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MEMORANDUM

DATE: April 28, 2017
TO: Alex Dupey, MIG
FROM: Scott Mansur, PE, PTOE; Garth Appanaitis, PE; Jordin Kelly, EIT
SUBJECT: Wilsonville Town Center Plan
Existing Conditions – Multimodal Transportation Conditions and Analysis

Wilsonville Town Center is approximately 100 acres and encompasses the properties north of Wilsonville Road, within and adjacent to Town Center Loop. Town Center is an important service hub for the Wilsonville community and the region at large. City Hall and other City offices, the Wilsonville Public Library, the Community Center/Senior Center, parks, the post office, and Clackamas Community College are in or near Town Center. Town Center has developed gradually over the years without a unified vision to guide public and private investments.

The Wilsonville Town Center Plan (the Plan) will guide development in Town Center to create a cohesive, unified district that enhances existing assets in the area and sets the stage for new development. The Plan will guide how Town Center becomes a more vibrant pedestrian and transit-supportive district. The Plan will provide a community-driven vision for Town Center and strategic actions that will establish a clear path forward to advancing the vision. The strategies may include new projects, programs, partnerships, or policies that will foster an attractive and accessible place for visitors and residents of all ages to shop, eat, live, work, learn, and play.

The purpose of this memorandum is to document existing conditions for all modes of transportation in Wilsonville Town Center to identify key transportation opportunities and needs that will be referenced through the development of the Plan. The analysis focuses on nine study intersections that are the most likely to be impacted by the Plan and evaluates the transit, bicycle, and pedestrian network within Town Center.



Key Findings

While not a traditional grid system, Town Center roads keep cars moving

- **Intersections operate smoothly during the evening rush hour.** All study intersections meet operating standards for 2016 traffic conditions.
- **Town Center's roadways are relatively safe.** A review of crashes in the City's Transportation System Plan (TSP)¹ did not identify any safety deficiencies in Town Center.
- **Future traffic growth can be accommodated through planned projects.** Current traffic forecasts for 2035², which include the construction of the financially constrained projects identified in the TSP, indicate that implementation of High Priority Projects in the TSP will generally address needs to allow for increased travel demand on Town Center roadways.
- **Navigating Town Center may be difficult for motorists.** Although wayfinding signs exist, due to the many driveways and access points, finding one's way can be confusing.

Multimodal facilities exist and there are opportunities for additional improvements

- **Some pleasant pedestrian and bicycle facilities exist in Town Center.** Town Center Loop East includes buffered bike lanes and a separated path, while Wilsonville Road under I-5 includes a comfortable elevated pathway with art. Additional public and private pathways provide some linkage within Town Center land uses.
- **Poor sidewalk and pathway conditions also exist in Town Center.** Field observations identified cracked sidewalks, narrow sidewalks and pathways, debris on sidewalks, pathways that are difficult to find, gaps within the system, and a lack of curb ramps that comply with the most current version of the Americans with Disabilities (ADA) Act standards.
- **Town Center Loop West is difficult to cross.** With four travel lanes and a posted speed of 35 MPH, Town Center Loop West is difficult for pedestrians and bicycles to cross. At stop-controlled intersections, pedestrians must cross five travel lanes due to the existing left-turn pockets.
- **Walking and biking along most of Town Center's roadways is uncomfortable.** With the exception of Town Center Loop East, a section of Park Place, and a section of Courtyard Drive, the analysis indicated that most adults would not feel comfortable walking or biking in Town Center. Factors include traffic speeds, number of travel lanes, turning vehicles at intersections, lack of motor vehicle buffers, presence and width of bike lanes, and roadway lighting. In addition, people may be deterred from walking and biking to Town Center

¹ Wilsonville Transportation System Plan, Amended 2016.

² The 2035 forecasts are consistent with Metro's regional growth assumptions based on population or other demographic factors. The growth assumptions are based on reasonably likely overall long-term growth both within and outside Wilsonville and do not necessarily represent full development of the maximum or most dense uses allowed through the Comprehensive Plan.



because of high traffic volumes and speeds on Wilsonville Road that make crossing at the intersections difficult. Lower speed limits, wider sidewalks, buffered bike lanes, and landscaped buffers improve conditions for walking and biking on streets in Town Center where they exist.

- **Some private businesses are auto oriented.** Many of the existing private developments are auto oriented and do not provide safe and convenient connections between buildings for biking and walking.
- **Transit service in Town Center connects to key regional transit destinations.** Two South Metro Area Regional Transit (SMART) transit routes serve the study area, Route 2x-Barbur and Route 4-Wilsonville Road, and provide service to the Tualatin Park and Ride and Barbur Transit Center to connect to TriMet's regional transit system.

Study Area Characteristics

Wilsonville Town Center's transportation network was inventoried and analyzed to understand how the system currently operates and provide context for future decisions. The study area includes the roadway segments within and connecting to Town Center, which is mapped in Figure 1. In addition, the analysis focused on nine study intersections that, through coordination with the City of Wilsonville, were deemed the most critical multimodal intersections. Due to their significance in creating key connections, the analysis also included the bicycle and pedestrian path west of Town Center Loop West and the path north of Courtside Drive at Town Center Park connecting the park to Town Center Loop East and Clackamas Community College.



Figure 1 - Study Area

Existing Roadway Characteristics

The following sections provide general information about the roadway network, traffic conditions for the base year and 2035 p.m. peak hour, and multimodal facility inventory and analysis.

The perimeter of Town Center is bounded by three major arterial streets – Wilsonville Road, Town Center Loop West and Town Center Loop East – that provide access to the district. Several minor arterials and collectors provide access into the district and are complemented by three local service streets that provide additional connections to destinations in the district. Table 1 lists the characteristics of the study area roadways which include functional classification, posted speed, number of lanes, and bicycle/pedestrian/parking facilities. The functional classifications for the study area roadways are documented in the City of Wilsonville’s Transportation System Plan (TSP).³

³ *Transportation System Plan*. City of Wilsonville. Amended June 2016.



Table 1 – Wilsonville Town Center Roadway Characteristics

Roadway	Classification	Number of Lanes	Posted Speed	Sidewalks	Bike Lanes
Wilsonville Road	Major Arterial ⁽¹⁾	4	25/35 mph	Yes	Yes
Town Center Loop W	Major Arterial	4	35 mph	Partial ⁽²⁾	No
Town Center Loop E	Major Arterial	2	35 mph	Yes	Yes
Parkway Avenue	Minor Arterial	2	35 mph	Yes	Yes
Canyon Creek Drive	Minor Arterial	2	35 mph	Yes	Yes
Courtside Drive	Local Street	2	25 mph	Yes	Partial ⁽³⁾
Park Place	Collector	2	25 mph	Yes	Yes
Parkway Court	Collector	2	25 mph	Yes	Yes
Rebekah Street	Local Street	2	25 mph	Yes	Yes
Memorial Drive	Collector	2	35 mph	Yes	Yes
Citizen Drive	Private Drive	2	n/a	Partial ⁽⁴⁾	No

⁽¹⁾ East of Town Center Loop East, Wilsonville Road becomes a Minor Arterial.

⁽²⁾ Approximately 300 ft sidewalk gap along west side of Town Center Loop West just north of NW Rugs & Furniture.

⁽³⁾ Bicycle lanes extend approximately 800 feet west from Town Center Loop East to the driveway entrance at Goodwill.

⁽⁴⁾ Sidewalks extend approximately 400 feet west from Town Center Loop West on the north and south sides.

The table highlights a key difference in cross-section and character between Town Center Loop West and Town Center Loop East. Although both streets have the same posted speed, Town Center Loop West is more auto-centric with four vehicle travel lanes and lack of bike lanes. Town Center Loop East is a more multi-modal street with a three-lane cross-section, sidewalks, multi-use path, and buffered bike lanes, which makes walking and cycling attractive and comfortable.

Wilsonville Road is a major east-west bike connection with striped bike lanes that connects neighborhoods beyond Town Center to the district. Although the posted speed adjacent to Town Center near the Town Center Loop West intersection is 25 mph, it increases to 35 mph east of Holly Street, which may deter all but the most confident cyclists from accessing the Town Center by bike.

Intersection Operations and Performance Measures

A key outcome of the Plan will be land use and development strategies to advance a community-driven vision for the Town Center. Understanding how traffic moves through the district today will help inform how well the district will accommodate anticipated traffic volumes in the future. In order to measure the experience of motor vehicles accessing the district, the analysis evaluated ten critical multi-modal intersections that serve as key access points in Town Center.



Level of service (LOS) ratings and volume-to-capacity (v/c) ratios are two performance measures of intersection operations.

- **Level of service (LOS):** A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection.⁴ LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity.
- **Volume-to-capacity (v/c) ratio:** A decimal representation (typically between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. It is determined by dividing the peak hour traffic volume by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

The City of Wilsonville requires the intersections of public streets to meet its minimum acceptable level of service (LOS) standard, which is LOS D (operates with significant delays) for peak periods.⁵ Interstate 5 (I-5) is adjacent to the study area boundaries and impacts the functionality of roads within the study area. I-5 is an Oregon Department of Transportation (ODOT) facility classified as an Interstate on the National Highway System and part of the national network as a high clearance, reduction review, freight route. According to the *1999 Oregon Highway Plan (OHP)*, ODOT mobility targets are given as v/c ratios and are based on the highway category, which is 0.90 for peak period for the I-5 ramp intersections along Wilsonville Road.^{6,7}

⁴ A description of Level of Service (LOS) is provided in the Attachment which includes a list of the delay values (in seconds) that correspond to each LOS designation. For example, the City of Wilsonville’s minimum operating standard, LOS D, has an approximately allowed delay of 25 to 35 seconds for an unsignalized intersection and 35 to 55 seconds for a signalized intersection.

⁵ *City of Wilsonville Code*, City of Wilsonville Section 4.140.

⁶ *1999 Oregon Highway Plan*, Page 76, Oregon Department of Transportation, 1999.

⁷ The typical ODOT mobility target for interchange ramps is a 0.85 v/c ratio. However, when the interchange vicinity is fully developed and adequate storage is available on the interchange ramp to prevent queues from backing up on the mainline, then the target can be increased to a 0.90 v/c ratio.



Existing Intersection Operations

Existing traffic volumes were collected for the p.m. peak hour and are shown in Figure 2.⁸ On a typical weekday Wilsonville Road has approximately 1,600 vehicles in both directions during the p.m. peak hour east of Town Center Loop West. Typical day is generally assumed to be any weekday that is not influence by holiday travel, special events, or a major traffic incident that impacts regional travel patterns. The traffic analysis reflects traffic counts that were collected on a single weekday that was not known to be influenced by any of these factors. The traffic counts were compared to previous weekday counts and determined to be generally consistent for a typical day. The amount of traffic on Wilsonville Road can increase due to regional traffic conditions when motor vehicles avoid I-5 due to an incident or congestion. Existing traffic operations at the study intersections were determined for the p.m. peak hour based on the 2000 Highway Capacity Manual methodology for signalized intersections and 2010 Highway Capacity Manual for unsignalized intersections.⁹

The results were then compared with the City of Wilsonville's minimum acceptable LOS operating standard and ODOT's minimum required mobility target (v/c). Table 2 lists the calculated delay, LOS, and v/c ratio (for the critical movements) of each study intersection. All of the study intersections currently meet operating standards with the exception of the Town Center Loop West/Citizens Drive study intersection, which has high southbound through volumes causing significant delay for the westbound left turning vehicles, thus, causing this intersection to fail to meet operating standards. Recommendations for potential projects to improve this intersection will be included in the next technical memorandum.

It is important to note that the intersection operations at the study intersections listed in Table 2 represent typical operations. What this analysis does not include is incurred delay from incidents on the I-5 mainline and the ramp meter on the I-5 southbound ramp that regulates the flow of traffic onto I-5 and I-205. Such conditions are present when traffic uses Wilsonville Road to bypass incident congestion on I-5. To quantify the extent, frequency, and severity of such conditions would

⁸ Traffic counts were collected from 4 to 6 p.m. on Thursday November 3, 2016 and are included as an attachment.

⁹ *2000 and 2010 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2000 and 2010. The 2000 HCM methodology for signalized intersections was used in order to report the V/C ratio, which is needed for comparing to performance standards and is not included in the 2010 HCM methodology.



require extensive collection and analysis of incident and performance data and is beyond the scope of this operational analysis for typical weekday periods.

Table 2 - Existing Conditions Intersection Operations

Intersection	Jurisdiction	Operating Standard/ Mobility Target	PM Peak Hour		
			Delay	LOS	v/c
Signalized					
Wilsonville Road/Town Center Loop E	City of Wilsonville	LOS D	19.3	B	0.45
Wilsonville Road/Rebekah St	City of Wilsonville	LOS D	13.3	B	0.38
Wilsonville Road/Town Center Loop W	City of Wilsonville	LOS D	34.5	C	0.64
Wilsonville Road/ I-5 NB	ODOT	0.90 v/c	23.8	C	0.52
Wilsonville Road/ I-5 SB	ODOT	0.90 v/c	26.0	C	0.49
Town Center Loop West/Parkway Avenue	City of Wilsonville	LOS D	30.5	C	0.38
Town Center Loop East/Canyon Creek Road	City of Wilsonville	LOS D	23.8	C	0.25
Unsignalized					
Town Center Loop West/Park Place	City of Wilsonville	LOS D	19.7	A/C	0.34
Town Center Loop West/Citizen Drive	City of Wilsonville	LOS D	87.3	A/F	0.86
Town Center Loop East/Courtside Drive	City of Wilsonville	LOS D	16.4	A/C	0.15

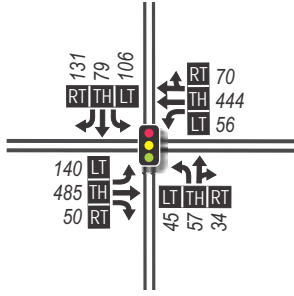
Signalized Intersections:

Delay = Average Stopped Delay per Vehicle (sec)
 LOS = Level of Service of Intersection
 v/c = Volume-to-Capacity Ratio of Intersection

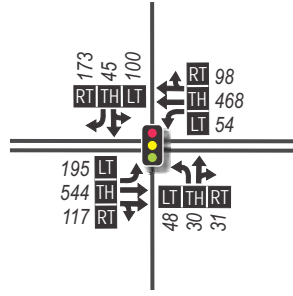
Unsignalized Intersections:

Delay = Average Stopped Delay per Vehicle (sec) at Worst Movement
 LOS = Level of Service of Major Street/Minor Street
 v/c = Volume-to-Capacity Ratio of Worst Movement

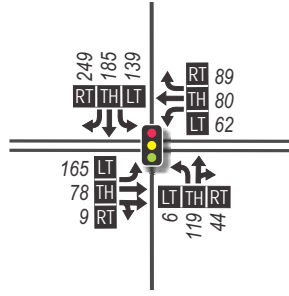
1. Wilsonville Rd. @ Town Center Loop East



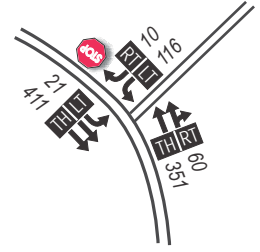
2. Wilsonville Rd. @ Rebekah St.



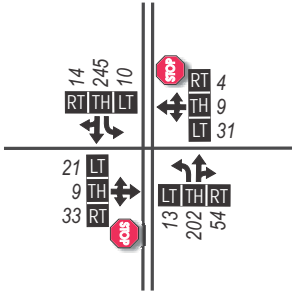
3. Town Center Loop @ Parkway Ave.



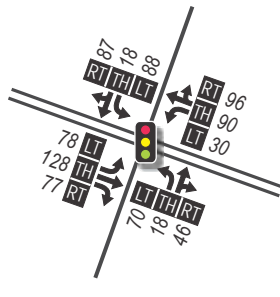
4. Town Center Loop West @ Park Place



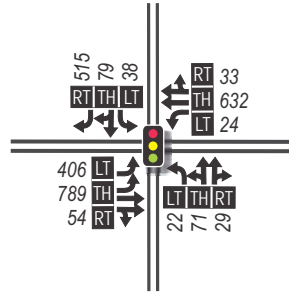
5. Town Center Loop East @ Courtside Dr.



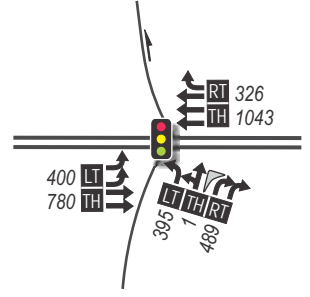
6. Town Center Loop East @ SW Canyon Creek Rd.



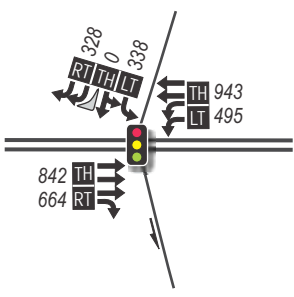
7. Wilsonville Rd. @ Town Center Loop West



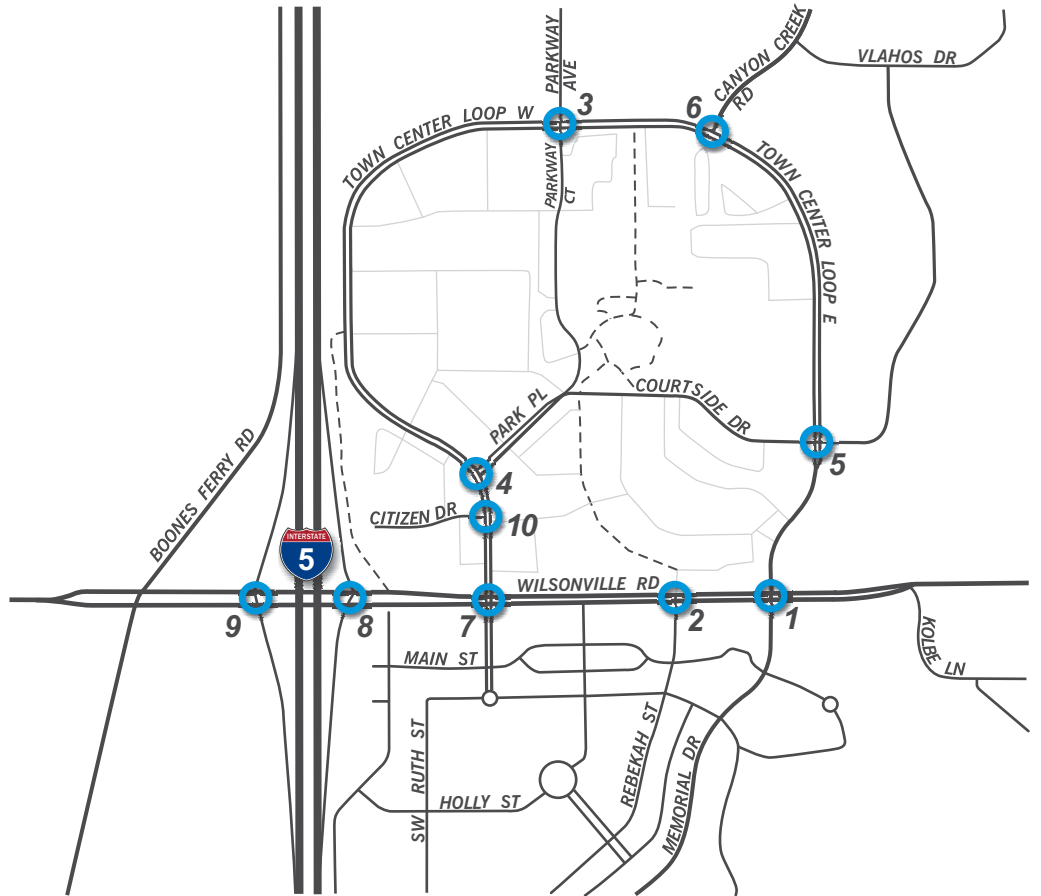
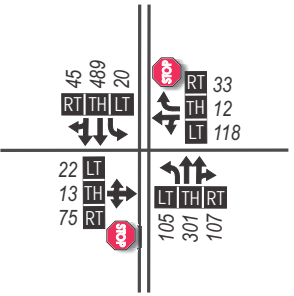
8. Wilsonville Rd. @ I-5 Northbound Ramp



9. Wilsonville Rd. @ I-5 Southbound Ramp



10. Town Center Loop West @ Citizen Dr.



LEGEND

- # - Study Intersection
- 🚦 - Traffic Signal
- 🛑 - Stop Sign
- - Bicycle & Pedestrian Path
- - Internal Roadways
- ← - Lane Configuration
- 000 - PM Peak Hour Traffic Volumes
- LT TH RT - Volume Turn Movement (Left • Thru • Right)

DKS

Figure 2

2016 Existing Conditions PM Peak Hour Traffic Volumes

No Scale



Future Traffic Conditions

The following sections summarize the future 2035 p.m. peak hour traffic volumes and operations.

Future Traffic Volumes

Future traffic forecasts were prepared for a 2035 horizon year based on the regional travel demand model (Metro Gamma Model) that was refined for the City of Wilsonville. Within the study area, the model estimates travel times using HCM node delays at the intersections and travel times between intersections to perform the traffic assignment. The raw model volumes were post-processed to estimate 2035 turn movement volumes at the future study intersections which are shown in Figure 3. As shown, the majority of traffic growth between 2016 and 2035 is expected to occur at study intersections along Wilsonville Road with moderate traffic volume increases at the remaining study intersections around the Town Center Loop.

Future Intersection Operations

The future p.m. peak hour traffic operations at the study intersections were determined by utilizing the future traffic volumes and assessing intersection performance based on the *2000 Highway Capacity Manual* methodology for signalized intersections and *2010 Highway Capacity Methodology* for unsignalized intersections. The estimated average delay, level of service (LOS), and volume to capacity (v/c) ratio of each study intersection are listed in Table 3.

As shown, the Town Center Loop West/Park Place and Town Center Loop West/Citizens Drive study intersections are the only study intersection projected to fail the City of Wilsonville LOS D operating standard in the year 2035 during the p.m. peak hour. The high southbound through volumes projected for 2035 are anticipated to cause significant delay for the westbound left turning vehicles that must wait for available gaps, thus, causing the intersections to fail to meet operating standards. Recommendations for potential projects to improve this intersection will be included in the next technical memorandum.

Even though the SW Wilsonville Road/Southbound I-5 intersection does meet the overall intersection 0.90 v/c mobility target during the p.m. peak hour, the southbound ramp signal meter is projected to experience a future demand of 1,660 vehicles during the p.m. peak hour, as compared to 1,150 vehicles today. These projections would result in the ramp meter experiencing a v/c ratio of 1.32. Therefore, the ramp is projected to be approximately 30% over capacity in the year 2035,

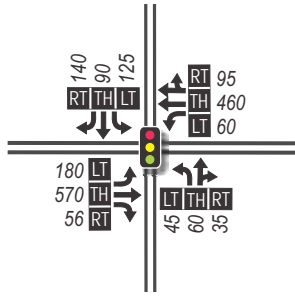


which will require SW Wilsonville Road to store approximately 400 vehicles destined for I-5 south during the peak hour and would significantly impact future interchange operations.

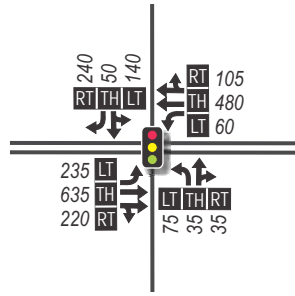
Table 3 - Future Conditions Intersection Operations

Intersection	Jurisdiction	Operating Standard/Mobility Target	PM Peak Hour		
			Delay	LOS	V/C
Signalized					
Wilsonville Road/Town Center Loop East	City of Wilsonville	LOS D	20.7	C	0.53
Wilsonville Road/Rebekah St	City of Wilsonville	LOS D	16.0	B	0.48
Wilsonville Road/Town Center Loop West	City of Wilsonville	LOS D	53.6	D	0.85
Wilsonville Road/ I-5 NB	ODOT	0.90 v/c	28.3	C	0.67
Wilsonville Road/ I-5 SB	ODOT	0.90 v/c	48.4	D	0.90
Town Center Loop West/Parkway Avenue	City of Wilsonville	LOS D	38.4	D	0.54
Town Center Loop East/Canyon Creek Road	City of Wilsonville	LOS D	23.8	C	0.31
Unsignalized					
Town Center Loop West/Park Place	City of Wilsonville	LOS D	38.8	A/E	0.58
Town Center Loop West/Citizen Drive	City of Wilsonville	LOS D	>100	B/F	>1.0
Town Center Loop East/Courtside Drive	City of Wilsonville	LOS D	19.9	A/C	0.24
Signalized Intersections:			Unsignalized Intersections:		
Delay = Average Stopped Delay per Vehicle (sec)			Delay = Average Stopped Delay per Vehicle (sec) at Worst Movement		
LOS = Level of Service of Intersection			LOS = Level of Service of Major Street/Minor Street		
V/C = Volume-to-Capacity Ratio of Intersection			V/C = Volume-to-Capacity Ratio of Worst Movement		

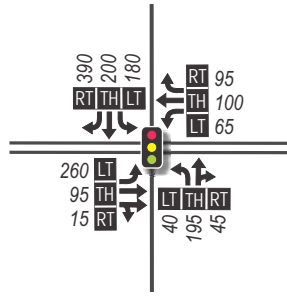
1. Wilsonville Rd. @ Town Center Loop East



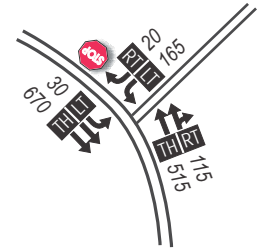
2. Wilsonville Rd. @ Rebekah St.



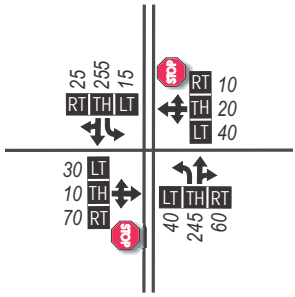
3. Town Center Loop @ Parkway Ave.



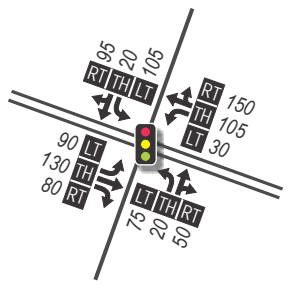
4. Town Center Loop West @ Park Place



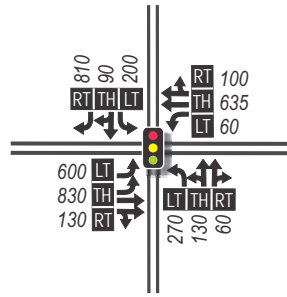
5. Town Center Loop East @ Courtside Dr.



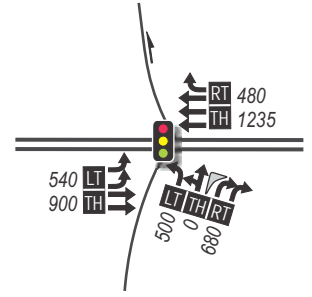
6. Town Center Loop East @ SW Canyon Creek Rd.



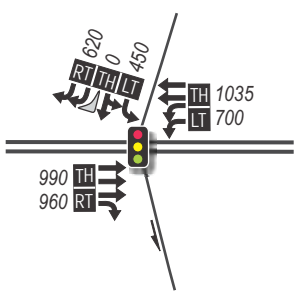
7. Wilsonville Rd. @ Town Center Loop West



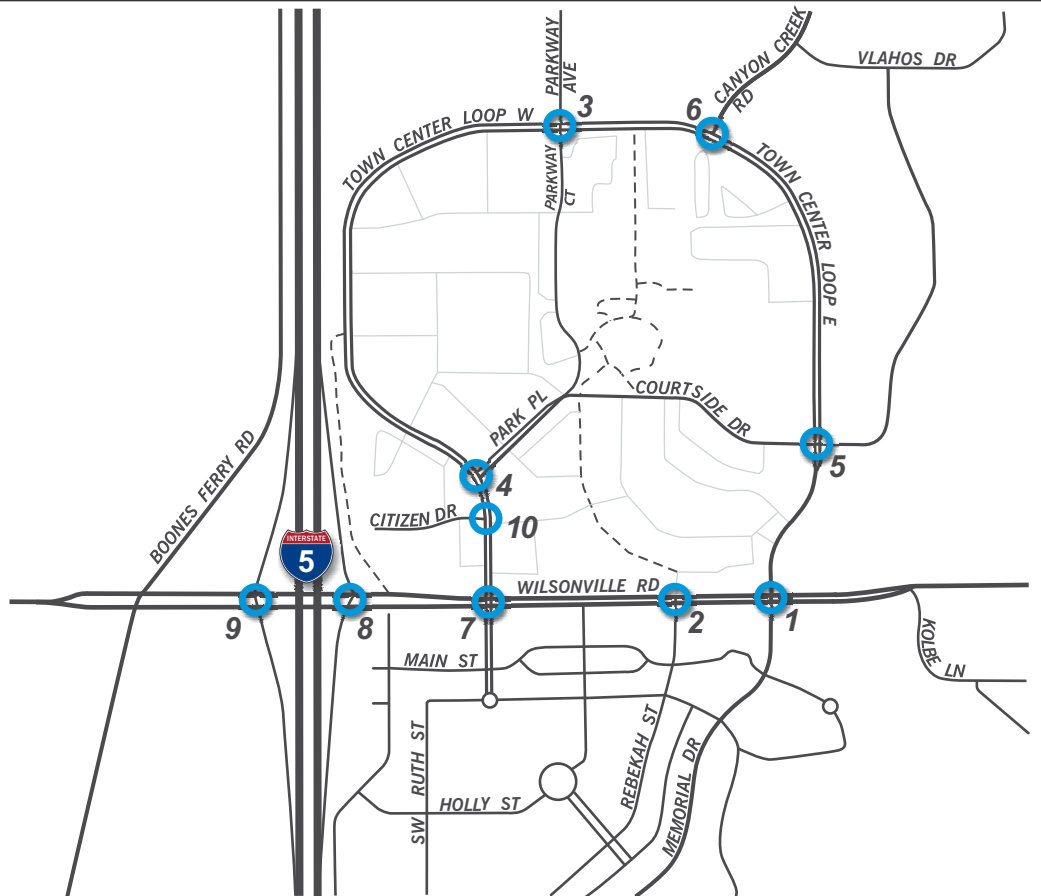
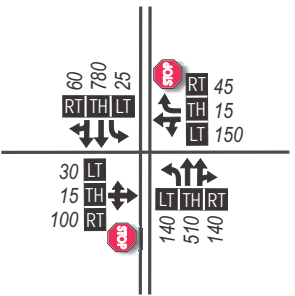
8. Wilsonville Rd. @ I-5 Northbound Ramp



9. Wilsonville Rd. @ I-5 Southbound Ramp



10. Town Center Loop West @ Citizen Dr.



LEGEND

- # - Study Intersection
- 🚦 - Traffic Signal
- 🛑 - Stop Sign
- - Bicycle & Pedestrian Path
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- LT|TH|RT - Volume Turn Movement (Left • Thru • Right)

DKS

No Scale

Figure 3
2035 Future Conditions PM Peak Hour Traffic Volumes



Parking Use (PLACEHOLDER)

Note: This section is a placeholder to be replaced upon completion of the parking observations.

The project team will collect parking observations for a site visit during the weekend midday (11 am to 1 pm) period and a weekday midday period. Alternatively, a site visit could occur during a weekday peak traffic period (4 pm to 6 pm). The qualitative parking observations will focus on general occupancy location (which lots and where in lot) and estimated levels (magnitude) but will not include detailed or specific counts as they are beyond the scope of this project. Photos will be included to document key observations, and additional observations conducted by City staff will also be summarized.

Multimodal Facilities Inventory and Analysis

In order to create a vibrant pedestrian and transit-supportive Town Center district, facilities that promote walking, biking, and transit are essential. Understanding the conditions of existing infrastructure that support active transportation modes, as shown in Figure 4, as well as the benefits of future planned projects, is an important step to developing a plan for future investment in Town Center.



Figure 4 - Bicycle, Pedestrian, and Transit Facilities

Bicycle Facilities

Bicycle lanes exist along Wilsonville Road, Park Place (from Town Center Loop West to Courtside Drive), Courtside Drive (for approximately 800 feet at its eastern end), Memorial Drive, and Town Center Loop East (from Canyon Creek Road to Wilsonville Road). The bicycle lanes on Town Center Loop East have a five foot wide striped buffer separating the bicycles from the vehicles.

Overall, the bicycle facilities along the roads in the study area were in good condition with little to no debris and adequate widths for bicycle lanes as per ODOT's guidelines.¹⁰ However, along Town Center Loop West there are no bicycle lanes and the higher speeds of 35 mph decrease the safety for bicyclists using this facility. Additionally, the lack of facilities along Town Center Loop West disconnects the west side of Wilsonville Town Center from the rest of the area.

Pedestrian Facilities

Sidewalks exist along all of the public roadways in the Town Center with the exception of approximately 400 feet of Town Center Loop West from the north edge of NW Rugs and Furniture property to the multi-use path and the north side of Park Place from Town Center Loop West to Courtside Drive. The existing sidewalks are in fair to good condition (minor to no cracking, patching, raveling, or faulting and the surface are generally smooth) and the majority of the crossing locations have sidewalk ramps, but do not meet current ADA standards. The sidewalk conditions along Citizen Drive, a private street, are in poor condition (sidewalks cracking, debris, narrow, and lack of ADA ramps) and end abruptly. There is a pedestrian activated beacon at the Town Center Loop East/Courtside Drive intersection. Additionally, many of the internal roadways (including both site access and major drive aisles, as shown in Figure 4) have existing sidewalks and provide connectivity from the loop system to internal land uses.

Other crossing facilities include midblock crossings (one north of Wilsonville Road along Town Center Loop East and two along Courtside Drive near Town center Loop E), striped crossings on all legs of each signalized intersection (except the west leg at the Wilsonville Road/Town Center Loop West intersection): and two striped crossings at both the Park Place/Courtside Drive intersection and the Town Center Loop West/Citizen Drive intersection, which also includes advanced warning signs that alert drivers of the crossing location.

¹⁰ 2012 ODOT Highway Design Manual, Table 13-1:4R Shoulder Width and Bicycle Accommodations.



The main shopping center north of Wilsonville Road is bounded by Town Center Loop East and West and has a well-connected internal pedestrian system that includes a wide-arc pedestrian pathway and an east/west pathway that connects the arc pathway to the Safeway development. Furthermore, sidewalks connect pedestrians from the shopping center to Town Center Loop West and East, Park Place, Courtside Drive, and Wilsonville Road. However, there are no sidewalks on the west side of Rebekah Street north of Wilsonville Road leading into the shopping center so eastbound pedestrians are required to cross Rebekah Street to enter the shopping center.

Transit Facilities

Two South Metro Area Regional Transit (SMART) routes serve the study area, Route 2x-Barbur and Route 4-Wilsonville Road. Both routes operate with headways around 30 minutes to an hour.

Route 2x-Barbur travels along Wilsonville Road to Town Center Loop E, then to Courtside Drive, Park Place, and continues north along Parkway Avenue. This route begins at the SMART Central at Wilsonville Station and connects to key destinations in Wilsonville such as City Hall, the Civic Center, Parkway Woods Business Park, and Argyle Square, as well as to key regional destinations such as the Tualatin Park and Ride and the Barbur Transit Center.

Route 4-Wilsonville Road travels along Wilsonville Road to Town Center Loop W, Park Place, Town Center Loop E, and continues east along Wilsonville Road. This route begins at the SMART Central at Wilsonville Station, traveling to key destinations in Wilsonville including Inza Wood Middle School/Boones Ferry Primary school, Graham Oaks Nature Park (limited service), Town Center Park, the Civic Center, and Wilsonville High School/Boeckman Primary School.

Future Planned Projects

The City of Wilsonville's TSP includes future planned bicycle, pedestrian, and transit projects. The following is a short summary of the two planned projects near the Town Center.

BW-08 Town Center Loop Multimodal Improvements

The TSP identifies Town Center Loop West as a major arterial with deficiencies due to lack of bicycle lanes, missing sidewalks for approximately 400 feet, and no transit stops. This project identifies improvements to Town Center Loop West to meet the major arterial standards and provide multimodal connectivity as defined by the City’s TSP (see standards depicted in Figure 5).¹¹

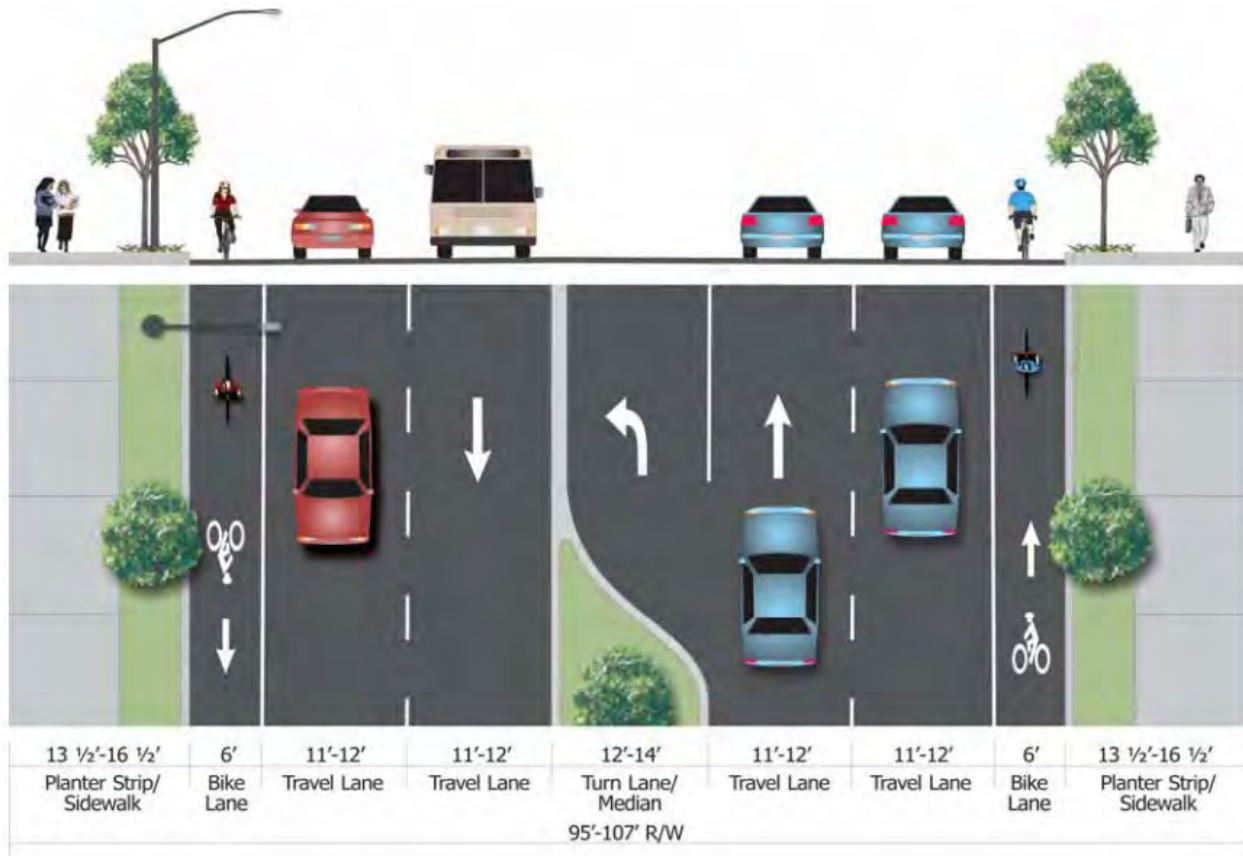


Figure 5 - Major Arterial Cross-Section Standard

The existing right-of-way along Town Center Loop is 72 feet with some sidewalks within the right-of-way. In order to bring Town Center Loop up to the City of Wilsonville cross-section standards for a major arterial (minimum of 95-foot right-of-way), the roadway will need to be widened.

¹¹ Wilsonville Transportation System Plan, Amended 2016.

BW-09 Town Center Loop Pedestrian/Bicycle Bridge

This project will construct a pedestrian/bicycle bridge over I-5 as shown in Figure 5. This will help improve connectivity between the SMART/WES stations and neighborhoods, including Villebois, located west of I-5 and the residential areas and Town Center east of I-5 by providing a direct non-vehicle connection across the interstate. This connection will provide a multimodal linkage that would allow trips both for future trips as well as those that currently travel through the interchange via walking, biking, or driving to avoid the Wilsonville Road interchange and additional out-of-direction travel to Boeckman Road. Without this connection, pedestrians and bicyclists are required to travel over 2,500 feet north or south to reach the nearest location to cross I-5. The City previously applied for grant funding for this project and was awarded funding in April 2017 by Metro (regional flexible fund allocation).

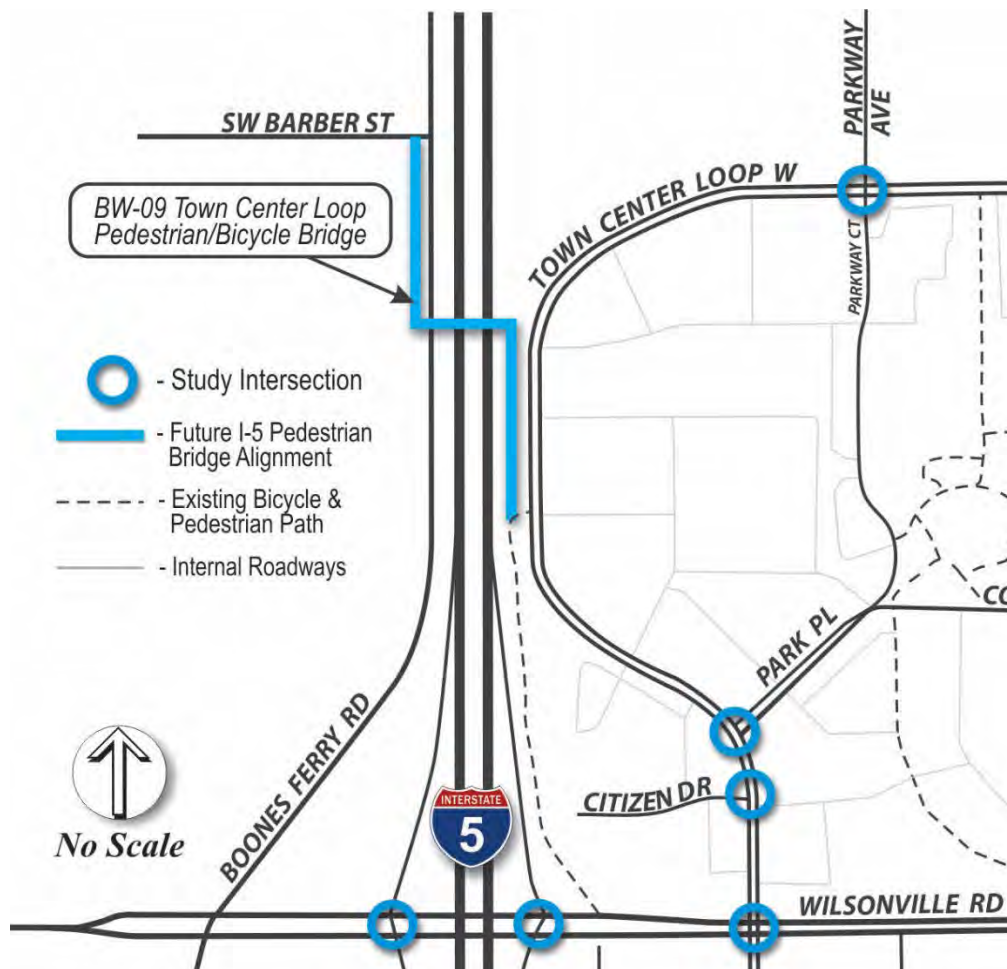


Figure 6 - Future Pedestrian and Bicycle Bridge over I-5



Multimodal User Comfort (Level of Traffic Stress Analysis)

The following sections summarize the methodology and results of the Level of Traffic Stress Analysis for bicycles and pedestrians, which gauges the level of comfort for multimodal travelers. This analysis evaluated each study intersection and roadway segment within the Town Center study area based on the existing roadway configuration.

Methodology

The following sections provide an overview of the methodology used to determine the Bicycle Level of Traffic Stress (LTS) and Pedestrian Level of Traffic Stress (PLTS) in the Wilsonville Town Center study area. The LTS and PLTS analysis from the ODOT Analysis Performance Manual (APM) methodologies were applied to score the study segments and study intersections within the study area.¹²

The traffic stress criteria in the LTS methodology is broken into table-based criteria for three categories; segment, intersection approaches, and intersection crossings. Segments are typically considered to be two-way but there are areas where conditions are not the same on each side of the street (i.e. parking only on one side) and both directions can be reported separately, which is the case for several segments in this analysis. Typically, the methodology uses the worst overall LTS values for each overall segment. For example, if a segment has a LTS 2 but there is an intersection approach at the end of the segment at LTS 4, the whole segment would be LTS 4. However, this approach leads to a loss of detailed analysis and is better suited for larger areas or complete cities. This analysis focuses on individual LTS ratings for segments and intersections in order to find key locations where multimodal transportation can be improved. This analysis uses the criteria outlined in the ODOT APM including the type and characteristics of bicycle lanes, sidewalks, and other multimodal facilities that are described in more detail in the following sections. It should be noted that this is the best tool available but there are still limitations in the results of the multimodal analysis. For example, a pathway may score well because it is a comfortable route, however, the route may not be convenient and could likely lead to little to no use.

¹² Level of Traffic Stress methodologies and application examples appear on pages 14-8 through 14-50 of the Analysis Procedures Manual. The APM is available online at <https://www.oregon.gov/ODOT/TD/TP/pages/apm.aspx>.



Bicycle Level of Traffic Stress

ODOT’s Bicycle LTS is based on a methodology that assesses street segments, intersections, and intersection approaches for the level of stress incurred by bicyclists riding there¹³. LTS is scored on a scale of 1 to 4, with 4 being the most stressful. Segments with separated facilities, such as a wide sidewalk vertically separated from vehicle traffic or a multi-use path are automatically assigned the lowest stress score, LTS 1. More detail is provided on the scale provided in Table 4 and are summarized from the ODOT APM.

Table 4 - Level of Traffic Stress Characteristics for Bicycles

LTS Score	Description
1	Suitable for all bicyclists, including children who are trained to safely cross intersections. Low traffic speeds, no more than one lane in either direction.
2	Suitable for teen and adult bicyclists. Speeds slightly higher, but still with low differential between bicycles and automobiles. Streets can be up to three lanes. Intersections are not difficult to cross.
3	Moderately stressful and suitable for some adult bicyclists comfortable with moderate speeds, up to 35 mph where bike lanes are present or 30 mph in shared lane situations. Streets may be up to five lanes wide.
4	Highly stressful conditions for most riders and suitable only for experienced bicyclists comfortable with proximity to/sharing road with high-speed automobile traffic. Streets may be two to five lanes wide, but with higher speeds. Intersections are wide or high-speed and are likely difficult to cross.

Street segment assessment is based on roadway and traffic characteristics:

- number of lanes
- traffic speed
- presence and width of on-street parking
- presence and width of bike lanes

Intersection assessment is based on:

- signalization
- number of lanes on the cross street

¹³ This methodology provides results from the singular perspective of the cyclists. Future recommendations will consider the combined experience for users of all modes of transportation.



- presence of median on the cross street.

Intersection approach assessment is based on:

- presence of left or right turn lanes
- number of lanes crossed by left-turning bicyclist
- speed limit
- interaction of the right turn lane and bike lane

The core idea of this methodology is that no single factor (speed, traffic volume, type of bicycle facility, etc.) impacts the way a bicyclist experiences the roadway.

The methodology for determining LTS also relies upon the concept that a bicyclist's choice of route (or decision whether to go by bike for a given trip) is influenced by the most stressful condition experienced. For instance, a route can be generally pleasant and low stress, but the existence of a high-stress segment can ruin the overall rider experience and deter the individual from using the route. This concept is particularly pertinent for family-friendly bikeways where the alignment is often chosen to take advantage of existing low-volume, low-speed streets that may cross arterials at unsignalized locations. Generally, LTS 1 and 2 segments and intersections are considered "low-stress." These facilities are comfortable to a large segment of bicyclists.

Pedestrian Level of Traffic Stress

ODOT developed the Pedestrian Level of Traffic Stress (PLTS) analysis as a complement to the bicycle LTS analysis. Ratings reflect the combined experience of both able-bodied pedestrians and those using wheeled mobility devices¹⁴.

Street segments are evaluated with the following criteria:

- sidewalk condition and width
- buffer (space between the pedestrian and moving traffic) type and width
- bike lane width
- parking width
- number of lanes and posted speed
- illumination presence
- general land use

¹⁴ This methodology provides results from the singular perspective of pedestrians. Future recommendations will consider the combined experience for users of all modes of transportation.

The combinations of total buffer width and number of lanes, along with posted speed and buffer type are compared in a matrix to derive a PLTS score. For example, a sidewalk segment with a buffer width of 12 feet on a four-lane street is PLTS 2, but is PLTS 3 on a six-lane street. Similarly, more robust buffer types, such as landscaping with trees (instead of an open, unobstructed space), mitigate the impact of higher speeds on PLTS. The ODOT APM characterizes the different pedestrian levels of stress as summarized in Table 5 below.

Table 5. Description of Pedestrian LTS Scoring Criteria (from the ODOT APM)

PLTS Score	Description
1	Little to no traffic stress on a sidewalk or shared-use path with a buffer between the facility and automobile traffic. Suitable for all users including children under 10 and those using wheeled mobility devices.
2	Little traffic stress but requires more attention to traffic than may be expected of younger children. Some factors may limit use for those in wheeled mobility devices. Adjacent roadway may have higher speed/volume, but facility is buffered.
3	Moderate stress. Able-bodied adults feel uncomfortable, but safe using facility. Can be higher speed roadway with small buffers. Wheeled mobility device users may find parts impassable.
4	High traffic stress. Route unsuitable and only used by able-bodied adults with no other routing choices. No/narrow buffer for facility on higher speed street, or lack of sidewalk.

Intersection crossings are evaluated with the following criteria:

- functional class of the road
- number of lanes
- posted speeds
- average daily traffic (ADT)
- sidewalk ramp presence
- median refuge
- illumination presence
- signalized crossing or pedestrian activated beacon

Pedestrian and Bicycle LTS Findings

Overall, the bicycle and pedestrian networks accommodate multimodal travel east to west along Wilsonville Road and along Courtside Drive/Park Place. The multimodal network also accommodates travel north to south along the bicycle and pedestrian path behind the US Postal Service building and along Town Center Loop East. The primary gaps in the multimodal facilities are along Town Center Loop West where high stress levels are a result of a lack of bike lanes and along Wilsonville Road where bicycles may be deterred from travelling due to the high stress levels resulting from high traffic volumes and speeds and crossing the I-5 on and off ramp intersections (noting that the separated, elevated pathway under I-5 does offer some reprieve along the corridor).

The LTS scoring results are shown in Figure 7. Many segments (as shown in Figure 7 on page 26) rate LTS 3 or 4 (indicating they are moderately stressful facilities not comfortable for some of the adult population) with the exception of the Wilsonville Road/I-5 underpass, Town Center Loop East, a section of Park Place (see photo below), and a section of Courtside Drive. Town Center Loop East and the section of Courtside Drive have a five-foot buffer for bicycles that reduces the stress levels. The Wilsonville Road underpass has a wide, raised separated path that also improves the comfort of both pedestrians and bicyclists. The speed limit and bicycle lanes along Park Place reduce the stress at this segment.



Low Stress Bicycle and Pedestrian Facilities along Park Place

All of the study intersections are LTS 4 for bicycles due to complex intersection characteristics (such as a channelized right turn lane), a total of six or more lanes, or increased conflict between bicycles and turning vehicles.

The PLTS scoring results are shown in Figure 8 on page 27. Similar to the bicycle LTS results, nearly all segments rate LTS 3 or 4 with the exception of Town Center Loop E, Courtside Drive, and portions of Park Place (see photo above). Lower speed limits help reduce stress levels along Park Place and Courtside Drive. Wider sidewalks and landscaped buffers improve stress levels along Town Center Loop E.



The study intersections near the I-5 interchange are rated LTS 3 primarily due to the large intersections and channelized or separated right turns. The Town Center Loop West/Park Place intersection rated LTS 4 due to a lack of ADA facilities (see middle photo below), high speeds, and high traffic volumes along Town Center Loop W. The majority of the remaining intersections are categorized as LTS 1 and 2 due to signalization or included enhanced crossing elements such as the pedestrian activated beacon at Town Center Loop East/Courtside Drive intersection adjacent to City Hall.



The internal roads on private properties within Town Center connect with the public facilities creating additional crossing locations for pedestrians. The crossing locations at these driveways that are in good condition and have the proper ADA compliant sidewalks and ramps, including the required slope, width, landing zone, and truncated domes, have an LTS 1 rating for pedestrians (see top photo). Crossing locations at driveways that do not have ADA compliant facilities (see middle photo) are rated



Crossing location at Driveways
Top - LTS 1 at Wilsonville Medical Plaza
Middle - LTS 2 at Northwest Rugs
Bottom - LTS 3 at Starbucks onto Citizens Drive

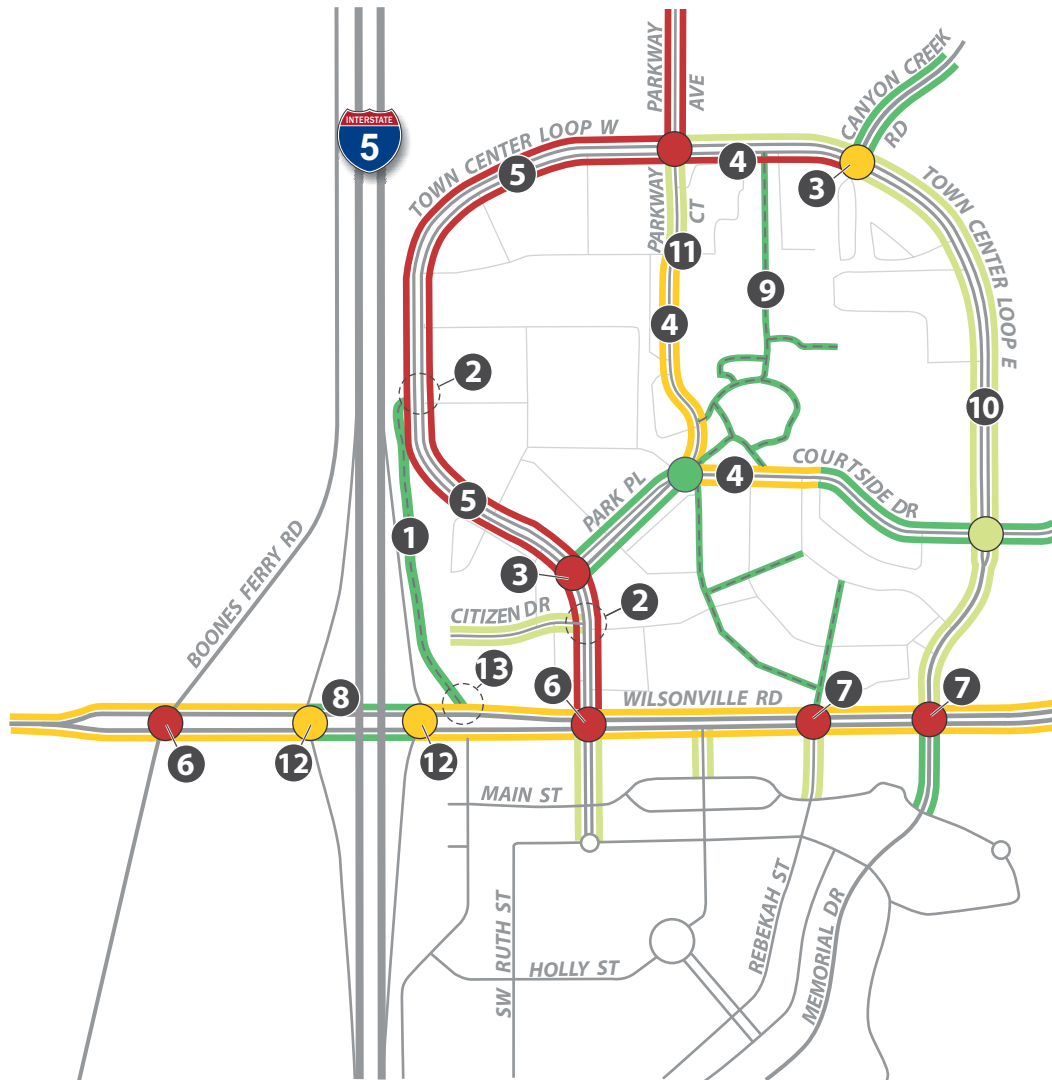
at LTS 2 for pedestrians. If a crossing location at a driveway does not have ADA facilities and is damaged (see bottom photo), it is rated at LTS 3 for pedestrians. Along the Town Center Loop, the majority of the driveways have a rating of LTS 1 with the exception of a few locations that are rated LTS 2 or 3 due to lack of proper ADA facilities and damaged concrete at the ramps.

The separated bicycle and pedestrian path west of Town Center Loop West and the path north of Courtside Drive connecting the park to Town Center Loop East and Clackamas Community College have the lowest stress level (LTS 1) for both bicycle and pedestrians due to the separation from motorized traffic. The path west of Town Center Loop West is separated from the majority of the areas that generate the most bicycle and pedestrian traffic, but does provide a parallel connection (LTS 1) between Wilsonville Road and Town Center Loop W. Additionally, the path does not connect with existing bicycle facilities or a crossing at Town Center Loop West and the path does not have lighting as shown in the photos below.



Bicycle and Pedestrian Path west of Town Center Loop West

The path north of Courtside Drive connecting the park to Town Center Loop East and Clackamas Community College provides good connectivity to the center of the Town Center area, however it does not have pathway lighting and the north access point connects with Town Center Loop at a midblock location and pedestrian and cyclists may try to cross Town Center Loop unsafely rather than travel out of direction to the nearest crossing at the traffic signal.



Result Notes:

- ① Comfortable facility but not convenient and poor lighting
- ② Poor bicycle crossing location
- ③ LTS can be improved with bicycle facilities along the west leg
- ④ Lack of bicycle facilities
- ⑤ LTS 4 due to 35 mph speeds, 4 lane cross-section and no bicycle facilities
- ⑥ LTS 4 due to complex intersections, 4 to 8 lane cross section and permissive left and right turn movements
- ⑦ LTS 4 due to wide cross-section and conflicting permissive turning movements
- ⑧ LTS 1 due to grade separated multi-use path
- ⑨ Poor lighting along facility, creates out of direction travel for north and south bicycle movements on Parkway Avenue
- ⑩ Buffered bicycle lanes
- ⑪ Modified cul-de-sac separates Park Place & Parkway Court
- ⑫ LTS 3 due to potential for right-hook crashes
- ⑬ Poor connection to bicycle and pedestrian path from Wilsonville Road.

LEGEND

Segment BLTS	Intersection BLTS	
— - 4	● - 4	----- - Bicycle & Pedestrian Path
— - 3	● - 3	————— - Internal Roadways
— - 2	● - 2	
— - 1	● - 1	

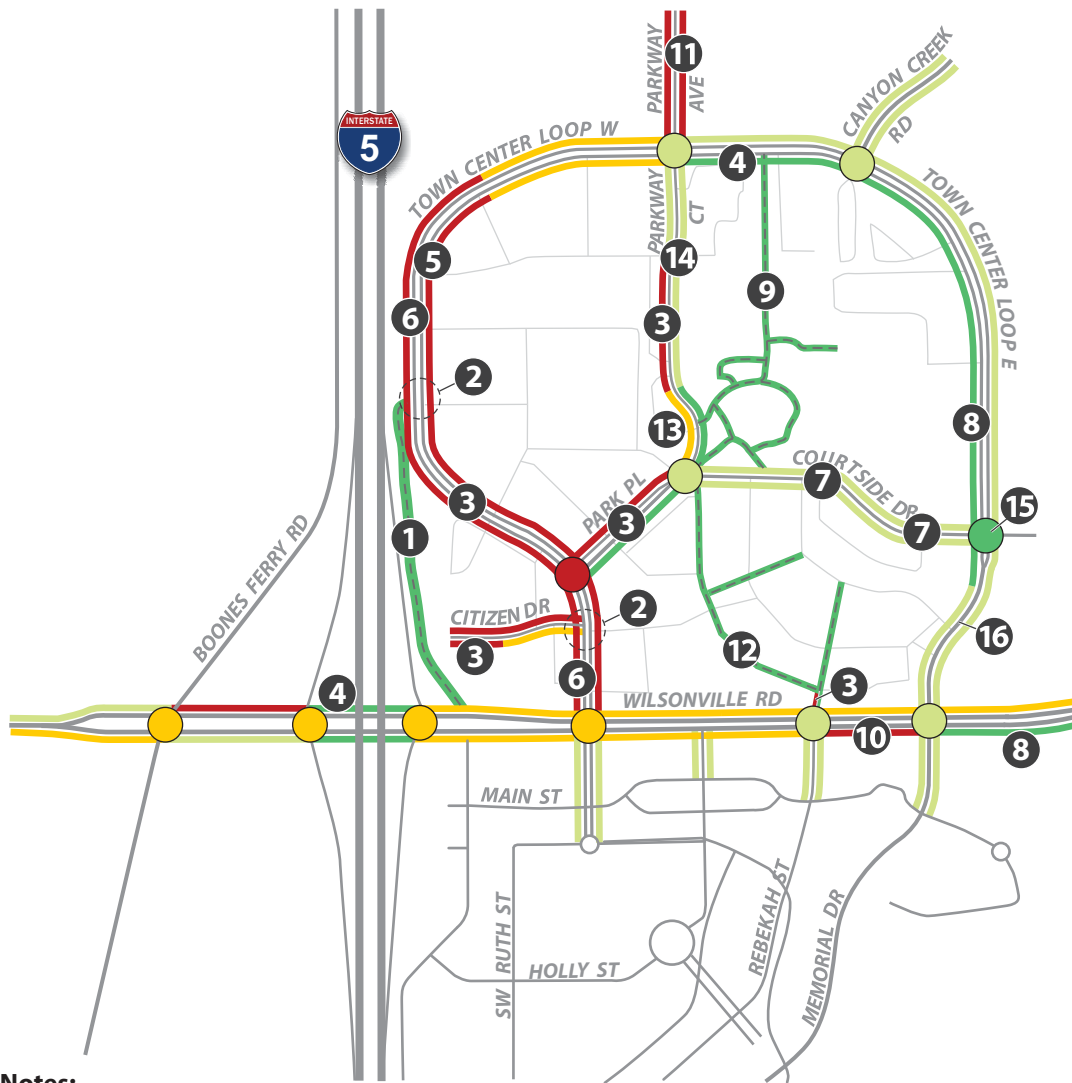
DKS



No Scale

Figure 7

Bicycle Level of Traffic Stress Results



Result Notes:

- 1 Comfortable facility but not convenient, poor lighting, and lack of crossing at Town Center Loop West
- 2 Lack of pedestrian crossing amenities
- 3 No sidewalks
- 4 LTS 1 due to width and grade separated
- 5 LTS 4 due to buffer less than 5 feet wide and 4 lane cross-section
- 6 Curb-tight sidewalks
- 7 Raised pedestrian crossing locations
- 8 Separated multi-use path
- 9 Poor lighting along path
- 10 LTS 4 due to 5 lane cross-section and curb-tight, narrow sidewalk
- 11 Curb-tight, narrow sidewalk and high motor vehicle speeds (over 40 mph)
- 12 Wide sidewalks with multiple crosswalks within the main shopping center
- 13 LTS 3 due to narrow sidewalks
- 14 Modified cul-de-sac separates Park Place & Parkway Court
- 15 Pedestrian Activated Beacon
- 16 Striped school crosswalk without pedestrian amenities

LEGEND

Segment BLTS

- - 4
- - 3
- - 2
- - 1

Intersection BLTS

- - 4
- - 3
- - 2
- - 1

- - Bicycle & Pedestrian Path
- - Internal Roadways

DKS



No Scale

Figure 8

Pedestrian Level of Traffic Stress Results



ATTACHMENTS

- A. LOS Description
- B. Field Observation Notes
- C. Traffic Count Data Sheets
- D. Intersection Traffic Analysis HCM Worksheets
- E. BLTS Data Sheets
- F. PLTS Data Sheets



ATTACHEMENT A

LOS Description

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Levels of service categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set level of service D as the minimum acceptable level of service for peak hour operation and plan for level of service C or better for all other times of the day. The Highway Capacity Manual provides level of service calculation methodology for both intersections and arterials¹. The following two sections provide interpretations of the analysis approaches.

¹ *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2000, Chapter 16 and 17.

UNSIGNALIZED INTERSECTIONS (Two-Way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left turn movements). The method assesses available and critical gaps in the traffic stream which make it possible for side street traffic to enter the main street flow. The 2010 Highway Capacity Manual describes the detailed methodology. It is not unusual for an intersection to experience level of service E or F conditions for the minor street left turn movement. It should be understood that, often, a poor level of service is experienced by only a few vehicles and the intersection as a whole operates acceptably.

Unsignalized intersection levels of service are described in the following table.

Level-of-Service Criteria: Automobile Mode

Control Delay (s/vehicle)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c > 1.0$
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street.
LOS is not calculated for major-street approaches or for the intersection as a whole

SIGNALIZED INTERSECTIONS

For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (secs.)	Description
A	<10.00	Free Flow/Insignificant Delays: No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1-20.0	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1-35.0	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1-55.0	Approaching Unstable/Tolerable Delays: The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red signal indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. The proportion of vehicles not stopping declines, and individual cycle failures are noticeable.
E	55.1-80.0	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	>80.0	Forced Flow/Excessive Delays: Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

Source: 2000 Highway Capacity Manual, Transportation Research Board, Washington D.C.



ATTACHEMENT B

Field Observation Notes

Field Observations

On Thursday, December 1, 2016, various aspects of the existing bicycle and pedestrian facilities were measured to verify the data used for the Level of Traffic Stress analysis. Additionally, a general review of the transportation network and the bicycle and pedestrian facilities within the study area was completed to determine areas where there may be deficiencies in the system.



Looking south at the multi-use path fenced entrance from Wilsonville Road (left), and the multi-use path connection with the sidewalk along Wilsonville Road (right)

The photos above show different access points of the separated bicycle and pedestrian path west of Town Center Loop. The south entrance of the path near Wilsonville Road has two fences that require bicycles to walk through and deters vehicles from entering. Furthermore, the path does not connect with the existing bicycle facilities on Wilsonville Road and bicyclists would need to cross the right turn lane to ride in the bicycle lane. Also shown in the figure is the median barrier on Wilsonville Road that does not allow bicyclists to travel east along Wilsonville Road.

The sidewalks along Wilsonville Road, shown on the figure to the right, are in good condition (no cracking or faulting and smooth surface) and provide connection to other locations along Wilsonville Road and crossing locations.



Sidewalks on Wilsonville Road looking east near the I-5 northbound intersection.

Further along the multi-use path west of Town Center loop there are connections to the internal driveways including Citizen Drive. The entrance to the path, shown in the photo to the right, from Citizen Drive is very narrow and has low visibility to users of the path. Additionally, the entrance can collect leaves and other debris. North of this connection from Citizen Drive there are no connections to Town Center Loop West until the path ends.



Looking west at the access from Citizen Drive to the multi-use path west of Town Center Loop

As shown in the photo to the below, Town Center Loop W does not have bicycle lanes or signs indicating that bicycles are sharing the roadway. On Town Center Loop W, the sidewalks are buffered with landscaping along most of the roadway. This provides separation for the pedestrians from the vehicles, which increases their comfort and safety. However, at many of the driveways there are no designated crossing locations between Wilsonville Road and Parkway Avenue.



Looking north along Town Center Loop W near Mattress World (top) and looking east at a Town Center Loop W crossing location near central driveway to Fry's Electronics (bottom)

Just south of Town Center Loop W along Parkway Court there is a cul-de-sac that has been converted into an intersection. Vehicles are required to slow down and drive onto the former sidewalk to travel through the intersection.

Along Park Place the sidewalks are very wide (see photo to the right) and the sidewalks are in fair conditions (minor cracking or faulting and the surface is general smooth). These facilities give more space between the pedestrian and vehicles, increasing the comfort and safety of the pedestrian. The photo also shows that there are no bicycle lanes along this segment of Park Place which typically decreases the safety and comfort of bicyclists. However, the wide sidewalks along Park Place provide a safe facility for bicyclists as well as pedestrians.



Looking south at pedestrian and bicycle facilities along Park Place near Wilsonville Parks & Recreation building

The sidewalks along Citizen Drive end at midblock locations and there are no crossing ramps at the driveway intersections. The sidewalks are in poor condition (cracking and faulting in several locations) and do not provide access to all business along Citizen Drive.



Looking west at a crossings along Citizen Drive near the entrance to Starbucks (left), and at the end of a sidewalk along Citizen Drive near Guest House Inn & Suites (right).



ATTACHEMENT C

Traffic Count Data Sheets



KEY DATA NETWORK

4:10PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop East				Town Center Loop East				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	3	2	4	0	9	8	10	0	8	24	1	0	4	34	4	0
4:05PM	7	3	3	0	6	4	15	0	15	30	2	0	6	30	5	0
4:10PM	7	4	2	0	6	8	9	0	8	23	5	0	5	27	10	0
4:15PM	3	6	1	0	11	11	12	0	4	25	4	0	1	34	2	0
4:20PM	1	2	2	0	7	5	9	0	9	33	5	0	2	32	4	0
4:25PM	2	2	2	0	5	8	9	0	9	21	4	0	3	32	5	0
4:30PM	4	5	2	0	6	9	14	0	4	28	1	0	3	21	7	0
4:35PM	2	3	4	0	12	6	17	0	8	32	3	0	3	35	1	0
4:40PM	5	6	2	0	9	2	4	0	8	29	3	0	3	41	4	0
4:45PM	3	6	2	0	5	3	10	0	6	29	1	0	4	34	4	0
4:50PM	3	4	1	0	6	4	12	0	9	35	1	0	5	36	5	0
4:55PM	5	3	2	0	6	9	14	0	12	39	1	0	7	27	2	0
5:00PM	1	4	5	0	13	10	16	0	8	30	0	0	9	36	5	0
5:05PM	3	8	5	0	12	6	11	0	11	33	3	0	2	42	9	0
5:10PM	2	6	6	0	4	8	7	0	8	34	4	0	4	30	7	0
5:15PM	1	7	2	0	7	6	12	0	9	41	3	0	1	42	8	0
5:20PM	11	5	1	0	8	4	10	0	7	29	2	0	5	42	5	0
5:25PM	7	5	3	0	8	4	15	0	9	26	3	0	6	38	4	0
5:30PM	4	1	2	0	10	5	6	0	13	44	1	0	2	41	4	0
5:35PM	4	6	2	0	7	7	9	0	9	29	2	0	5	36	3	0
5:40PM	4	4	2	0	8	7	8	0	16	33	5	0	4	36	9	0
5:45PM	3	4	1	0	13	8	9	0	9	41	3	0	6	23	7	0
5:50PM	0	3	2	0	10	5	9	0	6	36	3	0	5	44	5	0
5:55PM	2	3	2	0	7	5	7	0	9	27	4	0	4	29	5	0

Other Vehicles

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop East				Town Center Loop East				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	2	0	1	3	0	0	0	0	0	0
4:05PM	0	1	0	0	0	0	1	0	0	2	0	0	0	2	1	0



KEY DATA NETWORK

4:10PM	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
4:15PM	0	1	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0
4:20PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:40PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
4:45PM	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
5:15PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0
5:35PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0
5:45PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0

Time	NB	SB	EB	WB
4:00PM	3	3	6	0
4:05PM	0	1	0	0
4:10PM	0	0	1	1
4:15PM	1	1	1	1
4:20PM	3	0	0	1
4:25PM	0	2	1	0
4:30PM	0	0	2	0
4:35PM	4	1	1	0
4:40PM	0	0	0	0
4:45PM	1	0	3	0
4:50PM	1	0	0	2
4:55PM	0	3	0	0
5:00PM	0	0	0	0
5:05PM	0	0	0	0
5:10PM	1	0	0	0
5:15PM	1	0	0	0
5:20PM	1	1	2	2
5:25PM	0	1	0	0
5:30PM	0	0	1	0
5:35PM	0	2	1	0
5:40PM	0	3	0	0
5:45PM	2	2	0	0
5:50PM	0	1	1	0
5:55PM	0	1	1	0



KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224	
Study Name	Wilsonville Rd at Rebekah St
Location	45.302921 - -122.762076
Start Date	11/3/2016
Start Time	4:00PM
Key Data Summary	
Peak Hour Start	4:45PM
Peak 15 Min Start	4:50PM
PHF (15-Min Int)	0.98

PEAK-HOUR VOLUMES

NBLeft	NBThru	NBRt	SBLeft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
48	30	31	100	45	163	145	429	61	54	468	98	160	273	679	560	109	308	635	620

PERCENT HEAVY VEHICLES

NBLeft	NBThru	NBRt	SBLeft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0	1.6%	0.0%	0.0%	2.1%	0.0%	0.0%	0.4%	1.5%	1.4%	0.0%	0.3%	1.3%	1.6%

PHV- Pedestrians using Crosswalk

NB	SB	EB	WB
7	9	2	1

PEAK-HOUR VOLUMES- BICYCLES

NBLeft	NBThru	NBRt	SBLeft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt
0	1	0	0	0	0	0	0	0	0	2	0

All Vehicle Volumes

Start	Northbound				Southbound				Eastbound				Westbound			
	Rebekah St				Rebekah St				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	2	0	3	0	1	3	14	0	13	43	4	0	4	45	4	0
4:05PM	7	0	3	0	5	2	12	0	9	31	4	1	3	42	9	0
4:10PM	6	5	3	0	8	5	11	0	12	24	5	0	4	32	4	0
4:15PM	2	4	2	0	4	0	12	0	14	30	1	0	6	46	5	0
4:20PM	9	1	5	0	6	1	14	0	14	37	10	0	1	33	6	0
4:25PM	4	3	0	0	4	6	13	0	8	31	5	0	2	34	10	0
4:30PM	3	0	3	0	5	4	11	0	8	31	2	0	6	28	8	0
4:35PM	2	0	1	0	3	3	24	0	15	33	5	0	6	45	5	0
4:40PM	8	3	1	0	7	3	14	0	6	37	3	0	3	41	6	0
4:45PM	5	2	4	0	4	2	14	0	17	26	5	0	5	33	10	0
4:50PM	9	5	4	0	8	7	8	0	13	35	4	0	8	33	4	0
4:55PM	0	2	2	0	7	5	17	0	13	40	7	0	6	43	5	0
5:00PM	3	2	5	0	9	3	13	0	17	33	8	0	1	41	8	0
5:05PM	7	5	1	0	12	4	12	0	7	26	6	0	2	46	7	0
5:10PM	3	2	0	0	8	2	15	0	15	42	6	0	2	32	7	0
5:15PM	1	0	4	0	9	2	16	0	12	39	7	0	4	41	8	0
5:20PM	6	3	0	0	6	2	13	0	8	36	3	0	8	47	7	0
5:25PM	5	4	2	0	8	5	11	0	13	32	4	0	7	40	12	0
5:30PM	3	2	3	0	8	3	15	0	11	44	6	0	1	39	9	0
5:35PM	2	2	2	0	6	3	13	0	12	38	2	0	7	41	8	0
5:40PM	4	1	4	0	15	7	16	0	7	38	3	0	3	32	13	0
5:45PM	3	0	1	0	10	4	11	0	6	41	2	0	3	33	2	0
5:50PM	6	0	2	0	5	1	13	0	9	37	7	0	10	29	13	0
5:55PM	7	1	2	0	11	0	13	0	12	30	5	0	5	30	3	0

Bicycles on Road

Start	Northbound				Southbound				Eastbound				Westbound			
	Rebekah St				Rebekah St				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0



KEY DATA NETWORK

4:10PM	0	0	0	0	0	0	0	1	0	3	1	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:20PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	Rebekah St				Rebekah St				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	2	0	3	0	1	3	14	0	13	39	4	0	4	43	4	0
4:05PM	7	0	3	0	5	2	12	0	9	29	4	1	3	39	9	0
4:10PM	6	5	3	0	8	5	11	0	12	23	5	0	4	32	4	0
4:15PM	2	4	2	0	4	0	12	0	14	30	1	0	6	45	4	0
4:20PM	9	1	5	0	6	1	14	0	14	37	10	0	1	32	6	0
4:25PM	4	3	0	0	4	6	13	0	8	30	5	0	2	33	10	0
4:30PM	3	0	3	0	5	4	11	0	8	31	2	0	6	27	8	0
4:35PM	2	0	1	0	3	3	24	0	15	33	5	0	6	45	5	0
4:40PM	8	3	1	0	7	3	14	0	6	36	3	0	3	41	6	0
4:45PM	5	2	4	0	4	2	14	0	17	25	5	0	5	32	10	0
4:50PM	9	5	4	0	8	7	8	0	12	34	4	0	8	29	4	0
4:55PM	0	2	2	0	7	5	17	0	13	40	7	0	6	43	5	0
5:00PM	3	2	5	0	8	3	13	0	17	32	8	0	1	41	8	0
5:05PM	7	5	1	0	12	4	12	0	7	26	6	0	2	46	7	0
5:10PM	3	2	0	0	8	2	15	0	15	41	6	0	2	31	7	0
5:15PM	1	0	4	0	9	2	16	0	12	39	7	0	4	41	8	0
5:20PM	6	3	0	0	6	2	13	0	8	36	3	0	8	46	7	0
5:25PM	5	4	2	0	8	5	11	0	13	32	4	0	7	40	12	0
5:30PM	3	2	3	0	8	3	15	0	11	43	6	0	1	38	9	0
5:35PM	2	2	2	0	6	3	13	0	12	38	2	0	7	40	8	0
5:40PM	4	1	4	0	15	7	16	0	7	36	3	0	3	31	13	0
5:45PM	3	0	1	0	10	4	11	0	6	41	2	0	3	31	2	0
5:50PM	6	0	2	0	5	1	13	0	9	37	7	0	10	29	13	0
5:55PM	7	1	2	0	11	0	13	0	12	29	5	0	5	29	3	0

Other Vehicles

	Northbound				Southbound				Eastbound				Westbound			
Start	Rebekah St				Rebekah St				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0
4:05PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0

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4:10PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
4:50PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	4	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0

Pedestrian Crossing at Approach

Time	NB	SB	EB	WB
4:00PM	0	1	0	0
4:05PM	2	5	1	1
4:10PM	1	2	1	3
4:15PM	0	3	3	2
4:20PM	1	1	1	1
4:25PM	2	3	4	1
4:30PM	0	1	2	0
4:35PM	1	0	0	1
4:40PM	0	2	5	2
4:45PM	1	1	1	0
4:50PM	0	2	0	0
4:55PM	0	2	0	0
5:00PM	0	0	0	0
5:05PM	0	0	0	0
5:10PM	2	0	0	0
5:15PM	0	0	0	0
5:20PM	0	0	0	0
5:25PM	1	0	0	1
5:30PM	0	2	0	0
5:35PM	3	0	1	0
5:40PM	0	2	0	0
5:45PM	0	1	0	0
5:50PM	1	0	0	0
5:55PM	3	0	0	0

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4:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

Start	Northbound				Southbound				Eastbound				Westbound			
	Parkway Ave				Parkway Ave				Town Center Loop				Town Center Loop			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	1	12	5	0	11	19	14	0	17	6	0	0	3	10	3	0
4:05PM	2	9	1	0	9	20	23	0	14	9	0	0	3	8	9	0
4:10PM	1	6	3	0	11	13	17	0	18	5	0	0	4	9	4	0
4:15PM	0	10	5	0	10	9	16	0	11	8	1	0	6	11	13	0
4:20PM	0	11	1	0	12	13	27	0	11	9	0	0	2	6	4	0
4:25PM	1	8	2	0	8	13	16	0	11	4	1	0	5	11	2	0
4:30PM	0	6	6	0	16	6	13	0	17	7	0	0	7	8	3	0
4:35PM	2	9	3	0	13	16	19	0	12	7	0	0	4	9	2	0
4:40PM	2	7	6	0	12	19	26	0	10	10	2	0	5	6	9	0
4:45PM	0	15	0	0	13	7	24	0	11	4	0	0	4	7	12	0
4:50PM	0	6	7	0	18	8	26	0	10	5	0	0	7	5	11	0
4:55PM	0	8	5	0	13	17	18	0	7	5	1	0	1	6	7	0
5:00PM	1	4	4	0	14	18	25	0	12	7	1	0	7	7	9	0
5:05PM	0	5	3	0	7	17	17	0	21	9	1	0	6	7	8	0
5:10PM	0	16	2	0	8	14	22	0	15	4	0	0	9	6	11	0
5:15PM	0	14	3	0	16	17	21	0	14	7	1	0	3	6	2	0
5:20PM	0	10	3	0	6	14	14	0	17	7	1	0	5	4	6	0
5:25PM	1	16	2	0	9	17	16	0	20	6	2	0	5	8	5	0
5:30PM	0	5	4	0	7	19	19	0	15	3	0	0	4	9	6	0
5:35PM	1	12	2	0	8	17	19	0	12	3	1	0	3	8	7	0
5:40PM	0	8	3	0	14	15	23	0	17	4	0	0	1	4	4	0
5:45PM	0	11	5	0	7	21	19	0	11	7	2	0	2	6	6	0
5:50PM	0	8	3	0	6	12	15	0	15	4	0	0	0	8	4	0
5:55PM	0	7	6	0	12	16	24	0	12	6	1	0	2	11	5	0

Other Vehicles

Start	Northbound				Southbound				Eastbound				Westbound			
	Parkway Ave				Parkway Ave				Town Center Loop				Town Center Loop			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0

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KEY DATA NETWORK

4:05PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
4:10PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
4:45PM	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0
4:55PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
5:10PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45PM	0	1	0	0	0	1	1	0	0	0	1	0	0	0	2	1	0
5:50PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	NB	SB	EB	WB
4:00PM	0	0	1	0
4:05PM	0	0	0	0
4:10PM	0	1	0	2
4:15PM	0	0	2	1
4:20PM	0	0	6	0
4:25PM	0	0	0	0
4:30PM	0	0	0	2
4:35PM	0	0	0	1
4:40PM	0	1	1	0
4:45PM	0	0	0	0
4:50PM	0	0	0	0
4:55PM	0	0	3	0
5:00PM	0	0	2	1
5:05PM	0	0	0	2
5:10PM	0	0	0	0
5:15PM	0	0	1	0
5:20PM	0	0	2	0
5:25PM	0	0	0	2
5:30PM	1	0	3	0
5:35PM	0	0	2	0
5:40PM	0	1	0	0
5:45PM	0	0	1	0
5:50PM	1	0	0	0
5:55PM	0	0	0	0



Data Provided by K-D-N.com 503-594-4224

Study Name	Park Place at Town Center
Location	45.304604 - -122.766048
Start Date	11/3/2016
Start Time	4:00PM
Key Data Summary	
Peak Hour Start	5:00PM
Peak 15 Min Start	5:00PM
PHF (15-Min Int)	0.92

PEAK-HOUR VOLUMES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
	351	60	21	411					116		10	527	361	0	81	411	432	0	126

PERCENT HEAVY VEHICLES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
0.0%	0.6%	3.3%	0.0%	0.7%	0.0%	0.0	0.0%	0.0%	1.7%	0.0%	0.0%	0.9%	0.6%	#DIV/0!	2.5%	1.0%	0.7%	0.0%	1.6%

PHV- Pedestrians using Crosswalk

NB	SB	EB	WB
7	3		4

PEAK-HOUR VOLUMES- BICYCLES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt
	0	0	0	1					0		0

All Vehicle Volumes

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop West				Town Center Loop West								Park Place			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM		28	6	0	3	32		0					10		2	0
4:05PM		25	5	0	1	44		0					11		1	0
4:10PM		26	11	0	3	32		0					7		1	0
4:15PM		23	2	0	1	26		0					13		0	0
4:20PM		21	7	0	6	37		0					8		1	0
4:25PM		23	6	0	3	27		0					7		1	0
4:30PM		23	6	0	1	27		1					11		1	0
4:35PM		21	2	0	3	34		0					8		1	0
4:40PM		27	6	0	4	45		0					14		0	0
4:45PM		24	5	0	0	31		0					7		1	0
4:50PM		16	5	0	1	36		0					12		1	0
4:55PM		20	4	0	0	29		0					10		0	0
5:00PM		35	1	0	4	47		0					14		1	0
5:05PM		33	4	0	3	37		0					14		1	0
5:10PM		24	9	1	1	28		0					6		1	0
5:15PM		29	0	0	2	30		0					7		1	0
5:20PM		34	3	0	2	28		0					8		1	0
5:25PM		29	8	0	1	30		0					12		0	0
5:30PM		18	3	0	0	39		0					14		0	0
5:35PM		22	5	0	2	35		0					13		0	0
5:40PM		28	5	0	1	32		0					11		2	0
5:45PM		32	5	1	1	33		0					5		0	0
5:50PM		29	7	0	2	30		0					7		2	0
5:55PM		38	10	3	2	42		0					5		1	0

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop West				Town Center Loop West								Park Place			



Other Vehicles																	
	Northbound				Southbound				Eastbound				Westbound				
Start	Town Center Loop West				Town Center Loop West								Park Place				
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	
4:00PM		0	0	0		0	0						0		1	0	
4:05PM		0	0	0		0	0						0		0	0	
4:10PM		0	1	0		0	0						1		0	0	
4:15PM		0	0	0		0	0						0		0	0	
4:20PM		0	0	0		0	0						0		0	0	
4:25PM		0	0	0		0	0						0		0	0	
4:30PM		0	0	0		0	0						0		0	0	
4:35PM		2	0	0		0	1						0		0	0	
4:40PM		0	0	0		0	0						1		0	0	
4:45PM		0	1	0		0	0						0		0	0	
4:50PM		0	0	0		0	1						0		0	0	
4:55PM		0	0	0		0	0						1		0	0	
5:00PM		0	0	0		0	0						0		0	0	
5:05PM		0	0	0		0	0						0		0	0	
5:10PM		1	0	0		0	0						1		0	0	
5:15PM		1	0	0		0	0						0		0	0	
5:20PM		0	1	0		0	0						0		0	0	
5:25PM		0	0	0		0	0						0		0	0	
5:30PM		0	0	0		0	0						0		0	0	
5:35PM		0	0	0		0	0						1		0	0	
5:40PM		0	0	0		0	0						0		0	0	
5:45PM		0	0	0		0	3						0		0	0	
5:50PM		0	1	0		0	0						0		0	0	
5:55PM		0	0	0		0	0						0		0	0	

Pedestrian Crossing at Approach				
Time	NB	SB	EB	WB
4:00PM	0	0		1
4:05PM	0	0		0
4:10PM	0	0		0
4:15PM	0	0		2
4:20PM	0	0		1
4:25PM	0	0		0
4:30PM	0	0		0
4:35PM	0	0		0
4:40PM	0	0		1
4:45PM	0	0		1
4:50PM	0	0		0
4:55PM	0	0		0
5:00PM	0	0		0
5:05PM	0	0		0
5:10PM	0	0		0
5:15PM	0	0		0
5:20PM	0	3		0
5:25PM	2	0		1
5:30PM	0	0		0
5:35PM	0	0		0
5:40PM	0	0		1
5:45PM	4	0		0
5:50PM	1	0		0
5:55PM	0	0		2

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KEY DATA NETWORK

4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop East				Town Center Loop East				Courtside Dr				Courtside Dr			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	1	13	1	0	0	23	1	0	0	1	6	0	0	0	1	0
4:05PM	1	10	4	0	2	27	1	0	4	0	2	0	1	0	1	0
4:10PM	1	18	0	0	0	21	2	0	2	0	2	0	2	1	1	0
4:15PM	2	13	1	0	0	26	1	0	0	0	2	0	2	2	0	0
4:20PM	4	13	1	0	1	23	1	0	1	1	2	0	0	0	0	0
4:25PM	0	13	1	0	0	21	0	0	2	0	3	0	1	0	0	0
4:30PM	1	13	3	0	0	28	2	0	4	1	3	0	2	1	0	0
4:35PM	3	9	4	0	0	27	1	0	0	2	1	0	3	0	0	0
4:40PM	0	16	3	0	1	15	0	0	4	2	0	0	0	2	1	0
4:45PM	1	12	1	0	1	14	2	0	1	0	5	0	2	0	0	0
4:50PM	0	14	1	0	2	28	1	0	3	0	2	0	0	1	0	0
4:55PM	0	17	2	0	0	21	1	0	1	0	1	0	2	0	0	0
5:00PM	0	19	4	0	2	29	3	0	3	0	6	0	1	2	0	0
5:05PM	2	19	5	0	4	17	1	0	2	1	2	0	3	2	1	0
5:10PM	2	17	7	0	0	18	1	0	2	2	3	0	3	1	0	0
5:15PM	2	21	3	0	0	24	1	0	1	0	2	0	2	1	0	0
5:20PM	0	19	4	0	0	19	1	0	3	0	1	0	4	0	1	0
5:25PM	0	10	2	0	0	20	2	0	3	2	4	0	3	0	1	0
5:30PM	1	12	6	0	2	16	1	0	1	0	2	0	1	1	0	0
5:35PM	2	20	7	0	0	12	1	0	2	0	2	0	6	1	0	0
5:40PM	1	20	3	0	0	15	1	0	0	1	5	0	2	0	0	0
5:45PM	1	11	8	0	0	24	0	0	0	3	1	0	3	0	0	0
5:50PM	4	11	4	0	0	14	0	0	0	0	2	0	6	1	0	0
5:55PM	3	19	1	0	1	11	0	0	0	4	0	0	2	1	0	0

Other Vehicles

	Northbound				Southbound				Eastbound				Westbound			
Start	Town Center Loop East				Town Center Loop East				Courtside Dr				Courtside Dr			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0
4:05PM	0	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0



KEY DATA NETWORK

4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	2	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
4:50PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
5:40PM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Time	NB	SB	EB	WB
4:00PM	0	1	0	0
4:05PM	1	0	1	2
4:10PM	0	0	0	0
4:15PM	1	0	1	0
4:20PM	0	1	0	0
4:25PM	0	0	2	0
4:30PM	3	0	1	0
4:35PM	1	0	0	0
4:40PM	0	0	1	1
4:45PM	1	0	2	2
4:50PM	2	0	0	1
4:55PM	0	1	0	0
5:00PM	0	0	0	0
5:05PM	0	0	0	0
5:10PM	6	0	1	0
5:15PM	0	1	0	0
5:20PM	0	0	0	0
5:25PM	0	0	0	2
5:30PM	0	3	1	1
5:35PM	0	3	3	2
5:40PM	0	0	0	0
5:45PM	1	2	2	0
5:50PM	2	0	0	0
5:55PM	2	0	0	0

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KEY DATA NETWORK

Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	Canyon Creek				Canyon Creek				Town Center Loop				Town Center Loop			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	1	1	1	0	2	1	3	0	1	3	3	0	0	4	3	0
4:05PM	4	4	7	0	10	4	6	0	5	9	7	0	2	9	9	0
4:10PM	5	1	1	0	6	2	2	0	4	11	6	0	6	8	10	0
4:15PM	10	1	3	0	6	0	10	0	10	8	8	0	1	10	5	0
4:20PM	7	0	3	0	10	2	5	0	7	9	6	0	2	3	7	0
4:25PM	3	1	3	0	7	0	10	0	2	8	3	0	1	4	6	0
4:30PM	6	2	4	0	9	0	6	0	12	15	5	0	3	5	5	0
4:35PM	1	0	6	0	7	0	12	0	7	11	10	0	1	1	9	0
4:40PM	9	2	3	0	6	2	5	0	6	5	8	0	2	8	7	0
4:45PM	3	0	5	0	4	4	7	0	5	10	6	0	1	9	10	0
4:50PM	5	3	4	0	11	0	12	0	5	16	9	0	3	12	4	0
4:55PM	6	2	4	0	7	3	4	0	8	11	3	0	4	3	7	0
5:00PM	11	2	3	0	5	1	7	0	7	12	6	0	4	14	16	0
5:05PM	2	0	2	0	4	1	4	0	2	10	3	0	4	11	8	0
5:10PM	5	0	3	0	10	2	12	0	6	9	4	0	1	7	13	0
5:15PM	0	2	2	0	6	0	5	0	9	17	5	0	4	4	7	0
5:20PM	2	2	3	0	5	5	2	0	4	8	3	0	0	14	10	0
5:25PM	5	2	2	0	9	0	7	0	10	6	3	0	4	4	7	0
5:30PM	3	1	1	0	7	0	6	0	6	8	1	0	1	8	6	0
5:35PM	2	0	1	0	6	1	5	0	2	11	2	0	1	8	12	0
5:40PM	0	1	4	0	5	0	5	0	7	13	5	0	0	4	7	0
5:45PM	2	1	0	0	4	1	6	0	9	17	2	0	0	10	2	0
5:50PM	1	0	1	0	10	0	2	0	6	6	0	0	1	4	6	0
5:55PM	3	0	0	0	5	0	9	0	9	8	3	0	0	11	8	0



Other Vehicles																
	Northbound				Southbound				Eastbound				Westbound			
Start	Canyon Creek				Canyon Creek				Town Center Loop				Town Center Loop			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:05PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrian Crossing at Approach				
Time	NB	SB	EB	WB
4:00PM	0	0	0	0
4:05PM	0	0	0	0
4:10PM	0	0	2	0
4:15PM	2	0	1	0
4:20PM	0	0	0	0
4:25PM	0	0	0	0
4:30PM	0	0	0	0
4:35PM	1	1	0	0
4:40PM	0	0	2	0
4:45PM	0	0	0	0
4:50PM	0	0	0	0
4:55PM	0	0	0	0
5:00PM	1	1	0	0
5:05PM	0	0	0	0
5:10PM	0	0	0	0
5:15PM	1	0	1	0
5:20PM	0	0	1	0
5:25PM	0	1	0	0
5:30PM	2	0	0	0
5:35PM	0	0	0	0
5:40PM	1	0	0	1
5:45PM	0	0	0	0
5:50PM	0	0	0	0
5:55PM	0	2	2	0

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4:10PM	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0
4:15PM	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:25PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
4:30PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
4:40PM	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0
4:45PM	2	1	0	0	0	0	2	0	0	0	1	0	0	1	0	0
4:50PM	0	0	0	0	0	0	2	0	0	1	0	0	0	4	0	0
4:55PM	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:10PM	1	0	0	0	0	1	0	0	1	2	0	0	0	1	0	0
5:15PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:20PM	0	1	0	0	0	0	0	0	0	0	2	0	0	1	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	1	0	0	0	0	1	0	0	0	2	0	0	0	1	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
5:50PM	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0
5:55PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

Time	NB	SB	EB	WB
4:00PM	0	1	0	1
4:05PM	3	1	0	6
4:10PM	1	0	0	2
4:15PM	1	0	0	3
4:20PM	0	0	0	3
4:25PM	1	0	0	1
4:30PM	0	0	0	0
4:35PM	0	1	0	3
4:40PM	0	1	0	1
4:45PM	4	0	0	2
4:50PM	1	1	0	5
4:55PM	1	0	0	1
5:00PM	0	0	0	1
5:05PM	6	0	0	0
5:10PM	1	1	0	2
5:15PM	0	0	0	0
5:20PM	2	0	0	0
5:25PM	0	0	0	0
5:30PM	0	0	0	2
5:35PM	0	0	0	0
5:40PM	0	0	0	0
5:45PM	1	0	0	2
5:50PM	0	0	0	0
5:55PM	1	0	0	5



Data Provided by K-D-N.com 503-594-4224	
Study Name	Wilsonville Rd at I5 NB ramps
Location	45.302952 - -122.768422
Start Date	11/3/2016
Start Time	4:00PM
Key Data Summary	
Peak Hour Start	4:40PM
Peak 15 Min Start	4:40PM
PHF (15-Min Int)	0.97

PEAK-HOUR VOLUMES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
395	1	489	0	0	0	360	618	0	0	1043	326	0	687	1438	1107	885	0	978	1369

PERCENT HEAVY VEHICLES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt	NBEnt	SBEnt	EBEnt	WBEnt	NBLeav	SBLeav	EBLeav	WBLeav
5.5%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0	1.3%	0.0%	0.0%	1.0%	1.8%	0.0%	2.5%	2.2%	1.0%	2.8%	0.0%	1.9%	1.2%

PHV- Pedestrians using Crosswalk

NB	SB	EB	WB
5	23	0	2

PEAK-HOUR VOLUMES- BICYCLES

NBLeft	NBThru	NBRt	SBLleft	SBThru	SBRt	EBLeft	EBThru	EBRt	WBLeft	WBThru	WBRt
2	0	0	0	0	0	0	0	0	0	1	0

All Vehicle Volumes

Start	Northbound				Southbound				Eastbound				Westbound			
	I5 NB off ramp				I5 NB on ramp				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	22	0	30	0	0	0	0	0	24	53	0	1	0	61	22	0
4:05PM	19	0	24	0	0	0	0	0	52	66	0	0	0	95	30	0
4:10PM	27	0	32	0	0	0	0	0	28	51	0	0	0	90	28	0
4:15PM	45	0	37	0	0	0	0	0	40	44	0	0	0	89	24	0
4:20PM	26	0	38	0	0	0	0	0	29	67	0	0	0	74	32	0
4:25PM	28	0	33	0	0	0	0	0	34	51	0	0	0	82	14	0
4:30PM	34	0	40	0	0	0	0	0	23	46	0	0	0	75	27	0
4:35PM	33	0	43	0	0	0	0	0	31	38	0	0	0	63	27	0
4:40PM	26	0	47	0	0	0	0	0	39	44	0	0	0	95	31	0
4:45PM	35	0	38	0	0	0	0	0	25	47	0	0	0	96	21	0
4:50PM	39	0	55	0	0	0	0	0	36	47	0	0	0	86	24	0
4:55PM	23	0	47	0	0	0	0	0	28	48	0	0	0	76	28	0
5:00PM	26	0	27	0	0	0	0	0	35	62	0	0	0	104	35	0
5:05PM	30	0	33	0	0	0	0	0	25	55	0	0	0	95	38	0
5:10PM	39	0	35	0	0	0	0	0	31	54	0	0	0	77	26	0
5:15PM	34	0	45	0	0	0	0	0	27	56	0	0	0	64	26	0
5:20PM	41	0	36	0	0	0	0	0	22	58	0	0	0	86	21	0
5:25PM	32	0	37	0	0	0	0	0	37	54	0	0	0	101	29	0
5:30PM	36	1	53	0	0	0	0	0	33	53	0	0	0	73	22	0
5:35PM	34	0	36	0	0	0	0	0	22	40	0	0	0	90	25	0
5:40PM	41	0	34	0	0	0	0	0	14	60	0	0	0	102	28	0
5:45PM	31	0	33	0	0	0	0	0	29	66	0	0	0	77	20	0
5:50PM	32	0	34	0	0	0	0	0	35	45	0	0	0	66	15	0
5:55PM	19	0	33	0	0	0	0	0	33	54	0	0	0	84	18	0

Bicycles on Road																
Start	Northbound				Southbound				Eastbound				Westbound			
	I5 NB off ramp				I5 NB on ramp				Wilsonville Rd				Wilsonville Rd			

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Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05PM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	I5 NB off ramp				I5 NB on ramp				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	19	0	30	0	0	0	0	0	24	47	0	0	0	60	20	0
4:05PM	18	0	24	0	0	0	0	0	50	64	0	0	0	94	27	0
4:10PM	24	0	32	0	0	0	0	0	28	49	0	0	0	89	28	0
4:15PM	43	0	36	0	0	0	0	0	38	43	0	0	0	89	24	0
4:20PM	24	0	38	0	0	0	0	0	28	66	0	0	0	72	32	0
4:25PM	26	0	32	0	0	0	0	0	32	51	0	0	0	81	14	0
4:30PM	28	0	40	0	0	0	0	0	20	46	0	0	0	74	26	0
4:35PM	32	0	42	0	0	0	0	0	30	37	0	0	0	63	27	0
4:40PM	25	0	46	0	0	0	0	0	38	42	0	0	0	95	30	0
4:45PM	34	0	38	0	0	0	0	0	24	45	0	0	0	95	20	0
4:50PM	38	0	54	0	0	0	0	0	35	47	0	0	0	83	22	0
4:55PM	21	0	47	0	0	0	0	0	26	48	0	0	0	74	26	0
5:00PM	25	0	27	0	0	0	0	0	34	62	0	0	0	104	35	0
5:05PM	25	0	33	0	0	0	0	0	23	55	0	0	0	95	38	0
5:10PM	35	0	34	0	0	0	0	0	30	53	0	0	0	75	26	0
5:15PM	33	0	45	0	0	0	0	0	27	55	0	0	0	64	26	0
5:20PM	39	0	36	0	0	0	0	0	22	56	0	0	0	85	21	0
5:25PM	31	0	37	0	0	0	0	0	36	54	0	0	0	101	29	0
5:30PM	35	1	53	0	0	0	0	0	32	53	0	0	0	73	22	0
5:35PM	32	0	36	0	0	0	0	0	22	40	0	0	0	89	25	0
5:40PM	41	0	34	0	0	0	0	0	13	58	0	0	0	100	27	0
5:45PM	31	0	33	0	0	0	0	0	26	65	0	0	0	76	20	0
5:50PM	31	0	33	0	0	0	0	0	32	45	0	0	0	64	15	0
5:55PM	19	0	33	0	0	0	0	0	31	54	0	0	0	82	18	0



Other Vehicles																	
	Northbound				Southbound				Eastbound				Westbound				
Start	I5 NB off ramp				I5 NB on ramp				Wilsonville Rd				Wilsonville Rd				
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	
4:00PM	3	0	0	0	0	0	0	0	0	0	6	0	1	0	1	2	0
4:05PM	1	0	0	0	0	0	0	0	0	2	2	0	0	0	1	3	0
4:10PM	3	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0
4:15PM	2	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0	0
4:20PM	2	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0
4:25PM	2	0	1	0	0	0	0	0	0	2	0	0	0	0	1	0	0
4:30PM	6	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1	0
4:35PM	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0
4:40PM	1	0	1	0	0	0	0	0	0	1	2	0	0	0	0	1	0
4:45PM	1	0	0	0	0	0	0	0	0	1	2	0	0	0	1	1	0
4:50PM	1	0	1	0	0	0	0	0	0	1	0	0	0	0	3	2	0
4:55PM	2	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0
5:00PM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:05PM	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
5:10PM	4	0	1	0	0	0	0	0	0	1	1	0	0	0	2	0	0
5:15PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
5:20PM	2	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0
5:25PM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:30PM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
5:35PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:40PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	1	0
5:45PM	0	0	0	0	0	0	0	0	0	3	1	0	0	0	1	0	0
5:50PM	1	0	1	0	0	0	0	0	0	3	0	0	0	0	2	0	0
5:55PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0

Pedestrian Crossing at Approach				
Time	NB	SB	EB	WB
4:00PM	2	1	0	0
4:05PM	0	2	0	0
4:10PM	2	0	0	0
4:15PM	1	0	0	0
4:20PM	1	0	0	0
4:25PM	0	1	0	0
4:30PM	1	1	0	0
4:35PM	0	1	0	0
4:40PM	0	1	0	0
4:45PM	1	1	0	0
4:50PM	0	1	0	0
4:55PM	2	1	0	0
5:00PM	0	1	0	0
5:05PM	0	2	0	0
5:10PM	0	3	0	0
5:15PM	0	2	0	0
5:20PM	1	2	0	0
5:25PM	1	1	0	0
5:30PM	0	5	0	1
5:35PM	0	3	0	1
5:40PM	1	1	0	0
5:45PM	2	0	0	2
5:50PM	1	0	0	0
5:55PM	0	0	0	0

K-D-N

KEY DATA NETWORK

Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
4:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
4:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
5:10PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Lights

	Northbound				Southbound				Eastbound				Westbound			
Start	I5 SB on ramp				I5 SB off ramp				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	13	0	16	0	0	74	56	0	42	61	0	0
4:05PM	0	0	0	0	10	0	15	0	0	90	63	0	50	61	0	0
4:10PM	0	0	0	0	14	0	6	0	0	61	51	0	48	53	0	0
4:15PM	0	0	0	0	10	0	18	0	0	80	55	0	34	83	0	0
4:20PM	0	0	0	0	12	0	15	0	0	82	48	0	40	78	0	0
4:25PM	0	0	0	0	11	0	12	0	0	49	50	0	41	59	0	0
4:30PM	0	0	0	0	11	0	9	0	0	61	48	0	27	57	0	0
4:35PM	0	0	0	0	9	0	17	0	0	74	87	0	28	82	0	0
4:40PM	0	0	0	0	8	0	12	0	0	60	49	0	47	76	0	0
4:45PM	0	0	0	0	14	0	8	0	0	58	51	0	48	88	0	0
4:50PM	0	0	0	0	11	0	26	0	0	67	44	0	32	63	0	0
4:55PM	0	0	0	0	10	0	9	0	0	74	33	0	42	76	0	0
5:00PM	0	0	0	0	10	0	13	0	0	75	54	0	54	76	0	0
5:05PM	0	0	0	0	15	0	15	0	0	63	60	0	43	62	0	1
5:10PM	0	0	0	0	12	0	9	0	0	76	56	0	22	73	0	0
5:15PM	0	0	0	0	11	0	14	0	0	73	52	0	41	91	0	0
5:20PM	0	0	0	0	13	0	14	0	0	61	52	0	42	64	0	0
5:25PM	0	0	0	0	10	0	17	0	0	81	58	0	49	70	0	0
5:30PM	0	0	0	0	13	0	12	0	0	64	54	0	33	91	0	0
5:35PM	0	0	0	0	12	0	24	0	0	55	46	0	44	88	0	0
5:40PM	0	0	0	0	15	0	15	0	0	54	45	0	43	81	0	0
5:45PM	0	0	0	0	22	0	9	0	0	64	37	0	25	63	0	0
5:50PM	0	0	0	0	10	0	15	0	0	80	40	0	37	79	0	0
5:55PM	0	0	0	0	7	0	21	0	0	68	40	0	44	54	0	0



Other Vehicles																
	Northbound				Southbound				Eastbound				Westbound			
Start	I5 SB on ramp				I5 SB off ramp				Wilsonville Rd				Wilsonville Rd			
Time	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
4:00PM	0	0	0	0	0	0	0	0	0	9	0	0	1	3	0	0
4:05PM	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0
4:10PM	0	0	0	0	0	0	1	0	0	1	3	0	0	3	0	0
4:15PM	0	0	0	0	0	0	1	0	0	5	5	0	1	2	0	0
4:20PM	0	0	0	0	0	0	1	0	0	1	1	0	1	3	0	0
4:25PM	0	0	0	0	1	0	0	0	0	2	2	0	0	6	0	0
4:30PM	0	0	0	0	0	0	0	0	0	3	1	0	1	4	0	0
4:35PM	0	0	0	0	1	0	3	0	0	0	2	0	0	2	0	0
4:40PM	0	0	0	0	0	0	1	0	0	3	2	0	0	1	0	0
4:45PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0
4:50PM	0	0	0	0	0	0	1	0	0	1	1	0	1	3	0	0
4:55PM	0	0	0	0	0	0	2	0	0	2	0	0	1	2	0	0
5:00PM	0	0	0	0	0	0	1	0	0	3	1	0	0	2	0	0
5:05PM	0	0	0	0	0	0	1	0	0	0	2	0	0	5	0	0
5:10PM	0	0	0	0	1	0	0	0	0	2	2	0	1	3	0	0
5:15PM	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0
5:20PM	0	0	0	0	0	0	1	0	0	2	1	0	0	2	0	0
5:25PM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0
5:30PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
5:35PM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0
5:40PM	0	0	0	0	0	0	0	0	0	4	3	0	1	1	0	0
5:45PM	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0
5:50PM	0	0	0	0	0	0	0	0	0	1	0	0	1	3	0	0
5:55PM	0	0	0	0	0	0	1	0	0	2	0	0	0	3	0	0

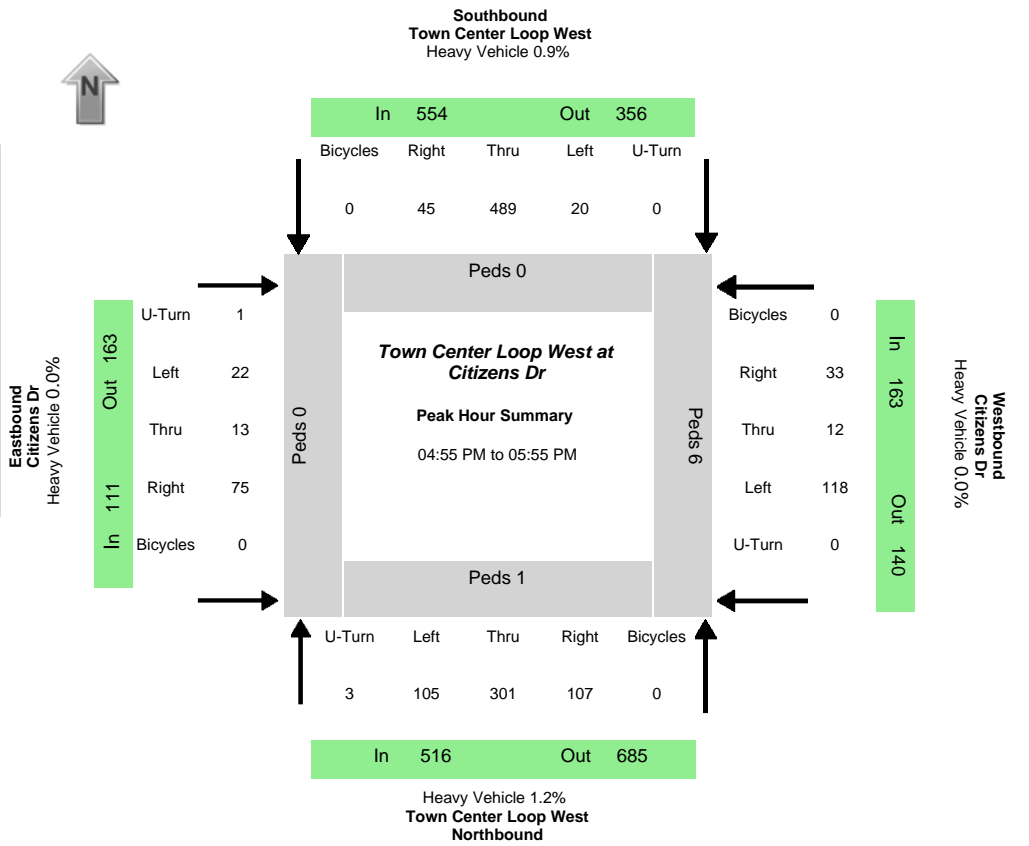
Pedestrian Crossing at Approach				
Time	NB	SB	EB	WB
4:00PM	0	2	0	0
4:05PM	1	2	0	0
4:10PM	1	0	0	0
4:15PM	1	0	0	0
4:20PM	1	0	0	0
4:25PM	0	1	0	0
4:30PM	1	0	0	0
4:35PM	0	1	0	0
4:40PM	0	0	1	1
4:45PM	0	1	0	0
4:50PM	2	1	0	0
4:55PM	0	0	1	0
5:00PM	0	0	0	0
5:05PM	0	2	0	0
5:10PM	0	0	0	0
5:15PM	2	2	0	0
5:20PM	1	0	0	0
5:25PM	0	0	0	0
5:30PM	2	1	1	0
5:35PM	2	2	2	0
5:40PM	1	0	0	0
5:45PM	0	0	0	0
5:50PM	3	0	0	0
5:55PM	1	0	0	0



KEY DATA NETWORK

Data Provided by K-D-N.com 503-594-4224

N/S street	Town Center Loop West
E/W street	Citizens Dr
City, State	Wilsonville OR
Site Notes	
Location	45.303987 - -122.765828
Start Date	Thursday, February 23, 2017
Start Time	04:00:00 PM
Weather	Partial sun/clouds
Study ID #	106701
Peak Hour Start	04:55:00 PM
Peak 15 Min Start	05:20:00 PM
PHF (15-Min Int)	0.93



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
105	301	107	3	20	489	45	0	22	13	75	1	118	12	33	0	516	554	111	163	685	356	163	140
Percent Heavy Vehicles																							
1.0%	1.7%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.9%	0.0%	0.0%	0.7%	1.4%	0.6%	0.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	1	16	32

Time	All Vehicle Volumes																15 Min Sum	1 HR Sum
	Northbound Town Center Loop West				Southbound Town Center Loop West				Eastbound Citizens Dr				Westbound Citizens Dr					
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	8	33	9	0	1	43	2	0	2	0	3	0	7	0	1	0		
04:05:00 PM	9	31	17	0	0	31	2	0	0	0	4	0	6	2	3	0		
04:10:00 PM	7	22	12	0	3	44	2	0	4	0	9	0	12	0	2	0	331	
04:15:00 PM	4	15	8	0	1	51	1	0	1	3	5	0	8	4	2	0	325	
04:20:00 PM	5	23	14	0	0	50	2	0	2	3	8	0	7	1	3	0	338	
04:25:00 PM	3	19	8	0	0	32	3	0	3	0	2	0	9	1	4	0	305	
04:30:00 PM	10	21	6	0	2	42	0	0	2	0	5	0	11	1	3	0	305	
04:35:00 PM	7	34	11	1	1	40	4	0	1	0	4	0	12	1	3	0	306	
04:40:00 PM	7	29	10	1	2	48	8	0	1	0	7	0	12	2	2	0	351	
04:45:00 PM	7	24	7	0	2	26	10	0	6	1	1	0	5	3	6	0	346	
04:50:00 PM	11	17	8	0	3	35	1	0	0	0	7	0	4	0	1	0	314	
04:55:00 PM	7	21	12	0	0	40	3	0	2	3	9	0	12	1	7	0	302	1289
05:00:00 PM	3	22	9	0	0	52	3	0	1	1	4	1	5	1	0	0	306	1282
05:05:00 PM	11	26	6	1	1	33	2	0	0	0	9	0	8	2	3	0	321	1279
05:10:00 PM	3	15	11	0	1	51	4	0	3	0	5	0	11	0	2	0	310	1268
05:15:00 PM	3	30	12	0	4	40	5	0	3	0	9	0	8	1	0	0	323	1280
05:20:00 PM	9	34	10	1	2	34	6	0	2	2	6	0	11	0	1	0	339	1280
05:25:00 PM	13	22	6	0	1	51	2	0	3	1	5	0	15	2	6	0	360	1323
05:30:00 PM	16	23	16	0	2	32	2	0	2	2	10	0	9	1	3	0	363	1338
05:35:00 PM	12	24	7	0	3	44	2	0	2	3	2	0	15	2	1	0	362	1336
05:40:00 PM	9	29	6	0	0	35	7	0	0	0	9	0	8	0	3	0	341	1313
05:45:00 PM	7	24	5	1	2	44	6	0	3	0	2	0	8	0	6	0	331	1323
05:50:00 PM	12	31	7	0	4	33	3	0	1	1	5	0	8	2	1	0	322	1344
05:55:00 PM	14	23	5	1	2	34	8	0	2	1	6	0	6	0	2	0	320	1331



ATTACHEMENT D

Intersection Traffic Analysis HCM Worksheets

HCM Signalized Intersection Capacity Analysis

1: Wilsonville Rd & Town Center Loop E

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	485	50	56	444	70	45	57	34	106	79	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1749	1900	1534	1797	3506		1805	1734		1805	1900	1531
Flt Permitted	0.41	1.00	1.00	0.41	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	752	1900	1534	785	3506		1805	1734		1805	1900	1531
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	146	505	52	58	462	73	47	59	35	110	82	136
RTOR Reduction (vph)	0	0	20	0	7	0	0	26	0	0	0	121
Lane Group Flow (vph)	146	505	32	58	528	0	47	68	0	110	82	15
Confl. Peds. (#/hr)	5		13	13		5	2		5	5		2
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	2%	3%	0%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	76.8	68.6	68.6	70.8	65.6		6.8	8.2		11.5	12.4	12.4
Effective Green, g (s)	76.8	68.6	68.6	70.8	65.6		6.8	8.2		11.5	12.4	12.4
Actuated g/C Ratio	0.70	0.62	0.62	0.64	0.60		0.06	0.07		0.10	0.11	0.11
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	599	1184	956	553	2090		111	129		188	214	172
v/s Ratio Prot	c0.02	c0.27		0.00	0.15		0.03	c0.04		c0.06	0.04	
v/s Ratio Perm	0.15		0.02	0.06								0.01
v/c Ratio	0.24	0.43	0.03	0.10	0.25		0.42	0.53		0.59	0.38	0.09
Uniform Delay, d1	5.7	10.6	8.0	7.6	10.6		49.7	49.0		47.0	45.3	43.7
Progression Factor	0.81	0.66	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	1.1	0.1	0.1	0.3		1.9	3.0		3.8	0.8	0.2
Delay (s)	4.8	8.1	8.0	7.6	10.8		51.6	52.0		50.8	46.1	43.9
Level of Service	A	A	A	A	B		D	D		D	D	D
Approach Delay (s)		7.4			10.5			51.9			46.8	
Approach LOS		A			B			D			D	

Intersection Summary

HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Rebekah & Wilsonville Rd

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	544	117	54	468	98	48	30	31	100	45	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.92			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	1.00
Satd. Flow (prot)	1783	3430		1798	3437		1803	1741			1822	1594
Flt Permitted	0.40	1.00		0.39	1.00		0.51	1.00			0.75	1.00
Satd. Flow (perm)	744	3430		745	3437		964	1741			1423	1594
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	199	555	119	55	478	100	49	31	32	102	46	177
RTOR Reduction (vph)	0	10	0	0	10	0	0	27	0	0	0	151
Lane Group Flow (vph)	199	664	0	55	568	0	49	36	0	0	148	26
Confl. Peds. (#/hr)	7		9	9		7	1		2	2		1
Confl. Bikes (#/hr)						2			1			
Heavy Vehicles (%)	1%	2%	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	84.3	75.9		77.3	72.4		16.7	16.7			16.2	16.2
Effective Green, g (s)	84.3	75.9		77.3	72.4		16.7	16.7			16.2	16.2
Actuated g/C Ratio	0.77	0.69		0.70	0.66		0.15	0.15			0.15	0.15
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	649	2366		570	2262		146	264			209	234
v/s Ratio Prot	c0.02	0.19		0.00	0.17			0.02				
v/s Ratio Perm	c0.21			0.06			0.05				c0.10	0.02
v/c Ratio	0.31	0.28		0.10	0.25		0.34	0.14			0.71	0.11
Uniform Delay, d1	3.6	6.6		5.0	7.7		41.7	40.4			44.6	40.7
Progression Factor	0.92	0.31		0.82	0.76		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.2	0.3		0.1	0.3		1.0	0.2			9.7	0.2
Delay (s)	3.5	2.3		4.2	6.1		42.7	40.6			54.4	40.8
Level of Service	A	A		A	A		D	D			D	D
Approach Delay (s)		2.6			5.9			41.5			47.0	
Approach LOS		A			A			D			D	

Intersection Summary

HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Parkway Ave & Town Center Loop W/Town Center Loop E

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↗		↖	↗	↗
Volume (vph)	165	78	9	62	80	89	6	119	44	139	185	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	3396		1752	1900	1564	1805	1748		1770	1881	1566
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1787	3396		1752	1900	1564	1805	1748		1770	1881	1566
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	174	82	9	65	84	94	6	125	46	146	195	262
RTOR Reduction (vph)	0	6	0	0	0	71	0	12	0	0	0	159
Lane Group Flow (vph)	174	85	0	65	84	23	6	159	0	146	195	103
Confl. Peds. (#/hr)	1		1	1		1	6		12	12		6
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	5%	0%	3%	0%	1%	0%	3%	5%	2%	1%	1%
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6						4
Actuated Green, G (s)	20.5	31.9		15.5	26.9	26.9	1.4	29.1		15.5	43.2	43.2
Effective Green, g (s)	20.5	31.9		15.5	26.9	26.9	1.4	29.1		15.5	43.2	43.2
Actuated g/C Ratio	0.19	0.29		0.14	0.24	0.24	0.01	0.26		0.14	0.39	0.39
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	333	984		246	464	382	22	462		249	738	615
v/s Ratio Prot	c0.10	0.02		0.04	c0.04		0.00	c0.09		c0.08	0.10	
v/s Ratio Perm						0.01						0.07
v/c Ratio	0.52	0.09		0.26	0.18	0.06	0.27	0.34		0.59	0.26	0.17
Uniform Delay, d1	40.3	28.4		42.2	32.8	31.9	53.8	32.7		44.2	22.6	21.7
Progression Factor	0.58	0.37		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.7	0.1		2.6	0.9	0.3	6.6	2.0		9.7	0.9	0.6
Delay (s)	28.2	10.6		44.8	33.7	32.2	60.4	34.8		54.0	23.5	22.3
Level of Service	C	B		D	C	C	E	C		D	C	C
Approach Delay (s)		22.1			36.1			35.6			30.4	
Approach LOS		C			D			D			C	

Intersection Summary		
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.38	
Actuated Cycle Length (s)	110.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	62.9%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group

Intersection

Int Delay, s/veh 2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	116	10	351	60	21	411
Conflicting Peds, #/hr	3	7	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	1	3	0	1
Mvmt Flow	126	11	382	65	23	447

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	690	230	0 0 454 0
Stage 1	421	-	- - - -
Stage 2	269	-	- - - -
Critical Hdwy	6.84	6.9	- - 4.1 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.3	- - 2.2 -
Pot Cap-1 Maneuver	379	779	- - 1117 -
Stage 1	630	-	- - - -
Stage 2	752	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	369	774	- - 1117 -
Mov Cap-2 Maneuver	369	-	- - - -
Stage 1	626	-	- - - -
Stage 2	737	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	18.9	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	369	774	1117	-
HCM Lane V/C Ratio	-	-	0.342	0.014	0.02	-
HCM Control Delay (s)	-	-	19.7	9.7	8.3	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0	0.1	-

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	9	33	31	9	4	13	202	54	10	245	14
Conflicting Peds, #/hr	9	0	10	10	0	9	6	0	7	7	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	6	3	0	25	15	1	4	0	1	0
Mvmt Flow	24	10	38	36	10	5	15	232	62	11	282	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	634	657	307	650	634	280	308	0	0	304	0	0
Stage 1	323	323	-	303	303	-	-	-	-	-	-	-
Stage 2	311	334	-	347	331	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.527	4	3.525	2.335	-	-	2.2	-	-
Pot Cap-1 Maneuver	395	387	724	381	399	707	1182	-	-	1268	-	-
Stage 1	693	654	-	704	667	-	-	-	-	-	-	-
Stage 2	704	647	-	667	649	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	373	372	714	342	384	697	1175	-	-	1261	-	-
Mov Cap-2 Maneuver	373	372	-	342	384	-	-	-	-	-	-	-
Stage 1	678	643	-	689	653	-	-	-	-	-	-	-
Stage 2	676	633	-	612	638	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	16.4	0.4	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1175	-	-	497	367	1261	-	-
HCM Lane V/C Ratio	0.013	-	-	0.146	0.138	0.009	-	-
HCM Control Delay (s)	8.1	-	-	13.5	16.4	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.5	0	-	-

HCM Signalized Intersection Capacity Analysis

6: Canyon Creek Rd & Town Center Loop E

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	128	77	30	90	96	70	18	46	88	18	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.89		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1574	1805	1683		1805	1654		1786	1620	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.66	1.00		0.71	1.00	
Satd. Flow (perm)	1805	1863	1574	1805	1683		1254	1654		1335	1620	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	89	145	88	34	102	109	80	20	52	100	20	99
RTOR Reduction (vph)	0	0	38	0	34	0	0	39	0	0	74	0
Lane Group Flow (vph)	89	145	50	34	177	0	80	33	0	100	45	0
Confl. Peds. (#/hr)	4		2	2		4			5	5		
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	0%	2%	0%	0%	4%	1%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	9.0	56.4	56.4	5.1	52.5		25.5	25.5		25.5	25.5	
Effective Green, g (s)	9.0	56.4	56.4	5.1	52.5		25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.09	0.56	0.56	0.05	0.52		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	1050	887	92	883		319	421		340	413	
v/s Ratio Prot	c0.05	c0.08		0.02	c0.11			0.02			0.03	
v/s Ratio Perm			0.03				0.06			c0.07		
v/c Ratio	0.55	0.14	0.06	0.37	0.20		0.25	0.08		0.29	0.11	
Uniform Delay, d1	43.6	10.3	9.8	45.9	12.6		29.6	28.3		30.0	28.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	0.3	0.1	2.5	0.5		1.9	0.4		2.2	0.5	
Delay (s)	47.3	10.6	9.9	48.4	13.1		31.5	28.7		32.2	29.1	
Level of Service	D	B	A	D	B		C	C		C	C	
Approach Delay (s)		20.6			18.0			30.2			30.5	
Approach LOS		C			B			C			C	

Intersection Summary		
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.25	
Actuated Cycle Length (s)	100.0	Sum of lost time (s) 13.0
Intersection Capacity Utilization	51.0%	ICU Level of Service A
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

7: Town Center Lp West/Town Center Loop W & Wilsonville Rd

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	406	789	54	24	632	33	222	71	29	38	79	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.0	4.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.95		*0.95	0.91		1.00	0.95	0.95
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	0.89	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97		0.95	1.00	1.00
Satd. Flow (prot)	3502	3523		1805	3544		1665	3217		1805	1539	1463
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97		0.95	1.00	1.00
Satd. Flow (perm)	3502	3523		1805	3544		1665	3217		1805	1539	1463
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	432	839	57	26	672	35	236	76	31	40	84	548
RTOR Reduction (vph)	0	3	0	0	3	0	0	11	0	0	95	260
Lane Group Flow (vph)	432	893	0	26	704	0	118	214	0	40	225	52
Confl. Peds. (#/hr)	15		3	3		15	14					14
Heavy Vehicles (%)	0%	1%	6%	0%	1%	0%	3%	3%	0%	0%	3%	1%
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	18.2	56.9		4.5	43.2		12.8	12.8		18.3	18.3	18.3
Effective Green, g (s)	18.2	57.4		4.5	43.7		12.8	12.8		18.8	18.8	18.3
Actuated g/C Ratio	0.17	0.52		0.04	0.40		0.12	0.12		0.17	0.17	0.17
Clearance Time (s)	4.0	4.5		4.0	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.3		2.5	4.3		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	579	1838		73	1407		193	374		308	263	243
v/s Ratio Prot	c0.12	c0.25		0.01	0.20		c0.07	0.07		0.02	c0.15	
v/s Ratio Perm												0.04
v/c Ratio	0.75	0.49		0.36	0.50		0.61	0.57		0.13	0.86	0.21
Uniform Delay, d1	43.7	16.8		51.3	24.9		46.2	46.0		38.7	44.3	39.6
Progression Factor	0.88	1.22		1.06	0.89		1.00	1.00		0.96	0.92	0.94
Incremental Delay, d2	4.6	0.9		2.1	1.2		4.8	1.7		0.1	22.7	0.3
Delay (s)	43.0	21.4		56.5	23.5		51.1	47.7		37.4	63.4	37.4
Level of Service	D	C		E	C		D	D		D	E	D
Approach Delay (s)		28.4			24.7			48.9			49.8	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

8: I-5 NB & Wilsonville Rd

PM 100 Sec
Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔↔	↑↑			↑↑↑	↔	↔	↔	↔↔				
Volume (vph)	400	780	0	0	1043	326	395	1	489	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5				
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88				
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)	3400	3574			5136	1549	1618	1623	2814				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)	3400	3574			5136	1549	1618	1623	2814				
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	412	804	0	0	1075	336	407	1	504	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	196	0	0	263	0	0	0	
Lane Group Flow (vph)	412	804	0	0	1075	140	203	205	241	0	0	0	
Confl. Peds. (#/hr)	5		23	23		5	2					2	
Confl. Bikes (#/hr)						1			2				
Heavy Vehicles (%)	3%	1%	0%	0%	1%	2%	6%	0%	1%	0%	0%	0%	
Turn Type	Prot	NA			NA	Perm	Split	NA	custom				
Protected Phases	5	2			6		3	3	8				
Permitted Phases						6							
Actuated Green, G (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5				
Effective Green, g (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5				
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.26	0.26	0.26				
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5				
Vehicle Extension (s)	2.3	4.9			4.9	4.9	2.3	2.3	2.3				
Lane Grp Cap (vph)	911	2355			1797	542	419	420	729				
v/s Ratio Prot	c0.12	0.22			c0.21		0.13	c0.13	0.09				
v/s Ratio Perm						0.09							
v/c Ratio	0.45	0.34			0.60	0.26	0.48	0.49	0.33				
Uniform Delay, d1	33.5	8.2			29.4	25.6	34.5	34.6	33.0				
Progression Factor	0.77	0.20			0.94	0.90	1.00	1.00	1.00				
Incremental Delay, d2	1.4	0.4			1.2	1.0	4.0	4.0	0.2				
Delay (s)	27.3	2.0			28.8	24.1	38.5	38.6	33.2				
Level of Service	C	A			C	C	D	D	C				
Approach Delay (s)		10.6			27.6			35.6			0.0		
Approach LOS		B			C			D			A		
Intersection Summary													
HCM 2000 Control Delay			23.8		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.52										
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				13.5				
Intersection Capacity Utilization			76.7%		ICU Level of Service				D				
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 9: I-5 SB & Wilsonville Rd

PM 100 Sec
 Wilsonville Road Signal Timing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖↗	↑↑					↘	↖	↖↗
Volume (vph)	0	842	664	495	943	0	0	0	0	338	0	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	0.88
Frbp, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1542	3467	3505					1698	1698	2656
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1542	3467	3505					1698	1698	2656
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	868	685	510	972	0	0	0	0	348	0	338
RTOR Reduction (vph)	0	0	403	0	0	0	0	0	0	0	0	175
Lane Group Flow (vph)	0	868	282	510	972	0	0	0	0	174	174	163
Confl. Peds. (#/hr)	7		8	8		7	1		3	3		1
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	0%	2%	2%	1%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					7	7	4
Permitted Phases			2									
Actuated Green, G (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Effective Green, g (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Actuated g/C Ratio		0.34	0.34	0.25	0.63					0.29	0.29	0.29
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.9	4.9	2.3	4.9					2.3	2.3	2.3
Lane Grp Cap (vph)		1733	525	866	2214					486	486	760
v/s Ratio Prot		0.17		c0.15	0.28					c0.10	0.10	0.06
v/s Ratio Perm			c0.18									
v/c Ratio		0.50	0.54	0.59	0.44					0.36	0.36	0.21
Uniform Delay, d1		28.8	29.3	36.3	10.3					31.2	31.2	29.8
Progression Factor		0.86	0.79	1.70	0.19					1.00	1.00	1.00
Incremental Delay, d2		0.8	3.1	2.4	0.5					2.1	2.1	0.1
Delay (s)		25.6	26.1	64.1	2.5					33.3	33.3	29.9
Level of Service		C	C	E	A					C	C	C
Approach Delay (s)		25.8			23.7			0.0			31.6	
Approach LOS		C			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			26.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			76.7%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

Intersection

Intersection Delay, s/veh 12

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	13	75	118	12	33	105	301	107	20	489	45
Conflicting Peds, #/hr	0	0	1	6	0	6	1	0	1	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	1	2	0	0	1	0
Mvmt Flow	24	14	81	127	13	35	113	324	115	22	526	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	994	1265	289	927	1231	231	575	0	0	445	0	0
Stage 1	594	594	-	613	613	-	-	-	-	-	-	-
Stage 2	400	671	-	314	618	-	-	-	-	-	-	-
Follow-up Headway	4	4	3	4	4	3	2	-	-	2	-	-
Pot Capacity-1 Maneuver	202	171	714	226	179	777	1001	-	-	1126	-	-
Stage 1	463	496	-	451	486	-	-	-	-	-	-	-
Stage 2	603	458	-	677	484	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-	-	-	-
Mov Capacity-1 Maneuver	162	148	713	167	155	769	1000	-	-	1120	-	-
Mov Capacity-2 Maneuver	162	148	-	167	155	-	-	-	-	-	-	-
Stage 1	410	486	-	398	429	-	-	-	-	-	-	-
Stage 2	492	404	-	571	474	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22	77	2	0

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1000	-	-	335	177	769	1120	-	-
HCM Lane V/C Ratio	0.113	-	-	0.353	0.857	0.031	0.019	-	-
HCM Control Delay (s)	9.058	-	-	21.5	87.3	9.8	8.277	-	-
HCM Lane LOS	A			C	F	A	A		
HCM 95th %tile Q(veh)	0.381	-	-	1.549	6.119	0.095	0.059	-	-























Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined

HCM Signalized Intersection Capacity Analysis
1: Wilsonville Rd & Town Center Loop E

Future Volumes - PM Peak

2/10/2017
























												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Future Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	1900	1534	1800	3480		1805	1737		1805	1900	1531
Flt Permitted	0.37	1.00	1.00	0.34	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	683	1900	1534	647	3480		1805	1737		1805	1900	1531
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	188	594	62	62	479	99	47	62	36	130	94	146
RTOR Reduction (vph)	0	0	26	0	11	0	0	25	0	0	0	125
Lane Group Flow (vph)	188	594	37	63	567	0	47	74	0	130	94	21
Confl. Peds. (#/hr)	5		13	13		5	2		5	5		2
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	2%	3%	0%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	74.3	64.9	64.9	66.2	60.8		6.8	9.8		13.4	15.9	15.9
Effective Green, g (s)	74.3	64.9	64.9	66.2	60.8		6.8	9.8		13.4	15.9	15.9
Actuated g/C Ratio	0.68	0.59	0.59	0.60	0.55		0.06	0.09		0.12	0.14	0.14
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	553	1121	905	445	1923		111	154		219	274	221
v/s Ratio Prot	c0.03	c0.31		0.01	0.16		0.03	c0.04		c0.07	c0.05	
v/s Ratio Perm	0.20		0.02	0.08								0.01
v/c Ratio	0.34	0.53	0.04	0.14	0.29		0.42	0.48		0.59	0.34	0.10
Uniform Delay, d1	7.0	13.5	9.5	9.9	13.1		49.7	47.7		45.7	42.3	40.8
Progression Factor	0.90	0.82	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	1.7	0.1	0.1	0.4		1.9	1.7		3.6	0.5	0.1
Delay (s)	6.6	12.7	9.6	10.1	13.5		51.6	49.4		49.3	42.9	40.9
Level of Service	A	B	A	B	B		D	D		D	D	D
Approach Delay (s)		11.1			13.2			50.1			44.4	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			20.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			58.6%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2: Rebekah & Wilsonville Rd

Future Volumes - PM Peak


























2/10/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 						 		
Traffic Volume (vph)	235	635	220	60	480	105	75	35	35	140	50	240	
Future Volume (vph)	235	635	220	60	480	105	75	35	35	140	50	240	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99			1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00	
Frt	1.00	0.96		1.00	0.97		1.00	0.93			1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00	
Satd. Flow (prot)	1783	3380		1802	3433		1804	1744			1816	1594	
Flt Permitted	0.37	1.00		0.31	1.00		0.44	1.00			0.74	1.00	
Satd. Flow (perm)	704	3380		581	3433		837	1744			1387	1594	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	240	648	224	61	490	107	77	36	36	143	51	245	
RTOR Reduction (vph)	0	22	0	0	12	0	0	29	0	0	0	200	
Lane Group Flow (vph)	240	850	0	61	585	0	77	43	0	0	194	45	
Confl. Peds. (#/hr)	7		9	9		7	1		2	2		1	
Confl. Bikes (#/hr)						2			1				
Heavy Vehicles (%)	1%	2%	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm	
Protected Phases	5	2		1	6			8			4		
Permitted Phases	2			6			8			4		4	
Actuated Green, G (s)	80.8	71.7		72.1	67.0		20.7	20.7			20.2	20.2	
Effective Green, g (s)	80.8	71.7		72.1	67.0		20.7	20.7			20.2	20.2	
Actuated g/C Ratio	0.73	0.65		0.66	0.61		0.19	0.19			0.18	0.18	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5			2.5	2.5	
Lane Grp Cap (vph)	613	2203		437	2091		157	328			254	292	
v/s Ratio Prot	c0.03	0.25		0.01	0.17			0.02					
v/s Ratio Perm	c0.25			0.08			0.09				c0.14	0.03	
v/c Ratio	0.39	0.39		0.14	0.28		0.49	0.13			0.76	0.15	
Uniform Delay, d1	5.0	8.9		6.8	10.1		39.9	37.2			42.6	37.7	
Progression Factor	0.98	0.71		0.78	0.71		1.00	1.00			1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.1	0.3		1.8	0.1			12.2	0.2	
Delay (s)	5.1	6.7		5.4	7.5		41.7	37.3			54.9	37.9	
Level of Service	A	A		A	A		D	D			D	D	
Approach Delay (s)		6.4			7.3			39.6			45.4		
Approach LOS		A			A			D			D		
Intersection Summary													
HCM 2000 Control Delay			16.0									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	13.0
Intersection Capacity Utilization			60.3%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 3: Parkway Ave & Town Center Loop W/Town Center Loop E

Future Volumes - PM Peak

2/10/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 						 			 		
Traffic Volume (vph)	260	95	15	65	100	95	40	195	45	180	200	390	
Future Volume (vph)	260	95	15	65	100	95	40	195	45	180	200	390	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1787	3379		1752	1900	1564	1805	1778		1770	1881	1565	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1787	3379		1752	1900	1564	1805	1778		1770	1881	1565	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	274	100	16	68	105	100	42	205	47	189	211	411	
RTOR Reduction (vph)	0	11	0	0	0	74	0	8	0	0	0	272	
Lane Group Flow (vph)	274	105	0	68	105	26	42	244	0	189	211	139	
Confl. Peds. (#/hr)	1		1	1		1	6		12	12		6	
Confl. Bikes (#/hr)												2	
Heavy Vehicles (%)	1%	5%	0%	3%	0%	1%	0%	3%	5%	2%	1%	1%	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases	5	2		1	6		3	8		7	4		
Permitted Phases						6						4	
Actuated Green, G (s)	20.5	33.7		15.5	28.7	28.7	5.6	27.3		15.5	37.2	37.2	
Effective Green, g (s)	20.5	33.7		15.5	28.7	28.7	5.6	27.3		15.5	37.2	37.2	
Actuated g/C Ratio	0.19	0.31		0.14	0.26	0.26	0.05	0.25		0.14	0.34	0.34	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	333	1035		246	495	408	91	441		249	636	529	
v/s Ratio Prot	c0.15	0.03		0.04	c0.06		0.02	c0.14		c0.11	0.11		
v/s Ratio Perm						0.02						0.09	
v/c Ratio	0.82	0.10		0.28	0.21	0.06	0.46	0.55		0.76	0.33	0.26	
Uniform Delay, d1	43.0	27.3		42.2	31.8	30.6	50.7	36.0		45.5	27.1	26.4	
Progression Factor	0.97	0.29		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	13.7	0.1		2.8	1.0	0.3	3.7	5.0		19.3	1.4	1.2	
Delay (s)	55.3	7.9		45.0	32.8	30.9	54.4	41.0		64.8	28.5	27.6	
Level of Service	E	A		D	C	C	D	D		E	C	C	
Approach Delay (s)		41.2			35.1			42.9			36.5		
Approach LOS		D			D			D			D		
Intersection Summary													
HCM 2000 Control Delay			38.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	18.0
Intersection Capacity Utilization			68.2%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Vol, veh/h	130	20	515	115	30	580
Future Vol, veh/h	130	20	515	115	30	580
Conflicting Peds, #/hr	3	7	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	1	3	0	1
Mvmt Flow	137	21	542	121	32	611
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	978	339	0	0	670	0
Stage 1	610	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Critical Hdwy	6.84	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	248	663	-	-	930	-
Stage 1	505	-	-	-	-	-
Stage 2	670	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	238	659	-	-	930	-
Mov Cap-2 Maneuver	238	-	-	-	-	-
Stage 1	502	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	35	0		0.4		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	238	659	930	-
HCM Lane V/C Ratio	-	-	0.575	0.032	0.034	-
HCM Control Delay (s)	-	-	38.8	10.6	9	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	3.2	0.1	0.1	-

Intersection												
Int Delay, s/veh	4.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Future Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Conflicting Peds, #/hr	9	0	10	10	0	9	6	0	7	7	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	3	0	25	15	1	4	0	1	0
Mvmt Flow	32	11	74	42	21	11	42	258	63	16	268	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	722	738	299	749	720	306	305	0	0	331	0	0
Stage 1	323	323	-	384	384	-	-	-	-	-	-	-
Stage 2	399	415	-	365	336	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.527	4	3.525	2.335	-	-	2.2	-	-
Pot Cap-1 Maneuver	345	348	731	327	356	683	1185	-	-	1240	-	-
Stage 1	693	654	-	637	615	-	-	-	-	-	-	-
Stage 2	631	596	-	652	645	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	307	326	721	272	333	673	1178	-	-	1233	-	-
Mov Cap-2 Maneuver	307	326	-	272	333	-	-	-	-	-	-	-
Stage 1	663	640	-	609	588	-	-	-	-	-	-	-
Stage 2	574	570	-	565	631	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	19.9	0.9	0.4
HCM LOS	B	C		























Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	488	315	1233	-	-
HCM Lane V/C Ratio	0.036	-	-	0.237	0.234	0.013	-	-
HCM Control Delay (s)	8.2	-	-	14.7	19.9	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.9	0	-	-

HCM Signalized Intersection Capacity Analysis

6: Canyon Creek Rd & Town Center Loop E

Future Volumes - PM Peak






















2/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	130	80	30	105	150	75	20	50	105	20	95
Future Volume (vph)	90	130	80	30	105	150	75	20	50	105	20	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.89		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1574	1805	1663		1805	1656		1786	1622	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.66	1.00		0.71	1.00	
Satd. Flow (perm)	1805	1863	1574	1805	1663		1247	1656		1333	1622	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	137	84	32	111	158	79	21	53	111	21	100
RTOR Reduction (vph)	0	0	37	0	45	0	0	39	0	0	75	0
Lane Group Flow (vph)	95	137	47	32	224	0	79	35	0	111	47	0
Confl. Peds. (#/hr)	4		2	2		4			5	5		
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	0%	2%	0%	0%	4%	1%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2				8			4		
Actuated Green, G (s)	9.3	56.5	56.5	5.0	52.2		25.5	25.5		25.5	25.5	
Effective Green, g (s)	9.3	56.5	56.5	5.0	52.2		25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.09	0.56	0.56	0.05	0.52		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	1052	889	90	868		317	422		339	413	
v/s Ratio Prot	c0.05	0.07		0.02	c0.13			0.02				0.03
v/s Ratio Perm			0.03				0.06			c0.08		
v/c Ratio	0.57	0.13	0.05	0.36	0.26		0.25	0.08		0.33	0.11	
Uniform Delay, d1	43.4	10.2	9.8	45.9	13.2		29.6	28.3		30.3	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.3	0.1	2.4	0.7		1.9	0.4		2.6	0.6	
Delay (s)	47.8	10.5	9.9	48.3	13.9		31.5	28.7		32.8	29.1	
Level of Service	D	B	A	D	B		C	C		C	C	
Approach Delay (s)		21.5			17.6			30.2			30.9	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.31									
Actuated Cycle Length (s)			100.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			51.7%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 7: Town Center Lp West/Town Center Loop W & Wilsonville Rd

Future Volumes - PM Peak

2/10/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	830	130	60	635	100	270	130	60	200	90	810
Future Volume (vph)	600	830	130	60	635	100	270	130	60	200	90	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.0	4.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.95		*0.95	0.91		1.00	0.95	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.97	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	0.88	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3502	3465		1805	3491		1665	3216		1805	1524	1467
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3502	3465		1805	3491		1665	3216		1805	1524	1467
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	632	874	137	63	668	105	284	137	63	211	95	853
RTOR Reduction (vph)	0	10	0	0	11	0	0	19	0	0	133	261
Lane Group Flow (vph)	632	1001	0	63	762	0	162	303	0	211	346	208
Confl. Peds. (#/hr)	15		3	3		15	14					14
Heavy Vehicles (%)	0%	1%	6%	0%	1%	0%	3%	3%	0%	0%	3%	1%
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	23.4	49.2		7.2	33.0		15.6	15.6		20.5	20.5	20.5
Effective Green, g (s)	23.4	49.7		7.2	33.5		15.6	15.6		21.0	21.0	20.5
Actuated g/C Ratio	0.21	0.45		0.07	0.30		0.14	0.14		0.19	0.19	0.19
Clearance Time (s)	4.0	4.5		4.0	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.3		2.5	4.3		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	744	1565		118	1063		236	456		344	290	273
v/s Ratio Prot	c0.18	0.29		0.03	c0.22		c0.10	0.09		0.12	c0.23	
v/s Ratio Perm												0.14
v/c Ratio	0.85	0.64		0.53	0.72		0.69	0.66		0.61	1.19	0.76
Uniform Delay, d1	41.6	23.2		49.8	34.0		44.9	44.7		40.8	44.5	42.4
Progression Factor	1.02	0.93		1.03	0.94		1.00	1.00		0.99	0.98	0.99
Incremental Delay, d2	7.6	1.7		3.5	4.0		7.4	3.3		2.7	115.9	11.2
Delay (s)	49.9	23.3		55.0	36.1		52.2	48.0		43.3	159.4	53.3
Level of Service	D	C		D	D		D	D		D	F	D
Approach Delay (s)		33.6			37.5			49.4			95.3	
Approach LOS		C			D			D			F	
Intersection Summary												
HCM 2000 Control Delay			53.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.5			
Intersection Capacity Utilization			83.1%			ICU Level of Service			E			
Analysis Period (min)			15									

























c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

8: I-5 NB & Wilsonville Rd













Future Volumes - PM Peak

2/10/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	 	 			  				 				
Traffic Volume (vph)	540	900	0	0	1235	480	500	0	680	0	0	0	
Future Volume (vph)	540	900	0	0	1235	480	500	0	680	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5				
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88				
Frbp, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00				
Satd. Flow (prot)	3400	3574			5136	1549	1618	1618	2814				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00				
Satd. Flow (perm)	3400	3574			5136	1549	1618	1618	2814				
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	557	928	0	0	1273	495	515	0	701	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	243	0	0	204	0	0	0	
Lane Group Flow (vph)	557	928	0	0	1273	252	257	258	497	0	0	0	
Confl. Peds. (#/hr)	5		23	23		5	2					2	
Confl. Bikes (#/hr)						1			2				
Heavy Vehicles (%)	3%	1%	0%	0%	1%	2%	6%	0%	1%	0%	0%	0%	
Turn Type	Prot	NA			NA	Perm	Split	NA	custom				
Protected Phases	5	2			6		3	3	8				
Permitted Phases						6							
Actuated Green, G (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5				
Effective Green, g (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5				
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.26	0.26	0.26				
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5				
Vehicle Extension (s)	2.3	4.9			4.9	4.9	2.3	2.3	2.3				
Lane Grp Cap (vph)	911	2355			1797	542	419	419	729				
v/s Ratio Prot	c0.16	0.26			c0.25		0.16	0.16	c0.18				
v/s Ratio Perm						0.16							
v/c Ratio	0.61	0.39			0.71	0.46	0.61	0.62	0.68				
Uniform Delay, d1	35.2	8.6			30.9	27.8	35.9	35.9	36.7				
Progression Factor	0.78	0.23			1.02	1.16	1.00	1.00	1.00				
Incremental Delay, d2	2.5	0.4			1.3	1.6	6.6	6.6	2.3				
Delay (s)	29.8	2.4			32.9	33.7	42.5	42.6	39.0				
Level of Service	C	A			C	C	D	D	D				
Approach Delay (s)		12.7			33.1			40.5				0.0	
Approach LOS		B			C			D				A	
Intersection Summary													
HCM 2000 Control Delay			28.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.67										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	13.5
Intersection Capacity Utilization			104.0%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 9: I-5 SB & Wilsonville Rd

Future Volumes - PM Peak
 2/10/2017

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↑	↑↑	↑↑					↑	↑	↑↑	
Traffic Volume (vph)	0	990	960	700	1035	0	0	0	0	450	0	620	
Future Volume (vph)	0	990	960	700	1035	0	0	0	0	450	0	620	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5	
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	0.88	
Frbp, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00	
Satd. Flow (prot)		5085	1542	3467	3505					1698	1698	2656	
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00	
Satd. Flow (perm)		5085	1542	3467	3505					1698	1698	2656	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	0	1021	990	722	1067	0	0	0	0	464	0	639	
RTOR Reduction (vph)	0	0	388	0	0	0	0	0	0	0	0	143	
Lane Group Flow (vph)	0	1021	602	722	1067	0	0	0	0	232	232	496	
Confl. Peds. (#/hr)	7		8	8		7	1			3	3	1	
Confl. Bikes (#/hr)						4							
Heavy Vehicles (%)	0%	2%	2%	1%	3%	0%	0%	0%	0%	1%	0%	7%	
Turn Type		NA	Perm	Prot	NA					Split	NA	custom	
Protected Phases		2		1	6					7	7	4	
Permitted Phases			2										
Actuated Green, G (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5	
Effective Green, g (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5	
Actuated g/C Ratio		0.34	0.34	0.25	0.63					0.29	0.29	0.29	
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5	
Vehicle Extension (s)		4.9	4.9	2.3	4.9					2.3	2.3	2.3	
Lane Grp Cap (vph)		1733	525	866	2214					486	486	760	
v/s Ratio Prot		0.20		c0.21	0.30					0.14	0.14	c0.19	
v/s Ratio Perm			c0.39										
v/c Ratio		0.59	1.15	0.83	0.48					0.48	0.48	0.65	
Uniform Delay, d1		29.9	36.2	39.1	10.7					32.4	32.4	34.5	
Progression Factor		0.89	0.88	1.63	0.21					1.00	1.00	1.00	
Incremental Delay, d2		1.3	84.7	6.6	0.6					3.3	3.3	1.7	
Delay (s)		27.9	116.7	70.2	2.8					35.8	35.8	36.2	
Level of Service		C	F	E	A					D	D	D	
Approach Delay (s)		71.6			30.0			0.0			36.0		
Approach LOS		E			C			A			D		
Intersection Summary													
HCM 2000 Control Delay			48.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	13.5
Intersection Capacity Utilization			104.0%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

Intersection

Intersection Delay, s/veh 141.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	29	17	98	153	16	43	137	512	139	26	782	59
Conflicting Peds, #/hr	0	0	1	6	0	6	1	0	1	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	1	2	0	0	1	0
Mvmt Flow	31	18	105	165	17	46	147	551	149	28	841	63

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1513	1930	454	1412	1887	362	905	0	0	706	0	0
Stage 1	929	929	-	926	926	-	-	-	-	-	-	-
Stage 2	584	1001	-	486	961	-	-	-	-	-	-	-
Follow-up Headway	4	4	3	4	4	3	2	-	-	2	-	-
Pot Capacity-1 Maneuver	84	67	559	# 100	71	641	754	-	-	902	-	-
Stage 1	292	349	-	293	350	-	-	-	-	-	-	-
Stage 2	470	323	-	537	337	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	49	52	558	# 49	55	635	753	-	-	897	-	-
Mov Capacity-2 Maneuver	49	52	-	# 49	55	-	-	-	-	-	-	-
Stage 1	235	338	-	235	280	-	-	-	-	-	-	-
Stage 2	328	259	-	399	326	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	197	\$ 1198	2	0

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	753	-	-	132	53	635	897	-	-
HCM Lane V/C Ratio	0.196	-	-	1.173	3.719	0.049	0.031	-	-
HCM Control Delay (s)	10.94	-	-	197.3	\$ 1383.4	11	9.142	-	-
HCM Lane LOS	B			F	F	B	A		
HCM 95th %tile Q(veh)	0.723	-	-	9.18	21.461	0.153	0.096	-	-

Notes

~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined



ATTACHMENT E

BLTS Data Sheets

Bicycle LTS - Segments

Segment	Roadway	Limits	Direction	Traffic Speed	Seperated	Bike Lanes	Width of Bike Lanes	On-Street Parking	Width of Parking	Combined Width	Number of Lanes	Table	LTS	Control Factor for LTS Score
001	SW Wilsonville Road	SW Kinsman Road to SW Boones Ferry Rd	Both	25		Yes	5	No		5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
002	SW Wilsonville Road	SW Boones Ferry Rd to I-5 SB Ramps	Both	25		Yes	5.5	No		5.5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
003	SW Wilsonville Road	I-5 SB Ramps to I-5 NB Ramps	Both		Yes								LTS 1	
004	SW Wilsonville Road	I-5 NB to Town Center Loop W	Both	25		Yes	5.5	No		5.5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
005	SW Wilsonville Road	Town Center Loop W to Holly Street	Both	25		Yes	5	No		5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
006	SW Wilsonville Road	Holly Street to Rebekah Street	Both	35		Yes	5	No		5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
007	SW Wilsonville Road	Rebekah Street to Town Center Loop E/Memorial Drive	Both	35		Yes	5	No		5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
008	SW Wilsonville Road	Town Center Loop E/Memorial Drive to SW Kolbe Lane	Both	35		Yes	5	No		5	2	14-4	LTS 3	More than 2 lanes per direction with no buffer
009	SW Wilsonville Road	SW Kolbe Lane to Edge of Study Area	Both	35		Yes	5	No		5	1	14-4	LTS 3	High speeds with no buffer
010	Town Center Loop W	SW Wilsonville Road to Park Place	Both	35		No		No		0	2	14-5	LTS 4	No Bicycle Lanes, high speeds, and multiple lanes
011	Town Center Loop W	Park Place to SW Parkway Avenue	Both	35		No		No		0	2	14-5	LTS 4	No Bicycle Lanes, high speeds, and multiple lanes
012	Town Center Loop E	SW Parkway Avenue to SW Canyon Creek Road	WB	35		Yes	11	No		11	2	14-4	LTS 2	
013	Town Center Loop E	SW Parkway Avenue to SW Canyon Creek Road	EB	35		No		No		0	2	14-5	LTS 4	No Bicycle Lanes, high speeds, and multiple lanes
014	Town Center Loop E	SW Canyon Creek Road to SW Courtside Drive	Both	35		Yes	10	No		10	2	14-4	LTS 2	
015	Town Center Loop E	SW Courtside Drive to SW Wilsonville Road	Both	35		Yes	10	No		10	2	14-4	LTS 2	
016	SW Parkway Avenue	SW Wilsonville Road to SW Center Loop W	Both		Yes					0	1		LTS 1	
017	Park Place	Town Center Loop W to SW Courtside Drive	Both	25		Yes	6	No		6	1	14-4	LTS 1	
018	Park Place	SW Courtside Drive to SW Parkway Court	Both	25		No		Yes	10	10	1	14-3	LTS 3	No Bicycle Lanes but low speeds and one lane
019	SW Parkway Court	SW Courtside Drive to Town Center Loop	Both	25		No		No		0	1	14-5	LTS 2	
020	SW Courtside Drive	Park Place to (Raised Crosswalk)	Both	25		No		Yes	8.5	8.5	1	14-3	LTS 3	No Bicycle Lanes but low speeds and one lane
021	SW Courtside Drive	(Raised Crosswalk) to Town Center Loop E	Both	25		Yes	6	No		6	1	14-4	LTS 1	
022	SW Citizen Drive	SW Town Center Loop W to SW Parkway Avenue	Both	15		No		No		0	1	14-5	LTS 2	
023	Town Center Loop W	SW Main Street to SW Wilsonville Road	Both	25		Yes	5	No		5	1	14-4	LTS 2	
024	SW Holly Lane	SW Main Street to SW Wilsonville Road	Both	25		No		No		0	1	14-5	LTS 2	
025	Rebekah Street	SW Main Street to SW Wilsonville Road	Both	25		Yes	5	No		5	1	14-4	LTS 2	
026	SW Memorial Drive	Murase Plaza Park to SW Wilsonville Road	Both	25		Yes	6	No		6	1	14-4	LTS 1	
027	SW Parkway Avenue	SW Town Center Loop W to SW Thunderbird Drive	NB	40		Yes	6	No		6	1	14-4	LTS 4	High speeds with no buffer
028	SW Parkway Avenue	SW Town Center Loop W to SW Thunderbird Drive	SB	40		No		No		0	1	14-5	LTS 4	No Bicycle Lanes and high speeds
029	SW Canyon Creek Road	SW Town Center Loop W to SW Vlahos Drive	Both	30		Yes	6	No		6	1	14-4	LTS 1	

General Information		Approach						Right Turn Movement						Left Turn Movement				Intersection LTS	Control Factor for LTS Score		
Intersection	Direction	Traffic Control	Median	Speed	Lanes Crossed	Table	LTS	Right Turn	Right Turn Type	Bike Lane Alignment	Turn Lane Length	Turning Speed	Table	RT LTS	Left Turn Pocket	Speed	Lanes Crossed			Table	LT LTS
Wilsonville Road/Boones Ferry Road	NB	Signalized	No	25	7	14-9	4	Yes	Single	Lane Drop	300	10	14-7	4	Yes	25	2	14-8	3	4	Bicycles required to cross more than 6 lanes and multiple turn conflicts
Wilsonville Road/Boones Ferry Road	SB	Signalized	No	25	6	14-9	4	No					na	Yes	25	2	14-8	3			
Wilsonville Road/Boones Ferry Road	EB	Signalized	No	25	5	14-9	2	Yes	Other	Lane Drop	45	15	14-7	4	Yes	25	2	14-8	3		
Wilsonville Road/Boones Ferry Road	WB	Signalized	No	25	4	14-9	2	Yes	Other	Lane Drop	180	15	14-7	4	Yes, Duel Lefts	25	2	14-8	4		
Wilsonville Road/I-5 Southbound Ramp	NB					na							na					na		3	Westbound right vehicles increase right-hook crash potential
Wilsonville Road/I-5 Southbound Ramp	SB					na							na					na			
Wilsonville Road/I-5 Southbound Ramp	EB	Signalized	No	25	2	14-9	1	Yes	Single	Left	235	15	14-7	3				na			
Wilsonville Road/I-5 Southbound Ramp	WB	Signalized	No	25	4	14-9	2						na					na			
Wilsonville Road/I-5 Northbound Ramp	NB					na							na					na		3	Westbound right vehicles increase right-hook crash potential
Wilsonville Road/I-5 Northbound Ramp	SB					na							na					na			
Wilsonville Road/I-5 Northbound Ramp	EB	Signalized	No	25	4	14-9	2	Yes	Single	Straight	300	15	14-7	3				na			
Wilsonville Road/I-5 Northbound Ramp	WB	Signalized	No	25	2	14-9	1						na					na			
Wilsonville Road/Town Center Loop West	NB	Signalized	No	25	5	14-9	2	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	25	2	14-8	3	4	Bicycles required to cross more than 6 lanes and multiple right turn conflicts
Wilsonville Road/Town Center Loop West	SB	Signalized	No	25	7	14-9	4	Yes	Single	Lane Drop			14-7	4	Yes	25	2	14-8	3		
Wilsonville Road/Town Center Loop West	EB	Signalized	No	25	4	14-9	2	Yes	Other	Lane Drop			14-7	4	Yes, Duel Lefts	25	2	14-8	3		
Wilsonville Road/Town Center Loop West	WB	Signalized	No	25	5	14-9	2						na	4	Yes	25	2	14-8	3		
Wilsonville Road/Rebekah Street	NB	Signalized	No	25	5	14-9	3	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	25	1	14-8	2	4	Multiple turn conflicts
Wilsonville Road/Rebekah Street	SB	Signalized	No	15	5	14-9	3	yes	Single	Lane Drop			14-7	4	Yes	15	1	14-8	2		
Wilsonville Road/Rebekah Street	EB	Signalized	No	35	3	14-9	2	yes	Dual Exclusive/Shared	Any			14-7	4	Yes	35	2	14-8	4		
Wilsonville Road/Rebekah Street	WB	Signalized	No	35	3	14-9	2	yes	Dual Exclusive/Shared	Any			14-7	4	Yes	35	2	14-8	4		
Wilsonville Road/Town Center Loop East	NB	Signalized	No	25	4	14-9	3	Yes	Other	Any			14-7	4	Yes	25	1	14-8	2	4	Multiple turn conflicts
Wilsonville Road/Town Center Loop East	SB	Signalized	No	25	5	14-9	3	Yes	Single	Lane Drop			14-7		Yes	25	1	14-8	2		
Wilsonville Road/Town Center Loop East	EB	Signalized	No	35	3	14-9	2	Yes	Other	Any			14-7	4	Yes	35	1	14-8	4		
Wilsonville Road/Town Center Loop East	WB	Signalized	No	35	4	14-9	3	Yes	Other	Any			14-7	4	Yes	35	2	14-8	4		
Town Center Loop West/Park Place	NB	TWTC	No	35	3	14-9	2	Yes	Dual Exclusive/Shared	Any			14-7	4				na		4	Southbound bicycles required to cross 2 lane of high speed road to turn left and multiple right turn conflicts
Town Center Loop West/Park Place	SB	TWTC	No	35	0	14-9	2						na		Yes	35	2	14-8	4		
Town Center Loop West/Park Place	EB	TWTC	No	25	5	14-9	3						na		Yes	25	1	14-8	2		
Town Center Loop West/Park Place	WB					na		Yes	Single	Lane Drop			14-7	4				na			
Town Center Loop/Parkway	NB	Signalized	No	25	5	14-9	3	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	25	1	14-8	2	4	Multiple turn conflicts
Town Center Loop/Parkway	SB	Signalized	No	40	5	14-9	3	Yes	Single	Lane Drop			14-7	4	Yes	40	2	14-8	4		
Town Center Loop/Parkway	EB	Signalized	No	35	3	14-9	2	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	35	2	14-8	4		
Town Center Loop/Parkway	WB	Signalized	No	35	4	14-9	3	Yes	Single	Lane Drop			14-7	4	Yes	35	2	14-8	4		
Town Center Loop East/Canyon Creek Road	NB	Signalized	No	15	3	14-9	1	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	15	0	14-8	2	3*	Multiple turn conflicts
Town Center Loop East/Canyon Creek Road	SB	Signalized	No	25	4	14-9	2	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	25	1	14-8	2		
Town Center Loop East/Canyon Creek Road	EB	Signalized	No	35	3	14-9	2	Yes	Single	Lane Drop			14-7	4	Yes	35	1	14-8	4		
Town Center Loop East/Canyon Creek Road	WB	Signalized	No	35	3	14-9	2	Yes	Dual Exclusive/Shared	Any			14-7	4	Yes	35	2	14-8	4		
Town Center Loop East/Courtside Drive	NB	TWTC	No	35	2	14-9	2						na					na		2	
Town Center Loop East/Courtside Drive	SB	TWTC	No	35	2	14-9	2						na					na			
Town Center Loop East/Courtside Drive	EB	TWTC	No	25	3	14-9	1						na					na			
Town Center Loop East/Courtside Drive	WB	TWTC	No	25	3	14-9	1						na					na			
Parkway Place/Courtside Drive	NB	AWTC	No	25	2	14-9	1						na					na		1	
Parkway Place/Courtside Drive	SB	AWTC	No	25	2	14-9	1						na					na			
Parkway Place/Courtside Drive	EB	AWTC	No	25	3	14-9	1						na					na			
Parkway Place/Courtside Drive	WB	AWTC	No	25	3	14-9	1						na					na			

*Maximum LTS score is 4, however turning movement conflicts were ignored at this intersection based on engineering judgement



ATTACHMENT F

PLTS Data Sheets

General Information			Signalized Intersection				Unsignalized Intersections							Adjustment for Crosswalk Enhancements				Approach	Intersection	Control Factor for LTS Score		
Intersection	Leg	Traffic Control	Turn Control	Missing Features	Complex Elements	LTS	Speed	Lanes Crossed	VPD	Median Refuge	Functional Classification	Table	ADA Ramp	LTS	Adjustment	Deduction	Adjustment	Deduction	LTS		LTS	
Wilsonville Road/Boones Ferry Road	N	Signalized	Protected	None	Channalized Right Turn	3						14-20	No	3		0		0	3	3	No ADA ramps on north leg, several complex elements at intersection	
Wilsonville Road/Boones Ferry Road	S	Signalized	Protected	None	Narrow Refuge Island	3						14-20	Yes		0		0	3				
Wilsonville Road/Boones Ferry Road	E	Signalized	Protected	None	6+ Lanes crossed	3						14-20	Yes		0		0	3				
Wilsonville Road/Boones Ferry Road	W	Signalized	Protected	None	Narrow Refuge Island	3						14-20	Yes		0		0	3				
Wilsonville Road/I-5 Southbound Ramp	N	Signalized	Permissive		Channalized Right Turn	3						14-20	Yes		0		0	3	3	Several complex elements at intersection		
Wilsonville Road/I-5 Southbound Ramp	S					3						14-20	Yes		0		0	3				
Wilsonville Road/I-5 Southbound Ramp	E	Signalized			Closed or Limited Crosswalks	3						14-20	Yes		0		0	3				
Wilsonville Road/I-5 Southbound Ramp	W	Signalized			Channalized Right Turn	3						14-20	Yes		0		0	3				
Wilsonville Road/I-5 Northbound Ramp	N					1						14-20	Yes		0		0	1	3	Several complex elements at intersection		
Wilsonville Road/I-5 Northbound Ramp	S	Signalized				1						14-20	Yes		0		0	1				
Wilsonville Road/I-5 Northbound Ramp	E	Signalized			Channalized Right Turn	3						14-20	Yes		0		0	3				
Wilsonville Road/I-5 Northbound Ramp	W	Signalized			Closed or Limited Crosswalks	3						14-20	Yes		0		0	3				
Wilsonville Road/Town Center Loop West	N	Signalized				1						14-20	Yes		0		0	1	3	Closed Crossing on west leg		
Wilsonville Road/Town Center Loop West	S	Signalized				1						14-20	Yes		0		0	1				
Wilsonville Road/Town Center Loop West	E	Signalized				1						14-20	Yes		0		0	1				
Wilsonville Road/Town Center Loop West	W	Signalized			Closed or Limited Crosswalks	3						14-20	Yes		0		0	3				
Wilsonville Road/Rebekah Street	N	Signalized	Permissive		None	2						14-20	Yes		0		0	2	2			
Wilsonville Road/Rebekah Street	S	Signalized	Permissive		None	2						14-20	Yes		0		0	2				
Wilsonville Road/Rebekah Street	E	Signalized			None	1						14-20	Yes		0		0	1				
Wilsonville Road/Rebekah Street	W	Signalized			None	1						14-20	Yes		0		0	1				
Wilsonville Road/Town Center Loop East	N	Signalized	Permissive	None	None	1						14-20			0		0	1	2	No ADA ramps on south leg		
Wilsonville Road/Town Center Loop East	S	Signalized	Permissive	None	None	1						14-20	No	2	0		0	2				
Wilsonville Road/Town Center Loop East	E	Signalized	Permissive	None	None	1						14-20			0		0	1				
Wilsonville Road/Town Center Loop East	W	Signalized	Permissive	None	None	1						14-20			0		0	1				
Town Center Loop West/Park Place	N	TWSC					35	5	9500	No	Arterial	14-21		4		0		0	4	4	High traffic volumes along Town Center Loop and required to several lanes	
Town Center Loop West/Park Place	S	TWSC					35	5	9500	No	Arterial	14-21		4	Lighting	0.5		0	3.5			
Town Center Loop West/Park Place	E											14-20			0		0	0				
Town Center Loop West/Park Place	W	TWSC					25	3		No		14-20	No	3		0		0	3			
Town Center Loop/Parkway	N	Signalized	Permissive	None	None							14-20	No	2		0		0	2	2	No ADA ramps on the north, south, and east legs	
Town Center Loop/Parkway	S	Signalized	Permissive	None	None							14-20	No	2		0		0	2			
Town Center Loop/Parkway	E	Signalized	Permissive	None	None							14-20	No	2		0		0	2			
Town Center Loop/Parkway	W	Signalized	Permissive	None	None	2						14-20	Yes			0		0	2			
Town Center Loop East/Canyon Creek Road	N	Signalized	Permissive	None	None	2						14-20	Yes			0		0	2	2	Permissive turn movements	
Town Center Loop East/Canyon Creek Road	S	Signalized	Permissive	None	None	2						14-20	Yes			0		0	2			
Town Center Loop East/Canyon Creek Road	E	Signalized	Permissive	None	None	2						14-20	Yes			0		0	2			
Town Center Loop East/Canyon Creek Road	W	Signalized	Permissive	None	None	2						14-20	Yes			0		0	2			
Town Center Loop East/Courtside Drive	N	Signalized				1						14-20	Yes			0		0	1	1		
Town Center Loop East/Courtside Drive	S	Signalized				1						14-20	Yes			0		0	1			
Town Center Loop East/Courtside Drive	E	TWSC					25	2			Local	14-20	Yes	1		0		0	1			
Town Center Loop East/Courtside Drive	W	TWSC					25	2			Local	14-20	Yes	1		0		0	1			
Parkway Place/Courtside Drive	N	ASWC					25	2	7250	No	Collector	14-20	Yes	1		0		0	1	2	No ADA ramps on the east and west legs	
Parkway Place/Courtside Drive	S	ASWC					25	3		No	Collector	14-20	Yes	1		0		0	1			
Parkway Place/Courtside Drive	E	ASWC					25	2	7250	No	Local	14-20	No	2	Markings	0.5		0	1.5			
Parkway Place/Courtside Drive	W	ASWC					25	2		No	Local	14-20	No	2		0		0	2			