.9
LnGrp LOS	C			B		C	A	A	A	C	A	A
Approach Vol, veh/h		-49			113			470			699	
Approach Delay, s/veh		-15.5			20.0			8.3			9.2	
Approach LOS		A			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	8
Phs Duration (G+Y+Rc), s	7.1	24.9	7.1	4.7		32.0	5.4	6.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	18.0	4.0	16.0		28.0	4.0	16.0
Max Q Clear Time (g_c+I1), s	4.4	7.6	4.3	0.0		9.4	2.9	2.3
Green Ext Time (p_c), s	0.0	4.2	0.0	0.0		5.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
15: 67th Ave & 188th St

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	480	5	65	15	5	5	15	310	15	5	325	325
Future Volume (veh/h)	480	5	65	15	5	5	15	310	15	5	325	325
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1900	1900	1743	1743	1900	1863	1863	1863
Adj Flow Rate, veh/h	505	5	-6	16	5	0	16	326	11	5	342	74
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
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, %	2	2	2	0	0	0	9	9	9	2	2	2
Cap, veh/h	615	0	999	228	38	0	330	507	17	338	563	478
Arrive On Green	0.35	0.48	0.00	0.02	0.02	0.00	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1774	1863	0	1440	1900	0	904	1677	57	1039	1863	1583
Grp Volume(v), veh/h	505	-1	-1	16	5	0	16	0	337	5	342	74
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1440	1900	0	904	0	1733	1039	1863	1583
Q Serve(g_s), s	9.4	0.0	0.0	0.4	0.1	0.0	0.6	0.0	6.1	0.2	5.7	1.2
Cycle Q Clear(g_c), s	9.4	0.0	0.0	0.4	0.1	0.0	6.2	0.0	6.1	6.3	5.7	1.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	615	0	0	228	38	0	330	0	524	338	563	478
V/C Ratio(X)	0.82	0.00	0.00	0.07	0.13	0.00	0.05	0.00	0.64	0.01	0.61	0.15
Avail Cap(c_a), veh/h	1028	0	0	834	839	0	456	0	765	482	822	699
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	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	0.0	17.6	17.5	0.0	13.5	0.0	11.0	13.7	10.8	9.3
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.1	1.5	0.0	0.1	0.0	1.3	0.0	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	3.1	0.0	3.0	0.6
LnGrp Delay(d),s/veh	13.6	0.0	0.0	17.7	19.0	0.0	13.5	0.0	12.3	13.7	11.9	9.4
LnGrp LOS	B			B	B		B		B	B	B	A
Approach Vol, veh/h		503			21			353			421	
Approach Delay, s/veh		13.7			18.0			12.3			11.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		15.0		21.3		15.0	16.6	4.7
Change Period (Y+Rc), s		4.0		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		16.0		41.0		16.0	21.0	16.0
Max Q Clear Time (g_c+I1), s		8.2		0.0		8.3	11.4	2.4
Green Ext Time (p_c), s		2.7		0.0		2.7	1.2	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		12.7
HCM 2010 LOS		B

DELAY (CONTROL)

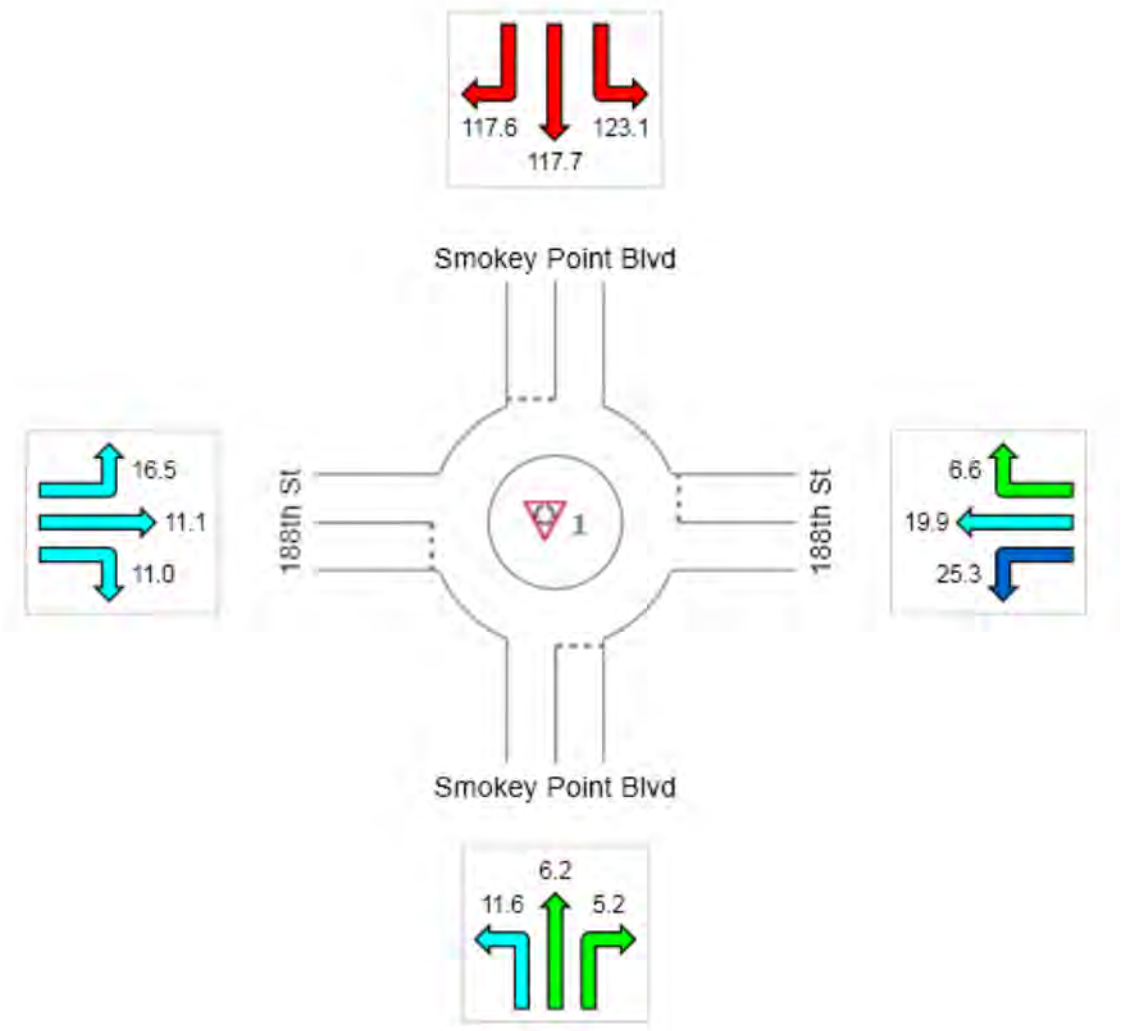
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: Smokey Point Blvd at 188th St - Perteet Edits

Projected 2035 with Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	7.1	17.3	119.3	11.9	34.3
LOS	A	B	F	B	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

DELAY (CONTROL)

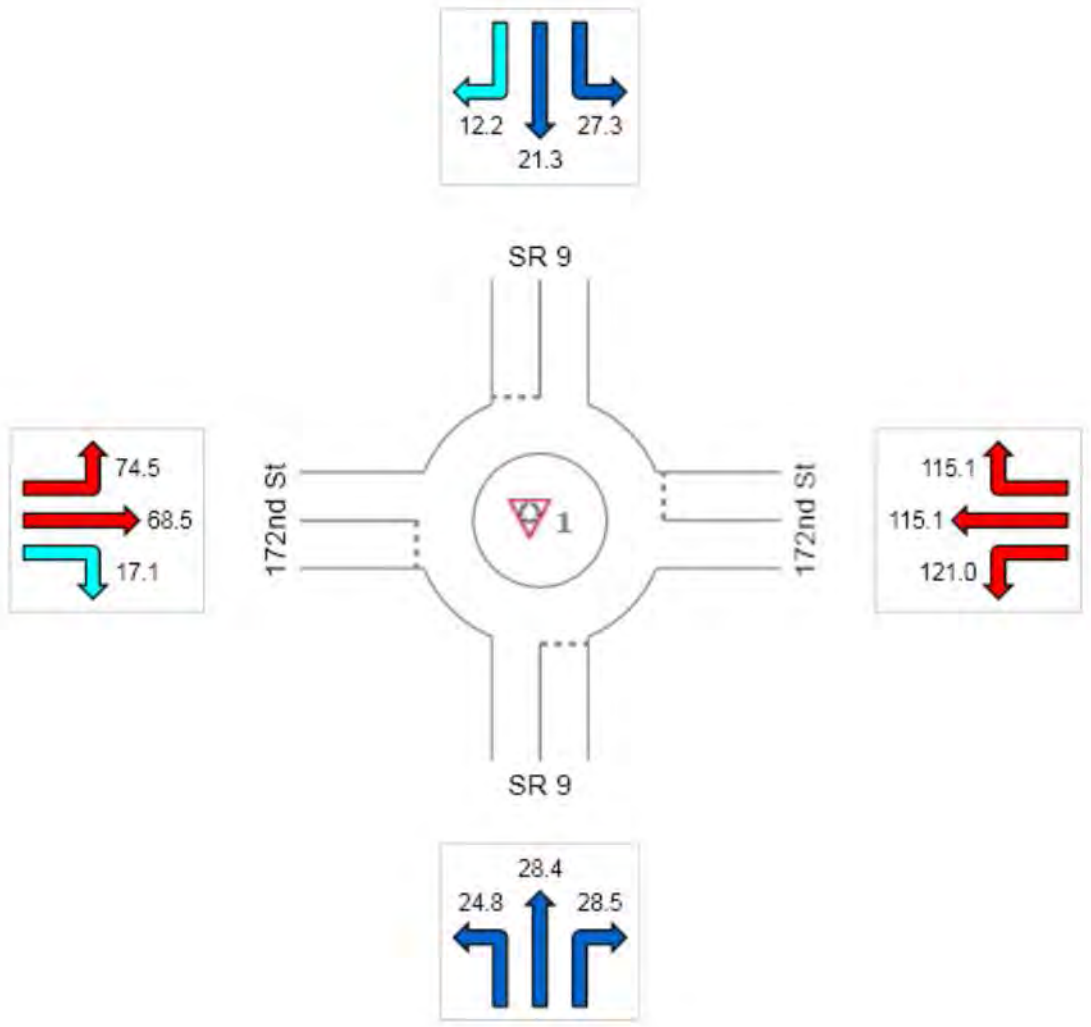
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: SR 9 at 172nd St - Perteet Revised v2

Projected 2035 Baseline
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	27.2	116.0	20.7	52.0	57.3
LOS	C	F	C	D	E



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\17 - SR 9 at 172nd - Perteet Edits.sip6

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	145	1365	790	25	1	80
Future Vol, veh/h	145	1365	790	25	1	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	350	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	153	1437	832	26	1	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	858	0	-	0	2587	845
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	1742	-
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	783	-	-	-	28	366
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	156	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	783	-	-	-	23	366
Mov Cap-2 Maneuver	-	-	-	-	23	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	126	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	783	-	-	-	309
HCM Lane V/C Ratio	0.195	-	-	-	0.276
HCM Control Delay (s)	10.7	-	-	-	21
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.7	-	-	-	1.1

DELAY (CONTROL)

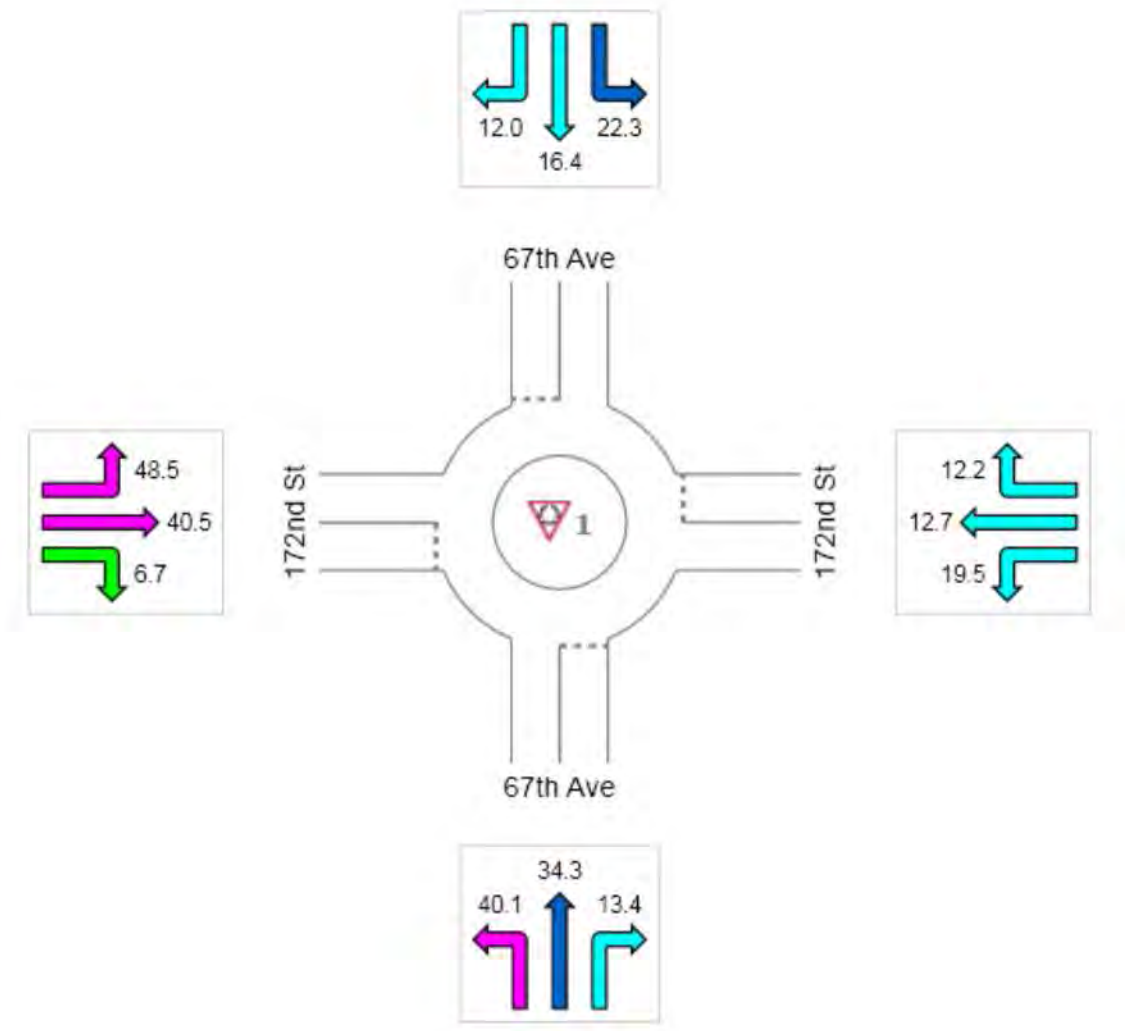
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 67th Ave at 172nd St (SR 531) - Perteet Edits

Projected 2035 With Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	26.8	13.6	16.6	36.0	25.9
LOS	C	B	B	D	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\19 - 67th at 172nd - Perteet Edits.sip6

DELAY (CONTROL)

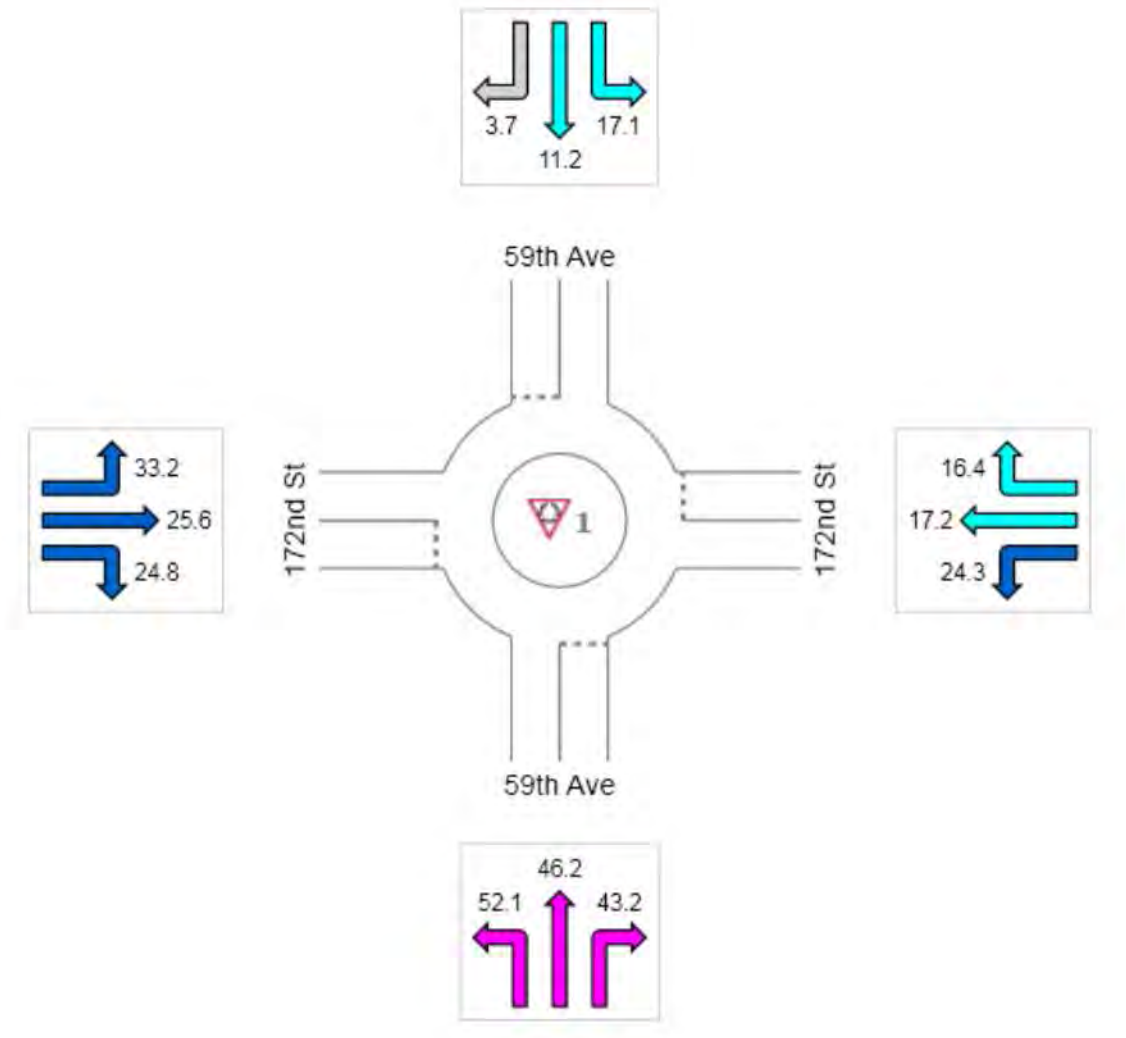
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 59th Ave at 172nd St (SR 531) - Perteet Edits

Projected 2035 with Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	44.8	17.8	7.4	27.1	23.2
LOS	D	B	A	C	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\20 - 59th at 172nd.sip6

DELAY (CONTROL)

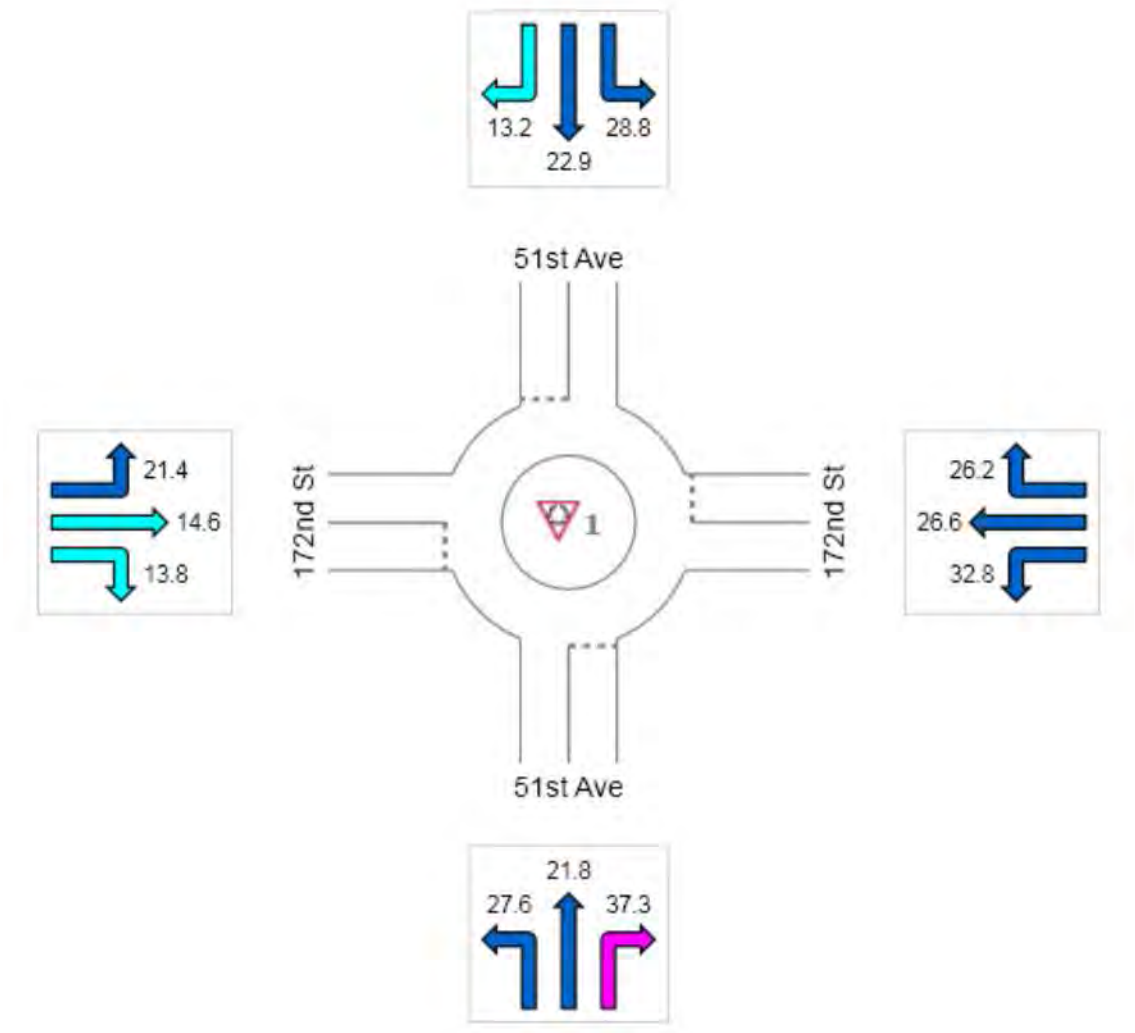
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 51st Ave at 172nd St (SR 531) - Perteet Edits

Projected 2035 with Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	30.1	27.5	24.3	14.6	23.8
LOS	C	C	C	B	C



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\21 - 51st at 172nd.sip6

DELAY (CONTROL)

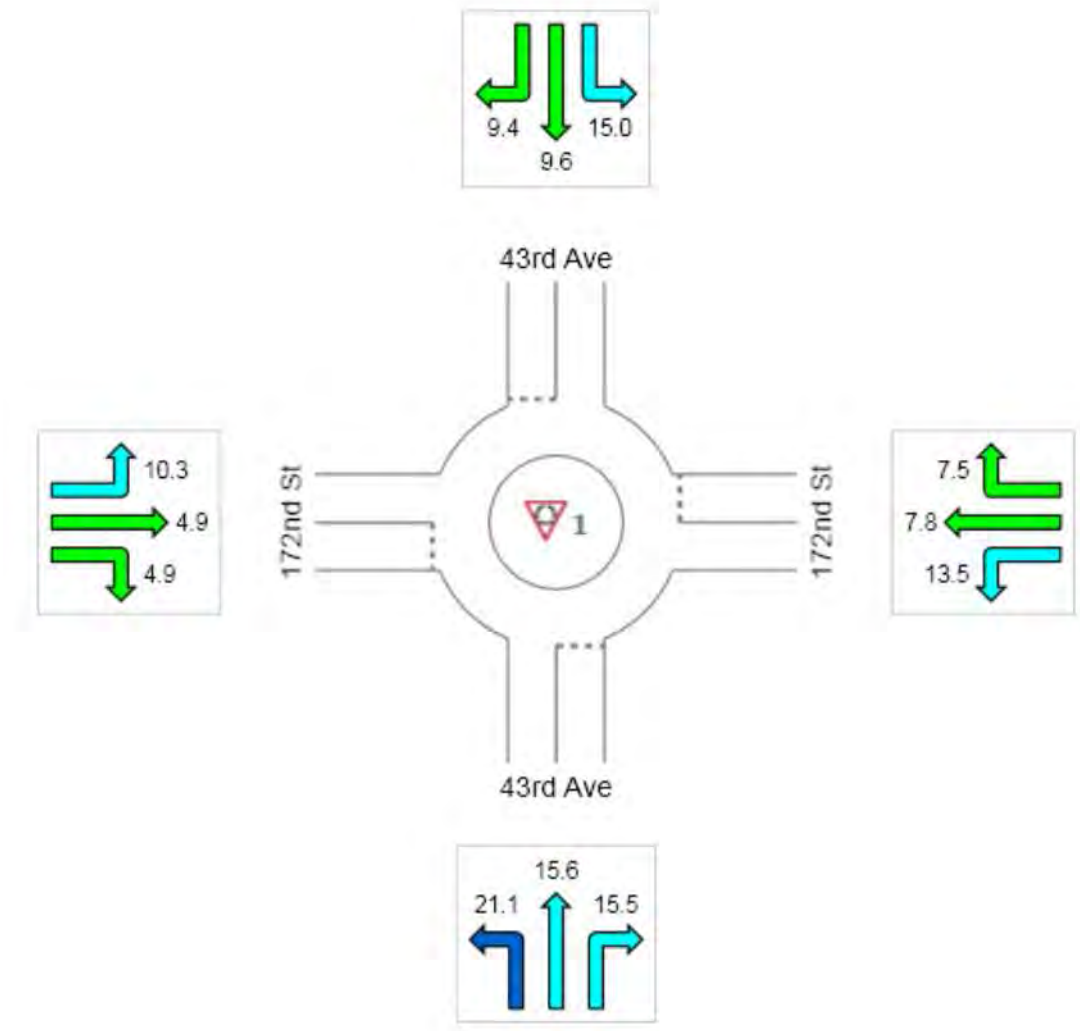
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: 43rd Ave at 172nd St (SR 531) - Perteet Edits

Projected 2035 with Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	17.4	8.0	9.6	5.4	7.9
LOS	B	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\22 - 43rd at 172nd.sip6

HCM 2010 Signalized Intersection Summary
23: Smokey Point Blvd & 172nd St (SR-531)

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	365	980	395	70	1130	200	800	485	30	255	285	500
Future Volume (veh/h)	365	980	395	70	1130	200	800	485	30	255	285	500
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	384	1032	163	74	1189	16	842	511	11	268	300	184
Adj No. of Lanes	1	2	1	1	3	1	2	2	1	1	2	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	1388	621	94	1156	360	813	858	384	296	611	273
Arrive On Green	0.44	0.78	0.78	0.05	0.23	0.23	0.24	0.24	0.24	0.28	0.29	0.29
Sat Flow, veh/h	1774	3539	1583	1774	5085	1583	3442	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	384	1032	163	74	1189	16	842	511	11	268	300	184
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1695	1583	1721	1770	1583	1774	1770	1583
Q Serve(g_s), s	23.7	16.6	1.5	4.5	25.0	0.6	26.0	14.1	0.6	16.0	7.7	11.3
Cycle Q Clear(g_c), s	23.7	16.6	1.5	4.5	25.0	0.6	26.0	14.1	0.6	16.0	7.7	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1388	621	94	1156	360	813	858	384	296	611	273
V/C Ratio(X)	0.99	0.74	0.26	0.78	1.03	0.04	1.04	0.60	0.03	0.91	0.49	0.67
Avail Cap(c_a), veh/h	387	1388	621	113	1156	360	813	858	384	355	611	273
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	30.9	9.0	1.8	51.4	42.5	15.8	42.0	36.9	31.8	38.9	35.1	36.4
Incr Delay (d2), s/veh	41.2	2.0	0.2	25.2	34.1	0.1	40.9	3.0	0.1	22.7	2.7	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	8.1	0.7	2.9	15.3	0.3	16.9	7.2	0.3	9.7	4.0	5.9
LnGrp Delay(d),s/veh	72.1	11.0	2.0	76.6	76.6	15.9	82.9	39.9	31.9	61.6	37.8	48.4
LnGrp LOS	E	B	A	E	F	B	F	D	C	E	D	D
Approach Vol, veh/h		1579			1279			1364			752	
Approach Delay, s/veh		24.9			75.8			66.4			48.9	
Approach LOS		C			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.3	30.7	9.9	47.1	30.0	23.0	28.0	29.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.6	23.0	7.0	42.0	26.0	19.0	24.0	25.0
Max Q Clear Time (g_c+I1), s	18.0	16.1	6.5	18.6	28.0	13.3	25.7	27.0
Green Ext Time (p_c), s	0.3	3.7	0.0	10.0	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.0
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
24: Smokey Point Blvd & Smokey Point Dr

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1	95	1	1	10	95	895	15	1	750	30
Future Volume (veh/h)	55	1	95	1	1	10	95	895	15	1	750	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1810	1900	1900	1900	1900	1863	1863	1900	1845	1845	1900
Adj Flow Rate, veh/h	58	1	21	1	1	0	100	942	16	1	789	27
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	0	0	0	2	2	2	3	3	3
Cap, veh/h	184	1	26	136	89	0	612	2796	47	585	2715	93
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.00	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	1029	18	373	547	1277	0	667	3561	60	578	3458	118
Grp Volume(v), veh/h	80	0	0	2	0	0	100	468	490	1	400	416
Grp Sat Flow(s),veh/h/ln	1420	0	0	1824	0	0	667	1770	1852	578	1752	1824
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	3.5	3.5
Cycle Q Clear(g_c), s	3.1	0.0	0.0	0.1	0.0	0.0	4.3	0.0	0.0	0.0	3.5	3.5
Prop In Lane	0.72		0.26	0.50		0.00	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	212	0	0	225	0	0	612	1389	1454	585	1376	1432
V/C Ratio(X)	0.38	0.00	0.00	0.01	0.00	0.00	0.16	0.34	0.34	0.00	0.29	0.29
Avail Cap(c_a), veh/h	628	0	0	701	0	0	612	1389	1454	585	1376	1432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.63	0.63	0.63	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	0.0	23.8	0.0	0.0	0.2	0.0	0.0	1.3	1.6	1.6
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.5	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	1.3	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	1.9	1.9
LnGrp Delay(d),s/veh	26.3	0.0	0.0	23.9	0.0	0.0	0.5	0.4	0.4	1.3	2.2	2.2
LnGrp LOS	C			C			A	A	A	A	A	A
Approach Vol, veh/h		80			2			1058			817	
Approach Delay, s/veh		26.3			23.9			0.4			2.2	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		47.2		7.8		47.2		7.8
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		27.0		20.0		27.0		20.0
Max Q Clear Time (g_c+I1), s		6.3		5.1		5.5		2.1
Green Ext Time (p_c), s		12.0		0.3		12.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	2.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
25: I-5 NB Ramps & 172nd St (SR-531)

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	370	1025	0	0	1960	520	670	1	705	0	0	0
Future Volume (veh/h)	370	1025	0	0	1960	520	670	1	705	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1900	1881			
Adj Flow Rate, veh/h	389	1079	0	0	2063	0	705	1	0			
Adj No. of Lanes	1	2	0	0	3	1	2	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	408	2537	0	0	2288	712	756	0	348			
Arrive On Green	0.46	1.00	0.00	0.00	0.45	0.00	0.22	0.22	0.00			
Sat Flow, veh/h	1792	3668	0	0	5305	1599	3476	0	1599			
Grp Volume(v), veh/h	389	1079	0	0	2063	0	705	0	0			
Grp Sat Flow(s),veh/h/ln	1792	1787	0	0	1712	1599	1738	0	1599			
Q Serve(g_s), s	23.0	0.0	0.0	0.0	41.0	0.0	21.9	0.0	0.0			
Cycle Q Clear(g_c), s	23.0	0.0	0.0	0.0	41.0	0.0	21.9	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	408	2537	0	0	2288	712	756	0	348			
V/C Ratio(X)	0.95	0.43	0.00	0.00	0.90	0.00	0.93	0.00	0.00			
Avail Cap(c_a), veh/h	408	2537	0	0	2288	712	758	0	349			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.33	0.33	0.00	0.00	0.09	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	29.4	0.0	0.0	0.0	28.3	0.0	42.2	0.0	0.0			
Incr Delay (d2), s/veh	15.7	0.2	0.0	0.0	0.6	0.0	18.2	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	3.0	0.1	0.0	0.0	19.4	0.0	12.4	0.0	0.0			
LnGrp Delay(d),s/veh	45.0	0.2	0.0	0.0	28.9	0.0	60.5	0.0	0.0			
LnGrp LOS	D	A			C		E					
Approach Vol, veh/h		1468			2063			705				
Approach Delay, s/veh		12.1			28.9			60.5				
Approach LOS		B			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		82.1			29.1	53.0		27.9
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		78.0			25.0	49.0		24.0
Max Q Clear Time (g_c+I1), s		2.0			25.0	43.0		23.9
Green Ext Time (p_c), s		12.5			0.0	5.3		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		28.3
HCM 2010 LOS		C

HCM 2010 Signalized Intersection Summary
26: I-5 SB Ramps & 172nd St (SR-531)

Projected 2035 with Improvements
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1205	585	0	1715	915	0	0	0	190	1	460
Future Volume (veh/h)	0	1205	585	0	1715	915	0	0	0	190	1	460
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1845	1845				1900	1810	1810
Adj Flow Rate, veh/h	0	1268	0	0	1805	558				200	1	468
Adj No. of Lanes	0	2	0	0	2	1				0	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	3	3				5	5	5
Cap, veh/h	0	2159	0	0	2138	956				544	3	488
Arrive On Green	0.00	0.61	0.00	0.00	0.81	0.81				0.32	0.32	0.32
Sat Flow, veh/h	0	3725	0	0	3597	1568				1715	9	1538
Grp Volume(v), veh/h	0	1268	0	0	1805	558				201	0	468
Grp Sat Flow(s),veh/h/ln	0	1770	0	0	1752	1568				1724	0	1538
Q Serve(g_s), s	0.0	24.0	0.0	0.0	33.9	14.0				9.9	0.0	32.8
Cycle Q Clear(g_c), s	0.0	24.0	0.0	0.0	33.9	14.0				9.9	0.0	32.8
Prop In Lane	0.00		0.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2159	0	0	2138	956				547	0	488
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.84	0.58				0.37	0.00	0.96
Avail Cap(c_a), veh/h	0	2159	0	0	2138	956				548	0	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	0.29	0.29				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.0	0.0	0.0	7.3	5.4				29.0	0.0	36.8
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.0	1.3	0.8				0.4	0.0	30.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.0	0.0	0.0	15.9	6.1				4.8	0.0	18.0
LnGrp Delay(d),s/veh	0.0	14.2	0.0	0.0	8.6	6.1				29.4	0.0	67.2
LnGrp LOS		B			A	A				C		E
Approach Vol, veh/h		1268			2363						669	
Approach Delay, s/veh		14.2			8.0						55.9	
Approach LOS		B			A						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		71.1		38.9		71.1		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		67.0		35.0		67.0		
Max Q Clear Time (g_c+I1), s		26.0		34.8		35.9		
Green Ext Time (p_c), s		36.9		0.1		28.6		

Intersection Summary		
HCM 2010 Ctrl Delay		17.3
HCM 2010 LOS		B

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	20	1	745	385	85
Future Vol, veh/h	35	20	1	745	385	85
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	-	150	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	21	1	784	405	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1191	405	405	0	-	0
Stage 1	405	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	207	646	1154	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	646	1154	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	449	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1154	-	275	-	-
HCM Lane V/C Ratio	0.001	-	0.211	-	-
HCM Control Delay (s)	8.1	-	21.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	5	25	40	40	35
Future Vol, veh/h	15	5	25	40	40	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	5	26	42	42	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	21	0	113	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1595	-	884	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1595	-	869	1061
Mov Cap-2 Maneuver	-	-	-	-	869	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	913	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.8	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	949	-	-	1595	-
HCM Lane V/C Ratio	0.083	-	-	0.016	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	655	325	0	1250	0	5
Future Vol, veh/h	655	325	0	1250	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	689	342	0	1316	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	689
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	446
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	446
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	446	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	13.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

DELAY (CONTROL)

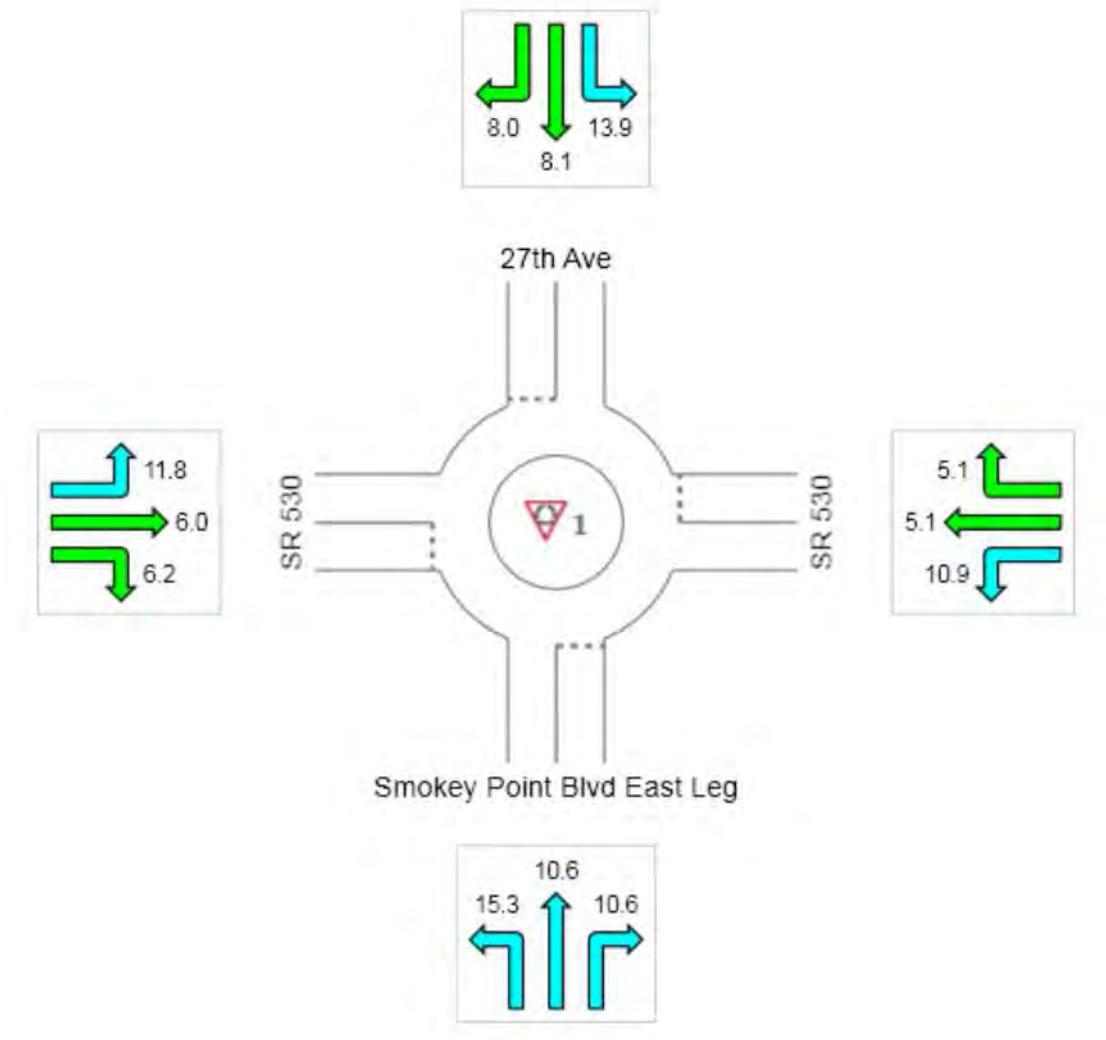
Average control delay per vehicle, or average pedestrian delay (seconds)

Site: SR 530 at Smokey Point Blvd East Leg - Perteet Edits

Projected 2035 With Improvements
Roundabout

All Movement Classes

	South	East	North	West	Intersection
	12.0	6.6	9.5	6.1	7.8
LOS	B	A	A	A	A



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F | Continuous

Level of Service Method: Delay & v/c (HCM 2010)
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Roundabout Level of Service Method: Same as Signalised Intersections
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

\Operations\Sidra\30 - SR 530 at Smokey Point.sip6

Intersection	
Int Delay, s/veh	2.8

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	5	940	250	0	0	325
Future Vol, veh/h	5	940	250	0	0	325
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	989	263	0	0	342

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	263	0	-	0	-	263
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.218	-	-	-	-	3.318
Pot Cap-1 Maneuver	1301	-	-	0	0	776
Stage 1	-	-	-	0	0	-
Stage 2	-	-	-	0	0	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1301	-	-	-	-	776
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	NB	SB	SE
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT
Capacity (veh/h)	1301	-	776	-
HCM Lane V/C Ratio	0.004	-	0.441	-
HCM Control Delay (s)	7.8	0	13.2	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	2.3	-

Intersection	
Int Delay, s/veh	294.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	85	350	635	405	270	300
Future Vol, veh/h	85	350	635	405	270	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	368	668	426	284	316

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1095	0	-	0	1429	882
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	637	-	-	-	~ 149	345
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	580	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	637	-	-	-	~ 123	345
Mov Cap-2 Maneuver	-	-	-	-	~ 123	-
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	478	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	$ 1053.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	637	-	-	-	186
HCM Lane V/C Ratio	0.14	-	-	-	3.226
HCM Control Delay (s)	11.6	0	-		$ 1053.3
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	55.8

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	1084	1622	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
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	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	0	0	0	-	0
Stage 1	0	-	-	-	-	-
Stage 2	1	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1022	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	-	-	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	1022	-	-	-	-	-

Approach	WB	SE	NW
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	WBLn1	SEL	SET
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	104.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	770	250	15	600	265	30
Future Vol, veh/h	770	250	15	600	265	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	811	263	16	632	279	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	811	0	1474	811
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	815	-	~ 139	379
Stage 1	-	0	-	-	437	-
Stage 2	-	0	-	-	512	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	815	-	~ 135	379
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	$ 593.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	144	-	815	-
HCM Lane V/C Ratio	2.156	-	0.019	-
HCM Control Delay (s)	$ 593.5	-	9.5	0
HCM Lane LOS	F	-	A	A
HCM 95th %tile Q(veh)	25.4	-	0.1	-

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

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
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	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	2	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	1	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1020	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1622	-	-	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0	0
HCM Lane LOS	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-	-

H Roadway Sections

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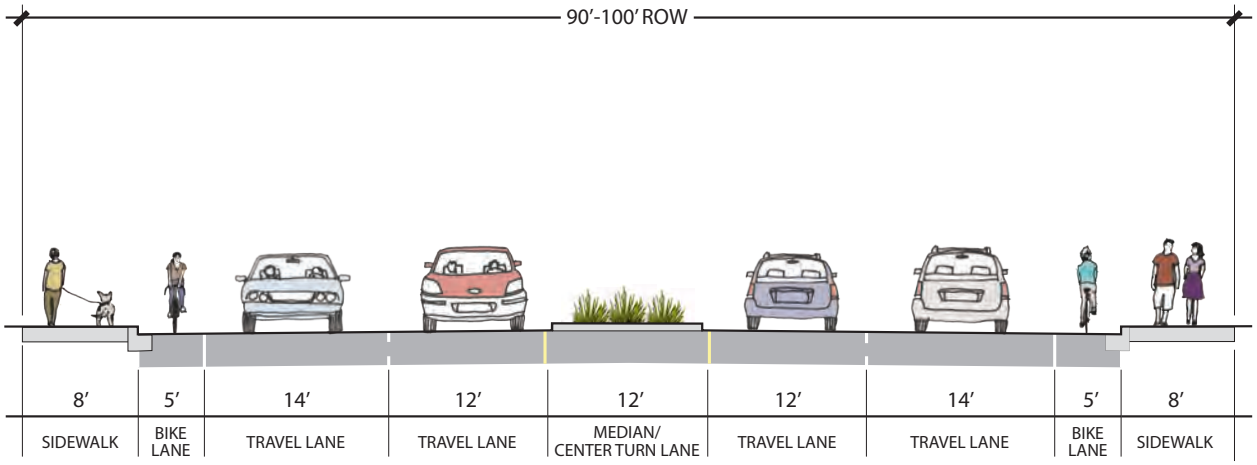
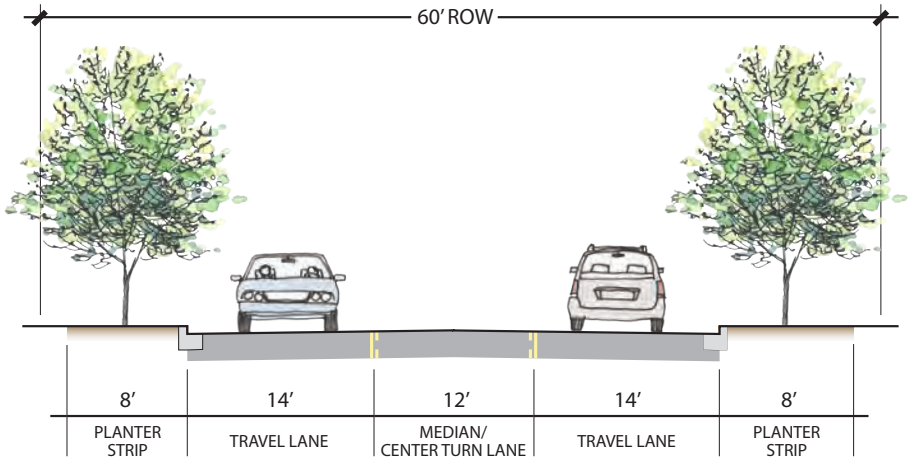
TYPICAL ROADWAY CROSS-SECTIONS

SECTION 1 *5-Lane Urban*

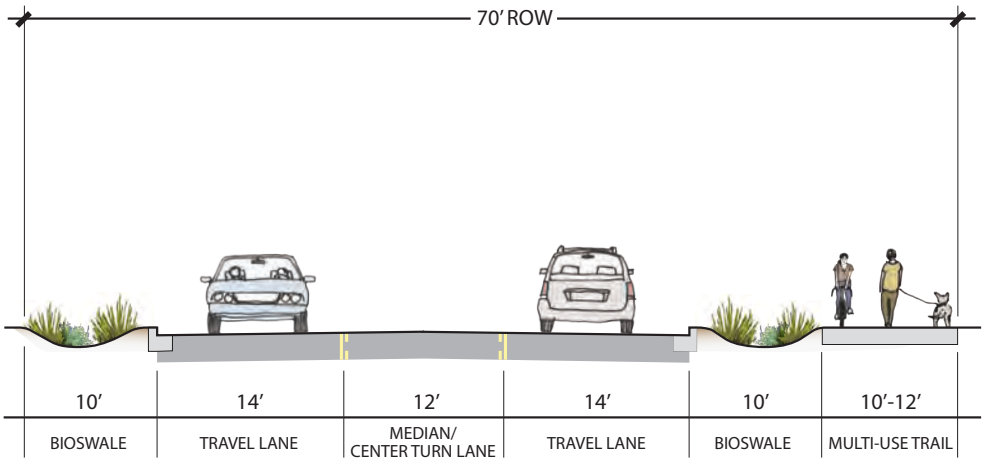


SECTION 2 *3-Lane Urban (Standard)*

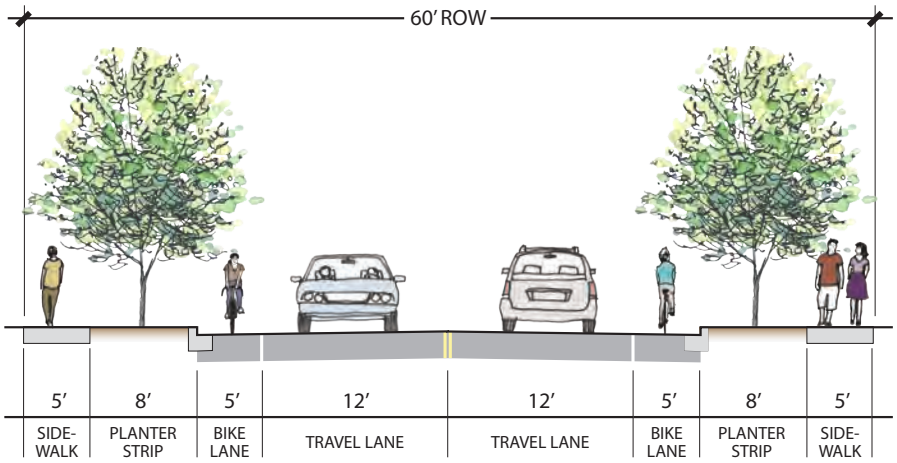


TYPICAL ROADWAY CROSS-SECTIONS

SECTION 3 *3-Lane Urban (LID)*

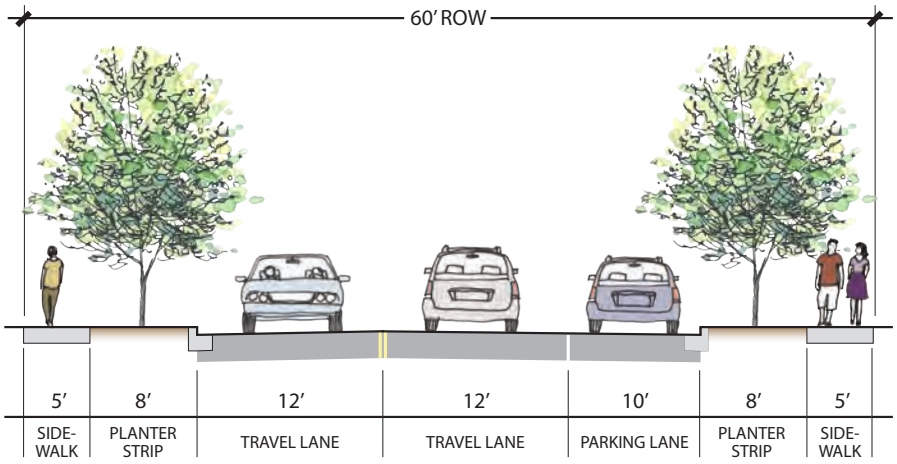


SECTION 4 *2-Lane Urban (High Traffic)*

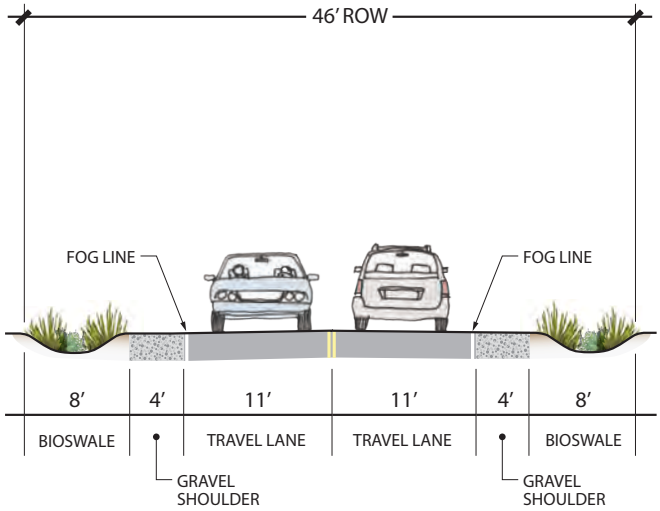


TYPICAL ROADWAY CROSS-SECTIONS

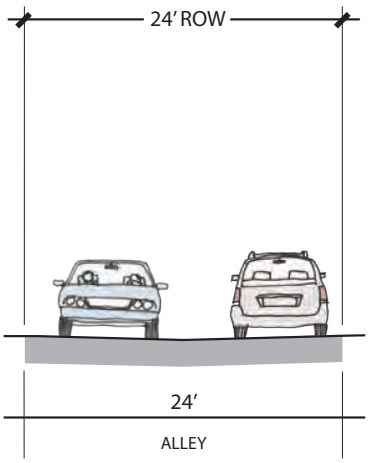
SECTION 5 *2-Lane Urban (Residential)*



SECTION 6 *2-Lane Rural*



SECTION 7 *Alley*



I Travel Demand Model Plot

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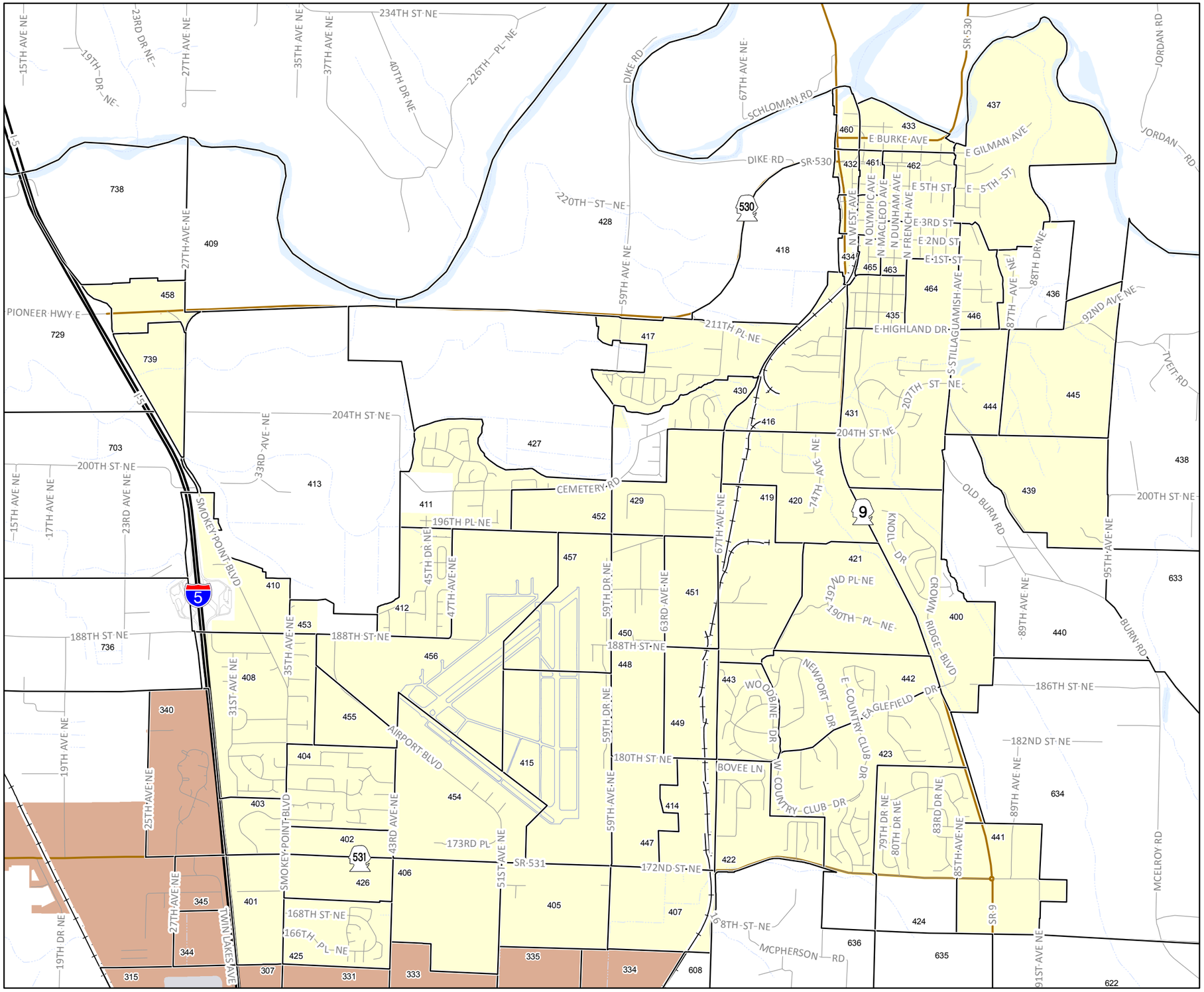
FINAL - 2017



City of Arlington

Arlington Limits and TAZ Boundaries

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- TAZ Boundaries within or intersecting City Limits
- City of Marysville

N
W E
S

Waterbodies provided by Snohomish County FTP site, downloaded February 2017.

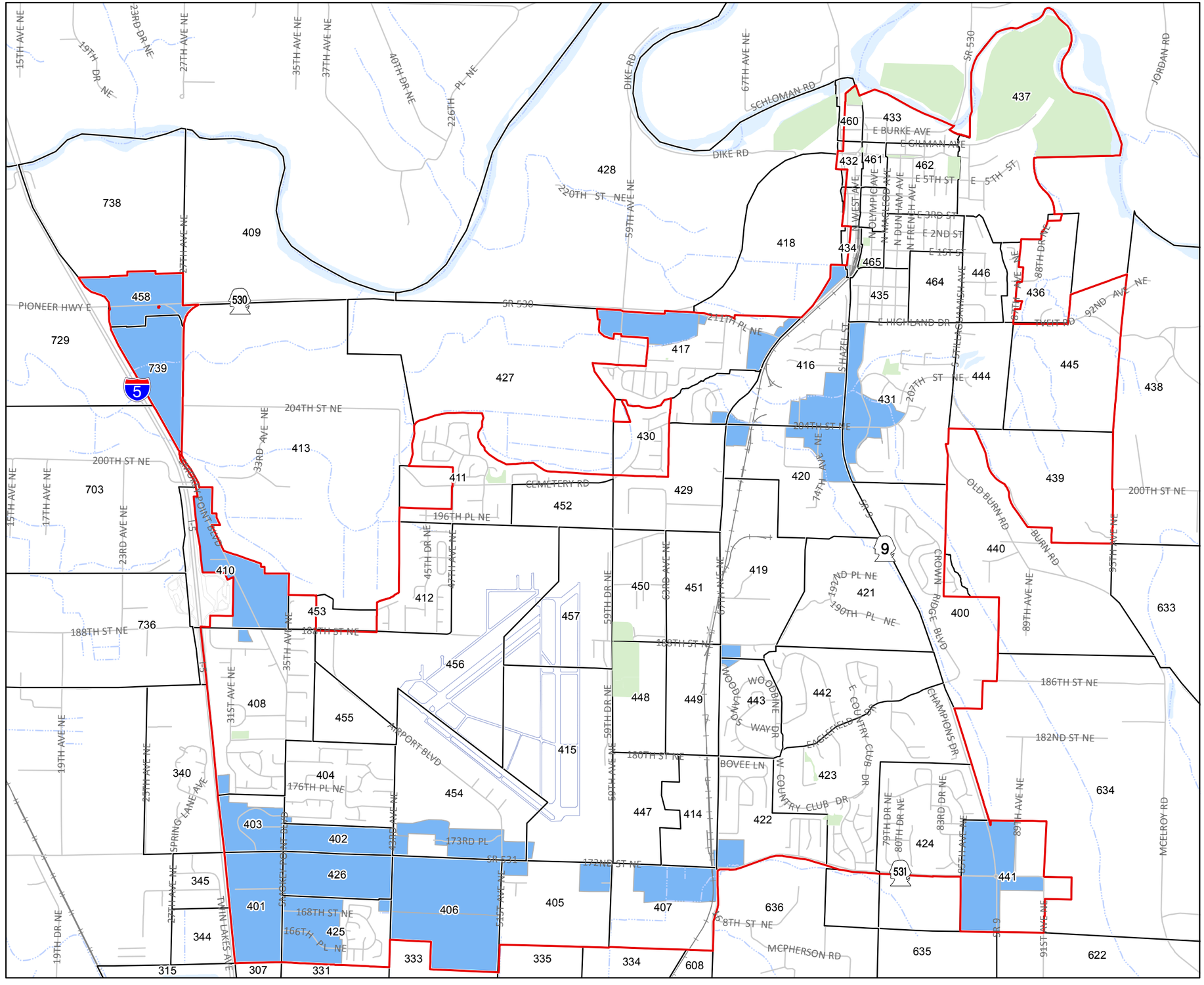
0 0.225 0.45 0.9 Miles

6/13/2017

ArlBase_TAZ_11x17_17

kdh/akc

FINAL - 2017



City of Arlington

Mixed Use Overlay with TAZ Boundaries

Legend

- Arlington
- Streets
- Airport
- Rail line
- Rest area
- Parks
- TAZ Boundaries
- Mixed Use Overlay

N W E S

Scale: 0 1,250 2,500 5,000 Feet

Date: 6/13/2017

File: MU_Overlay_TAZ11x17_17

Cartographer: kdh/akc

FINAL - 2017

Intersection Improvements
- Right In/Right Out
- Roundabout
- Signal

New Infrastructure
- Off/On Ramps
- Overpass
- Tunnel

Street Improvements
- 2 Lanes
- 3 Lanes
- 4 Lanes
- 5 Lanes

New Roads
- 2 Lanes
- 3 Lanes

Projects labeled by project number
R = road project
I = intersection project

Roundabout intesection improvements extend to I-5, down Smokey Point Blvd and up 27th Ave

City of Arlington

2035 Transportation Improvement Projects & TAZ Boundaries

2017 Update

Legend

- Arlington City Limits
- State Highway
- State Route
- Streets
- Airport
- Rail line
- Rest area
- TAZ Boundaries within or intersecting City Limits
- City of Marysville

N W E S

Waterbodies and streams provided by Snohomish County FTP site, downloaded February 2015.

Scale: 0 0.25 0.5 1 Miles

Date: 6/13/2017

File: TransProj_TAZ_11x17_17

Cartographer: kdh/akc

J Glossary Of Acronyms

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GLOSSARY OF ACRONYMS

ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
ALP	Airport Layout Plan
AP	Airport Protection District
BNSF	Burlington Northern Santa Fe Railroad
CFP	Capital Facilities Plan
COA	City of Arlington
CPP	Countywide Planning Policies
CTR	Commute Trip Reduction
ESD	Employment Security Department
FGTS	Freight and Goods Transportation System
FHWA	Federal Highway Administration
GTEC	Growth and Transportation Efficiency Centers
GMA	Growth Management Act
HCM	Highway Capacity Manual
HSP	Highway System Plan
HSS	Highways of Statewide Significance
ITE	Institute of Transportation Engineers
LOS	Level of Service
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
PSRC	Puget Sound Regional Council
RTPO	Regional Transportation Planning Organization

SEPA	State Environmental Policy Act
SL&E	Seattle, Lake Shore and Eastern Railroad
SMTP	State Multimodal Transportation Plan
SR	State Route
TBD	Transportation Benefit District
TDM	Transportation Demand Management
TDR	Transfer of Development Rights
TIF	Transportation (or Traffic) Impact Fee
TIP	Transportation Improvement Plan
UGA	Urban Growth Area
WSDOT	Washington State Department of Transportation

K Project Cost Estimate Details

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ARLINGTON TRANSPORTATION 2035 PLAN

INTERSECTION PROJECTS

Project ID	Project Name	Project Limits	Project Description	Design	Right of Way	Construction	Total Project Cost (rounded)	Comments
I1	Smokey Point Blvd/SR-530	Intersection	Install a roundabout at Smokey Point Blvd east/SR 530. Reconstruct 27th Ave to align with roundabout. Convert Smokey Point Blvd west/SR 530 to right-in-right-out	$955,319	$288,398	$5,303,270	$6,550,000	2013 SCJ Estimate updated to 2015
I2	Smokey Point Blvd/188th St	Intersection	Install a roundabout at Smokey Point Blvd/188th St	$267,058	$200,294	$2,877,496	$3,350,000	
I3	Airport Blvd/188th St	Intersection	Install a roundabout at Airport Blvd/188th St	$146,882	$73,441	$1,544,722	$1,770,000	
I4	SR-530/59th Ave	Intersection	Install a roundabout at SR 530/59th Ave	$366,076	$165,770	$2,155,014	$2,690,000	
I5	SR 530/211th St	Intersection	Install a roundabout at SR 530/211th St	$428,240	$165,770	$2,155,014	$2,750,000	
I6	SR-530/SR-9/Division	Intersection	Add a 2nd EB left-turn lane at SR 530/SR 9/Division St	---	---	---	$3,501,085	$2,886,199 in 2007 costs, 21.3% cost escalation to 2015
I7	SR-530/SR-9/Burke	Intersection	Install a traffic signal at SR 530/SR 9/Burke Ave	---	---	---	$1,120,465	$923,681 in 2007 costs, 21.3% cost escalation to 2015
I8	204th St/Olympic Place	Intersection	Install a roundabout at 204th St/Olympic Pl	$105,721	$6,608	$964,706	$1,080,000	Assumes smaller urban roundabout. Single lane roundabout
I9	204th St/74th Ave	Intersection	Install Traffic Signal at 204th St/74th Ave					Project Funding is being provided by AVR. See Roadway project R7
I10	204th St/ 71st Ave	Intersection	Install Traffic Signal at 204th St/71st Ave	$51,880	$3,037	$430,418	$490,000	
I11	67th Ave/188th St	Intersection	Install traffic signal at 67th Ave/Future Rd (Project R9)	$51,836	$4,030	$422,013	$480,000	
I12	67th Ave/Arlington Valley Rd	Intersection	Install traffic signal at 67th Ave/Arlington Valley Rd (Project R7)	$52,767	$15,203	$590,032	$660,000	
I13	40th Ave and 172nd St (SR-531)	Intersection	Install Traffic Signal at 40th Ave/172nd St (SR-531)	$58,756	$43,536	$962,343	$1,070,000	
							$25,511,550	

ARLINGTON TRANSPORTATION 2035 PLAN

ROAD PROJECTS

Project ID	Project Name	Project Limits	Project Description	Street Classification	Street Type	Length (LF)	ROW Width Required (ft)	Current ROW Width (ft)	Design	Right of Way	Construction	Total Project Cost (rounded)	Comments
R1	Smokey Point Blvd	188th St - SR 530	Reconstruct Smokey Point Blvd from 188th St to SR 530 from a 2 lane roadway to a 3 lane roadway	Arterial	3	7165	70	60	$982,040	$61,377	$8,654,227	$9,700,000	Typical roadway cross sections for this section of road have been developed from a grant funded LID project.
R2	Cross Town Connector	Cemetery Rd. - 47th Ave - 188th St.	Reconstruct Cemetery Rd from 47th Ave to 188th St from a 2 lane roadway to a 3 lane roadway	Arterial	4	15286	60	55	$0	$0	$7,490,140	$7,500,000	Project consist of channelization and sidewalks. $490 per linear foot based upon discussion with City. Project consists primarily of rehabilitation.
R3	45th Drive Extension	45th Drive NE - Cemetery Rd	New 2 lane roadway connecting the existing terminus of 45th Dr with Cemetery Rd	Residential	5	575	60	R/W to be donated				$0	**+20 years**
R4	211th Place	67th - SR-530	Reconstruct 211th Pl from 67th Ave to SR 530 from a 2 lane roadway to a 3 lane roadway	Arterial	4	2265	60	45	$273,661	$16,098	$2,253,680	$2,550,000	Coordinate with SR-530 roundabout project I-5, **I believe this will be a +20 year project or just make into a 2-lane arterial.**
R5	Highland Drive	SR-9 - Stillaguamish Ave	Reconstruct Highland Dr from SR 9 to Stillaguamish Ave from a 2 lane roadway to a 3 lane roadway	Arterial	2	2570	60	35-45	$327,960	$679,765	$2,990,219	$4,000,000	
R6	74th & 71st	Internal Roads at former furniture manufacturer	Construct new 2 lanes roadways from Hazel St to 204th St. These roadways will tie into 71st Ave and 74th Ave, with 71st Ave tieing into 74th Ave	Collector	4	2665	60	need to acquire	$0	$0	$2,002,449	$2,010,000	This standard applies if these roads are to be dedicated to public use, otherwise they will remain private roads for internal circulation.
R7	Arlington Valley Rd.	67th Ave - 204th St	Construct new 3 lane roadway from southern terminus of 74th Ave to 191st Pl, connecting 67th Ave and 204th St	Arterial	3	3300	70	60 only 1/2	$378,000	$125,000	$3,776,047	$4,279,047	Currently Funded and being constructed in Summer 2016
R8	197th St Extension	67th Ave - Arlington Valley Rd.	Construct new 2 lane roadway connecting 67th Ave to Arlington Valley Rd (Project 18)	Arterial	4	2230	60	R/W to be donated	$206,227	$0	$2,004,487	$2,220,000	
R9	Future Rd	Arlington Valley Rd. - 188th St.	Construct new 2 lane roadway connecting Arlington Valley Rd (Project 18) to 67th Ave at 188th St	Arterial	4	1125	60	R/W to be donated				$0	+20 years
R10	59th Dr. Extension	59th Dr - Cemetery Rd	Construct 2 lane extension of 59th Dr from northern terminus to Cemetery Rd	Arterial	4	1925	60	City owns R/W	$178,021	$0	$1,568,812	$1,750,000	
R11	186th St	Crownridge Blvd - City Limits	Construct new 2 lane roadway from Crownridge Blvd to eastern city limits	Collector	4	880	60	30-50	$228,216	$0	$1,072,615	$1,310,000	
R12	89th Ave	172nd St - 186th St	Reconstruct/Extend 89th Ave from 172nd St to 186th St (Project 24)	Collector	3	4650	70	60 need to acquire	$1,099,201	$351,744	$6,155,526	$7,610,000	3250 LF of Private road, 1400 LF of new road construction
R13	172nd St/91st Ave	SR-9 roundabout - City Limits	Reconstruct 172nd St from SR 9 to eastern city limits from a 2 lane roadway to a 3 lane roadway	Arterial	3	1075	60	130-70-40	$162,634	$0	$1,524,698	$1,690,000	
R14A	SR-531 Widening	43rd Ave - 67th Ave	Reconstruct SR 531 (172nd St) from 43rd Ave to 67th Ave from a 2 lane roadway to a 4 lane roadway. Install roundabouts at the intersections of 43rd Ave, 51st Ave, 59th Ave and 67th Ave	State Highway	1	7735	---	---	---	---	---	$ 39,300,000	WSDOT to determine ROW needs, project fully funded with 2015 Transportation Package ($39.3 mil)
R14B	SR-531 Rehabilitation	Smokey Point Blvd - 43rd Ave	Perform roadway and corridor improvements. Eliminate Left Turn pockets, install solid median.	State Highway	1	2600	---	---				$ 1,300,000	State route, assumes $500/LF for design, permitting, and rehabilitation construction. Does not assume ROW is needed
R15	59th Ave	172nd St - 192nd St	Reconstruct 59th Ave from SR 531 (172nd St) to northern terminus from a 2 lane roadway to a 3 lane roadway	Arterial	2	7440	60	60-75	$754,363	$0	$6,647,825	$7,410,000	Road standard to vary between 3-lane STD and 3-Lane LID
R16A	63rd Ave - North	188th St - SR 531	Construct new 3 lane roadway from SR 531 (172nd St) to 188th St. Construct right-in-right-out intersection control at intersection with SR 531	Arterial	3	5290	70	City Own R/W	$845,049	$0	$7,008,937	$7,860,000	New road, City to acquire ROW as purchase or as development requirement
R16B	63rd Ave - South	SR 531 - 168th St	Construct new 3 lane roadway from SR 531 (172nd St) to 168th St. Construct right-in-right-out intersection control at intersection with SR 531	Arterial	3	1300	70	R/W to be donated	$378,689	$17,193	$1,722,423	$2,120,000	New road, City to acquire ROW as purchase or as development requirement

ARLINGTON TRANSPORTATION 2035 PLAN

ROAD PROJECTS

Project ID	Project Name	Project Limits	Project Description	Street Classification	Street Type	Length (LF)	ROW Width Required (ft)	Current ROW Width (ft)	Design	Right of Way	Construction	Total Project Cost (rounded)	Comments
R17	180th St	59th Ave 3qst- BNSF RR Tracks (63rd Ave)	Construct new 2 lane roadway from 59th Ave to the BNSF railroad tracks	Arterial	4	2055	70	60	$297,372	$0	$2,620,592	$2,920,000	
R18	59th Ave	172nd South - City Limits	Extend 59th Ave from SR 531 (172nd St) to southern city limits from a 2 lane roadway to a 3 lane roadway	Arterial	3	670	65	65 need to acquire	$135,925	$43,496	$766,616	$950,000	Road extension project. Maintain existing road section type with 65' ROW and extend 670' to City Limits.
R19	168th St	43rd Ave E to BNSF RR Tracks	Construct new 3 lane roadway from 47th Ave to BNSF railroad tracks	Arterial	3	7450	70	need to acquire additional	$1,750,143	$840,069	$9,870,809	$12,470,000	New road construction.
R20	51st Ave	172nd St - South City Limits	Reconstruct 51st Ave from SR 531 (172nd St) to southern city limits from a 2 lane roadway to a 5 lane roadway	Arterial	1	2685	110	60	$976,259	$1,775,456	$5,506,101	$8,260,000	Construct 5-lane road to match Marysville road section
R21	47th Ave	172nd St - South City Limits	Construct 3 lane roadway from SR 531 (172nd St) to southern city limits. Install right-in-right-out intersection control at intersection with SR 531	Arterial	4	2065	60	R/W to be donated	$334,880	$0	$2,951,131	$3,290,000	
R22	43rd Ave	172nd St - South City Limits	Construct 3 lane roadway from SR 531 (172nd St) to southern city limits	Collector	4	2670	60	32 need to acquire	$217,623	$991,875	$1,917,798	$3,130,000	Extend existing road to meet Marysville road.
R23	39th Ave Extension	162nd Pl - South City Limits	Construction of 2 lane extention of 39th Ave from 162nd Pl to southern city limits	Residential	5	395	60	need to acquire				$0	+20 years
R24	38th Ave Extension	168nd Pl - 168th St	Construct 2 lane extension of 38th Ave from 168Pl St to 168th St (Project 50)	Residential	5	390	60	need to acquire				$0	+20 years
R25	39th Ave - South	168th St - 172nd St	Construct 2 lane roadway from 168th St (Project 50) to SR 531 (172nd St)	Arterial	2	1025	60	City owns R/W	$130,251	$0	$1,221,100	$1,360,000	
R26	39th Ave - North	172nd St - 173rd St	Construct 2 lane roadway from 173rd St (Project 43) to SR 531 (172nd St)	Arterial	2	635	60	need to acquire	$80,692	$503,873	$711,097	$1,300,000	
R27	173rd St (PH3)	43rd Ave - 51st Ave	Construct 2 lane roadway from Airport Blvd (51st Ave) to 43rd Ave	Arterial	3	2640	70	City owned	-	-	-	$1,685,270	Previous Estimate $1,685,270 (Perteet 2014). Assumed adjusted to 2015 costs by City.
R28A	173rd (PH 1)	Smokey Point Blvd - Airport Blvd	Construct 2 lane roadway from Smokey Point Blvd to Phase 2	Arterial	3	1925	60	acquired	$0	$0	$1,866,175	$1,866,175	Road design and R/W complete. Costs provided by the City.
R28B	174th (PH 2)	Smokey Point Blvd - Airport Blvd	Construct 2 lane roadway from Phase 1 to 43rd Ave	Arterial	3	620	60		$5,826	$100,000	$815,637	$930,000	
R29	43rd Ave Extension	North end of 43rd Ave - Airport Blvd	Construct 2 lane extension of 43rd Ave from northern terminus of 43rd Ave to Airport Blvd	Arterial	4	375	60	City owns R/W	$51,867	$0	$457,080	$510,000	
R30	Smokey Point Blvd	172nd St - 188th St	Reconstruct Smokey Point Blvd from SR 531 (172nd St) to 188th St from a 2 lane roadway to a 5 lane roadway	Arterial	1	5450	110	80	$1,138,997	$1,441,525	$10,393,351	$12,980,000	Existing ROW averages between 70', 80' and 100'; use 80' as an average.
R31	WSDOT rest area connector roads (east & west)		Conduct a study of the viablity of constructing roadways to connect the local street system to the rest area interchange	Arterial	4		60	undetermined	$0	$0	$0	$60,000	
R32	188th I-5 Bridge	Smokey Point Blvd - 27th Ave	Construct 2 lane bridge over I-5 from Pecnik Rd terminus to 27th Ave. Reconstruct Pecnik Rd.	Arterial	3	850	???	Additional R/W needed	$135,783	$337,238	$5,838,021	$6,320,000	Does not include on/off ramps
~~R33~~	~~23rd Ave~~	~~200th St - 188th St~~	~~Reconstruct 23rd Ave from 200th St to 188th St~~	~~Arterial~~	~~3~~	~~4025~~	~~70~~	~~40~~ ~~County ROW~~					CANCELED, NOT EXPANDING WEST OF I-5
~~R34~~	~~188th St~~	~~I-5 bridge - 19th Ave~~	~~Reconstruct 188th St from 19th Ave to I-5 bridge (Project 47)~~	~~Arterial~~	~~3~~	~~2835~~	~~70~~	~~40-50~~ ~~County ROW~~					CANCELED, NOT EXPANDING WEST OF I-5
R35	168th St	43rd Ave - Smokey Point Blvd	Construct 3 lane roadway from Smokey Point Blvd to 47th Ave (Project 36)	Arterial	3	2545	70	Additional R/W needed	$601,606	$2,356,034	$3,609,635	$6,570,000	
R36	188th St	67th Ave - 59th Ave	Reconstruct 188th St from 59th Ave to 67th Ave from a 2 lane roadway to a 3 lane roadway	Arterial	4	3715	60	30 need to acquire	$513,197	$0	$4,971,598	$5,490,000	
R37	172nd St NE	67th Ave NE - SR-9	Reconstruct SR 531 (172nd St) from 67th Ave to SR 9 from a 2 lane roadway to a 4 lane roadway.	State Highway	1	6770	100	65-85	$1,575,395	$1,790,665	$14,375,478	$17,750,000	
R38	Tveit Rd	Stillaguamish Ave - City Limits	20 years+									$0	+20 years

ARLINGTON TRANSPORTATION 2035 PLAN

ROAD PROJECTS

Project ID	Project Name	Project Limits	Project Description	Street Classification	Street Type	Length (LF)	ROW Width Required (ft)	Current ROW Width (ft)	Design	Right of Way	Construction	Total Project Cost (rounded)	Comments
R39	186th St	City Limits ease - 186th (paved road surface)	20 years+									$0	+20 years
R40	Cross Airport Tunnel	188th St NE - 47th Ave NE	20 Years+									$0	+20 years
												$0	
												$190,450,492	

TRAIL_NO	NAME	PROJECT LIMITS	DESCRIPTN	Length (ft)	Design	Right of Way	Construction	Total Project Cost (rounded)	COMMENTS	
T-1	168th Trail	51st Ave to 43rd Ave	12-ft wide, 3,650-ft long paved multiuse trail to be completed as part of road project R19	3,650					Funded in project R19	
T-2	173rd Trail	Smokey Pt Blvd to Airport Blvd	12-ft wide, 2,210-ft long paved multiuse trail to be completed as part of road project R28A & R28B	2,210					Funded in project R28 A & B	
T-3	188th Trail	Smokey Pt Blvd to Airport Blvd	12-ft wide, 1,550-ft long paved multiuse trail to be completed as part of road project R2	1,550					Funded in project R2	
T-4	204th Trail	Centennial Trail at 69th Ave to SR-9	12-ft wide, 2,075-ft long paved multiuse trail, trail under planning & design (partially funded)	2,075					Funded in project R7 & R9, in design & planning	
T-5	43rd Trail	172nd St to 168th St	12-ft wide, 1,820-ft long paved multiuse trail to be completed as part of road project R2	1,820					Funded in project R22	
T-6	51st St Trail	172nd St to City Limits	12-ft wide, 1,590-ft long paved multiuse trail to be completed as part of road project R20	1,590					Funded in project R20	
T-7A	63rd Trail #1	Cemetery Rd to 188th St	12-ft wide, 5,240-ft long paved multiuse trail	5,240	$159,366	$9,960	$1,495,089	$1,670,000		
T-7B	63rd Trail #2	188th St to SR-531	12-ft wide, 5,200-ft long paved multiuse trail to be completed as part of road project R16A	5,200					Funded in project R16A	
T-8	188th Trail	67th Ave to 66th Ave	12-ft wide, 360-ft long paved trail connecting existing 188th St trail to Centennial Trail	360	$16,478	$8,239	$168,707	$200,000		
T-9	172nd Trail #1	43rd Ave to 67th Ave	12-ft wide, 7, 710-ft long paved multiuse trail with 2020 construction start, part of project R14A	7,710					Funded in projects R14B, construct in 2020	
T-10	74th Trail	200th St to 204th St	12-ft wide, 2,000-ft long paved multiuse trail to be completed as part of road project R7	2,000					Funded in projects R7 & R9, in design	
T-11	Arl. Valley Road Trail	67th Ave to 200th St	12-ft wide, 4,000-ft long paved multiuse trail to be completed as part of AVR project R7	4,000					Funded in projects R7 & R9, in design	
T-12	Bluff Trail	188th St to Smokey Pt Blvd	12-ft wide, 2,900-ft long unpaved trail along bluff in natural setting with overlook	3,500	$66,994	$4,187	$582,430	$660,000	Trail length 3,500-ft	
T-13	Burke Trail	Trail to trail connection	From Centennial Trail to Eagle Trail, construct with Haller Park project	450					Funded - part of Haller Park project	
T-14	Gilman Trail	Trail to Park connection	12-ft wide, 2,500-ft long paved trail from Centennial Trail to Country Charm Park	2,500	$37,999	$0	$490,511	$530,000	Trail length 2,500-ft. Broadway crossing	
T-15	Country Charm Access	Trail to Park connection	10-ft wide, 800-ft long unpaved trail connecting Country Charm Park to Twin Rivers Trail (T17)	1,100	$27,935	$11,174	$208,254	$250,000	Trail len 1,100-ft, State bridge crossing	
T-16	Cemetery connector	Centennial Trail to SPB Trail	10-ft wide, 15,140-ft multiuse trail from Cent. Trail at 204th St to Smokey point Blvd	15,140	$281,968	$25,633	$3,821,945	$4,130,000	Trail len 15,140-ft; 5,250 ft part of R2	
T-17	Twin Rivers Trail	Trail to Park connection	10-ft wide, 1,100-ft paved trail connecting Country Charm trail (T15) to Twin Rivers Park	895	$70,088	$38,230	$491,437	$600,000	Trail length 895-ft, unpaved trail seg	
T-18	Edgecombe Trail (A)	172nd St to Marysville	2,100-ft long unpaved trail connecting to Centennial &172nd St trails, parallels realigned Edgecombe Crk	2,150	$80,013	$29,772	$610,703	$730,000	Trail length 2,150-ft, unpaved trail seg	
T-19	Edgecombe Trail (M)	Marysville Trail	Marysville's extension of Edgecombe Trail (T18) starting in Arlington *(see Marysville plan)*	0					Marysville project	
T-20	Frontage Trail	Trail to Park connection	10-ft wide, 5,475-ft paved trail connecting Centennial Trail to Portage Creek Wildlife Refuge	5,475					Funded in project R4, trail to run along Portage Creek	
T-21	Gleneagle Trail	Neighborhood Trail	10-ft wide, 6,100-ft trail connecting Centennial Trail thru Gleneagle neighborhood, passing two schools	6,100	$156,872	$96,537	$2,161,272	$2,420,000	Trail length 6,100-ft,	---
T-22	172nd Trail #2	67th Ave to 89th Ave	12-ft wide, 7,250-ft long trail connecting 172nd Ave #1 (T09) trail to 89th Ave Trail (T29), projects R37 & R13	7,250					Funded in project R37 & R13	
T-23	Highland Dr	S Olympic to Hospital	12-ft wide, 2,200-ft long trail connecting Hospital to S Olympic Trail (T28), included with project R5	2,200					Funded in project R5	
T-24	Island Crossing Trail	Trail & SW system	Combined paved trail and sidewalk system within City and state right-of-way, included with project I1	750					Funded in project I1	
T-25	S Olympic Trail	204th St to Highland Dr	12- ft wide, 2,575-ft long paved trail from 204th St Trail (T04) to Highland Dr Trail (T26)	2,610	$166,353	$90,738	$1,241,339	$1,500,000	Trail length 2,610-ft,	---
T-26	Smokey Pt Blvd Trail #1	35th Ave to	12-ft wide, 9,150-ft long paved trail from SPB Trail #2 at 35th Ave and extending to trail and to Island Crossing Trail (T24), part of road project R1	9,150					Funded in project R1	
T-27	Smokey Pt Blvd Trail #2	172nd St to 35th Ave	12-ft wide, 4,000-ft long paved trail from SPB Trail #1 to Smky Pt Transit Center, 173rd St Trail (T02), and S. City Trail (T28), part of road project R30	4,000					Funded in project R30	
T-28	South City Trail	172nd St to 164th St	12-ft wide, 4,000-ft long paved trail connecting SPB Trail #2 to Country Manor trail	4,000	$298,771	$152,564	$2,096,313	$2,550,000	Trail length 1,800-ft,	---
T-29	89th Trail	172nd St to Crownridge Blvd	12-ft wide, 5,950-ft paved trail from 172nd St to Crownridge, part of projects R12, R39, and R11	5,950					Funded in projects R12, R39 & R11	
			Miles of Trail Projects	**20.95**				**$ 15,240,000**		

L Revenue and Expenditure Forecast

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City of Arlington

Revenue and Expenditure Forecast

Annual Revenue (in 2015 dollars)

7% Annual Increase (uncompounded)

	Growth Multiplier	Forecasted Revenue
2015	1.000	$8,023,081
2016	1.070	$8,584,696
2017	1.140	$9,146,312
2018	1.210	$9,707,928
2019	1.280	$10,269,543
2020	1.350	$10,831,159
2021	1.420	$11,392,774
2022	1.490	$11,954,390
2023	1.560	$12,516,006
2024	1.630	$13,077,621
2025	1.700	$13,639,237
2026	1.770	$14,200,853
2027	1.840	$14,762,468
2028	1.910	$15,324,084
2029	1.980	$15,885,700
2030	2.050	$16,447,315
2031	2.120	$17,008,931
2032	2.190	$17,570,547
2033	2.260	$18,132,162
2034	2.330	$18,693,778
2035	2.400	$19,255,394
Sum of 2016 through 2035		**$278,400,898**

Operations/Other cost (in 2015 Dollars)

5.6% Annual Increase (uncompounded)

	Growth Multiplier	Forecasted Expenditure
2015	1.000	$2,691,267
2016	1.056	$2,841,978
2017	1.112	$2,992,689
2018	1.168	$3,143,400
2019	1.224	$3,294,111
2020	1.280	$3,444,822
2021	1.336	$3,595,533
2022	1.392	$3,746,244
2023	1.448	$3,896,955
2024	1.504	$4,047,666
2025	1.560	$4,198,377
2026	1.616	$4,349,088
2027	1.672	$4,499,799
2028	1.728	$4,650,510
2029	1.784	$4,801,221
2030	1.840	$4,951,932
2031	1.896	$5,102,643
2032	1.952	$5,253,354
2033	2.008	$5,404,065
2034	2.064	$5,554,776
2035	2.120	$5,705,487
Sum of 2016 through 2035		**$85,474,654**

Annual Maintenance Cost (in 2015 Dollars)

10.5% Annual Increase (uncompounded)

	Growth Multiplier	Forecasted Expenditure
2015	1.000	$648,580
2016	1.105	$716,681
2017	1.210	$784,782
2018	1.315	$852,883
2019	1.420	$920,984
2020	1.525	$989,085
2021	1.630	$1,057,186
2022	1.735	$1,125,287
2023	1.840	$1,193,388
2024	1.945	$1,261,489
2025	2.050	$1,329,590
2026	2.155	$1,397,691
2027	2.260	$1,465,792
2028	2.365	$1,533,893
2029	2.470	$1,601,994
2030	2.575	$1,670,095
2031	2.680	$1,738,196
2032	2.785	$1,806,297
2033	2.890	$1,874,397
2034	2.995	$1,942,498
2035	3.100	$2,010,599
Sum of 2016 through 2035		**$27,272,808**

2016-2035 Revenue Projection Summary

Total revenue	$278,400,898
Less Maintenance	-$27,272,808
Less Operation/Other	-$85,474,654
Net Revenue for Roadway and Intersection Construction	**$165,653,436**

Project Cost Summary

Intersection	$22,591,550
Roadway	$200,790,492
Project Cost Total	**$223,382,042**
Less Developer Cost	-$35,523,500
Less SR 531 widening	-$39,300,000
Total City Funding Requirement for 2035 Plan Projects	**$148,558,542**

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M Public Comments and Responses

Comment Matrix is still Draft with some entries not yet completed

City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

Review Phase: Transportation Agency Review Draft Issued July 2017 [to be revised to Final based on these responses to agency and public comments]
Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

No.	Page No.	Section Paragraph No.	Agency Comment	Commenter Name	City Response (specific ext revisions in bright red font)	For PDS comments only, PDS reply to City response	City Responder Name	City Reviewer Name	Implementation Date	Implementation Initials
Responses to City of Arlington Planning Commission Comments made during a Workshop on 8/1/2017										
1		General	My notes from last night's meeting showed only two comments from the Planning Commission: ... Please let me know if there is any additions or correction to the comments	James Kelly, PW Director, email to Bruce Angell, Chair	We understand Planning Commission comments at the workshop were limited to the two requests listed below.		MW	JK	10/30/17	MW
2		General	1. Please edit narrative text in Land Use sections of Water, Sewer and Transportation plan to make sure it is consistent with what is stated in City's Comprehensive Plan.	Bruce Angell, Chair	A determination of consistency between planning documents that are in preparation is an iterative process. The GMA Comprehensive Plan appears to have received more comprehensive agency comments than did the WSP (e.g., PSRC), so we are waiting for final revisions to the GMA comp plan before beginning a final review and making any necessary corrections. Also, although it is not as true for Land Use as other technical subject matter, plans adopted by reference within the GMA comp plan often contain more detail that is only summarized in the GMA plan, so the absence of some information in the GMA comp plan should not be construed as inconsistent with its adopted, referenced plans.		MW	JK	10/30/17	MW
3		General	2. After MU Overlay zoning is adopted, please revisit Water, Sewer, and Transportation modeling to make sure area population projections are consistent.	Bruce Angell, Chair	We will revisit your concern after final revisions to the GMA comp plan are completed. However, we are fairly certain that the water modeling results and their implications are within the precision and limits of a wide and reasonable range of population projections. For example, removing UGA expansion west of I-5 from consideration and reallocating more than 2,200 persons across the 342 pressure zone (generally Old Town plus city limits west of 67th Avenue), did not result in any new capital improvement projects, and only removed the projects situated west of the freeway.		MW	JK	10/30/17	MW
4										
Responses to PSRC Comments on the Transportation 2035 Plan made 8/2/2017 during a phone call with Public Works Director Jim Kelly, per Jim Kelly email documentation										
1		General	I was on a conference call with Reid and Erika Harris (PRSC Planning) this afternoon discussing comments to elements in the City's recently submitted Comprehensive Plan. After that discussion, Reid exited the call and I continued talking with Erika about the T-2035 Plan, comments are as follows	James Kelly, PW Director, phone conversation with Erika Harris, PSRC			MW	JK	10/30/17	JK
2			PRSC would like specific information relating population increase and employment increase used in the modeling and traffic forecasting (information to be added to section 5.1.2).	Erika Harris, PSRC Planning	The 2035 household and employment data represents the PSRC growth forecast for the greater model area as reconciled with population and employment forecasts that were used by SnoCo in modeling Arlington's buildable lands reconciliation in 2016		JK	MW	10/30/17	JK
3		1.8	In section 1.8 we referenced Vision 2030, should be Vision 2040.	Erika Harris, PSRC Planning	Concur. Correction has been made.		JK	MW	10/30/17	JK
4		1.4	PRSC requested greater clarification between 20-year TIP (long term) and 6-year TIP (short term) in section 1.4.	Erika Harris, PSRC Planning	Greater detail was included in section 1.4.1 providing greater clarification between the 20-year TIP (long term) and 6-year TIP (short term)		JK	MW	10/30/17	JK
5			Continue with multimodal plan as referenced in T-2035 Plan. Schedule?	Erika Harris, PSRC Planning	The City is first moving forward with a "Complete Streets" plan and then will pursue the Multimodal Plan.		JK	MW	10/30/17	JK

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			Responses to Public Comments made during the Public Hearing before the City of Arlington Planning Commission on 8/15/2017							
1		General	Public Hearing Notes were obtained from Kristin Foster, City of Arlington Community and Economic Development on	Bruce Angell, Chair			MW	JK	10/30/17	MW
2		General	Clarification as to why Brekhus/Beach is a focus area in the Transportation Plan and not the Water and Sewer Plans?	Commissioner McDonald	Brekhus/Beach was mistakenly included as a focus area in the Transportation 2035 Plan and has been removed from applicable maps and text.		MW	JK	10/30/17	MW
3		General	What the definition is of signaled vs. un-signaled intersections, and is more curious about an un-signaled intersection. What category does a round-a-bout fall into?	Commissioner Levesque	Round-a-bouts have no automated signals and associated infrastructure with which to control the flow of traffic, and therefore are considered un-signaled intersections.		MW	JK	10/30/17	MW
4			Attorney representing Mr. Phillips, Ms. Heigart, and Mr. Pitman of the Brekhus/Beach area.	Dannon Traxler	Noted		MW	JK	10/30/17	MW
5			Comments are condensed for all three Public Hearings as the comments are essentially the same for all	Dannon Traxler	Noted. Thank you.		MW	JK	10/30/17	MW
6			Received an 11 page letter from Mr. Peiffle at the end of the business day today	Dannon Traxler	Noted. ("Today" would be 8/15/2017.)		MW	JK	10/30/17	MW
7			The gist of the letter seems that the City is opposed to our position on the plans that the City needs to complete adequate planning for infrastructure	Dannon Traxler	Noted. Thank you.		MW	JK	10/30/17	MW
8			Last time when commenting on the 2015 Plan update when adding King Thompson, and trying to put all the future growth into that area, we stated “Hey you can’t do that, that’s not GMA compliant because we’ve got this area over here called Brekhus/Beach that you can put your growth.” Staff and the City Attorney didn’t agree with us, but that is the reason we are all here. Snohomish County didn’t agree with the City and said that the City can’t expand in that area (King Thompson) because you do have adequate land capacity to put your growth	Dannon Traxler	Noted. Thank you.		JK	MW	10/30/17	MW
9			The City has to plan for the 20 year horizon to meet the growth projections looking at land capacity analysis and Brekhus/Beach is part of that, and these are planning documents to meet current and future population needs	Dannon Traxler	Concur.		JK	MW	10/30/17	MW
10			This isn’t just about capacity, it’s about funding infrastructure to get that capacity to the land that needs it so you can meet your growth projections	Dannon Traxler	Concur.		JK	MW	10/30/17	MW
11		WSP Appendix S	The Comp Plan needs to show infrastructure planning for that entire 20 year period, how it’s going to be financed, and it needs to be more than conceptual	Dannon Traxler	The roads, water and sewer layouts in WSP Appendix S demonstrate conceptual infrastructure connection points based on this first conceptual layout. The City will continue to work with Brekhus/Beach representatives as development		JK	MW	10/30/17	MW
12			We do see conceptual planning for the Brekhus/Beach area with internal roads, water and sewer infrastructure, and potential connection points, but that’s not real planning on how this is actually going to develop to Brekhus/Beach build out	Dannon Traxler	This is a conceptual layout that was developed per input from Brekhus/Beach representative to identify future connections to City infrastructure (water, sewer and streets).		JK	MW	10/30/17	MW
13			It was stated by staff at the last meeting that you’re only planning for 200 plus units at Brekhus/Beach for the 20 year planning period, and that’s not the case. In your reconciliation process it was agreed with Snohomish County that you would be building to 606 units, and that is part of satisfying your growth projections. So, within this 20 year planning period you need to show how that is obtainable, and that isn’t occurring in your plan. There does need to be some sort of financial component showing how over the next 20 years this can be built out	Dannon Traxler	The capital planning process is naturally much shorter than the 20 year planning horizon under GMA.		JK	MW	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

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Date: 10/31/2017

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	Page No.	Paragraph No.							Date	Initials
14			A letter was sent to Planning Commission with citations and including RCWs to back up previous comments (see Traxlor letter dated August 4, 2017)	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JK	MW	10/30/17	MW
15			Show an analysis of what funds the City is going to provide vs. what funds the private developer is going to provide	Dannon Traxler	We cannot project infrastructure designs or associated costs if there is no development plan that will connect into the City's infrastructure system (water,		JK	MW	10/30/17	MW
16			We understand that the developer is going to have significant amount of the improvements especially on the property itself within Brekhus/Beach and all the internal systems, but the City is going to have to participate in financing some of the extension to get the infrastructure to the land itself	Dannon Traxler	Noted. Thank you.		JK	MW	10/30/17	MW
17			There needs to be some indication in this plan that the City can provide urban governmental services by the end of the 20 year planning period	Dannon Traxler	The water, sewer, and transportation plans show that these infrastructure services will be available at adequate service levels for the 20 year planning period.		JK	MW	10/30/17	MW
18			The City's Capital Facilities Plan doesn't identify the needed funding.	Dannon Traxler	The water, sewer, and transportation capital plans do show adequate financial funding for planned improvements.		JK	MW	10/30/17	MW
19			The Transportation Plan has 280 million dollars over the next 20 years. Why can't some of that money be earmarked towards getting some extensions to Brekhus/Beach so you can satisfy your growth projections over the next 20 years?	Dannon Traxler	Based on Brekhus/Beach population projections contained in the City's General Comprehensive Plan, the transportation system servicing the Brekhus/Beach area is adequate to serve a development based on the conceptual design included in Appendix T of the transportation plan.		JK	MW	10/30/17	MW
20			A financing analysis was to be provided at the Workshop and that was ignored	Dannon Traxler	Financial planning is included in the water, sewer, and transportation plans.		JK	MW	10/30/17	MW
21			The letter received from the City Attorney at 5:06 pm wasn't appreciated when a meeting is being held at 7:00 pm	Bob Phillips	Noted. The City apologizes for the late notice. Notice of the public hearing was advertised as required by law.		JK	MW	10/30/17	MW
22			Believes that Mr. Pieffle misunderstand what they are asking for	Bob Phillips	Your opinion is noted.		JK	MW	10/30/17	MW
23			We are asking what is required by the GMA, which is to bring services to the property, not into the property. Plan for roads and support Fire and Police as the growth potentially moves into the area	Bob Phillips	Based on Brekhus/Beach population projections contained in the City's General Comprehensive Plan and the conceptual Brekhus/Beach development layout, there are adequate existing or planned city services (water, sewer, and transportation).		JK	MW	10/30/17	MW
24			There is interest in the property, but there is a TDR program in place that means nothing. No one is willing to look when a TDR program is in place, and is under the impression that this was to be abolished last year	Bob Phillips	The TDR program will be repealed and removed from the AMC upon adoption of the GMA Comprehensive Plan by the City Council.		JK	MW	10/30/17	MW
25			We're not looking for infrastructure to the Brekhus/Beach area or for you to build roads per say. Can't expect someone to buy 20 acres, develop it, but plan for 300	Bob Phillips	Noted. Thank you.		JK	MW	10/30/17	MW
26			Would like everyone to be on the same page	Bob Phillips	Concur.		JK	MW	10/30/17	MW
27			Asking for the City to provide what it is responsible for	Bob Phillips	Concur. This is the City's intent.		JK	MW	10/30/17	MW
28		Recommendation	Planning Commission voted 4-0-0-1 on 8-15-2017 to recommend to City Council approval of the 2017 Amendment to the 2015 WSP (4 commissioners in favor; 1 commissioner abstaining)	Planning Commission	Thank you.		MW	JK	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

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			Responses to Comments made in Langabeer & Traxler, P.S., letter dated 7/21/2017							
1		General	I am writing on behalf of my clients Mr. and Mrs. Robert Phillips, Mr. Mike Pitman, and Ms. Jody Heigert, with regard to the City of Arlington's (City) 2017 Comprehensive Plan Update (Comp Plan Update) and the City 's proposed changes (Draft Plan) related to the Brekhus/Beach Subarea. This letter follows two prior submissions to the City's Planning Commission and the City Council which related to the 2015 Comp Plan Update.	Dannon Traxler	Responses here will focus on letters received after publication of the 2017 update of the GMA Comprehensive Plan and the Transportation 2035 Plan, and the 2017 Amendments of the Water (WSP) and Sewer (GSP) plans, and not the two 2015 letters.		MW	JK	10/30/17	MW
2			As you may know, my clients have a pending appeal before the Growth Management Hearings Board of the 2015 Comprehensive Plan. We filed that Petition for Review in September 2015, and it has essentially been on hold since that time, pending the outcome of the revisions to the Draft Plan that the Planning Commission is reviewing now. The issues in our appeal, to summarize, pertained to the City's plan to accommodate projected growth by expanding the UGA into the King-Thompson area, the unworkable TDR overlay on Brekhus/Beach which has prevented the accommodation of higher density development in that area, and the failure of the City to plan for and identify financing components of capital facilities infrastructure to Brekhus/Beach, including the provision of roads and water and sewer infrastructure to serve development there.	Dannon Traxler	We acknowledge your appeal of the 2015 GMA Comprehensive Plan (and the plans it adopts by reference) has been "on hold" pending the completion of the 2017 Update and Amendments. We understand the first two of your three issues--UGA expansion west of I-5 and the TDR overlay on the Brekhus/Beach neighborhood are satisfactorily addressed in the revised (2017) documents. We further understand that your third issue--lack of development of municipal infrastructure to facilitate development at Brekhus/Beach--remains unsettled as the revised documents move toward adoption by City Council.		MW	JK	10/30/17	MW
3			We placed the appeal on hold with the hope that the Draft Plan would address (and moot out) the big issues in our appeal, and it has, to a certain extent. We fully agree with the City's plan to remove ARL3 from the Snohomish County docket so that the King-Thompson area is not included in the UGA. We also agree with the City's decision to remove the TOR overlay from Brekhus/Beach. We recognize that the removal will give the property owners more options. We thank you for your efforts in these respects, as it will allow us to dismiss some of the issues in our appeal.	Dannon Traxler	Concur. See the response immediately above.		MW	JK	10/30/17	MW
4			There are issues that remain, however. First, we do not agree with the City's decision to make up for the density capacity it won't be getting as part of the King-Thompson expansion by cramming a large part of the planned growth over the 20 year planning period into multi-family developments, which it seems from reviewing public comments over the course of this process, many of the people in this community oppose. The City should be placing at least some of that density in the available land at Brekhus/Beach and ensuring that adequate infrastructure can be installed within the 20-year planning period to support that kind of development in the area. We are deeply troubled by the fact that the reconciliation process with Snohomish County yielded an agreement of 606 units for the Brekhus/Beach area based on a development density of 5.5 dwellings per acre. This seems to be at least part of the resolution for accommodating the population projection. We do not understand how this density can be used when there's no assurance that such a density can be achieved within the planning period without adequate infrastructure. This is not GMA-compliant.	Dannon Traxler	We understand your lack of agreement. However, the City is required to make GMA and capital planning decisions in the context of many competing economic demands on the City. The reconciliation process with the County recognizes that growth is most likely to occur first in those areas which are already ready for growth. This is expected and required under GMA.		JK	MW	10/30/17	MW

Comment Matrix is still Draft with some entries not yet completed

City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

Review Phase: Transportation Agency Review Draft Issued July 2017 [to be revised to Final based on these responses to agency and public comments]

Contact: James Kelly and Mike Wolanek (City)

Date: 10/31/2017

No.	Section		Agency Comment	Commenter Name	City Response (specific ext revisions in bright red font)	For PDS comments only, PDS reply to City response	City Responder Name	City Reviewer Name	Implementation	
	Page No.	Paragraph No.							Date	Initials
5			The City concedes that the Draft Plan does not allow Brekhus/Beach to develop up to its OMA-required potential. On page 4-18 of the Draft Plan, the City states that the area is assumed to be a part of the buildable lands inventory. The City also states: "The City faces a paradox where the GMA requires that lands within Urban Growth Areas be developed at urban densities (4+ houses per acre), but there is no market or infrastructure financing available to achieve that level of development. Only a density of 20,000 square feet per acre is permissible without sewer or other facilities." Thus, in its own Comp Plan, the City is stating that it is not complying with GMA requirements in its treatment of Brekhus/Beach as far as density goes, while at the same time agreeing to use an unrealistic 5.5 acre density for growth capacity at Brekhus/Beach to satisfy population projections. This creates an internal inconsistency within the plan, which is also noncompliant with the GMA.	Dannon Traxler	See prior response immediately above.		JK	MW	10/30/17	MW
6			We are also concerned that the revised plan does not do any actual capital facilities planning for Brekhus/Beach, nor does it identify current or future funding mechanisms for such infrastructure, leaving an area that is within the City limits, to be fully funded by private property owners. While the "high-level master plan" includes some big picture mapping and discussion of roads, and water and sewer service, and a 2009 arterial study identifies potential transportation improvements, this does not constitute actual capital facilities planning and does nothing to ensure that this property which is de facto "urban" in nature will be developed to OMA-required densities within the planning period. For example, we see nothing in the section on Future Transportation Needs identifying any road projects that will aid in ensuring the build-out of Brekhus/Beach within the planning period even at only 5.5 units per acre. We also do not understand why the City isn't seeking any alternative funding mechanisms for such infrastructure, such as government grants and EDI funds.	Dannon Traxler	The water, sewer, and transportation plans use the population densities provided in the City's GMA Comprehensive Plan to develop a capital facilities improvement and financing plan. Based on the provided population densities and the conceptual Brekhus/Beach development plan, the existing and planned facilities will be adequate to meet the needs of the future population.		JK	MW	10/30/17	MW
7			The heart of the GMA is the requirement for coordinated and comprehensive planning. Infrastructure must match and support urbanization. The costs of supplying urban services are to be taken into account at the time the urban growth boundary is extended or capacity is increased. GMA guidelines explain: The obligation to provide urban areas with adequate public facilities is not limited to new urban areas. Counties and cities must include in their capital facilities element a plan to provide adequate public facilities to all urban areas, including those existing areas that are developed, but do not currently have a full range of urban governmental services or services necessary to support urban densities. WAC 365-196-320(1)(e).	Dannon Traxler	The water, sewer, and transportation plan meet the requirements of WAC 365-196-320(1).		JK	MW	10/30/17	MW
8			The City's excuse is that "the topography and geology of the area make the installation of infrastructure such as roads and sewers very costly." The revised plan also identifies "numerous planning issues" with the Brekhus/Beach Subarea. The fact is, Brekhus/Beach is within the City limits, and per GMA requirements, the City is required to plan for growth. Capital facilities planning and financing are part and parcel of that	Dannon Traxler	The water, sewer, and transportation plans use the population densities provided in the City's GMA Comprehensive Plan to develop a capital facilities improvement and financing plan. Based on the provided population densities and the conceptual Brekhus/Beach development plan, the existing and planned facilites will be adequate to meet the needs of the future population.		JK	MW	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

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Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

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9			Finally, we are also troubled by the City's imposition of a high-level master plan over Brekhus/Beach which would seem to hold hostage those folks with smaller parcels who may want to develop to higher level densities before one wealthy developer can come in and buy up the whole area. We would like some assurance from the City that property owners within Brekhus/Beach can come up with smaller-scale development plans consistent with the high-level plan and still be allowed to develop at higher densities. That only makes sense. Capital facilities planning by both the City and the property owners would of course need to be a necessary component of that.	Dannon Traxler	The City is open to work with Brekhus/Beach as a whole comprehensive development or as individual parcel developments. The development layout included in the water, sewer, and transportation plans was developed as a joint exercise with the City and a representative from Brekhus/Beach.		JK	MW	10/30/17	MW
10			We look forward to working with you cooperatively on these issues and to help draft revisions that are agreeable to all parties and that are GMA-compliant. Please include me on your email list for all notifications related to your 2017 Comp Plan Update.	Dannon Traxler	Noted. Thank you.		JK	MW	10/30/17	MW
Responses to Comments made in Langabeer & Traxler, P.S., letter dated 7/31/2017										
1		General	I am writing on behalf of my clients Mr. and Mrs. Robert Phillips, Mr. Mike Pitman, and Ms. Jody Heigert, with regard to the City of Arlington's (City) 2017 Updates to its Comprehensive Water and Sewer, and Transportation Plans as they relate to the Brekhus/Beach Subarea. This letter follows our prior submission to the Planning Commission on July 21, 2017 related to the 201 7 Comprehensive Plan Update and our attendance at your July 18, 201 7 Planning Commission meeting.	Dannon Traxler	Noted. Thank you.		MW	JXK	10/30/17	MW
2			We testified at the public hearing about our pending appeal before the Growth Management Hearings Board of the City's 2015 Comprehensive Plan and explained that we placed the appeal on hold with the hope that the updates to your current Plan would address the big issues in our appeal. We agreed that this update will resolve many of the appeal issues. However, we expressed concern about remaining issues related to the City's failure to properly plan for growth at Brekhus/Beach. Specifically, this iteration of the Comprehensive Plan does not ensure that adequate infrastructure (including water, sewer, and roads) can be installed to Brekhus/Beach within the 20-year planning period to support densities required by the OMA and the City's own Plan. The City does not appear to be doing any actual capital facilities planning for Brekhus/Beach, and it does not identify current or future funding mechanisms for such infrastructure, leaving an area within the City limits to be fully funded by private property owners.	Dannon Traxler	We disagree with this statement. The City has been planning for Brekhus/Beach since 2008, this early work focused on expansion of the wastewater treatment plant and obtaining additional water rights. The City is currently expanding Lift Station #2 that will eventually handle sanitary sewer flows from the Brekhus/Beach development. All of these past efforts and the current effort is fully funded by the City of Arlington. Based on the population densities projected in the City's GMS Comprehensive Plan and the conceptual Brekhus/Beach development plan, the existing and planned facilities will be adequate to meet the needs of the future population.		MW	JXK	10/30/17	MW
3			At that same meeting, we and the Planning Commission were told by City staff that new information was available from Public Works related to infrastructure planning for Brekhus/Beach in the updates for the Water, Sewer, and Transportation Plans and that it was posted online. Staff stated that Public Works was also working on a financing analysis related to that infrastructure which would be available at the Planning Commission' s work session on August 1, 2017. In response, the Planning Commission explicitly directed staff to request that Public Works work on the financing component for the next meeting. We were encouraged by this development.	Dannon Traxler	Noted. Thank you.		MW	JXK	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

Review Phase: Transportation Agency Review Draft Issued July 2017 [to be revised to Final based on these responses to agency and public comments]
Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

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4			The following day, I reviewed the City's website and the online draft updates to the Water and Sewer Plans. I did not see any new information (about infrastructure or otherwise) related to Brekhus/Beach. I first emailed Kristin Foster on July 20, 2017 and asked if she could point me toward the new information on the City's website. She referred me to James Kelly with Public Works.	Dannon Traxler	Noted. Thank you.		JK	MW	10/30/17	MW
5			On July 21, 2017, I emailed Mr. Kelly and asked about Brekhus/Beach planning information and a financing analysis. He responded that same day, stating: ' The 2017 updated Water and Sewer comprehensive plans do not include any Brekhus/Beach infrastructure planning work other than what was included in the 2015 documents." This took me completely by surprise, given what staff stated at the July 18th Planning Commission meeting, so I then emailed Amy Rusko and Marc Hayes and asked for clarification on their statements to the Commission. When I did not receive a response from either one of them, I called and spoke directly with Amy Rusko. She verified staff's statements at the Planning Commission meeting that staff believed new information related to Brekhus/Beach infrastructure and future financing either existed in the new Water and Sewer Plans or was forthcoming, and that staff believed it would also be part of the Transportation Plan update. She said that she did not know why Public Works had not provided it.	Dannon Traxler	Based on the population densities projected in the City's GMA Comprehensive Plan and the conceptual Brekhus/Beach development plan, the existing and planned facilities that were included in the 2015 planning documents (water, sewer, and transportation) are adequate to meet the needs of the Brekhus/Beach population in the planning horizon.		JK	MW	10/30/17	MW
6			This is very troubling. It means that the information the Planning Commission received from staff at its July 18th public hearing was inaccurate, and the Planning Commission voted to send the draft Comprehensive Plan to Council after receiving this information. There is no new information on Brekhus/Beach infrastructure planning in the Water, Sewer and Transportation Plans (and apparently, none is planned), and there is no financing analysis forthcoming. We do not understand this disconnect between Planning and Public Works staff. Misinformation of this sort should not *be* presented to the public during meetings, and it certainly should not be presented to the Planning Commission who is tasked with vetting crucial planning documents for	Dannon Traxler	The water, sewer, and transportation plans include infrastructure improvement and financing plans for any needed infrastructure improvements to meet the population projections contained in the City's GMA Comprehensive Plan and at the service points as identified in the preliminary Brekhus/Beach development plan.		JK	MW	10/30/17	MW
7			As we stated in our testimony to you, infrastructure planning and the identification of mechanisms for funding infrastructure are crucial components in ensuring a OMA-compliant Comprehensive Plan in accordance with RCW 36.70A.1 15 and WAC 365-196-320(1)(e). This is particularly true, since the City's reconciliation process with Snohomish County yielded an agreement of 606 units for the Brekhus/Beach area based on a development density of 5.5 dwellings per acre. There is no infrastructure currently in place to accommodate that level of growth within the planning period, and the City is obligated to correct that deficiency with this Comprehensive Plan update.	Dannon Traxler	The water, sewer, and transportation plans include infrastructure improvement and financing plans for any needed infrastructure improvements to meet the population projections contained in the City's GMA Comprehensive Plan and at the service points as identified in the preliminary Brekhus/Beach development plan.		JK	MW	10/30/17	MW

City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

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Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

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8			Since infrastructure and funding information about areas within the City's urban growth area is necessary for the City's Comprehensive Plan to pass GMA muster, we request that at its August 2nd work session, the Planning Commission direct Public Works to come forward with new Brekhus/Beach planning information before any vote is taken on the Water, Sewer, and Transportation Plans. Since such information was promised to the Planning Commission by Planning staff, we also believe it is appropriate for the Commission to address the discrepancies between City departments to ensure that this process charts a smoother course in the future.	Dannon Traxler	Noted. Thank you.		JK	MW	10/30/17	MW
Responses to Comments made in Langabeer & Traxler, P.S., letter dated 8/4/2017										
1		General	I am writing on behalf of my clients Mr. and Mrs. Robert Phillips, Mr. Mike Pitman, and Ms. Jody Heigert, with regard to the City of Arlington's (City) 2017 Updates to its Comprehensive Water and Sewer, and Transportation Plans as they relate to the Brekhus/Beach Subarea. At the request of Planning staff, I am providing the following legal citations/analysis of the Growth Management Act (GMA) and associated Growth Management Hearings Board decisions related to the GMA requirement that the City plan for infrastructure to serve Brekhus/Beach within the 20-year planning period. This information has previously been submitted to both the Planning Commission and the City Council. The full text of the GMA citations is included on Exhibit A, attached.	Dannon Traxler	In general, please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		MW	JK	10/30/17	MW
2a			The City's most crucial "miss" related to Brekhus/Beach is the OMA requirement that the City include a capital facilities plan element, which requires the City to forecast future needs for capital facilities (these facilities are necessary to allow Brekhus/Beach to develop to its potential) and requires the City to develop a six-year plan to finance the capital facilities. RCW 36.70A.070(3) requires that each Comp Plan include a plan, scheme or design for:	Dannon Traxler	The City did complete a capital facilities plan for water, sewer, and transportation that assed current infrastructure capacities and projected future infrastructure needs based of population projections from the City's GMA Comprehensive Plan. There is a financial section for each capital facilities plan (water, sewer, and transportation).		MW	JK	10/30/17	MW
2b			"(a) An inventory of existing capital facilities owned by public entities, showing the locations and capacities of the capital facilities; (b) a forecast of the future needs for such capital facilities: (c) the proposed locations and capacities of expanded or new capital facilities: (d) at least a six-year plan that will finance such capital facilities within projected funding capacities and clearly identifies sources of public money for such purposes: and (e) a requirement to reassess the land use element if probable funding falls short of meeting existing needs and to ensure that the land use element, capital facilities plan element. and financing plan within the capital facilities plan element are coordinated and consistent ". (emphases added).	Dannon Traxler	See reply above		MW	JK	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

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Contact: James Kelly and Mike Wolanek (City)

Date: 10/31/2017

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3			As far as we can tell, the City has never done any real capital facilities planning for Brekhus/Beach, as required by the GMA. The City has not forecast the future needs for Brekhus/Beach, has shown only very general proposed locations and capacities of infrastructure necessary to serve Brekhus/Beach, and has not included proposed infrastructure for Brekhus/Beach in its six-year financing plan, all despite the fact that Brekhus/Beach is an urban area within the City limits. Instead, the City ignores the capital facilities needs of the area by choosing simply not to recognize or plan for such needs and by calling the area "too difficult" to serve. The GMA doesn't allow for such choices.	Dannon Traxler	The City has completed capital planning (engineering, design and financing) for the Brekhus/Beach area. In 2007/2008 then planned populations for Brekhus/Beach were used to size the wastewater treatment plant upgrade and the amount of water rights that needed to be procured. The same ultimate build-out populations were used in sizing the current (2016/2017) improvements to Lift Station #2.		JXK	MW	10/30/17	MW
4			In addition, the City does not ensure that public facilities were available to serve Brekhus/Beach when it was annexed. The requirement of RCW 36.70A.020(12) is compelling and requires the City to "(e)ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards." (emphasis added). The current version of the Comp Plan is under appeal for the City's failure to plan and finance public facilities for the Brekhus/Beach area, and the City cannot perpetuate this same violation in this next round. Brekhus/Beach is "available for occupancy" because it is within the City limits. Thus, under RCW 36.70A.020(12) the City is bound to plan and finance the infrastructure to serve it, and the City must do so during this planning period.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW
5			In addition, RCW 36.70A.070(6) requires that the City include a transportation element that identifies "..state and local system needs to meet current and future demands." The transportation element also requires financing which must include "(a)n analysis of funding capability to judge needs against probable funding resources." Brekhus/Beach certainly has a "local system need" for roads to serve property that is within the City limits. We cannot see that the City has identified that need in any of its planning documents or done any analysis as to the funding capability of serving the area with roads. Instead, the City dismisses Brekhus/Beach as being too difficult and "too expensive" to serve, despite the fact that the City chose to annex the area. This approach violates RCW 36.70A.070(6). See Bothell, et al v Snohomish County. CPSGMHB Case No. 07-3-0026c, 21, Final Decision and Order (Sep. 17, 2007). GMA Guidelines explain: The obligation to provide urban areas with adequate public facilities is not limited to new urban areas. Counties and cities must include in their capital facilities element a plan to provide adequate public facilities to ***all*** *urban areas*, including those existing areas that are developed, but do not currently have a full range of urban governmental services or services necessary to support urban densities. WAC 365-196-320(1)(e). (emphases added).	Dannon Traxler	Noted. Thank you.		JXK	MW	10/30/17	MW

City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

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Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

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6			It is clear from the Draft Plan that the City has no current or future plans to make good on its annexation of Brekhus/Beach and to properly and responsibly plan for public facility needs (which should have been done years ago). This is unacceptable, since the City is on a GMA- mandated deadline to serve Brekhus/Beach: "(A)reas included in the UGA expansion areas must have adequate urban services available within 20 years of the area's inclusion in the UGA." KCRP VI, 06-3-0007, 11/5/07, at 9. (emphasis added). The City has not even begun to plan for the placement of growth within this urban area within the City limits. The City failed to properly plan for infrastructure when it annexed Brekhus/Beach, and it perpetuates this failure with its most recent Comp Plan review and update. The City's approach is a blatant violation of the	Dannon Traxler	Noted. Thank you.		JXK	MW	10/30/17	MW
7			The onus of properly planning for growth falls on the City and not on individual property owners, and the City's failure to properly shoulder the burden cannot be perpetuated in the current Comp Plan Update without violating the GMA. This is supported by relevant GMHB decisions. For example, in Fallgatter IX v. City of Sultan, CPSGMHB 07-3-0017, FDO (Jun. 29, 2006) at 8- 9, the Board found that "(A jurisdiction's) solely relying on future development to provide major infrastructure, such as sewer, and not planning to have the capacity to provide service to existing development, fails to meet the requirements of the GMA." In addition, the Board came to the conclusion that "...a jurisdiction must ensure that within urban areas there will be adequate and available sewer capacity to serve the existing, un-sewered urban population within the 20-year planning period." Id. Because Brekhus/Beach is within the City limits and the UGA, the City must permit urban densities in the area, and the area is de facto "urban" in nature. Since Brekhus/Beach is urban, the fact that the City has failed to serve the area (and continues to fail to properly plan for it) violates the GMA.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW
8			In Fallgatter IX, the Board found that the city did not comply with RCW 36.70A.020(12)'s and 36.70A.070(3)'s mandate to provide adequate and necessary facilities to support existing and new development within the 20-year planning period. CPSGMHB 07-3-0017, FDO (Jun. 29, 2006) at 8-9. The city's Capital Facilities Plan in that case failed to provide an adequate needs assessment (i.e. current needs, future needs, and expected levels of service) so as to properly document the needed funding to supply these services, both in regard to the funds required as well as the source of the needed funds. Id. at 9. Arlington is similarly guilty: the City's Capital Facilities Plan does not identify the needed funding to develop the infrastructure and services necessary to serve Brekhus/Beach which is an urban area within the City.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW

City of Arlington Transportation 2035 Plan, 2017 Update

Public Comments and City Responses

Review Phase: Transportation Agency Review Draft Issued July 2017 [to be revised to Final based on these responses to agency and public comments]
Contact: James Kelly and Mike Wolanek (City)
Date: 10/31/2017

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9			Similarly, in City of Shoreline, et al v. Snohomish County, Coordinated Case Nos. 09-3- 0013c and 10-3-001 l c, Final Decision and Order (Apr. 25, 2011), the GMHB found that the development regulations enacted by Snohomish County for the Point Wells Urban Center did not adopt a sufficient plan for infrastructure and services. Instead, the regulations established process for developing urban services commitments concurrently with approving project pennit applications. Spokane County tested the same 'wait and see' approach to infrastructure mitigation in Fenske v. Spokane County, arguing that "traffic impacts will be subsequently reviewed and mitigated during the site-specific land use approval process and will be required to meet traffic concurrency at that later point in time."EWGMHB Case No. 10-1-0010, Final Decision and Order (Sep. 3, 2010), at 7-8.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW
10			But the Board in Fenske found that such an approach was unacceptable: "By its very nature, capital facilities planning must be done at the PLAN approval stage as opposed to the PROJECT approval stage in order to effectively provide for the necessary lead time and identification of probable funding sources, and also to inform decision makers and the public as they consider the public infrastructure impacts of proposed comprehensive plan amendments." Id. (emphasis in original). What this means is that the City can't just wait for a developer to make the development of Brekhus/Beach happen and worry about infrastructure needs then. The City must take action NOW.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW
11			Finally, the assertion by Public Works that infrastructure planning and financing for Brekhus/Beach is not necessary because it only has a planned build-out of 200-plus units during this planning period is inaccurate. It is clear in the draft Plan (see p. 5-16) that the reconciliation process with Snohomish County yielded an agreement with the City of 606 units for the Brekhus/Beach area based on a development density of 5.5 dwellings per acre. This seems to be at least part of the resolution for accommodating the population projection. We do not understand how this density can be used when there's no assurance that such a density can be achieved within the planning period without adequate infrastructure. We also do not see anywhere in the draft Plan any reference to an acceptable build-out of only 200-plus units for Brekhus/Beach. This is not GMA-compliant.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW
12			The City concedes that the Draft Plan does not allow Brekhus/Beach to develop up to its OMA-required potential. On page 4-18 of the Draft Plan, the City states that the area is assumed to be a part of the buildable lands inventory. The City also states: "The City faces a paradox where the GMA requires that lands within Urban Growth Areas be developed at urban densities (4+ houses per acre), but there is no market or infrastructure financing available to achieve that level of development. Only a density of 20,000 square feet per acre is permissible without sewer or other facilities." Thus, in its own Comp Plan, the City is stating that it is not complying with GMA requirements in its treatment of Brekhus/Beach as far as density goes, while at the same time agreeing to use an unrealistic 5.5 acre density for growth capacity at Brekhus/Beach to satisfy population projections. This creates an internal inconsistency within the plan, which is also noncompliant with RCW 36.70A.070.	Dannon Traxler	Please refer to the analysis in City Attorney Steven Peiffle's letter dated 8-15-17.		JXK	MW	10/30/17	MW

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City of Arlington Transportation 2035 Plan, 2017 Update

Agency Comments and City Responses

Review Phase: WSP Agency Review Draft Issued July 2017 [to be revised to Final based on these responses to agency comments]
Contact: James Kelly and Mike Wolanek (City)
Dan Burwell (RH2 Engineering)
Date: 8/8/2017

No.	Section		Agency Comment	Commenter Name	City Response (specific ext revisions in bright red font)	For PDS comments only, PDS reply to City response	City Responder Name	City Reviewer Name	Implementation	
	Page No.	Paragraph No.							Date	Initials
24			There is interest in the property, but there is a TDR program in place that means nothing. No one is willing to look when a TDR program is in place, and is under the impression that this was to be abolished last year	Bob Phillips	The TDR program will be appealed and removed from the AMC upon adoption of the GMA Comprehensive Plan by the City Council.		JK	MW	10/30/17	JK
25			We're not looking for infrastructure to the Brekhus/Beach area or for you to build roads per say. Can't expect someone to buy 20 acres, develop it, but plan for 300	Bob Phillips	Noted. Thank you.		JK	MW	10/30/17	JK
26			Would like everyone to be on the same page	Bob Phillips	Concur.		JK	MW	10/30/17	JK
27			Asking for the City to provide what it is responsible for	Bob Phillips	Concur. This is the City's intent.		JK	MW	10/30/17	JK
28		Recommendation	Planning Commission voted 4-0-0-1 on 8-15-2017 to recommend to City Council approval of the 2017 Amendment to the 2015 WSP (4 commissioners in favor; 1 commissioner abstaining)	Planning Commission	Thank you.		MW	JK	10/30/17	JK
Responses to PSRC Comments on the Transportation 2035 Plan made 8/2/2017 during a phone call with Public Works Director Jim Kelly, per Jim Kelly email documentation										
1		General	I was on a conference call with Reid and Erika Harris (PRSC Planning) this afternoon discussing comments to elements in the City's recently submitted Comprehensive Plan. After that discussion, Reid exited the call and I continued talking with Erika about the T-2035 Plan, comments are as follows	James Kelly, PW Director, phone conversation with Erika Harris, PSRC			MW	JK	10/30/17	JK
2			PRSC would like specific information relating population increase and employment increase used in the modeling and traffic forecasting (information to be added to section 5.1.2).	Erika Harris, PSRC Planning	The 2035 household and employment data represents the PSRC growth forecast for the greater model area as reconciled with population and employment forecasts that were used by SnoCo in modeling Arlington's buildable lands reconciliation in 2016		JK	MW	10/30/17	JK
3		1.8	In section 1.8 we referenced Vision 2030, should be Vision 2040.	Erika Harris, PSRC Planning	Concur. Correction has been made.		JK	MW	10/30/17	JK
4		1.4	PRSC requested greater clarification between 20-year TIP (long term) and 6-year TIP (short term) in section 1.4.	Erika Harris, PSRC Planning	Greater detail was included in section 1.4.1 providing greater clarification between the 20-year TIP (long term) and 6-year TIP (short term)		JK	MW	10/30/17	JK
5			Continue with multimodal plan as referenced in T-2035 Plan. Schedule?	Erika Harris, PSRC Planning	The City is first moving forward with a "Complete Streets" plan and then will pursue the Multimodal Plan.		JK	MW	10/30/17	JK

N SEPA Determination of Non-Significance

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SEPA THRESHOLD DETERMINATION
Determination of Non-Significance (DNS)

File Name: Transportation 2035 Plan, 2017 Update

File Number: PLN#364

Lead Agency: City of Arlington, Community and Economic Development Department

Description: The Arlington Transportation 2035 Plan, 2017 Update serves as the transportation element for the City of Arlington's current GMA Comprehensive Plan. The 2017 Update follows Puget Sound Regional Council's (PSRC) integrated long-range growth management, environmental, economic, and transportation strategy contained in VISION 2040.

PSRS's review of Arlington's 2015 GMA Comprehensive Plan identified an inconsistency between the Arlington and the Snohomish County comprehensive plans regarding UGA expansion west of I-5. The City filed a petition in 2014 to expand the UGA west of I-5 and included this proposed expansion area in tis 2015 GMA Comprehensive Plan. After meeting with Snohomish County Planning and Development Services in 2016, this petition was withdrawn.

Population growth previously targeted for the proposed UGA expansion area west of I-5 has been reallocated throughout much of the City through a Mixed Use zoning overlay. The Arlington Transportation 2035 Plan, 2017 Update includes projected transportation and pedestrian movements and needs associated with this population redistribution.

In addition to addressing use of consistent land use assumptions across all plan elements, the 2017 Update also addresses identified gaps in non-motorized transportation planning and in the multiyear transportation financing plan.

The 2017 Update recommendations include more than 50 specific roadway and intersection projects that improve arterial capacity, circulation, and safety. The Plan also relies heavily on non-motorized improvements by expanding its network of sidewalks, trails, bike lanes and expanding use of ADA-approved transitions. It also includes a financial plan that details how these transportation projects will be funded, and summarizes Arlington's capabilities to maintain and preserve these infrastructure improvements into the future.

Location: City of Arlington

Applicant: City of Arlington Department of Public Works

Staff Contact: Amy Rusko, Associate Planner, arusko@arlingtonwa.gov

Date Checklist Prepared: July 14, 2017

Approvals Required: City of Arlington and Puget Sound Regional Council

SEPA Threshold Determination: The City has determined that with the mitigation measures identified herein, this proposal would not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2) (c). This determination was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

Disclaimer: The determination that an environmental impact statement does not have to be filed does not mean there will be no adverse environmental impacts. The City of Arlington codes governing noise control, land use performance standards, construction and improvements of roads, off site road improvement obligations, drainage control, traffic, school, park, stormwater, and utility mitigations, fire protection; and building practices will provide substantial mitigation of the aforementioned impacts.

The issuance of this DNS should not be interpreted as acceptance or approval of this proposal as presented. The City of Arlington reserves the right to deny or approve said proposal subject to conditions if it is determined to be in the best interest of the city and/or necessary for the general health, safety, and welfare of the public to do so.

Date of Determination of DNS: August 2, 2017

Studies Required: SEPA Checklist

Comment Period: There is a 14-day comment period for this DNS. If you would like to comment on this Threshold Determination, written comments must be received prior to 5:00 p.m. on August 19, 2017. The Responsible Official may incorporate any substantial comments into the DNS. If the DNS is substantially modified, it will be reissued for further public review.

SEPA Responsible Official: Marc Hayes, Director of Community and Economic Development

August 2, 2017 | Marc Hayes

DATE | SIGNATURE OF SEPA RESPONSIBLE OFFICIAL

To Appeal a Decision: An agency or person may appeal the City's procedural compliance with WAC Chapter 197-11 (SEPA) for issuance of this DNS. Appeal of the final DNS must be made to the Hearing Examiner within 10 days of the date the DNS is final (see WAC 197-11-390(2) (a)). The DNS is a final DNS when the City issues the land use permit. Appeal of the land use permit must be made to the Hearing Examiner within 14 days of the date the permit is issued.