CITY OF PHILOMATH
TRANSPORTATION SYSTEM PLAN

JULY 2018

VOLUME 2
APPENDIX

Volume 2 Appendix Table of Contents

SECTION 1

TECH MEMO ONE

PUBLIC AND STAKEHOLDER INVOLVEMENT STRATEGY

Technical Memorandum #1

DATE: January 17, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE - DKS Associates
Kristen Svicarovich, PE - DKS Associates

SUBJECT: **Philomath Transportation System Plan Update**
Task 2.1 Public and Stakeholder Involvement Strategy P14180-009

The Public and Stakeholder Involvement Strategy will be used to guide stakeholder and public involvement throughout the City of Philomath's Transportation System Plan (TSP) update. This plan reflects the commitments from the City of Philomath and the Oregon Department of Transportation (ODOT) to coordinate and carry out public outreach activities to provide community members with the opportunity to weigh in on local transportation concerns and to provide input on the future of transportation within their city.

The City of Philomath will involve the public and stakeholders primarily through a series of committee meetings, public open houses, and work sessions with elected officials. The distribution of project information will primarily occur through the project website, www.philomathtsp.org.

Project Description and Project Area

The City of Philomath is located in Benton County, Oregon and is home to approximately 4,584 residents.[1] The City covers approximately two square miles and major roadways within its boundary include Highways 20 (US20) and 34 (OR34). The transportation system includes streets, pedestrian and bicycle facilities, rail facilities, and public transportation.

As part of State requirements, the City of Philomath will be updating the City's TSP, replacing the current TSP, which was adopted in 1999.[2] A TSP is a long-range plan that implements the transportation element of the City's Comprehensive Plan. The Philomath TSP update will establish a new 2015 baseline condition and identify transportation improvements needed through the year 2040. The TSP will address compliance with any new or amended federal, state, and local plans, policies, and regulations including the Oregon Transportation Plan (OTP), the state Transportation Planning Rule (TPR), the Oregon Highway Plan (OHP), and the Oregon Greenhouse Gas Reduction Initiative.

---

[1] United States Census (2010 Population). City of Philomath, Oregon. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml. 2010.
[2] *City of Philomath Transportation System Plan*. November 1999.

Public Involvement Purpose and Goals

The purpose of public involvement for the project is to share information and gather input on the needs and issues of the stakeholders in Philomath and the surrounding area.

The project's public involvement and communication goals are to:

- Communicate complete, accurate, understandable, and timely information.
- Actively seek public input throughout the project and engage a broad and diverse audience.
- Provide meaningful public involvement opportunities and demonstrate how input has influenced the process.
- Seek participation of potentially affected and/or interested individuals, neighborhoods, businesses, and organizations.
- Comply with Civil Rights Act of 1964 Title VI requirements. Title VI and its implementing regulations provide that no person shall be subjected to discrimination on the basis of race, color or national origin under any program or activity that receives federal financial assistance.
- Ensure that the public involvement process is consistent with applicable state and federal laws and requirements, and is sensitive to local policies, goals, and objectives.

Target Audiences

Getting community members and organizations involved in the TSP process is important for the success of the TSP update. The engagement effort seeks out participants of potentially affected and/or interested individuals, neighborhoods, businesses, and organizations. The public involvement process will seek to engage the following types of affected and interested people and organizations in the project area:

- Elected officials
- Agency partners working on related plans
- Corvallis Area Metropolitan Planning Organization (CAMPO)
- Business organizations, associations and chambers of commerce
- Bicycle and pedestrian interests
- Transit interests, including current or potential passenger transit riders/users
- Freight interests
- Environmental interests
- Accessibility groups
- Senior services
- Minority groups
- Health equity interests
- Housing and community development interests
- Casa Latinos Unidos de Benton County
- Emergency services providers
- Local event organizers
- Large employers
- Recreation interests
- General public
- Local media

Decision-Making Structure

The City Council makes all final decisions for this project. The Project Management Team (PMT) will make recommendations to the City Council based on technical analysis and stakeholder input. The decision-making structure for the TSP was developed to establish clear roles and responsibilities throughout the project. The PMT believes the best way to build support for this project is to have an open, inclusive process that is viewed as credible by stakeholders.

To support development of a credible decision-making process, a Citizen Advisory Committee (CAC) was approved by the City Council to provide community-based recommendations. The CAC is the primary recommendation body for the project team and is anticipated to meet four times throughout the project duration at key milestones. CAC meetings will be open to the public and include a public comment period.

A Technical Advisory Committee (TAC), primarily consisting of various state and local agency representatives, will also support the PMT. The TAC's role is to provide regulatory reviews of work products and to strengthen coordination between the TSP update and other related planning efforts in the region.

Based on this information, the decision-making structure shown in Figure 1 was developed to visually represent the checks and balances developed for this project.

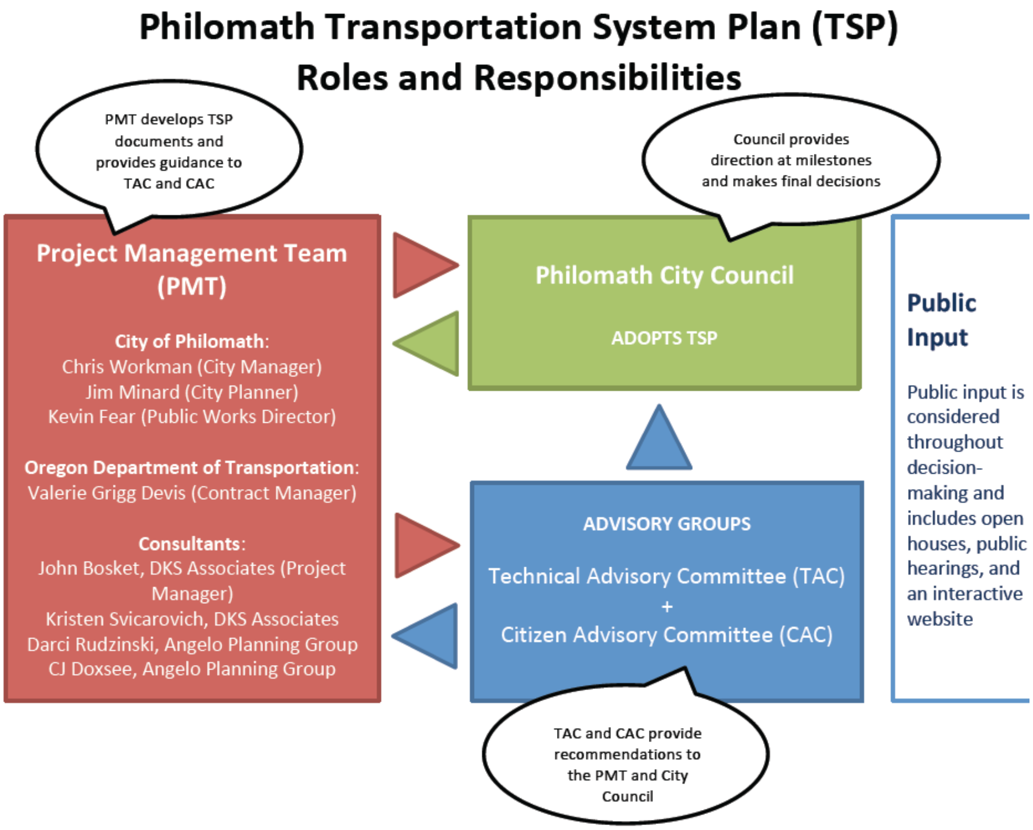


Figure 1: Philomath Transportation System Plan Roles and Responsibilities

Preventing Misinformation

Providing up to date and reliable information is a key factor to prevent misinformation within the community. Communication with the public will primarily happen through the TSP website. Information on the website will be clearly labeled as tasks are in progress. Documents will be labeled “DRAFT” when they are in the review period and will be labeled “FINAL” when they have been finalized.

In addition to keeping the website up to date, contact information has been provided for the Philomath City Manager, Chris Workman. Should any questions arise throughout the TSP process, Mr. Workman will be available to clarify any misinformation.

Project Website Development

The project website www.philomathtsp.org is the primary source for public information. The site includes a description of the TSP process, copies of project materials, and contact information for project staff. Upcoming meetings are announced on the site and materials are posted in advance of each meeting. The project team can also provide translated documents in Spanish upon request.

The website also provides the public with the ability to provide general comments and sign up for email announcements. A comment map is also available so the public can make comments on specific locations by mode of travel (bicycle, pedestrian, transit, motor vehicle, or other). Ultimately, the proposed projects will be added to the comment map so that the public can make comments on both existing conditions and future projects.

Demographic Analysis

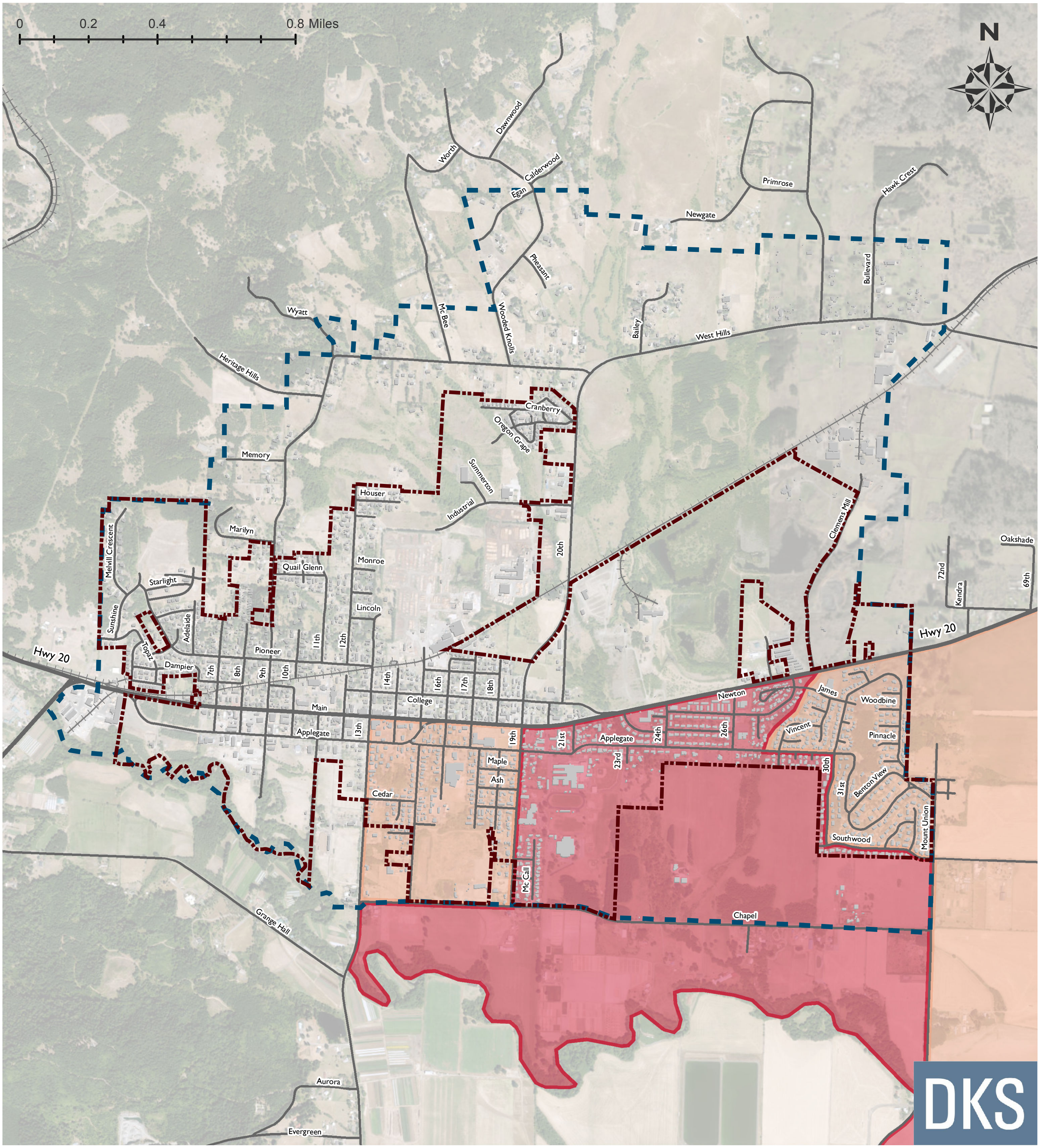
As part of the outreach to engage citizens and stakeholders in the TSP process, the City of Philomath will make special efforts to involve minority and low-income groups. This public involvement plan meets requirements and guidance found in the ODOT Title VI (1964 Civil Rights Act) Plan. Specifically, the Title VI Plan identifies measures to reach and solicit comments from disadvantaged populations within a community. The list of Title VI and Environmental Justice (EJ) populations includes: race/color/national origin, age, gender, disabilities (mental and physical), limited English proficiency, minority races, and low-income. The community was analyzed by block groups, using data obtained from the 2009-2013 American Community Survey.[3] The City of Philomath contains seven block groups, and data from these block groups were compared to statewide averages.

Over 12 percent of the residents in Philomath were living below the poverty level in between 2009 to 2013, which is below the statewide average of approximately 16 percent. The median household income was just over $55,000 annually. As shown in Figure 2, a greater proportion of residents with an income below the poverty level are located on the south side of Highway 20 (US20), based on census block groups that exceed the citywide average.

According to the American Community Survey, less than one percent of residents living in Philomath over the age of five speak English less than "very well" which is well below the statewide average of approximately six percent (See Figure 3). Additionally, nearly 93 percent of the population of Philomath identifies as Caucasian. Residents that identify as minorities represent 7.3 percent of the City's population, which is below the statewide average of 14.8 percent. Residents who identify as minorities are evenly distributed throughout the city and no trend in location was identified. The largest minority group represented in the City of Philomath is Hispanic or Latino residents, whose numbers are approximately five times larger than the next minority group.

[3] United States Census Bureau. American Fact Finder. 2009-2013 American Community Survey 5-Year Estimates. Accessed December 2015. http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml

2 Demographic Analysis of Impoverished Residents



Desciption:

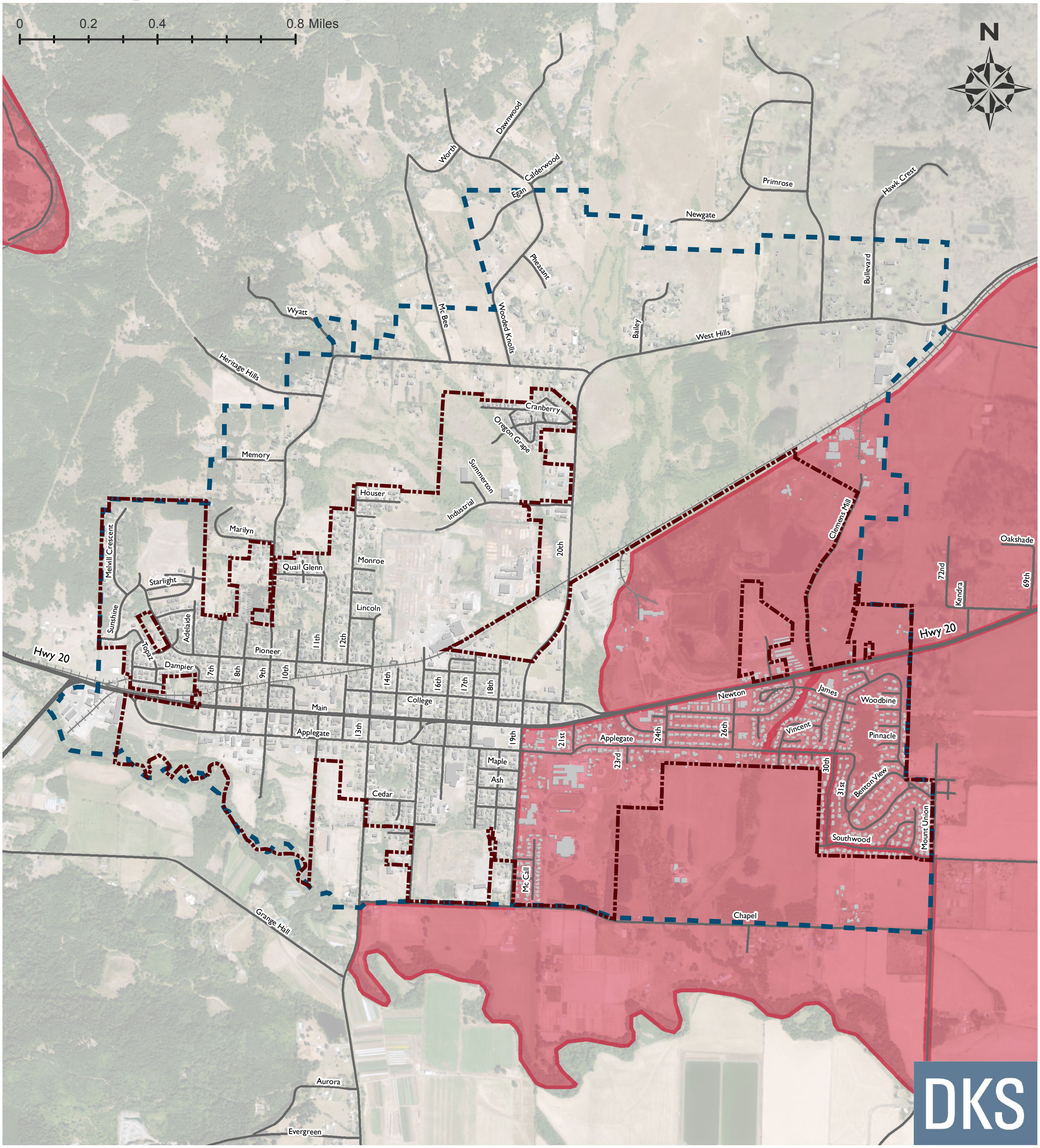
Locations with a greater proportion of impoverished residents (based on 2013 census block groups that exceed the 2013 ACS citywide average).

Legend:

- Slightly greater (20% - 50% over average)
- Considerably greater (+50% over average)
- Urban Growth Boundary
- City Limits

3 Demographic Analysis of Residents Over 5 who Speak English less than Very Well

City of Philomath 1882 Transportation System Plan Oregon



Desciption:

Locations with a greater proportion of residents over 5 who speak english less than very well based on 2013 census block groups that exceed the 2013 ACS citywide average.

Legend:

- Slightly greater (20% - 50% over average)
- Considerably greater (+50% over average)
- Urban Growth Boundary
- City Limits

Approximately 11 percent of residents living in Philomath are living with a disability, which is below the statewide average of almost 14 percent. Residents living with disabilities are evenly distributed throughout the city and no trend in location was identified.

The median age of residents living in Philomath is approximately 35, with the largest percentage of residents between the ages of 35 to 44. Approximately nine percent of residents are 65 years of age or older, which is lower than the statewide average of 14.5 percent. Residents age 65 years or older are evenly distributed throughout the city and no trend in location was identified.

Although proficient English is spoken by over 99 percent of Philomath residents, key project documents will be translated into other languages upon request. The City will also post project advertisements in locations where Hispanic or Latino community members are likely to see them.

To assist those that cannot drive, public meetings will be at locations accessible via transit, walking, or biking when feasible. Additionally, the City will provide downloadable materials on the project website, and hardcopies of project documents will be available upon request at City Hall for those without internet access.

To help engage senior citizens, the City will post project advertisements in locations where seniors will be likely to see them. Such locations may include drugstores, grocery stores, and retirement and assisted living communities.

SECTION 2

TECH MEMO TWO

PLANNING DOCUMENTS REVIEW

Technical Memorandum #2

DATE: January 17, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE - DKS Associates
Rachel Vogt, EIT - DKS Associates
Darci Rudzinski, AICP - Angelo Planning Group

SUBJECT: **Philomath Transportation System Plan**
Task 3.1 Existing Planning Documents Review

This memorandum summarizes planning documents, policies, and regulations that are applicable to the Philomath Transportation System Plan (TSP) update. The City's current TSP, adopted in 1999, will serve as the foundation for the update process, upon which new information obtained from system analysis and stakeholder input will be applied to address changing transportation needs through the year 2040. As new strategies for addressing transportation needs are proposed, compliance and coordination with the plans, policies, and regulations described in this document will be required.

The plan review summary includes the following documents that were reviewed. The documents are organized by local, state, and regional plans, policies, and regulations:

Local Plans, Policies, and Regulations

The following sections summarize the City of Philomath and other local plans, policies, and regulations and describe how they will impact the TSP update project. Documents reviewed include the following

1. Philomath TSP
2. Philomath Comprehensive Plan
3. Philomath Municipal Code
4. Philomath Capital Improvement Plan
5. Downtown Multi-modal Streetscape Improvement Project Plan
6. Philomath Parks Master Plan
7. Master Philomath Bike Path and Trails Plan
8. Philomath Safe Routes to School Plan

Philomath Transportation System Plan - 1999

The current Philomath TSP, adopted by City Council in November of 1999, contains transportation goals, policies, and strategies to address transportation needs for the City over a 20-year planning horizon. The plan includes determining transportation demands based on the 2020 horizon year future population, a street network, and the future footprint for US 20/OR 34, where potential designs included wider, two-way streets, a bypass, or a one-way couplet. The TSP provides a plan for the development of the City's transportation system, which addresses improvements to roadways, new pedestrian and bicycle facilities, improvements in public transit service, and transportation demand management strategies required to address the City's transportation needs through the 20-year horizon.

Key Goals

The TSP includes the following goals and objectives, which were informed by other previous plans and input from a public open house.

- *Goal 1: Relive Increasing Traffic Congestions on US 20/OR 34*
- *Goal 2: Improve Traffic Circulation and Safety Throughout the City*
- *Goal 3: Promote the Increased Use of Alternative Modes*
- *Goal 4: Develop a Master Plan that Defines Future Street Locations*
- *Goal 5: Provide Alternate Routes to Deter through Industrial Traffic out of the Downtown Core and Residential Neighborhoods*
- *Goal 6: Integrate the Transportation System Plan with Other Lane Use Planning Projects in the City*

Key Considerations

Some of the main issues raised in the 1999 TSP that are still outstanding or have only partially been addressed are listed below. The TSP update project will determine how to address these outstanding concerns.

- **Install a Traffic Signal at the Intersection of US 20 and OR 34**

  The traffic signal was recommended to maintain future acceptable levels of service and also to improve safety for the left-turn movement on the south approach of OR 34. Given the traffic conditions at the time, the intersection only met one signal warrant and it was determined that a signal would not be required until nearly the year 2016. It was recommended that this be a long term project when intersection widening was also required on US 20.

- **Install a Traffic Signal at the Intersection of Main Street and 26th Street**

  The traffic signal was recommended to improve access to and from US 20/OR 34 at 26th Street, which would be more efficient than the other multiple access points that exist in the vicinity of Green Street, 24th Street, Newton Street, and Clemens Mill Road. The signal may also help to create platooning of vehicles along the highway as they enter the City and pass through town.

- **Bridge Improvements on Grange Hall Road (Grease Creek Bridge)**

  This project was recommended to provide structural improvement to the Grease Creek Bridge and potential sight distance improvements at Grange Hall Road and Fern Road to maintain the expected vehicle demand along the Plymouth Drive/Chapel Drive route connecting to 53rd Street in Corvallis. The improvements would improve sight distance and increase driver safety by realigning the roadway near the intersection.

- **Access Improvement for Clemens Mill Road along US 20/OR 34**

  Access improvements were recommended to address concerns about the conflict between left-turning vehicles accessing Clemens Mill Road and Newton Street along US 20/OR 34 as the roads are 350 feet apart on opposite sides of the highway. Newton Street is 1000 feet east of 26th Street and these intersections are too close together for traffic signals. Connecting Clemens Mill Road to 26th Street at US 20/OR 34 was recommended to provide safe highway access and provide better connectivity in the local areas north of US 20/OR 34.

- **Connect 26th Street to West Hills Road and Chapel Drive**

  Two new road connections were recommended between West Hills Road and Chapel Drive along an alignment following 26th Street. The road would continue north of US 20/OR 34 either directly to West Hill Road or join with Clemens Mill Road to West Hill Road. The proposed road would assume a two-lane road with bicycle lanes and sidewalks with a minimum right-of-way width of 60 feet and on street parking. The southern connection would serve as a primary connector to future residential developments and expand the grid system.

- **Construct roads connecting 71st Street to West Hill Road and Mt. Union Avenue**

  The proposed road would provide benefits for truck traffic on Bellfountain Road. However, this project is outside of the Philomath UGB and would be more appropriate for the City of Corvallis or Benton County to include. It was not recommended at the time due to low expected growth and high cost.

The primary project addressed in this TSP was the improvement of US 20/OR 34 in Philomath to accommodate the growing travel demands and high freight traffic. The alternatives included a one-way couplet, widening US 20/OR 34 to five lanes, and extending West Hills Road to US 20/OR 34 Intersection to alleviate expected traffic congestion along in Philomath. The City completed Phase I of the one-way couplet project and plans to complete phase II in the next few years.

Key Standards or Policies

- *The right-of-way and roadway width standards for specific road classifications for the City streets in Philomath are shown in Table 7-1. Sidewalks must be a minimum of 5 feet except in a business and commercial zone where 10-foot wide sidewalks are required. There are no bicycle facility requirements.*
- *The recommended street standards for state highways, county roads, and local streets is summarized in Table 7-2 including parking, sidewalks, planting strips, and bicycle lanes.*
- *Recommended access management guidelines are summarized in Table 7-4 for each functional classification.*
- *Spacing requirements for efficient traffic progression to optimize signalized intersection are summarized in Table 7-5.*
- *Changes in local zoning adjacent to US 20/OR 34 and the designation of a Special Transportation Area in the downtown area will be included in future updates or revisions of the TSP.*
- *Curb extension at intersection and mid-block crossing design examples are included to improve pedestrian facilities.*
- *At signalized intersections, the minimum Level of Service (LOS) is D. For unsignalized intersections, the minimum acceptable standard is also LOS D. Table E-2 and E-3 presents the relationship between LOS and volume-to-capacity ratio and the qualitative description of various service levels.*

Bicycle & Pedestrian Facilities

The TSP identifies the existing bicycle and pedestrian facilities within City limits. Bicycle facilities include multi-use paths, bike lanes, shoulder bikeways, and shared roadways and the four bicycle facilities that connect Philomath to Corvallis are as follows:

- Country Club Road (Corvallis) to US 20 to Philomath (multi-use path)
- North 53rd Street to Reservoir Road to West Hills Road to 19th Street, ending at College Street (bicycle lanes)

- US 20/OR 34 from Corvallis to 19th Street in Philomath (shoulder bikeway)
- Plymouth Road from 53rd Street to Bellfountain Road, south along Bellfountain beyond Chapel Road (shoulder bikeway)

The City identifies a lack of sidewalk connectivity along one or both sides of many of the roadways resulting in pedestrians frequently sharing the road with vehicles. Many sidewalk segments also lack curb cuts for wheelchair access. The TSP identifies a ten-year sidewalk development plan to address these deficiencies

The TSP identifies potential transportation improvements that improve bicycle and pedestrian facilities including revise Zoning and Development Codes that encourage mixed-use development and increased density and Transportation Demand Management Strategies that provide for alternative mode of transportation. Bicycle Improvements identified in the TSP correlate with the Master Philomath Bike Path and Trails Plan discussed in a later section.

What this means for the Philomath TSP Update: The TSP update will consider the recommended improvements from the current plan and build on what projects have been built or partially built and new projects that are planned. In addition, the performance of City streets will be partially evaluated using a mobility standard requiring operation of LOS D or better. The functional classification system and access spacing standards for the City may also be revisited for the TSP update.

Philomath Comprehensive Plan – 1983; Last Update 2003

The Philomath Comprehensive Plan is intended to meet the requirements of the Statewide Planning Goals[1] and to guide the community's vision for future growth and development. The 1999 Philomath TSP is incorporated into the Comprehensive Plan by reference.[2]

Comprehensive Plan Goals are found in the beginning of the Plan, separate from policies, and are organized into six general categories. The Public Land Use Goal directs the City to "(p)rovide the necessary public owned land for a good transportation system, parks, public buildings, and utilities as well as to protect and preserve certain natural resource areas."

The transportation element of the Comprehensive Plan is found in Chapter VI, Transportation, which includes a brief summary of Philomath's system and the City's transportation policies. The transportation policies are organized into four categories: Transportation Policies, Bicycle Policies, Pedestrian Ways, and Transit Policies.

[1] Statewide Planning Goals - http://www.oregon.gov/lcd/pages/goals.aspx

[2] Policy 8, 1999 Philomath Transportation Systems Plan, states: "The Philomath Transportation Systems Plan, attached hereto, marked Exhibit A, is by this reference incorporated into the Comprehensive Plan. (Amended by Ord. 701, 5/13/02)."

Policies listed under the heading of Transportation Policies provide direction on a range of specific and general transportation-related topics. Specific topic areas include

- Limiting industrial traffic in residential areas (Policy 1)
- Locations of future multi-use pathways (Policy 4)
- Improvements to US 20/OR 34 (Policies 5, 6, and 18)
- Building culverts along Newton Creek (Policy 11).

More generally applicable policy direction include

- Incorporating or promoting multi-modal elements (Policies 3, 4, 13, and 16)
- Coordination with other plans and organizations (Policies 5, 6, 17, and 18)
- Access management (Policies 19, 20, 21, and 22)
- Use compatibility and standards (Policies 1, 10, and 16)
- Facility improvements (Policies 7 and 16)
- Travel demand management (Policies 9 and 14)
- Environmental concerns (Policy 11)

Policies that are found elsewhere in the Comprehensive Plan that are relevant to transportation system planning include the following:

- The orderly development of frontage along US 20/OR 34 between 19th Street and the eastern urban growth boundary, particularly on the north side of the road, shall be provided for by limiting and consolidating accesses onto the highway, providing for adequate urban facilities, promoting the acquisition or retention of open space at the old Willamette Mill site, providing for internal traffic circulation, controlling freestanding signs, and requiring landscaping. Policy 11, II Economy.
- The City of Philomath shall promote the viability of the downtown area by providing for the development of off-street parking to offset the loss of on-street parking caused by the restriping of Main Street. Policy 12, II Economy.
- Traffic congestion on Main Street is reaching undesirable levels. The City favors the development of a one-way couplet utilizing college, Main, and Applegate Streets as the preferred alternative over a bypass or a single Main Street as alternative for alleviating traffic problems. (Amended by Ord. 615, June, 14, 1993)
- The City shall support improvements to Highway system that addresses and results in improving the City's locational disadvantages relating to transportation and access to markets from U.S. Highway 101 and Interstate 5. (15a Added by Ord. #720 on 9/22/03.) Policy 15, II Economy.
- The City shall require any new commercial development to provide sufficient off-street parking and improvements (or a covenant consenting to participate in the improvements) of adjoining substandard streets. Policy 17, II Economy.

- The City of Philomath shall cooperate with Benton County regarding development standards for roads in the urban fringe, as specified in the Urban Fringe Management Agreement between Philomath and Benton County. Policy 11, IV Urbanization.
- The City shall coordinate with the Oregon Department of Transportation on the use and development of the portion of the Corvallis-to-the-Sea Trail that is within the City and UGB. Open Space Policy 4, VII. Resources and Hazards.
- Appropriate trails, creeks, and watercourses should be preserved via a Public zone designation, easements or other mechanisms to ensure their protection, connectivity, and possible utilization for multi-use recreation purposes. Open Space Policy 6, VII. Resources and Hazards.
- The City shall encourage and coordinate with Benton County, to maintain connectivity and public access between open areas within the City as well those open space and scenic view areas outside the UGB. Scenic Views Policy 3, VII. Resources and Hazards.

In addition, there are several general public facilities policies found in Section V that apply to the provision of transportation facilities, including those that address planning sufficient capacity to meet the City's future needs (General Policy 1), requiring extension of facilities "to and through" developing property (General Policy 8), and discouraging private roadways (General Policy 12).

Comprehensive Plan policies will need to be made consistent with the transportation policies developed as part of the TSP update.

What this means for the Philomath TSP Update: The TSP update process will provide an opportunity to review transportation policies and update them, as well as supporting sections of the Comprehensive Plan transportation element, to better represent current state and local practices and objectives. Potential policy changes may reflect issues that have been evolving since the TSP was last updated, such as strategies to optimize transportation management and maximizing the efficiency of the existing transportation system, and the role the transportation system plays in human health.

Philomath Municipal Code

Title 18 of the Philomath Municipal Code (PMC) contains the City's Development Code and implements the Comprehensive Plan. Title 18 includes requirements regarding general code administration (Division 1, PMC 18.05 – 18.25), land use districts (Division 2, PMC 18.30 – 18.55), design standards (Division 3, PMC 18.60 – 18.95), applications and review procedures (Division 4, PMC 18.100 – 18.145), and exceptions to code standards (Division 5, PMC 18.150 – 18.160).

Design standards applicable to all developments are generally found in Division 3; design standards specific to a land use or district (i.e. building orientation) can also be found in Division 2. Chapter 18.65 provides access and circulation standards for vehicles and pedestrians, including standards for number and spacing of vehicle access and design standards for pedestrian access and circulation. Provisions and standards for landscaping and street trees are provided in Chapter 18.70. Vehicle and bicycle parking requirements and standards are provided in Chapter 18.75. Vehicle parking standards include parking minimum requirements as well as parking credit provisions, shared parking standards, and ADA parking requirements. Bicycle parking requirements include minimum parking requirements for selected uses, exemptions, and location and design standards. Development standards for streets and transportation improvements are found in Chapter 18.80 and are subject to the provisions of the Comprehensive Plan and TSP.

Sections of Division 4 relevant to transportation facilities includes review procedures (18.105), development review and site design review (18.110), land divisions and lot line adjustments (18.115), conditional use permits (18.120), master planned developments (18.125), and annexations (18.135). Type II through IV review procedures and criteria are subject to the standards in the development code, including transportation design standards. In addition Type IV review procedures are generally subject to the Statewide Planning Goals and Comprehensive Plan policies.

What this means for the Philomath TSP Update: As part of the TSP update the street functional classifications and cross-sections, mobility and access management standards, will be reviewed and potentially revised to ensure that they meet community needs. Where modifications are proposed, Title 18 standards will need to be updated for consistency with the updated TSP. In addition, the PMC contains a number of other transportation-related development requirements (e.g., vehicular and bicycle parking, pedestrian access). Amendments to these development requirements may be needed in order to implement the recommendations of the updated TSP and to better comply with the State's Transportation Planning Rule (see Technical Memorandum #3, Regulatory Review).

Philomath Capital Improvement Plan

The Philomath Capital Improvement Plan, adopted by the Philomath City Council on March 9, 2015, lists the schedule for facility improvements, infrastructure improvements, and equipment replacements for the 2015-2016 year. Parking lot/landscape restoration is scheduled for the City Hall and Police Station to be restored in 2020, Public Works building to be restored in 2028, and the Library to be restored in 2034. Funds for an overlay project along 24th street were added to the 2015-2016 budget year. Landscaping City Park near the gazebo and the planning, design, and construction of N 11th Street Park were also added to the 2015-2016 budget year. This Plan does not consider any bicycle or pedestrian projects specifically, but states that possible bicycle routes or foot paths will be identified.

What this means for the Philomath TSP Update: The current TSP update will include capital improvement projects as part of the future conditions analysis and in the development of proposed improvements. The capital improvement projects that have a committed funding source will be included in the future baseline transportation.

Philomath Downtown Multi-modal Streetscape Improvement Project Plan

The Philomath Downtown Multi-Modal Streetscape Improvement Project Plan[3] is for the downtown Philomath area along Main Street and Applegate Street between 7th Street and 14th Street. The project was undertaken in combination with the 2007 couplet reconfiguration of US 20/OR 34 through Philomath's downtown core; however there was not enough funding to complete the streetscape improvement to the downtown core. A conceptual drawing showing sidewalk and bicycle facility improvements, lighting and signal improvements, and the addition of benches and kiosks is shown in Figure 1.

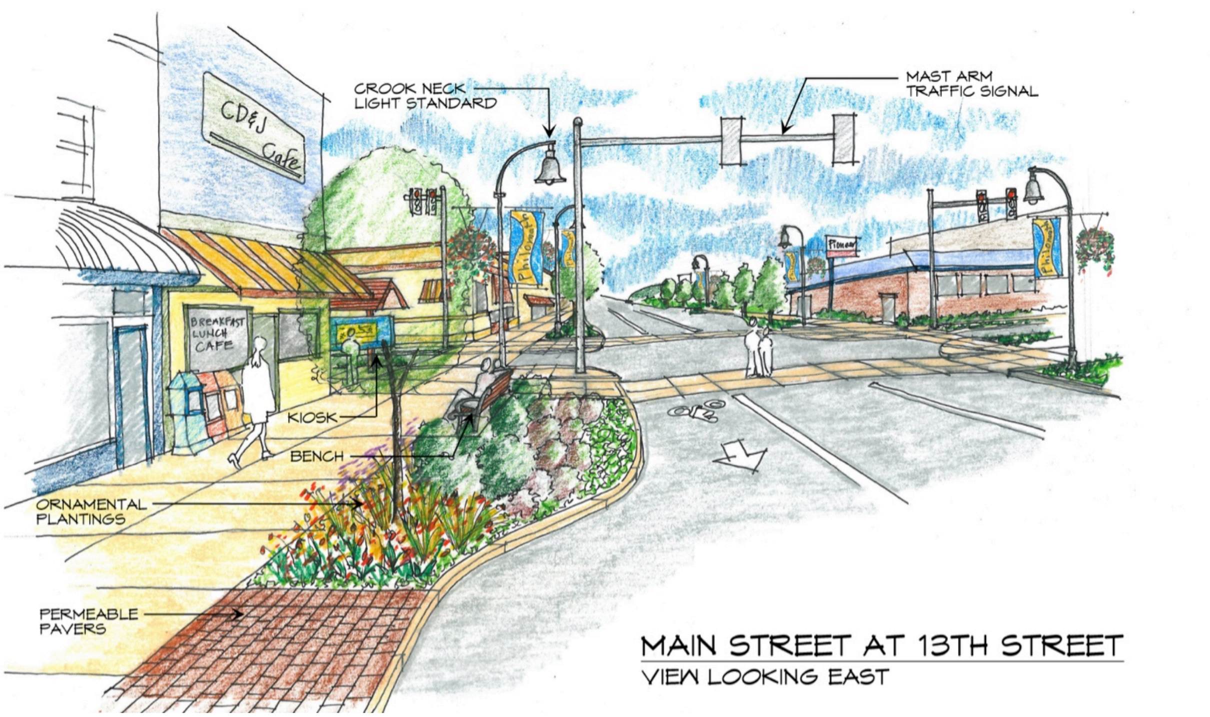


Figure 1: Downtown Philomath Multi-Modal Streetscape Improvement Conceptual Design

[3] Plans for Streetscape Improvements can be found at http://www.ci.philomath.or.us/index.asp?Type=B_BASIC&SEC=%7B45CAF922-023B-4781-9D35-1158E8523751%7D

What this means for the Philomath TSP Update: The Philomath Downtown Multi-Modal Streetscape Improvement Project Plan will inform recommended street design for Main Street and associated improvement projects. Construction may begin in spring of 2016 and this project would improve the walkability of the downtown area and support bicycle infrastructure through the downtown area. This project integrates many of the elements the updated TSP is expected to address and provides guidance on the type of improvements

City of Philomath Parks Master Plan

The City of Philomath Parks Master Plan was approved in December 2012 to update the existing 1998 City Park Master Plan. The capital projects list was recently updated in February 2016. Plan development provided an opportunity to connect with the community and learn what current and future needs the residents considered to be important. The Plan provides maps and tables of the existing parks and multi-modal paths, includes classifications of the requirements for each type of park, and identifies areas in need of improvement. The Plan identifies that there is an additional need for neighborhood parks generally in the City, and in particular for parks located north of US 20/OR 34.

Key Findings

The Plan identified several key findings which are listed below:

- The majority of City parks are located south of US 20/OR 34 with the exception of a neighborhood park north of US 20/OR 34.
- The community anticipates spending considerably more time on low impact activities such as walking picnicking, biking, and general relaxation.
- Similar to national trends, the community also anticipates a nominal increase in court and field games.
- The public indicated that if given a greater opportunity, they would participate more in walking and hiking trails, clear park facilities, and viewing wildlife.
- Vehicle parking was considered the top funding priority followed by expanding amenities and increased maintenance.
- Linear parks or trails that connect parks, neighborhoods, and other community destinations are important to the community.
- The Philomath School District plays a large role in the community and the City must continue to actively work with the School District to efficiently use limited resources.
- A lack of a community center for all ages in the City was identified.
- All recommended parks and improvements would cost a total of $1.9 million; the Park Master Plan presents a long-term plan to complete these improvements by identifying top priorities and ways to efficiently reach the Plan goals.

Key Goals

The Plan included several goals and policies including the following:

- Parks and Recreation Policies
- Coordinate development of recreational facilities and programs with other government agencies
- Consider the needs of the elderly, the handicapped, and the low-income when developing recreational programs and facilities
- Utilize Oregon State Comprehensive Outdoor Recreation Plan and the National Park and Recreation association standards as guidelines
- Pedestrian Ways
- Require safe, convenient, and direct pedestrian ways, and the maintenance thereof, within all areas of the community
- New development and redevelopment project shall encourage pedestrian access by providing convenient, useful, and direct pedestrian access
- Facilities shall be provided by new development that minimize travel distance within and between new subdivisions, planned developments, shopping centers, industrial parks, residential areas, transit stops, and neighborhood activity centers (schools and parks)
- Open Space
- As urbanization occurs along watercourses, some open space area should be maintained in order to minimize erosion potentials; maintain water temperatures, quality, and natural drainage channels, and allow for linear parks along these channels
- Park and recreation land shall be considered for dedication in relation to the Park Mater Plan when urban development occurs to preserve open space
- Coordinate with ODOT on the use and development of the Corvallis-to-the-Sea Trail that is within the City and UGB.
- Scenic Views
- The City encourages Benton County to protect the Mount Union Cemetery from relocation and development that would encroach on the scenic views from the Cemetery.
- The City shall evaluate and consider all areas above 300 feet Mean Sea Level in an effort to maintain and preserve existing views and viewpoints. All development where natural vistas may exist should take into consideration means to preserve these vistas through design and location of streets, parks or open space, and lot layout.
- The City shall encourage and coordinate with Benton County, to maintain connectivity and public access between open areas within the City as well as those open space and scenic view areas outside of the UGB.

What this means for the Philomath TSP Update: The TSP update will consider the findings and recommendations of the Parks Master Plan to help inform the development of the future transportation system, including the recommendation to add more parks north of US 20/OR 34. The updated TSP should reflect the finding that Philomath residents anticipate spending considerably more time on low impact activities such as walking and biking. The TSP update project could support improved community connectivity through coordination with neighboring communities to improve existing multi-use paths and trails as well as consider new multi-use paths and trails.

Master Philomath Bike Path and Trails Plan – 1994

The goal of the 1994 Master Philomath Bike Path and Trails Plan is "to link parks, open spaces, schools and residential areas via a system of trails and bike paths." The plan identifies that the existing system has three bicycle paths that connect Corvallis and Philomath:

- County Club Road to US 20 to Philomath
- North 53rd Street to Reservoir Road to West Hills Road to 19th Street ending at College Street
- Plymouth Road from 53rd Street to Bellfountain Road ending at intersection with Mt. Union and Southwood Drive.

The plan proposes the following improvements to the existing bicycle paths:

- Extend central bicycle path from Corvallis (County Club Road to US 20) from Applegate Street and South 26th Street south to City limits; then west to City Park/Philomath High School to South 19th Street
- Extend northern bicycle path (North 53rd to Reservoir Road) from North 19th and College Streets south along South 19th Street to Chapel Road (requires widening and other improvements on South 19th Street)
- Extend southern bicycle path (Plymouth Road) east from Plymouth Road along Southwood Drive, 30th Street, and Applegate Street to connect with County Club Road to US 20 bicycle path (recommended that bicycle path be added along Chapel Road from Bellfountain Road to Fern Road along South 13th Street)
- Add bicycle path to South 13th Street from Applegate Street to Chapel Road
- Improve and extend North 13 or North 13th from Main Street to West Hills Road to include a bicycle path (alternatively improve 9th Street by adding a bicycle path from Main Street to West Hills Road)
- Connect bike path on South 13th Street across Frolic and Rodeo grounds and Marys River Park to the Marys River
- Provide trail and/or bike path along the Marys River from Fern Road to Woods Creek to join with proposed section of the Corvallis-to-the-Sea Trail

- Provide trail and bike path from West Hills Road north to the Benton County Open Space Park to connect to the proposed Corvallis-to-the-Sea Trail
- Add bike lane(s) to US 20/OR 34
- Provide bike lane(s) along Applegate Street from 26th Street to 11th Street

What this means for the Philomath TSP Update: **The Master Philomath Bike Path and Trails Plan will be used to guide bicycle improvement recommendations for the TSP update.**

Philomath Safe Routes to School Plan - 2011

The Philomath Safe Routes to School Plan was adopted on June 30, 2011 and evaluates the existing routes proposed in 2008, the roads and intersections with heavy pedestrian traffic caused by the schools, and the roads and intersections identified as areas of improvement and the recommendations to fix those areas. The plan includes figures and tables for each location that include the existing and proposed designs, a short description, the benefits the improvements would have, and the cost estimation for the project.

Safe Routes to School – Key Locations

The locations and route identified by the Safe Routes to School Plan are as follow:

- Pioneer Street (Adelaide Drive to 13th Street)
- 11th Street (Quail Glen Drive to Pioneer Street)
- College Street (Pioneer Street/ 13th Street to Applegate Street/17th Street)
- 17th Street and Main Street Intersection
- Philomath Rodeo Grounds Path
- Cedar Street (13th Street to Willow Lane/15th Street)
- Willow Lane/Cedar Street Path (Willow Lane to Cedar Street)
- 17th Street (Applegate Street to 19th Street/Cedar Street)
- Philomath High School and Middle School Path System
- Applegate Street and 21st Street Intersection
- Applegate Street (16th Street to 29th Street)

Key Safety Concerns and Infrastructure Issues

- Vehicle traffic on 9th Street often exceeds the speed limit
- Several intersection corners do not have ADA-compliant ramps or are missing any type or curb ramp
- Missing or lack of sidewalks along 11th Street and older four-foot sidewalks along 17th Street
- High left turning vehicle traffic on the south leg of 17th street onto Main street can pose a hazard to pedestrians in the crosswalk
- Raised median along Main Street forces cyclists to ride of western sidewalk and use pedestrian crosswalk to cross the street

- Half of the Willow Lane/Cedar Street Path is through a grassy field and there is apparent heavy use as shown from a wide swath of trodden grass
- Applegate Street and 21st Street intersection has limited visibility due to the skewness of the intersection and creates a longer crossing distance for pedestrians, increasing their risk
- Conflicts with utility poles, mailboxes, and other obstacles along Applegate Street
- Congestion along Applegate Street at the beginning and end of the school makes riding a bicycle in the street difficult; children ride of sidewalk to avoid traffic

What this means for the Philomath TSP Update: The Safe Routes to School Plan will be used to guide safety and infrastructure recommendations for the TSP update when considering the Philomath schools.

Land Use Approvals and Transportation Improvements

The City of Philomath has approved land use and street classification changes in the eastern portion of the City. There is a proposed collector street that starts at Chapel Drive, runs north to connect with 26th Street, extends north of US 20/OR 34 through the existing American Home and Stone mining property to connect with Clemens Mill Road. Clemens Mill Road would then extend north to West Hills Road. There is a planned traffic signal at US 20/OR 34 and 26th Street. Additionally, US 20/OR 34 would be classified as a Major Arterial. Figure 2 shows the potential route of the 26th Street extension and the location of the proposed traffic signal.

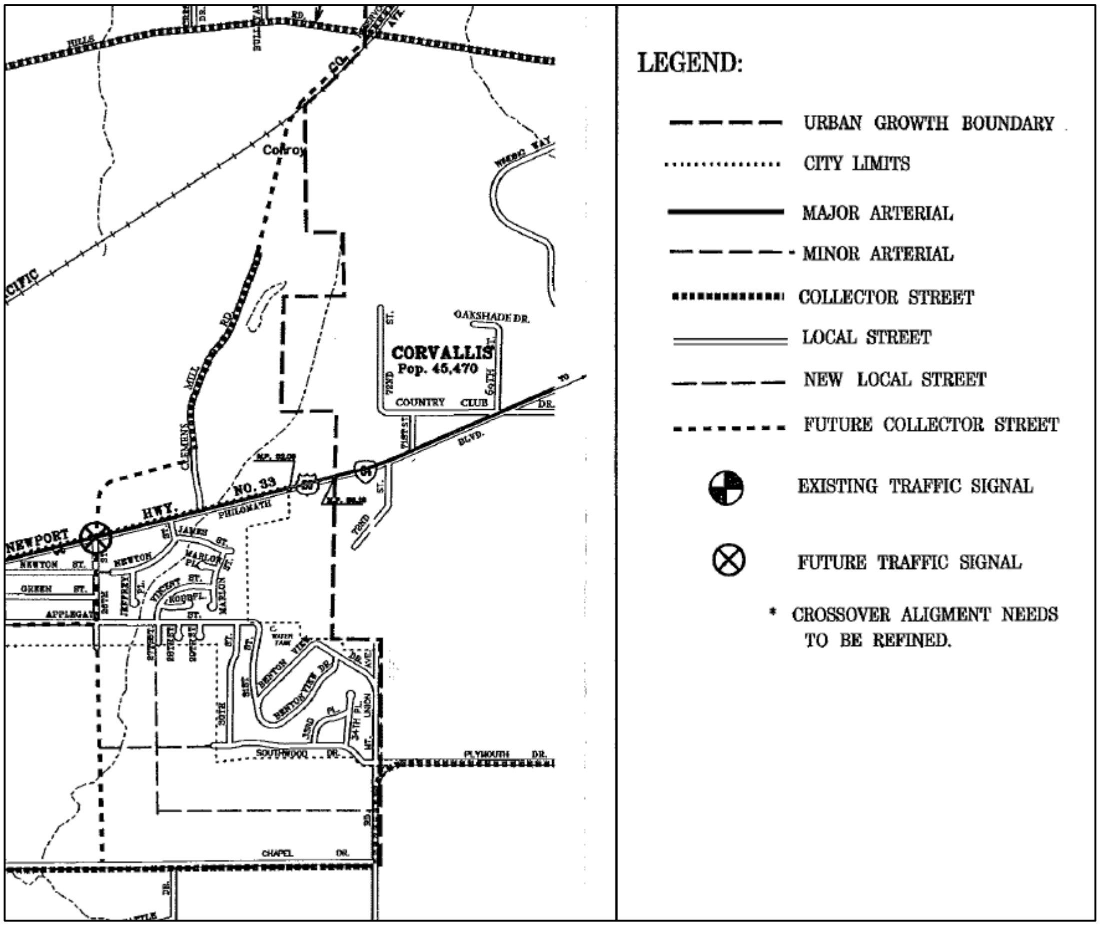


Figure 2: 1999 Philomath TSP Future Street Classification and Traffic Signals

What this means for the Philomath TSP Update: The updated TSP will reflect and plan for approved land use changes and will provide recommendations and incorporate them as appropriate.

The City of Philomath has applied for 2016 STIP funding for a Chapel Drive Bike Path and Pedestrian Improvements project. This project has not yet been approved or funded. The bicycle and pedestrian improvements would be located along the eastern segment of Chapel Driver from 19th Street to Bellfountain Road (see Figure 3). The surrounding land-uses include urban residential to the north of Chapel Drive and rural Residential to the south. The project includes a table top intersection at 19th Street and Chapel Drive, planted center medians along portions of Chapel Drive (as shown in Figure 4), bike lanes on either side of Chapel Drive, a separated sidewalk along the north of Chapel Drive, and a bioswale north of the separated sidewalk.

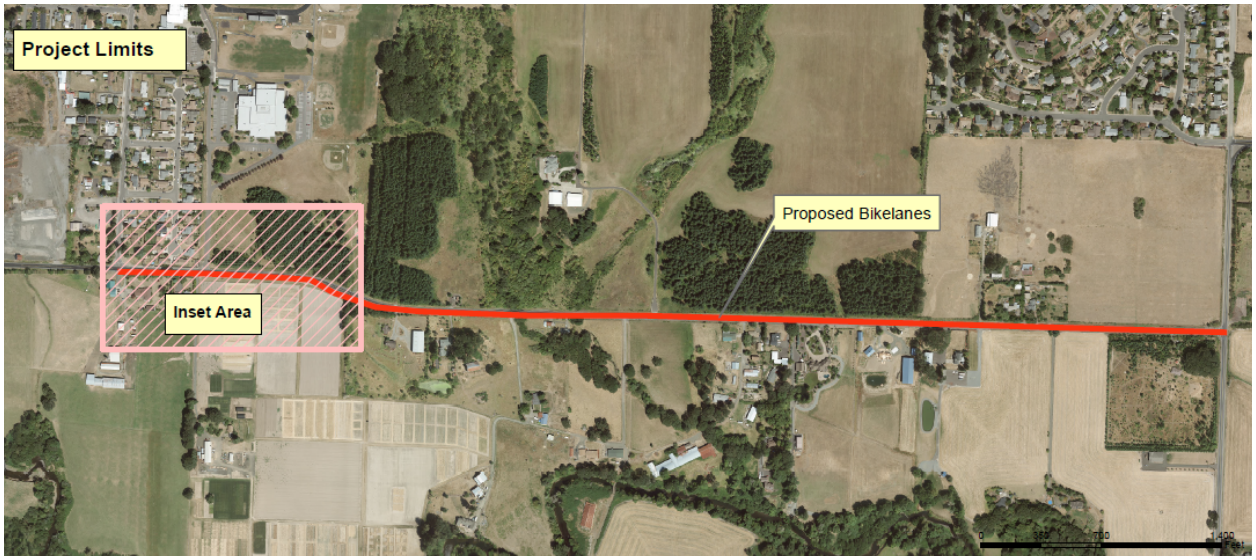


Figure 3: Bicycle and Pedestrian Improvement Plan Project Area

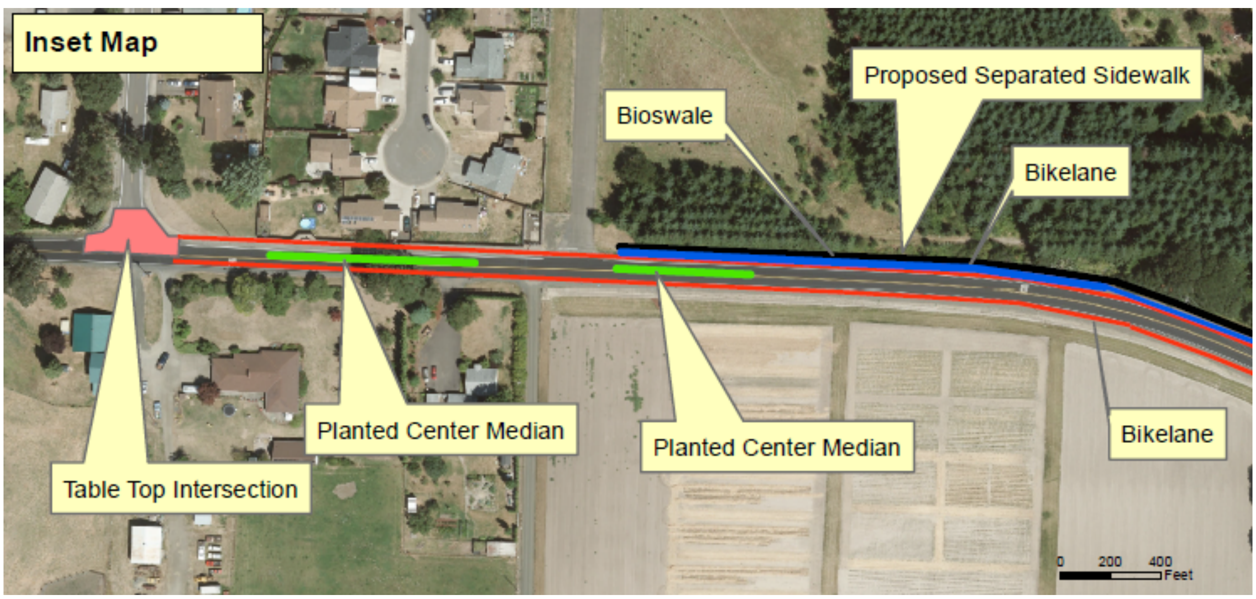


Figure 4: Bicycle and Pedestrian Improvement Plan Conceptual Design

What this means for the Philomath TSP Update: The updated TSP will consider this STIP application as a potential future project for the area and will provide recommendations and incorporate them as appropriate.

Regional Plans, Policies, and Regulations

The following sections summarize state plans, policies, and regulations including the following:

1. West Corvallis – North Philomath Plan
2. CAMPO Regional Transportation Plan
3. Central Willamette Valley ITS Plan – 2010
4. Benton-Lincoln Counties Special Transportation Fund Program Planning Project – 2007
5. Benton County TSP – 2001
6. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way – 2011
7. Corvallis Draft Transit Master Plan
8. Oregon Passenger Rail (Eugene – Portland) – 2013
9. CAMPO Strategic Assessment of GHG Emissions – 2014
10. CAMPO Transportation Safety Plan
11. US 20 / OR 34 Optimization Study – 2015

West Corvallis – North Philomath Plan – 1998

The West Corvallis – North Philomath Plan, adopted in 1998, provides recommendations for the future development of West Corvallis and north of Philomath. The plan has six points of consensus that follow the vision for Corvallis and develop a framework for the plan, including the following:

- A moderate rate of planned growth
- Retain the individual identities of Philomath and Corvallis
- Continue to develop good interconnected paths and bicycle routes
- Preserve the hillside view-sheds
- Preserve riparian corridors
- New developments should be clustered and pedestrian friendly

The plan recommended transportation network mitigations in the West Corvallis-North Philomath area to accommodate future growth and increased traffic volumes. The plan includes several conceptual future collector and local road alignments including realigning Country Club Drive, constructing new collectors between West Hills Road, 72nd Street, and Philomath Boulevard, and connecting Plymouth Drive to County Club Drive.

What this means for the Philomath TSP Update: The TSP update will coordinate with the City of Corvallis and Benton County in evaluating recommended improvements from the Plan to provide connectivity in this area.

CAMPO Regional Transportation Plan – 2012

The CAMPO RTP is currently being updated concurrently with the Philomath TSP. The CAMPO Regional Transportation Plan (RTP) is intended to direct future infrastructure developments in a manner that is closely aligned with the lifestyle and the values of the community, particularly those related to the conservation of energy, natural resources and the reduction of Greenhouse Gases (GHG). The plan outlines the transportation priority projects and policies, and provides a blueprint for the orderly allocation of scarce resources. The plan is intended to meet both federal and state requirements for regional transportation plans as described in the Safe, Accountable, Flexible, Efficient, Transportation Equity Act – a Legacy for Users (SAFETEA-LU), the applicable Transportation Act during the development of the document.

The plan includes the following recommended policies for implementation throughout land use and transportation decision-making processes:

Transportation System Management

- Provide for the safety of motorists, bicyclist and pedestrians
- Manage the transportation system to support the economic vitality of the area
- Promote alternative modes of transportation and take measures to reduce reliance on SOVs
- Preserve, protect and maintain the existing transportation system
- Provide for transportation system connectivity to reduce vehicle miles of travel
- Provide for movement of people and freight within and to destinations outside of the Planning Area
- Construct bike and pedestrian facilities as a component of all arterial and collector construction
- Improve gateways to the area and preserve historic transportation structures
- Construct trails, bikeways, transit and pedestrian facilities
- Allocate the majority of the area's allotment under the Surface Transportation Program (STP) to the maintenance and preservation of the existing transportation system

Transportation Demand Management

- Provide transportation choices for all people
- Support public transportation for both interurban and intra-urban trips
- Enhance transit service throughout the Planning Area by adding new bus routes, extending transit routes, extending transit service hours, providing higher service frequencies and better bus stops, shelters and amenities.
- Develop a coordinated transit service throughout the Planning Area and to neighboring destinations
- Monitor and modify, as needed, transit routes to serve the highest number of passengers
- Engage with employers to reduce vehicular trips by developing transportation management associations
- Seek funding to enhance TDM activities

- Promote carpool and vanpool programs
- Connectivity of transit, bicycle routes and pedestrian facilities shall be considered in the development review process for new developments
- Require planning for a network of bikeway and pedestrian facilities within new developments (internal circulation)
- Construct Park and Ride facilities on the periphery of the Planning Area and adjacent to transit routes
- Support car-share and bike-share programs

Land Use Management

- Land use and transportation decision making processes should be coordinated
- Promote higher residential density standards to make land use compatible with operation of viable public transportation
- Promote developments which blend commercial and residential uses
- Promote in-fill development
- Promote development of grid street pattern

Environment Protection

- Preserve and protect the natural environment (air, water and soil)
- Promote sustainability and livability throughout the transportation decision making process
- Preserve and protect the natural beauty of the area
- Preserve and protect the integrity of neighborhoods

Energy Conservation

- Remain appraised of the energy outlook and its impacts on the transportation system to update the Transportation Plan every five years
- Promote the use of renewable and alternative energy sources/fuels, such as bio-diesel and electricity, to reduce dependency on petroleum-based products
- Promote alternative modes of transportation through land use and transportation decision-making processes to reduce demand for vehicular trips and particularly, single occupancy vehicle trips

Parking Management

- Encourage major employers to use incentives that promote greater use of alternative transportation modes by employees, and disincentives for the use of workplace parking
- Give priority to the parking needs of those who carpool or vanpool, while accommodating visitors and persons with disabilities
- Limit the number of parking spaces required for new developments
- Encourage workplace incentive programs for public transportation, carpooling and vanpooling

- New development within or near central business districts should require fewer parking spaces than those in outlying areas
- Encourage new developments to locate buildings near the street and provide parking behind buildings
- Position parking in a manner that minimizes conflict with bicycle and pedestrian access
- Encourage shared parking among neighboring businesses
- Encourage telecommuting of employees
- Encourage the consolidation of commercial driveways to the degree practicable

The Sustainability recommendations of the RTP are mainly derived from the transportation-related measures recommended in the City of Corvallis Community Sustainability Action Plan as well as those recommended by the CAMPO Policy Board. These are:

Reduce GHG Emissions

- Model CO2 emissions with the region's transportation model to provide information on the CO2 emissions of existing and/or future transportation networks.
- Consider CO2 emissions when prioritizing transportation projects.
- Fund pedestrian and bicycling programs and facilities that are likely to result in auto trip reduction.
- Research successful strategies for reducing GHG emissions to develop best practices for local implementation.
- Provide reliable transit services to all trip generators to reduce driving.
- Support maintenance, upgrades and enhanced efficiency of public transit services.
- Support the expansion of ride-sharing and carpool programs.

Promote Fuel-Efficiency and Cleaner Vehicles

- Support vehicle retrofits and the purchase of cleaner motor vehicles in public transit fleets.
- Upgrade bridges to lift weight restrictions for freight.
- Support initiatives to reduce unnecessary idling.

Integrate Transportation and Land Use Planning

- Support and promote Transit-Oriented developments (TODs).
- Support and promote the "5 D's" of sound land use planning: Density, Diversity, Design and Distance [to transit].

Integrate Transit, Cycling, and Walking as Viable Alternatives to the Car

- Make transit easier to use by decreasing wait times, coordinating fares and creating seamless transfers among transit systems. Also work to create connections to bicycle and pedestrian facilities.
- Real time information at transit stops and on board transit.
- Traffic signal prioritization for buses.
- Incorporate mid-block connections, and multi-use paths into residential subdivisions.

- Encourage bicycling and walking through events, commute campaigns and public awareness campaigns.
- Encourage development of bicycle parking and clothes changing facilities at worksites, transportation terminals and other destinations. Establish standards for bicycle parking including size, number of spots, proximity to entrance and space needed around the parking to adequately fit bicycles.
- Publish local and regional cycling maps showing recommended cycling routes and facilities, roadway conditions (shoulders, traffic volumes, special barriers to cycling, etc.) hills, recreational facilities, and other information helpful to cyclists.
- Improve walking and cycling safety through traffic calming, streetscape and complete streets policies. Ensure that sidewalks are ADA-compliant and well-lit.
- Create safer bicycle and pedestrian crossings. Place pedestrian-activated signals at high-activity mid-block locations and intersections. Realign pathways further from their parallel streets when they approach intersections to help avoid collisions with right-turning cars. Also make bike lane crossings highly visible with pavement paint or signs.
- Develop and publicize internet tools for bicycling, such as bike route mapping and trip planning.

Implement environmentally sound roadway construction standards

- Reuse existing pavement materials.
- Reduce lifecycle impacts from extraction and production of virgin materials.
- Promote use of locally sourced materials to reduce impacts from transportation emissions, reduce fuel costs, and support local economies.
- Reduce lifetime energy consumption of lighting systems for roadways.
- Make roadway capital assets last longer and perform better by preserving and maintaining them.
- Utilizing pavement technologies which reduce environmental impacts (such as long-life pavement, permeable pavement, warm mix asphalt, cool pavement and quiet pavement).

The CAMPO RTP has prepared maps for recommended transportation projects to be completed by 2016, projects to be completed by 2025, project to be completed by 2035, and recommended illustrative projects which include the following:

Completed by 2016

- Bicycle and Pedestrian improvements along Pioneer Street, College Street, Applegate Street and 21st Street, Main and 17th Street, and Cedar and 13th Street.

Completed by 2025

- Paved shoulders along Chapel Street (possible 2018-2021 STIP Project)
- Bicycle and Pedestrian improvement along 11th Street and on Rodeo Ground
- Traffic signal at 26th and US 20/OR 34

- Traffic signal at Alsea Highway (OR 34) and US 20
- Reconstruct Applegate Street/US 20/OR 34
- Improve 13th Street to urban standards

Completed by 2035

- Realign Clemens Mill Street
- Improve Chapel Street to urban standards

What this means for the Philomath TSP Update: The RTP provides an opportunity for Philomath and other local agencies within the MPO to coordinate TSP projects and policies. The TSP process will coordinate the RTP's planned projects.

Central Willamette Valley ITS Plan – 2010

The Central Willamette Valley Intelligent Transportation System (ITS) Plan defines advanced technologies that support regional transportation initiatives such as promoting travel options, optimizing transportation system performance, and reducing the frequency and effects of incidents. The plan was developed collaboratively with a Steering Committee made up of key stakeholders from across the region. The ITS Action Plan includes advanced technologies and management strategies that improve the safety and efficiency of the transportation system and improve the traveler experience for all modes in the Central Willamette Valley. The ITS Action Plan includes specific ITS projects and deployment priorities. A total of 43 ITS projects were identified for the Central Willamette Valley to support the region's vision and goals. The ITS projects that best fit the region's vision can be described as follows:

- ***Expand Traveler Information Services –*** *Provide traveler information on arterial roadways and support multimodal route planning and guidance.*
- ***Implement Transit Service Enhancements –*** *Improve transit speed and reliability and broadcast real-time vehicle location and stop arrival information.*
- ***Enhance Safety of Alternative Modes -*** *Improve bicycle detection and provide bicycle signal timing.*
- ***Improve Corridor System Management Capabilities –*** *Enhance traffic signal operations (timing and signal system), provide video monitoring, provide vehicle detection (speeds and volumes), install Ethernet communications, update coordinated signal timings, and support transit signal priority.*
- ***Construct a Regional Communications Network between Agencies –*** *Provide a network that supports transportation data exchange and video sharing.*
- ***Construct Virtual Traffic Operations Centers –*** *Provide staff and physical space to support active corridor management.*

- ***Enable Emergency Service Coordination –*** *Provide coordinated planning and operations and share real-time traffic and incident information between emergency services and traffic management.*

What this means for the Philomath TSP Update: **The current TSP update will determine how to address the ITS recommendations to help inform the development of the plan.**

Benton-Lincoln Counties Special Transportation Fund Program Planning Project – 2007

The Benton-Lincoln Counties Special Transportation Fund Program Planning Project, completed in 2007, serves as a guide for the investment of state and federal funding for both Benton and Lincoln Counties. The plan examined opportunities for the two counties to coordinate and improve specialized transportation services and public transportation. The plan methodology included the documentation of demographics, description of current services, and identification of strategies to mitigate the unmet needs. The plan fulfilled a federal requirement that was enacted in 2005 from the Safe, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Both Benton and Lincoln County have a higher than average presence of older adults, persons with disabilities, and persons in poverty, as compared to the State of Oregon. Due to this, equitable and accessible transportation and transit opportunities are of critical importance. In Benton County, there is currently a need for enhanced service between Corvallis and Albany, a fixed route service on weekends, extended evening service and increased frequency of Corvallis Transit System (CTS).

The plan identified priority needs and issues of a regional nature or scope, including the following:

- *Lack of transportation linking the communities within the three-county region, particularly critical:*
  - Limited service between Sweet Home/Lebanon/eastern Linn County and Corvallis (especially for medical trips)
  - Limited service between Newport and Corvallis (especially for medical trips)
  - Limited options for transporting seniors and other with medical needs between Albany and Corvallis and between Newport and Corvallis
  - Limited transport services for those that live in rural areas or in the outlying communities
  - Limited options for transporting seniors and persons with disabilities to Salem, Eugene, and Portland
- *Lack of sustainable and equitable funding for regional (intercity and cross-county) transportation*

- *Lack of public and agency awareness of transportation service options*
- *Limited transport services that can accommodate individuals that need special care*
- *Lack of knowledge on the part of seniors and persons with disabilities about how to use transport services*
- *Need for driver training*

What this means for the Philomath TSP Update: The TSP update will determine how to incorporate the transportation and transit needs in Benton County to help inform the development of the Plan.

Benton County TSP – 2001

The Benton County Transportation System Plan (TSP) was adopted in 2001. The plan discusses key transportation issues being faced by the county, establishes evaluation criteria to determine a preferred alternative, and identifies additional improvements needed.

Key Considerations

- The majority of roadway congestion will occur on the state highway system.
- Limited new road construction to improve connectivity could allow the County road system to relieve some congestion.
- Even with improved connectivity and aggressive efforts to decrease dependence on automobile travel, US 20/OR 34 between Corvallis and Philomath will need to be widened to provide operational capacity that complies with state capacity standards for the next 20 years.
- Improve rural transit with an express bus service between Albany and Philomath as well as supporting an expansion of the Corvallis Transit System Services.

Financial constraints will require the lowest-cost alternatives suitable for meeting the needs of the next 20 years and may require a compromise of the vision and/or goals. The transportation system goals for the BCTSP were as follows:

Mobility, Circulation, and Safety Goals

- Develop a transportation system to facilitate appropriate travel modes.
- Ensure sufficient capacity is provided concurrent with future travel demand to, within, and through Benton County.
- Provide safe interactive multi-modal facilities.
- Ensure mobility to the transportation disadvantaged.
- Coordinate with local agencies and providers to expand transit services countywide.
- Ensure an adequate truck route network to reduce commercial/neighborhood conflicts.
- Provide both primary and secondary access for emergency services.

Capital Improvement Goals

- Maximize the useful life of existing facilities.
- Maximize the cost effectiveness of transportation improvements.
- Ensure adequate and equitable long-term funding mechanisms.
- Maintain a Transportation Improvement Plan.

Community Goals

- Provide transportation services that preserve and protect the scenic and natural resources and rural character of Benton County.
- Minimize conflicting uses on the transportation system that degrade neighborhoods and rural communities.

Economic Development Goals

- Preserve and protect transportation corridors essential to the economic vitality of the County.
- Promote the use of freight rail and air service to reduce trucking activity on County roads.
- Promote efficient and affordable ground transportation to existing regional airports (Portland and Eugene).

What this means for the Philomath TSP Update: The TSP update will determine how to address the recommended Benton County improvements and consider the relevant transportation goals. The Benton County TSP update will likely be underway during the development of the Philomath TSP, so the plan updates should be coordinated. The City and the county will also need to coordinate on a potential future express bus services between Albany and Philomath and the expansion of the Corvallis Transit System to Philomath.

Corvallis Draft Transit Master Plan/Transit Development Plan

The 2006 Corvallis Draft Transit Master Plan provides the existing conditions of the Corvallis Transit System (CTS), policies and programs impacting CTS, the long- and short-term service plans, and the operational policy considerations. The Philomath Connection, which provides service from Corvallis to Philomath, operates along some of the same roadway sections where CTS operates and utilizes the Corvallis Downtown Transit Center. While the draft transit master plan was never adopted by the Corvallis City Council – the new Transit Development Plan currently underway provides the opportunity for Philomath to evaluate the transit services currently received and future needs. Additionally, by coordinating transit services the need for or amount of highway widening between Philomath and Corvallis could be reduced and additional services, such as increased frequency, transit shelters, or “fareless” services, can be considered.

What this means for the Philomath TSP Update: The TSP update will coordinate with the short- and long-term plans of the Corvallis Transit Master Development Plan when considering the transit aspects in Philomath and provides an opportunity to consider current and future transit service needs in Philomath.

Oregon Passenger Rail (Eugene – Portland) – 2013

The Portland to Eugene Intercity Passenger Rail Assessment is one of a series of studies conducted as part of the 2010 Oregon Rail Study. These studies analyze and assess rail systems in Oregon and are intended to serve as a basis for updating the Oregon Rail Plan as well as to contribute to other state, regional and local planning efforts.

Previous state planning efforts have repeatedly found that, to meet expected population growth in the region, the Willamette Valley section of the Pacific Northwest Rail Corridor (PNWRC - between Vancouver, Canada and Eugene) should be developed for expanded and improved intercity passenger rail service. The Portland to Eugene section has also been federally designated as a High Speed Rail corridor. The Passenger Rail Assessment identifies (draft) service goals for the corridor, including improved reliability, frequency, and travel time for passenger travel, without negative impacts to freight operations.

There are no alternatives which run through Philomath and although an option was considered that would connect to Corvallis. Though this option is not the preferred alternative, it will be analyzed in the Draft Environmental Impact Statement. Transportation services from Philomath would have to provide connection to Oregon Passenger Rail stops.

What this means for the Philomath TSP Update: The TSP update will consider the impact of the Draft Environmental Impact Statement results of the Oregon Passenger Rail recommendations to help inform the development of the Plan.

CAMPO Strategic Assessment of GHG Emissions – 2014

The Corvallis Area Metropolitan Planning Organization (CAMPO) engaged in a voluntary planning effort known as a strategic assessment to estimate how close the region’s existing plans come to reaching greenhouse gas emissions reduction targets and other important outcomes of regional interest, including changes to vehicle miles traveled and air pollutants. The major findings of the strategic assessment include the following:

- By implementing adopted plans, greenhouse gas emissions will decline. Implementing the region’s adopted plans alone results in a 2.1 percent reduction in greenhouse gas emissions per capita. In combination with potential state-led actions, such as ambitious pricing strategies that are currently not being implemented, but may be in the future, an 18.5 percent reduction could be achieved.

- Additional analysis, called sensitivity testing, indicates that reaching the region's 21 percent reduction target adopted by the Land Conservation and Development Commission is feasible. There are a variety of policies and actions that the region could pursue that would enable it to meet the greenhouse gas emissions target.
- Implementation of adopted plans is expected to result in other important benefits for the region:
- Total fuel consumption per capita is expected to drop by 53 percent
- Criteria air pollutants are expected to drop by 60 percent
- Walking and cycling trips will continue to increase
- Improvements to air quality and expanded options for transportation are likely to improve public health and reduce health care costs for area residents
- The assessment highlights other issues that the region may want to consider further either through plan updates or more detailed scenario planning. These include:
- Household transportation costs are expected to increase, due to increases in vehicle ownership and operating costs
- Vehicle miles are expected to increase slightly, by 3 percent

What this means for the Philomath TSP Update: The TSP update will further support implementation of adopted plans and policies that work towards achieving the region's goals to reduce greenhouse gas emissions.

CAMPO Transportation Safety Plan

The Corvallis Area MPO is currently developing a Transportation Safety Plan for the MPO area, which will help to identify transportation safety concerns for all modes of transportation and identify mitigation measures for those concerns. The goal of the Transportation Safety Plan is to identify and prioritize safety improvements throughout the CAMPO planning area that can be made as funding and resources become available.

What this means for the Philomath TSP Update: The TSP update should consider the future recommendations of the safety plan and incorporate them as appropriate.

US 20 / OR 34 Optimization Study – 2015

The US 20/OR 34 Optimization Study provides recommendations for the 2.2 mile long corridor of US 20/OR 34 extending from OR 99W to 53rd Street. The study area is a critical segment of highway in Corvallis for commuter, freight, and recreational traffic. The study identified low cost, operational improvements to address safety and mobility within the next five years.

The three recommended strategies that were identified in the study include the following:

- Adaptive signal timing – software that monitors, responds to, and adjusts signal timing based on traffic data and user-defined objectives to reduce number of stops, travel time, fuel consumption, and emissions
- Freight signal priority – detection at traffic signals that will extend the green time of a signal movement when trucks are detected on the approach to reduce heavy vehicle red-light violations, number of stops, delay, noise pollution, and annual emissions.
- Arterial performance measurement and real-time equipment monitoring – detection at five signalized intersections and one mid-block location to collect arterial performance measures, including traffic volumes, travel speeds, travel times, vehicle classifications, vehicle occupancy, pedestrian and bicycle volumes, and delay for vehicles, pedestrians, and bicyclists. This will reduce travel time, provide robust data, the ability to analysis before and after data, minimize time between equipment failure and notification, and improve efficiency for maintenance scheduling and routing.

The two proposed strategies that were identified for further consideration include the following:

- Intersection improvements at 53rd Street – add striping and detection for the through westbound bicycle lane to the left of the right turn lane, add striping for the eastbound right turn lane, analyze lighting and install street lights (likely two) to meet current standards, tighten the turning radii for the NE corner, remove and apply striping as necessary, and close access on NW corner
- Intersection improvements at 26th Street/Brooklane Drive – add street lighting on the SW corner near the path crossing, consider moving the south leg crosswalk to the trail connection (out of the intersection), install bicycle detection and sharrows for the northbound bicycle movement, and remove and restripe as necessary

What this means for the Philomath TSP Update: The TSP update will determine how to incorporate the optimization study recommendations to help inform the development of the Plan.

State & Federal Plans, Policies, and Regulations

The following sections summarize state plans, policies, and regulations including the following:

1. Oregon Transportation Plan
2. Oregon Highway Plan
3. Oregon Bicycle and Pedestrian Plan
4. Oregon Freight Plan
5. Oregon Rail Plan
6. Oregon Aviation Plan
7. ODOT TSP Guidelines
8. Oregon Public Transportation Plan
9. Oregon Transportation Options Plan
10. Oregon Transportation Safety Action Plan
11. Transportation Planning Rule (OAR 660-012)
12. Access Management Rules (OAR 734-051)
13. Statewide Transportation Improvement Program (STIP)
14. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way

Oregon Transportation Plan – 2006

As the guiding document for local TSPs, the Oregon Transportation Plan (OTP) establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing transportation in Oregon. The goals and policies are further implemented by various modal plans, including the Aviation System Plan, Bicycle and Pedestrian Plan, Freight Plan, Highway Plan, Public Transportation Plan, Rail Plan and the Transportation Safety Action Plan.

Each of the OTP's seven goals is defined by more specific policies and strategies:

OTP Goal 1 – Mobility and Accessibility

This goal aims to enhance Oregon's quality of life and economic vitality by providing a balanced, efficient, cost-effective and integrated multimodal transportation system that ensures appropriate access to all areas of the state, the nation and the world, with connectivity among modes and places.

Policy 1.1 – Development of an Integrated Multimodal System
It is the policy of the State of Oregon to plan and develop a balanced, integrated transportation system with modal choices for the movement of people and goods.

Strategy 1.1.1

Plan and develop a multimodal transportation system that increases the efficient movement of people and goods for commerce and production of goods and services that is coordinated with regional and local plans. Require regional and local transportation plans to address existing and future centers of economic activity, routes and modes connecting passenger facilities and freight facilities, intermodal facilities and industrial land, and major intercity and intra-city transportation corridors and supporting transportation networks.

Strategy 1.1.2

Promote the growth of intercity bus, truck, rail, air, pipeline and marine services to link all areas of the state with national and international transportation facilities and services. Increase the frequency of intercity services to provide travel options.

Strategy 1.1.4

In developing transportation plans to respond to transportation needs, use the most cost-effective modes and solutions over the long term, considering changing conditions and based on the following:

- Managing the existing transportation system effectively.
- Improving the efficiency and operational capacity of existing transportation infrastructure and facilities by making minor improvements to the existing system.
- Adding capacity to the existing transportation system.
- Adding new facilities to the transportation system.

Policy 1.2 – Equity, Efficiency and Travel Choices

It is the policy of the State of Oregon to promote a transportation system with multiple travel choices that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.

Strategy 1.2.1

Develop and promote inter and intra-city public transportation.

Strategy 1.2.2

Better integrate, locate, and design passenger and freight multimodal transportation facilities and connections to expedite travel and provide travel options. Locate and design transportation facilities to connect with other modes.

Policy 1.3: Relationship of Interurban and Urban Mobility.

It is the policy of the State of Oregon to provide intercity mobility through and near urban areas in a manner which minimizes adverse effects on urban land use and travel patterns and provides for efficient long distance travel.

Strategy 1.3.1

Use a regional planning approach and inter-regional coordination to address problems that extend across urban growth boundaries.

Strategy 1.3.2

In coordination with affected jurisdictions, develop and manage the transportation network so that local trips can be conducted primarily on the local system and the interstate and statewide facilities can primarily serve intercity movement and interconnect the systems. Develop, maintain and improve parallel roadways, freight rail, transit, bus rapid transit, commuter rail and light rail to provide alternatives to using intercity highways for local trips where possible.

What this means for the Philomath TSP Update: The TSP update will support the growth of existing and future centers of economic activity, routes and modes connecting passenger facilities and freight facilities, intermodal facilities and industrial land, and major intercity and intra-city transportation corridors and supporting transportation networks. It will also promote the most cost-effective long-term modes and solutions that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.

OTP Goal 2 – Management of the System

This goal aims to improve the efficiency of the transportation system by optimizing the existing transportation infrastructure capacity with improved operations and management.

Policy 2.1 – Capacity and Operational Efficiency

It is the policy of the State of Oregon to manage the transportation system to improve its capacity and operational efficiency for the long term benefit of people and goods movement.

Strategy 2.1.1

Promote transportation demand management and other transportation system operations techniques that reduce peak period travel, help shift traffic volumes away from the peak period and improve traffic flow. Such techniques may include high occupancy vehicle lanes with express transit service, truck-only lanes, van/carpools, park-and-ride facilities, parking management programs, telework, flexible work schedules, peak period pricing, ramp metering, traveler information systems, traffic signal optimization, route diversion strategies, incident management and enhancement of rail, transit, bicycling and walking.

Strategy 2.1.2

Protect the integrity of statewide transportation corridors and facilities from encroachment by such means as managing access to state highways, limiting interchanges, creating safe rail crossings and controlling incompatible land use around airports, ports, pipelines and other intermodal passenger and freight facilities.

Strategy 2.1.3

Use advanced traveler information devices, incident management, speed management, improvements to signaling systems and other technologies to extend the efficiency, safety and capacity of transportation systems. Develop protocols and implement methods for alternate routing to respond to incidents.

Strategy 2.1.4

Enhance efficiency and reduce conflicts among transportation users, for example by reducing bottlenecks and geometric constraints, and improving or removing modal crossings. Provide for a network of arterials and highways to efficiently move goods and services while enhancing safety and community movements on local streets. Provide for signal prioritization and road patterns that support public transit. Support rail reconfiguration and additional tracks that benefit passenger and freight movements.

What this means for the Philomath TSP Update: The TSP update will prioritize travel demand management and transportation system operations techniques that fine tune and maximize existing facilities over costly major roadway capacity improvements.

OTP Goal 3 – Economic Vitality

This goal promotes the expansion and diversification of Oregon's economy through the efficient and effective movement of people, goods, services and information in a safe, energy-efficient and environmentally sound manner.

Policy 3.2 – Moving People to Support Economic Vitality

It is the policy of the State of Oregon to develop an integrated system of transportation facilities, services and information so that intrastate, interstate and international travelers can travel easily for business and recreation.

Strategy 3.2.2

In regional and local transportation system plans, support options for traveling to employment, services and businesses. These include, but are not limited to, driving, walking, bicycling, ridesharing, public transportation and rail.

Strategy 3.2.4

Address scenic values in state, regional and local planning, improvements and maintenance. Support state and federal Scenic Byways and Tour Routes and connections to parks and recreation areas.

Strategy 3.2.5

Promote tourism via air, bicycles, motor vehicles, rail and ships. Support connections to recreational trails.

Policy 3.3 – Downtowns and Economic Development

It is the policy of the State of Oregon to provide transportation improvements to support downtowns and to coordinate transportation and economic development strategies.

Strategy 3.3.1

Coordinate private and public resources to provide transportation improvements and services to help stimulate active and vital downtowns, economic centers and main streets.

What this means for the Philomath TSP Update: The TSP update will identify projects that support a prosperous and competitive economy by preserving and enhancing business opportunities, and ensuring the efficient movement of people and goods to recreational, employment, housing and other destinations in Philomath and neighboring areas.

OTP Goal 4 – Sustainability

This goal seeks to provide a transportation system that meets present needs without compromising the ability of future generations to meet their needs from the joint perspective of environmental, economic and community objectives. This system is consistent with, yet recognizes differences in, local and regional land use and economic development plans. It is efficient and offers choices among transportation modes. It distributes benefits and burdens fairly and is operated, maintained and improved to be sensitive to both the natural and built environments.

Policy 4.1 – Environmentally Responsible Transportation System

It is the policy of the State of Oregon to provide a transportation system that is environmentally responsible and encourages conservation and protection of natural resources.

Strategy 4.1.1:

Practice stewardship of air, water, land, wildlife and botanical resources. Take into account the natural environments in the planning, design, construction, operation and maintenance of the transportation system. Create transportation systems compatible with native habitats and species and help restore ecological processes, considering such plans as the Oregon Conservation Strategy and the Oregon Plan for Salmon and Watersheds. Where adverse impacts cannot reasonably be avoided, minimize or mitigate their effects on the environment. Work with state and federal agencies and other stakeholders to integrate environmental solutions and goals into planning for infrastructure development and provide for an ecosystem-based mitigation process.

Strategy 4.1.2:

Encourage the development and use of technologies that reduce greenhouse gases.

Policy 4.3 – Creating Communities

It is the policy of the State of Oregon to increase access to goods and services and promote health by encouraging development of compact communities and neighborhoods that integrate residential, commercial and employment land uses to help make shorter trips, transit, walking and bicycling feasible. Integrate features that support the use of transportation choices.

Strategy 4.3.1

Support the sustainable development of land with a mix of uses and a range of densities, land use intensities and transportation options in order to increase the efficiency of the transportation system. Support travel options that allow individuals to reduce vehicle use.

Strategy 4.3.2

Promote safe and convenient bicycling and walking networks in communities. Fill in missing gaps in sidewalk and bikeway networks, especially to important community destinations such as schools, shopping areas, parks, medical facilities and transit facilities. Enhance walking, bicycling and connections to public transit through appropriate community and main street design. Promote facility designs that encourage walking and biking.

Strategy 4.3.4

Promote transportation facility design, including context sensitive design, which fits the physical setting, serves and responds to the scenic, aesthetic, historic and environmental resources, and maintains safety and mobility.

Strategy 4.3.5

Reduce transportation barriers to daily activities for those who rely on walking, biking, rideshare, car-sharing and public transportation by providing: Access to public transportation and the knowledge of how to use it. Facility designs that consider the needs of the mobility-challenged including seniors, people with disabilities, children and non-English speaking populations.

What this means for the Philomath TSP Update: The TSP update will identify solutions that support the movement of people, regardless of mode, and that reduce transportation barriers to daily activities for walkers, bikers and public transportation users. The solutions will be environmentally responsible and should fit the physical setting and context of the surrounding land use.

OTP Goal 5 – Safety and Security

This goal aims to plan, build, operate and maintain the transportation system so that it is safe and secure.

Policy 5.1 – Safety
It is the policy of the State of Oregon to continually improve the safety and security of all modes and transportation facilities for system users including operators, passengers, pedestrians, recipients of goods and services, and property owners.

Strategy 5.1.3

Ensure that safety and security issues are addressed in planning, design, construction, operation and maintenance of new and existing transportation systems, facilities and assets.

Policy 5.2 – Security
It is the policy of the State of Oregon to provide transportation security consistent with the leadership of federal, state and local homeland security entities.

Strategy 5.2.3

Improve the evacuation and emergency response capabilities of the urban and rural transportation system.

What this means for the Philomath TSP Update: The TSP update will develop projects that ensure the transportation system maintains and improves individual safety and security and maximizes public safety and service access.

OTP Goal 6 – Funding the Transportation System

This goal seeks to create a transportation funding structure that will support a viable transportation system to achieve state and local goals today and in the future.

Policy 6.1 – Funding Structure

It is the policy of the State of Oregon to develop a transportation finance structure that addresses the public funding aspects of all modes and reinforces plan strategies. This structure should include provisions for flexibility in the use of new funding sources and new partnerships to achieve system integration while also protecting transportation funds for transportation purposes.

Strategy 6.1.2

Develop and maintain adequate resources for demonstrated and proven transportation needs for all transportation modes and jurisdictions.

What this means for the Philomath TSP Update: The TSP update will include an assessment of the level of transportation funding projected to be available through the 20-year planning horizon in comparison to the cost of developing a transportation system that is able to meet the City's needs. Opportunities to establish stable funding sources will be discussed and project prioritization will consider the feasibility of funding.

OTP Goal 7 – Coordination, Communication and Cooperation

This goal ensures coordination, communication and cooperation among transportation users, providers and those most affected by transportation activities to align interests, remove barriers and bring innovative solutions so the transportation system functions as one system.

Policy 7.1 – A Coordinated Transportation System

It is the policy of the State of Oregon to work collaboratively with other jurisdictions and agencies with the objective of removing barriers so the transportation system can function as one system.

Strategy 7.1.1

Examine transportation functions among and within state and local agencies and providers in order to make the delivery of transportation services and facilities more efficient. Consider consolidation of functions where it can improve efficiency, accountability and service delivery.

Policy 7.3 – Public Involvement and Consultation

It is the policy of the State of Oregon to involve Oregonians to the fullest practical extent in transportation planning and implementation in order to deliver a transportation system that meets the diverse needs of the state.

Strategy 7.3.1

In all phases of decision-making, provide affected Oregonians early, open, continuous, and meaningful opportunity to influence decisions about proposed transportation activities. When preparing and adopting a multimodal transportation plan, modal/topic plan, facility plan or transportation improvement program, conduct and publicize a program for citizen, business, and tribal, local, state and federal government involvement. Clearly define the procedures by which these groups will be involved.

Strategy 7.3.3

Seek out and facilitate the involvement of those potentially affected including traditionally underserved populations.

What this means for the Philomath TSP Update: **The TSP update will offer public involvement opportunities to all stakeholders and residents, comply with Title VI guidelines, and will coordinate with other jurisdictions and agencies, including CAMPO, to ensure the transportation system limits barriers and functions as one system.**

Oregon Highway Plan – Amended 2013

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including the Oregon Highway Plan. The OHP defines policies and investment strategies for Oregon's state highway system. The plan contains three elements: a vision element that describes the broad goal for how the highway system should look in 20 years; a policy element that contains goals, policies, and actions to be followed by state, regional, and local jurisdictions; and a system element that includes an analysis of needs, revenues, and performance measures.

ODOT Highway Classification for Philomath

OHP Goal 1, Policy 1A (State Highway Classification System) categorizes state highways for planning and management decisions. Within Philomath, US 20/OR 34 (aka, Corvallis-Newport Highway) is classified as a Statewide Highway.

Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. Inside Special Transportation Areas (see Special Designations below), local access may also be a priority.

What this means for the Philomath TSP Update: **While this policy places importance on the efficient travel of through motor vehicle trips on highways, the policy must still be balanced with other goals and objectives of the Oregon Transportation Plan to ensure its multi-modal intentions are addressed along non-expressway designated segments.**

Special Designations: OHP Goal 1, Policy 1B identifies special highway segment designations for specific types of land use patterns to foster compact development on state highways in which the need for appropriate local access outweighs the considerations of highway mobility. There are currently no special highway segment designations within Philomath.

A special highway segment designation that may be of interest to Philomath, particularly in the downtown, is a Special Transportation Area (STA). The primary objective of a STA is to provide access to and circulation amongst community activities, businesses, and residences and to accommodate pedestrian, bicycle, and transit movement along and across the highway. While traffic moves through an STA and automobiles may play an important role in accessing an STA, convenience of movement within an STA is focused upon pedestrian, bicycle, and transit modes. STAs look like traditional "Main Streets" and the designation is generally located on both sides of a state highway. Direct street connections and shared on-street parking are encouraged. Local auto, pedestrian, bicycle, and transit movements to the area are generally as important as the through movement of traffic. Because of this, ODOT's mobility targets and design standards in STA's are intended to allow for lower speed operations.

What this means for the Philomath TSP Update: The downtown "Main Street" portion of US 20/OR 34 in Philomath (couplet streets US 20/OR 34 and Applegate Street) is not identified as an STA. The merits of this designation will be evaluated as part of the TSP process to determine if the City would like to obtain the designation.

State Highway Freight System: OHP Goal 1, Policy 1C addresses the need to balance the movement of goods and services with other uses. It states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. Within Philomath, US 20/OR 34 (Corvallis-Newport Highway) is classified as an Oregon Freight Route and Federal Truck Route.

What this means for the Philomath TSP Update: Transportation solutions along highways through Philomath must be accommodating to freight, consistent with the freight and truck route designations. Any reduction of highway dimensions or requests for special designations will be subject to review by the Statewide Freight Advisory Committee.

Reduction Review Routes: An Administrative Rule was recently adopted to provide clear direction in the implementation of ORS 366.215. The rule requires review of all potential actions that will alter, relocate, change or realign a Reduction Review Route that could result in permanent reductions in vehicle-carrying capacity. Reduction of vehicle-carrying capacity means a permanent reduction in the horizontal or vertical clearance of a highway section, by a permanent physical obstruction to motor vehicles located on useable right-of-way subject to Commission jurisdiction, unless such changes are supported by the Stakeholder Forum. If ODOT identifies that an action may result in a reduction of vehicle-carrying capacity, a Stakeholder Forum will be convened to help advise ODOT regarding the effect of the proposed action on the ability to move motor vehicles through a section of highway. In Philomath, US 20/OR 34 (Corvallis-Newport Highway) is classified as a Reduction Review Routes.

What this means for the Philomath TSP Update: Transportation improvements recommended on Reduction Review Routes, including US 20/OR 34, will include a record of the proposed roadway dimensions and sufficient detail to allow for a review of Vehicle-Carrying Capacity during future design of roadway improvements. Any reduction of highway dimensions will be subject to review by the Statewide Freight Advisory Committee.

Lifeline Routes: OHP Goal 1, Policy 1E designates routes for emergency response in the event of an earthquake, categorized as Tier 1, 2 and 3. The routes identified as Tier 1 are considered to be the most significant and necessary to ensure a functioning statewide transportation network. A functioning Tier 1 lifeline system provides traffic flow through the state and to each region. The Tier 2 lifeline routes provide additional connectivity and redundancy to the Tier 1 lifeline system. The Tier 2 system allows for direct access to more locations and increased traffic volume capacity, and it provides alternate routes in high-population regions in the event of outages on the Tier 1 system. The Tier 3 lifeline routes provide additional connectivity and redundancy to the lifeline systems provided by Tiers 1 and 2.

In Philomath, US 20/OR 34 (Corvallis-Newport Highway) is classified as Tier 3 lifeline routes.

What this means for the Philomath TSP Update: The City can use the TSP update to designate local lifeline routes to ensure their intended function is considered in system investment and management decisions.

Bypasses: OHP Goal 1, Policy 1H designates highways that are designed to maintained or increase statewide or regional mobility. Generally they relocate a highway alignment around a downtown, an urban or metropolitan area or an existing highway. The goal of bypass facilities is to effectively serve state and regional traffic trips. There are no roads in Philomath that are classified as bypasses.

What this means for the Philomath TSP Update: The bypass designation will be considered when projects are being developed for the TSP update.

Summary of ODOT Classifications

Updates to the TSP will support the existing highway classifications and will enhance the ability of the highways in Philomath to serve their defined functions. The following summarizes the classifications of state highways in Philomath:

- US 20-OR 34 (Corvallis-Newport Highway, No. 33) is classified as a Statewide Highway, part of the National Highway System (NHS), a Federal Truck Route, an Oregon Freight Route, a Reduction Review Route, and a Tier 3 Lifeline Route.

ODOT Transportation System Management Policies

State Highway Mobility Targets: OHP Goal 1, Policy 1F sets mobility targets for ensuring a reliable and acceptable level of mobility on the highway system. Each intersection along state highways has a mobility target requiring that the highway operate at or below a specified volume to capacity (v/c) ratio. The mobility targets shown in

Table 1 are applicable to highway in Philomath (pursuant to OHP Policy 1F, Table 6).

Volume to capacity (V/C) ratio: A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) 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 will experience excessive queues and long delays.

Table 1: Highway Intersection Mobility Targets

Highway (segment)	Special Designation	Highway Signalized Intersections	Unsignalized Intersections	
			Highway Approaches	Side Street Approaches to Highway
US 20-OR 34	Freight Route on a Statewide Highway	0.85	0.85	0.95

OHP Action 1F.3, of Policy 1F allows local jurisdictions to consider alternate mobility standards for state highways where it would be infeasible to meet the standards listed in

Table 1 above. The alternative standards shall be clear and objective and must be related to v/c ratios. The standards must demonstrate that it would be infeasible to meet the highway mobility standards listed in

Table 1 above and must be adopted as part of the local TSP. In addition, the TSP shall include all feasible actions for:

- Providing a network of local streets, collectors and arterials to relieve traffic demand on state highways and to provide convenient pedestrian and bicycle ways;
- Managing access and traffic operations to minimize traffic accidents, avoid traffic backups on freeway ramps, and make the most efficient use of highway capacity;
- Managing traffic demand, where feasible, to manage peak hour traffic loads on state highways;
- Providing alternative modes of transportation; and
- Managing land use to limit vehicular demand on state highways consistent with the Land Use and Transportation Policy (1B).

The TSP shall include a financially feasible implementation program and shall demonstrate strong public and private commitment to carry out the identified improvements and other actions. The alternate highway mobility standards will become effective only after the Transportation Commission has adopted them.

What this means for the Philomath TSP Update: System performance for state highways will be measured, in part, using the adopted Oregon Highway Plan mobility targets. The TSP update will evaluate the need for adopting alternate mobility targets for highways if there are no feasible project alternatives identified to meet the existing mobility targets. The City may request adoption of alternate mobility targets by the Oregon Transportation Commission, if necessary.

Access Management on Highways: OHP Goal 3, Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system.[4] The standards are based on state highway classification and differ based on posted speed. The applicable standards for highways through Philomath are presented in

Table 2.

Table 2: US 20/OR 34 Access Spacing Standards

Highway Milepost Range	Posted Speed	Minimum Intersection and Driveway Spacing (measurement in feet)
49.7 - 50.1 (Main St.)	40	800
51.5 – 52.1	40	800
49.9 – 50.2 (Applegate St.)	35	500
50.1 – 50.8 (Main St)	35	500
51.2 – 52.1	35	500
50.2 – 51.2	25	350

Source: 1999 Oregon Highway Plan, OAR 734-051-4020; Table 4.

[4] ODOT Access Management Standards (Appendix C): www.oregon.gov/ODOT/TD/TP/OHP_AM.shtml

What this means for the Philomath TSP Update: ODOT access spacing standards for highways should be incorporated into the TSP, along with supporting policies that work towards meeting the access spacing standards in Table 2.

Major Improvements: OHP Goal 1, Policy 1G outlines the priorities for maintaining highway performance and improving safety through system efficiency and management before adding capacity. According to this policy, the highest priority should be placed on protection of the existing system, followed by improvements in efficiency and capacity of existing facilities. Once these options have been investigated, the third and fourth priorities would be to add capacity to the existing system and then to add new facilities. Higher priority measures must be implemented first unless a lower priority measure is clearly more cost-effective or unless it more effectively supports safety, growth management, or other livability and economic viability considerations.

What this means for the Philomath TSP Update: Transportation solutions for Philomath must be developed with the following process: 1) Consider options to protect the existing system, 2) Consider minor improvements to enhance efficiency and capacity of existing facilities, 3) Consider major roadway improvements to existing facilities, 4) Consider options that would add new facilities to the system.

Projects off State Highways: OHP Goal 2, Policy 2B establishes ODOT's interest in projects on local roads that maintain or improve safety and mobility performance on state roadways, and supports local jurisdictions in adopting land use and access management policies.

What this means for the Philomath TSP Update: The TSP will include sections describing existing and future land use patterns, access management and implementation measures, and will consider solutions that reduce the need for local trips on highways.

Traffic Safety: OHP Goal 2, Policy 2F identifies the need for projects in the state to improve safety for all users of the state highway system through engineering, education, enforcement, and emergency services. One component of the TSP is to identify existing crash patterns and rates and to develop strategies to address safety issues. Proposed projects will aim to reduce the vehicle crash potential and/or improve bicycle and pedestrian safety by providing upgraded facilities that meet current standards.

What this means for the Philomath TSP Update: The TSP update will consider existing safety issues and then develop projects that enhance transportation system safety and security by maximizing the comfort and convenience of walking, biking and transit transportation options, public safety and service access.

Alternative Passenger Modes: OHP Goal 4, Policy 4B, requires that highway projects encourage the use of alternative passenger modes to reduce local trips. The TSP will also consider ways to support and increase the use of alternative passenger modes to reduce trips on highways and other facilities.

What this means for the Philomath TSP Update: The TSP update will incorporate the recommended improvements from the Corvallis Transit Development Plan, and will consider additional solutions that will enhance multi-modal travel in Philomath. It is recommended that the City take an active role in the Transit Development Plan process and request consideration for projects that will serve as goals of the Philomath TSP. This may include some City funding for projects that will produce the desired results, changing fare structure, modifying routes, etc.

Transportation Demand Management: OHP Goal 4, Policy 4D, encourages efficient use of the state transportation system through investment in transportation demand management strategies.

What this means for the Philomath TSP Update: The TSP update will consider transportation demand management strategies to create greater mobility, reduce auto trips, make more efficient use of the roadway system, and minimize air pollution.

Projects on State Highways: The Highway Design Manual[5] (HDM) provides uniform design standards and procedures for ODOT and is in general agreement with the 2001 American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*. Some key areas where guidance is provided are the location and design of new construction, major reconstruction, and resurfacing, restoration or rehabilitation (3R) projects. The HDM should be used for all projects on state highways in Philomath to determine design requirements, including the minimum required volume to capacity ratios for use in the design of highway projects.

[5] ODOT Highway Design Manual: http://www.oregon.gov/ODOT/HWY/ENGSERVICES/hwy_manuals.shtml

What this means for the Philomath TSP Update: System performance of state highway improvement projects will be measured, in part, using the HDM v/c ratios. While HDM standards must be applied to ODOT facilities, design exceptions can be granted to those standards where conditions justify such action in order to balance the policies and objectives of the Oregon Transportation Plan and the Philomath TSP, and with consideration given to the availability of transportation funding.

Oregon Bicycle and Pedestrian Plan – 1995

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including Oregon Bicycle and Pedestrian Plan. The Oregon Bicycle and Pedestrian Plan is currently being updated and will be comprised of two parts: the Policy and Action Plan and the Oregon Bicycle and Pedestrian Design Guide.

The Policy and Action section contains background information, legal mandates and current conditions, goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. Originally adopted in 1995 and reaffirmed as an element of the OTP in 2006, this section is currently being updated as the "Bicycle and Pedestrian Mode Plan."

The Design Guide is the technical element of the plan that guides the design and management of bicycle and pedestrian facilities on state-owned facilities. It has been designated as a companion piece to the Highway Design Manual and includes updated and innovative pedestrian and bicycle treatments. The Design Guide was updated in 2011 and will remain separate from the policy portion of the plan.

The guiding vision for the plan includes:

- People can bicycle or walk safely and conveniently to all destinations within reasonable walking or bicycling distance;
- People can walk or ride to and from their transit stops and have a comfortable and convenient place to wait or transfer;
- Touring bicyclists can enjoy Oregon's natural beauty on roads and highways that are designed for bicycle travel;
- Appropriate transportation choices are available to all; and
- Streets, roads and highways are designed to encourage bicycling and walking.

Key Considerations

At the time of adoption, planners found that conditions are generally good for bicyclists on rural highways, but are poor for bicyclists and pedestrians on many urban highways. To ensure safe and attractive facilities throughout Oregon, the plan recommends three actions.

Action 1: Provide bikeway and walkway systems that are integrated with other transportation systems.

Action 2: Create a safe, convenient, and attractive bicycling and walking environment.

Action 3: Develop education programs that improve bicycle and pedestrian safety.

Key Standards

The Oregon Bicycle and Pedestrian Design Guide establishes standards for safe and attractive bikeways and walkways. The guide includes standards relating to:

- **Planning bicycle and pedestrian networks:** focused on arterials and planning considerations such as land use, public transit and access management.
- **Bikeway Design:** Shared roadway, shoulder bikeway and bike lanes are discussed as well as special considerations such as railroad crossings.
- **Bicycle Parking:** General recommendations for cities' local ordinances.
- **Bike Lane Restriping Guidelines:** An effective and inexpensive treatment for improving conditions on roadways.
- **Walkway Design:** Standards are established to meet ADA requirements, as well as considerations such as bus stops and planting strips are presented.
- **Street Crossings:** Safety improvements for pedestrians such as islands and curb extensions.
- **Multiuse Paths:** Opportunities and challenges are presented.
- **Intersections and Interchanges:** A challenges to users and designers, designs to improve bicycle and pedestrian safety at conflicts points are outlined.
- **Signing:** Standardized signs and markings are proposed for state and local systems.
- **Maintenance:** Recommendations are presented that will enable ODOT, cities and counties to keep facilities in usable condition.
- **Safety Considerations:** Engineering, education, and enforcement solutions are presented in response to the major causes of pedestrian and bicycle crashes.
- **Bicycle Maps:** Standards are presented to ensure that bicycle maps have uniform legends statewide.

What this means for the Philomath TSP Update: The Bicycle and Pedestrian Plan serves as the guiding policy for bicycle and pedestrian planning. The TSP should implement the goals and policies of the Plan, including the three actions to ensure safe multimodal infrastructure. The subsequent, updated design guide (2011) portion represents ODOT's standards for constructing state-owned facilities. The standards for constructing or maintaining bicycle and pedestrian infrastructure are recommended by ODOT, but not required for use by local jurisdictions.

Oregon Freight Plan – 2011

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including the Oregon Freight Plan (OFP). The intent of the OFP is to improve freight connections to local, state, tribal, regional, national and international markets with the goal of increasing trade-related jobs and income for Oregon workers and businesses. The plan documents the economic importance of freight movement in Oregon, identifies transportation networks important to freight-dependent industries and recommends multimodal strategies to increase strategic freight system efficiency. The plan identifies sixteen freight issues and strategies with action steps to address the issues.

Philomath is in the state's Western Freight Corridor, which contains some of the major intermodal facilities in the state, and move both heavy and valuable goods to markets around the world. Interstate 5 carries the majority of north/south freight traffic in Oregon and connects the Oregon freight system with national and international destinations. Besides I-5, the Western Corridor Freight Facilities, near Philomath include:

- **Facilities Providing Connectivity:** US 20, US 101, OR 99W, OR 58, and OR 126.
- **Class I rail:** BNSF and UP
- **Shortline rail:** Willamette Pacific Railroad, Albany and Eastern Railroad, Central Oregon & Pacific Railroad, Coos Bay Rail Link, Albany Eastern Railroad.
- **Categories I, II and III Airports:** Corvallis Municipal Airport, Eugene Airport/Mahlon Sweet Field, and Newport Municipal Airport.

What this means for the Philomath TSP Update: The freight system impacts will be considered during the development of transportation solutions for the TSP update.

Oregon Rail Plan – 2014

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including the Oregon Rail Plan. The Oregon Rail Plan provides a comprehensive assessment of the state's rail planning, freight rail, and passenger rail systems. The Oregon Rail Plan identifies specific policies and planning processes concerning rail in the state, and establishes a system of integration between freight and passenger elements into the land use and transportation planning processes and calls for cooperation between state, regional and local jurisdictions in completing the plan.

The rail lines in Philomath are considered Non-Class I railroads in Oregon, which primarily serve line-side industries, such as agriculture and forestry, while the switching and terminal railroads serve several of the state's ports, where they service ocean terminals handling carload and containerized goods, as well as nearby industries.

What this means for the Philomath TSP Update: The TSP will incorporate the recommendations of the Oregon Rail Plan in the rail modal plan, as well as consider the implications of recommendations to other modal projects in the City.

Oregon Aviation Plan – 2007

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including the Oregon Aviation Plan (OAP). The OAP establishes five categories of airports based in their functional roles and provides a statewide perspective relating to airport planning decisions while further refining the goals and policies of the OTP. The Plan provides both forecasts and inventories for the public access airports in the state, with key issues being that:

- Local governments own most airports.
- The federal government owns most of the navigational system.
- The FFA determines funding levels and prioritization of expenditures.
- The nearest airport is the Corvallis Municipal Airport, which is classified as a Category 2 – Urban General Aviation Airport, used to support all general aviation aircraft and accommodate corporate aviation activity, including business jets, helicopters, and other general aviation activity. The primary airport users are business related and it services a large geographic region or they experience high levels of general aviation activity.

What this means for the Philomath TSP Update: The TSP will take into consideration key transportation routes and modes that access the Corvallis Municipal Airport, the nearest airport to Philomath. To the extent necessary, the Corvallis Airport Master Plan will be referenced during the TSP update as the document that more specifically addresses the aviation issues in Corvallis, including an outline for future development.

ODOT TSP Guidelines – 2008

ODOT's Transportation System Plan Guidelines document directs TSP updates to address recent policy and regulatory changes, and calls out some of the recent changes to the OTP, OHP, and TPR. Since adoption of the 1999 Philomath TSP, the OTP was updated (2006) to emphasize maintaining assets in place, optimizing existing system performance through technology and better system integration, creating sustainable funding, and investing in strategic capacity enhancements. Policy 1F (Mobility Standards) of the OHP was amended in 2011 to clarify that the adoption of alternative mobility standards is permitted where it is "infeasible or impractical to meet the mobility targets." Appendix C (Access Management Spacing Standards) has also been updated to be consistent with amendments to the Access Management Rule, OAR 734-051.

What this means for the Philomath TSP Update: The TSP update will address the policy and regulatory changes of the ODOT TSP Guidelines since the adoption of the 1999 TSP.

Oregon Public Transportation Plan – 1997

The current Oregon Public Transportation Plan (OPTP) was adopted in 1997. While ODOT is currently undertaking an update to the plan, the goals and policies found in the plan will continue to guide Corvallis in their transit planning. The vision adopted by the Oregon Public Transportation Plan Advisory Committee, and which guides the plan includes:

- A comprehensive, interconnected and dependable public transportation system, with stable funding, that provides access and mobility in and between communities of Oregon in a convenient, reliable and safe manner that encourages people to ride.
- A public transportation system that provides appropriate service in each area of the state, including service in urban areas that is an attractive alternative to the single-occupant vehicle, and high-quality, dependable service in suburban, rural and frontier (remote) areas.
- A system that enables those who do not drive to meet their daily needs.
- A public transportation system that plays a critical role in improving the livability and economic prosperity for Oregonians.

Key Considerations

At the time of adoption, the primary purpose of transit was as a mobility link for those lacking transportation options. It was also seen an alternative for communities concerned about traffic congestion. The authors anticipated that funding would be sustainable enough to maintain levels of transit service, but may not grow enough to respond to statewide planning initiatives.

While a larger percentage of federal transportation funds are now distributed through the Federal Transit Administration, communities across the state continue to struggle to find enough funding to meet transit needs. The OPTP laid out three levels of transit service for the state:

Level 1: Freeze services at current levels (service Oregonians most dependent upon the public transportation system- seniors, disabled, low-income and youth).

Level 2: Keep pace with growth (serve transit dependent Oregonians and where it would have positive impact on traffic congestion, air quality and community livability in Oregon's larger communities).

Level 3: Respond to State and Federal mandates and goals (expand service to accommodate the needs of those Oregonians who use public transportation by choice with particular emphasis on the commuter).

Key Standards

Minimum level of service standards are defined in the OPTP as an operational benchmark and performance criteria. These criteria focus on public transportation operations, including peak and off-peak frequencies, vehicle maintenance programs and replacement schedules, intermodal connections, and ridesharing, as well as attainment of policy-related objectives. This standard applies to the public transportation system in "large urban areas" of Oregon.

What this means for the Philomath TSP Update: **The OPTP continues to serve as the overarching policy framework for transit in Oregon. The TSP update will be written in accordance with the guiding policy found in the Plan.**

Oregon Transportation Options Plan – 2015

The Oregon Transportation Options Plan is the first intermodal topic plan of its kind for the state. It is schedule to be considered for adoption in 2015. Transportation Options (TO) include strategies, programs, and investment that enhance traveler opportunities and choices to bike, walk, take transit, share rides, and telecommute. The Plan provides an overview of existing transportation options providers across the state, establishes a vision and policies, and presents key strategies and initiatives. These elements provide guidance to support and advance TO program activities and integration with capital investment planning.

Key Considerations

The guiding vision for the TO plan envisions a transportation system that provides travelers of all ages and abilities with transportation options to access goods, services, and opportunities across the state. Each goal is accompanied by a set of policies, strategies, and highlighted best practices.

The goals that guide the plan include:

Safety – To provide a safe transportation system through investments in education and training for roadway designers, operators, and users of all modes.

Funding – To establish an optimized transportation system with funding for transportation options equally considered with other programs at the state, regional and local levels, with strategic partnerships that support jurisdictional collaboration, and with public and private sector transportation investment.

Accessibility – Expand the availability, information, and ease of use of transportation options; improving access to employment, daily needs, services, education, and travel to social and recreational opportunities.

Mobility & System Efficiency – To improve the mobility of people and goods and the efficiency of the transportation system by managing congestion, enhancing transportation system reliability, and optimizing transportation investment through transportation options.

Economy – To enhance economic vitality by supporting job creation and retention, decreasing household spending on transportation, supporting vibrant local businesses and helping goods move reliably.

Health & Environment – To support healthier natural and built environments by developing and promoting transportation options that reduce the environmental impacts of motorized travel and allow more people to incorporate physical activity in their daily lives.

Land Use & Transportation – To ensure land use planners, developers, and decision makers have transportation options tools and strategies to implement livable development patterns by supporting the availability, access, and co-location of transportation options.

Coordination – To work collaboratively with public and private partners to integrate transportation options into local, regional, and state planning processes, operations and management, and investment decisions.

Equity – To support the diverse transportation needs of people of all ages, abilities, income levels, and ethnicities throughout Oregon.

Knowledge & Information – To provide Oregonians and visitors with easily accessible information about the full range of transportation options available to them, to improve the customer experience through increased human capital, and to help customers match options with individual travel needs.

Key Standards or Policies

The Oregon Transportation Options Plan contains numerous policies and strategies that will inform the TSP update. The most relevant policies include:

2.3 Work to ensure that transportation options programs and tools are considered for funding across programs where they support overall transportation needs.

2.f Define basic transportation options programs and services (such as ridesharing, park-and-rides, information access), assess needs unique to geographic areas, and seek funding to support such needs.

3.1 Provide access to multiple modes and transportation options so that people may choose to walk, bicycle, take transit, and share rides for a broad range of trips, including trips to work, school, access goods and services, recreation and tourist destinations, and special events.

4.2 In developing statewide, regional, and local plans, investigate options to divert traffic to less busy times of the day or to other modes before considering roadway capacity expansion, in turn optimizing existing state and local transportation systems through transportation options investments.

4.3 Deploy and incentivize transportation options solutions as a means of managing congestion, especially during peak hour travel, and as mitigation during construction.

5.2 Invest in transportation options as a system efficiency and management tool to reduce the need for costly capital infrastructure investments. Focus and scale investments to meet local needs and circumstances. When investing in transportation options programs, consider accompanying supportive policies, such as bicycle, pedestrian and transit infrastructure investment, and coordinated land use and local funding commitment.

7.2 Encourage the incorporation of multimodal level of service (LOS) or similar multimodal and person movement measures and analysis tools during transportation system plan (TSP) updates.

7.3 Encourage the development of multimodal trip rates that take into account trips using non-SOV modes for modeling land uses and development types that can be accessed by transportation options.

8.1 Efficiently accommodate trips for transportation disadvantaged populations where travel options are currently not available.

8.4 Integrate transportation options programs and investments throughout the planning process to ensure its early incorporation into funding cycles, capital, and operational projects.

9.2 Provide transportation options to serve the needs of Oregon residents, including but not limited to, mobility-limited individuals, low-income households, communities of color, seniors, youth, persons with disabilities, and those with limited English proficiency and other vulnerable populations.

What this means for the Philomath TSP Update: The TSP update will consider the policies and strategies presented in the Oregon Transportation Options Plan. Although the plan does not contain a project list, there are several programs and best practices in planning, funding and project design that could be incorporated into Philomath's next TSP to increase non-drive alone mode shares and in increase the range of options for residents and visitors.

Oregon Transportation Safety Action Plan – 2011

The goals and policies of the Oregon Transportation Plan (OTP) are further implemented by various modal plans, including the Oregon Transportation Safety Action Plan (OTSAP). The OTSAP is intended to help sustain and strengthen the focus on factors contributing to transportation related fatalities and injuries and encourage safety programs and practices that address other significant safety problems including the rising death toll for pedestrians and roadside workers, secondary crashes occurring on urban freeways, inadequate emergency response services, and conflicts between motor vehicles and other travel modes. Strategies and actions include:

- ***Implement engineering solutions for bicyclists and pedestrians****: Continue to identify, evaluate, and implement engineering solutions for bicyclists, pedestrians and other non-motorized vehicles with an eye to improving the safety of system users.*
- ***Engineering systems for public input that hear multiple viewpoints:*** *Develop systems and controls to assure that ODOT hears the perspectives of all road users and interest groups as it develops solutions to safety, livability, and engineering problems. Evaluate the usefulness of the "Hearing Every Voice" system.*
- ***Engineering incorporating safety messages into the roadway system:*** *Identify ways to incorporate safety messages and cues into Oregon's roadway system. Develop a long range roadside signage strategy and plan for safety messages.*
- ***Advocate safety in local system plans:*** *Strongly advocate for the consideration of roadway, human, and vehicle elements of safety in modal, corridor and local system plan development.*
- ***Consider access management:*** *In planning and project development, continue to consider access management techniques in both rural and urban settings that show improvements in safety for the roadway user.*
- ***Consider the special needs of motorcycles, bicyclists and pedestrians in the safety of road maintenance functions:*** *Continue to consider safety—including the special needs of motorcyclists, bicyclists, and pedestrians—in all road maintenance functions. Provide educational opportunities to agency staff and partners that highlight the importance of considering the special safety needs of these users.*

- ***Use vegetation management techniques to reduce hazards and increase visibility:*** *With consideration to the scenic quality of the roadway, use vegetation management techniques to improve the safety of roadway users.*
- ***Consider local needs and limitations when establishing safety standards:*** *Continue to consider local needs and resource limitations when establishing safety standards for operations and maintenance by communicating consistently with local agencies.*

What this means for the Philomath TSP Update: The TSP update will incorporate the applicable strategies and actions where practical.

Transportation Planning Rule (OAR 660-012) – Last Updated 2012

The Transportation Planning Rule (TPR) implements Oregon Statewide Planning Goal 12, which supports transportation facilities and systems that are safe, efficient, and cost-effective and are designed to reduce reliance on single-occupancy vehicles. The objective of the TPR is to reduce air pollution, congestion, and other negative impacts to livability, and to maximize investments made in the transportation system. The following subsections of the TPR are relevant to the Philomath TSP update.

660-012-0020 – Elements of Transportation System Plans

Section 0020 of the TPR specifies required plan elements, including an inventory and assessment of existing conditions; forecasts of transportation needs; a road system plan; a public transportation plan; a bicycle and pedestrian plan; air, rail, water, and pipeline plans as applicable; transportation system and demand management plans; a financing program; and implementing policies and land use regulations.

660-012-0035 – Evaluation and Selection of Transportation System Alternatives

Section 0035 describes standards and alternatives available to agencies evaluating and selecting transportation projects, including benefits to different modes, land use alternatives, and environmental and economic impacts.

660-012-0045 – Implementation of the Transportation System Plan

The TPR requires local governments to adopt land use regulations consistent with state and federal requirements "to protect transportation facilities, corridors and sites for their identified functions." This is achieved through a variety of measures, including locally adopting access control measures, standards based on roadway classification, notice requirements and coordinated review procedures for land use applications, processes to apply conditions of approval to development proposals to mitigate transportation-related impacts, and regulations ensuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

660-012-0050 – Transportation Project Development

Section -0050 requires that transportation projects be reviewed for compliance with local and regional plans and, when applicable, undergo a NEPA environmental review process. Amendments to Section 0050 made since adoption of the 1999 Philomath TSP protect determinations of need, mode, function and general location for projects identified in TSPs.

660-012-0060 – Plan and Land Use Regulation Amendments

Section -0060 specifies a category of facilities, improvements, and services that can be assumed to be "in-place" or committed and available to provide transportation capacity over a 20-year planning horizon. The TPR guides local jurisdictions in determining what transportation improvements are "reasonably likely to be provided by the end of the planning period" when considering amendments to local plans and land use regulations.

Amendments made to Section -0060 are among the most significant changes that have been made to the TPR since adoption of the City's 1999 TSP. The amendments require local jurisdictions to balance the need for development with the need for transportation improvements, establish the end of the planning period as the measure for determining "significant effect," define the transportation improvements that a local government can consider in determining significant effect, and identify methods to determine whether a needed transportation facility is reasonably likely to be provided within the planning horizon.

What this means for the Philomath TSP Update: Requirements in TPR Sections -0020 and -0035 will direct the development and final contents of the updated TSP. Requirements in Sections -0045 and -0060 will direct potential amendments to the City's Land Development Code during the implementation stage of this update process. These potential amendments are referred to in the section of this memorandum on the Development Code and will be addressed in detail in the regulatory review in Technical Memorandum #3 (Task 3.2).

Access Management Rules (OAR 734-051)

The Oregon Access Management Rule[6] (OAR 734-051) attempts to balance the safety and mobility needs of travelers along state highways with the access needs of property and business owners. ODOT's rules manage access to the state's highway facilities in order to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the 1999 OHP. Access management rules allow ODOT to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction.

In addition, the ability to close existing approaches, set access spacing standards and establish a formal appeals process in relation to access issues is identified. These rules enable the State to direct location

[6] *Access Management Rule: http://arcweb.sos.state.or.us/rules/OARS_700/OAR_734/734_051.html*

and spacing of intersections and approaches on state highways, ensuring the relevance of the functional classification system and preserving the efficient operation of state routes.

See OHP Goal 3, Policy 3A for a summary of access spacing standards on state highways in Philomath.

What this means for the Philomath TSP Update: **ODOT access spacing standards for highways should be referenced in the TSP, along with supporting policies that work towards meeting the access spacing standards.**

Statewide Transportation Improvement Program (STIP)

The Oregon Statewide Transportation Improvement Program (STIP) is the state's four-year transportation improvement program for state and regional systems. The STIP is updated every other year and is adopted by the Oregon Transportation Commission (OTC) and is approved by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) as required by federal law. The STIP is a project scheduling and funding document, not a plan. The projects in the STIP are consistent with adopted transportation plans. Additionally, the STIP is financially constrained, indicating that the projects included have committed funding available. There are two STIP lists that are relevant, including 2012-2015 and 2015-2018.

2015-2018 STIP Projects

- 19th Street Railroad Crossing – Overlay, grind, and inlay (2017) $70,222
- SW 53rd Street to Reservoir-West Hills – Right of Way Acquisition (2017) $500,000

2012-2015 STIP Projects

- Philomath SRTS Shared-Use Path to Schools (2012) $371,842
- SW 53rd Street and Philomath Blvd – Pavement Overlay (2015) $102,000

What this means for the Philomath TSP Update: **The TSP update will incorporate the STIP improvements into the Plan.**

Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way – 2011

The Guidelines are written by the United States Access Board and direct the design, construction, and alteration of pedestrian facilities in public streets, sidewalks and trails. The document advises on sidewalks, street-crossings, pedestrian signals and other elements related to pedestrian circulation. The recommendations enable state and local governments to meet accessibility standards outlined in the Americans with Disabilities Act (ADA). Table 3 references a select few applicable standards.

Table 3: Facility Guidance

Facility	Standard
Pedestrian Street Crossings	Where pedestrian access routes are contained within the pedestrian street crossings, the grade of the pedestrian access route shall be 5 percent maximum.
Curb Ramps	Perpendicular curb ramps can be provided where the sidewalk is at least 12 ft. wide. Parallel curb ramps can be provided where the sidewalk is at least 4 ft. wide. Parallel and perpendicular curb rams can be combines. Blended transitions are raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing that have a grade of 5 percent of less.
Transit Stops	Transit stops should be located so that there is a level and stable surface for boarding vehicles. Locating transit stops at signalized intersections increases the usability for pedestrian with disabilities. Where security bollards are installed at transit stops, they must not obstruct the clear space at boarding and alighting areas or reduce the required clear width at pedestrian access routes.
Boarding and Alighting Areas	At boarding and alighting areas at sidewalk or street level transit stops for rail vehicles, detectable warning surfaces shall be placed at the side of the boarding and alighting area facing the rail vehicles. Boarding platforms shall not exceed a slope of 2 percent in any direction.

Source: Proposed Rights-of-Way Guidelines, accessed at http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/chapter-r3-technical-requirements

What this means for the Philomath TSP Update: The guidelines may be referenced to determine how best to meet ADA requirements for pedestrian and transit facilities. The TSP will recommend a process and plan to address ADA non-compliant sidewalks and ramps as well as address transit stops and shelters guidance when developing the bus stop accessibility survey checklist.

SECTION 3

TECH MEMO THREE

REGULATORY FRAMEWORK REVIEW

Technical Memorandum #3

DATE: January 17, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: Darci Rudzinski & CJ Doxsee - Angelo Planning Group

SUBJECT: **Philomath Transportation System Plan Update**
Task 3.2 Regulatory Framework Review

Transportation system planning in Oregon is required by state law as one of the 19 statewide planning goals (Goal 12 – Transportation). The Transportation Planning Rule (TPR), Oregon Administrative Rule Division 12 (Chapter 660), defines the necessary elements of a local Transportation System Plan (TSP) and how to implement Goal 12. The TPR requires counties and cities to prepare local TSPs that are consistent with the Oregon Transportation Plan (OTP) and, for jurisdictions within a metropolitan planning organization, with the regional transportation plan. The overall purpose of the TPR is to provide and encourage a safe, convenient, and economic transportation system. The rule also implements provisions of other statewide planning goals related to transportation planning in order to plan and develop transportation facilities and services in close coordination with urban and rural development. The TPR directs TSPs to integrate comprehensive land use planning with transportation needs and to promote multi-modal systems that make it more convenient for people to walk, bicycle, use transit and drive less. The City of Philomath's TSP must be consistent with the current TPR, which was amended most recently in December 2011.

Technical Memorandum #2 (Background Document Review) addresses the OTP and other background documents that will be referenced in updating the Philomath TSP. This memorandum focuses on the extent to which the City meets the requirements of TPR. Table 1 describes how the City's Development Code, Title 18 of the Philomath Municipal Code, meets particular TPR sections and identifies recommended improvements where local requirements could be strengthened or modified to be more consistent with the TPR. To the extent necessary, suggested draft code language will be prepared at the implementation phase of the TSP update project that supports the policies and recommendations of the draft TSP and is consistent with the TPR.

Table 1 – TPR Review of the City of Philomath Municipal Code (Title 18)

TPR Requirement	Municipal Code References and Recommendations
OAR 660-012-0045	
(1) Each local government shall amend its land use regulations to implement the TSP.	
(a) The following transportation facilities, services and improvements need not be subject to land use regulations except as necessary to implement the TSP and, under ordinary circumstances do not have a significant impact on land use: (A) Operation, maintenance, and repair of existing transportation facilities identified in the TSP, such as road, bicycle, pedestrian, port, airport and rail facilities, and major regional pipelines and terminals; (B) Dedication of right-of-way, authorization of construction and the construction of facilities and improvements, where the improvements are consistent with clear and objective dimensional standards; (C) Uses permitted outright under ORS 215.213(1)(m) through (p) and 215.283(1)(k) through (n), consistent with the provisions of 660-012-0065;[1] and (D) Changes in the frequency of transit, rail and airport services. (b) To the extent, if any, that a transportation facility, service, or improvement concerns the application of a comprehensive plan provision	PMC 18.110.020 (Applicability) exempts regular maintenance, repair and replacement of materials, parking resurfacing, and similar maintenance and repair from development review and site design review. Philomath Municipal Code (PMC) provides lists of allowed and conditional uses according to land use districts (i.e. Residential, Commercial, Industrial, Public, and Overlay). The operation, maintenance and repair of existing transportation facilities are not currently listed as allowed outright in PMC land use districts. PMC 18.80.020 (Transportation Improvements) provides public facility standards, however the code doesn't list operation, maintenance, and repair of existing transportation as not being subject to land use regulations. **Recommendation:** The operation, maintenance, and repair of existing transportation facilities as identified in the TSP are recommended to be included as allowed outright in individual land use districts or as a provision in 18.105.020 (Description of permit/decision-making procedures) and applicable to all land use districts.

[1] Transportation uses in ORS 215 are included in list(s) of uses that may be established in exclusive farm use zones; OAR 660-112-0065 (Transportation Improvements on Rural Lands) identifies transportation facilities, services and improvements which may be permitted on rural lands consistent with Goals 3, 4, 11, and 14 without a goal exception.

TPR Requirement	Municipal Code References and Recommendations
or land use regulation, it may be allowed without further land use review if it is permitted outright or if it is subject to standards that do not require interpretation or the exercise of factual, policy or legal judgment.	
(c) In the event that a transportation facility, service or improvement is determined to have a significant impact on land use or requires interpretation or the exercise of factual, policy or legal judgment, the local government shall provide a review and approval process that is consistent with 660-012-0050. To facilitate implementation of the TSP, each local government shall amend regulations to provide for consolidated review of land use decisions required to permit a transportation project.	Referenced TPR Section -0050 addresses project development and implementation – how a transportation facility or improvement authorized in a TSP is designed and constructed. Project development may or may not require land use decision-making. The TPR directs that during project development, projects authorized in an acknowledged TSP will not be subject to further justification with regard to their need, mode, function, or general location. PMC Chapter 18.105 includes review procedures dependent on the type of application. Notice for a Type II procedure (administrative) is required to be sent to any entitled governmental agency that has entered into an intergovernmental agreement with the City, or any affected agency as appropriate. Similarly, notice for a Type III procedure (quasi-judicial) is required to be sent to any governmental agency that has entered into an intergovernmental agreement with the city, or is otherwise entitled to receive the notice. PMC 18.105.040(B)(1)(d) requires land division applications (Type II) to include an impact study on public facilities and services and propose improvements to meet city standards. PMC 18.105.050(B)(2)(d) requires all Type III applications to include an impact study on public facilities and services and propose improvements to meet city standards. PMC 18.45.070(A)(2) (Special standards for certain

TPR Requirement	Municipal Code References and Recommendations
	uses) allows the city to require uses in Industrial Districts that are likely to generate high levels of vehicle traffic due to shipping and receiving to conduct a traffic impact analysis. PMC 18.105.070(C)(2) (Consolidated Proceedings) allows applicants with Type II and Type III reviews to consolidate permits for the same one or more parcels of land. PMC 18.120.040(A)(3) includes use criteria for approving conditional uses (which is processed as a Type III Review). The criteria require that public facilities have adequate capacity to serve the proposal. **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.
(2) Local governments shall adopt land use or subdivision ordinance regulations, consistent with applicable federal and state requirements, to protect transportation facilities corridors and sites for their identified functions. Such regulations shall include:	
(a) Access control measures, for example, driveway and public road spacing, median control and signal spacing standards, which are consistent with the functional classification of roads and consistent with limiting development on rural lands to rural uses and densities;	PMC Chapter 18.65 (Access and Circulation) provides standards for vehicles (18.65.020) and pedestrians (18.65.020). Vehicular access and circulation standards are intended to manage and maintain adequate level of service and to maintain the functional classification of roadways. Driveway spacing standards are determined on the functional classification of the roadway they abut. Driveway access standards for arterial and collector streets are determined based on the city's TSP, Manual on Uniform Traffic Control Devices (MUTCD), or ODOT's Highway Corridor Plan. Access on to US 20/OR 34 is subject to the applicable standards and policies contained in the ODOT Highway Corridor Plan. Public road spacing, applicable to large site developments, is a function of block length and

TPR Requirement	Municipal Code References and Recommendations
	perimeter based on the land use district. Traffic signals, to be provided in locations noted on approved street plans when warrants are met, are required to be in conformance with the Highway Capacity Manual and MUTCD. **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.
(b) Standards to protect the future operations of roads, transitways and major transit corridors	PMC 18.80.020(E) (Street Location, Width and Grade) requires the location, width and grade of all streets to conform to the TSP and design specifications. Design specifications are also found in Public Works Design Standards (PWDS) 2.11. More information on PWDS is provided below. PMC 18.105.040(B)(1)(d) (Type II Review) and PMC 18.105.050(B)(2)(d) (Type III Review) require impact studies to assess and address impacts to the transportation system. Mobility standards will be reviewed and updated as part of the TSP process; level of service is defined in the PMC definitions section, however the PMC code does not include specific mobility standards **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.
(c) Measures to protect public use airports by controlling land uses within airport noise corridors and imaginary surfaces, and by limiting physical hazards to air navigation;	This requirement does not apply, as Philomath does not currently have a public use airport.
(d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;	See response to -0045(1)(c).

TPR Requirement	Municipal Code References and Recommendations
(e) A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;	PMC 18.105.040(B)(1)(d) (Type II Review) requires land division applications and PMC 18.105.050(B)(2)(d) (Type III Review) requires all Type III applications to include an impact study on public facilities and services and propose improvements to meet city standards. The study is required to address impacts to pedestrian ways and bikeways, among other related public facility systems. Permit applicants are required to dedicate real property to the city where required, unless the applicant can show evidence that the property dedication is not proportional to the impacts. Authority to approve, approve with conditions, or deny an application based on the relevant approval criteria and standards is provided to planning officials for Type II applications (PMC 18.105.040(D)) and the planning commission for Type III applications (PMC 18.105.060(E)). PMC 18.110.060 (Approval criteria) allows the review authority to approve development review and site design review with conditions when they are a part of land divisions, conditional use permit, master planned development, specific area plan, or other approval criteria. PMC 18.115 (Land division) provides procedures and regulations for subdivisions and partitions as part of a two-step process. Conditions of approval may be applied by the city as necessary, including the requirement of reserve strips for the purpose of controlling access to adjoining undeveloped properties and through the creation of access easements (18.80.020(D)) PMC 18.120 (Conditional use permit) provides criteria, standards, and conditions of approval for conditional use applications. Conditions of approval are intended to minimize the impact on the surrounding public facilities and include, but are not

TPR Requirement	Municipal Code References and Recommendations
	limited to right-of-way (PMC 18.120.040(C)(6)) and public land dedications and construction of pedestrian/bicycle pathways in accordance with adopted plans (PMC 18.120.040(C)(13)). PMC 18.125 (Master planned developments) is an overlay zone that allows the development of land through a master planned development process. The approval process is considered a Type III procedure, which requires applications to include an impact study on public facilities and services and proposed improvements to meet city standards (see PMC 18.105.050(B)(2)(d) above). PMC 18.45.070(A)(2) (Special standards for certain uses) allows the city to require uses in Industrial Districts that are likely to generate high levels of vehicle traffic due to shipping and receiving to conduct a traffic impact analysis. PMC 18.65.020(D) (Vehicular access and circulation) allows the city or other agency with access jurisdiction to require a traffic study for determining transportation requirements. In addition, PMC 18.65.020(E) allows the city or other agency with access jurisdiction to apply conditions of approval for protecting the operation of the transportation system, including closing/consolidation off curb cuts or access points, reciprocal access easements, traffic control devices, and/or other mitigation to ensure the transportation system safety and efficiency. **Recommendations:** The City has a process to apply conditions to development proposals; this TPR requirement is met. However, to strengthen the City's capacity to protect transportation facilities, the City should consider adding provisions to existing TIS requirements that specify requiring transportation improvements may be a condition of approval. Adding transportation improvements to mitigate

TPR Requirement	Municipal Code References and Recommendations
	impacts as a potential condition of approval for Type II and III review procedures would also help protect the function and operation of the planned transportation system.
(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of: (A) Land use applications that require public hearings; (B) Subdivision and partition applications; (C)Other applications which affect private access to roads; and (D)Other applications within airport noise corridor and imaginary surfaces which affect airport operations.	Procedures for Type II and Type III reviews are found on PMC 18.105.040 and 18.105.050 respectively. Both review types have regulations to provide notice to public agencies. Official notice of Type II applications are required to be mailed to "any governmental agency that is entitled to notice under in intergovernmental agreement… The city may notify other affected agencies, as appropriate, for review of the application. " Official notice if a Type III hearing or Type II appeal is required to be mailed to "any governmental agency that has entered into an intergovernmental agreement with the city which includes provision for such notice, or who is otherwise entitled to such notice". PMC Table 18.105.020 includes a summary of development decision/permit by type of decision-making procedures. Land use applications such as conditional use permit (Type III), master planned development (Type III), site design review (Type II or III), and subdivisions (Type II or III) are listed. Access permits are listed as a Type I review. The Type I review procedure does not include a requirement to provide notice to public agencies. However, access permits onto state highways or county roads are subject to review and approval by ODOT and Benton County respectively as regulated in PMC 18.65.020(C). **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.

TPR Requirement	Municipal Code References and Recommendations
(g) Regulations assuring amendments to land use designations, densities, and design standards are consistent with the functions, capacities and performance standards of facilities identified in the TSP.	Code amendments and land use district map changes are subject to a Type IV review and the regulations provided in PMC 18.135. PMC 18.105.060 (Type IV procedure (legislative)) is a review procedure for legislative matters and is reviewed by the planning commission, with final decisions made by the city council. Decision-making considerations through a Type IV procedure are required to be based on applicable Comprehensive Plan policies and provisions of Title 18 that implement the Comprehensive Plan, which include land use districts and design standards. Comprehensive Plan amendments are subject to a Type IV review procedure as well as regulations in the Comprehensive Plan. PMC 18.135 (Annexation) provides standards and procedures for legislative amendments to the code and land use district map. PMC 18.135.050 (Transportation planning rule compliance) requires comprehensive plan amendment proposals or proposals to change to the land use district to review and determine if a transportation facility is significantly affected. Amendments which significantly affect a transportation facility are required to be limited through allowed land uses, amending the TSP to support the increase land use, or altering the land use regulations **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.
(3) Local governments shall adopt land use or subdivision regulations for urban areas and rural communities as set forth below. The purposes of this section are to provide for safe and convenient pedestrian, bicycle and vehicular circulation consistent with access management standards and the function of affected streets, to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and	

TPR Requirement	Municipal Code References and Recommendations
bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.	
(a) Bicycle parking facilities as part of new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit transfer stations and park-and-ride lots.	PMC 18.75.040 (Bicycle parking requirements) requires bicycle parking for all uses subject to site design review. Standards for the design and minimum number of bicycle parking are applied to multifamily residences (of three or more dwelling units), parking lots, schools, colleges, commercial districts, and multiple use buildings. Site design review (PMC 18.110.020) applies to all developments in the city, except for those specifically listed as part of a development review or regular maintenance, repair and replacement of materials, parking, resurfacing, and similar maintenance and repair. Part of the site design review submission requirements includes a site plan showing the location and width of all public and private streets, drives, sidewalks, pathways, rights-of-way, and easements on the site and adjoining the sight. In addition site plans are required to show pedestrian and bicycle circulation areas and the location and dimensions of pedestrian and bicycle access if applicable **Recommendation:** Existing code provisions address this requirement. No changes to the code are recommended.
(b) On-site facilities shall be provided which accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. Single-family residential developments shall generally include streets	18.35.080 (Residential districts, building orientation) contains standards for the orientation of entrances for single-family townhomes that are subject to design review, multi-family housing, neighborhood commercial buildings, and public and institutional buildings. Standards require entrances to generally be oriented towards the street. Alternative standards ensure that entrances not facing the street will have pedestrian walkway connections to the street. In addition, all buildings in residential districts are

TPR Requirement	Municipal Code References and Recommendations
and accessways. Pedestrian circulation through parking lots should generally be provided in the form of accessways. (A) "Neighborhood activity centers" includes, but is not limited to, existing or planned schools, parks, shopping areas, transit stops or employment centers; (B) Bikeways shall be required along arterials and major collectors. sidewalks shall be required along arterials, collectors and most local streets in urban areas except that sidewalks are not required along controlled access roadways, such as freeways; (C) Cul-de-sacs and other dead-end streets may be used as part of a development plan, consistent with the purposes set forth in this section; (D) Local governments shall establish their own standards or criteria for providing streets and accessways consistent with the purposes of this section. Such measures may include but are not limited to: standards for spacing of streets or accessways; and standards for excessive out-of-direction travel; (E) Streets and accessways need not be required where one or more of the following conditions exist: (i) Physical or topographic conditions make a street or accessway connection impracticable. Such conditions include but are not limited to freeways, railroads, steep slopes, wetlands or other bodies of water where a connection could not reasonably be provided; (ii) Buildings or other existing development on	required to conform to PMC 18.65 (Access and Circulation). PMC 18.40 (Commercial districts) includes standards for block layout and building orientation (PMC 18.40.050), large scale buildings and developments (PMC 18.40.070), pedestrian and transit amenities (PMC 18.40.080), and special standards for certain uses (PMC 18.40.090). Block layout and building orientation requirements apply to new land divisions and development subject to design review. Standards require pedestrian pathway connections between the street and to building entrances and off-street parking. Large scale buildings and development are required to meet Access and Circulation standards in PMC 18.65. Pedestrian and transit amenities standards, applicable to most uses, are required to provide one or more of the listed pedestrian amenities, which include transit improvements such as shelters or pullouts, in accordance with the TSP. Special standards for subdivisions require the creation of alleys with pedestrian connections unless existing development patterns or topography make it impracticable. PMC 18.45 (Industrial districts) contains standards for the orientation of building entrances for all buildings. The main entrance is required to connect with the street via a pathway. In addition, pathway connections are required in yard setbacks as necessary to provide pedestrian circulation between developments and neighborhoods. PMC 18.65 (Access and Circulation) provides standards for vehicles (PMC 18.65.020) and bicycles

TPR Requirement	Municipal Code References and Recommendations
adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or (iii) Where streets or accessways would violate provisions of leases, easements, covenants, restrictions or other agreements existing as of May 1, 1995, which preclude a required street or accessway connection.	(PMC 18.65.030). Pedestrian access and circulation applies to all developments except single-family detached housing and are required to provide continuous pedestrian and/or multi-use pathway system in conformance with the standards of the section. Standards include extending pathways throughout the development site and connecting with all future phases, adjacent trails, parks, and open space area; provide safe, direct, and convenient pathways to all primary building entrances and all adjacent streets according to the provided definitions; and provide pathway connections to all parking areas, storage, areas, recreational facilities, and common areas for developments subject to design review. Pathways are also required at mid-block where the block length exceeds the required length and for cul-de-sacs or dead-end streets. PMC 18.110.050 (Site design review – application submission requirements) requires site plans to include a site plan showing the location and width of all public and private streets, drives, sidewalks, pathways, rights-of-ways, and easements on the site and adjoining site. In addition site plans are required to show pedestrian and bicycle circulation areas and the location and dimensions of pedestrian and bicycle access if applicable. The approval criteria (PMC 18.110.060) require land use applications to conform to the Access and Circulation standards (PMC 18.65). PMC 18.115.050 (Approval criteria – preliminary plat) includes approval criteria for land divisions, which must comply with all applicable development code sections, including design standards. PMC 18.125 (Master Planned Developments) are subject to Type III review procedures and are required to conform to the applicable land use district standards and design standards except as

TPR Requirement	Municipal Code References and Recommendations
	modified by this section; none of the modifications to standards affect on-site facility standards. PMC 18.65.020(G) and (H) provides access spacing standards, according to street classification. PMC 18.65.020(F) (Access Options) provides vehicle access options between the development that prioritize access to alleys, mid-block lanes, shared driveways, etc. before providing access directly to the street. PMC 18.80.020(B) allows for variances to design standards through a Class B variance. Class B variances are conducted as a Type II review and subject to PMC 18.155. Variances to vehicular access and circulation standards found in PMC 18.155.030(A)(2) encourage shared access before granting the variance if standards can't be met. Variances to transportation improvement requirements found in PMC 18.155.030(A)(6) can be granted if the criteria of PMC 18.80.020(B) are met, otherwise variances are granted through a Class C variance. PMC 18.80.020(B), however, does not provide criteria. PMC 18.80.020(G) (Minimum Rights-of-way) provides decisions-making criteria/authority for street improvements with variable widths. PMC 18.65.020(J) provides standards for street connectivity and block formation, applicable to land divisions and large site developments. Block length and perimeter are defined as a function of the perimeter, with "not to exceed" limitations. The "not to exceed" limitation effectively provide street spacing standards, 600 feet in residential districts, 400 feet in commercial districts, no limit in industrial districts. PMC 18.80.020(E) requires the street location, width,

TPR Requirement	Municipal Code References and Recommendations
	and grade to conform to the TSP and design specifications, as applicable, and an approved street plan or subdivision plat. In addition, PMC 18.80.020(G) requires rights-of-way and street sections to conform to applicable design specification, however the design specifications are not provided in the code. **Recommendations:** It is recommended that language be added to building orientation sections in individual zoning districts (PMC 18.35-45) or to Access and Circulation (PMC 18.65) that require pedestrian and bicycle connectivity to those types of uses included under "neighborhood activity centers" in the TPR. See response to -0045(7) for recommendations regarding exceptions to street or accessway connectivity.
(c) Off-site road improvements are otherwise required as a condition of development approval, they shall include facilities accommodating convenient pedestrian and bicycle and pedestrian travel, including bicycle ways on arterials and major collectors	See response related to conditions of approval, Section -0045(2)(e).
(e) Internal pedestrian circulation within new office parks and commercial developments shall be provided through clustering of buildings, construction of accessways, walkways and similar techniques.	PMC 18.40 (Commercial districts) includes standards for block layout and building orientation (PMC 18.40.050), large scale buildings and developments (PMC 18.40.070), pedestrian and transit amenities (PMC 18.40.080), and special standards for certain uses (PMC 18.40.090). Block layout and building orientation requirements apply to new land divisions and development subject to design review. Standards require pedestrian pathway connections between the street and to building entrances and off-street parking. Large scale buildings and development are required to meet Access and Circulation standards in PMC

TPR Requirement	Municipal Code References and Recommendations
	18.65. Pedestrian and transit amenities standards, applicable to certain single-family dwellings, multifamily dwellings, public/institutional buildings, and commercial and mixed-use buildings subject to design review, are required to provide one or more of the listed pedestrian amenities, one of which include transit improvements such as shelters or pullouts, in accordance with the TSP. Special standards for subdivisions require the creation of alleys with pedestrian connections unless existing development patterns or topography make it impracticable. PMC 18.45.050(E) requires commercial buildings in industrial districts that comprise of more than 40,000 square feet of ground-flood building space to conform to the block layout and building orientation standards for commercial zones in PMC 18.40.050 **Recommendation:** It is recommended that PMC 18.40.080 be modified to require the provision of transit amenities when standards are met (i.e. within a specified distance of a major transit stop).
(4) To support transit in urban areas containing a population greater than 25,000, where the area is already served by a public transit system or where determination has been made that a public transit system is feasible, local governments shall adopt land use and subdivisions as provided in (a)-(g) below.	
(a) Transit routes and transit facilities shall be designed to support transit use through provision of bus stops, pullouts and shelters, optimum road geometrics, on-road parking restrictions and similar facilities, as appropriate	The updated TSP will identify transit routes and recommend transit-supportive design treatments for these transportation facilities, consistent with this section of the TPR. **Recommendation:** Identify design treatments for

TPR Requirement	Municipal Code References and Recommendations
	transit routes and transit facilities through the TSP update process; update development code requirements as necessary.
(b) New retail, office and institutional buildings at or near major transit stops shall provide for convenient pedestrian access to transit through the measures listed in (A) and (B) below. (A) Walkways shall be provided connecting building entrances and streets adjoining the site; (B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable. Pedestrian connections shall connect the on site circulation system to existing or proposed streets, walkways, and driveways about the property. Where adjacent properties are undeveloped or have potential for redevelopment, streets, accessways and walkways on site shall be laid out or stubbed to allow for extension to the adjoining property; (C) In addition to (A) and (B) above, on sites at major transit stops provide the following: (i) Either locate buildings within 20 feet of the transit stop, a transit street or an intersecting street or provide a pedestrian plaza at the transit stop or street intersection; (ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site (iii) A transit passenger landing pad accessible to disabled persons (iv) An easement or dedication for a passenger	18.35.080 (Residential districts, building orientation) contains standards for the orientation of entrances for single-family townhomes that are subject to design review, multi-family housing, neighborhood commercial buildings, and public and institutional buildings. Standards require entrances to generally be oriented towards the street. Alternative standards ensure that entrances not facing the street will have pedestrian walkway connections to the street. In addition, all buildings in residential districts are required to conform to PMC 18.65 (Access and Circulation). PMC 18.40 (Commercial districts) includes standards for block layout and building orientation (PMC 18.40.050), large scale buildings and developments (PMC 18.40.070), pedestrian and transit amenities (PMC 18.40.080), and special standards for certain uses (PMC 18.40.090). Block layout and building orientation requirements apply to new land divisions and development subject to design review. Standards require pedestrian pathway connections between the street and to building entrances and off-street parking. Large scale buildings and development are required to meet Access and Circulation standards in PMC 18.65. Pedestrian and transit amenities standards, applicable to most uses, are required to provide one or more of the listed pedestrian amenities, which include transit improvements such as shelters or pullouts, in accordance with the TSP. Special standards for subdivisions require the

TPR Requirement	Municipal Code References and Recommendations
shelter if requested by the transit provide; and (v) Lighting at the transit stop.	creation of alleys with pedestrian connections unless existing development patterns or topography make it impracticable. PMC 18.45 (Industrial districts) contains standards for the orientation of building entrances for all buildings. The main entrance is required to connect with the street via a pathway. In addition, pathway connections are required in yard setbacks as necessary to provide pedestrian circulation between developments and neighborhoods. PMC 18.65 (Access and Circulation) provides standards for vehicles (PMC 18.65.020) and bicycles (PMC 18.65.030). As discussed earlier in TPR Section -0045(3)(b), City development standards include extending and connecting pedestrian pathways, but requirements do not explicitly address providing access to transit. **Recommendation:** It is recommended that PMC 18.65 (Access and Circulation) and building orientation standards for applicable land use districts be modified to include standards for locating or orienting building entrances and accessways to transit stops. Requirements related to transit-related improvements at major transit stops should also be explored, consistent with TPR (4)(b)(C).
(c) Local governments may implement 4(b)A) and (B) above through the designation of pedestrian districts and adoption of appropriate implementing measures regulating development within pedestrian districts. Pedestrian districts must comply with the requirement of (4)(b)(C) above.	The City of Philomath does not have pedestrian district designations. **Recommendation:** Consider adopting a pedestrian district along streets with fixed-route transit service that complies with 4(a)(C) as a means to implement 4(b)(A) –(B).

TPR Requirement	Municipal Code References and Recommendations
(d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools	PMC 18.75.030(B) (Credit for On-Street Parking) allows the minimum parking requirement to be reduced by one-to-one for available on-street parking adjacent to the development. However, the PMC does not currently include provisions allowing for a reduction in parking minimum requirements for carpools or vanpools **Recommendation:** The City may wish to consider requiring new developments with more than a specified number of employees to dedicate preferential parking space(s) for employee carpools and vanpools, separate from the current parking reduction allowance in PMC 18.75.030(B).
(e) Existing development shall be allowed to redevelop a portion of existing parking areas for transit-oriented uses, including bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where appropriate	The PMC does not currently include provisions allowing portions of parking areas to be developed for transit-oriented uses. **Recommendation:** It is recommended that provisions be added to PMC 18.75.030 to allow redevelopment of parking areas as described in -0045(4)(e)
(f) Road systems for new development shall be provided that can be adequately served by transit, including provision of pedestrian access to existing and identified future transit routes. This shall include, where appropriate, separate accessways to minimize travel distances.	The TSP update will review existing and planned transit routes; the location and design of any planned new roadways will consider existing and planned transit service. **Recommendation:** The Access and Circulation section of the code should be amended to require that new development provide pedestrian access to existing and planned future transit routes
(g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.	Transit routes are currently identified in the existing TSP. **Recommendation:** When updating the transit element of the TSP, review existing land uses and consider future land use changes that would support the viability of transit on existing or planned routes.

TPR Requirement	Municipal Code References and Recommendations
(6) In developing a bicycle and pedestrian circulation plan as required by 660-012-0020(2)(d), local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas. Appropriate improvements should provide for more direct, convenient and safer bicycle or pedestrian travel within and between residential areas and neighborhood activity centers (i.e., schools, shopping, transit stops). Specific measures include, for example, constructing walkways between cul-de-sacs and adjacent roads, providing walkways between buildings, and providing direct access between adjacent uses.	The TSP update will identify improvements to facilitate bicycle and pedestrian trips. This code audit summarizes bicycle and pedestrian improvements that are required through development review and approval, including the following: Walkways between cul-de-sacs and adjacent roads – See response and recommendations related to cul-de-sacs, Section -0045(3)(b). Walkways between buildings – See response and recommendations related to accessways, Section -0045(3)(e). Access between adjacent uses – See response and recommendations related to accessways, Section -0045(3)(e).
(7) Local governments shall establish standards for local streets and accessways that minimize pavement width and total ROW consistent with the operational needs of the facility. The intent of this requirement is that local governments consider and reduce excessive standards for local streets and accessways in order to reduce the cost of construction, provide for more efficient use of urban land, provide for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and which accommodate convenient pedestrian and bicycle circulation. Notwithstanding section (1) or (3) of this rule, local street standards adopted to meet this requirement need not be adopted as land use regulations.	Local street standards for width and ROW are found the Public Works Design Standards (PWDS) document. PWDS 2.11 provides improvement standards by street classification for arterials, minor and major collectors, commercial/industrial, and various residential streets including cul-de-sacs. Minimum ROW ranges between 50’ to 60’ for most streets, except for arterials (70-80’), cul-de-sac bulbs, and alleys. Generally the pavement width is 36’ for most street classification, except for arterials (42’), cul-de-sacs (28’, 34’, or 37’) and alleys (20’). The number of travel lanes is not defined for arterials and major collector roads, rather, they are dependent on the volume of traffic. The number of travel lanes for all other street types is not defined. Bicycle facilities are not required for any street classification, however PWDS 2.11(c) allows additional pavement and ROW to be required to accommodate turning lanes, parking, and bike lanes. PWDS 2.21(a) required sidewalks on both sides of

TPR Requirement	Municipal Code References and Recommendations
	curbed streets for all road classifications. Standards for minimum sidewalk widths are generally 5', except for US 20/OR 34 (6' of current ODOT standard). PWDS 1.1(e) allows variances to standards based on topography, right-of-way, geography, or existing physical conditions which impose an economic hardship. PWDS 1.11 provides a variance procedure and criteria for granting variances. Variances are reviewed by the Public Works Director, with an appeal to City Council. All criteria are required to be met and include an equivalent alternative with the least variance to standards, the change is required to address a specific design or construction problem causing undue hardship, and the alternative design is equal to or superior to the standards. PMC 18.80.020(B) allows for variances to design standards through a Class B variance. Class B variances are conducted as a Type II review and subject to PMC 18.155. Variances to transportation improvement requirements found in PMC 18.155.030(A)(6) can be granted if the criteria of PMC 18.80.020(B) are met, otherwise variances are granted through a Class C variance. PMC 18.80.020(B), however, does not provide criteria. PMC 18.80.020(G) (Minimum Rights-of-way) provides decisions-making criteria for street improvements with variable widths. **Recommendation:** Public Works Design Standards should be updated to be consistent with the updated draft TSP. References to updated TSP street classification standards should be included in the PMC and requirements for consistency with these standards legislatively adopted. The city should consider reducing the standards in PWDS to be consistent with a narrower local street standard as is currently shown in Figure 7-2 of the TSP. The city should review conditions under which a variance may

TPR Requirement	Municipal Code References and Recommendations
	be granted (PWDS 1.1(e)) and explore codifying criteria for approving variances to roadway width in the PMC.
OAR 660-12-0060	
Amendments to functional plans, acknowledged comprehensive plans, and land use regulations that significantly affect an existing or planned transportation facility shall assure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility.	PMC 18.105 provides procedures for amendments to the Code, Land Use District Map, and Comprehensive Plan. These types of amendments are subject to a Type IV Procedure (Legislative), which entails review by the planning commission with final decisions made by the city council. Both Code and Land Use District Map amendments are subject to the standards of PMC 18.135; amendments to the Comprehensive Plan are subject to the standards of the Comprehensive Plan. Type IV Procedures include notice requirements for affected governmental agencies. Decision-making considerations for Type IV Procedures include Statewide Planning Goals and ORS 197 (for Comprehensive Plans only) and any applicable Comprehensive Plan polices and provisions that are implemented in the code. PMC 18.135 (Annexation) provides standards and procedures for legislative amendments to the code and land use district map. PMC 18.135.050 (Transportation planning rule compliance) requires comprehensive plan amendment proposals or proposals to change to the land use district to review and determine if a transportation facility is significantly affected. Amendments which significantly affect a transportation facility are required to be limited through allowed land uses, amending the TSP to support the increase land use, or altering the land use regulations **Recommendation:** Update code language to clarify that consistency with Statewide Planning Goals and

TPR Requirement	Municipal Code References and Recommendations
	Transportation Planning Rule (-0060) are required for legislative approval.

SECTION 4

TECH MEMO FOUR

GOALS AND OBJECTIVES

Technical Memorandum #4

DATE: July 6, 2016

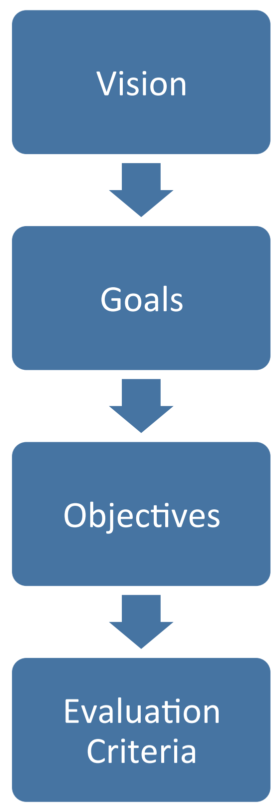
TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE

SUBJECT: **Philomath Transportation System Plan**
Task 3.3 Initial Goals, Objectives, and Evaluation Criteria

The purpose of this memorandum is to initiate the process of developing the transportation-related vision, goals, and objectives for Philomath. This effort will continue throughout the planning process, shaped by input received from the Citizen Advisory Committee and the general public.

Setting Direction for Transportation Planning



The process of identifying a vision, goals, and objectives helps describe the transportation system that best fits Philomath's values and guides how the Transportation System Plan (TSP) will be developed and implemented. This process typically begins with the development of a **vision statement**. A vision statement generally consists of an imaginative description of the desired condition in the future. It is important that the vision statement align with the community's core values.

Goals and objectives create manageable stepping-stones through which the broad vision statement can be achieved. **Goals** are the first step down from the broader vision. They are still somewhat general in nature and should be challenging, but not unreasonable. Each goal must be supported by more finite **objectives**. In contrast to goals, objectives should be specific and measurable. Where feasible, providing a targeted time period helps with objective prioritization and achievement.

The solutions recommended through the TSP must be consistent with the goals and objectives. To accomplish this, measurable **evaluation criteria** that are based on the goals and objectives will be developed as part of the process to screen and prioritize TSP actions.

The vision, goals, and objectives can be refined continuously throughout the TSP process. Towards the end of the process, when solutions have been identified, policy statements to guide future decisions can be developed to help the city implement plan recommendations.[1]

Existing Goals, Objectives, and Policies

Below are the goals and objectives written for the 1999 Philomath TSP. These are provided to understand the direction the community has previously established for transportation decisions and to provide ideas to facilitate the process of developing a new vision with goals and objectives that reflect current interests.

Goals and Objectives from the 1999 Philomath Transportation System Plan

GOAL 1: Relieve Increasing Traffic Congestion on Highway 20/34

Objectives

- Evaluate traffic counts, growth projections, and land use patterns to determine whether Highway 20/34 should be further improved within the Philomath Urban Growth Boundary (UGB).
- Consider alternatives to widening Highway 20/34, including transportation demand management measures that could reduce peak hour demand.
- Analyze the impacts of signalized and unsignalized intersections and rights-of-way in increasing the capacity of Highway 20/34 (e.g., better synchronization of signals, updated/additional traffic controls, etc.).
- Utilize access management measures, including limiting additional access points on Highway 20/34 and restricting existing access to local properties while preserving traffic flow.

GOAL 2 :Improve Traffic Circulation and Safety Throughout the City

Objectives

- Evaluate transportation and parking improvements to downtown traffic flow, including a one-way couplet on College and Main streets.
- Examine the role and potential of local street connections (e.g., how they are tied to Highway 20/34 and the impacts of couplet connections).
- Improve pedestrian/bicycle access across Highway 20/34, especially to schools, parks, and public buildings.
- Improve cross-town (both north-south and east-west) circulation and connectivity.

[1] Note that the City's existing transportation policies will be updated as part of the implementation phase of the TSP update project. Adopted transportation policy is currently found in Chapter VI, Transportation, in the Philomath Comprehensive Plan.

- Ensure that the street designs, especially couplets, avoid separation of the community.
- Evaluate the impacts of a bridge over Newton Creek to extend Applegate Street.
- Assess options to reduce traffic volumes and speeds near schools.
- Review design standards for streets.

GOAL 3: Promote the Increased Use of Alternative Modes

Objectives

- Identify measures to improve circulation for alternative modes.
- Improve pedestrian circulation within and between neighborhoods and commercial centers.
- Ensure connections to the existing pedestrian system (i.e., sidewalks and crosswalks) with new developments.
- Identify intersection improvements that enhance pedestrian safety.
- Provide additional sidewalks and improve existing sidewalks to enhance pedestrian safety and access.
- Identify measures (e.g., fixed-route bus systems, dial-a-ride, park-and-ride, vanpool, etc.) to develop and maintain transit usage.
- Assess potential of the railroad system for commuter rail, commercial rail, and excursion uses.
- Identify potential park-and-ride locations at both the east and west ends of the city.

GOAL 4: Develop a Master Plan that Defines Future Street Locations

Objectives

- Identify future street locations, especially in north Philomath and the Newton Creek industrial area.
- Develop street classifications and access management standards for existing and future street locations.
- Consider the *West Corvallis-North Philomath Plan* guidelines for an integrated circulation network for that area.

GOAL 5: Provide Alternate Routes to Deter Through Industrial Traffic out of the Downtown Core and Residential Neighborhoods

Objectives

- Develop a truck routing plan that minimizes/avoids conflicts with schools, residential areas, and the downtown core.
- Investigate alternate truck routes (e.g., Grange Hall Road) or other roads outside the city core.

GOAL 6: Integrate the Transportation System Plan with Other Land Use Planning Projects in the City

Objectives

- Review the comprehensive plan and other applicable plans to ensure compatibility.
- Develop a plan that is compatible with other land use plans.

Proposed New TSP Goals and Objectives

What is our vision for the future transportation system in Philomath? What do we like and not like about the system we currently have?

The goals and objectives from Philomath's current TSP (developed in 1999) provide a starting point for setting the direction for the new TSP. They cover a wide range of issues, including: mobility, connectivity, safety, promotion of alternate modes of travel, truck access, and TSP coordination with other plans. At the first TSP Citizen Advisory Committee (CAC) meeting,[2] we considered the 1999 TSP goals and objectives and discussed transportation issues and community interests of today in an effort to refocus these goals and objectives for the next 20 years. This included discussions about environmental impacts, enhancement of community health and livability, supporting the local economy, efficient use of public funds, and coordination with regional agencies.

In consideration of CAC input, the project team drafted the following vision and revised list of goals and objectives to guide the TSP process. These will continue to evolve throughout the project as we receive more input from the community and learn more about the future transportation needs of Philomath. At the conclusion of the project, it is anticipated that the final goals and objectives will be adopted as part of Philomath's Comprehensive Plan.

Vision Statement

Travel to and through Philomath is safe and efficient, with convenient options available for everyone. Investments in the transportation system are made in a cost-effective manner and respect the City's resources. The system supports local business activity, and US 20/OR 34 complements a vibrant downtown where people stop and visit and can cross the highway safely and comfortably.

Goal 1: Maintain efficient motor vehicle travel along the street network and through US 20/OR 34.

Objectives

a. Identify and preserve corridors for future street locations, especially in north Philomath and the Newton Creek industrial area. Consider the *West Corvallis-North Philomath Plan* guidelines for an integrated circulation network for that area.
b. Improve cross-town (both north-south and east-west) circulation and connectivity.
c. Maintain acceptable roadway and intersection operations where feasible considering environmental, land use, and topographical factors. The acceptability of roadway and intersection operations is defined by the City's mobility standard requiring operation at a level of service D or better.
d. Work with regional partners to reduce congestion along US 20/OR 34 between Philomath and Corvallis. Alternatives considered should include widening the corridor to four lanes, enhancing overall corridor travel efficiency, and transportation demand management measures that could reduce peak hour demand.

---

[2] Citizen Advisory Committee Meeting #1, February 25, 2016.

e. Develop street functional classifications with complementary operational guidance and standards to ensure streets are able to serve their intended purpose.
f. Evaluate transportation and parking improvements that have the potential to improve downtown traffic flow.

Goal 2: Develop a transportation system that provides mobility and accessibility for all members of the community, and reduces reliance on motor vehicle travel.

Objectives

a. Improve circulation for pedestrians, bicyclists, and transit riders within Philomath and to Corvallis.
b. Improve pedestrian and bicycle circulation within and between major activity generators such as neighborhoods, parks, schools, and commercial centers.
c. Implement the Safe Routes to Schools Plan recommendations.
d. Ensure connections to the existing pedestrian system (i.e., sidewalks, crosswalks, shared use paths) are made as part of new developments.
e. Enhance pedestrian safety at roadway crossings, including intersections and key mid-block locations.
f. Continuously improve existing transportation facilities to meet applicable City of Philomath and Americans with Disabilities Act (ADA) standards.
g. Develop and maintain maximum block length standards to minimize travel distances.
h. Ensure the pedestrian, and bike throughways are clear of obstacles and obstructions (e.g., utility poles, grates).
i. Improve existing streets to City standards, providing complete pedestrian and bicycle facilities.
j. Provide for transit user needs beyond basic provision of service (e.g., by providing sidewalk and bicycle connections, shelters, benches) to encourage higher levels of use.
k. Identify potential park-and-ride locations within the city.
l. Support expanded service hours for transit.
m. Assess potential of the railroad system for commuter rail, commercial rail, and excursion uses.
n. Improve pedestrian and bicycle access across US 20/OR 34, especially in locations where better access would support safer travel to schools, parks, and public buildings.

Goal 3: Enhance transportation safety.

Objectives

a. Assess options to reduce traffic volumes and speeds near schools.
b. Develop a truck routing plan that minimizes/avoids conflicts with schools, residential areas, and the downtown core.
c. Improve safety at locations with known issues.
d. Reduce traffic-related fatalities and serious injury collisions.
e. Reduce the amount of collisions involving vulnerable users (e.g., elderly, children, pedestrians, and cyclists).

f. Preserve the function and prioritize investments on routes and transportation facilities critical for emergency response and evacuation.
g. Apply a comprehensive approach to improving transportation safety that involves the five E's (engineering, education, enforcement, emergency medical services, and evaluation).
h. Implement the recommendations from the Safe Routes to School Plan.
i. Evaluate the need for improved street lighting.
j. Address speeding in the downtown.
k. Improve the comfort and safety of pedestrian crossings along US 20/OR 34.

Goal 4: Develop and maintain a transportation system that supports economic vitality.

Objectives

a. Improve the pedestrian and bicycle realm in the downtown.
b. Balance the need for efficient travel with business visibility and accessibility in the downtown.
c. Provide access to local businesses and business districts by all modes of transportation.
d. Consider streetscape improvements in the downtown to make it aesthetically pleasing and signify it as a destination.
e. Explore options to improve parking availability in the downtown.
f. Provide efficient freight movement on regional travel routes.
g. Increase the accessibility of major employment centers.

Goal 5: Provide a sustainable transportation system through responsible stewardship of financial and environmental resources.

Objectives

a. Preserve and protect the function of locally and regionally significant transportation corridors.
b. Preserve and maintain the existing transportation system assets to extend their useful life.
c. Improve travel reliability and efficiency of existing major travel routes in the city before adding capacity.
d. Pursue grants/ programs or collaboration with other agencies to efficiently fund transportation improvements and supporting programs.
e. Maintain stable and diverse revenue sources to meet the need for transportation investments in the city.
f. Evaluate and implement, where cost-effective, environmentally friendly materials and design approaches (water reduction, protect waterways, solar infrastructure, impervious materials).
g. Avoid or minimize impacts to natural resources, which may include alternative transportation facility designs in constrained areas.
h. Support technology applications that improve travel mobility and safety with less financial and environmental impact than traditional infrastructure projects.

Goal 6: Maintain coordination with local and state agencies and plans.

Objectives

a. Work with the Cascades West Area Commission on Transportation and the South Valley Regional Solutions Center to promote projects that improve regional linkages.
b. Coordinate transportation projects, policy issues, and development actions with all affected government agencies in the area, including Benton County, the City of Corvallis, the Corvallis Area Metropolitan Planning Organization, and the Oregon Department of Transportation.

SECTION 5

TECH MEMO FIVE

EXISTING CONDITIONS

Technical Memorandum #5

DATE: January 19, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE, DKS Associates
Rachel Vogt, EIT, DKS Associates
Ben Chaney, EIT, DKS Associates

SUBJECT: Philomath Transportation System Plan Update
Task 4.1 Existing Transportation Conditions and Baseline Performance

---

This memorandum provides a summary of the existing transportation conditions for the city of Philomath, providing documentation in the following areas:

- Unique Aspects of Philomath
- Key Destinations
- How People Travel
- Factors that Affect How People Travel
- Available Transportation Options
- How the Transportation System is Managed
- Conditions of the Existing Transportation System

Unique Aspects of Philomath

The city of Philomath, incorporated in 1882, is located in the mid-Willamette Valley at the base of Mary's Peak. Philomath is home to approximately 4,500 people and is a part of the Corvallis Area Metropolitan Planning Organization (CAMPO), which includes Corvallis, Philomath, Adair Village, and surrounding unincorporated areas[1] with a total population of approximately 66,000 people.[2]

The rodeo grounds adjacent to Mary's River Park is where the annual Philomath Frolic and Rodeo is held. The city's commercial district includes a variety of businesses, as well as the Benton County Historical Museum. The Benton County Historical Museum serves as an archive and display facility for items of historical significance to Benton County, as well as an exhibit space for contemporary art. A biennial "Quilt County" event, sponsored by the museum, attracts visitors from all over the Northwest. The museum, with its distinctive bell tower, is a well-known Philomath landmark.

---

[1] Corvallis Area Metropolitan Planning Organization. *About CAMPO.* 2012. Accessed March 2016. <http://www.corvallisareampo.org/SectionIndex.asp?SectionID=2>

[2] 2010 Census Demographic Profile – Population Map. Accessed March 2016. <http://www.census.gov/2010census/popmap/>

The Police station, City Hall, and the Philomath Community Library are located together on a city campus adjacent to Applegate Street. Located just west of Corvallis and Oregon State University, Philomath is also a short 45-minute drive from the Oregon Coast.[3] This unique location offers diverse recreation including hiking and mountain biking on Mary's Peak, Division I sports at Oregon State University, fishing on the Alsea River, or wine tasting at local wineries.

Philomath Frolic Rodeo

Key Destinations

One of first steps in planning for an effective transportation system is gaining an understanding of the key destinations that people currently travel to throughout the city. These destinations, referred to as "activity generators," are commonly categorized as homes, employment, shopping, school, civic buildings, recreation, and entertainment. Key activity generators are mapped in Figure 1.

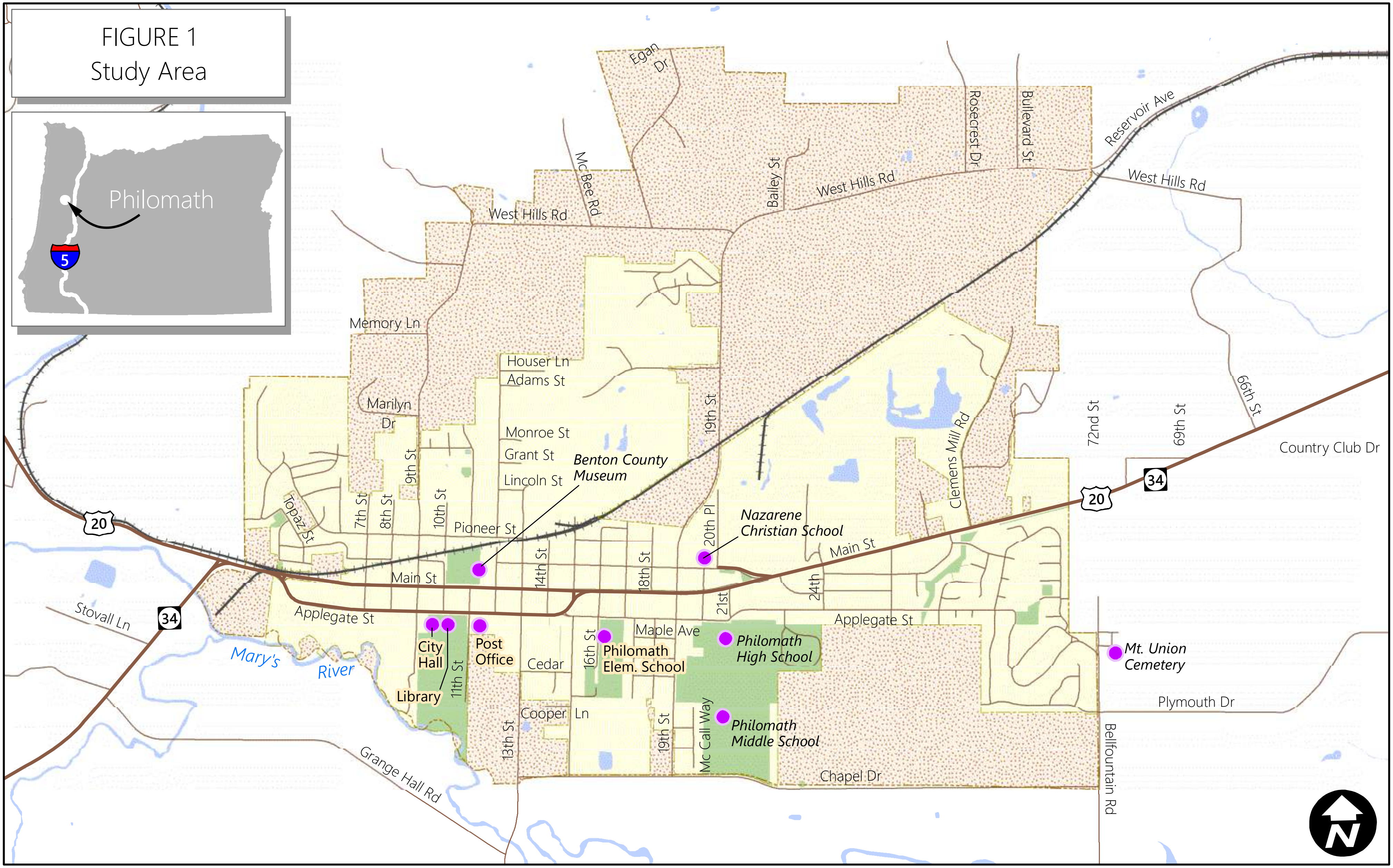
Benton County Museum

In Philomath, most homes are located to the north and southeast, with larger employment areas in the downtown (central), the south, and northeast. The elementary, middle, and high schools are all located near each other in the southern part of the city and most civic buildings are downtown along Applegate Street. The city owns and maintains eight parks, but the majority of them (in number and acreage) are in the southern half of the city. Shopping and entertainment opportunities are generally found in the central area of the city, in the downtown and along the US 20/OR 34 corridor. However, the nearest full-service grocery store is in Corvallis adjacent to the US 20/OR 34 at SW 53rd Street intersection (about 1.4 miles to the east).

Philomath City Park

[3] City of Philomath. *About Us.* 2010. Accessed December 2015. <http://www.philomathchamber.org/node/77>.

FIGURE 1
Study Area



City of Philomath

Transportation System Plan

March 2016

CITY OF PHILOMATH 1882 Transportation System Plan OREGON

0 0.125 0.25 0.5 Miles

Legend

- Activity Generator
- Park
- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Commuting Patterns

Much of the traffic in Philomath during the more congested weekday p.m. peak periods is often related to employment travel. On a typical day, approximately 1,950 Philomath residents leave town to go to jobs in other cities, while only about 160 live and work in Philomath. At the same time, Philomath imports approximately 900 employees from other cities.

Table 1 shows where Philomath residents and employees work and live.[4] As shown, only about eight percent of Philomath residents work in Philomath, while almost 40 percent work in Corvallis. Approximately 13 percent of residents travel to employment locations more than 25 miles outside of the city. Considering the most common locations associated with Philomath employment, most of the 1,950 residents leaving town for work are likely headed eastbound in the morning and westbound in the afternoon. The opposite would be true for the majority of the 900 employees coming to Philomath every day.

Table 1: Philomath Employment Patterns (2014)

City of Origin/ Destination	Where Philomath Residents are Employed	Where Philomath Workers Live	Distance from Philomath
Corvallis	39.5%	23.7%	< 10 mi
Philomath	**7.5%**	**14.9%**	-
Portland	5.5%	-	> 25 mi
Albany	4.2%	7.4%	10-25 mi
Eugene/Springfield	4.0%	-	> 25 mi
Salem	3.8%	1.2%	> 25 mi
Lebanon	1.1%	2.1%	10-25 mi
Adair Village	-	1.1%	10-25 mi
Other Cities	34.4%	49.6%	-

Source: Work Destination Analysis by Places. *OnTheMap U.S. Census Bureau.* 2010-2014. Accessed March 2016.

[4] United States Census Bureau. *Census Bureau Commuting Edition.* 2014. Accessed December 2015.

How People Travel

People traveling in Philomath have several choices when deciding how to make their trip. This section describes how people in Philomath have decided to travel in the past. As part of our public outreach process, we will solicit input to discover how people would like to travel and what improvements might be needed to encourage change.

Mode Choices for Commuters

Table 2 compares the commute travel modes choices of Philomath residents to other neighboring cities. On average, almost 70 percent of Philomath residents commuted to work between the years of 2009 and 2013 using single occupant motor vehicles, while only 10 percent carpooled to work.[5] Of those commuters driving alone to work from Philomath, most trips are occurring between Philomath and Corvallis, Albany, and Salem.

Nearly a quarter of Philomath residents walked, biked, rode public transportation, or worked from home. Of note, a higher percentage of employees rode transit or worked from home in Philomath than in the neighboring communities of Corvallis, Albany, or Salem.

Table 2: Commuter Mode Share in Philomath and Neighboring Cities

Transportation Mode	Percent of Commuters				
	Philomath	Corvallis	Albany	Salem	Portland Metro
Workers over 16 years of age	**1,700**	**24,900**	**21,000**	**64,600**	**302,400**
Walked	*4%*	*12%*	*3%*	*5%*	*6%*
Biked / Other	*1%*	*13%*	*3%*	*3%*	*7%*
Public Transportation	*8%*	*3%*	*<1%*	*2%*	*12%*
Motor Vehicle – *Single Occupant*	*67%*	*57%*	*79%*	*74%*	*59%*
Motor Vehicle – *Carpool*	*10%*	*8%*	*9%*	*12%*	*9%*
Worked at Home	*10%*	*7%*	*6%*	*4%*	*7%*

Source: US Census Bureau, 2009-2013 American Community Survey – Data for Philomath from Tract 108

Although the U.S. Census Bureau is a valuable source of information for work-related commute patterns in Philomath, it does not truly represent the transportation modes used to other activity generators like schools, recreation, or shopping.

[5] United States Census Bureau. *Census Bureau Commuting Edition.* 2013. Accessed December 2015.

Transportation Modes in the City

Traffic counts at study intersections (study intersections are shown in Figures 3 and 4) throughout Philomath were collected during May of 2012, and October of 2015.[6] These traffic counts captured volumes of motor vehicles, pedestrians, and bicyclists. Analysis of seasonal variations in traffic, illustrated in Figure 2, shows that activity levels in May or November generally represent typical average weekday traffic conditions while August represents the peak weekday traffic conditions. A review of the traffic counts[7] and other related data showed some general trends for each mode of travel, which are described below.

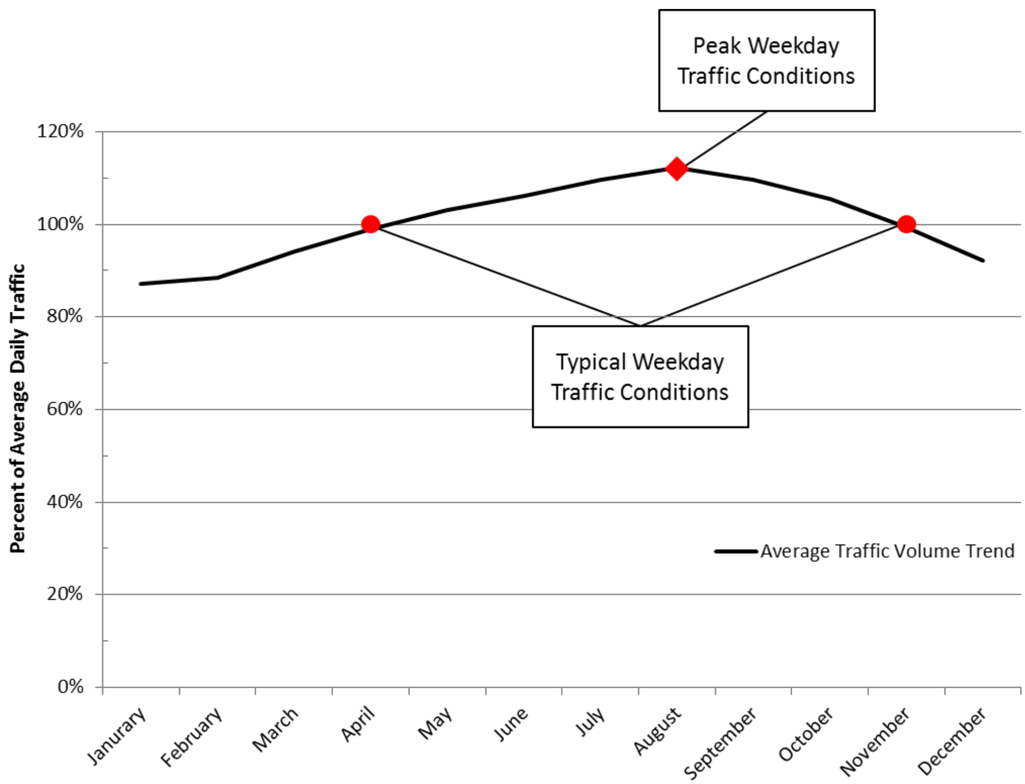


Figure 2: Seasonal Traffic Activity Variation in Philomath

---

[6] Annual growth rates ranging from approximately 1-2% per year were applied to the May 2012 traffic counts to create a consistent set of traffic volumes representing conditions during the year 2015 (see appendix for more information).
[7] ODOT. *Season Factor Table.* 2015.

Bicycle and Pedestrian volumes were low at most study intersections in Philomath with the exception of the intersections in the downtown area. The highest pedestrian volumes were found at following intersections:

- S 19th Street and Applegate Street,
- S 16th Street and Applegate Street,
- 19th Street and US 20/OR 34,
- N 13th Street and US 20/OR 34, and
- S 13th Street and US 20/OR 34.

All of these intersections are located near the public schools in Philomath, and volumes were from 17 to 22 pedestrians at each intersection during the peak hours. The Bellfountain Road/Chapel Drive intersection had the highest recorded bicycle volumes of all the study intersections with 10 to 13 bicyclists during the peak hour. The bicycle and pedestrian volumes for each intersection are shown in Figure 3.

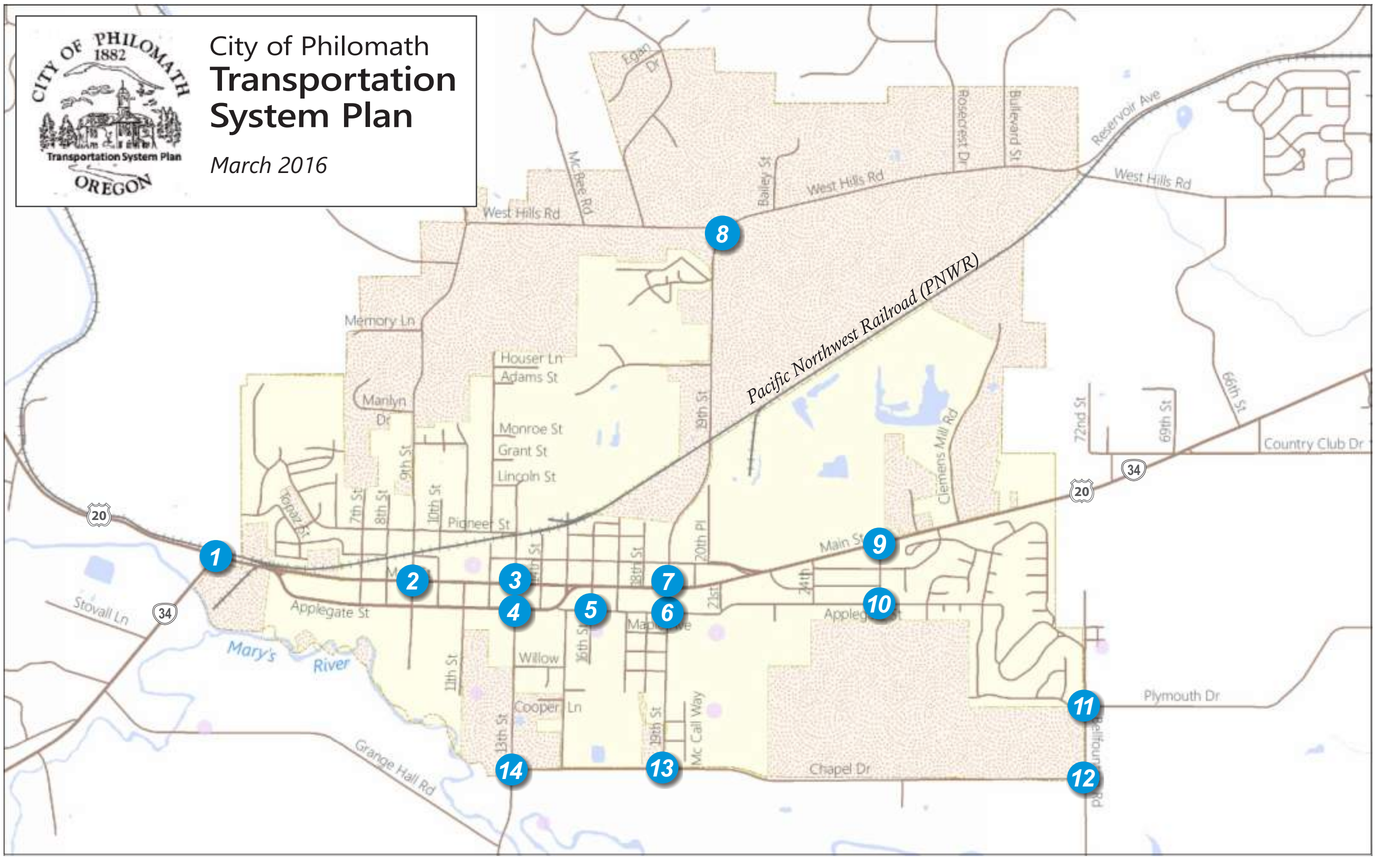
Public Transportation in Philomath includes three fixed route services and one on-demand service. The fixed route services include the Corvallis Transit System (CTS) Philomath Connection Route, the Coast to Valley Express service, and the privately run Valley Retriever service. Each service has at least one stop on Main Street and Applegate Street (US 20/OR 34 westbound and eastbound, respectively, in the couplet). The Philomath Connection has stops at several locations along Applegate Street and connections to Corvallis via Plymouth Drive.

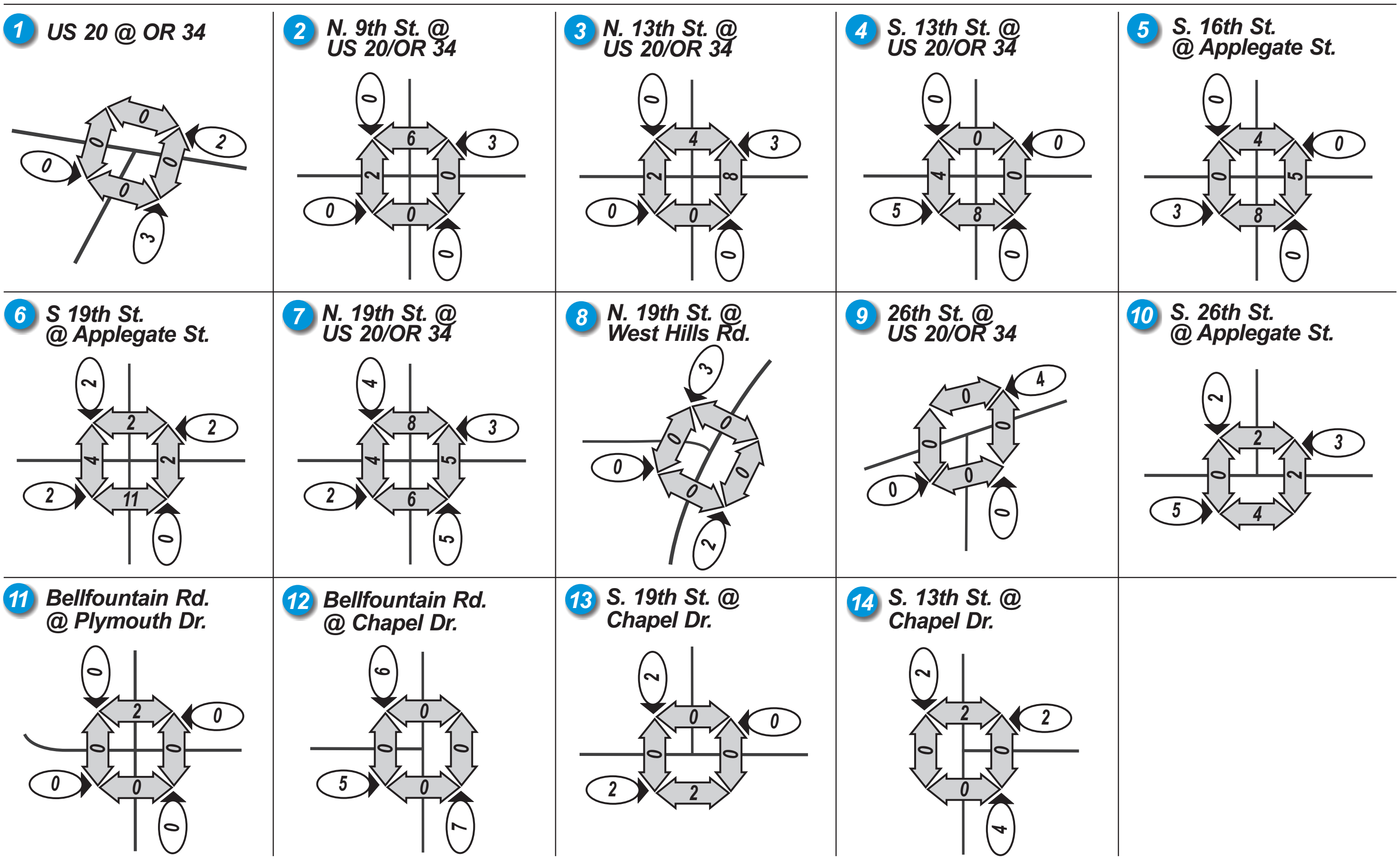
The Philomath Connection operates Monday through Friday, connecting Philomath, OSU and Downtown Corvallis along Plymouth Drive, 53rd Street and West Hills Road. Seven trips are provided each day: three in the morning, one midday, and three in the afternoon.

Unlike other CTS routes, the Philomath Connection requires a fare to ride the bus. Adults pay $0.75 for a single trip and $1.50 for a day pass. Students, faculty, and staff at OSU may ride for free.

Each weekday, the Philomath Connection carries approximately 100 passengers, or almost 20 passengers per hour. The most commonly used stops in Philomath are along US 20/OR 34 at N 14th Street, S 7th Street, and S 11th Street, as well as Applegate Street at S 16th Street, which all serve between 10 and 20 passengers per day. Ridership has decreased marginally over the past three years, from 120 daily passengers in 2012-2013 to approximately 100 daily passengers during the first half of 2015. The highest concentrations of passenger activity occur in Philomath, in central Corvallis (along 26th Street and Monroe Avenue), and near 53rd Street and US 20/OR 34.

The Coast to Valley Express provides transit service between Albany, Corvallis, Philomath, Toledo and Newport via US 20/OR 34. The Coast to Valley Express operates seven days a week, with four trips each direction each day. Service to Albany only operates every other trip. The cost for long-distance trips is $10 each way for adults, and $7 each way for youth, seniors, and individuals with disabilities.





LEGEND

- # - Study Intersection
- 0 - Pedestrian Volume
- 0 - Bicycle Volume

DKS

No Scale

Figure **3**

Existing (2015) Weekday PM Peak Hour Bicycle & Pedestrian Volumes

The Valley Retriever is a private bus service that operates twice a day between Newport and Salem, with stops in Philomath, Corvallis and Albany. Service continues to Portland and Bend, each with one trip a day. Service operates Sunday through Friday.

Motor vehicle volumes on the roadways in Philomath most commonly peak during weekdays between 5:00 p.m. and 6:00 p.m., but do vary depending on the time of year. For this reason, the traffic count data was adjusted to represent the 30th highest annual hour volumes (30 HV). These volumes are similar to what would be present on a busy day in August, and are commonly used for design purposes. The weekday p.m. peak hour traffic volumes for this design period that were developed for the study intersections are displayed in Figure 4.

Freight volumes on US 20/OR 34 in Philomath represent nearly 5 percent of all average annual daily traffic (AADT) and ranges from approximately 850 AADT west of the couplet along US 20, 1,200 AADT east of the couplet, and 500 to 650 AADT on each of the one-way streets of the couplet. Other routes used by freight vehicles that have been designated as freight routes by the city include 19th Street, Chapel Drive, Bellfountain Road, and 13th Street.

Factors that Affect How People Travel

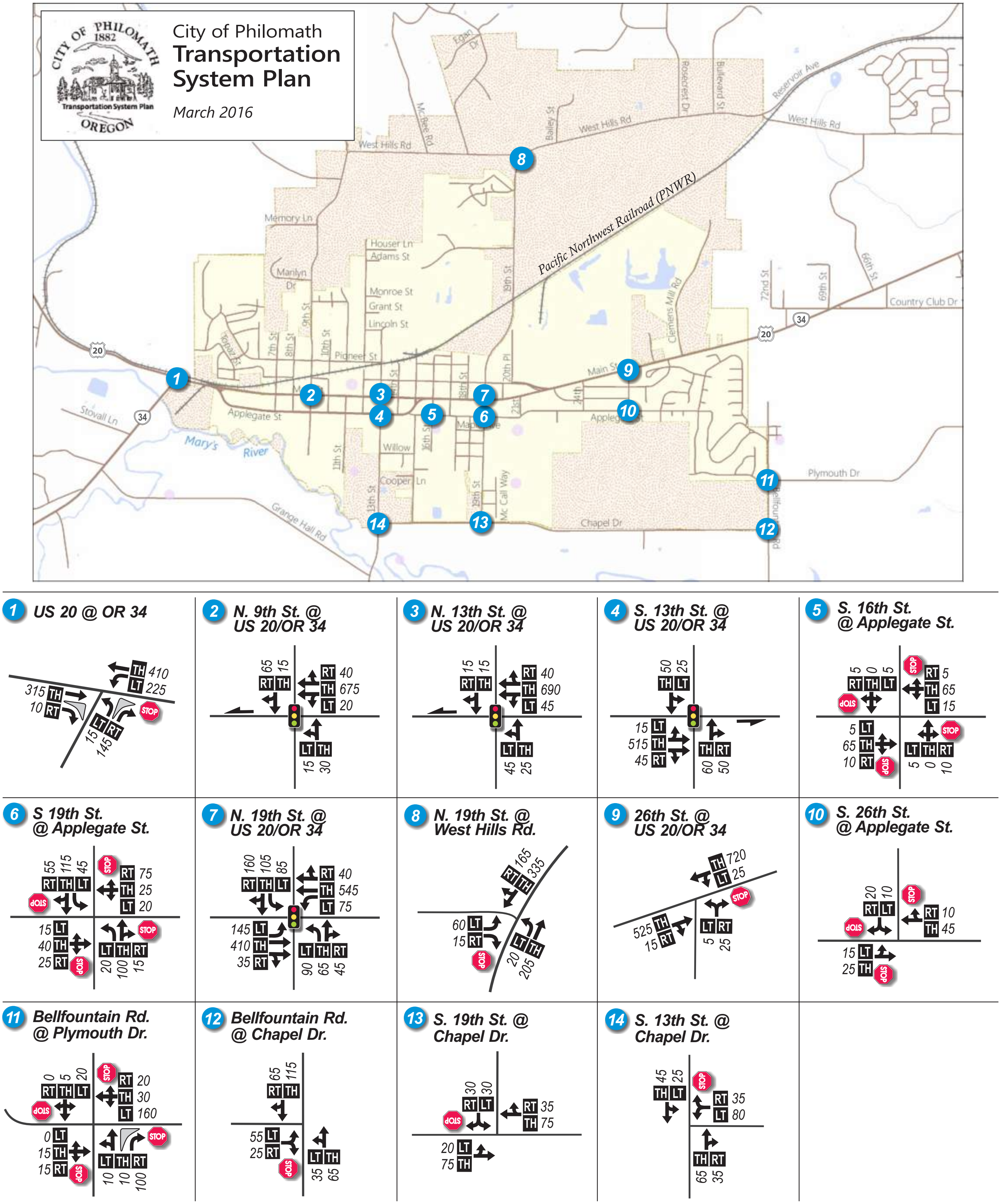
Travelers are often influenced by a number of factors when deciding how to arrive at a destination. Deciding to walk, bike, use public transportation, or a private motor vehicle often depends on a balance between cost, time, and convenience of travel. Common factors affecting how people travel are discussed below.

Destination: Whether you are going to work, school, shopping, or to a park, your intended destination and the distance to it often influence the mode of transportation you choose. Trips that are shorter generally present a better opportunity to walk or bicycle; longer distance trips more often require the use of public transit or private motor vehicles.

Pedestrian and bicycle facilities: The availability of continuous sidewalks, accessible curb ramps, crosswalks, and bike facilities increases the comfort and access of walking and biking within a community and affects how people are willing to travel. A lack of these facilities, particularly on higher volume or higher speed roadways, discourages people from utilizing non-motorized vehicle modes of transportation.

Where you work and how long it takes you to get there: Philomath residents who work outside of the city are more likely to commute via motor vehicle due to travel distance and commute time. Nearly 93 percent of Philomath residents commute to locations outside the city, and almost 70 percent of Philomath residents choose to use single occupant motor vehicles.

City of Philomath
Transportation System Plan
March 2016



LEGEND

- # - Study Intersection
- Traffic Signal
- STOP - Stop Sign
- Lane Configuration
- LT TH RT (Left•Thru•Right) - Volume Turn Movement
- 000 - Peak Hour Traffic Volumes

Note: Traffic volumes shown represent the 30th highest annual hour of traffic.

DKS

No Scale

Figure **4**

Existing (2015) 30 HV PM Peak Hour Traffic Volumes

Availability of public transportation services: Distance to bus stops, frequency of service, route coverage, connections to other transportation options, and amenities at stops are some of the factors that play a role in a user's decision to utilize public transportation. For those who cannot afford or are unable to drive, public transportation is an attractive option for making longer trips.

Age and income: Demographic characteristics such as age and income play a key role in determining mode of transportation. Philomath residents with lower incomes, as well as the youngest and oldest residents, often account for more trips via walking, biking, and public transportation. Approximately 24 percent of Philomath residents are under 18 years of age, and 10 percent are 65 years and older. Approximately 17% of individuals live on incomes below the poverty level.[8]

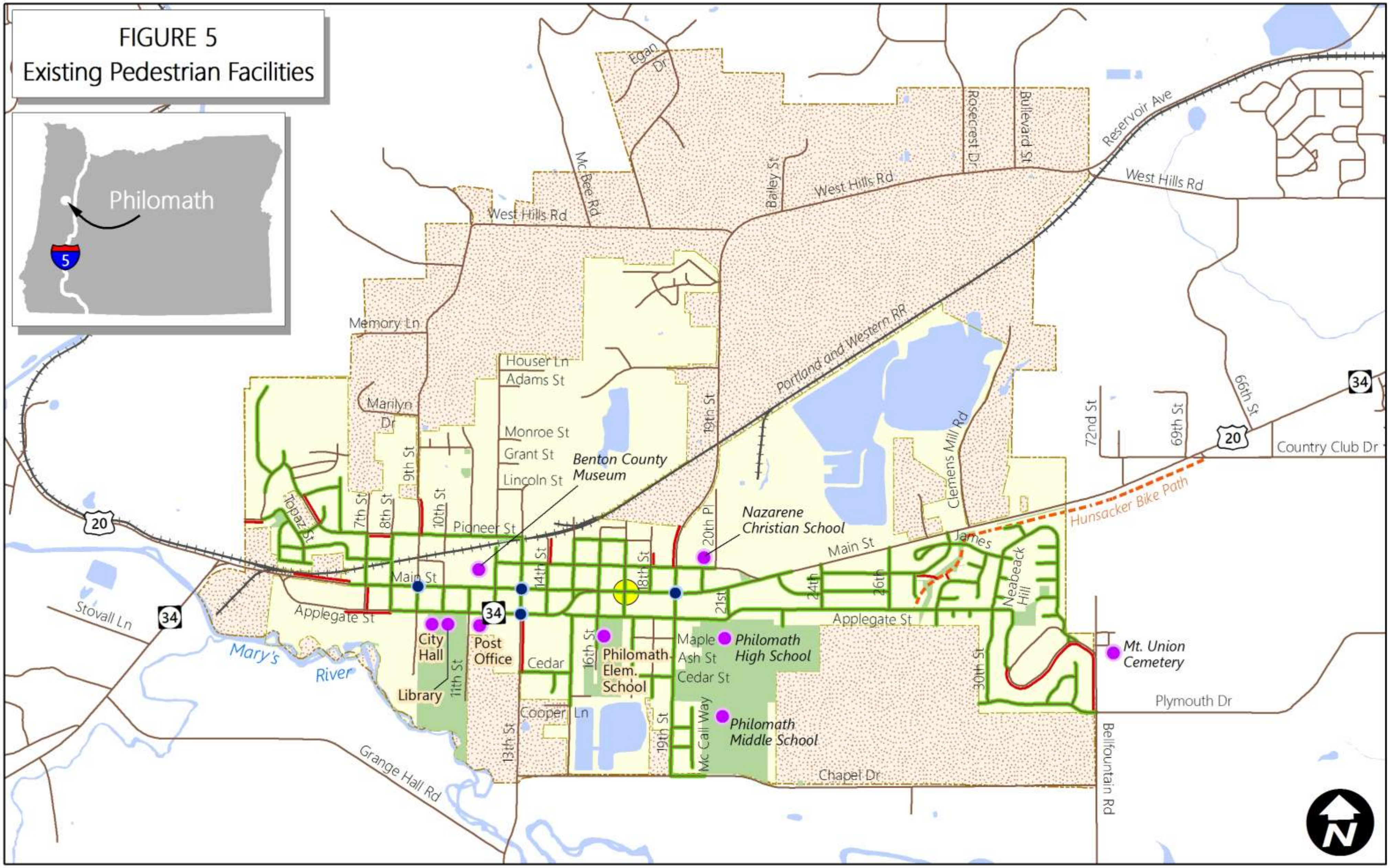
Available Transportation Options

Philomath has an abundance of existing transportation infrastructure and services that people use on a daily basis. Facilities and services commonly used are described below.

Pedestrian System

Walking plays a key role in Philomath's transportation network, and planning for pedestrians helps the city provide a complete multi-modal transportation system. It also supports healthy lifestyles and addresses a social equity issue ensuring that the young, the elderly, and those not financially able to afford motorized transport have access to goods, services, employment, and education. Approximately four percent of commuters in the city walk to work, with another eight percent utilizing public transportation to get to work, which generally includes walking at the beginning or end of the trip. In addition to the work commute trips, walking trips are made to and from recreational areas, shopping areas, schools, or other activity generators. Continuous sidewalk connections between activity generators and along major roadways, in addition to safe crossing opportunities along major roadways, are desirable to encourage non-motorized travel options. The walking network in Philomath is shown in Figure 5.

[8] 2010-2014 American Community Survey 5 Year Estimates.. *Philomath, Oregon Community Facts.* 2014. Accessed March 2016. <http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml>



City of Philomath

Transportation System Plan

March 2016

0 0.125 0.25 0.5 Miles

Legend

Pedestrian Facilities

- Sidewalk, Both Sides of Street
- Sidewalk, One Side of Street
- Shared-Use Path
- Park

Protected/Enhanced Crossings

- Signal
- RRFB/Beacon
- Activity Generator

- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Sidewalks are located along roadways, and are often separated from the roadway with a curb and/or planting strip. They typically have a hard, smooth surface, such as concrete. The city of Philomath requires five-foot sidewalks widths on all properties abutting a public roadway unless a variance is granted (ten-foot sidewalks are required in business and commercial zones).[9] On state facilities (US 20/OR 34), the Oregon Department of Transportation (ODOT) standard for sidewalk width is six feet. The existing sidewalk network along US 20/OR 34 is generally continuous on both sides between Green Street and 7th Street (this includes both directions of the couplet). There are also generally continuous sidewalks on College Street, 19th Street, and most of the neighborhood roads. Outside of these areas sidewalks are discontinuous or absent.

Shared-use paths serve a variety of non-motorized travelers, including pedestrians, bicyclists, skateboarders, and runners. Shared-use paths are typically paved (asphalt or concrete), but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards. Shared-use paths are usually wider (e.g., 10 – 14 feet) than an average sidewalk (e.g., 5 – 6 feet). A shared-use path currently exists in the east end of Philomath, beginning on Applegate Street, passing through Newton Creek Park, and paralleling the south side of US 20/ OR 34 until it connects with another shared-use path at Country Club Road in Corvallis.

Roadway shoulders serve as pedestrian routes in many rural Oregon communities and in older urban areas where sidewalk infill has not yet occurred. On roadways with low traffic volumes (i.e., less than 3,000 vehicles per day), shoulders may be adequate for pedestrian travel; however, they must be wide enough for safe passage (minimum of 4 feet) and may not always be in suitable condition for passage by people with disabilities.

In Philomath, there are many older areas of the city where sidewalk has not been constructed. While these mostly consist of low-volume, low-speed local streets, there are also segments of arterials and collectors where sidewalk infill is needed. Many of these segments are in underdeveloped areas outside of the city limits, but inside the urban growth boundary (UGB). In these areas, sidewalk infill can occur as part of future development. The most notable segment where sidewalk is needed inside of the current city limits is along US 20/OR 34 east of Green Street.

Enhanced roadway crossings provide safer and more comfortable places for pedestrians to cross higher-volume and higher-speed roadways. Without such crossing, major roadways like US 20/OR 34 can create a barrier effect for pedestrians, discouraging people from walking when making short trips. Enhanced crossings include many types of treatments, such as curb extensions, flashing yellow beacons, and traffic signals, but generally require more than just a marked crosswalk to be effective.

Within Philomath, there are a few enhanced crossing opportunities along US 20/OR 34, including traffic signals at the intersections with 19th Street, 13th Street (both side of the couplet), and 9th Street (north

[9] City of Philomath. *Philomath Municipal Code Chapter 12 Streets, Sidewalks and Public Places*. 2013.

side of couplet only) and a pedestrian-activated yellow flashing beacon at the intersection with 17th Street.

Bicycle System

Much like walking, bicycling plays a key role in the transportation system's ability to support healthy lifestyles and provide alternative travel choices to the automobile. In comparison to walking, bicycling is more suitable for longer trips. While Philomath's size makes it very bikable and jobs in Corvallis are in close proximity, only about one percent of Philomath commuters currently travel by bicycle.

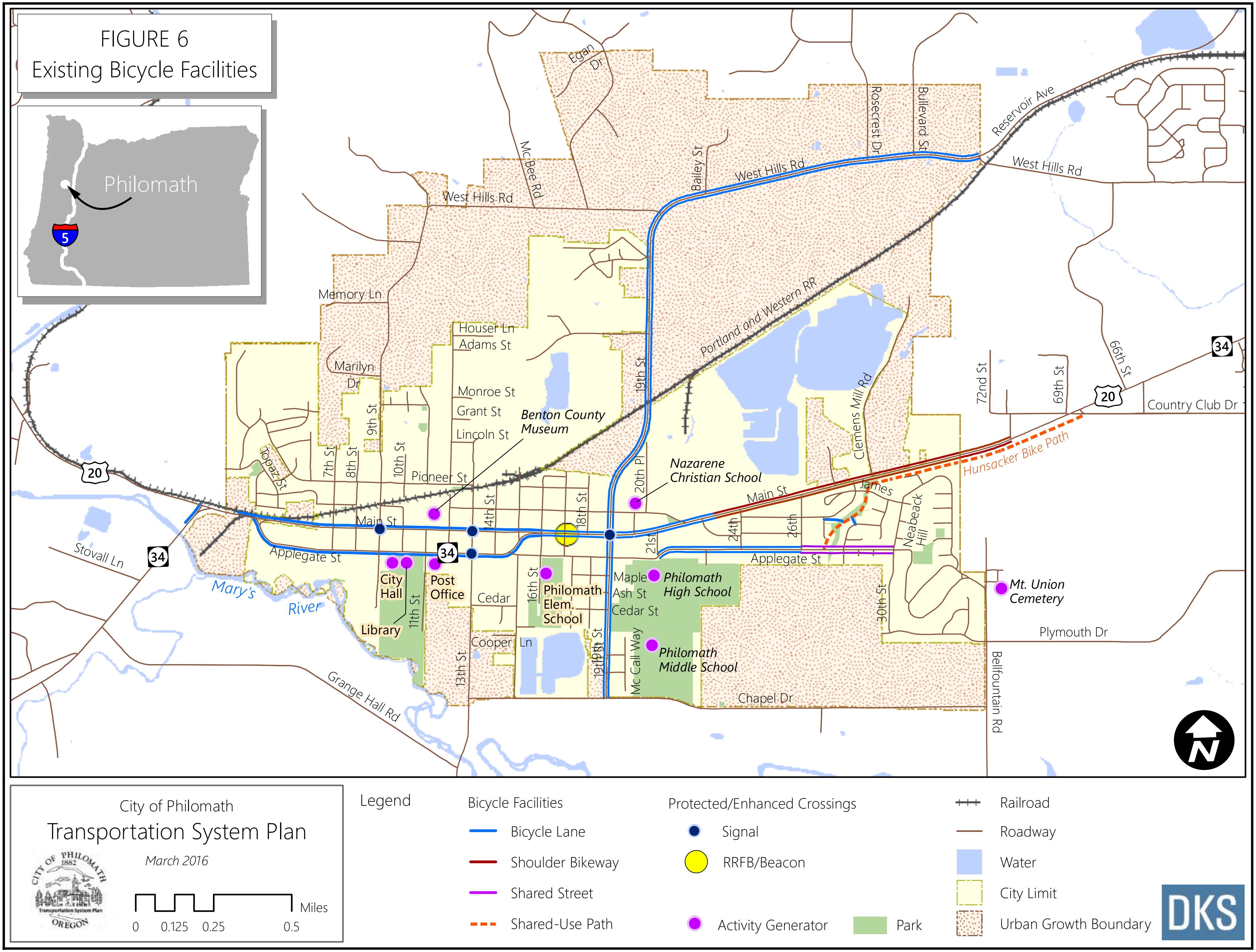
In addition to work commute trips, biking trips are made for getting to and from school, shopping, and other activity generators in the city, as well as for recreational purposes. Philomath's network of bicycle facilities, shown in Figure 6, is primarily composed of shared streets, bike lanes, shoulder bikeways, and shared-use paths (shared-use paths were previously described as part of the pedestrian system).

Shared streets include streets on which bicyclists and motorists share the same travel lane. The most suitable streets for shared bicycle use are those with low speeds (25 mph or less) and low traffic volumes (3,000 vehicles or fewer per day). Shared streets, often signed as bicycle routes, serve to provide continuity to other bicycle facilities (e.g., bicycle lanes) or can be designated as a preferred route through the community. Common practice is to sign a route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows and/or pavement markings. Shared streets can have signs that highlight a special route or provide directional information in bicycling minutes or distance. Most local streets in the city are considered shared streets, but do not have signs or pavement markings. Applegate Street from 26th Street to 30th Street was recently resurfaced and designated as a shared street using pavement markings (sharrows) in both directions.

Bike lanes are portions of the roadway designated specifically for bicycle travel using a striped lane and pavement stencils. ODOT standard width for a bicycle lane is six feet, with a minimum width against a curb or adjacent to a parking lane of five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. Bike lanes are most appropriate on arterials and collectors, where high traffic volumes and speeds warrant greater separation of the travel modes. Through Philomath, bike lanes are present on US 20/OR 34 from the west end of the couplet to Green Street, West Hill Road east of 19th Street, Applegate Street from 21st Street to 26th Street, and along all of 19th Street.

Shoulder bikeways are paved roadways that have striped shoulders wide enough for bicycle travel, but do not use signing or pavement markings to designate the shoulder specifically for bicycles. ODOT recommends a six-foot paved shoulder to adequately provide for bicyclists, and a four-foot minimum width in constrained areas. Roadways with shoulders less than four feet wide are considered shared streets. Some shoulder bikeways use warning signs to alert motorists to expect bicycle travel along the roadway. The most notable shoulder bikeway in Philomath is on US 20/OR 34 from Green Street to the eastern UGB.

FIGURE 6
Existing Bicycle Facilities



Bicycle parking facilities are a fundamental component of a bicycle network. Lack of safe and secure facilities for either short-term or long-term parking can be an obstacle to promoting bicycle riding. There is limited bicycle parking in the downtown area of the city, with parking available at the Post Office and City Hall, and bicycle parking at the Philomath schools. All bicycle parking is standard racks.

Public Transportation System

There are four primary public transportation options available to Philomath residents. Those systems make stops throughout the city of Philomath at fixed bus stop locations and on demand services, providing connections to the cities of Newport, Corvallis, Albany, Salem, and Portland. Figure 7 shows the existing transit routes in the city of Philomath and each service is described in more detail below.

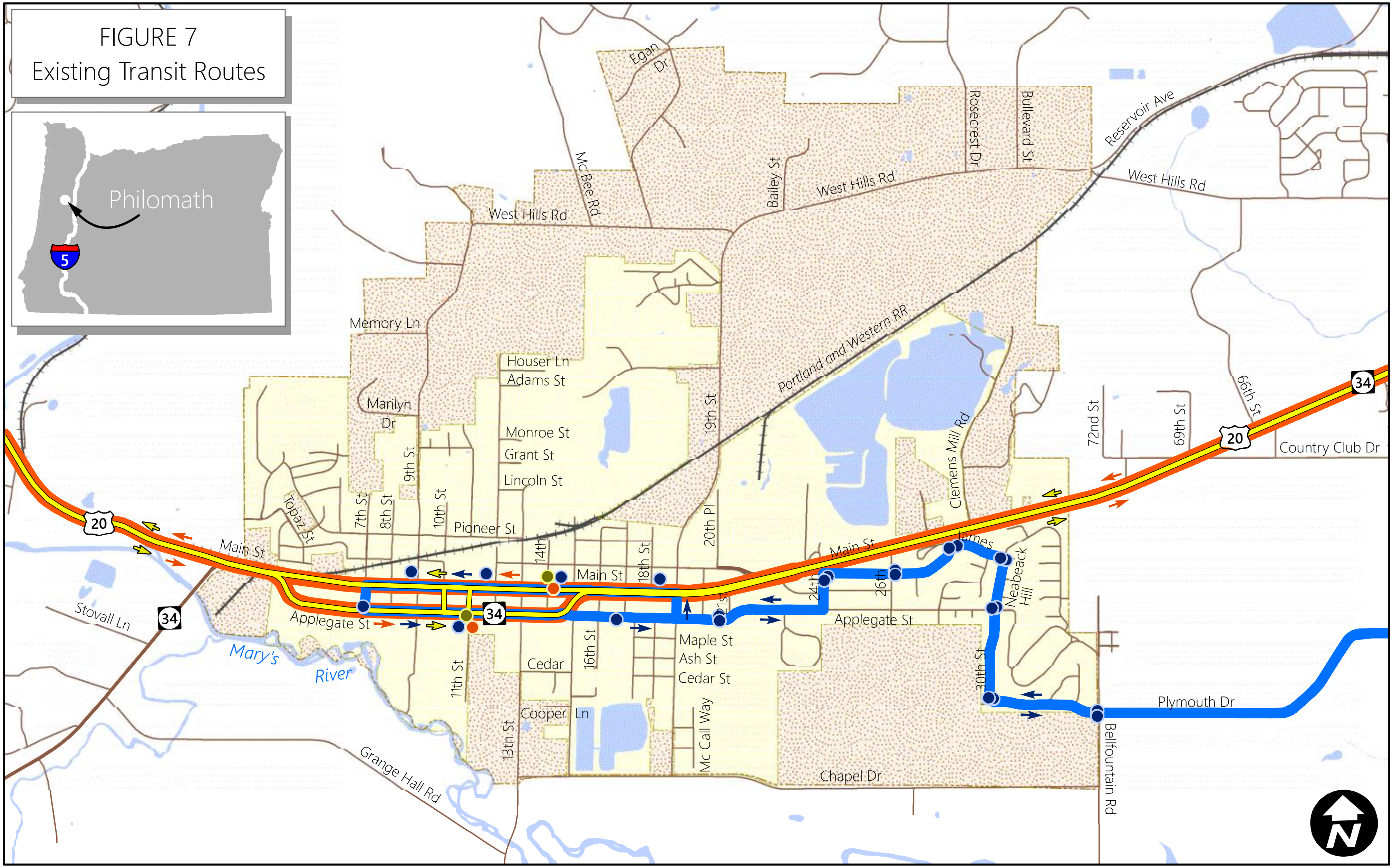
The Philomath Connection[10], by Corvallis Transit System (CTS), provides transit service between Corvallis and Philomath with stops along Plymouth Drive, S 30th Street, Newton Street, US 20/OR 34, and Applegate Street. The stops on US 20/OR 34 at N 14th Street and S 11th Street, as well as the stop on Applegate Street at S 16th Street, have covered shelters with bench seating. Transit service along this route is provided Monday through Friday from 6:15 a.m. to 7:15 p.m., with headways between one to four hours. Key destinations along this route include downtown Philomath, Philomath High School, Oregon State University, and downtown Corvallis.

The Coast to Valley Express[11] travels through Philomath four times a day (in each direction), seven days a week from the Amtrak station in Albany to South Beach/Hatfield Marine Science Center in Newport. Transit routes run from 6:20 a.m. to 10:30 a.m. for the morning service, and from 3:15 p.m. to 7:30 p.m. for the evening service. Within Philomath, the bus stops on US 20/OR 34 at N 14th Street (westbound) and at S 11th Street (eastbound). Regional stops of significance include the Samaritan Hospital and Clinic, the Corvallis Transit center, the Bi-mart shopping center on 53rd Street in Corvallis, the Eddyville Post Office, the Toledo Park and Ride, and Newport City Hall.

The Valley Retriever Buslines[12] travels through Philomath Sunday through Friday with stops in Corvallis, Albany, Salem, and then final destinations in Bend, Newport, Toledo, or the Portland area. The routes use the covered shelters at the bus stops on US 20/OR 34 at N 14th Street (westbound) and at S 11th Street (eastbound). Key destinations include the downtown Corvallis Greyhound station, the Amtrak station, the Greyhound Bus Terminal in Portland, and the Hawthorne Station in Bend.

---

[10] Corvallis Transit System. *Philomath Connection Bus Map & Schedule.* 2013. Accessed January 2016. <http://www.corvallisoregon.gov/modules/showdocument.aspx?documentid=4084>
[11] Lincoln County Oregon. *Coast to Valley Express Bus Schedule.* 2015. Accessed January 2016. <http://www.co.lincoln.or.us/transit/page/coast-valley-express-bus-schedule>
[12] Valley Retriever Busline. *VRB Schedule.* 2015. Accessed January 2016. <http://www.kokkola-bus.com/VRBSchedule.html>



City of Philomath
Transportation System Plan
March 2016

CITY OF PHILOMATH 1882 OREGON Transportation System Plan

0 0.125 0.25 0.5 Miles

Legend

Bus Stops and Routes
- Coast-To-Valley Express
- Corvallis Transit System, Philomath Connection
- Valley Retriever

- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Benton County Dial-A-Bus[13] service provides volunteer-run public transportation to seniors and persons with disabilities within Benton County who are unable to use regular fixed-route buses. Curb-to-curb Dial-A-Bus service, in wheelchair lift equipped mini-buses, is available on an as-needed reservation basis.

Roadway System

US 20/OR 34 is the major east-west transportation route through the center of Philomath, and the only road in Philomath with a classification of arterial. To the west, it extends to the Oregon Coast. To the east, it passes through Corvallis and connects to I-5. Through the downtown, the highway splits into a couplet with Main Street proceeding westbound and Applegate Street proceeding eastbound.

Other important east-west routes include West Hills Road, Chapel Drive, and Applegate Street (east of the couplet). West Hills Road and Chapel Drive provide alternate routes to US 20/OR 34 and are commonly used to travel to and from Corvallis. Applegate Street east of the couplet provides access to Philomath schools and residential areas in the southeast part of town.

Key north-south routes include N 9th Street, S 13th Street, and N and S 19th Street. North of the downtown, the Portland and Western Railroad cuts off most streets, limiting north-south connectivity through just four streets (N 7th Street, N 9th Street, N 13th Street, and N 19th Street).[14]

Due to limited regional connectivity, some streets in Philomath are affected by routing of traffic between US 20/OR 34 and OR 99W to the south. This issue was studied by Benton County through the Bellfountain Corridor Refinement Plan in 2002, with the study corridor defined as S 19th Street, Chapel Drive, Bellfountain Road, and Greenberry Road. On S 19th Street and Chapel Drive, the need to reduce traffic speeds and improve safety for pedestrians and bicyclists was identified.

Bridges

There are three bridges within the Philomath UGB, two of which are located within city limits, and one which is located outside of the city under Benton County jurisdiction but within the UGB. The first bridge is located on US 20/OR 34 west of Green Street (at mile point 51.31), the second is located on Applegate Street east of 23rd Street, and the final bridge located within the UGB is located on Chapel Drive west of Cattle Drive. All three bridges cross Newton Creek, are classified as sufficient, and do not have any restrictions.[15]

---

[13] Dial-A-Bus Benton County. *About Us.* 2014. January 2016. <http://dialabus.org/>
[14] N 15th Street also crosses the railroad, but only provides access to one property.
[15] Oregon Department of Transportation. *ODOT TransGIS: Structures Layer.* 2014. Accessed December 2015. <https://gis.odot.state.or.us/transgis/>

Rail Lines

Portland and Western Railroad (PNWR) is classified as a regional[16] rail line in conjunction with Willamette and Pacific Railroad and is the only freight line that runs through Philomath. The main line is part of the Portland and Western railroad line that begins in Toledo near the Oregon Coast. The railroad stays to the north of US 20/OR 34, with the exception of a spur line that begins at the Georgia-Pacific lumber manufacturer located on the western edge of the city in the southeast corner of the US 20/OR 34 intersection.

There are no intercity passenger rail facilities in Philomath. The nearest intercity passenger rail service is located in Albany.

At-grade crossings

The characteristics of each of the five at-grade rail crossings of public streets are described below[17]. The Federal Railroad Administration Office of Safety and Analysis keeps records of all crashes or other incidents involving trains at at-grade crossings. No incidents have been reported in Philomath in the past 15 years. Additionally, ODOT crash data includes no crashes related to railroad crossings or equipment within the past 5 years.

US 20/OR 34 (spur to Georgia-Pacific):

- One set of tracks
- Paved crossing with no pedestrian facilities
- Railroad crossing signal with gate arm and advance warning signs and pavement markings located approximately 250 to 300 feet on either side of the crossing
- Approximately two trains per day traveling no more than 15 mph

7th Street:

- One set of tracks
- Paved crossing with sidewalks
- Railroad crossing signal with gate arm and advance warning signs and pavement markings located approximately 100 feet on either side of the crossing
- Approximately six trains per day traveling no more than 20 mph

9th Street:

- One set of tracks
- Paved crossing with sidewalks
- Railroad crossing signal with gate arm and advance warning signs and pavement markings located approximately 100 to 125 feet on either side of the crossing

---

[16] Oregon Department of Transportation. *Oregon State Rail Plan – Freight and Passenger Rail System Inventory.* 2014

[17] Federal Railroad Administration Office of Safety and Analysis. *Annual WBAPS 2015*. Jan. 2016.

- Approximately six trains per day traveling no more than 20 mph

13th Street:

- One set of tracks
- Paved crossing with sidewalks on the west side only
- Railroad crossing signal with gate arm and advance warning signs and pavement markings located approximately 130 feet on the south leg of 13th Street and on Pioneer Street
- Approximately six trains per day traveling no more than 20 mph

19th Street:

- One set of tracks
- Paved crossing with no pedestrian facilities
- Railroad crossing signal with gate arm and overhead flashing signals for each direction and advance warning signs and pavement markings located approximately 400 to 500 feet on either side of the crossing
- Approximately six trains per day traveling no more than 20 mph

Intelligent Transportation Systems Facilities

The Central Willamette Valley Intelligent Transportation Systems (ITS) Plan[18] identifies the ITS facilities along US 20/OR 34 in Philomath. The plan shows four existing traffic signals owned by ODOT and existing twisted pair interconnected cable along the westbound couplet of US 20/OR 34. The plan notes that the majority of traffic signals have emergency vehicle preemption and that US 20/OR 34 is a low priority communications corridor in the central Willamette Valley.

Air Travel

There are no airports located within the city limits of Philomath. The nearest airport is located approximately eight miles away in Corvallis. The Corvallis Municipal Airport, owned and operated by the city of Corvallis, is located just to the west of OR 99W about four miles south of downtown. The airport provides support to 156 based commercial and private aircraft. The airport has two runways and serves 52,300 annual operations (i.e., take-offs or landings). Limited commercial air service between Corvallis, Portland, and Newport has been provided in the past, but is not currently provided.

The closest operating public airport is in Eugene, about 40 miles south of Philomath via OR 99W. Owned and operated by the City of Eugene, the public airport last completed a master plan update in 2010.[19] The airport serves public commercial and cargo needs. Nearly 900,000 passengers used the airport over the course of about 62,400 operations in 2015, primarily through Alaska Airlines and United Express.

There are four additional regional airports within about an hour of Philomath in the cities of Albany, Salem, Newport, and McMinnville.

---

[18] ODOT, DKS Associates, and IBI Group. *Central Willamette Valley ITS Plan.* December 2010.
[19] City of Eugene, Airport Master Plan Update. <https://www.eugene-or.gov/1060/Master-Plan-Update>

Waterway and Pipeline

There are currently no known waterway or major pipeline transportation facilities in the Philomath UGB.

How the Transportation System is Managed

Proper management of the transportation system helps ensure that facilities will serve their intended purpose and continue to allow for safe and efficient travel in the future.

Roadway Jurisdiction

Different agencies typically have their own design and operating standards for their transportation facilities. Most roadways in Philomath are owned and maintained by the city. However, some roadways are under the jurisdiction of the state or county as described below.

Oregon Department of Transportation Roadways

- US 20/OR 34

Benton County Roadways

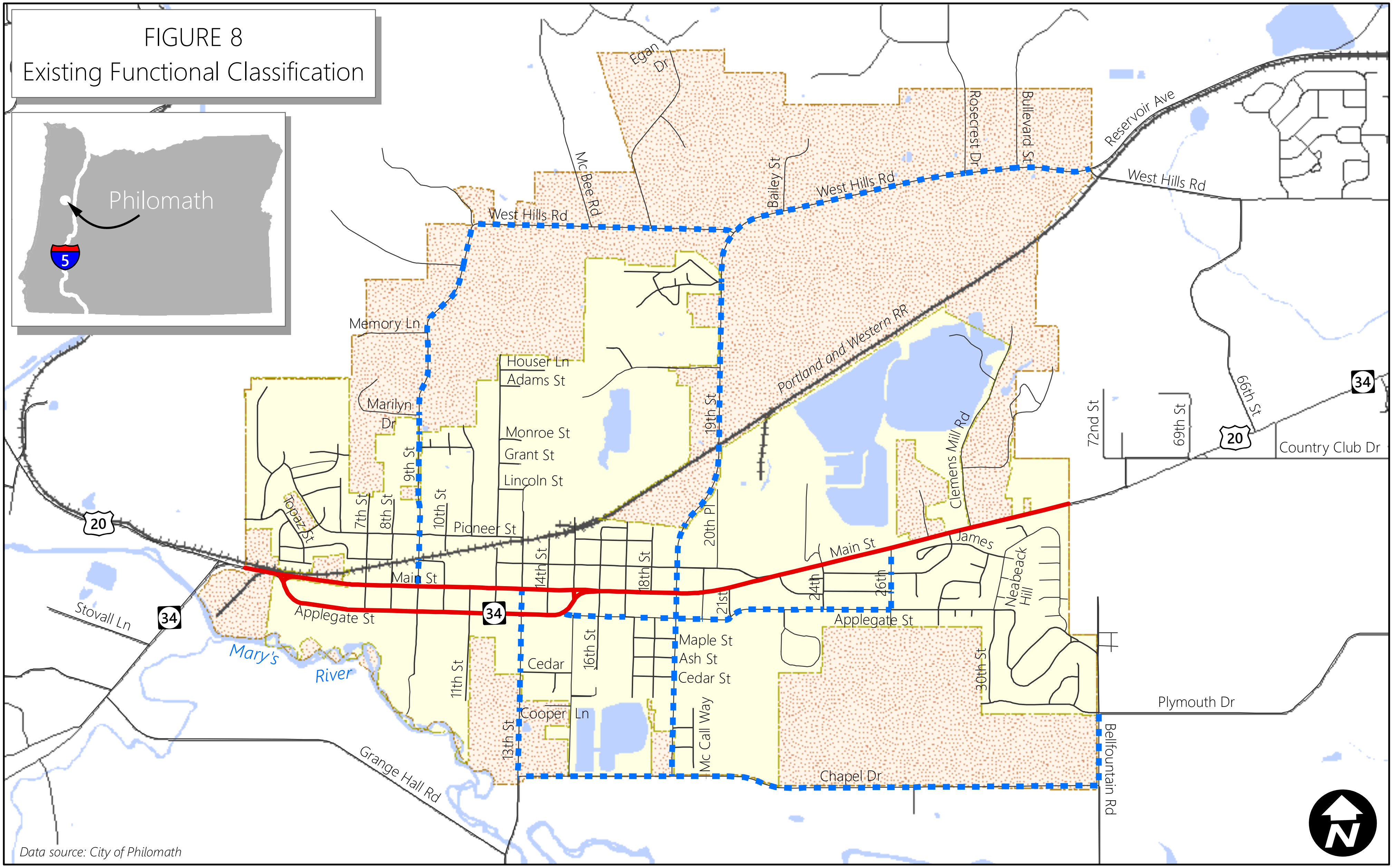
- N 9th Street
- S 13th Street
- N 19th Street
- Bellfountain Road
- Chapel Drive
- West Hills Road

Street Functional Classification and Route Designations

To manage the roadway network, the city classified the roadways based on a hierarchy according to the intended purpose of each road as shown in Figure 8. Roadways intended for high usage generally provide more efficient traffic movement (or mobility) through the city; roadways that primarily provide access to local destinations, such as businesses or residences, have lower usage. From highest to lowest intended usage, the classifications are described below.

- **Major Arterials** carry high volumes of traffic and are usually multi-lane (more than two lanes) in urban areas. The primary function is mobility and to provide for intercity traffic with the access function being minor.
- **Minor Arterials** carry less traffic than major arterials and generally serve shorter trips in a smaller area. They often connect residential, industrial, commercial, and recreational uses. The access function is of substantial importance.
- **Collectors** connect the arterial streets with local streets, neighborhoods, and commercial and industrial areas.
- **Local Streets** provide direct access to properties in Philomath and are not intended to provide efficient travel for through traffic. These roadways are often lined with residences and are designed to serve lower volumes of traffic at low speeds.

FIGURE 8
Existing Functional Classification



City of Philomath
Transportation System Plan
March 2016

Miles 0 0.125 0.25 0.5

Legend

Functional Classification
- Major Arterial
- Collector
- Local

- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

The Federal Highway Functional Classification categories are similar, but currently do not align with Philomath's classification categories. Amending Philomath's functional classification categories to align them with the federal categories will support future federal aid funding eligibility for streets designated as minor collectors or higher. The Federal Highway Functional Classification categories applicable to Philomath include:

- Other Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

US 20/OR 34, which is under the jurisdiction of ODOT, is classified by the state as a Statewide Highway and has further been designated as a State Freight Route and Federal Truck Route. As a Statewide Highway, there is typically a priority on providing efficient movement for longer inter-regional trips. As a State Freight and Federal Truck Route, there is an emphasis on efficient movement of goods and designs that accommodate larger vehicles.

Furthermore, the 1999 Philomath TSP identified the following roads as truck routes:

- US 20/OR 34
- West Hills Road (from east UGB to 19th Street)
- N and S 19th Street
- Bellfountain Road
- Chapel Drive
- S 13th Street
- Grange Hall Road (outside of UGB)
- Plymouth Road (outside of UGB)
- Reservoir Avenue (outside of UGB)

Seismic Lifeline Routes: The Oregon Highway Plan Goal 1, Policy 1E, designates routes for emergency response in the event of an earthquake, categorized as Tier 1, 2 and 3. In Philomath, US 20/OR 34 is classified as a Tier 3 lifeline route. The Tier 3 lifeline routes provide additional connectivity and redundancy to the lifeline systems provided by Tiers 1 and 2.

Mobility Standards/Targets

Mobility standards or targets set thresholds for the maximum amount of congestion that is determined to be acceptable for a given roadway by the agency of jurisdiction. These standards/targets often vary with functional classification, with more congestion deemed to be acceptable for streets with lower classifications (e.g., local streets).

Within Philomath, the mobility targets for US 20/ OR 34 are established by ODOT. For all other streets, the city of Philomath's mobility standards apply. Philomath uses "level of service" (LOS) as the measure of congestion for their standards, while ODOT uses "volume-to-capacity (v/c) ratios." Each is described as follows.

- **Level of Service (LOS):** A "report card" rating (A through F) based on the average delay experienced by motorists. 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 conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested.

  Philomath has identified LOS D as the minimum acceptable operating conditions for both signalized and unsignalized intersections in the city.

- **Volume-to-capacity (v/c) ratio:** A decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation). It is determined by dividing the peak hour traffic volume by the hourly capacity of a given facility. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. At 1.00, capacity has been reached and the facility is oversaturated, resulting in long delays.

  ODOT's mobility targets vary by highway classification, designation, area type, and posted speed. Because Philomath is within the Corvallis Area Metropolitan Planning Organization boundary, the mobility target for US 20/OR 34 requires a maximum v/c ratio of 0.85 for all signalized intersections and uncontrolled movements at unsignalized intersections. Movements that must yield or are stop-controlled (e.g., unsignalized side streets) may operate at v/c ratios as high as 0.95.

Access Spacing

Proper access spacing (i.e., the spacing of street and driveway intersections along a street) balances efficient, safe, and timely travel with access to individual destinations. Proper spacing between access points can reduce congestion, collision rates, and potentially even the need for additional roadway capacity.

Philomath's 1999 TSP contains recommended access spacing guidelines for each street functional classification. For collector streets it is recommended that public street intersections be spaced at least 250 feet apart, with private driveways spaced at least 100 feet apart. For local streets, the recommendations are similar, but there is essentially no minimum spacing for private driveways. Access spacing for arterials streets references the 1991 Oregon Highway Plan spacing standards. However, this plan has been superseded and these standards are no longer applicable to US 20/OR 34 (the only arterial).

ODOT's current access spacing standards for public and private approaches to state highways are based on state highway classification, area type, and posted speed. The applicable standards for US 20/OR 34 are shown in Table 3. In general, the higher the speed limit, the greater the minimum required distance between accesses.

Table 3: Access Spacing standards for US 20/OR 34[20]

Highway Segment	Posted Speed	Minimum Intersection and Driveway Spacing (center to center)
West of Couplet		
West UGB to Couplet	40 mph	800 feet
Main Street (westbound)		
West end of Couplet to 7th Street	40 mph	800 feet
7th Street to East end of Couplet	25 mph	350 feet
Applegate Street (eastbound)		
West end of Couplet to 7th Street	35 mph	500 feet
7th Street to East end of Couplet	25 mph	350 feet
East of Couplet		
East end of Couplet to 21st Street	25 mph	350 feet
21st Street to 24th Street	35 mph	500 feet
24th Street to Newton Street	40 mph	800 feet
Newton Street to East UGB	45 mph	800 feet

[20] ODOT Access Management Standards (Appendix C): www.oregon.gov/ODOT/TD/TP/OHP_AM.shtml

Condition of the Existing Transportation System

The measures described in the previous section were used to assess Philomath's existing transportation system. The findings are summarized below.

Condition of the Pedestrian System

The presence of pedestrian facilities in Philomath was previously discussed. Through a field review of these facilities, it was noted that the design and condition of sidewalks and shared-use paths varies. Maintenance of pedestrian facilities is important, but is an ongoing operational function of the city and not part of the long-range TSP. Establishing design standards to ensure new facilities are constructed to comply with ADA requirements and best practices will be addressed later in the TSP process.

Pedestrian Level of Service Assessment

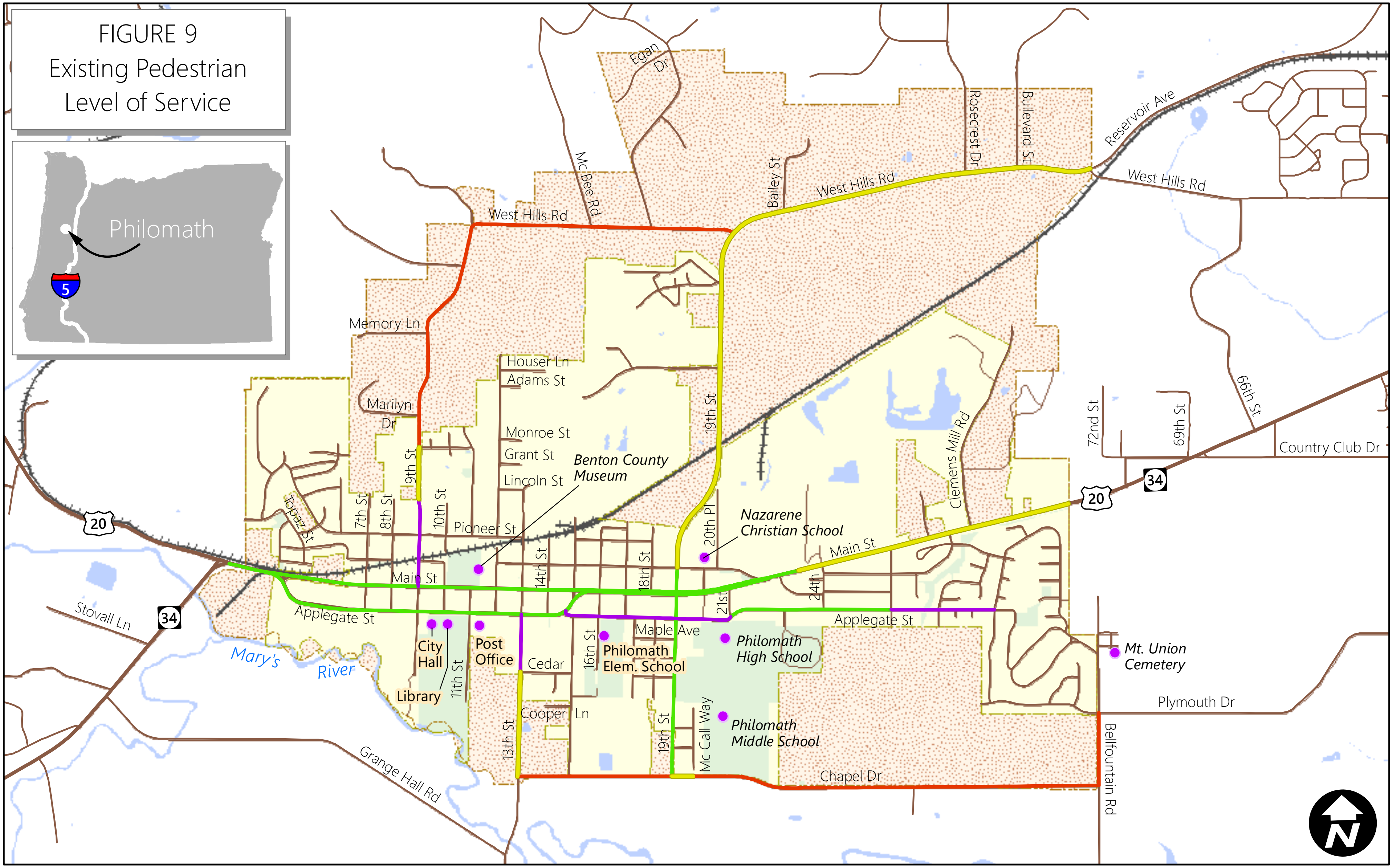
A Pedestrian Level of Service (PLOS) assessment[21] was completed for roadways in Philomath to characterize the quality of service provided on arterial and collector corridors. The quality of service is identified by considering various roadway characteristics and applying a context-based, subjective "Excellent/Good/Fair/Poor" rating. Roadway characteristics that were considered to impact the comfort and safety of pedestrian travel included the width of the outside travel lane, the width of a bicycle lane or shoulder, the presence of buffers from traffic (landscaped or others), the presence of sidewalks or paths, lighting, number of travel lanes, and the speed of motorized traffic. Roadways that had at least three of these characteristics (e.g., lighting, more than a 4-foot wide bicycle lane or shoulder, and sidewalks) received an "Excellent" rating; at least two characteristics received a "Good" rating; at least one characteristic received a "Fair" rating; no positive characteristics received a "Poor" rating. The results of the assessment can be seen in Figure 9.

As shown in Figure 9, the improved section of US 20/OR 34 (Green Street to the west end of the city), Applegate Street, and S 19th Street provide the best experience for pedestrians. Streets where only narrow shoulders are present, such as Chapel Drive, West Hills Road, and a portion of N 9th Street provide a poor experience and should be upgraded in the future.

It should be noted that the PLOS analysis does not consider the difficulty of crossing streets and that residents have commented that crossing US 20/OR 34 is challenging and at times unsafe.

[21] ODOT. *Analysis Procedure Manual Version 2.* Sept. 2015.

FIGURE 9
Existing Pedestrian
Level of Service



City of Philomath
Transportation System Plan
March 2016

0 0.125 0.25 0.5 Miles

Legend

Pedestrian LOS
- Excellent
- Good
- Fair
- Poor

- Activity Generator
- Park

- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Condition of the Bicycle System

Bicycle facilities were generally found to be in good condition during the field review. Notable deficiencies can be found on the roadways with high traffic speeds such as Chapel Drive, Bellfountain Road, and West Hills Road. In the downtown area, the main roads have some pavement damage caused by the high volume of large trucks. US 20/OR 34 west of 7th Street also has limited facilities.

Bicycle Level of Traffic Stress

Similar to the Pedestrian Level of Service assessment, a "Bicycle Level of Traffic Stress" (LTS) analysis was conducted to characterize the bicycling experience on the arterial and collector system. This methodology[22] breaks road segments into four classifications for measuring the effects of traffic-based stress on bicycle riders. The measure of traffic stress quantifies the perceived safety issue of being in close proximity to vehicles, primarily considering the physical distance to traffic and the speed of traffic. The methodology does not include explicit consideration of traffic volume, since the stress caused by proximity is present regardless of the amount of traffic. The four levels of stress are described below:

- **LTS 1:** Represents little traffic stress and requires less attention, so is suitable for all cyclists. This includes children that are trained to safely cross intersections alone and supervising riding parents of younger children. Generally, the age of 10 is assumed to be the earliest age that children can adequately understand traffic and make safe decisions, which is also the reason that many youth bike safety programs target this age level. Traffic speeds are low and there is no more than one lane in each direction. Intersections are easy to cross by children and adults. Typical locations include residential local streets and separated bike paths/cycle tracks.
- **LTS 2:** Represents little traffic stress but requires more attention than young children can handle, so is suitable for teen and adult cyclists with adequate bike handling skills. Traffic speeds are slightly higher but speed differentials are still low and roadways can be up to three lanes wide in total for both directions. Intersections are not difficult to cross for most teenagers and adults. Typical locations include collector-level streets with bike lanes or a central business district.
- **LTS 3:** Represents moderate stress and suitable for most observant adult cyclists. Traffic speeds are moderate but can be on roadways up to five lanes wide. Intersections are still perceived to be safe by most adults. Typical locations include low-speed arterials with bike lanes or moderate speed non-multilane roadways.
- **LTS 4:** Represents high stress and is suitable only for experienced and skilled cyclists. Traffic speeds are moderate to high and can be on roadways from two to over five lanes wide. Intersections can be complex, wide, and or high volume/speed that can be

[22] Mineta Transportation Institute Report 11-19. *Low stress Bicycling and Network Connectivity.* May 2012

perceived as unsafe by adults and are difficult to cross. Typical locations include high-speed or multilane roadways with narrow or no bike lanes.

The results of the Bicycle LTS analysis are illustrated in Figure 10. The speed of adjacent traffic is a major factor in this analysis, so corridors with lower posted speeds tend to have more favorable ratings, while corridors with higher posted speeds (over 35 mph) tend to have less favorable ratings. Therefore, wider shoulders/bike lanes and shared-use paths that provide a greater degree of separation should be considered in higher speed areas such as West Hills Road, N 19th Street, and Chapel Drive. Other areas, such as the downtown core along US 20/OR 34, may be comfortable for some adults, but may not be considered acceptable for children riding to school.

Condition of the Public Transportation System

Philomath residents have access to a significant geographic area via transit service, spanning from Newport, to Bend, to Portland, and including the Amtrak rail station in Albany. However, the frequency and schedule of service are limited, making some trips inconvenient or not possible if a return trip is not available. The limited frequency can also make transfers to other routes unattractive or impossible.

The Philomath Connection offers service during common weekday morning and afternoon commuting periods, but does not offer evening or late-night service. On an average weekday this route serves approximately 130 passengers, of which about 20% access Oregon State University. This route has a lower productivity (passengers per revenue hour) than any other CTS route and an on-time performance of approximately 67 percent.[23]

Transit access is limited to the central area of the city, but stops are relatively frequent and accessible via sidewalks. Most stops do not include amenities such as shelters or benches.

Condition of the Motor Vehicle System

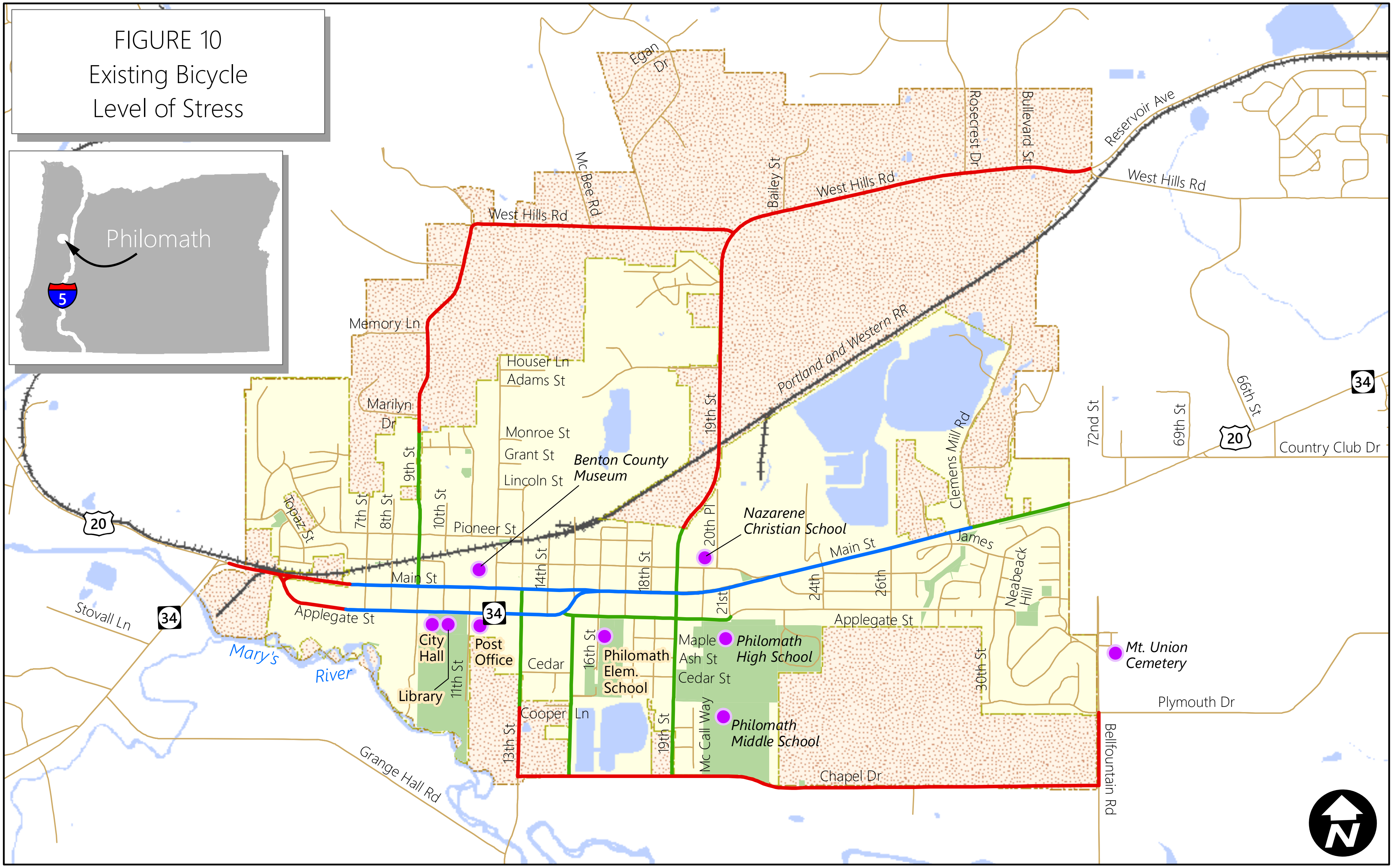
As noted previously, motor vehicle volumes on the roadways in Philomath most commonly peak during weekdays between 5:00 p.m. and 6:00 p.m., and are also generally higher in the summertime. For this reason, the level of congestion experienced at the 14 study intersections was evaluated during this period (representative traffic volumes are shown in Figure 4). The evaluation used 2010 Highway Capacity Manual (HCM) methodology[24] for unsignalized intersections and the 2000 HCM methodology for signalized intersection.[25]

The results of this analysis are shown in Table 4, with intersection operations compared to ODOT and Philomath mobility targets/standards to indicate where congestion is worse than levels determined to be acceptable. As shown, there is little congestion within Philomath and all intersections operate well

[23] Nelson/Nygaard, DRAFT Corvallis Transportation System Plan Update and Transit Development Plan Technical Memorandum #8, Existing Transit Conditions and Baseline Performance Appendix.
[24] Transportation Research Board. *2010 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2010.
[25] Transportation Research Board. *2000 Highway Capacity Manual*, Transportation Research Board, Washington DC, 2000.

within adopted standards/targets for mobility. However, residents have complained about congestion on US 20/OR 34 east of the city between Philomath and Corvallis. Additionally, residents and City staff have observed circulation challenges during school peak periods, particularly regarding busses.

FIGURE 10
Existing Bicycle
Level of Stress



City of Philomath
Transportation System Plan
March 2016

0 0.125 0.25 0.5 Miles

Legend

Bicycle Level of Traffic Stress
- LTS 2
- LTS 3
- LTS 4

*All other roads are LTS 1

- Activity Generator
- Parks
- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Table 4: 30th Highest Hour Existing Intersection Operations

Intersection	Mobility Target/ Standard	30th Highest Hour Volumes		
		Delay (seconds)	*LOS*	*V/C*
Signalized Intersections				
US 20/OR 34 and N 9th Street	$V/C \leq 0.85$	5.1	A	0.34
US 20/OR 34 and N 13th Street	$V/C \leq 0.85$	4.4	A	0.39
US 20/OR 34 and S 13th Street	$V/C \leq 0.85$	5.9	A	0.33
US 20/OR 34 and 19th Street	$V/C \leq 0.85$	13.9	B	0.49
Unsignalized Intersections				
US 20 and OR 34	$V/C \leq 0.85$*	31.6	A/D	0.20
S 16th Street and Applegate Street	LOS D	7.9	A/A	0.11
S 19th Street and Applegate Street	LOS D	9.3	A/A	0.18
N 19th Street and West Hills Road	LOS D	16.2	A/C	0.16
US 20/ OR 34 and 26th Street	$V/C \leq 0.95$	15.4	A/C	0.08
26th Street and Applegate Street	LOS D	7.3	A/A	0.63
Plymouth Drive and Bellfountain Road	LOS D	9.1	A/A	0.27
Bellfountain Road and Chapel Drive	LOS D	10.6	A/B	0.12
S 19th Street and Chapel Drive	LOS D	9.6	A/A	0.08
S 13th Street and Chapel Drive	LOS D	10.1	A/B	0.15

*This intersection is outside of the UGB. The mobility target shown applies to the stopped approach.

Signalized intersections:
Delay = Average Intersection Delay (sec.)
V/C = Volume-to-Capacity Ratio
LOS = Level of Service

Unsignalized intersections:
Delay = Critical Movement Approach Delay (sec.)
V/C = Critical Movement Volume-to-Capacity Ratio on Minor Street
LOS = Level of Service (Major/Minor Road)

Safety Evaluation

The safety of roadways and intersections in Philomath were evaluated through an analysis of crash data, which was reviewed to identify potential patterns related to motor vehicle, pedestrian, and bicycle modes of travel.

Crash Characteristics

For this analysis, the most recent five years of available crash data (2010-2014) for all roadways in Philomath was obtained from ODOT. Over that five-year period, there were 132 crashes within the UGB (average of about 26 per year). Breakdowns of crash types and severities are provided in Figures 11 and 12. Figure 13 provides a map of crash locations throughout the city.

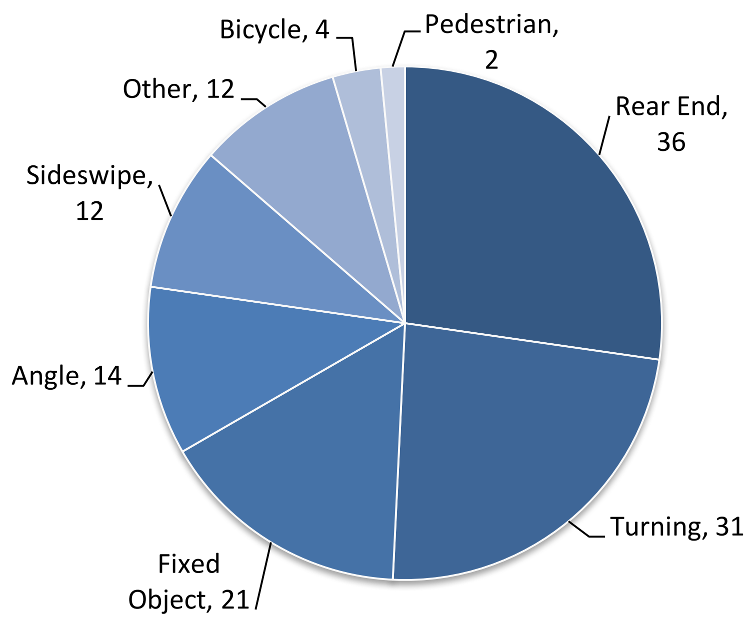


Figure 11: Crash Types in Philomath (2010-2014)

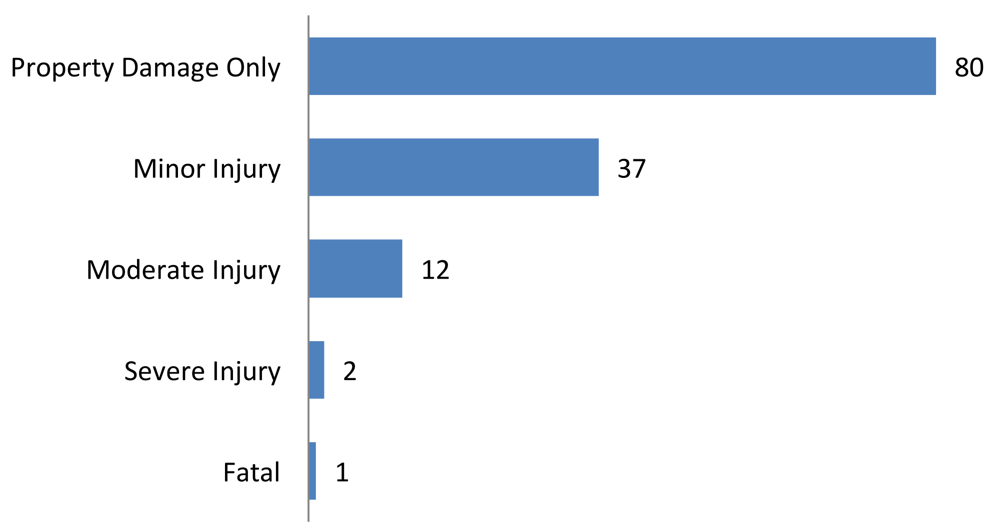
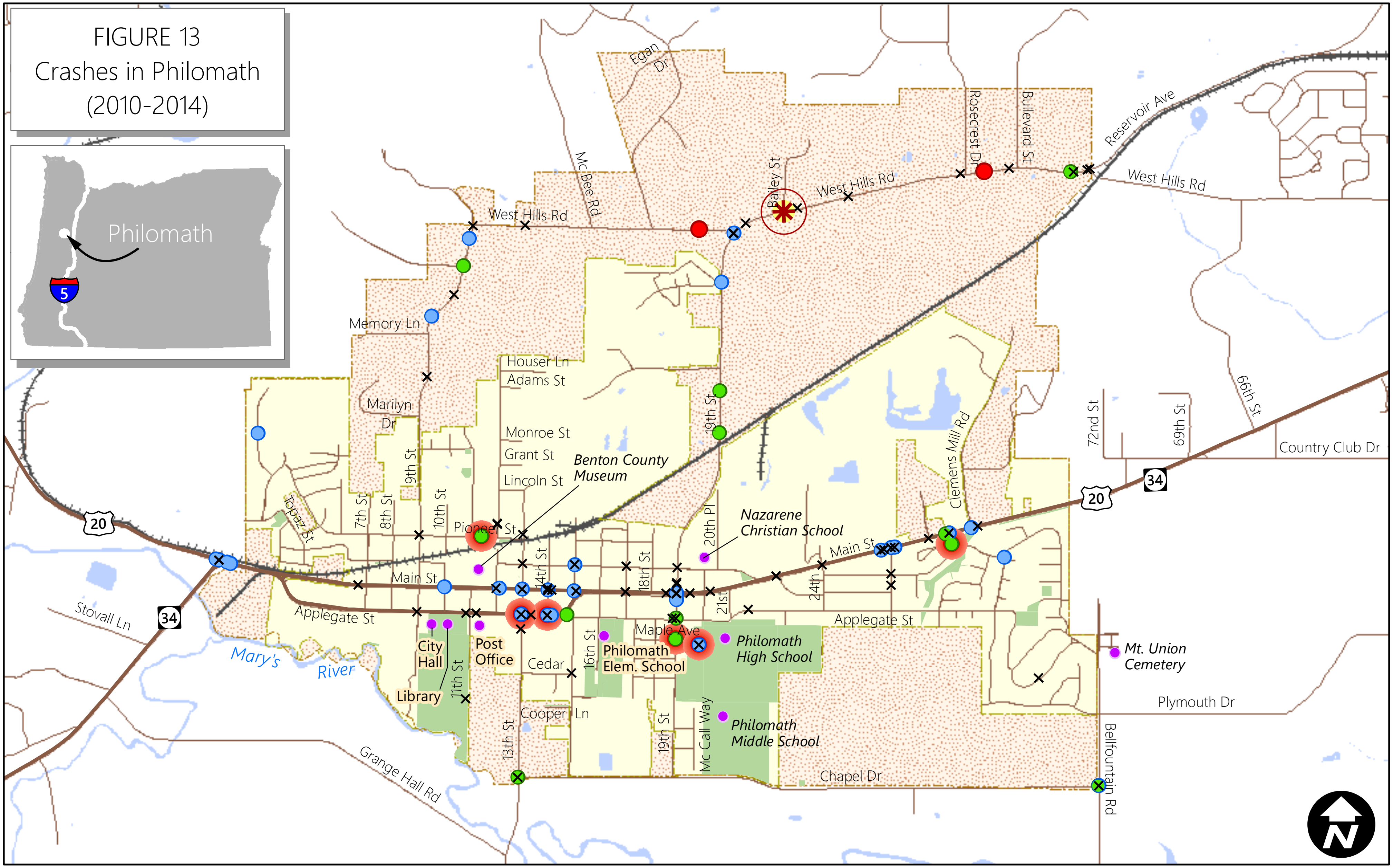


Figure 12: Crash Severities in Philomath (2010-2014)



City of Philomath

Transportation System Plan

March 2016

0 0.125 0.25 0.5 Miles

Legend

Crash Severity

- Severe Injury
- Moderate Injury
- Minor Injury
- Property Damage Only
- Fatal
- Bicycle and Pedestrian Crashes
- Activity Generator
- Parks
- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Crash types vary, but the majority involved rear-end collisions, turning movements, or drivers leaving the road and hitting a fixed object (e.g., mailbox, sign post, ditch, tree, etc.). Only four crashes involved bicyclists. Those crashes all involved cars making turning movements and resulted in moderate to minor injuries. Two crashes involved pedestrians. Both involved cars turning at the intersections on Applegate Street with 13th and 14th Streets, occurred at night, and resulted in minor injuries.

Most crashes resulted in only property damage or minor injuries (about 89 percent). However, there was one crash resulting in a fatality and two others that resulted in serious injuries (i.e., incapacitating). All three of these crashes occurred on West Hills Road, at the intersection of two local streets off the state highway system. The fatality involved a driver that disregarded a stop sign and the serious injury crashes involved driving too fast or carelessly on icy roads.

Intersection Crashes

Crash rates (a measure of the amount of crashes experienced with consideration for the amount of traffic served) for the fourteen study intersections are summarized and compared to the critical crash rate and the 90th percentile crash rate in Table 5. The critical crash rate and the 90th percentile crash rate provide thresholds against which each intersection's crash history can be compared. The critical crash rate compares an intersection's crash history to that of other similar intersections in Philomath. The 90th percentile crash rate compares an intersection's crash history to that of other similar intersections across Oregon. Where an intersection's crash rate is greater than either of these two thresholds, it is an indication that a problem might exist and that further study is warranted.

As shown in Table 5, the signalized intersections in Philomath have very low crash rates. Although the signal at US 20/OR 34 and 19th Street has seen a high absolute frequency of crashes, when considering the volume of traffic at the location the crash rates are low relative to other signalized intersections throughout Oregon. Crash rates for unsignalized intersections are also fairly low, but a few intersections have crash rates greater than the critical and 90th percentile crash rate thresholds. Among those, the intersections on Chapel Drive with 13th Street and Bellfountain Road have only experienced a few crashes over five years, which is likely insignificant. The characteristics of crashes at the remaining two intersections are described below.

Table 5: Intersection Crash Rates in Philomath (2010 – 2014)

Intersection	Crashes (Five Years)	Crash Rate [a]	Critical Crash Rate [b]	90th Percentile Crash Rate [c]
Signalized				
US 20/OR 34 (Main) and N 9th Street	0	0.00	0.80	0.86
US 20/OR 34 (Applegate) and S 13th Street	2	0.13	0.79	0.86
US 20/OR 34 (Main) and N 13th Street	5	0.36	0.82	0.86
US 20/OR 34 and 19th Street	14	0.43	0.69	0.86
Two-Way stop Controlled				
US 20 and OR 34	8	**0.39**	0.29	0.29
16th Street and Applegate Street	0	0.00	0.74	0.41
19th Street and Applegate Street	4	0.40	0.48	0.41
19th Street and West Hills Road	3	0.21	0.32	0.29
US 20/OR 34 and 26th Street	9	**0.37**	0.27	0.29
26th Street and Applegate Street	0	0.00	0.74	0.29
Bellfountain Road and Plymouth Drive	0	0.00	0.55	0.41
Bellfountain Road and Chapel Drive	3	**0.46**	0.44	0.29
19th Street and Chapel Drive	0	0.00	0.51	0.29
13th Street and Chapel Drive	2	**0.38**	0.49	0.29

Bold/Highlighted cells indicate that crash rate is over the critical crash rate or 90th percentile crash rate
[a] Crash rate is the number of intersection crashes per million entering vehicles
[b] Critical crash rates developed using a 95% confidence level, grouping facilities by intersection control type.
[c] Crash rates represent 90th percentile crash rates from a study of 5,000 intersections in Oregon

US 20 and OR 34 is a three-leg, unsignalized intersection, where US 20 continues west to the coast and OR 34 splits off and continues south. There were eight reported collision at this intersection, all of which were rear-end type collisions caused by the driver following too close. Five of the collisions occurred on the west leg of the intersection, two occurred on the south leg, and one occurred in the channelized right turn lane. All of the crashes resulted in a minor injury.

US 20/OR 34 and 26th Street is a three-leg, unsignalized intersection, where US 20/OR 34 is two-way in the east-west direction and 26th Street provides access to the neighborhood located south of the highway. There were nine reported collisions at this intersection, seven of which were rear-end type collisions caused by following too closely (4), careless driving (2), and inattentiveness (1).

The ODOT freight scale and weigh station located at the intersection of US 20/OR 34 at 26th Street is also a factor in considering any improvements to the intersection. Although none of the nine reported crashes at the intersection involved heavy freight vehicles, public feedback has emphasized that freight traffic using the weigh station can contribute to an environment that feels unsafe.

Roadway Segment Safety

Crash rates identifying the number of crashes per million vehicle miles traveled were calculated for sections of US 20/OR 34 through the city and compared to statewide average rates for similar highways. The reported crash rates are shown in Table 6. Each of the segments of US 20/OR 34 experienced crash rates below statewide averages during each of the last five years, indicating that the frequency of crashes was consistently low compared to similar highways.

Table 6: US 20/OR 34 Highway Segment Crash Rates (2010-2014)

	Crashes per million vehicle miles traveled				
US 20/OR 34 Highway Segment	2010	2011	2012	2013	2014
East UGB to Couplet	1.37	1.06	1.21	1.02	1.15
Westbound Couplet (Main St)	2.43	1.88	2.50	0.62	1.20
Eastbound Couplet (Applegate St)	0.46	0.94	1.33	0.44	0.86
Statewide Average Crash Rate*	2.50	2.84	2.80	2.82	2.93

* for Principal Arterials in Urban Cities

Safety Priority Index System (SPIS) Assessment

The crash analysis was supplemented by a review of ODOT Safety Priority Index System listings for locations in the city that ranked among the state's top ten percent of hazardous locations. The Safety Priority Index System (SPIS) is a method developed by ODOT for identifying hazardous locations on state highways, with the score based on three years of crash data, considering crash frequency, rate, and severity. ODOT bases its SPIS on 0.10-mile segments to account for variances in how crash locations are reported. This rating provides a general comparison of the overall safety of the highway based on crash information for all highway segments throughout the state.

According to ODOT 2014 SPIS ratings (data reported between 2011 and 2013), there are no segments of US 20/OR 34 in Philomath that rank among the top ten percent of state highways in Oregon.

Community-Reported Safety Concerns

Additional safety concerns have been reported by community members during the public outreach process, beyond those previously discussed. These locations are not verified through the data-driven analysis results, but offer valuable insight into the perception of road safety by the community.

- North 9th Street, between Pioneer Street and Quail Glenn Drive, is difficult for bicycles and pedestrians to navigate. Reasons include a steep hill, limited shoulders and missing sidewalks, and frequent speeding by motor vehicles.
- Northbound left turn movements entering US 20/OR 34 from 17th Street are difficult to complete, especially for larger vehicles. Community members commented that the design

makes it hard for vehicles to complete a two-stage left turn because there is insufficient room for longer vehicles to wait in the median.

- The enhanced pedestrian crossing of US 20/OR 34 at 17th Street was generally appreciated, although comments indicate some drivers find the beacons have low visibility in sunset glare conditions or are too high to be visible to nearby approaching vehicles.
- Generally, concern was expressed for pedestrians crossing US 20/OR 34, especially school students. Conflicts with speeding vehicles and freight vehicles amplify these concerns.

Summary of Existing Transportation Issues

Several existing transportation system issues were noted in this memorandum.

Key transportation system issues for pedestrians in Philomath include:

- Sidewalks are absent on most streets north of Pioneer Street, on most of S 13th Street, and along US 20/OR 34 east of Green Street.
- Residents have commented that US 20/OR 34 can be difficult to cross on foot.
- Continued maintenance of sidewalks and ongoing improvements to meet ADA requirements are needed.

Key transportation system issues for bicyclists in Philomath include:

- With the exception of US 20/OR 34, 19th Street, West Hills Road east of 19th Street, and portions of Applegate Street, there is a lack of separated bicycle facilities.
- Bicycle travel on facilities adjacent to higher speed vehicle traffic may be uncomfortable for younger or less experienced bicycle riders.

Key transportation system issues for transit users in Philomath include:

- The frequency of bus service is limited, making some trips inconvenient or not possible.
- Transit access is limited to the central area of the city, but it is still accessible within a one-mile walk to the remainder of the city.
- Most stops do not include amenities such as shelters or benches.

Key transportation system issues for drivers in Philomath include:

- Street connectivity is limited by the railroad running across the north side of the city (this impacts walking and biking as well).
- Due to limited regional connectivity, some streets in Philomath are affected by routing of traffic between US 20/OR 34 and OR 99W to the south.
- Residents have complained about congestion on US 20/OR 34 east of the city between Philomath and Corvallis.
- There have been several rear-end crashes at the intersection of US 20/OR 34 at 26th Street.
- There have been several rear-end crashes at the intersection of US 20 at OR 34 (just outside of the city).

Appendix

Seasonal Factor

Intersection Volumes

Intersection Traffic Operations

Intersection Crash Rates

Collision Data

Seasonal Factor

Philomath Traffic Count Data

The traffic count data were collected in both 2012 and 2015. Counts were collected at five intersections in May 2012; a.m. and p.m. peak hour counts[1] were collected on May 15, 2012 from 6-9 a.m. and 4-6 p.m. at the intersection of 26th Street and US 20/OR 34 and the intersection of Bellfountain Road and Chapel Drive; 16-hr turning movement counts and vehicle classifications were collected on May 16, 2012 at the intersection of 19th Street and US 20/OR 34[2] and on May 30, 2012 at the intersection of US 20 and OR 34, and 19th Street and Chapel Drive.[3]

Midday and p.m. peak hour counts were collected on October 28, 2015 between 2-4 p.m. and 4-6 p.m. at nine intersections[4] including

- Bellfountain Road and Plymouth Drive
- 9th Street and US 20/OR 34
- 13th Street and US 20/OR 34
- 13th Street and Applegate Street
- 13th Street and Chapel Drive
- 16th Street and Applegate Street
- 19th Street and Applegate Street
- 19th Street and West Hills Road
- 26th Street and Applegate Street

Growth Factor Methodology

The counts taken in 2012 were adjusted with the addition of three years of growth for consistency with the 2015 counts. Per the ODOT Analysis Procedures Manual (APM), the ODOT 2033 future volume tables were used to develop growth rates for each location where 2012 counts were collected. The annual growth rates are summarized by location in Table 1 including the rate, the applicable study intersections, the source location, state highway number, and mileage point.

For the two intersections that were not on state facilities (Chapel Drive at Bellfountain Road, Chapel Drive at 19th Street) a growth rate was determined from the adjacent intersections and US 20/OR 34. The growth rate from the adjacent intersections were very low and inconsistent, therefore the conservative (higher) growth rate of 1.47% per year was used at both intersections for consistency.

---

[1] Peak hour counts conducted by All Traffic Data
[2] 16-hr counts collected on May 16th were conducted by All Traffic Data
[3] 16-hr counts collected on May 30th were conducted by Quality Counts
[4] 2015 peak hour counts conducted by All Traffic Data

Table 1: Growth Rate for 2012 Data Collection using 2033 Future Volume Table

Annual Growth Rate	Study Intersections	Highway # (MP)	Source Location
1.47%	• US 20/OR 34 at 19th Street	033 (50.83)	0.02 mile east of 16th Street
		033 (51.35)	0.02 mile east of Green Street
1.37%	• US 20/OR 34 at 26th Street	033 (51.35)	0.02 mile east of Green Street
0.81%	• OR 34 at US 20	027 (58.46)	0.10 mile southwest of Corvallis-Newport Highway
2.17%	• US 20 at OR 34	033 (49.63)	0.10 mile west of Alsea Highway
1.47%	• Bellfountain Road at Chapel Drive • 19th Street at Chapel Drive	033 (50.83)	0.02 mile east of 16th Street
		033 (51.35)	0.02 mile east of Green Street

At the US 20 at OR 34 intersection, there are two annual growth rates reported based on differences in traffic volumes once US 20 and OR 34 separate and become individual highways. Along OR 34, the estimated growth rate 0.1 miles south of the intersection is 0.81%, where the estimated growth rate 0.1 miles west of the intersection is 2.17%. For the US 20 at OR 34 intersection, traffic volumes traveling to and from OR 34 will use the 0.81% growth rate, while traffic volumes traveling to and from US 20 will use the 2.17% growth rate.

Seasonal Factor Methodology

To determine the seasonal factors to be used in the Philomath area, the ODOT Analysis Procedures Manual section 5.4 was used. The first step was to determine if an Automatic Traffic Recorder (ATR) station was located in or near the City of Philomath. The nearest station, 02-003, is located approximately 5 miles outside of Philomath on Alsea Highway (OR 34). This station is not near enough to Philomath and is not located on the main road. The second step was to then determine if there were other ATR stations with similar characteristics as Philomath and traffic volumes within +/- 10% of the annual average daily traffic volumes as reported by the Transportation Volume Table. It was assumed that the city of Philomath has commuter and summer characteristics (due to employment in and proximity to Corvallis and being on a recreational route to the coast). The ATR stations with similar characteristics had greater than +/- 10% traffic volumes.

Due to the previous methods not meeting requirements, the final method to determine a seasonal factor was used. This method uses the Seasonal Trends Table which averages the seasonal trend groupings from the ATR Characteristic Table based on ADT. It was again assumed that Philomath would have commuter and summer characteristics due to its proximity to Corvallis and higher summer peaks due to recreational trips.

Seasonal Factors Results

Seasonal adjustments account for the variation in traffic during the year. The count data collected in Philomath during May of 2012 and on October 28, 2015 generally show traffic volumes that are slightly higher or the same as the average weekday conditions and slightly lower than summer (peak) conditions. The roadways in Philomath most commonly peak during the evening, but generally vary depending on the time of year. For this reason, the traffic count data was adjusted to represent two conditions: the 30th highest hour volume and the average weekday. For estimating the target conditions (either 30 HV or average weekday), seasonal adjustments will be made using the methodology provided by the APM.

To apply a consistent methodology across study intersections, the ATR Seasonal Trend Table is used to identify seasonal adjustments. There are no on-site automatic recording stations (ATRs) within or near the project area and there are no similar ATRs that have a volume within 10% of the majority of the study intersections. The proposed seasonal factors for the City of Philomath TSP are summarized in Table 2. Different trends are used for state facilities and non-state (City or County) facilities. The only state facility in Philomath is US 20/OR 34. The non-state facilities include Chapel Drive, Mt. Union Avenue, 19th Street, South 13th Street, and North 9th Street. The following trends will be used based on facility type:

- State Facilities – average of commuter and summer trends
- City/County Facilities – commuter trends

Table 2: Seasonal Factors for City of Philomath Roads

	State Facilities *(Average of Commuter & Summer Trends)*		City/County Facilities *(Commuter Trends)*	
Count Date	**30th HV**	**Average Weekday**	**30th HV**	**Average Weekday**
October 15	1.105	0.96	1.032	0.94
October 28	1.142	1.00	1.056	0.97
November 1	1.153	1.01	1.064	0.97
May 15*	1.089	0.95	1.028	0.94
May 16*	1.088	0.95	1.028	0.94
May 30*	1.075	0.94	1.037	0.95
June 1*	1.073	0.94	1.038	0.95

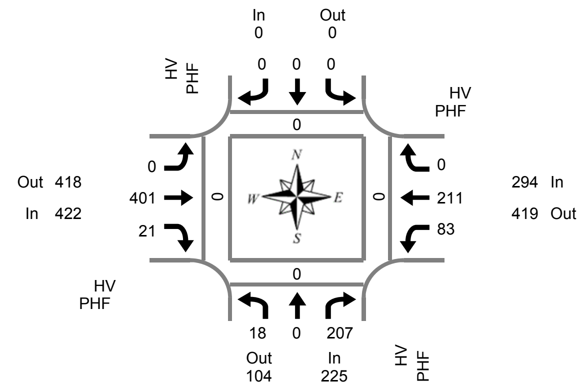
Source: ATR Seasonal Trend Table, ODOT 2015
*Counts were taken in 2012 – seasonal factor is from 2015 trends

To represent summer (peak 30 HV) conditions, factors will be applied to increase the May and October counts by 3 to 14%. To represent average weekday traffic conditions, the May and October counts will be decreased by between 0 to 6%.

Intersection Volumes

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

Hwy 20 & Hwy 34

Wednesday, May 16, 2012
6:30 AM to 9:30 AM

15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
6:30 AM	4	0	39	0	0	0	0	0	0	45	1	0	23	31	0	0	143	0	0	0	0
6:45 AM	3	1	33	0	0	0	0	0	0	55	2	0	16	29	0	0	139	0	0	0	0
7:00 AM	6	0	35	0	0	0	0	0	0	56	1	0	15	41	0	0	154	0	0	0	0
7:15 AM	4	0	54	1	0	0	0	0	0	82	6	0	23	47	0	0	216	0	0	0	0
7:30 AM	5	0	57	0	0	0	0	0	0	102	5	0	21	62	0	0	252	0	0	0	0
7:45 AM	4	0	57	1	0	0	0	0	0	127	7	0	17	51	0	0	263	0	0	0	0
8:00 AM	5	0	39	0	0	0	0	0	0	90	3	0	22	51	0	0	210	0	0	0	0
8:15 AM	5	0	34	1	0	0	0	0	0	64	9	0	26	54	0	0	192	0	0	0	0
8:30 AM	3	0	34	0	1	0	0	0	0	65	8	1	22	59	0	0	192	0	0	0	0
8:45 AM	7	0	40	0	0	0	0	0	0	76	4	0	26	55	0	0	208	0	0	0	0
9:00 AM	6	0	34	0	0	0	0	0	0	86	4	0	23	52	0	0	205	0	0	0	0
9:15 AM	4	0	22	0	0	0	0	0	0	66	6	0	14	56	0	0	168	0	0	0	0
Total Survey	56	1	478	3	1	0	0	0	0	914	56	1	248	588	0	0	2,342	0	0	0	0

Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Total	Pedestrians			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	225	104	329	2	0	0	0	0	422	418	840	0	294	419	713	0	941	0	0	0	0
%HV																					
PHF																					

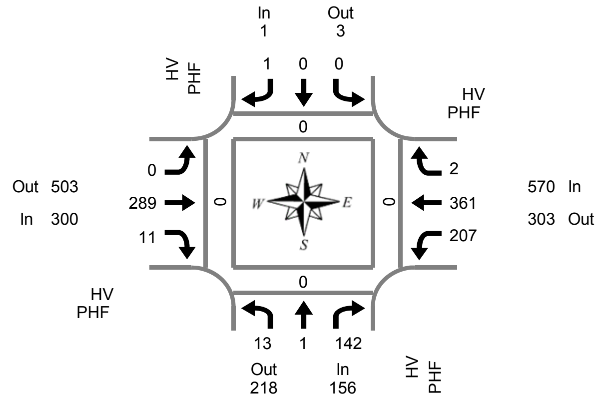
By Movement	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	18	0	207	225	0	0	0	0	0	401	21	422	83	211	0	294	941
%HV																	
PHF	0.90		0.91							0.79	0.75		0.90	0.85			0.89

Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Interval Total	Pedestrians			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
6:30 AM	17	1	161	1	0	0	0	0	0	238	10	0	77	148	0	0	652	0	0	0	0
6:45 AM	18	1	179	1	0	0	0	0	0	295	14	0	75	179	0	0	761	0	0	0	0
7:00 AM	19	0	203	2	0	0	0	0	0	367	19	0	76	201	0	0	885	0	0	0	0
7:15 AM	18	0	207	2	0	0	0	0	0	401	21	0	83	211	0	0	941	0	0	0	0
7:30 AM	19	0	187	2	0	0	0	0	0	383	24	0	86	218	0	0	**917**	0	0	0	0
7:45 AM	17	0	164	2	1	0	0	0	0	346	27	1	87	215	0	0	857	0	0	0	0
8:00 AM	20	0	147	1	1	0	0	0	0	295	24	1	96	219	0	0	802	0	0	0	0
8:15 AM	21	0	142	1	1	0	0	0	0	291	25	1	97	220	0	0	797	0	0	0	0
8:30 AM	20	0	130	0	1	0	0	0	0	293	22	1	85	222	0	0	773	0	0	0	0

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:45 PM to 5:45 PM

Hwy 20 & Hwy 34

Wednesday, May 16, 2012
3: 30 PM to 6:30 PM

15-Minute Interval Summary
3: 30 PM to 6:30 PM

Interval Start Time	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	2	0	27	1	0	0	0	0	0	63	7	0	42	65	0	0	206	0	0	0	0
3:45 PM	8	0	40	0	0	0	0	0	0	78	4	0	37	89	0	0	256	0	0	0	0
4:00 PM	8	0	32	0	0	0	0	0	0	76	1	0	46	70	0	0	233	0	0	0	0
4:15 PM	2	0	29	0	0	1	1	0	0	77	3	0	38	85	1	0	237	0	0	0	0
4:30 PM	1	0	32	0	0	0	0	0	0	107	5	0	44	81	0	1	270	0	0	0	0
4:45 PM	2	1	36	0	0	0	1	0	0	67	2	0	51	92	0	0	252	0	0	0	0
5:00 PM	2	0	44	0	0	0	0	0	0	67	2	0	46	89	2	0	252	0	0	0	0
5:15 PM	6	0	29	0	0	0	0	0	0	82	4	0	50	76	0	0	247	0	0	0	0
5:30 PM	3	0	33	1	0	0	0	0	0	73	3	0	60	104	0	0	276	0	0	0	0
5:45 PM	4	0	27	1	1	0	0	0	0	55	1	0	44	95	0	1	227	0	0	0	0
6:00 PM	2	0	23	0	1	0	0	0	0	55	1	0	41	74	2	0	199	0	0	0	0
6:15 PM	2	0	27	0	0	0	0	0	0	55	3	0	34	71	0	1	192	0	0	0	0
Total Survey	42	1	379	3	2	1	2	0	0	855	36	0	533	991	5	3	2,847	0	0	0	0

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Total	Pedestrians			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	156	218	374	1	1	3	4	0	300	503	803	0	570	303	873	0	1,027	0	0	0	0
%HV																					
PHF																					

By Movement	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	13	1	142	156	0	0	1	1	0	289	11	300	207	361	2	570	1,027
%HV																	
PHF	0.54	0.25	0.81				0.25			0.88	0.69		0.86	0.87	0.25		0.93

PEAK

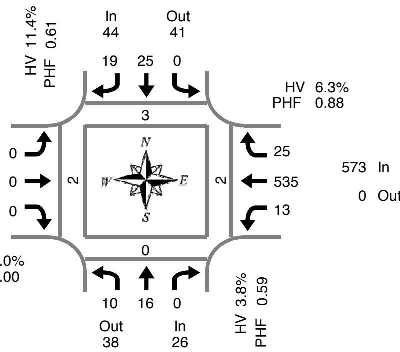
Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Hwy 34				Southbound Access Rd				Eastbound Hwy 34/US 20				Westbound US 20				Interval Total	Pedestrians			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	20	0	128	1	0	1	1	0	0	294	15	0	163	309	1	0	932	0	0	0	0
3:45 PM	19	0	133	0	0	1	1	0	0	338	13	0	165	325	1	1	996	0	0	0	0
4:00 PM	13	1	129	0	0	1	2	0	0	327	11	0	179	328	1	1	992	0	0	0	0
4:15 PM	7	1	141	0	0	1	2	0	0	318	12	0	179	347	3	1	1,011	0	0	0	0
4:30 PM	11	1	141	0	0	0	1	0	0	323	13	0	191	338	2	1	**1,021**	0	0	0	0
4:45 PM	13	1	142	1	0	0	1	0	0	289	11	0	207	361	2	0	1,027	0	0	0	0
5:00 PM	15	0	133	2	1	0	0	0	0	277	10	0	200	364	2	1	1,002	0	0	0	0
5:15 PM	15	0	112	2	2	0	0	0	0	265	9	0	195	349	2	1	949	0	0	0	0
5:30 PM	11	0	110	2	2	0	0	0	0	238	8	0	179	344	2	2	894	0	0	0	0

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:55 PM to 3:55 PM

N 9th St & Hwy 34

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
2:00 PM	0	3	0	0	0	1	0	0	0	0	0	0	1	35	0	0	40	0	0	0	0
2:05 PM	0	0	0	0	0	1	0	0	0	0	0	0	2	39	1	0	43	0	0	0	0
2:10 PM	0	2	0	0	0	3	2	0	0	0	0	0	1	36	3	0	47	0	0	0	0
2:15 PM	1	0	0	0	0	2	2	0	0	0	0	0	0	41	2	0	48	0	2	1	0
2:20 PM	1	0	0	0	0	2	2	0	0	0	0	0	3	26	0	0	34	0	0	0	0
2:25 PM	0	0	0	0	0	5	2	0	0	0	0	0	2	34	3	0	46	0	0	0	0
2:30 PM	1	2	0	0	0	3	3	0	0	0	0	0	0	39	0	0	48	0	0	0	0
2:35 PM	1	1	0	0	0	0	3	0	0	0	0	0	1	31	3	0	40	1	0	0	0
2:40 PM	0	0	0	0	0	2	1	0	0	0	0	0	1	39	0	0	43	0	0	0	0
2:45 PM	1	1	0	0	0	2	1	0	0	0	0	0	3	32	3	0	43	0	1	0	0
2:50 PM	0	1	0	0	0	2	2	0	0	0	0	0	1	29	1	0	36	1	0	0	0
2:55 PM	0	1	0	0	0	4	1	0	0	0	0	0	1	42	3	0	52	0	0	0	0
3:00 PM	1	2	0	0	0	2	3	0	0	0	0	0	0	48	2	2	58	0	0	0	0
3:05 PM	0	0	0	0	0	5	3	0	0	0	0	0	1	32	1	0	42	0	0	0	0
3:10 PM	0	1	0	0	0	1	0	0	0	0	0	0	2	40	1	0	45	0	0	0	0
3:15 PM	0	1	0	0	0	1	1	0	0	0	0	0	1	53	2	0	59	0	0	0	0
3:20 PM	2	2	0	0	0	0	2	0	0	0	0	0	2	44	5	0	57	0	0	0	0
3:25 PM	3	0	0	0	0	2	1	0	0	0	0	0	0	53	3	0	62	2	0	1	0
3:30 PM	0	1	0	0	0	3	1	0	0	0	0	0	0	46	1	0	52	0	0	0	0
3:35 PM	1	3	0	0	0	0	1	0	0	0	0	2	2	45	2	0	54	0	0	1	0
3:40 PM	1	3	0	0	0	3	1	0	0	0	0	0	0	51	0	0	59	0	0	0	1
3:45 PM	1	2	0	0	0	2	2	0	0	0	0	0	3	39	2	0	51	0	0	0	0
3:50 PM	1	0	0	0	0	2	3	0	0	0	0	0	1	42	3	1	52	1	0	0	1
3:55 PM	0	1	0	0	0	3	3	0	0	0	0	0	0	43	2	0	52	0	0	0	0
Total Survey	15	27	0	0	0	51	40	0	0	0	0	2	28	959	43	3	1,163	5	3	3	2

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
2:00 PM	0	5	0	0	0	5	2	0	0	0	0	0	4	110	4	0	130	0	0	0	0
2:15 PM	2	0	0	0	0	9	6	0	0	0	0	0	5	101	5	0	128	0	2	1	0
2:30 PM	2	3	0	0	0	5	7	0	0	0	0	0	2	109	3	0	131	1	0	0	0
2:45 PM	1	3	0	0	0	8	4	0	0	0	0	0	5	103	7	0	131	1	1	0	0
3:00 PM	1	3	0	0	0	8	6	0	0	0	0	0	3	120	4	2	145	0	0	0	0
3:15 PM	5	3	0	0	0	3	4	0	0	0	0	0	3	150	10	0	178	2	0	1	0
3:30 PM	2	7	0	0	0	6	3	0	0	0	0	2	2	142	3	0	165	0	0	1	1
3:45 PM	2	3	0	0	0	7	8	0	0	0	0	0	4	124	7	1	155	1	0	0	1
Total Survey	15	27	0	0	0	51	40	0	0	0	0	2	28	959	43	3	1,163	5	3	3	2

Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	26	38	64	0	44	41	85	0	0	564	564	2	573	0	573	3	643	3	0	2	2
%HV	3.8%				11.4%				0.0%				6.3%				6.5%				
PHF	0.59				0.61				0.00				0.88				0.90				

By Movement	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	10	16	0	26	0	25	19	44	0	0	0	0	13	535	25	573	643
%HV	10.0%	0.0%	0.0%	3.8%	0.0%	8.0%	15.8%	11.4%	0.0%	0.0%	0.0%	0.0%	23.1%	6.2%	0.0%	6.3%	6.5%
PHF	0.50	0.50	0.00	0.59	0.00	0.57	0.68	0.61	0.00	0.00	0.00	0.00	0.65	0.89	0.63	0.88	0.90

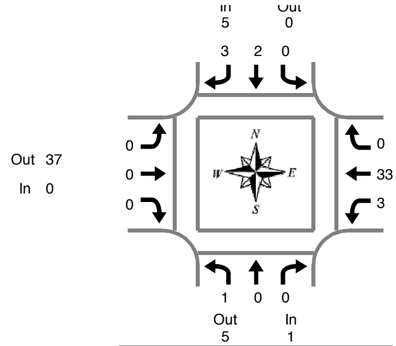
Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval	Pedestrians Crosswalk			
Time	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	Total	North	South	East	West
2:00 PM	5	11	0	0	0	27	19	0	0	0	0	0	16	423	19	0	520	2	3	1	0
2:15 PM	6	9	0	0	0	30	23	0	0	0	0	0	15	433	19	2	535	2	3	1	0
2:30 PM	9	12	0	0	0	24	21	0	0	0	0	0	13	482	24	2	585	4	1	1	0
2:45 PM	9	16	0	0	0	25	17	0	0	0	0	2	13	515	24	2	619	3	1	2	1
3:00 PM	10	16	0	0	0	24	21	0	0	0	0	2	12	536	24	3	643	3	0	2	2

Heavy Vehicle Summary

All Traffic Data
Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:55 PM to 3:55 PM

N 9th St & Hwy 34

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	5
2:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
2:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
2:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
2:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	7	7
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
2:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
2:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
2:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	3	4
2:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
2:55 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
3:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	8
3:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
3:30 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	3	0	3	5
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
3:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	2	1	0	3	4
3:50 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	4	0	4	6
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Survey	1	0	0	1	0	2	4	6	0	0	0	0	5	73	1	79	86

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	14	0	15	15
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	10	10
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1	12	12
2:45 PM	0	0	0	0	0	0	2	2	0	0	0	0	0	6	0	6	8
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	15
3:30 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	9	0	9	11
3:45 PM	1	0	0	1	0	1	1	2	0	0	0	0	2	6	0	8	11
Total Survey	1	0	0	1	0	2	4	6	0	0	0	0	5	73	1	79	86

Heavy Vehicle Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 9th St			Southbound N 9th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	5	6	5	0	5	0	37	37	36	0	36	42
PHF	0.25			0.63			0.00			0.60			0.66

By Movement	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	0	2	3	5	0	0	0	0	3	33	0	36	42
PHF	0.25	0.00	0.00	0.25	0.00	0.50	0.75	0.63	0.00	0.00	0.00	0.00	0.38	0.55	0.00	0.60	0.66

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

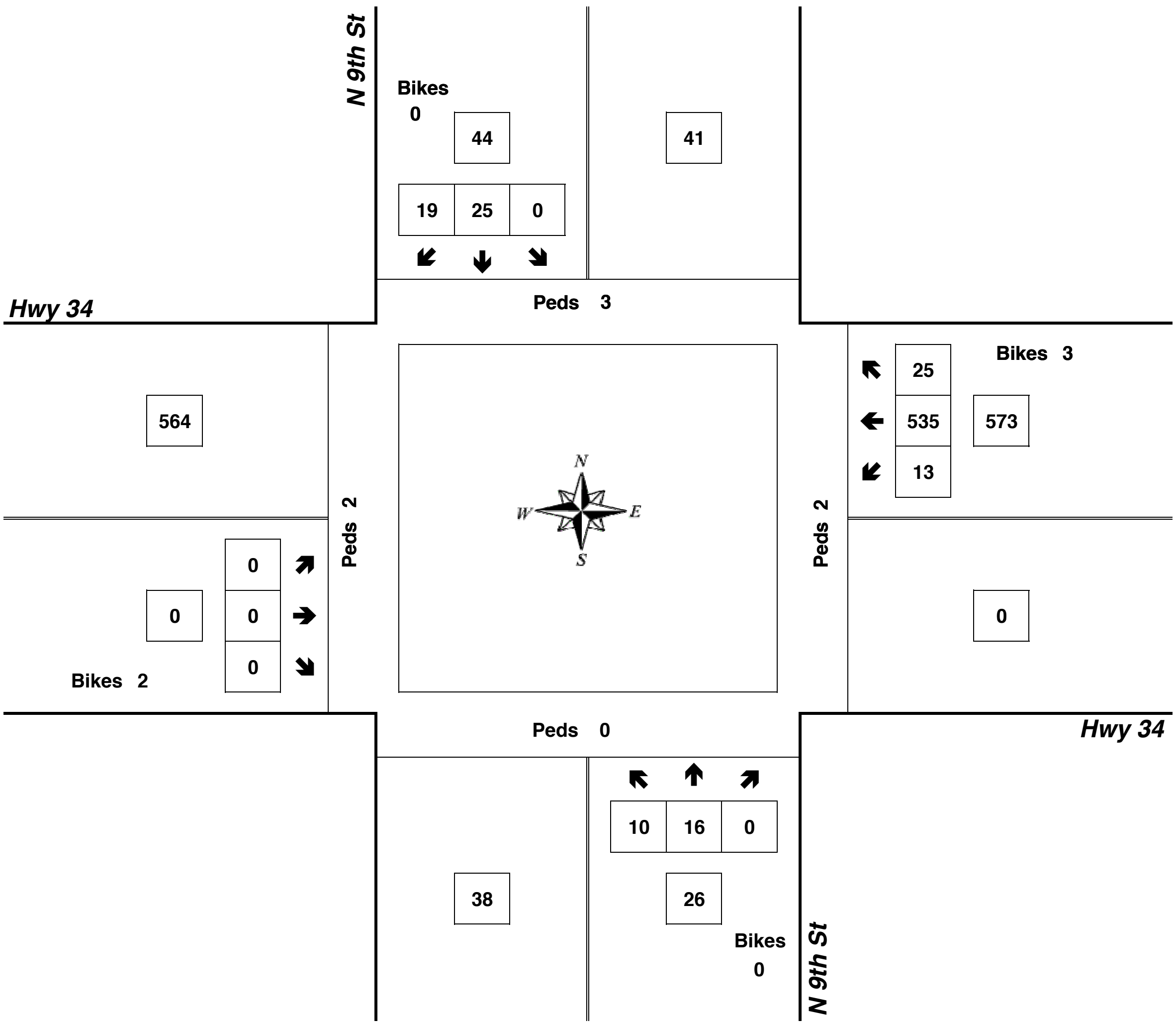
Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	2	2	0	0	0	0	2	40	1	43	45
2:15 PM	0	0	0	0	0	0	2	2	0	0	0	0	2	29	1	32	34
2:30 PM	0	0	0	0	0	0	2	2	0	0	0	0	1	35	1	37	39
2:45 PM	0	0	0	0	0	1	3	4	0	0	0	0	1	33	0	34	38
3:00 PM	1	0	0	1	0	2	2	4	0	0	0	0	3	33	0	36	41

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 9th St & Hwy 34

2:55 PM to 3:55 PM
Wednesday, October 28, 2015



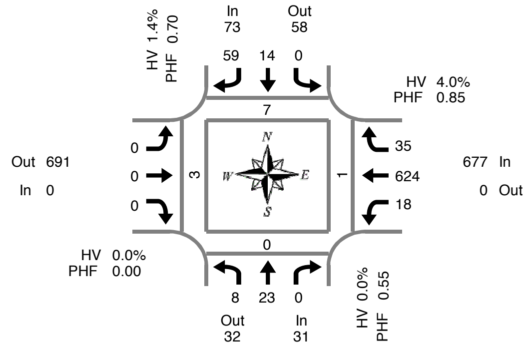
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.88	6.3%	573
NB	0.59	3.8%	26
SB	0.61	11.4%	44
Intersection	0.90	6.5%	643

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

N 9th St & Hwy 34

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	1	0	0	0	0	2	0	0	0	0	0	3	44	0	0	50	0	0	0	0
4:05 PM	0	3	0	0	0	1	3	0	0	0	0	0	4	52	4	1	67	0	0	0	0
4:10 PM	0	2	0	0	0	5	4	0	0	0	0	0	0	48	3	1	62	3	0	1	0
4:15 PM	1	1	0	0	0	2	8	0	0	0	0	1	3	50	3	0	68	0	0	0	2
4:20 PM	1	1	0	0	0	5	5	0	0	0	0	0	0	50	1	0	63	0	0	0	0
4:25 PM	0	2	0	0	0	1	4	0	0	0	0	0	1	38	2	0	48	0	0	0	0
4:30 PM	0	1	0	0	0	0	2	0	0	0	0	0	1	44	5	0	53	0	1	2	0
4:35 PM	0	0	0	0	0	0	2	0	0	0	0	0	2	44	3	0	51	0	0	0	0
4:40 PM	1	1	0	0	0	2	2	0	0	0	0	0	2	44	0	0	52	1	0	0	0
4:45 PM	0	0	0	0	0	2	3	0	0	0	0	0	2	36	3	0	46	3	0	0	0
4:50 PM	0	1	0	0	0	0	3	0	0	0	0	0	2	57	2	0	65	0	0	0	0
4:55 PM	0	2	0	0	0	1	5	0	0	0	0	0	3	62	3	0	76	2	0	1	2
5:00 PM	1	1	0	0	0	2	11	0	0	0	0	0	5	56	1	0	77	0	0	0	0
5:05 PM	1	2	0	0	0	1	3	0	0	0	0	0	4	32	3	0	46	0	0	0	0
5:10 PM	0	1	0	0	0	2	7	0	0	0	0	0	0	61	1	1	72	0	0	0	0
5:15 PM	1	3	0	0	0	2	5	0	0	0	0	0	0	45	5	0	61	2	0	0	0
5:20 PM	0	1	0	0	0	1	4	0	0	0	0	0	1	46	1	0	54	0	0	0	0
5:25 PM	3	2	0	0	0	1	4	0	0	0	0	0	1	46	4	1	61	1	0	0	0
5:30 PM	1	5	0	0	0	1	4	0	0	0	0	0	0	33	5	0	49	0	0	0	0
5:35 PM	0	3	0	0	0	1	6	0	0	0	0	0	1	57	2	0	70	0	0	0	0
5:40 PM	0	1	0	0	0	1	6	0	0	0	0	0	1	75	5	0	89	0	0	0	0
5:45 PM	1	1	0	0	0	1	1	0	0	0	0	0	0	54	3	0	61	2	0	0	1
5:50 PM	1	3	0	0	0	0	2	0	0	0	0	0	3	39	2	0	50	0	0	0	0
5:55 PM	2	4	0	0	0	0	4	0	0	0	0	0	2	48	3	0	63	0	0	0	0
Total Survey	14	42	0	0	0	32	100	0	0	0	0	1	41	1,161	64	4	1,454	14	1	4	5

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	6	0	0	0	6	9	0	0	0	0	0	7	144	7	2	179	3	0	1	0
4:15 PM	2	4	0	0	0	8	17	0	0	0	0	1	4	138	6	0	179	0	0	0	2
4:30 PM	1	2	0	0	0	2	6	0	0	0	0	0	5	132	8	0	156	1	1	2	0
4:45 PM	0	3	0	0	0	3	11	0	0	0	0	0	7	155	8	0	187	5	0	1	2
5:00 PM	2	4	0	0	0	5	21	0	0	0	0	0	9	149	5	1	195	0	0	0	0
5:15 PM	4	6	0	0	0	4	13	0	0	0	0	0	2	137	10	1	176	3	0	0	0
5:30 PM	1	9	0	0	0	3	16	0	0	0	0	0	2	165	12	0	208	0	0	0	0
5:45 PM	4	8	0	0	0	1	7	0	0	0	0	0	5	141	8	0	174	2	0	0	1
Total Survey	14	42	0	0	0	32	100	0	0	0	0	1	41	1,161	64	4	1,454	14	1	4	5

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	31	32	63	0	73	58	131	0	0	691	691	0	677	0	677	2	781	7	0	1	3
%HV	0.0%				1.4%				0.0%				4.0%				3.6%				
PHF	0.55				0.70				0.00				0.85				0.89				

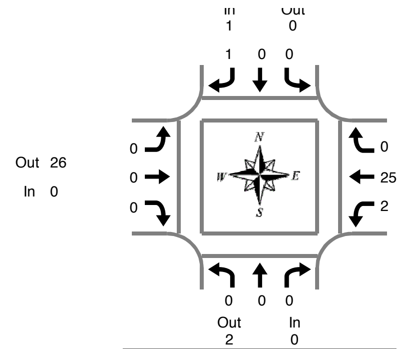
By Movement	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	8	23	0	31	0	14	59	73	0	0	0	0	18	624	35	677	781
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	1.4%	0.0%	0.0%	0.0%	0.0%	11.1%	4.0%	0.0%	4.0%	3.6%
PHF	0.50	0.58	0.00	0.55	0.00	0.70	0.70	0.70	0.00	0.00	0.00	0.00	0.38	0.84	0.73	0.85	0.89

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	3	15	0	0	0	19	43	0	0	0	0	1	23	569	29	2	701	9	1	4	4
4:15 PM	5	13	0	0	0	18	55	0	0	0	0	1	25	574	27	1	717	6	1	3	4
4:30 PM	7	15	0	0	0	14	51	0	0	0	0	0	23	573	31	2	714	9	1	3	2
4:45 PM	7	22	0	0	0	15	61	0	0	0	0	0	20	606	35	2	766	8	0	1	2
5:00 PM	11	27	0	0	0	13	57	0	0	0	0	0	18	592	35	2	753	5	0	0	1

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

N 9th St & Hwy 34

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:25 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	2	0	3	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:35 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total Survey	0	1	0	1	0	0	1	1	0	0	0	0	6	47	0	53	55

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	5	0	7	7
4:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	2	5	0	7	8
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	7	0	8	8
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6	6
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	6	0	6	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	10
Total Survey	0	1	0	1	0	0	1	1	0	0	0	0	6	47	0	53	55

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound N 9th St			Southbound N 9th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	2	2	1	0	1	0	26	26	27	0	27	28
PHF	0.00			0.25			0.00			0.61			0.58

By Movement	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	0	1	1	0	0	0	0	2	25	0	27	28
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.25	0.57	0.00	0.61	0.58

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

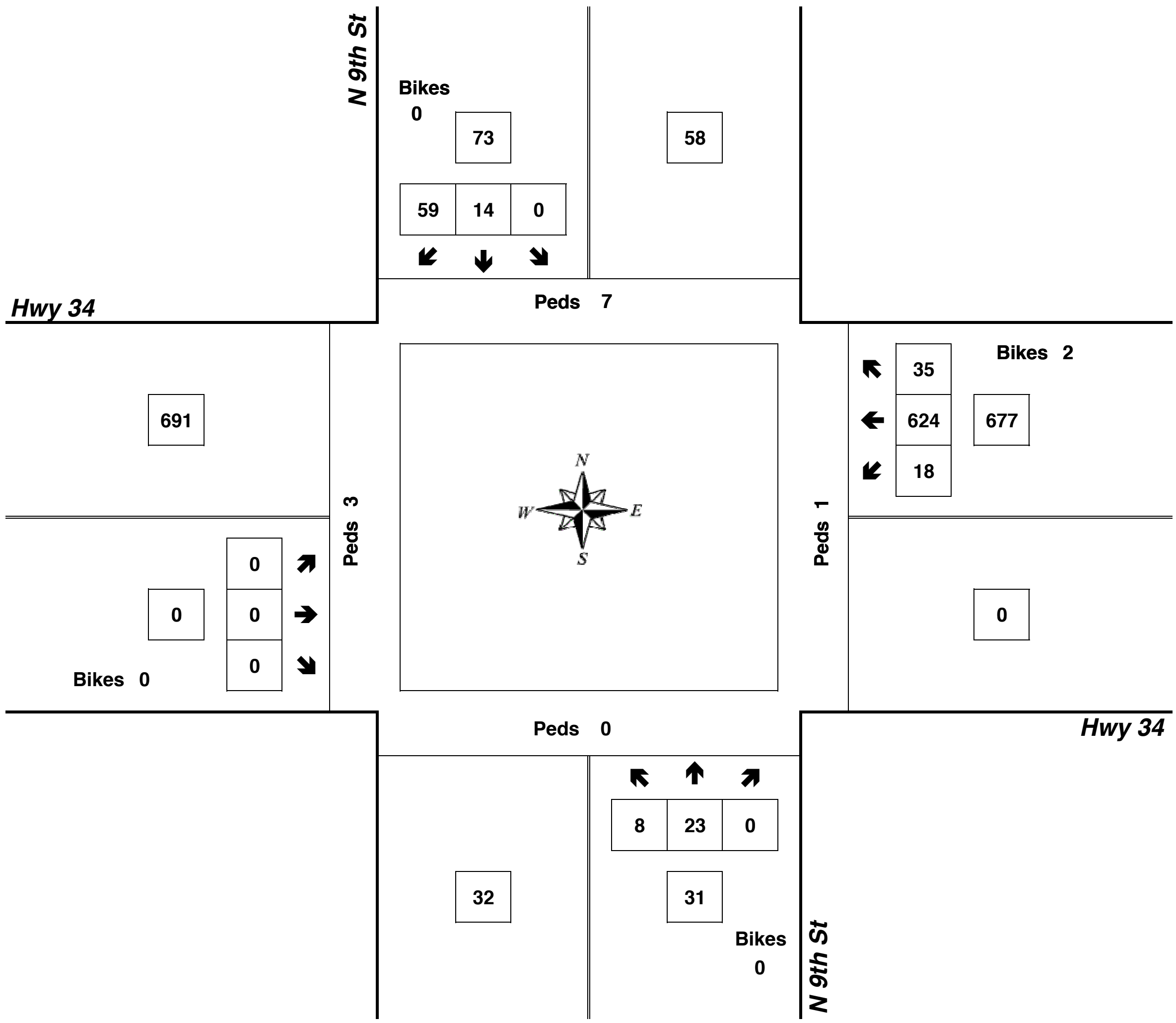
Interval Start Time	Northbound N 9th St				Southbound N 9th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	5	24	0	29	30
4:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	4	24	0	28	29
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	21	0	23	23
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	2	20	0	22	23
5:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	1	23	0	24	25

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 9th St & Hwy 34

4:50 PM to 5:50 PM
Wednesday, October 28, 2015



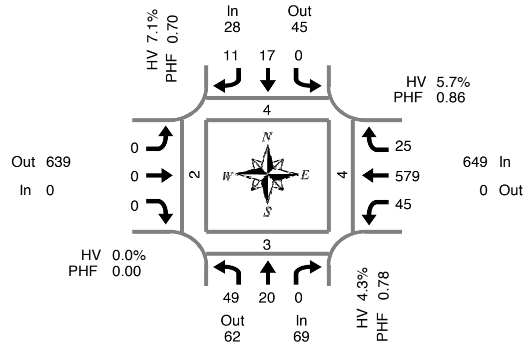
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.85	4.0%	677
NB	0.55	0.0%	31
SB	0.70	1.4%	73
Intersection	0.89	3.6%	781

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:55 PM to 3:55 PM

N 13th St & Hwy 34

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	2	0	0	0	0	2	0	0	0	0	0	0	2	38	1	1	45	0	0	0	0
2:05 PM	5	1	0	0	0	2	0	0	0	0	0	0	3	44	2	0	57	0	0	0	0
2:10 PM	1	1	0	0	0	1	1	0	0	0	0	0	4	47	1	0	56	0	0	0	0
2:15 PM	9	0	0	0	0	1	1	0	0	0	0	0	4	40	1	0	56	0	1	0	0
2:20 PM	0	1	0	0	0	0	1	0	0	0	0	0	2	29	3	0	36	0	1	0	0
2:25 PM	3	1	0	0	0	2	0	0	0	0	0	0	4	49	1	0	60	1	0	0	1
2:30 PM	8	2	0	0	0	4	0	0	0	0	0	0	3	42	2	0	61	0	0	0	0
2:35 PM	1	1	0	0	0	3	3	0	0	0	0	0	3	38	0	0	49	1	0	0	1
2:40 PM	5	1	0	0	0	3	0	1	0	0	0	0	6	43	1	0	59	1	0	0	0
2:45 PM	3	1	0	0	0	2	0	0	0	0	0	0	3	43	2	0	54	0	0	0	0
2:50 PM	5	3	0	0	0	1	1	0	0	0	0	0	3	34	1	0	48	0	2	0	1
2:55 PM	3	1	0	0	0	1	2	0	0	0	0	0	5	53	1	0	66	1	0	0	0
3:00 PM	3	0	0	0	0	2	0	0	0	0	0	0	4	49	3	0	61	1	0	0	0
3:05 PM	5	3	0	0	0	2	0	0	0	0	0	0	4	41	2	0	57	0	0	0	0
3:10 PM	2	2	0	0	0	2	0	0	0	0	0	0	1	48	0	0	55	1	0	0	0
3:15 PM	3	1	0	0	0	0	1	0	0	0	0	0	4	56	2	0	67	0	0	0	0
3:20 PM	3	2	0	0	0	0	2	0	0	0	0	0	7	49	4	0	67	0	0	0	0
3:25 PM	5	5	0	0	0	0	1	0	0	0	0	0	2	62	2	0	77	1	0	1	0
3:30 PM	6	1	0	0	0	3	0	0	0	0	0	0	3	48	1	0	62	0	2	1	2
3:35 PM	5	0	0	0	0	0	3	0	0	0	0	0	2	38	2	0	50	0	0	0	0
3:40 PM	4	1	0	0	0	2	1	0	0	0	0	0	4	50	4	0	66	0	0	0	0
3:45 PM	4	2	0	0	0	3	1	0	0	0	0	0	8	46	0	0	64	0	1	1	0
3:50 PM	6	2	0	0	0	2	0	0	0	0	0	0	1	39	4	0	54	0	0	1	0
3:55 PM	3	2	0	0	0	3	5	0	0	0	0	0	4	43	1	0	61	0	0	0	0
Total Survey	94	34	0	0	0	41	23	1	0	0	0	0	86	1,069	41	1	1,388	7	7	4	5

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	8	2	0	0	0	5	1	0	0	0	0	0	9	129	4	1	158	0	0	0	0
2:15 PM	12	2	0	0	0	3	2	0	0	0	0	0	10	118	5	0	152	1	2	0	1
2:30 PM	14	4	0	0	0	10	3	1	0	0	0	0	12	123	3	0	169	2	0	0	1
2:45 PM	11	5	0	0	0	4	3	0	0	0	0	0	11	130	4	0	168	1	2	0	1
3:00 PM	10	5	0	0	0	6	0	0	0	0	0	0	9	138	5	0	173	2	0	0	0
3:15 PM	11	8	0	0	0	0	4	0	0	0	0	0	13	167	8	0	211	1	0	1	0
3:30 PM	15	2	0	0	0	5	4	0	0	0	0	0	9	136	7	0	178	0	2	1	2
3:45 PM	13	6	0	0	0	8	6	0	0	0	0	0	13	128	5	0	179	0	1	2	0
Total Survey	94	34	0	0	0	41	23	1	0	0	0	0	86	1,069	41	1	1,388	7	7	4	5

Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	69	62	131	0	28	45	73	0	0	639	639	0	649	0	649	0	746	4	3	4	2
%HV	4.3%				7.1%				0.0%				5.7%				5.6%				
PHF	0.78				0.70				0.00				0.86				0.88				

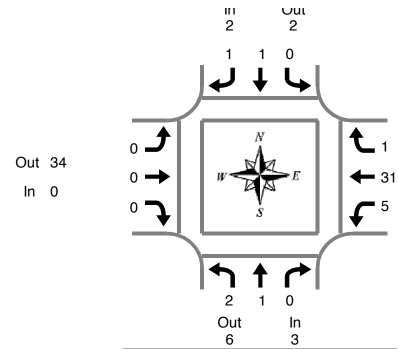
By Movement	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	49	20	0	69	0	17	11	28	0	0	0	0	45	579	25	649	746
%HV	4.1%	5.0%	0.0%	4.3%	0.0%	5.9%	9.1%	7.1%	0.0%	0.0%	0.0%	0.0%	11.1%	5.4%	4.0%	5.7%	5.6%
PHF	0.77	0.63	0.00	0.78	0.00	0.61	0.55	0.70	0.00	0.00	0.00	0.00	0.80	0.87	0.78	0.86	0.88

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	45	13	0	0	0	22	9	1	0	0	0	0	42	500	16	1	647	4	4	0	3
2:15 PM	47	16	0	0	0	23	8	1	0	0	0	0	42	509	17	0	662	6	4	0	3
2:30 PM	46	22	0	0	0	20	10	1	0	0	0	0	45	558	20	0	721	6	2	1	2
2:45 PM	47	20	0	0	0	15	11	0	0	0	0	0	42	571	24	0	730	4	4	2	3
3:00 PM	49	21	0	0	0	19	14	0	0	0	0	0	44	569	25	0	741	3	3	4	2

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
2:55 PM to 3:55 PM

N 13th St & Hwy 34

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
2:05 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	5	0	5	6
2:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	5
2:15 PM	2	0	0	2	0	0	0	0	0	0	0	0	1	0	0	1	3
2:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
2:25 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	8	0	8	9
2:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	5	0	5	6
2:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
2:40 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4
2:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0	3	4
2:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
2:55 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:10 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
3:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	1	4	0	5	6
3:20 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	6	0	7	8
3:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
3:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	3	0	4	5
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	5
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
3:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Survey	8	1	0	9	0	2	1	3	0	0	0	0	9	72	1	82	94

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	13	0	14	15
2:15 PM	2	0	0	2	0	1	0	1	0	0	0	0	2	9	0	11	14
2:30 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	11	0	11	13
2:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	2	6	0	8	10
3:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	3	0	4	5
3:15 PM	1	0	0	1	0	0	1	1	0	0	0	0	2	13	0	15	17
3:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	9	1	11	12
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	8
Total Survey	8	1	0	9	0	2	1	3	0	0	0	0	9	72	1	82	94

Heavy Vehicle Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 13th St			Southbound N 13th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	6	9	2	2	4	0	34	34	37	0	37	42
PHF	0.38			0.25			0.00			0.62			0.62

By Movement	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	1	0	3	0	1	1	2	0	0	0	0	5	31	1	37	42
PHF	0.50	0.25	0.00	0.38	0.00	0.25	0.25	0.25	0.00	0.00	0.00	0.00	0.63	0.60	0.25	0.62	0.62

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

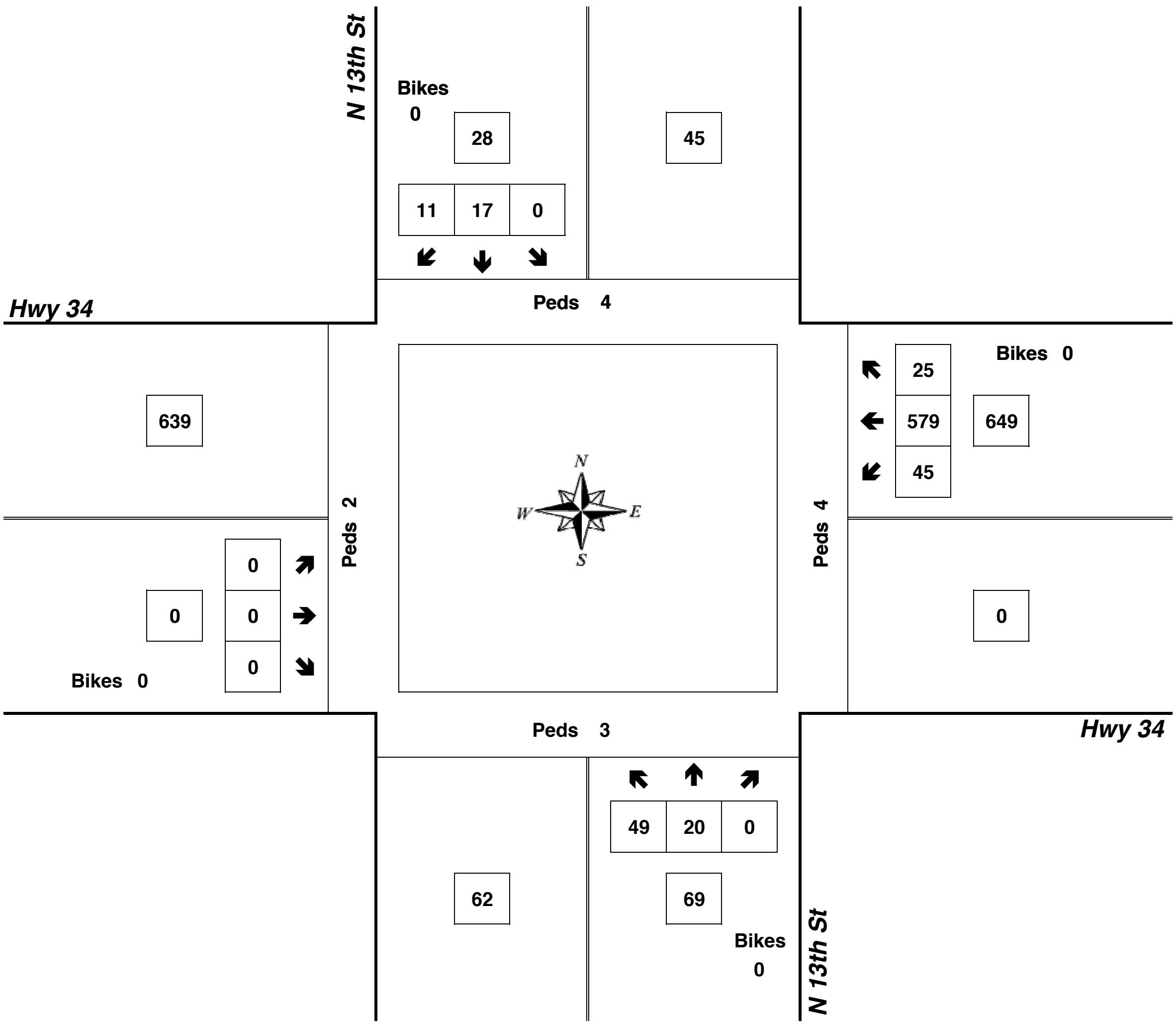
Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	7	0	0	7	0	1	0	1	0	0	0	0	5	39	0	44	52
2:15 PM	6	0	0	6	0	2	0	2	0	0	0	0	5	29	0	34	42
2:30 PM	5	0	0	5	0	1	1	2	0	0	0	0	5	33	0	38	45
2:45 PM	3	1	0	4	0	1	1	2	0	0	0	0	6	31	1	38	44
3:00 PM	1	1	0	2	0	1	1	2	0	0	0	0	4	33	1	38	42

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 13th St & Hwy 34

2:55 PM to 3:55 PM
Wednesday, October 28, 2015



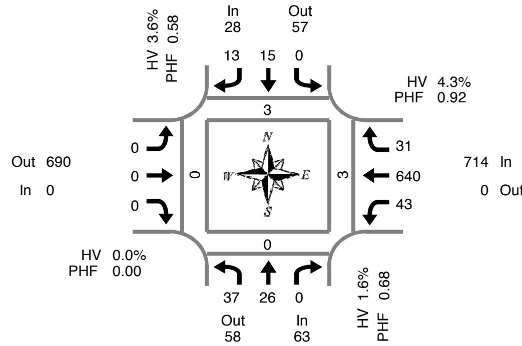
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.86	5.7%	649
NB	0.78	4.3%	69
SB	0.70	7.1%	28
Intersection	0.88	5.6%	746

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

N 13th St & Hwy 34

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 13th St L	T	R	Bikes	Southbound N 13th St L	T	R	Bikes	Eastbound Hwy 34 L	T	R	Bikes	Westbound Hwy 34 L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	4	1	0	0	0	1	1	0	0	0	0	0	2	41	2	0	52	0	0	0	0
4:05 PM	5	0	0	0	0	0	0	0	0	0	0	0	7	59	1	0	72	0	0	0	0
4:10 PM	5	3	0	0	0	3	0	0	0	0	0	0	1	38	3	0	53	0	1	1	0
4:15 PM	4	0	0	0	0	0	2	0	0	0	0	0	2	58	1	0	67	0	0	0	0
4:20 PM	7	1	0	0	0	5	0	0	0	0	0	0	4	49	1	0	67	0	0	0	0
4:25 PM	5	1	0	0	0	4	4	0	0	0	0	0	4	37	3	0	58	0	0	0	4
4:30 PM	3	2	0	0	0	1	1	0	0	0	0	0	6	47	2	0	62	0	0	1	0
4:35 PM	1	2	0	0	0	3	1	0	0	0	0	0	8	46	2	0	63	0	0	0	0
4:40 PM	4	1	0	0	0	0	0	0	0	0	0	0	4	42	1	0	52	0	0	1	0
4:45 PM	0	1	0	0	0	1	1	0	0	0	0	0	7	39	2	0	51	0	0	0	0
4:50 PM	2	2	0	0	0	2	3	0	0	0	0	0	6	56	1	0	72	0	0	0	0
4:55 PM	1	2	0	0	0	1	2	0	0	0	0	0	3	75	1	1	85	0	0	0	0
5:00 PM	3	4	0	0	0	3	1	0	0	0	0	0	1	51	1	0	64	0	0	0	0
5:05 PM	0	2	0	0	0	1	0	0	0	0	0	0	2	51	4	0	60	0	0	0	0
5:10 PM	3	4	0	0	0	1	1	0	0	0	0	0	5	52	3	0	69	0	0	0	0
5:15 PM	2	3	0	0	0	1	1	0	0	0	0	0	7	50	4	0	68	0	0	1	0
5:20 PM	8	1	0	0	0	2	1	0	0	0	0	0	5	45	3	0	65	0	0	0	0
5:25 PM	3	1	0	0	0	1	1	0	0	0	0	0	5	47	1	0	59	1	0	0	0
5:30 PM	4	3	0	0	0	0	1	0	0	0	0	0	2	45	3	0	58	1	0	0	0
5:35 PM	9	3	0	0	0	2	1	0	0	0	0	0	2	50	2	0	69	0	0	2	0
5:40 PM	0	0	0	0	0	1	1	0	0	0	0	0	4	65	2	2	73	1	0	0	0
5:45 PM	2	1	0	0	0	0	0	0	0	0	0	0	1	53	6	0	63	0	0	0	0
5:50 PM	3	0	0	0	0	0	1	0	0	0	0	0	3	45	3	0	55	0	0	0	1
5:55 PM	0	1	0	0	0	1	2	0	0	0	0	0	3	50	2	0	59	0	0	4	0
Total Survey	78	39	0	0	0	34	26	0	0	0	0	0	94	1,191	54	3	1,516	3	1	10	5

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 13th St L	T	R	Bikes	Southbound N 13th St L	T	R	Bikes	Eastbound Hwy 34 L	T	R	Bikes	Westbound Hwy 34 L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	14	4	0	0	0	4	1	0	0	0	0	0	10	138	6	0	177	0	1	1	0
4:15 PM	16	2	0	0	0	9	6	0	0	0	0	0	10	144	5	0	192	0	0	0	4
4:30 PM	8	5	0	0	0	4	2	0	0	0	0	0	18	135	5	0	177	0	0	2	0
4:45 PM	3	5	0	0	0	4	6	0	0	0	0	0	16	170	4	1	208	0	0	0	0
5:00 PM	6	10	0	0	0	5	2	0	0	0	0	0	8	154	8	0	193	0	0	0	0
5:15 PM	13	5	0	0	0	4	3	0	0	0	0	0	17	142	8	0	192	1	0	1	0
5:30 PM	13	6	0	0	0	3	3	0	0	0	0	0	8	160	7	2	200	2	0	2	0
5:45 PM	5	2	0	0	0	1	3	0	0	0	0	0	7	148	11	0	177	0	0	4	1
Total Survey	78	39	0	0	0	34	26	0	0	0	0	0	94	1,191	54	3	1,516	3	1	10	5

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound N 13th St In	Out	Total	Bikes	Southbound N 13th St In	Out	Total	Bikes	Eastbound Hwy 34 In	Out	Total	Bikes	Westbound Hwy 34 In	Out	Total	Bikes	Total	Pedestrians Crosswalk North	South	East	West
Volume	63	58	121	0	28	57	85	0	0	690	690	0	714	0	714	3	805	3	0	3	0
%HV	1.6%				3.6%				0.0%				4.3%				4.1%				
PHF	0.68				0.58				0.00				0.92				0.91				

By Movement	Northbound N 13th St L	T	R	Total	Southbound N 13th St L	T	R	Total	Eastbound Hwy 34 L	T	R	Total	Westbound Hwy 34 L	T	R	Total	Total
Volume	37	26	0	63	0	15	13	28	0	0	0	0	43	640	31	714	805
%HV	2.7%	0.0%	0.0%	1.6%	0.0%	0.0%	7.7%	3.6%	0.0%	0.0%	0.0%	0.0%	11.6%	4.1%	0.0%	4.3%	4.1%
PHF	0.58	0.65	0.00	0.68	0.00	0.63	0.54	0.58	0.00	0.00	0.00	0.00	0.63	0.88	0.70	0.92	0.91

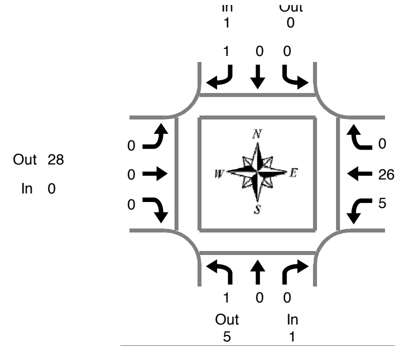
Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 13th St L	T	R	Bikes	Southbound N 13th St L	T	R	Bikes	Eastbound Hwy 34 L	T	R	Bikes	Westbound Hwy 34 L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	41	16	0	0	0	21	15	0	0	0	0	0	54	587	20	1	754	0	1	3	4
4:15 PM	33	22	0	0	0	22	16	0	0	0	0	0	52	603	22	1	770	0	0	2	4
4:30 PM	30	25	0	0	0	17	13	0	0	0	0	0	59	601	25	1	770	1	0	3	0
4:45 PM	35	26	0	0	0	16	14	0	0	0	0	0	49	626	27	3	793	3	0	3	0
5:00 PM	37	23	0	0	0	13	11	0	0	0	0	0	40	604	34	2	762	3	0	7	1

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

N 13th St & Hwy 34

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	2	0	3	4
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:25 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	5
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	1	1	0	0	0	0	3	1	0	4	5
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	5
5:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	3
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total Survey	3	0	0	3	0	0	1	1	0	0	0	0	8	51	0	59	63

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7
4:15 PM	2	0	0	2	0	0	0	0	0	0	0	0	1	5	0	6	8
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	8	0	10	10
4:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	4	5	0	9	10
5:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	4	0	4	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	12	0	13	13
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	9
Total Survey	3	0	0	3	0	0	1	1	0	0	0	0	8	51	0	59	63

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound N 13th St			Southbound N 13th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	5	6	1	0	1	0	28	28	31	0	31	33
PHF	0.25			0.25			0.00			0.55			0.59

By Movement	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	0	0	1	1	0	0	0	0	5	26	0	31	33
PHF	0.25	0.00	0.00	0.25	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.31	0.46	0.00	0.55	0.59

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

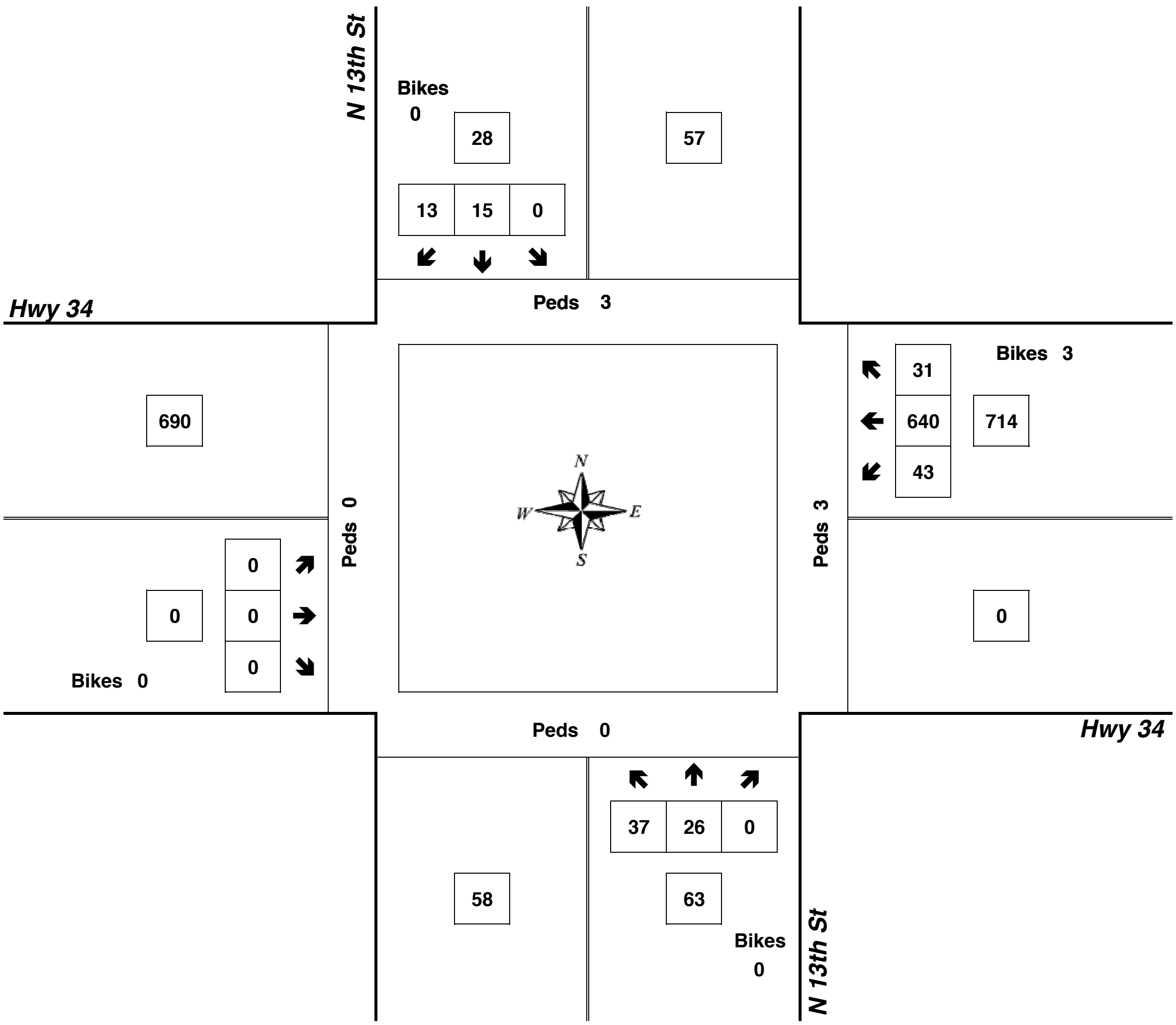
Interval Start Time	Northbound N 13th St				Southbound N 13th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	2	0	0	2	0	0	1	1	0	0	0	0	7	25	0	32	35
4:15 PM	3	0	0	3	0	0	1	1	0	0	0	0	7	22	0	29	33
4:30 PM	1	0	0	1	0	0	1	1	0	0	0	0	6	18	0	24	26
4:45 PM	1	0	0	1	0	0	1	1	0	0	0	0	5	22	0	27	29
5:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	26	0	27	28

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 13th St & Hwy 34

4:50 PM to 5:50 PM
Wednesday, October 28, 2015

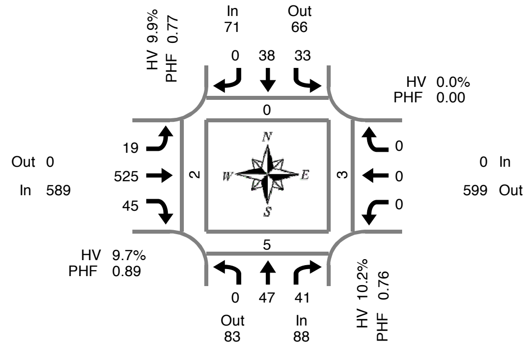


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.92	4.3%	714
NB	0.68	1.6%	63
SB	0.58	3.6%	28
Intersection	0.91	4.1%	805

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
2:15 PM to 3:15 PM

S 13th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St L	T	R	Bikes	Southbound S 13th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
2:00 PM	0	1	1	0	0	3	0	0	1	25	2	0	0	0	0	0	33	0	0	0	0
2:05 PM	0	4	3	0	2	4	0	0	1	45	2	0	0	0	0	0	61	1	0	0	1
2:10 PM	0	2	4	0	0	5	0	0	0	40	2	0	0	0	0	0	53	0	0	0	0
2:15 PM	0	8	2	0	1	1	0	0	0	45	8	0	0	0	0	0	65	0	0	0	0
2:20 PM	0	0	1	0	3	2	0	0	2	36	4	0	0	0	0	0	48	0	0	0	0
2:25 PM	0	2	3	0	2	3	0	0	2	43	4	0	0	0	0	0	59	0	0	0	0
2:30 PM	0	7	4	0	3	4	0	0	3	44	3	1	0	0	0	0	68	0	0	0	1
2:35 PM	0	2	2	0	3	4	0	0	0	44	1	0	0	0	0	0	56	0	0	0	1
2:40 PM	0	4	7	0	3	5	0	1	2	47	3	0	0	0	0	0	71	0	0	0	0
2:45 PM	0	3	3	0	6	2	0	0	1	53	3	0	0	0	0	0	71	0	0	1	0
2:50 PM	0	5	0	0	2	3	0	0	3	48	5	0	0	0	0	0	66	0	0	1	0
2:55 PM	0	3	3	0	2	4	0	0	1	40	2	0	0	0	0	0	55	0	1	1	0
3:00 PM	0	3	4	0	2	3	0	0	1	41	7	0	0	0	0	0	61	0	0	0	0
3:05 PM	0	6	5	0	3	4	0	0	3	42	3	0	0	0	0	0	66	0	4	0	0
3:10 PM	0	4	7	0	3	3	0	0	1	42	2	0	0	0	0	0	62	0	0	0	0
3:15 PM	0	4	2	0	0	4	0	0	0	46	1	0	0	0	0	0	57	1	1	1	0
3:20 PM	0	3	5	0	1	5	0	0	1	30	6	0	0	0	0	0	51	1	0	0	0
3:25 PM	0	10	0	0	1	1	0	0	0	42	1	0	0	0	0	0	55	0	2	1	0
3:30 PM	0	4	0	0	1	4	0	0	3	49	4	0	0	0	0	0	65	0	1	0	0
3:35 PM	0	4	2	0	1	2	0	0	0	47	0	0	0	0	0	0	56	0	1	0	0
3:40 PM	0	4	2	0	1	2	0	0	2	39	2	0	0	0	0	0	52	0	1	0	0
3:45 PM	0	3	4	0	2	12	0	0	3	39	3	0	0	0	0	0	66	0	2	0	0
3:50 PM	0	6	3	0	3	1	0	0	1	39	6	0	0	0	0	0	59	0	0	1	0
3:55 PM	0	3	0	0	1	5	0	0	3	44	2	0	0	0	0	0	58	0	0	0	0
Total Survey	0	95	67	0	46	86	0	1	34	1,010	76	1	0	0	0	0	1,414	3	13	6	3

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St L	T	R	Bikes	Southbound S 13th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
2:00 PM	0	7	8	0	2	12	0	0	2	110	6	0	0	0	0	0	147	1	0	0	1
2:15 PM	0	10	6	0	6	6	0	0	4	124	16	0	0	0	0	0	172	0	0	0	0
2:30 PM	0	13	13	0	9	13	0	1	5	135	7	1	0	0	0	0	195	0	0	0	2
2:45 PM	0	11	6	0	10	9	0	0	5	141	10	0	0	0	0	0	192	0	1	3	0
3:00 PM	0	13	16	0	8	10	0	0	5	125	12	0	0	0	0	0	189	0	4	0	0
3:15 PM	0	17	7	0	2	10	0	0	1	118	8	0	0	0	0	0	163	2	3	2	0
3:30 PM	0	12	4	0	3	8	0	0	5	135	6	0	0	0	0	0	173	0	3	0	0
3:45 PM	0	12	7	0	6	18	0	0	7	122	11	0	0	0	0	0	183	0	2	1	0
Total Survey	0	95	67	0	46	86	0	1	34	1,010	76	1	0	0	0	0	1,414	3	13	6	3

Peak Hour Summary
2:15 PM to 3:15 PM

By Approach	Northbound S 13th St In	Out	Total	Bikes	Southbound S 13th St In	Out	Total	Bikes	Eastbound Applegate St In	Out	Total	Bikes	Westbound Applegate St In	Out	Total	Bikes	Total	Pedestrians Crosswalk North	South	East	West
Volume	88	83	171	0	71	66	137	1	589	0	589	1	0	599	599	0	748	0	5	3	2
%HV	10.2%				9.9%				9.7%				0.0%				9.8%				
PHF	0.76				0.77				0.89				0.00				0.90				

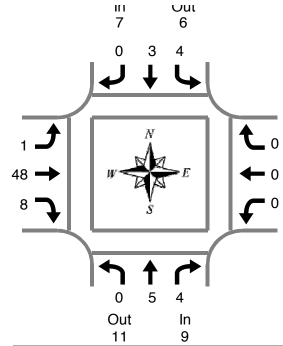
By Movement	Northbound S 13th St L	T	R	Total	Southbound S 13th St L	T	R	Total	Eastbound Applegate St L	T	R	Total	Westbound Applegate St L	T	R	Total	Total
Volume	0	47	41	88	33	38	0	71	19	525	45	589	0	0	0	0	748
%HV	0.0%	10.6%	9.8%	10.2%	12.1%	7.9%	0.0%	9.9%	5.3%	9.1%	17.8%	9.7%	0.0%	0.0%	0.0%	0.0%	9.8%
PHF	0.00	0.90	0.64	0.76	0.69	0.73	0.00	0.77	0.68	0.89	0.70	0.89	0.00	0.00	0.00	0.00	0.90

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St L	T	R	Bikes	Southbound S 13th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
2:00 PM	0	41	33	0	27	40	0	1	16	510	39	1	0	0	0	0	706	1	1	3	3
2:15 PM	0	47	41	0	33	38	0	1	19	525	45	1	0	0	0	0	748	0	5	3	2
2:30 PM	0	54	42	0	29	42	0	1	16	519	37	1	0	0	0	0	739	2	8	5	2
2:45 PM	0	53	33	0	23	37	0	0	16	519	36	0	0	0	0	0	717	2	11	5	0
3:00 PM	0	54	34	0	19	46	0	0	18	500	37	0	0	0	0	0	708	2	12	3	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Out 0
In 57

Peak Hour Summary
2:15 PM to 3:15 PM

S 13th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	5
2:05 PM	0	1	1	2	0	0	0	0	0	6	1	7	0	0	0	0	9
2:10 PM	0	0	1	1	0	1	0	1	0	3	2	5	0	0	0	0	7
2:15 PM	0	2	1	3	0	0	0	0	0	3	0	3	0	0	0	0	6
2:20 PM	0	0	0	0	1	1	0	2	0	3	2	5	0	0	0	0	7
2:25 PM	0	0	0	0	1	0	0	1	0	5	0	5	0	0	0	0	6
2:30 PM	0	1	1	2	0	0	0	0	0	3	0	3	0	0	0	0	5
2:35 PM	0	0	0	0	0	0	0	0	0	6	1	7	0	0	0	0	7
2:40 PM	0	1	1	2	0	0	0	0	0	2	1	3	0	0	0	0	5
2:45 PM	0	1	0	1	1	0	0	1	0	5	0	5	0	0	0	0	7
2:50 PM	0	0	0	0	0	1	0	1	0	4	2	6	0	0	0	0	7
2:55 PM	0	0	0	0	0	0	0	0	1	7	1	9	0	0	0	0	9
3:00 PM	0	0	1	1	0	0	0	0	0	1	1	2	0	0	0	0	3
3:05 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
3:10 PM	0	0	0	0	1	0	0	1	0	7	0	7	0	0	0	0	8
3:15 PM	0	0	0	0	0	1	0	1	0	3	0	3	0	0	0	0	4
3:20 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
3:25 PM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
3:30 PM	0	0	0	0	1	0	0	1	0	2	2	4	0	0	0	0	5
3:35 PM	0	0	1	1	0	0	0	0	0	3	0	3	0	0	0	0	4
3:40 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
3:45 PM	0	0	0	0	0	0	0	0	0	6	1	7	0	0	0	0	7
3:50 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	2
3:55 PM	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	4
Total Survey	0	7	7	14	5	6	0	11	1	88	17	106	0	0	0	0	131

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	1	2	3	0	1	0	1	0	14	3	17	0	0	0	0	21
2:15 PM	0	2	1	3	2	1	0	3	0	11	2	13	0	0	0	0	19
2:30 PM	0	2	2	4	0	0	0	0	0	11	2	13	0	0	0	0	17
2:45 PM	0	1	0	1	1	1	0	2	1	16	3	20	0	0	0	0	23
3:00 PM	0	0	1	1	1	1	0	2	0	10	1	11	0	0	0	0	14
3:15 PM	0	1	0	1	0	2	0	2	0	8	0	8	0	0	0	0	11
3:30 PM	0	0	1	1	1	0	0	1	0	9	2	11	0	0	0	0	13
3:45 PM	0	0	0	0	0	0	0	0	0	9	4	13	0	0	0	0	13
Total Survey	0	7	7	14	5	6	0	11	1	88	17	106	0	0	0	0	131

Heavy Vehicle Peak Hour Summary
2:15 PM to 3:15 PM

By Approach	Northbound S 13th St			Southbound S 13th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	9	11	20	7	6	13	57	0	57	0	56	56	73
PHF	0.56			0.58			0.71			0.00			0.79

By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	5	4	9	4	3	0	7	1	48	8	57	0	0	0	0	73
PHF	0.00	0.63	0.50	0.56	0.50	0.75	0.00	0.58	0.25	0.75	0.50	0.71	0.00	0.00	0.00	0.00	0.79

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

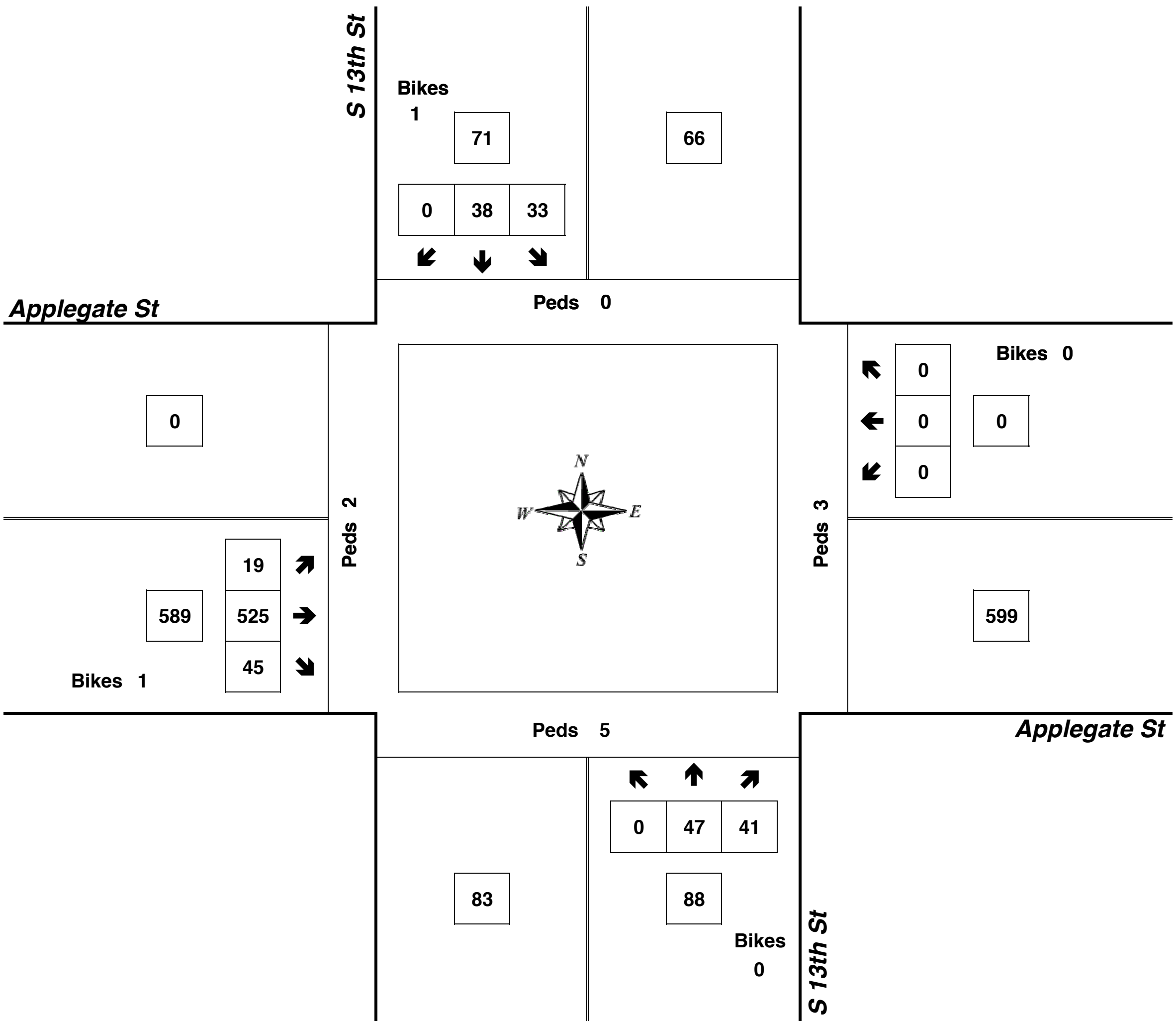
Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	6	5	11	3	3	0	6	1	52	10	63	0	0	0	0	80
2:15 PM	0	5	4	9	4	3	0	7	1	48	8	57	0	0	0	0	73
2:30 PM	0	4	3	7	2	4	0	6	1	45	6	52	0	0	0	0	65
2:45 PM	0	2	2	4	3	4	0	7	1	43	6	50	0	0	0	0	61
3:00 PM	0	1	2	3	2	3	0	5	0	36	7	43	0	0	0	0	51

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

S 13th St & Applegate St

2:15 PM to 3:15 PM
Wednesday, October 28, 2015



Approach	PHF	HV%	Volume
EB	0.89	9.7%	589
WB	0.00	0.0%	0
NB	0.76	10.2%	88
SB	0.77	9.9%	71
Intersection	0.90	9.8%	748

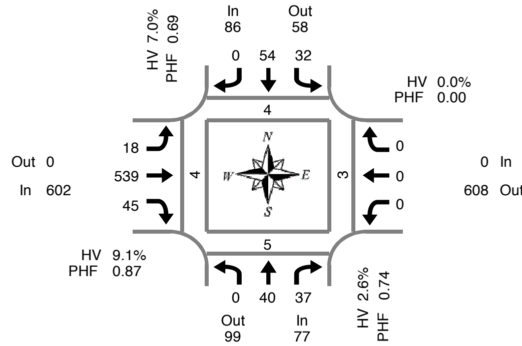
Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

S 13th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM



Peak Hour Summary
4:00 PM to 5:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	3	2	0	2	2	0	0	3	61	2	0	0	0	0	0	75	0	0	0	0
4:05 PM	0	3	2	0	3	7	0	0	1	52	3	1	0	0	0	0	71	0	1	0	0
4:10 PM	0	6	6	0	2	2	0	0	2	46	3	0	0	0	0	0	67	0	0	1	0
4:15 PM	0	2	1	0	1	4	0	0	2	52	4	0	0	0	0	0	66	2	0	1	0
4:20 PM	0	6	5	0	2	5	0	0	2	39	2	0	0	0	0	0	61	0	0	0	0
4:25 PM	0	5	2	0	4	6	0	0	1	46	4	0	0	0	0	0	68	0	0	1	0
4:30 PM	0	3	2	0	5	4	0	0	2	40	6	0	0	0	0	0	62	0	0	0	0
4:35 PM	0	4	4	0	3	9	0	0	1	40	4	0	0	0	0	0	65	0	1	0	0
4:40 PM	0	3	2	0	2	1	0	0	1	46	5	0	0	0	0	0	60	0	2	0	0
4:45 PM	0	1	3	0	2	3	0	0	1	42	4	0	0	0	0	0	56	1	1	0	2
4:50 PM	0	3	4	0	2	7	0	0	1	33	5	0	0	0	0	0	55	1	0	0	0
4:55 PM	0	1	4	0	4	4	0	0	1	42	3	0	0	0	0	0	59	0	0	0	2
5:00 PM	0	3	4	0	3	2	0	0	3	52	2	2	0	0	0	0	69	0	0	0	0
5:05 PM	0	2	1	0	2	3	0	0	1	46	6	0	0	0	0	0	61	0	3	0	0
5:10 PM	0	4	7	0	1	5	0	0	2	49	4	0	0	0	0	0	72	0	2	0	0
5:15 PM	0	4	7	0	2	4	0	0	2	41	2	0	0	0	0	0	62	0	0	0	0
5:20 PM	0	7	6	0	2	7	0	0	1	43	3	0	0	0	0	0	69	0	0	0	0
5:25 PM	0	3	5	0	2	6	0	0	1	43	6	1	0	0	0	0	66	0	0	0	1
5:30 PM	0	7	0	0	0	3	0	0	0	34	4	0	0	0	0	0	48	0	0	0	1
5:35 PM	0	13	2	0	2	2	0	0	1	32	3	1	0	0	0	0	55	0	1	0	0
5:40 PM	0	0	0	0	3	5	0	0	0	27	5	0	0	0	0	0	40	0	0	0	0
5:45 PM	0	3	3	0	1	1	0	0	1	24	3	0	0	0	0	0	36	0	1	0	1
5:50 PM	0	4	5	0	1	2	0	0	0	25	0	0	0	0	0	0	37	0	0	0	0
5:55 PM	0	2	2	0	1	3	0	0	0	33	0	0	0	0	0	0	41	0	0	0	0
Total Survey	0	92	79	0	52	97	0	0	30	988	83	5	0	0	0	0	1,421	4	12	3	7

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	12	10	0	7	11	0	0	6	159	8	1	0	0	0	0	213	0	1	1	0
4:15 PM	0	13	8	0	7	15	0	0	5	137	10	0	0	0	0	0	195	2	0	2	0
4:30 PM	0	10	8	0	10	14	0	0	4	126	15	0	0	0	0	0	187	0	3	0	0
4:45 PM	0	5	11	0	8	14	0	0	3	117	12	0	0	0	0	0	170	2	1	0	4
5:00 PM	0	9	12	0	6	10	0	0	6	147	12	2	0	0	0	0	202	0	5	0	0
5:15 PM	0	14	18	0	6	17	0	0	4	127	11	1	0	0	0	0	197	0	0	0	1
5:30 PM	0	20	2	0	5	10	0	0	1	93	12	1	0	0	0	0	143	0	1	0	1
5:45 PM	0	9	10	0	3	6	0	0	1	82	3	0	0	0	0	0	114	0	1	0	1
Total Survey	0	92	79	0	52	97	0	0	30	988	83	5	0	0	0	0	1,421	4	12	3	7

Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	77	99	176	0	86	58	144	0	602	0	602	1	0	608	608	0	765
%HV	2.6%				7.0%				9.1%				0.0%				8.2%
PHF	0.74				0.69				0.87				0.00				0.90

Pedestrians Crosswalk			
North	South	East	West
4	5	3	4

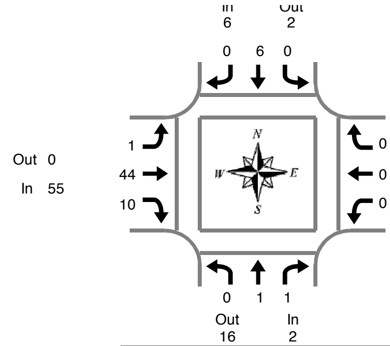
By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	40	37	77	32	54	0	86	18	539	45	602	0	0	0	0	765
%HV	0.0%	2.5%	2.7%	2.6%	0.0%	11.1%	0.0%	7.0%	5.6%	8.2%	22.2%	9.1%	0.0%	0.0%	0.0%	0.0%	8.2%
PHF	0.00	0.71	0.77	0.74	0.67	0.71	0.00	0.69	0.75	0.85	0.75	0.87	0.00	0.00	0.00	0.00	0.90

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	0	40	37	0	32	54	0	0	18	539	45	1	0	0	0	0	765	4	5	3	4
4:15 PM	0	37	39	0	31	53	0	0	18	527	49	2	0	0	0	0	754	4	9	2	4
4:30 PM	0	38	49	0	30	55	0	0	17	517	50	3	0	0	0	0	756	2	9	0	5
4:45 PM	0	48	43	0	25	51	0	0	14	484	47	4	0	0	0	0	712	2	7	0	6
5:00 PM	0	52	42	0	20	43	0	0	12	449	38	4	0	0	0	0	656	0	7	0	3

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



S 13th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Peak Hour Summary
4:00 PM to 5:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	5
4:05 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
4:10 PM	0	0	1	1	0	0	0	0	0	2	0	2	0	0	0	0	3
4:15 PM	0	0	0	0	0	1	0	1	1	9	1	11	0	0	0	0	12
4:20 PM	0	0	0	0	0	0	0	0	0	4	1	5	0	0	0	0	5
4:25 PM	0	1	0	1	0	0	0	0	0	4	0	4	0	0	0	0	5
4:30 PM	0	0	0	0	0	1	0	1	0	3	2	5	0	0	0	0	6
4:35 PM	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	4
4:40 PM	0	0	0	0	0	0	0	0	0	5	3	8	0	0	0	0	8
4:45 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
4:50 PM	0	0	0	0	0	3	0	3	0	2	1	3	0	0	0	0	6
4:55 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
5:00 PM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4
5:05 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
5:10 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	4
5:20 PM	0	0	1	1	0	0	0	0	0	3	0	3	0	0	0	0	4
5:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
5:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	0	2	2	4	0	7	0	7	1	70	10	81	0	0	0	0	92

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	1	1	0	0	0	0	0	8	1	9	0	0	0	0	10
4:15 PM	0	1	0	1	0	1	0	1	1	17	2	20	0	0	0	0	22
4:30 PM	0	0	0	0	0	1	0	1	0	11	6	17	0	0	0	0	18
4:45 PM	0	0	0	0	0	4	0	4	0	8	1	9	0	0	0	0	13
5:00 PM	0	1	0	1	0	0	0	0	0	12	0	12	0	0	0	0	13
5:15 PM	0	0	1	1	0	0	0	0	0	8	0	8	0	0	0	0	9
5:30 PM	0	0	0	0	0	1	0	1	0	3	0	3	0	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
Total Survey	0	2	2	4	0	7	0	7	1	70	10	81	0	0	0	0	92

Heavy Vehicle Peak Hour Summary
4:00 PM to 5:00 PM

By Approach	Northbound S 13th St			Southbound S 13th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	16	18	6	2	8	55	0	55	0	45	45	63
PHF	0.50			0.38			0.69			0.00			0.72

By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	1	2	0	6	0	6	1	44	10	55	0	0	0	0	63
PHF	0.00	0.25	0.25	0.50	0.00	0.38	0.00	0.38	0.25	0.65	0.42	0.69	0.00	0.00	0.00	0.00	0.72

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	1	1	2	0	6	0	6	1	44	10	55	0	0	0	0	63
4:15 PM	0	2	0	2	0	6	0	6	1	48	9	58	0	0	0	0	66
4:30 PM	0	1	1	2	0	5	0	5	0	39	7	46	0	0	0	0	53
4:45 PM	0	1	1	2	0	5	0	5	0	31	1	32	0	0	0	0	39
5:00 PM	0	1	1	2	0	1	0	1	0	26	0	26	0	0	0	0	29

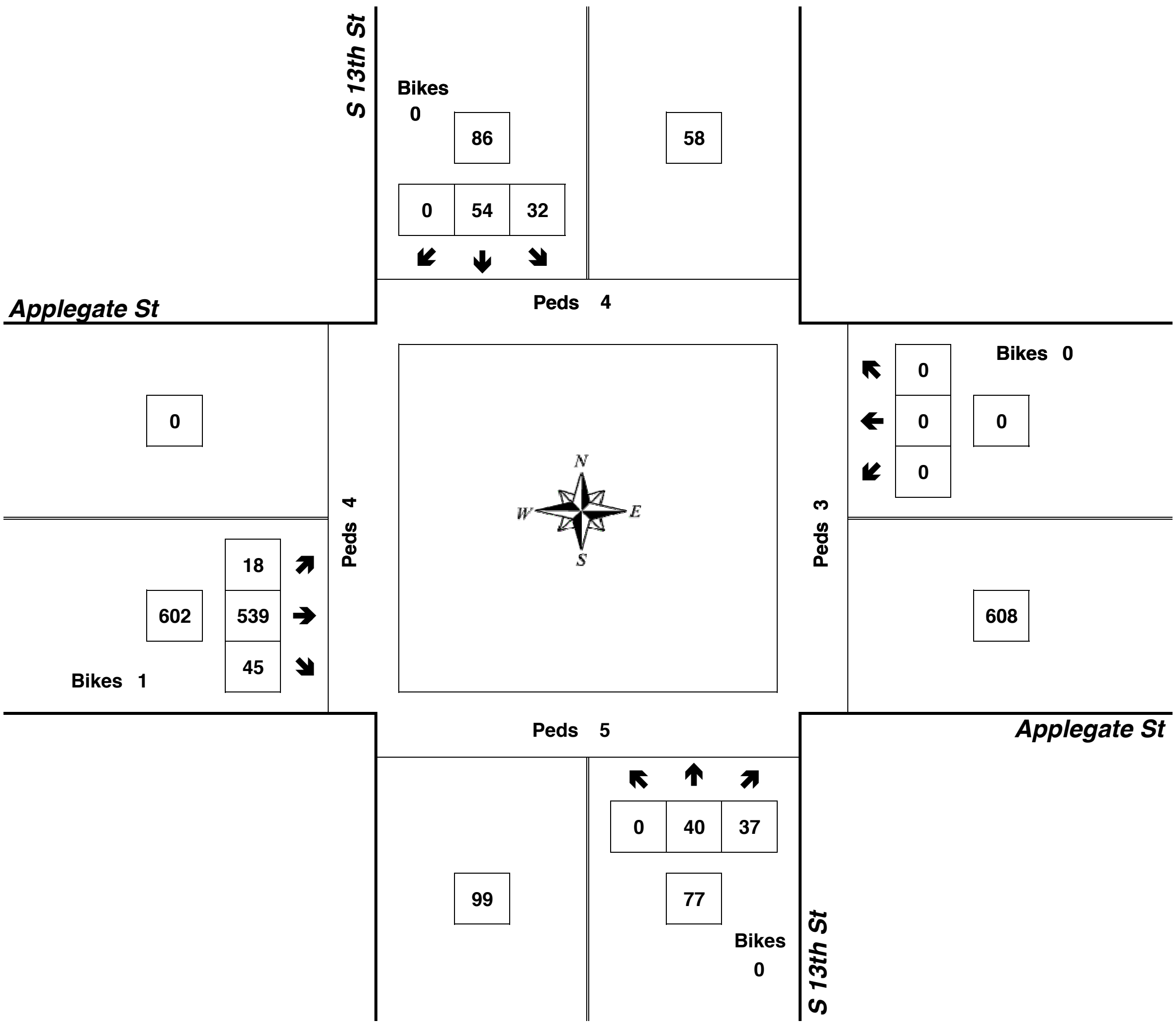
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

S 13th St & Applegate St

4:00 PM to 5:00 PM
Wednesday, October 28, 2015



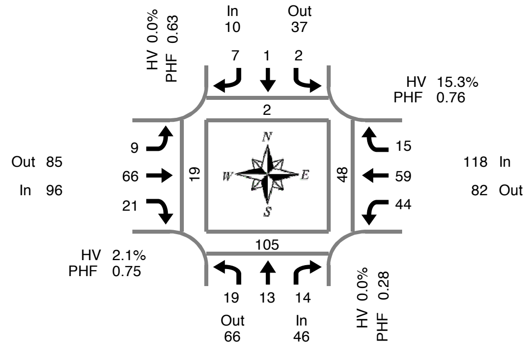
Approach	PHF	HV%	Volume
EB	0.87	9.1%	602
WB	0.00	0.0%	0
NB	0.74	2.6%	77
SB	0.69	7.0%	86
Intersection	0.90	8.2%	765

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:25 PM to 3:25 PM

S 16th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5	0	0	0	0
2:05 PM	0	0	0	0	0	0	0	0	0	4	0	0	1	5	0	0	10	0	0	0	0
2:10 PM	0	0	1	0	0	0	0	0	0	1	1	0	1	5	0	0	9	0	1	0	0
2:15 PM	1	0	0	0	0	0	0	0	2	1	1	0	2	4	0	0	11	0	1	0	0
2:20 PM	0	0	0	0	0	0	1	0	0	3	3	0	0	3	1	0	11	0	0	0	0
2:25 PM	0	0	0	0	1	0	1	0	1	3	1	0	5	3	0	1	15	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	3	4	0	5	2	2	0	16	0	0	0	1
2:35 PM	0	0	1	0	0	0	1	0	0	8	3	0	5	3	3	0	24	0	0	0	0
2:40 PM	0	0	0	0	0	0	2	0	0	4	6	0	8	4	1	0	25	0	8	1	2
2:45 PM	1	0	0	0	0	0	0	0	0	7	1	0	6	2	1	0	18	1	9	6	1
2:50 PM	3	2	0	0	0	0	0	0	1	1	3	0	8	3	2	0	23	0	21	14	4
2:55 PM	9	4	7	0	0	0	2	0	5	10	2	0	1	7	3	0	50	1	49	27	11
3:00 PM	5	6	5	0	1	0	0	0	0	10	0	0	1	14	0	0	42	0	4	0	0
3:05 PM	0	0	0	0	0	0	1	0	0	2	0	0	0	3	2	0	8	0	0	0	0
3:10 PM	0	0	0	0	0	0	0	0	1	7	1	0	0	4	1	0	14	0	0	0	0
3:15 PM	0	0	1	0	0	0	0	0	0	6	0	0	3	10	0	0	20	0	2	0	0
3:20 PM	1	1	0	0	0	1	0	0	1	5	0	0	2	4	0	3	15	0	12	0	0
3:25 PM	2	0	0	0	0	0	0	0	1	5	0	0	1	5	0	0	14	0	8	0	0
3:30 PM	1	1	0	0	0	0	0	0	0	2	0	0	2	2	0	2	8	0	2	0	0
3:35 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	7	0	1	0	0
3:40 PM	1	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	5	0	0	0	0
3:45 PM	0	1	0	0	0	0	1	0	0	4	0	0	1	4	0	0	11	0	2	0	0
3:50 PM	0	0	0	0	0	0	0	0	0	1	1	0	1	4	1	0	8	2	1	0	0
3:55 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4	0	1	0	0
Total Survey	24	15	15	0	2	1	9	0	12	98	28	0	53	97	19	6	373	4	122	48	19

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	0	0	1	0	0	0	0	0	0	7	1	0	2	13	0	0	24	0	1	0	0
2:15 PM	1	0	0	0	1	0	2	0	3	7	5	0	7	10	1	1	37	0	1	0	0
2:30 PM	0	0	1	0	0	0	3	0	0	15	13	0	18	9	6	0	65	0	8	1	3
2:45 PM	13	6	7	0	0	0	2	0	6	18	6	0	15	12	6	0	91	2	79	47	16
3:00 PM	5	6	5	0	1	0	1	0	1	19	1	0	1	21	3	0	64	0	4	0	0
3:15 PM	3	1	1	0	0	1	0	0	2	16	0	0	6	19	0	3	49	0	22	0	0
3:30 PM	2	1	0	0	0	0	0	0	0	10	1	0	2	3	1	2	20	0	3	0	0
3:45 PM	0	1	0	0	0	0	1	0	0	6	1	0	2	10	2	0	23	2	4	0	0
Total Survey	24	15	15	0	2	1	9	0	12	98	28	0	53	97	19	6	373	4	122	48	19

Peak Hour Summary
2:25 PM to 3:25 PM

By Approach	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	46	66	112	0	10	37	47	0	96	85	181	0	118	82	200	4	270	2	105	48	19
%HV	0.0%				0.0%				2.1%				15.3%				7.4%				
PHF	0.28				0.63				0.75				0.76				0.59				

By Movement	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	19	13	14	46	2	1	7	10	9	66	21	96	44	59	15	118	270
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	4.8%	2.1%	22.7%	13.6%	0.0%	15.3%	7.4%
PHF	0.28	0.27	0.29	0.28	0.50	0.25	0.58	0.63	0.38	0.75	0.40	0.75	0.50	0.61	0.63	0.76	0.59

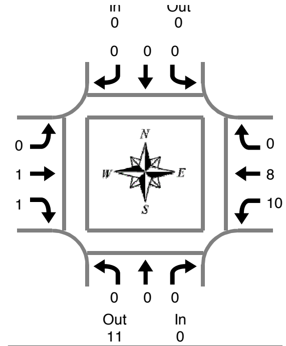
Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	14	6	9	0	1	0	7	0	9	47	25	0	42	44	13	1	217	2	89	48	19
2:15 PM	19	12	13	0	2	0	8	0	10	59	25	0	41	52	16	1	257	2	92	48	19
2:30 PM	21	13	14	0	1	1	6	0	9	68	20	0	40	61	15	3	269	2	113	48	19
2:45 PM	23	14	13	0	1	1	3	0	9	63	8	0	24	55	10	5	224	2	108	47	16
3:00 PM	10	9	6	0	1	1	2	0	3	51	3	0	11	53	6	5	156	2	33	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:25 PM to 3:25 PM

S 16th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
2:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
2:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
2:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:50 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
2:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:50 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	0	0	0	0	0	2	3	5	10	8	0	18	23

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	2
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	8	0	0	8	9
2:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Total Survey	0	0	0	0	0	0	0	0	0	2	3	5	10	8	0	18	23

Heavy Vehicle Peak Hour Summary
2:25 PM to 3:25 PM

By Approach	Northbound S 16th St			Southbound S 16th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	11	11	0	0	0	2	8	10	18	1	19	20
PHF	0.00			0.00			0.50			0.56			0.56

By Movement	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	0	0	0	0	1	1	2	10	8	0	18	20
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.50	0.31	0.25	0.00	0.56	0.56

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	1	2	3	9	2	0	11	14
2:15 PM	0	0	0	0	0	0	0	0	0	1	2	3	9	8	0	17	20
2:30 PM	0	0	0	0	0	0	0	0	0	2	1	3	9	8	0	17	20
2:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	1	8	0	9	11
3:00 PM	0	0	0	0	0	0	0	0	0	1	1	2	1	6	0	7	9

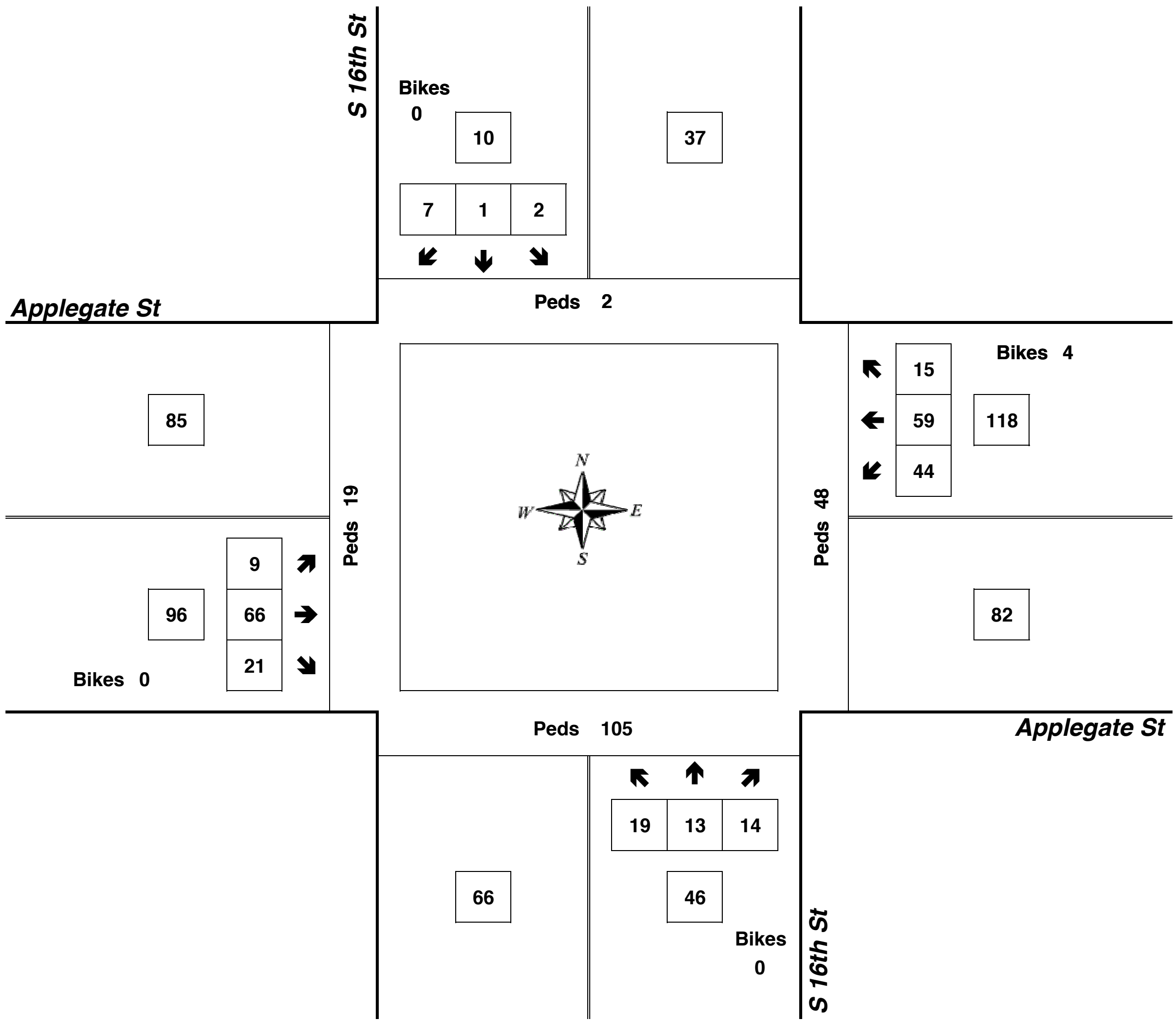
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

S 16th St & Applegate St

2:25 PM to 3:25 PM
Wednesday, October 28, 2015



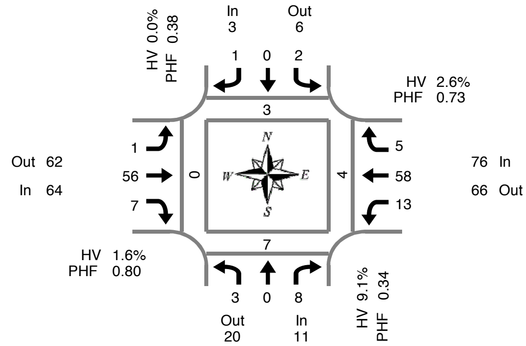
Approach	PHF	HV%	Volume
EB	0.75	2.1%	96
WB	0.76	15.3%	118
NB	0.28	0.0%	46
SB	0.63	0.0%	10
Intersection	0.59	7.4%	270

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

S 16th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 16th St L	T	R	Bikes	Southbound S 16th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	5	0	1	0	0
4:05 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	6	1	0	13	0	1	0	0
4:10 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	6	1	0	10	0	1	0	0
4:15 PM	0	0	0	0	0	0	0	0	1	3	0	1	0	3	0	1	7	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	2	3	0	2	2	2	0	11	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	1	1	3	2	0	1	4	0	0	11	2	0	0	0
4:30 PM	4	1	0	0	0	0	0	0	0	3	1	0	1	4	0	0	14	0	0	0	0
4:35 PM	2	0	3	0	0	0	0	0	0	1	0	0	1	7	0	0	14	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	0	6	0	1	0	0
4:45 PM	0	0	2	0	0	0	0	0	0	2	0	0	0	4	1	0	9	0	4	2	0
4:50 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	6	2	0	14	0	2	0	0
4:55 PM	0	0	1	0	0	0	1	0	0	2	0	0	0	4	2	0	10	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	0	0	0	0
5:05 PM	0	0	0	0	2	0	0	0	0	3	0	0	2	5	1	0	13	0	3	2	0
5:10 PM	0	0	0	0	0	0	0	0	0	5	0	1	0	3	1	0	9	0	1	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	6	0	0	1	6	0	0	14	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	6	1	0	0	13	0	0	20	0	0	0	0
5:25 PM	0	0	1	0	0	0	0	0	0	4	1	0	1	5	0	0	12	1	0	0	0
5:30 PM	1	0	0	0	0	0	0	0	0	2	2	1	2	2	0	0	9	0	1	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	5	1	0	1	5	0	0	12	2	0	2	0
5:40 PM	2	0	2	0	0	0	0	0	1	9	0	0	3	3	1	0	21	0	0	0	0
5:45 PM	0	0	2	0	0	0	0	0	0	2	1	0	1	4	0	0	10	0	0	0	0
5:50 PM	0	0	2	0	0	0	1	0	0	5	1	0	0	3	1	0	13	0	2	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	6	0	0	2	6	1	0	15	0	0	0	0
Total Survey	9	1	14	0	2	0	2	1	3	89	13	3	18	113	14	1	278	5	17	6	2

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 16th St L	T	R	Bikes	Southbound S 16th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	0	0	0	0	0	0	0	0	0	10	0	0	0	16	2	0	28	0	3	0	0
4:15 PM	0	0	0	0	0	0	0	1	2	8	5	1	3	9	2	1	29	2	0	0	0
4:30 PM	6	1	3	0	0	0	0	0	0	5	1	0	2	16	0	0	34	0	1	0	0
4:45 PM	0	0	3	0	0	0	1	0	0	10	0	0	0	14	5	0	33	0	6	2	2
5:00 PM	0	0	0	0	2	0	0	0	0	11	0	1	2	11	2	0	28	0	4	2	0
5:15 PM	0	0	2	0	0	0	0	0	0	16	2	0	2	24	0	0	46	1	0	0	0
5:30 PM	3	0	2	0	0	0	0	0	1	16	3	1	6	10	1	0	42	2	1	2	0
5:45 PM	0	0	4	0	0	0	1	0	0	13	2	0	3	13	2	0	38	0	2	0	0
Total Survey	9	1	14	0	2	0	2	1	3	89	13	3	18	113	14	1	278	5	17	6	2

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound S 16th St In	Out	Total	Bikes	Southbound S 16th St In	Out	Total	Bikes	Eastbound Applegate St In	Out	Total	Bikes	Westbound Applegate St In	Out	Total	Bikes	Total	Pedestrians Crosswalk North	South	East	West
Volume	11	20	31	0	3	6	9	0	64	62	126	2	76	66	142	0	154	3	7	4	0
%HV	9.1%				0.0%				1.6%				2.6%				2.6%				
PHF	0.34				0.38				0.80				0.73				0.84				

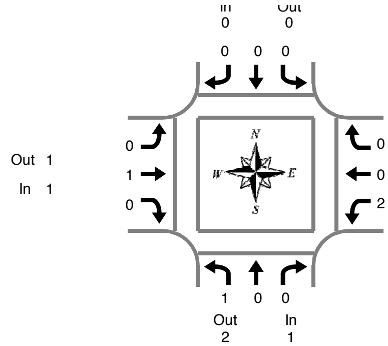
By Movement	Northbound S 16th St L	T	R	Total	Southbound S 16th St L	T	R	Total	Eastbound Applegate St L	T	R	Total	Westbound Applegate St L	T	R	Total	Total
Volume	3	0	8	11	2	0	1	3	1	56	7	64	13	58	5	76	154
%HV	33.3%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	1.6%	15.4%	0.0%	0.0%	2.6%	2.6%
PHF	0.25	0.00	0.33	0.34	0.25	0.00	0.25	0.38	0.25	0.82	0.44	0.80	0.54	0.60	0.63	0.73	0.84

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 16th St L	T	R	Bikes	Southbound S 16th St L	T	R	Bikes	Eastbound Applegate St L	T	R	Bikes	Westbound Applegate St L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	6	1	6	0	0	0	1	1	2	33	6	1	5	55	9	1	124	2	10	2	2
4:15 PM	6	1	6	0	2	0	1	1	2	34	6	2	7	50	9	1	124	2	11	4	2
4:30 PM	6	1	8	0	2	0	1	0	0	42	3	1	6	65	7	0	141	1	11	4	2
4:45 PM	3	0	7	0	2	0	1	0	1	53	5	2	10	59	8	0	149	3	11	6	2
5:00 PM	3	0	8	0	2	0	1	0	1	56	7	2	13	58	5	0	154	3	7	4	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

S 16th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	1	0	0	1	0	0	0	0	0	2	0	2	2	1	0	3	6

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	1	0	0	1	0	0	0	0	0	2	0	2	2	1	0	3	6

Heavy Vehicle Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound S 16th St			Southbound S 16th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	0	0	0	1	1	2	2	1	3	4
PHF	0.25			0.00			0.25			0.25			0.33

By Movement	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	0	1	0	0	0	0	0	1	0	1	2	0	0	2	4
PHF	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.25	0.33

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

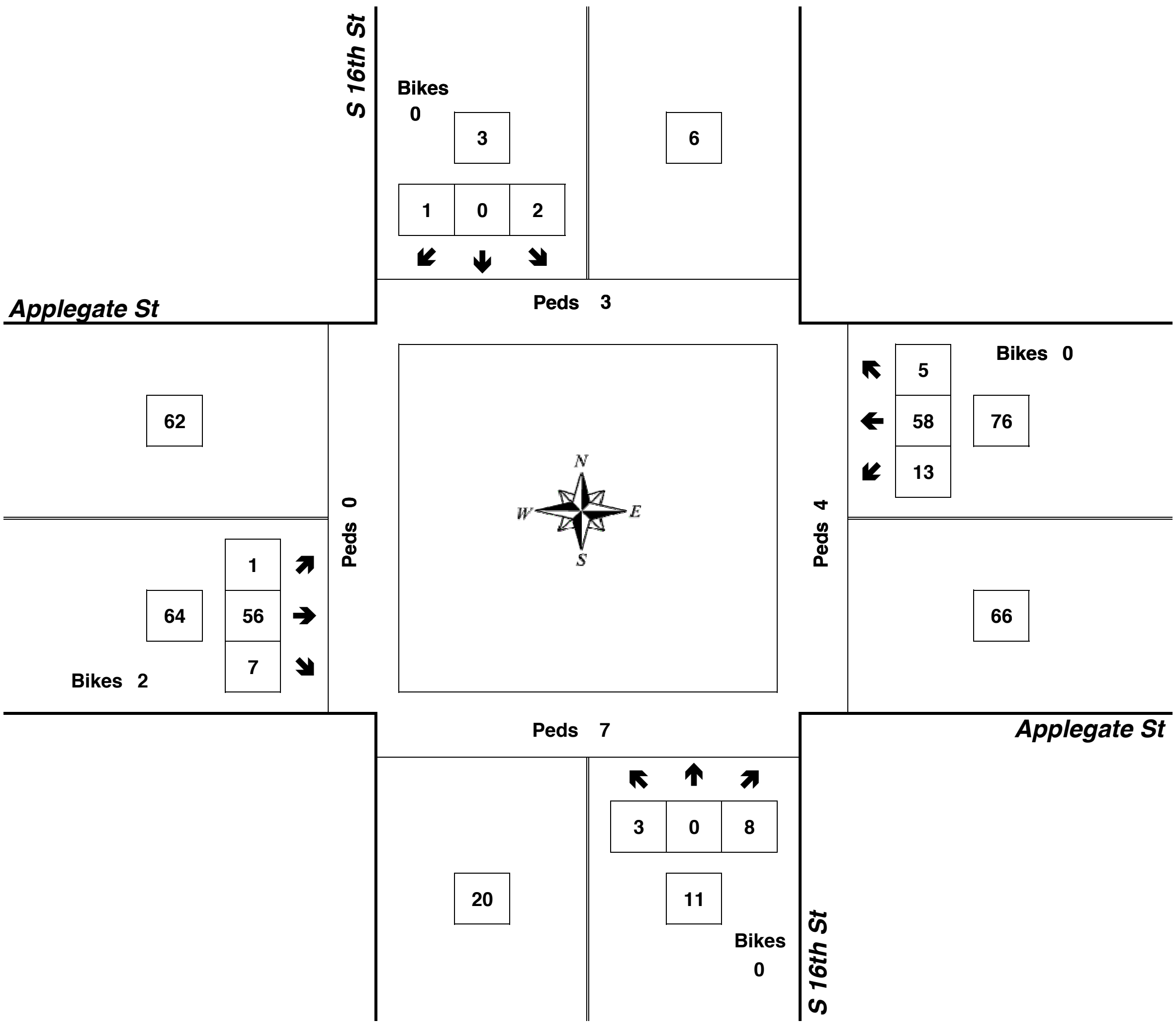
Interval Start Time	Northbound S 16th St				Southbound S 16th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	3
5:00 PM	1	0	0	1	0	0	0	0	0	1	0	1	2	0	0	2	4

Peak Hour Summary

Clay Carney
(503) 833-2740

S 16th St & Applegate St

5:00 PM to 6:00 PM
Wednesday, October 28, 2015

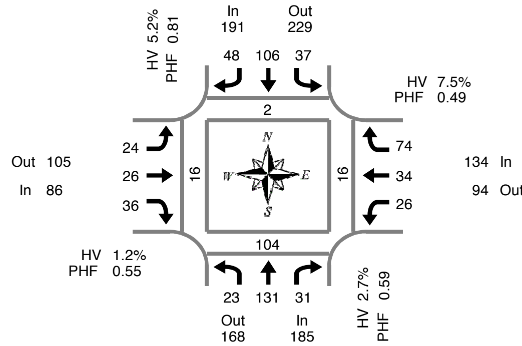


Approach	PHF	HV%	Volume
EB	0.80	1.6%	64
WB	0.73	2.6%	76
NB	0.34	9.1%	11
SB	0.38	0.0%	3
Intersection	0.84	2.6%	154

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
2:30 PM to 3:30 PM

S 19th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	0	6	1	0	1	8	3	0	0	1	2	0	1	1	2	1	26	0	0	0	2
2:05 PM	0	5	0	0	0	2	4	1	0	1	2	0	0	3	0	0	17	0	1	0	0
2:10 PM	1	6	0	0	1	6	5	2	2	0	2	0	0	3	2	0	28	0	1	0	0
2:15 PM	1	16	0	0	1	4	4	0	1	0	0	0	1	3	2	0	33	0	0	0	0
2:20 PM	0	8	1	0	0	5	1	0	1	0	4	0	2	1	4	0	27	0	1	0	0
2:25 PM	1	3	0	0	0	4	5	0	2	1	2	0	0	2	1	0	21	0	0	0	0
2:30 PM	1	7	2	0	3	6	4	0	2	1	4	0	1	3	1	0	35	0	0	0	0
2:35 PM	5	3	0	0	1	5	12	1	2	1	3	0	3	4	2	0	41	1	0	0	0
2:40 PM	1	1	0	0	2	16	6	0	2	0	3	0	2	1	5	0	39	0	0	0	1
2:45 PM	7	8	1	0	1	7	9	1	2	1	2	0	0	6	2	0	46	0	0	0	0
2:50 PM	5	16	3	0	2	9	4	0	1	1	2	1	0	1	1	0	45	0	2	0	0
2:55 PM	0	14	1	0	2	12	1	0	2	4	9	0	1	0	2	0	48	0	27	0	4
3:00 PM	0	8	1	0	4	10	1	0	6	6	8	0	3	1	3	0	51	0	24	4	0
3:05 PM	1	6	4	0	5	11	2	0	1	1	2	0	1	0	6	0	40	0	3	2	0
3:10 PM	0	23	5	0	5	6	1	0	3	3	1	0	3	7	6	0	63	0	6	0	3
3:15 PM	3	23	8	0	6	10	3	0	1	3	1	0	2	5	14	0	79	1	30	3	4
3:20 PM	0	13	3	1	1	7	2	0	1	3	1	0	7	2	16	0	56	0	11	7	4
3:25 PM	0	9	3	0	5	7	3	0	1	2	0	0	3	4	16	1	53	0	1	0	0
3:30 PM	0	2	0	0	3	9	0	0	1	2	2	0	0	0	7	0	26	0	5	4	0
3:35 PM	1	3	2	0	2	8	0	0	2	1	1	0	1	2	4	0	27	0	0	0	0
3:40 PM	1	5	0	0	2	6	1	0	1	1	2	0	0	0	2	0	21	1	1	0	1
3:45 PM	1	6	0	0	0	3	1	1	1	2	1	0	0	3	4	0	22	0	0	0	0
3:50 PM	0	3	0	0	2	9	5	0	1	1	2	0	0	2	7	0	32	1	0	0	0
3:55 PM	0	5	0	2	1	8	1	0	2	0	2	0	1	1	1	0	22	0	0	1	0
Total Survey	29	199	35	3	50	178	78	6	38	36	58	1	32	55	110	2	898	4	113	21	19

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	1	17	1	0	2	16	12	3	2	2	6	0	1	7	4	1	71	0	2	0	2
2:15 PM	2	27	1	0	1	13	10	0	4	1	6	0	3	6	7	0	81	0	1	0	0
2:30 PM	7	11	2	0	6	27	22	1	6	2	10	0	6	8	8	0	115	1	0	0	1
2:45 PM	12	38	5	0	5	28	14	1	5	6	13	1	1	7	5	0	139	0	29	0	4
3:00 PM	1	37	10	0	14	27	4	0	10	10	11	0	7	8	15	0	154	0	33	6	3
3:15 PM	3	45	14	1	12	24	8	0	3	8	2	0	12	11	46	1	188	1	42	10	8
3:30 PM	2	10	2	0	7	23	1	0	4	4	5	0	1	2	13	0	74	1	6	4	1
3:45 PM	1	14	0	2	3	20	7	1	4	3	5	0	1	6	12	0	76	1	0	1	0
Total Survey	29	199	35	3	50	178	78	6	38	36	58	1	32	55	110	2	898	4	113	21	19

Peak Hour Summary
2:30 PM to 3:30 PM

By Approach	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	185	168	353	1	191	229	420	2	86	105	191	1	134	94	228	1	596	2	104	16	16
%HV	2.7%				5.2%				1.2%				7.5%				4.4%				
PHF	0.59				0.81				0.55				0.49				0.75				

By Movement	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	23	131	31	185	37	106	48	191	24	26	36	86	26	34	74	134	596
%HV	0.0%	3.8%	0.0%	2.7%	0.0%	1.9%	16.7%	5.2%	4.2%	0.0%	0.0%	1.2%	11.5%	0.0%	9.5%	7.5%	4.4%
PHF	0.44	0.56	0.46	0.59	0.58	0.80	0.44	0.81	0.60	0.59	0.47	0.55	0.54	0.61	0.40	0.49	0.75

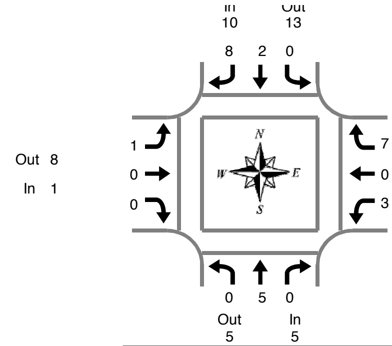
Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	22	93	9	0	14	84	58	5	17	11	35	1	11	28	24	1	406	1	32	0	7
2:15 PM	22	113	18	0	26	95	50	2	25	19	40	1	17	29	35	0	489	1	63	6	8
2:30 PM	23	131	31	1	37	106	48	2	24	26	36	1	26	34	74	1	596	2	104	16	16
2:45 PM	18	130	31	1	38	102	27	1	22	28	31	1	21	28	79	1	555	2	110	20	16
3:00 PM	7	106	26	3	36	94	20	1	21	25	23	0	21	27	86	1	492	3	81	21	12

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:30 PM to 3:30 PM

S 19th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
2:00 PM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
2:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
2:15 PM	0	3	0	3	0	2	0	2	0	0	0	0	0	0	0	0	5
2:20 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:25 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
2:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
2:35 PM	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	7
2:40 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
3:15 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3
3:20 PM	0	2	0	2	0	0	0	0	0	0	0	0	1	0	1	2	4
3:25 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	0	5	6	7
3:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
3:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:55 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
Total Survey	0	13	0	13	0	7	8	15	1	1	0	2	3	0	10	13	43

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
2:00 PM	0	2	0	2	0	2	0	2	0	0	0	0	0	0	1	1	5
2:15 PM	0	5	0	5	0	2	0	2	0	0	0	0	0	0	1	1	8
2:30 PM	0	0	0	0	0	0	8	8	1	0	0	1	0	0	0	0	9
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	1	3
3:15 PM	0	5	0	5	0	0	0	0	0	0	0	0	2	0	7	9	14
3:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	3
Total Survey	0	13	0	13	0	7	8	15	1	1	0	2	3	0	10	13	43

Heavy Vehicle Peak Hour Summary
2:30 PM to 3:30 PM

By Approach	Northbound S 19th St			Southbound S 19th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	5	5	10	10	13	23	1	8	9	10	0	10	26
PHF	0.25			0.31			0.25			0.28			0.46

By Movement	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	5	0	5	0	2	8	10	1	0	0	1	3	0	7	10	26
PHF	0.00	0.25	0.00	0.25	0.00	0.25	0.25	0.31	0.25	0.00	0.00	0.25	0.38	0.00	0.25	0.28	0.46

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
2:00 PM	0	7	0	7	0	4	8	12	1	0	0	1	0	0	2	2	22
2:15 PM	0	5	0	5	0	4	8	12	1	0	0	1	1	0	1	2	20
2:30 PM	0	5	0	5	0	2	8	10	1	0	0	1	3	0	7	10	26
2:45 PM	0	5	0	5	0	2	0	2	0	1	0	1	3	0	7	10	18
3:00 PM	0	6	0	6	0	3	0	3	0	1	0	1	3	0	8	11	21

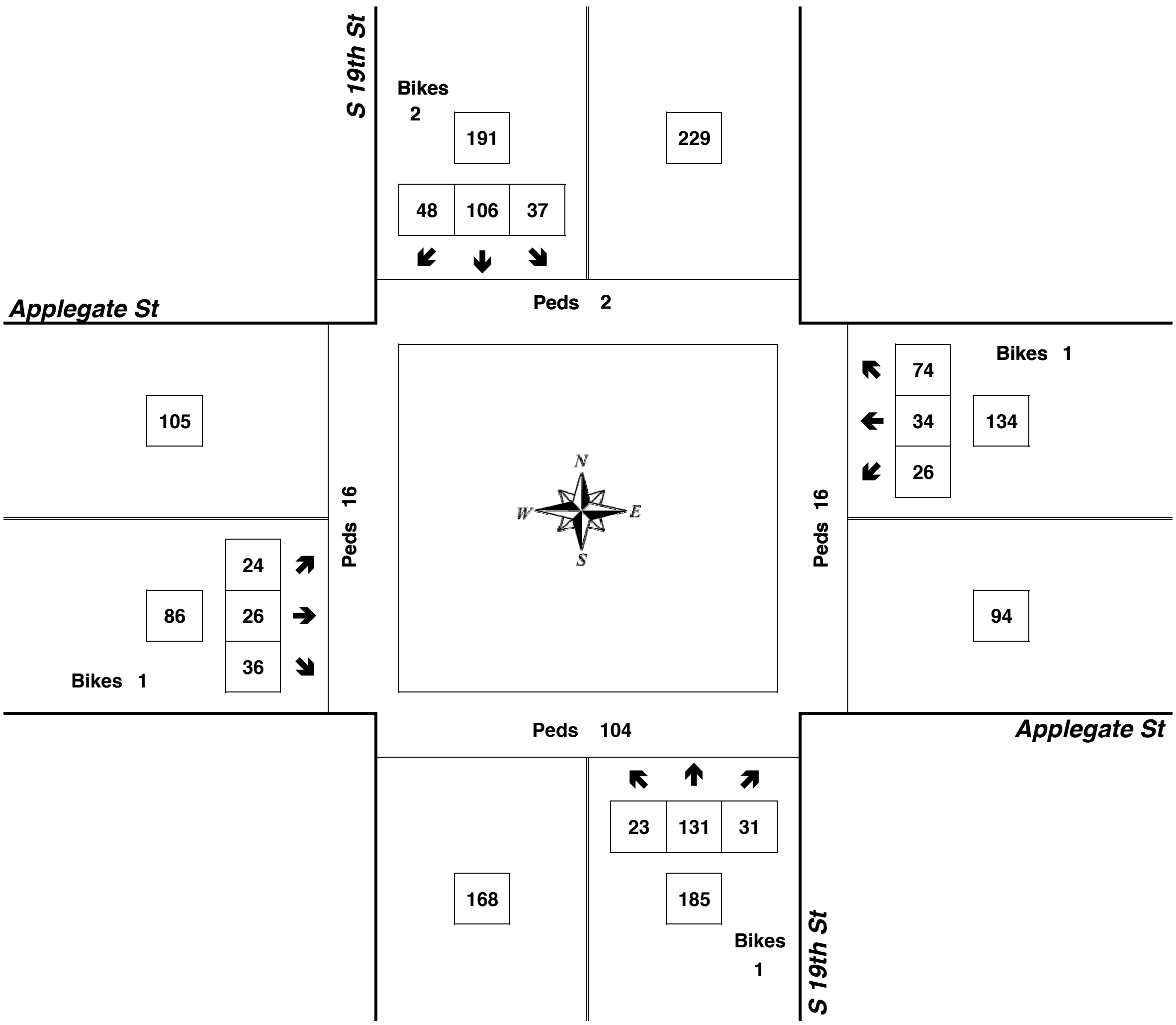
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

S 19th St & Applegate St

2:30 PM to 3:30 PM
Wednesday, October 28, 2015



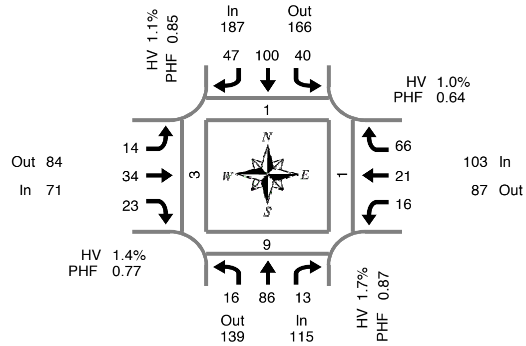
Approach	PHF	HV%	Volume
EB	0.55	1.2%	86
WB	0.49	7.5%	134
NB	0.59	2.7%	185
SB	0.81	5.2%	191
Intersection	0.75	4.4%	596

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

S 19th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	7	0	0	3	4	0	1	1	0	1	0	1	0	2	0	20	1	0	1	0
4:05 PM	0	9	1	0	2	3	3	1	2	2	3	0	0	3	4	0	32	0	0	0	0
4:10 PM	0	5	1	0	0	5	5	0	1	0	0	0	2	2	2	0	23	0	1	0	0
4:15 PM	0	5	1	1	1	4	1	1	2	1	1	0	0	0	1	2	17	1	0	1	1
4:20 PM	0	7	1	0	4	2	6	2	3	2	1	0	0	2	2	0	30	0	0	0	0
4:25 PM	1	7	0	0	0	2	6	2	0	2	1	0	2	0	4	0	25	0	0	1	6
4:30 PM	1	4	1	0	1	4	1	0	1	3	3	0	0	3	1	0	23	0	0	0	0
4:35 PM	0	8	0	0	2	6	3	0	1	2	1	0	0	4	2	0	29	0	0	0	0
4:40 PM	1	8	0	0	0	3	2	0	0	0	1	0	1	2	0	2	18	0	2	0	0
4:45 PM	0	0	1	0	2	6	6	0	2	2	2	0	1	5	5	0	32	1	0	2	0
4:50 PM	1	4	1	0	1	9	2	0	0	3	3	0	4	4	10	1	42	0	0	0	0
4:55 PM	0	6	0	0	3	6	4	0	0	2	1	0	0	0	0	0	22	0	0	0	0
5:00 PM	0	6	0	0	0	10	1	0	0	1	1	0	0	1	3	0	23	0	0	0	0
5:05 PM	2	6	1	0	5	5	3	0	2	1	2	0	0	1	4	0	32	0	0	0	0
5:10 PM	0	6	1	0	3	10	3	0	3	4	1	1	0	0	3	0	34	0	4	0	0
5:15 PM	3	8	2	0	0	8	4	0	0	4	2	0	2	2	3	0	38	1	0	0	0
5:20 PM	2	8	0	0	4	6	2	0	0	1	2	0	1	8	4	0	38	0	0	0	0
5:25 PM	1	5	2	0	3	6	6	0	3	1	3	0	0	1	3	0	34	0	0	0	0
5:30 PM	0	6	0	0	2	12	6	0	1	1	1	0	2	0	5	0	36	0	0	0	1
5:35 PM	3	11	0	0	4	9	4	0	1	2	1	0	0	2	6	1	43	0	2	0	1
5:40 PM	1	6	2	0	7	7	4	0	3	4	3	0	3	2	7	0	49	0	0	0	1
5:45 PM	1	6	2	0	1	11	5	0	0	4	2	0	5	0	5	0	42	0	0	0	0
5:50 PM	0	10	3	0	7	10	3	1	0	4	3	0	0	3	13	0	56	0	3	1	0
5:55 PM	3	8	0	0	4	6	6	0	1	7	2	0	3	1	10	0	51	0	0	0	0
Total Survey	21	156	20	1	59	154	86	8	27	53	41	1	27	46	99	6	789	4	12	6	10

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	21	2	0	5	12	8	2	4	2	4	0	3	5	8	0	75	1	1	1	0
4:15 PM	1	19	2	1	5	8	13	5	5	5	3	0	2	2	7	2	72	1	0	2	7
4:30 PM	2	20	1	0	3	13	6	0	2	5	5	0	1	9	3	2	70	0	2	0	0
4:45 PM	1	10	2	0	6	21	12	0	2	7	6	0	5	9	15	1	96	1	0	2	0
5:00 PM	2	18	2	0	8	25	7	0	5	6	4	1	0	2	10	0	89	0	4	0	0
5:15 PM	6	21	4	0	7	20	12	0	3	6	7	0	3	11	10	0	110	1	0	0	0
5:30 PM	4	23	2	0	13	28	14	0	5	7	5	0	5	4	18	1	128	0	2	0	3
5:45 PM	4	24	5	0	12	27	14	1	1	15	7	0	8	4	28	0	149	0	3	1	0
Total Survey	21	156	20	1	59	154	86	8	27	53	41	1	27	46	99	6	789	4	12	6	10

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	115	139	254	0	187	166	353	1	71	84	155	1	103	87	190	1	476	1	9	1	3
%HV	1.7%				1.1%				1.4%				1.0%				1.3%				
PHF	0.87				0.85				0.77				0.64				0.80				

By Movement	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	16	86	13	115	40	100	47	187	14	34	23	71	16	21	66	103	476
%HV	0.0%	2.3%	0.0%	1.7%	0.0%	2.0%	0.0%	1.1%	0.0%	2.9%	0.0%	1.4%	0.0%	0.0%	1.5%	1.0%	1.3%
PHF	0.67	0.90	0.46	0.87	0.67	0.89	0.73	0.85	0.70	0.57	0.72	0.77	0.50	0.48	0.59	0.64	0.80

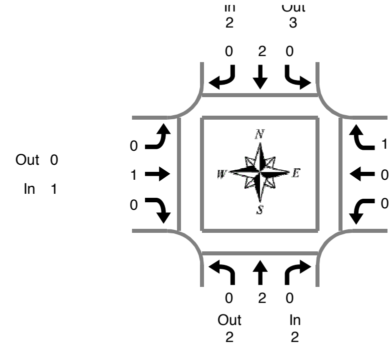
Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	5	70	7	1	19	54	39	7	13	19	18	0	11	25	33	5	313	3	3	5	7
4:15 PM	6	67	7	1	22	67	38	5	14	23	18	1	8	22	35	5	327	2	6	4	7
4:30 PM	11	69	9	0	24	79	37	0	12	24	22	1	9	31	38	3	365	2	6	2	0
4:45 PM	13	72	10	0	34	94	45	0	15	26	22	1	13	26	53	2	423	2	6	2	3
5:00 PM	16	86	13	0	40	100	47	1	14	34	23	1	16	21	66	1	476	1	9	1	3

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

S 19th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
4:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:05 PM	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	1	3
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:35 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
4:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
5:40 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	3
5:55 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Survey	1	4	0	5	0	5	0	5	0	1	1	2	0	1	1	2	14

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
4:00 PM	1	1	0	2	0	0	0	0	0	0	1	1	0	1	0	1	4
4:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:45 PM	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	4
Total Survey	1	4	0	5	0	5	0	5	0	1	1	2	0	1	1	2	14

Heavy Vehicle Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound S 19th St			Southbound S 19th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	2	4	2	3	5	1	0	1	1	1	2	6
PHF	0.25			0.50			0.25			0.25			0.38

By Movement	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	2	0	2	0	2	0	2	0	1	0	1	0	0	1	1	6
PHF	0.00	0.25	0.00	0.25	0.00	0.50	0.00	0.50	0.00	0.25	0.00	0.25	0.00	0.00	0.25	0.25	0.38

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

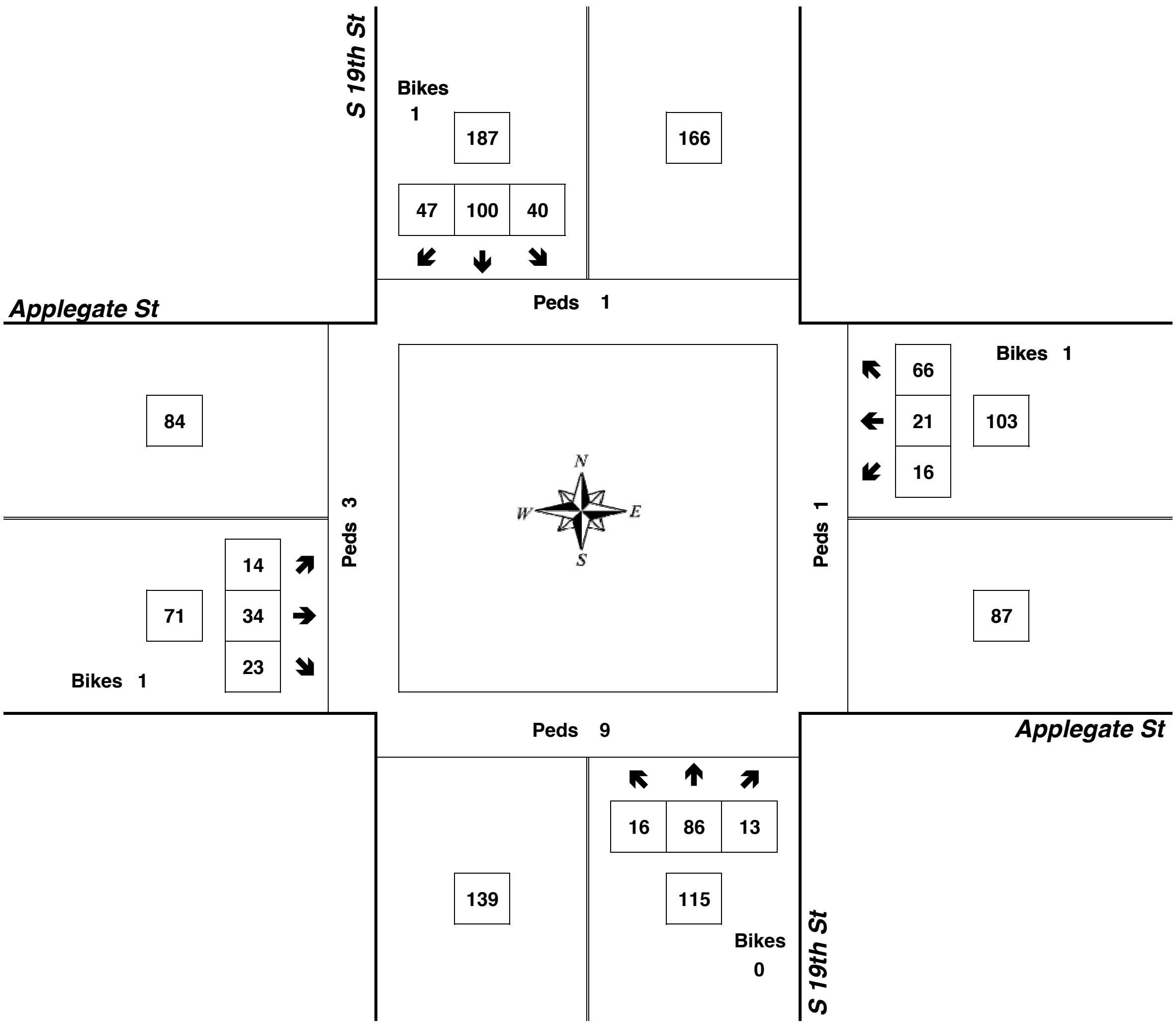
Interval Start	Northbound S 19th St				Southbound S 19th St				Eastbound Applegate St				Westbound Applegate St				Interval
Time	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total
4:00 PM	1	2	0	3	0	3	0	3	0	0	1	1	0	1	0	1	8
4:15 PM	0	1	0	1	0	3	0	3	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
4:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
5:00 PM	0	2	0	2	0	2	0	2	0	1	0	1	0	0	1	1	6

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

S 19th St & Applegate St

5:00 PM to 6:00 PM
Wednesday, October 28, 2015

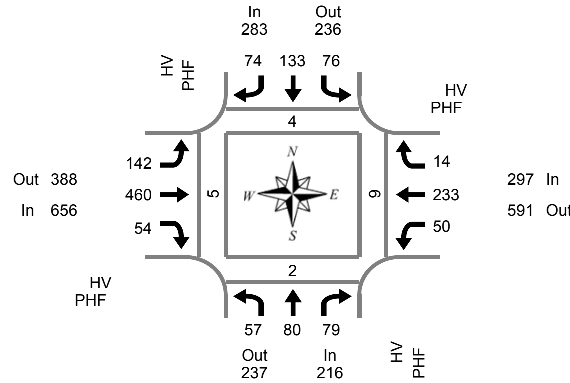


Approach	PHF	HV%	Volume
EB	0.77	1.4%	71
WB	0.64	1.0%	103
NB	0.87	1.7%	115
SB	0.85	1.1%	187
Intersection	0.80	1.3%	476

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

19th St & Hwy 34

Wednesday, May 16, 2012
6:30 AM to 9:30 AM

15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
6:30 AM	5	8	11	0	12	8	8	1	28	83	4	0	3	28	4	0	202	0	0	2	0
6:45 AM	7	9	10	0	12	8	18	0	16	70	6	1	4	45	4	0	209	0	0	0	0
7:00 AM	12	4	6	0	14	8	20	3	18	78	6	0	4	37	4	0	211	0	0	0	0
7:15 AM	10	12	18	0	14	27	17	0	28	106	12	1	6	48	4	0	302	1	1	1	1
7:30 AM	9	24	14	0	27	40	21	1	45	134	16	2	14	68	3	0	415	3	1	4	4
7:45 AM	24	24	23	0	23	45	22	1	40	117	22	0	22	69	2	0	433	0	0	3	0
8:00 AM	14	20	24	0	12	21	14	0	29	103	4	0	8	48	5	0	302	0	0	1	0
8:15 AM	9	4	6	0	11	4	20	0	31	94	6	1	8	59	2	0	254	0	0	0	0
8:30 AM	9	11	8	0	14	5	17	0	21	92	7	0	10	67	2	0	263	0	0	0	0
8:45 AM	6	9	5	0	14	8	22	0	18	89	6	0	8	59	2	0	246	0	0	0	0
9:00 AM	8	9	4	0	19	14	26	1	23	82	5	0	3	57	2	0	252	0	0	1	0
9:15 AM	6	6	8	0	10	10	12	0	19	112	1	0	4	47	3	0	238	1	1	3	0
Total Survey	119	140	137	0	182	198	217	7	316	1,160	95	5	94	632	37	0	3,327	5	3	15	5

Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	216	237	453	0	283	236	519	2	656	388	1,044	3	297	591	888	0	1,452	4	2	9	5
%HV																					
PHF																					

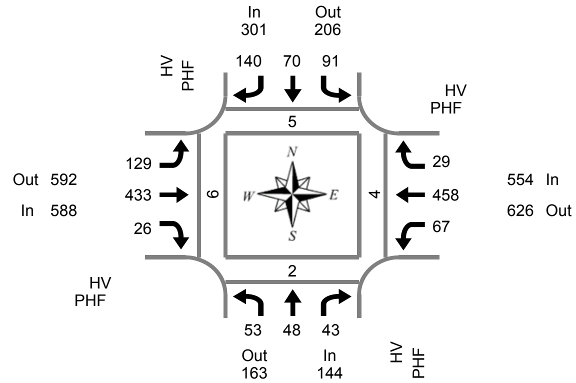
By Movement	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	57	80	79	216	76	133	74	283	142	460	54	656	50	233	14	297	1,452
%HV																	
PHF	0.59	0.83	0.82		0.70	0.74	0.84		0.79	0.86	0.61		0.57	0.84	0.70		0.84

Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
6:30 AM	34	33	45	0	52	51	63	4	90	337	28	2	17	158	16	0	924	1	1	3	1
6:45 AM	38	49	48	0	67	83	76	4	107	388	40	4	28	198	15	0	1,137	4	2	5	5
7:00 AM	55	64	61	0	78	120	80	5	131	435	56	3	46	222	13	0	1,361	4	2	8	5
7:15 AM	57	80	79	0	76	133	74	2	142	460	54	3	50	233	14	0	**1,452**	4	2	9	5
7:30 AM	56	72	67	0	73	110	77	2	145	448	48	3	52	244	12	0	1,404	3	1	8	4
7:45 AM	56	59	61	0	60	75	73	1	121	406	39	1	48	243	11	0	1,252	0	0	4	0
8:00 AM	38	44	43	0	51	38	73	0	99	378	23	1	34	233	11	0	1,065	0	0	1	0
8:15 AM	32	33	23	0	58	31	85	1	93	357	24	1	29	242	8	0	1,015	0	0	1	0
8:30 AM	29	35	25	0	57	37	77	1	81	375	19	0	25	230	9	0	999	1	1	4	0

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

19th St & Hwy 34

Wednesday, May 16, 2012
3:30 PM to 6:30 PM

15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	16	19	9	0	26	18	37	0	24	115	8	0	15	95	9	0	391	1	0	0	4
3:45 PM	15	14	10	1	22	12	23	1	26	118	5	0	17	92	8	0	362	0	0	0	1
4:00 PM	14	12	9	0	20	13	35	1	32	82	7	0	15	116	5	0	360	0	0	0	0
4:15 PM	18	13	5	0	18	20	38	1	29	90	2	0	13	106	10	0	362	2	0	0	1
4:30 PM	14	13	9	0	29	13	40	0	28	123	3	0	15	131	7	6	425	1	0	3	3
4:45 PM	8	7	10	2	19	10	34	0	31	107	4	0	12	109	4	1	355	2	2	0	1
5:00 PM	15	14	11	0	21	20	33	0	42	97	7	0	23	102	9	0	394	0	0	1	1
5:15 PM	16	14	13	2	22	27	33	1	28	106	12	1	17	116	9	0	413	0	0	2	0
5:30 PM	30	18	8	1	13	21	37	0	36	84	7	0	11	121	9	1	395	3	1	0	1
5:45 PM	18	11	8	1	17	23	37	2	22	73	5	0	17	143	9	1	383	4	4	1	1
6:00 PM	25	19	6	0	14	19	18	2	25	56	4	0	15	95	4	0	300	2	1	3	1
6:15 PM	8	8	1	0	10	13	23	1	20	54	2	0	8	90	3	0	240	1	1	1	0
Total Survey	197	162	99	7	231	209	388	9	343	1,105	66	1	178	1,316	86	9	4,380	16	9	11	14

Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	144	163	307	7	301	206	507	9	588	592	1,180	1	554	626	1,180	9	1,587	5	2	4	6
%HV																					
PHF																					

By Movement	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	53	48	43	144	91	70	140	301	129	433	26	588	67	458	29	554	1,587
%HV																	
PHF																	

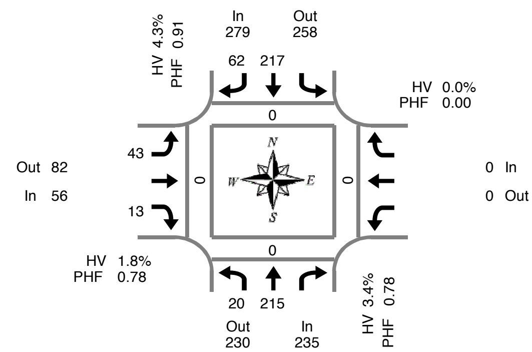
Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	63	58	33	1	86	63	133	3	111	405	22	0	60	409	32	0	1,475	3	0	0	6
3:45 PM	61	52	33	1	89	58	136	3	115	413	17	0	60	445	30	6	1,509	3	0	3	5
4:00 PM	54	45	33	2	86	56	147	2	120	402	16	0	55	462	26	7	1,502	5	2	3	5
4:15 PM	55	47	35	2	87	63	145	1	130	417	16	0	63	448	30	7	1,536	5	2	4	6
4:30 PM	53	48	43	4	91	70	140	1	129	433	26	1	67	458	29	7	**1,587**	3	2	6	5
4:45 PM	69	53	42	5	75	78	137	1	137	394	30	1	63	448	31	2	1,557	5	3	3	3
5:00 PM	79	57	40	4	73	91	140	3	128	360	31	1	68	482	36	2	1,585	7	5	4	3
5:15 PM	89	62	35	4	66	90	125	5	111	319	28	1	60	475	31	2	1,491	9	6	6	3
5:30 PM	81	56	23	2	54	76	115	5	103	267	18	0	51	449	25	2	1,318	10	7	5	3

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
_2:55 PM to 3:55 PM_

N 19th St & West Hills Rd

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 19th St				Southbound N 19th St				Eastbound West Hills Rd				Westbound				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
2:00 PM	0	5		0		18	4	1	4		1	0				0	32	0	0	0	0
2:05 PM	1	10		0		15	3	0	0		0	0				0	29	0	0	0	0
2:10 PM	1	12		0		8	2	0	1		1	0				0	25	0	0	0	0
2:15 PM	3	13		1		14	6	0	4		0	0				0	40	0	0	0	0
2:20 PM	1	11		0		19	6	0	5		0	0				0	42	0	0	0	0
2:25 PM	0	15		0		13	6	0	4		3	0				0	41	0	0	0	0
2:30 PM	0	9		0		15	3	0	1		2	0				0	30	0	0	0	0
2:35 PM	0	6		0		22	5	0	2		2	0				0	37	0	0	0	0
2:40 PM	2	15		0		21	2	0	1		0	0				0	41	0	0	0	0
2:45 PM	1	10		0		14	6	0	1		2	0				0	34	0	0	0	0
2:50 PM	1	19		0		12	6	1	3		1	0				0	42	0	0	0	0
2:55 PM	2	12		0		23	5	1	3		1	0				0	46	0	0	0	0
3:00 PM	2	15		0		16	5	0	1		2	0				0	41	0	0	0	0
3:05 PM	0	17		0		19	5	0	4		2	0				0	47	0	0	0	0
3:10 PM	3	21		1		23	3	0	1		2	0				0	53	0	0	0	0
3:15 PM	3	17		1		15	7	0	7		2	0				0	51	0	0	0	0
3:20 PM	0	15		0		16	5	0	2		0	0				0	38	0	0	0	0
3:25 PM	1	23		0		18	5	0	6		1	0				0	54	0	0	0	0
3:30 PM	2	23		0		16	5	0	2		0	0				0	48	0	0	0	0
3:35 PM	2	24		0		13	3	0	4		1	1				0	47	0	0	0	0
3:40 PM	2	14		0		19	3	0	7		0	0				0	45	0	0	0	0
3:45 PM	2	16		1		21	7	0	2		1	0				0	49	0	0	0	0
3:50 PM	1	18		0		18	9	0	4		1	0				0	51	0	0	0	0
3:55 PM	1	13		0		16	3	0	2		2	0				0	37	0	0	0	0
Total Survey	31	353		4		404	114	3	71		27	1				0	1,000	0	0	0	0

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 19th St				Southbound N 19th St				Eastbound West Hills Rd				Westbound				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
2:00 PM	2	27		0		41	9	1	5		2	0				0	86	0	0	0	0
2:15 PM	4	39		1		46	18	0	13		3	0				0	123	0	0	0	0
2:30 PM	2	30		0		58	10	0	4		4	0				0	108	0	0	0	0
2:45 PM	4	41		0		49	17	2	7		4	0				0	122	0	0	0	0
3:00 PM	5	53		1		58	13	0	6		6	0				0	141	0	0	0	0
3:15 PM	4	55		1		49	17	0	15		3	0				0	143	0	0	0	0
3:30 PM	6	61		0		48	11	0	13		1	1				0	140	0	0	0	0
3:45 PM	4	47		1		55	19	0	8		4	0				0	137	0	0	0	0
Total Survey	31	353		4		404	114	3	71		27	1				0	1,000	0	0	0	0

Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 19th St				Southbound N 19th St				Eastbound West Hills Rd				Westbound				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	235	230	465	3	279	258	537	1	56	82	138	1	0	0	0	0	570
%HV	3.4%				4.3%				1.8%				0.0%				3.7%
PHF	0.78				0.91				0.78				0.00				0.94

Pedestrians Crosswalk			
North	South	East	West
0	0	0	0

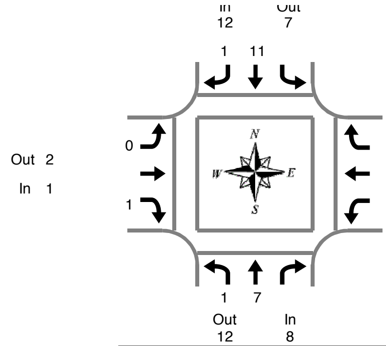
By Movement	Northbound N 19th St				Southbound N 19th St				Eastbound West Hills Rd				Westbound				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	20	215		235		217	62	279	43		13	56				0	570
%HV	5.0%	3.3%	NA	3.4%	NA	5.1%	1.6%	4.3%	0.0%	NA	7.7%	1.8%	NA	NA	NA	0.0%	3.7%
PHF	0.83	0.77		0.78		0.94	0.82	0.91	0.72		0.54	0.78				0.00	0.94

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 19th St				Southbound N 19th St				Eastbound West Hills Rd				Westbound				Interval Total	Pedestrians Crosswalk			
	L	T		Bikes		T	R	Bikes	L		R	Bikes				Bikes		North	South	East	West
2:00 PM	12	137		1		194	54	3	29		13	0				0	439	0	0	0	0
2:15 PM	15	163		2		211	58	2	30		17	0				0	494	0	0	0	0
2:30 PM	15	179		2		214	57	2	32		17	0				0	514	0	0	0	0
2:45 PM	19	210		2		204	58	2	41		14	1				0	546	0	0	0	0
3:00 PM	19	216		3		210	60	0	42		14	1				0	561	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
2:55 PM to 3:55 PM

N 19th St & West Hills Rd

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 19th St			Southbound N 19th St			Eastbound West Hills Rd			Westbound	Interval Total
	L	T	Total	T	R	Total	L	R	Total	Total	
2:00 PM	0	0	0	0	0	0	0	1	1	0	1
2:05 PM	0	1	1	1	0	1	0	0	0	0	2
2:10 PM	0	2	2	1	0	1	0	0	0	0	3
2:15 PM	1	1	2	0	0	0	1	0	1	0	3
2:20 PM	0	0	0	0	0	0	0	0	0	0	0
2:25 PM	0	1	1	2	0	2	1	0	1	0	4
2:30 PM	0	1	1	3	0	3	0	0	0	0	4
2:35 PM	0	0	0	6	0	6	0	1	1	0	7
2:40 PM	0	0	0	1	0	1	0	0	0	0	1
2:45 PM	0	1	1	1	0	1	0	0	0	0	2
2:50 PM	0	0	0	1	1	2	0	0	0	0	2
2:55 PM	0	0	0	1	0	1	0	0	0	0	1
3:00 PM	0	0	0	1	0	1	0	0	0	0	1
3:05 PM	0	0	0	1	0	1	0	1	1	0	2
3:10 PM	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	1	0	1	1	0	1	0	0	0	0	2
3:20 PM	0	1	1	0	0	0	0	0	0	0	1
3:25 PM	0	1	1	0	0	0	0	0	0	0	1
3:30 PM	0	1	1	1	1	2	0	0	0	0	3
3:35 PM	0	1	1	4	0	4	0	0	0	0	5
3:40 PM	0	1	1	2	0	2	0	0	0	0	3
3:45 PM	0	1	1	0	0	0	0	0	0	0	1
3:50 PM	0	1	1	0	0	0	0	0	0	0	1
3:55 PM	0	3	3	1	0	1	0	0	0	0	4
Total Survey	2	17	19	28	2	30	2	3	5	0	54

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound N 19th St			Southbound N 19th St			Eastbound West Hills Rd			Westbound	Interval Total
	L	T	Total	T	R	Total	L	R	Total	Total	
2:00 PM	0	3	3	2	0	2	0	1	1	0	6
2:15 PM	1	2	3	2	0	2	2	0	2	0	7
2:30 PM	0	1	1	10	0	10	0	1	1	0	12
2:45 PM	0	1	1	3	1	4	0	0	0	0	5
3:00 PM	0	0	0	2	0	2	0	1	1	0	3
3:15 PM	1	2	3	1	0	1	0	0	0	0	4
3:30 PM	0	3	3	7	1	8	0	0	0	0	11
3:45 PM	0	5	5	1	0	1	0	0	0	0	6
Total Survey	2	17	19	28	2	30	2	3	5	0	54

Heavy Vehicle Peak Hour Summary
2:55 PM to 3:55 PM

By Approach	Northbound N 19th St			Southbound N 19th St			Eastbound West Hills Rd			Westbound			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	8	12	20	12	7	19	1	2	3	0	0	0	21
PHF	0.67			0.38			0.25			0.00			0.48

By Movement	Northbound N 19th St			Southbound N 19th St			Eastbound West Hills Rd			Westbound	Total
	L	T	Total	T	R	Total	L	R	Total	Total	
Volume	1	7	8	11	1	12	0	1	1	0	21
PHF	0.25	0.58	0.67	0.39	0.25	0.38	0.00	0.25	0.25	0.00	0.48

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

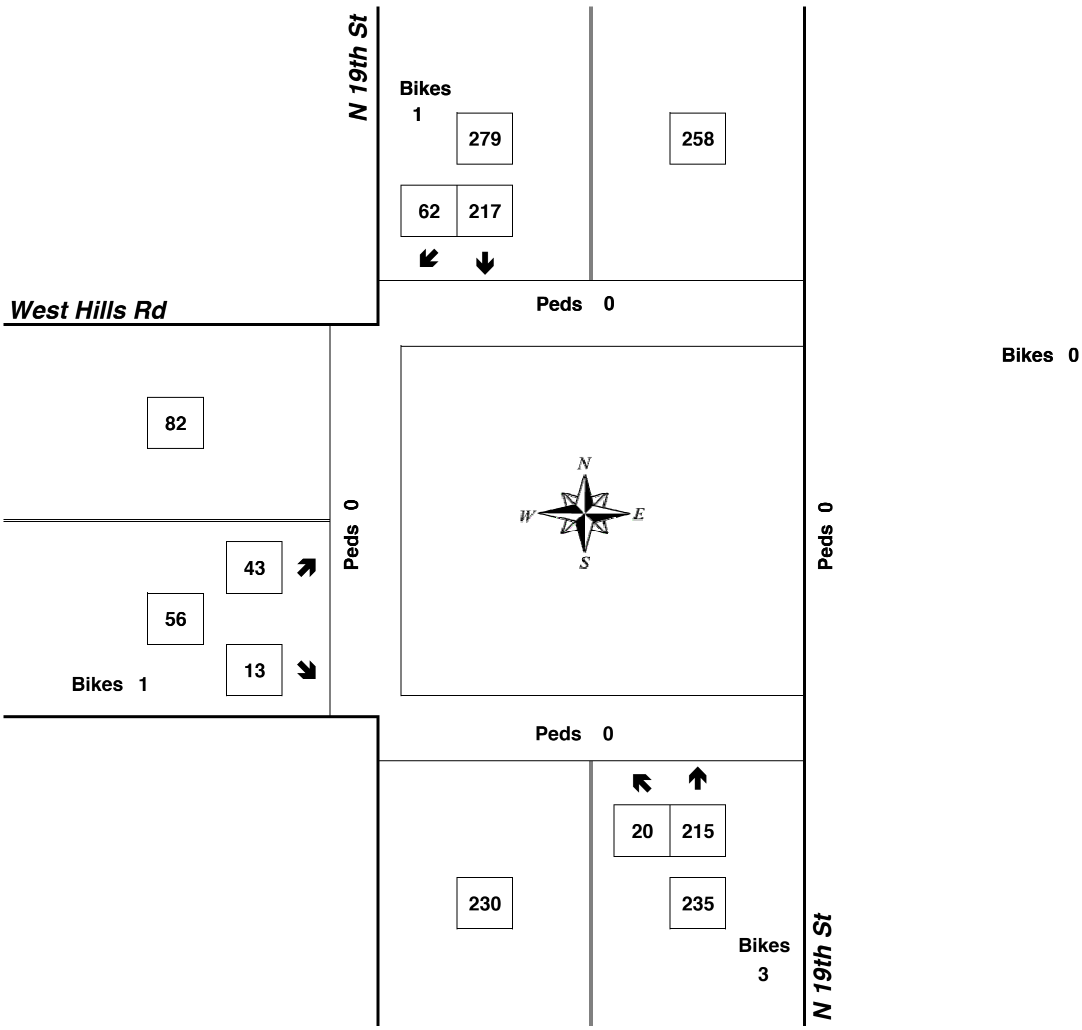
Interval Start Time	Northbound N 19th St			Southbound N 19th St			Eastbound West Hills Rd			Westbound	Interval Total
	L	T	Total	T	R	Total	L	R	Total	Total	
2:00 PM	1	7	8	17	1	18	2	2	4	0	30
2:15 PM	1	4	5	17	1	18	2	2	4	0	27
2:30 PM	1	4	5	16	1	17	0	2	2	0	24
2:45 PM	1	6	7	13	2	15	0	1	1	0	23
3:00 PM	1	10	11	11	1	12	0	1	1	0	24

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 19th St & West Hills Rd

2:55 PM to 3:55 PM
Wednesday, October 28, 2015

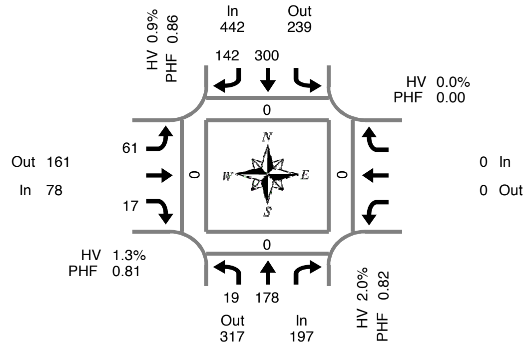


Approach	PHF	HV%	Volume
EB	0.78	1.8%	56
WB	0.00	0.0%	0
NB	0.78	3.4%	235
SB	0.91	4.3%	279
Intersection	0.94	3.7%	570

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:55 PM to 5:55 PM

N 19th St & West Hills Rd

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	T	Bikes	Southbound N 19th St T	R	Bikes	Eastbound West Hills Rd L	R	Bikes	Westbound Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	2	15	0	23	3	0	2	1	0	0	46	0	0	0	0
4:05 PM	4	26	0	17	7	0	5	1	0	0	60	0	0	0	0
4:10 PM	1	17	0	17	9	1	5	0	0	0	49	0	0	0	0
4:15 PM	1	17	0	24	6	1	3	2	0	0	53	0	0	0	0
4:20 PM	1	14	0	17	9	1	4	2	0	0	47	0	0	0	0
4:25 PM	1	12	0	18	6	0	2	0	0	0	39	0	0	0	0
4:30 PM	0	20	0	21	9	0	5	1	0	0	56	0	0	0	0
4:35 PM	3	13	0	18	9	0	4	1	0	0	48	0	0	0	0
4:40 PM	3	6	0	24	11	0	0	1	0	0	45	0	0	0	0
4:45 PM	1	13	0	23	11	0	3	1	0	0	52	0	0	0	0
4:50 PM	1	9	0	16	9	0	1	2	0	0	38	0	0	0	0
4:55 PM	2	11	0	26	10	0	6	2	0	0	57	0	0	0	0
5:00 PM	3	12	0	16	11	0	5	0	0	0	47	0	0	0	0
5:05 PM	4	16	0	28	13	0	2	2	0	0	65	0	0	0	0
5:10 PM	2	18	1	28	16	0	6	1	0	0	71	0	0	0	0
5:15 PM	0	20	0	30	14	0	3	1	0	0	68	0	0	0	0
5:20 PM	1	18	0	22	13	1	9	1	0	0	64	0	0	0	0
5:25 PM	1	16	0	26	12	0	5	2	0	0	62	0	0	0	0
5:30 PM	0	16	0	26	12	0	6	1	0	0	61	0	0	0	0
5:35 PM	4	19	0	31	10	0	2	3	0	0	69	0	0	0	0
5:40 PM	0	16	0	24	10	1	5	0	0	0	55	0	0	0	0
5:45 PM	1	9	0	20	11	0	6	2	0	0	49	0	0	0	0
5:50 PM	1	7	0	23	10	0	6	2	0	0	49	0	0	0	0
5:55 PM	2	13	0	18	10	0	4	1	0	0	48	0	0	0	0
Total Survey	39	353	1	536	241	5	99	30	0	0	1,298	0	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	T	Bikes	Southbound N 19th St T	R	Bikes	Eastbound West Hills Rd L	R	Bikes	Westbound Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	7	58	0	57	19	1	12	2	0	0	155	0	0	0	0
4:15 PM	3	43	0	59	21	2	9	4	0	0	139	0	0	0	0
4:30 PM	6	39	0	63	29	0	9	3	0	0	149	0	0	0	0
4:45 PM	4	33	0	65	30	0	10	5	0	0	147	0	0	0	0
5:00 PM	9	46	1	72	40	0	13	3	0	0	183	0	0	0	0
5:15 PM	2	54	0	78	39	1	17	4	0	0	194	0	0	0	0
5:30 PM	4	51	0	81	32	1	13	4	0	0	185	0	0	0	0
5:45 PM	4	29	0	61	31	0	16	5	0	0	146	0	0	0	0
Total Survey	39	353	1	536	241	5	99	30	0	0	1,298	0	0	0	0

Peak Hour Summary
4:55 PM to 5:55 PM

By Approach	Northbound N 19th St In	Out	Total	Bikes	Southbound N 19th St In	Out	Total	Bikes	Eastbound West Hills Rd In	Out	Total	Bikes	Westbound In	Out	Total	Bikes	Total
Volume	197	317	514	1	442	239	681	2	78	161	239	0	0	0	0	0	717
%HV	2.0%				0.9%				1.3%				0.0%				1.3%
PHF	0.82				0.86				0.81				0.00				0.88

Pedestrians Crosswalk North	South	East	West
0	0	0	0

By Movement	Northbound N 19th St L	T		Total	Southbound N 19th St	T	R	Total	Eastbound West Hills Rd L		R	Total	Westbound			Total	Total
Volume	19	178		197		300	142	442	61		17	78				0	717
%HV	0.0%	2.2%	NA	2.0%	NA	1.0%	0.7%	0.9%	1.6%	NA	0.0%	1.3%	NA	NA	NA	0.0%	1.3%
PHF	0.53	0.79		0.82		0.87	0.83	0.86	0.76		0.71	0.81				0.00	0.88

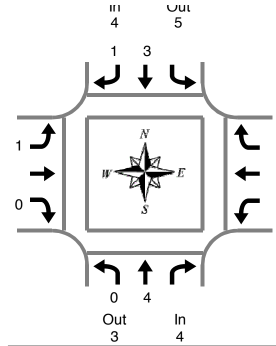
Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	T	Bikes	Southbound N 19th St T	R	Bikes	Eastbound West Hills Rd L	R	Bikes	Westbound Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
4:00 PM	20	173	0	244	99	3	40	14	0	0	590	0	0	0	0
4:15 PM	22	161	1	259	120	2	41	15	0	0	618	0	0	0	0
4:30 PM	21	172	1	278	138	1	49	15	0	0	673	0	0	0	0
4:45 PM	19	184	1	296	141	2	53	16	0	0	709	0	0	0	0
5:00 PM	19	180	1	292	142	2	59	16	0	0	708	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:55 PM to 5:55 PM

N 19th St & West Hills Rd

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	Northbound T	Northbound Total	Southbound N 19th St T	Southbound R	Southbound Total	Eastbound West Hills Rd L	Eastbound R	Eastbound Total	Westbound Total	Interval Total
4:00 PM	0	1	1	1	0	1	0	1	1	0	3
4:05 PM	0	1	1	0	0	0	0	0	0	0	1
4:10 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	1	1	0	0	0	0	0	0	0	1
4:25 PM	0	1	1	1	0	1	0	0	0	0	2
4:30 PM	0	4	4	0	0	0	0	0	0	0	4
4:35 PM	0	1	1	0	0	0	0	0	0	0	1
4:40 PM	0	1	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	1	0	1	0	0	0	0	1
4:50 PM	0	0	0	0	0	0	0	1	1	0	1
4:55 PM	0	1	1	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0
5:05 PM	0	0	0	0	0	0	0	0	0	0	0
5:10 PM	0	1	1	0	0	0	0	0	0	0	1
5:15 PM	0	1	1	0	0	0	0	0	0	0	1
5:20 PM	0	0	0	0	0	0	1	0	1	0	1
5:25 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	1	1	1	1	2	0	0	0	0	3
5:40 PM	0	0	0	1	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	1	0	1	0	0	0	0	1
5:55 PM	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	14	14	6	1	7	1	2	3	0	24

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	Northbound T	Northbound Total	Southbound N 19th St T	Southbound R	Southbound Total	Eastbound West Hills Rd L	Eastbound R	Eastbound Total	Westbound Total	Interval Total
4:00 PM	0	2	2	1	0	1	0	1	1	0	4
4:15 PM	0	2	2	1	0	1	0	0	0	0	3
4:30 PM	0	6	6	0	0	0	0	0	0	0	6
4:45 PM	0	1	1	1	0	1	0	1	1	0	3
5:00 PM	0	1	1	0	0	0	0	0	0	0	1
5:15 PM	0	1	1	0	0	0	1	0	1	0	2
5:30 PM	0	1	1	2	1	3	0	0	0	0	4
5:45 PM	0	0	0	1	0	1	0	0	0	0	1
Total Survey	0	14	14	6	1	7	1	2	3	0	24

Heavy Vehicle Peak Hour Summary
4:55 PM to 5:55 PM

By Approach	Northbound N 19th St In	Northbound Out	Northbound Total	Southbound N 19th St In	Southbound Out	Southbound Total	Eastbound West Hills Rd In	Eastbound Out	Eastbound Total	Westbound In	Westbound Out	Westbound Total	Total
Volume	4	3	7	4	5	9	1	1	2	0	0	0	9
PHF	0.50			0.33			0.25			0.00			0.56

By Movement	Northbound N 19th St L	Northbound T	Northbound Total	Southbound N 19th St T	Southbound R	Southbound Total	Eastbound West Hills Rd L	Eastbound R	Eastbound Total	Westbound Total	Total
Volume	0	4	4	3	1	4	1	0	1	0	9
PHF	0.00	0.50	0.50	0.38	0.25	0.33	0.25	0.00	0.25	0.00	0.56

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound N 19th St L	Northbound T	Northbound Total	Southbound N 19th St T	Southbound R	Southbound Total	Eastbound West Hills Rd L	Eastbound R	Eastbound Total	Westbound Total	Interval Total
4:00 PM	0	11	11	3	0	3	0	2	2	0	16
4:15 PM	0	10	10	2	0	2	0	1	1	0	13
4:30 PM	0	9	9	1	0	1	1	1	2	0	12
4:45 PM	0	4	4	3	1	4	1	1	2	0	10
5:00 PM	0	3	3	3	1	4	1	0	1	0	8

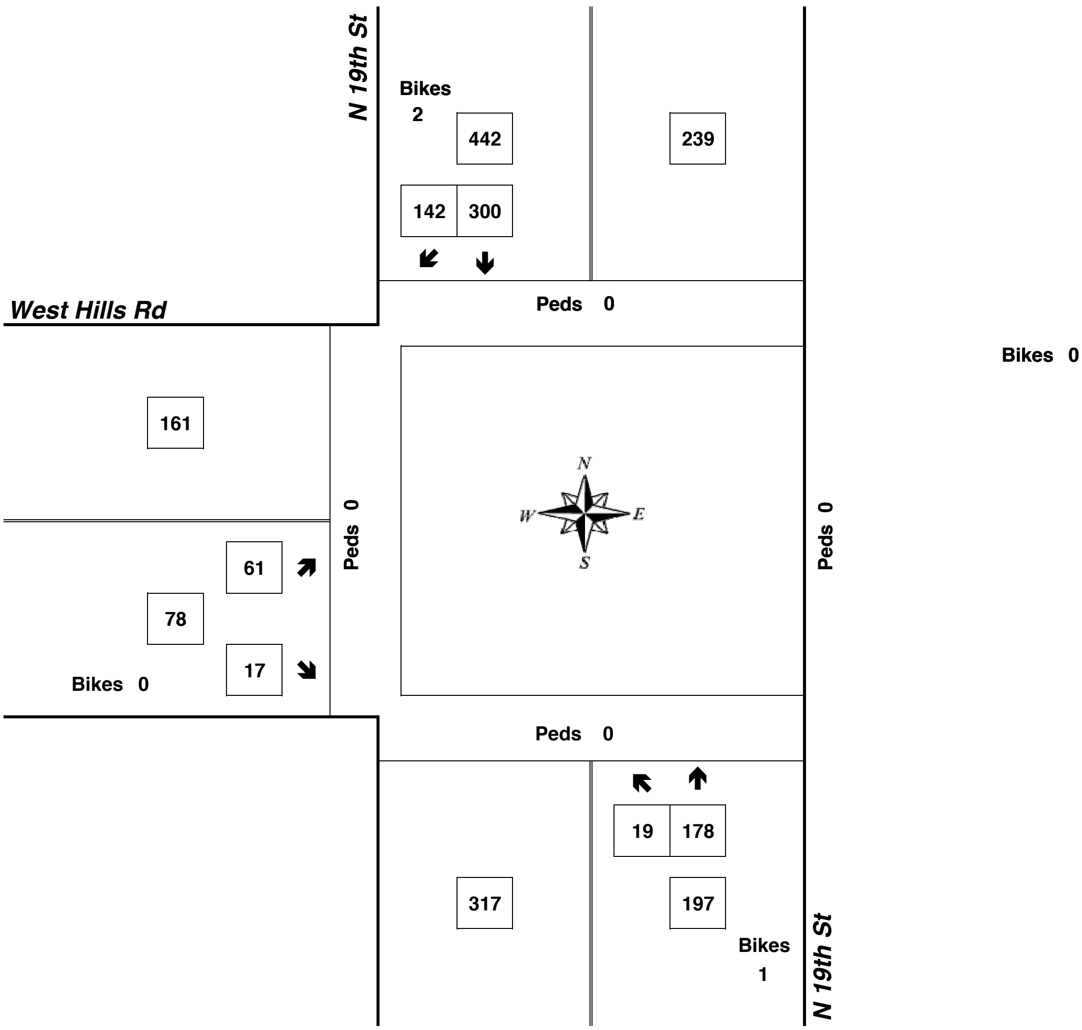
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

N 19th St & West Hills Rd

4:55 PM to 5:55 PM
Wednesday, October 28, 2015



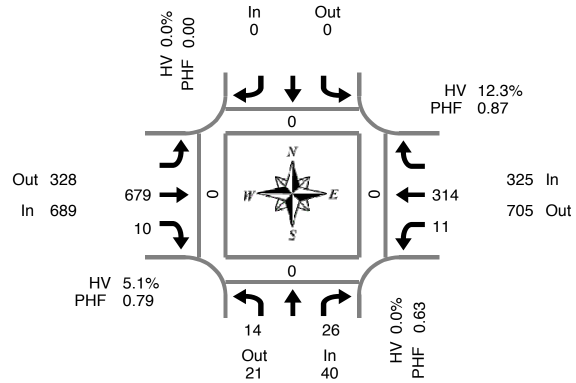
Approach	PHF	HV%	Volume
EB	0.81	1.3%	78
WB	0.00	0.0%	0
NB	0.82	2.0%	197
SB	0.86	0.9%	442
Intersection	0.88	1.3%	717

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
7:30 AM to 8:30 AM

26th St & Hwy 34

Tuesday, May 15, 2012
6:30 AM to 9:30 AM

15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
6:30 AM	1		2	0				0		105	1	0	0	55		0	164	0	0	1	0
6:45 AM	3		1	0				0		113	0	1	1	64		0	182	0	0	0	0
7:00 AM	2		3	0				0		101	0	0	0	54		0	160	0	0	0	0
7:15 AM	2		3	0				0		125	2	1	0	64		0	196	0	0	0	0
7:30 AM	3		13	0				0		213	4	1	2	79		0	314	0	0	0	0
7:45 AM	8		5	0				0		159	1	0	3	90		0	266	0	0	0	0
8:00 AM	2		3	0				0		174	2	0	2	74		1	257	0	0	0	0
8:15 AM	1		5	0				0		133	3	0	4	71		0	217	0	0	0	0
8:30 AM	2		6	0				0		124	1	1	4	93		1	230	0	0	0	0
8:45 AM	1		7	0				0		114	1	0	1	78		0	202	0	0	0	0
9:00 AM	1		4	0				0		104	1	0	0	72		0	182	0	0	0	0
9:15 AM	4		6	0				0		129	1	0	4	66		0	210	0	0	0	0
Total Survey	30		58	0				0		1,594	17	4	21	860		2	2,580	0	0	1	0

Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	40	21	61	0	0	0	0	0	689	328	1,017	1	325	705	1,030	1	1,054	0	0	0	0
%HV	0.0%				0.0%				5.1%				12.3%				7.1%				
PHF	0.63				0.00				0.79				0.87				0.84				

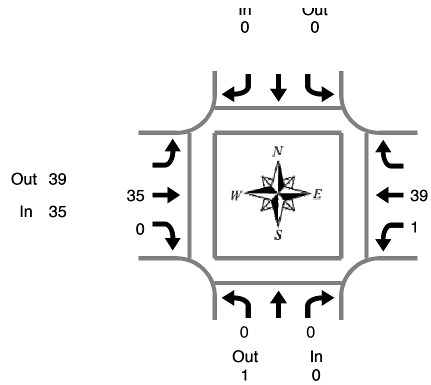
By Movement	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	14		26	40				0		679	10	689	11	314		325	1,054
%HV	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	NA	5.2%	0.0%	5.1%	9.1%	12.4%	NA	12.3%	7.1%
PHF	0.44		0.50	0.63				0.00		0.80	0.63	0.79	0.69	0.87		0.87	0.84

Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
6:30 AM	8		9	0				0		444	3	2	1	237		0	702	0	0	1	0
6:45 AM	10		20	0				0		552	6	3	3	261		0	852	0	0	0	0
7:00 AM	15		24	0				0		598	7	2	5	287		0	936	0	0	0	0
7:15 AM	15		24	0				0		671	9	2	7	307		1	1,033	0	0	0	0
7:30 AM	14		26	0				0		679	10	1	11	314		1	1,054	0	0	0	0
7:45 AM	13		19	0				0		590	7	1	13	328		2	970	0	0	0	0
8:00 AM	6		21	0				0		545	7	1	11	316		2	906	0	0	0	0
8:15 AM	5		22	0				0		475	6	1	9	314		1	831	0	0	0	0
8:30 AM	8		23	0				0		471	4	1	9	309		1	824	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:30 AM to 8:30 AM

26th St & Hwy 34

Tuesday, May 15, 2012
6:30 AM to 9:30 AM

Heavy Vehicle 15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
6:30 AM	0		0	0				0		5	0	5	0	7		7	12
6:45 AM	0		0	0				0		8	0	8	0	7		7	15
7:00 AM	0		0	0				0		12	0	12	0	12		12	24
7:15 AM	0		0	0				0		5	0	5	0	12		12	17
7:30 AM	0		0	0				0		7	0	7	0	10		10	17
7:45 AM	0		0	0				0		9	0	9	0	8		8	17
8:00 AM	0		0	0				0		4	0	4	0	15		15	19
8:15 AM	0		0	0				0		15	0	15	1	6		7	22
8:30 AM	0		0	0				0		9	0	9	0	20		20	29
8:45 AM	0		1	1				0		7	0	7	0	7		7	15
9:00 AM	0		0	0				0		5	0	5	0	10		10	15
9:15 AM	0		0	0				0		7	0	7	1	13		14	21
Total Survey	0		1	1				0		93	0	93	2	127		129	223

Heavy Vehicle Peak Hour Summary
7:30 AM to 8:30 AM

By Approach	Northbound 26th St			Southbound 26th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	0	0	0	35	39	74	40	35	75	75
PHF	0.00			0.00			0.28			0.24			0.27

By Movement	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	0		0	0				0		35	0	35	1	39		40	75
PHF	0.00		0.00	0.00				0.00		0.28	0.00	0.28	0.25	0.24		0.24	0.27

Heavy Vehicle Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
6:30 AM	0		0	0				0		30	0	30	0	38		38	68
6:45 AM	0		0	0				0		32	0	32	0	41		41	73
7:00 AM	0		0	0				0		33	0	33	0	42		42	75
7:15 AM	0		0	0				0		25	0	25	0	45		45	70
7:30 AM	0		0	0				0		35	0	35	1	39		40	75
7:45 AM	0		0	0				0		37	0	37	1	49		50	87
8:00 AM	0		1	1				0		35	0	35	1	48		49	85
8:15 AM	0		1	1				0		36	0	36	1	43		44	81
8:30 AM	0		1	1				0		28	0	28	1	50		51	80

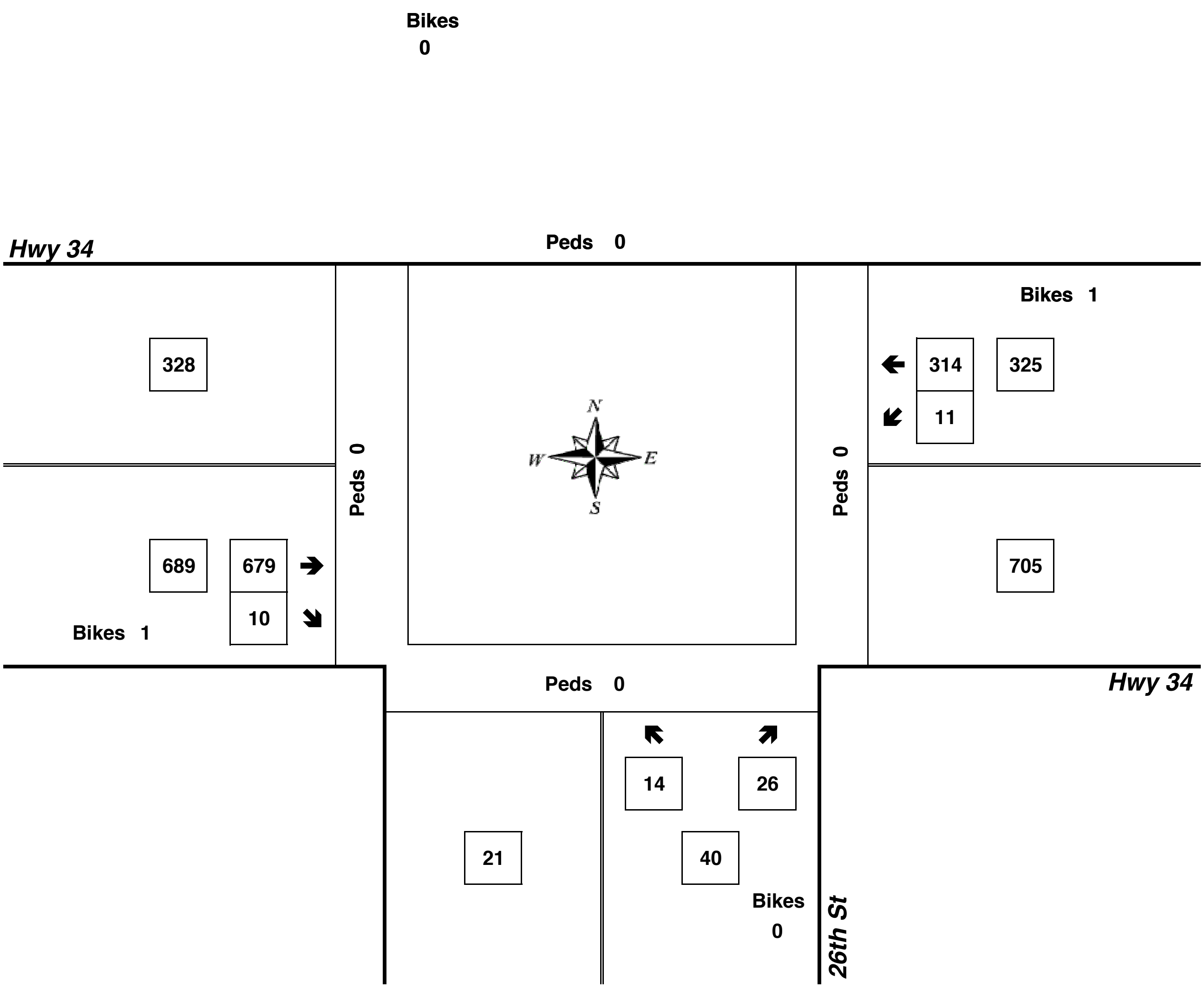
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

26th St & Hwy 34

7:30 AM to 8:30 AM
Tuesday, May 15, 2012

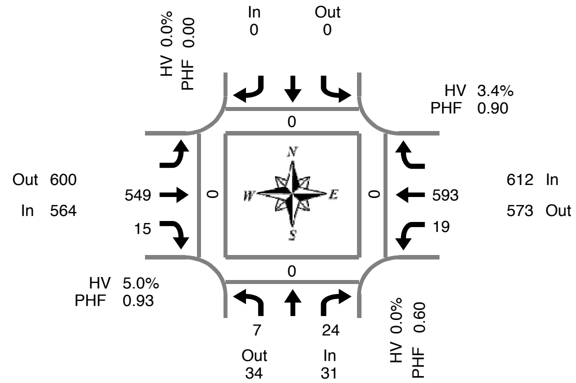


Approach	PHF	HV%	Volume
EB	0.79	5.1%	689
WB	0.87	12.3%	325
NB	0.63	0.0%	40
SB	0.00	0.0%	0
Intersection	0.84	7.1%	1,054

Count Period: 6:30 AM to 9:30 AM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:30 PM to 5:30 PM

26th St & Hwy 34

Tuesday, May 15, 2012
3:30 PM to 6:30 PM

15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
3:30 PM	1		3	0				0		165	1	0	3	133		0	306	0	0	0	0
3:45 PM	6		5	0				0		149	3	1	3	131		0	297	0	0	0	0
4:00 PM	0		1	0				0		106	3	1	3	134		0	247	0	0	0	0
4:15 PM	3		6	0				0		125	1	0	6	143		0	284	0	0	0	0
4:30 PM	4		9	0				0		152	0	0	4	166		1	335	0	0	0	0
4:45 PM	1		5	0				0		133	6	0	2	133		1	280	0	0	0	0
5:00 PM	0		5	0				0		136	3	0	5	145		1	294	0	0	0	0
5:15 PM	2		5	0				0		128	6	0	8	149		0	298	0	0	0	0
5:30 PM	0		7	0				0		111	2	0	4	151		0	275	0	0	0	0
5:45 PM	3		3	0				0		91	1	0	3	191		2	292	0	0	0	0
6:00 PM	4		2	0				0		101	0	0	3	131		0	241	0	0	0	0
6:15 PM	1		6	0				0		66	2	0	4	115		0	194	0	0	0	0
Total Survey	25		57	0				0		1,463	28	2	48	1,722		5	3,343	0	0	0	0

Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	31	34	65	0	0	0	0	0	564	600	1,164	0	612	573	1,185	3	1,207	0	0	0	0
%HV	0.0%				0.0%				5.0%				3.4%				4.1%				
PHF	0.60				0.00				0.93				0.90				0.90				

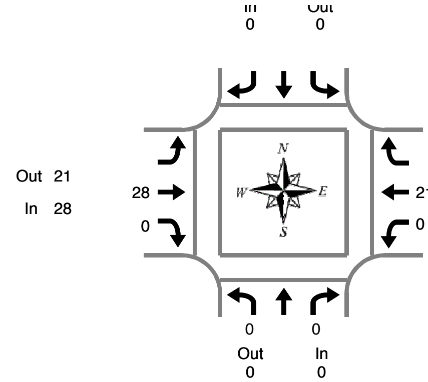
By Movement	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	7		24	31				0		549	15	564	19	593		612	1,207
%HV	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	NA	5.1%	0.0%	5.0%	0.0%	3.5%	NA	3.4%	4.1%
PHF	0.44		0.67	0.60				0.00		0.90	0.63	0.93	0.59	0.89		0.90	0.90

Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total	Pedestrians Crosswalk			
	L		R	Bikes				Bikes		T	R	Bikes	L	T		Bikes		North	South	East	West
3:30 PM	10		15	0				0		545	8	2	15	541		0	1,134	0	0	0	0
3:45 PM	13		21	0				0		532	7	2	16	574		1	1,163	0	0	0	0
4:00 PM	8		21	0				0		516	10	1	15	576		2	1,146	0	0	0	0
4:15 PM	8		25	0				0		546	10	0	17	587		3	1,193	0	0	0	0
4:30 PM	7		24	0				0		549	15	0	19	593		3	1,207	0	0	0	0
4:45 PM	3		22	0				0		508	17	0	19	578		2	1,147	0	0	0	0
5:00 PM	5		20	0				0		466	12	0	20	636		3	1,159	0	0	0	0
5:15 PM	9		17	0				0		431	9	0	18	622		2	1,106	0	0	0	0
5:30 PM	8		18	0				0		369	5	0	14	588		2	1,002	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
4:30 PM to 5:30 PM

26th St & Hwy 34

Tuesday, May 15, 2012
3:30 PM to 6:30 PM

Heavy Vehicle 15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
3:30 PM	0		0	0				0		16	0	16	0	1		1	17
3:45 PM	0		0	0				0		14	0	14	1	3		4	18
4:00 PM	0		0	0				0		7	0	7	0	9		9	16
4:15 PM	0		0	0				0		6	0	6	0	6		6	12
4:30 PM	0		0	0				0		7	0	7	0	6		6	13
4:45 PM	0		0	0				0		11	0	11	0	6		6	17
5:00 PM	0		0	0				0		5	0	5	0	4		4	9
5:15 PM	0		0	0				0		5	0	5	0	5		5	10
5:30 PM	0		0	0				0		2	0	2	0	5		5	7
5:45 PM	0		0	0				0		1	0	1	0	3		3	4
6:00 PM	0		0	0				0		6	0	6	0	1		1	7
6:15 PM	0		0	0				0		3	0	3	0	3		3	6
Total Survey	0		0	0				0		83	0	83	1	52		53	136

Heavy Vehicle Peak Hour Summary
4:30 PM to 5:30 PM

By Approach	Northbound 26th St			Southbound 26th St			Eastbound Hwy 34			Westbound Hwy 34			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	28	21	49	21	28	49	49
PHF	0.00			0.00			0.19			0.25			0.24

By Movement	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Total
	L		R	Total				Total		T	R	Total	L	T		Total	
Volume	0		0	0				0		28	0	28	0	21		21	49
PHF	0.00		0.00	0.00				0.00		0.19	0.00	0.19	0.00	0.25		0.25	0.24

Heavy Vehicle Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 26th St				Southbound 26th St				Eastbound Hwy 34				Westbound Hwy 34				Interval Total
	L		R	Total				Total		T	R	Total	L	T		Total	
3:30 PM	0		0	0				0		43	0	43	1	19		20	63
3:45 PM	0		0	0				0		34	0	34	1	24		25	59
4:00 PM	0		0	0				0		31	0	31	0	27		27	58
4:15 PM	0		0	0				0		29	0	29	0	22		22	51
4:30 PM	0		0	0				0		28	0	28	0	21		21	49
4:45 PM	0		0	0				0		23	0	23	0	20		20	43
5:00 PM	0		0	0				0		13	0	13	0	17		17	30
5:15 PM	0		0	0				0		14	0	14	0	14		14	28
5:30 PM	0		0	0				0		12	0	12	0	12		12	24

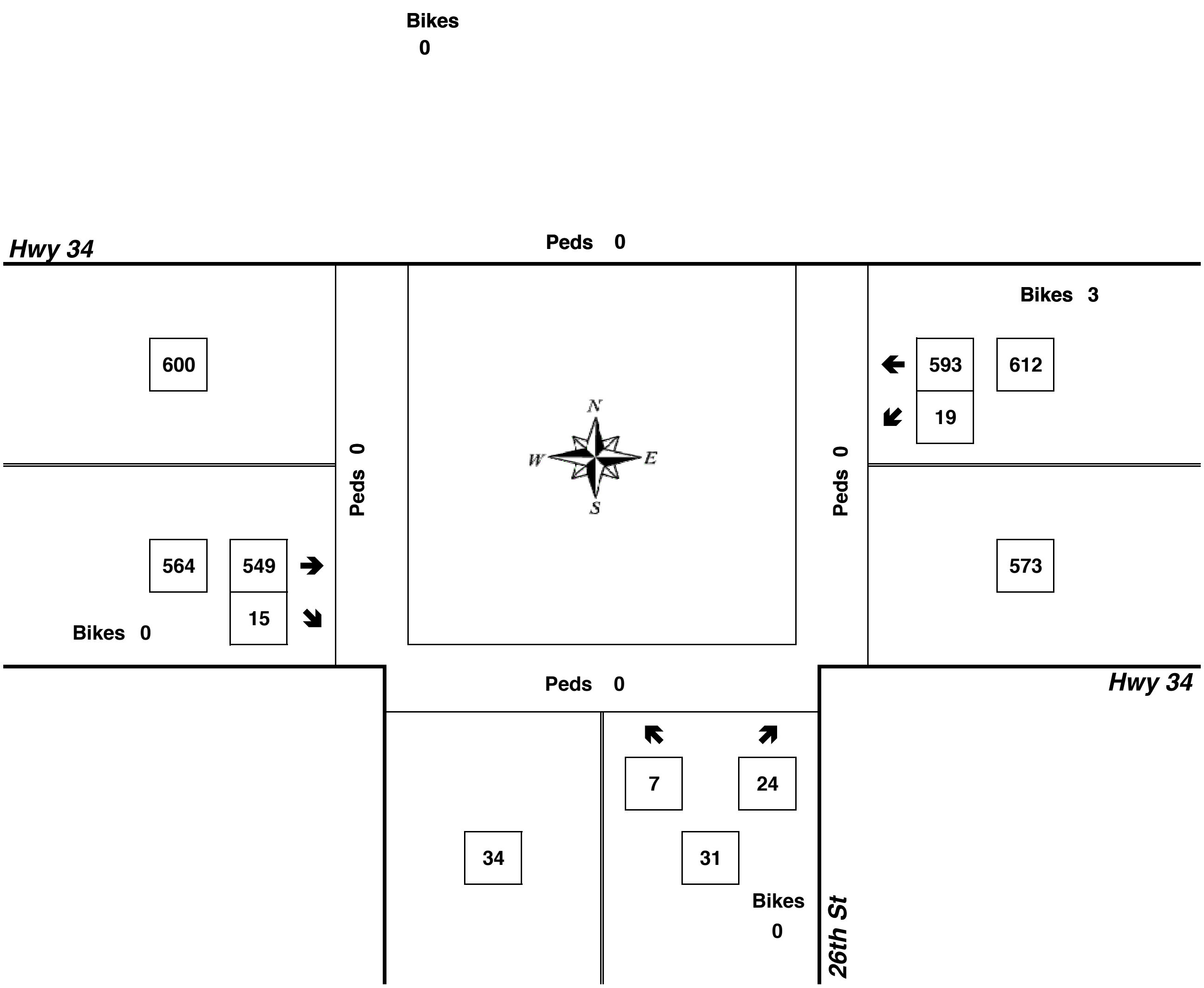
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

26th St & Hwy 34

4:30 PM to 5:30 PM
Tuesday, May 15, 2012

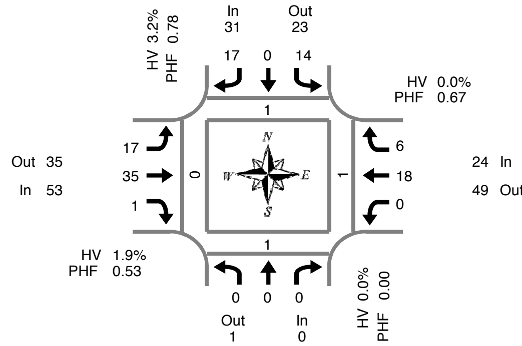


Approach	PHF	HV%	Volume
EB	0.93	5.0%	564
WB	0.90	3.4%	612
NB	0.60	0.0%	31
SB	0.00	0.0%	0
Intersection	0.90	4.1%	1,207

Count Period: 3:30 PM to 6:30 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
3:00 PM to 4:00 PM

N 26th St & Applegate St

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3	0	0	0	0
2:05 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	4	0	1	0	0
2:10 PM	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	4	0	0	0	0
2:15 PM	1	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0
2:20 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	4	0	0	0	0
2:25 PM	0	0	0	0	3	0	1	0	0	1	0	0	0	1	0	0	6	0	0	0	0
2:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	3	2	0	11	0	0	0	0
2:35 PM	0	0	0	0	0	0	1	0	0	2	0	0	0	3	0	0	6	0	0	0	0
2:40 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0
2:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	6	2	1	9	0	0	0	0
2:50 PM	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	5	0	0	0	0
2:55 PM	0	0	0	0	1	0	0	0	0	1	0	1	0	2	1	0	5	0	0	0	0
3:00 PM	0	0	0	0	1	0	1	0	0	2	1	0	0	2	1	0	8	0	0	0	0
3:05 PM	0	0	0	0	1	0	2	0	0	3	0	0	0	2	1	0	9	0	0	0	0
3:10 PM	0	0	0	0	0	0	3	0	1	4	0	0	0	0	0	0	8	0	0	0	0
3:15 PM	0	0	0	0	1	0	0	0	3	8	0	2	0	0	0	0	12	0	0	0	0
3:20 PM	0	0	0	0	2	0	3	0	3	6	0	0	0	1	1	0	16	0	1	1	0
3:25 PM	0	0	0	0	2	0	1	0	1	4	0	0	0	1	0	0	9	0	0	0	0
3:30 PM	0	0	0	0	0	0	2	0	1	2	0	0	0	2	0	0	7	0	0	0	0
3:35 PM	0	0	0	0	1	0	0	0	0	2	0	0	0	4	1	0	8	0	0	0	0
3:40 PM	0	0	0	0	3	0	0	0	2	1	0	0	0	0	0	0	6	0	0	0	0
3:45 PM	0	0	0	0	1	0	1	0	0	1	0	0	0	3	1	0	7	0	0	0	0
3:50 PM	0	0	0	0	1	0	4	0	2	1	0	0	0	2	1	0	11	0	0	0	0
3:55 PM	0	0	0	0	1	0	0	0	4	1	0	0	0	1	0	0	7	1	0	0	0
Total Survey	1	0	0	0	20	0	27	0	23	48	1	4	0	38	12	1	170	1	2	1	0

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	0	0	0	0	1	0	2	0	2	3	0	0	0	2	1	0	11	0	1	0	0
2:15 PM	1	0	0	0	4	0	3	0	1	2	0	0	0	3	0	0	14	0	0	0	0
2:30 PM	0	0	0	0	0	0	4	0	0	5	0	1	0	7	2	0	18	0	0	0	0
2:45 PM	0	0	0	0	1	0	1	0	3	3	0	1	0	8	3	1	19	0	0	0	0
3:00 PM	0	0	0	0	2	0	6	0	1	9	1	0	0	4	2	0	25	0	0	0	0
3:15 PM	0	0	0	0	5	0	4	0	7	18	0	2	0	2	1	0	37	0	1	1	0
3:30 PM	0	0	0	0	4	0	2	0	3	5	0	0	0	6	1	0	21	0	0	0	0
3:45 PM	0	0	0	0	3	0	5	0	6	3	0	0	0	6	2	0	25	1	0	0	0
Total Survey	1	0	0	0	20	0	27	0	23	48	1	4	0	38	12	1	170	1	2	1	0

Peak Hour Summary
3:00 PM to 4:00 PM

By Approach	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	0	1	1	0	31	23	54	0	53	35	88	2	24	49	73	0	108
%HV	0.0%				3.2%				1.9%				0.0%				1.9%
PHF	0.00				0.78				0.53				0.67				0.73

Pedestrians Crosswalk			
North	South	East	West
1	1	1	0

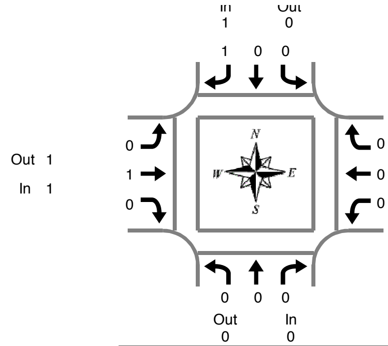
By Movement	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	14	0	17	31	17	35	1	53	0	18	6	24	108
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	3.2%	0.0%	2.9%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	1.9%
PHF	0.00	0.00	0.00	0.00	0.70	0.00	0.71	0.78	0.61	0.49	0.25	0.53	0.00	0.64	0.75	0.67	0.73

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	1	0	0	0	6	0	10	0	6	13	0	2	0	20	6	1	62	0	1	0	0
2:15 PM	1	0	0	0	7	0	14	0	5	19	1	2	0	22	7	1	76	0	0	0	0
2:30 PM	0	0	0	0	8	0	15	0	11	35	1	4	0	21	8	1	99	0	1	1	0
2:45 PM	0	0	0	0	12	0	13	0	14	35	1	3	0	20	7	1	102	0	1	1	0
3:00 PM	0	0	0	0	14	0	17	0	17	35	1	2	0	18	6	0	108	1	1	1	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



N 26th St & Applegate St

Wednesday, October 28, 2015

2:00 PM to 4:00 PM

Peak Hour Summary
3:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:25 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:25 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:50 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	0	0	0	0	0	0	2	2	0	1	0	1	0	0	0	0	3

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total Survey	0	0	0	0	0	0	2	2	0	1	0	1	0	0	0	0	3

Heavy Vehicle Peak Hour Summary
3:00 PM to 4:00 PM

By Approach	Northbound Approach			Southbound N 26th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	0	1	1	1	2	0	1	1	2
PHF	0.00			0.25			0.25			0.00			0.50

By Movement	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.50

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

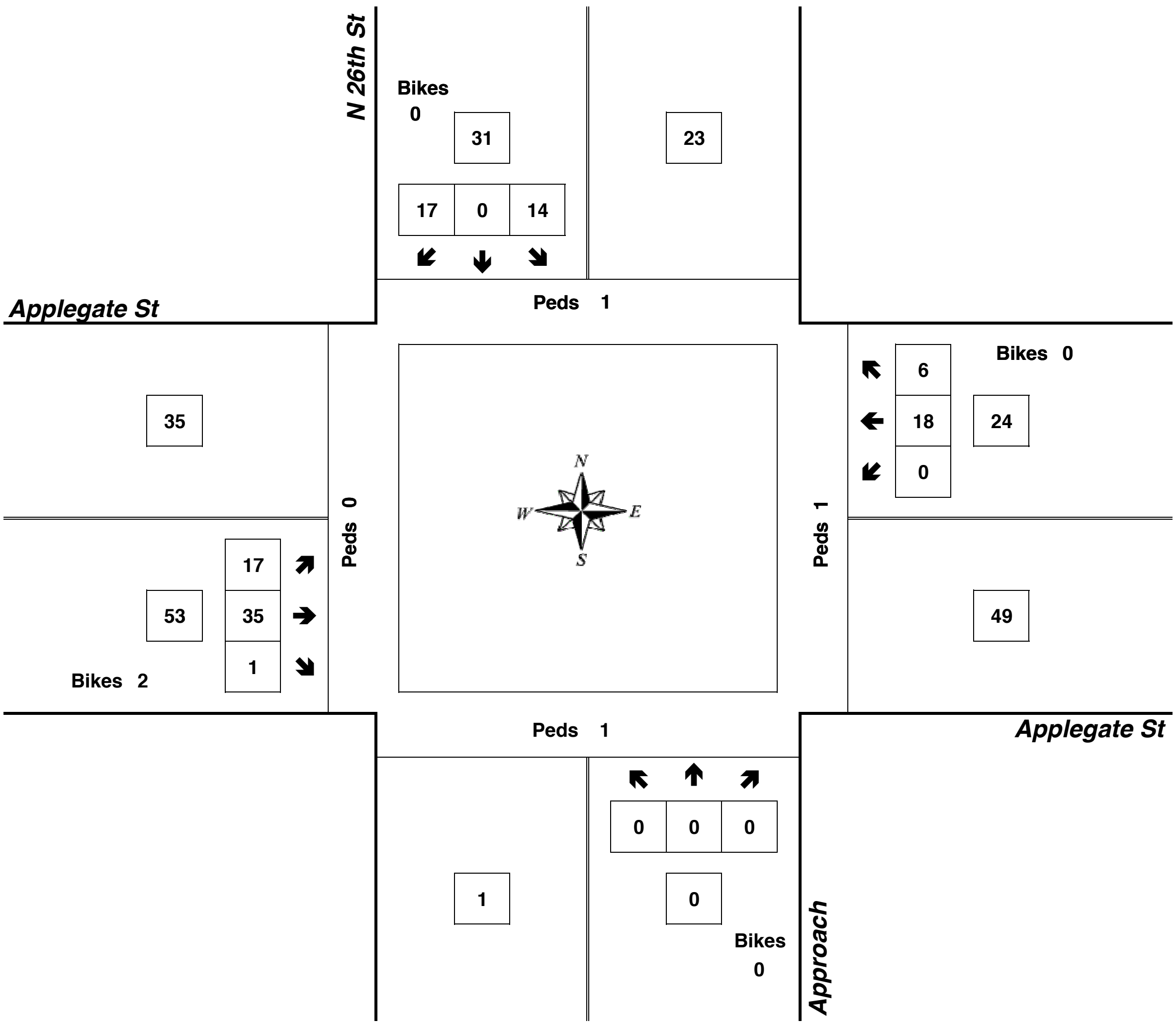
Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	2

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 26th St & Applegate St

3:00 PM to 4:00 PM
Wednesday, October 28, 2015

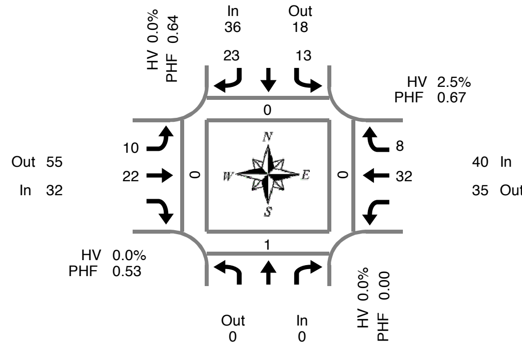


Approach	PHF	HV%	Volume
EB	0.53	1.9%	53
WB	0.67	0.0%	24
NB	0.00	0.0%	0
SB	0.78	3.2%	31
Intersection	0.73	1.9%	108

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:45 PM to 5:45 PM

N 26th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	1		2	0	1	1		0		1	0	0	6	2	0	0	0
4:05 PM				0	1		2	0	0	1		0		4	0	0	8	0	0	0	0
4:10 PM				0	0		0	0	1	1		0		1	0	0	3	1	0	1	0
4:15 PM				0	0		1	0	0	3		0		1	0	0	5	0	0	0	0
4:20 PM				0	1		2	0	2	1		0		4	2	0	12	0	0	0	0
4:25 PM				0	2		1	0	2	2		3		2	1	0	10	0	1	0	0
4:30 PM				0	1		1	0	0	2		0		1	1	1	6	1	0	0	1
4:35 PM				0	1		1	0	0	2		0		4	0	0	8	0	0	0	0
4:40 PM				0	0		3	0	0	2		0		1	1	0	7	0	0	0	0
4:45 PM				0	0		6	0	0	0		0		4	0	0	10	0	0	0	0
4:50 PM				0	5		3	0	1	3		0		1	1	1	14	0	0	0	0
4:55 PM				0	0		0	0	0	1		0		0	0	0	1	0	0	0	0
5:00 PM				0	0		2	0	1	0		0		1	1	0	5	0	0	0	0
5:05 PM				0	1		0	0	0	2		0		3	1	0	7	0	0	0	0
5:10 PM				0	2		1	0	1	1		1		3	0	0	8	0	0	0	0
5:15 PM				0	0		3	0	0	1		0		2	1	0	7	0	0	0	0
5:20 PM				0	1		0	0	1	3		0		3	1	0	9	0	0	0	0
5:25 PM				0	0		2	1	0	2		1		6	0	1	10	0	0	0	0
5:30 PM				0	2		4	0	3	5		0		2	2	0	18	0	0	0	0
5:35 PM				0	2		1	0	1	0		0		4	1	1	9	0	0	0	0
5:40 PM				0	0		1	0	2	4		1		3	0	0	10	0	1	0	0
5:45 PM				0	0		1	0	2	3		0		4	0	0	10	0	1	0	0
5:50 PM				0	0		1	0	1	0		0		4	0	0	6	0	1	0	0
5:55 PM				0	0		0	0	1	2		1		3	1	0	7	1	0	1	0
Total Survey				0	20		38	1	20	42		7		62	14	4	196	5	4	2	1

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	2		4	0	2	3		0		6	0	0	17	3	0	1	0
4:15 PM				0	3		4	0	4	6		3		7	3	0	27	0	1	0	0
4:30 PM				0	2		5	0	0	6		0		6	2	1	21	1	0	0	1
4:45 PM				0	5		9	0	1	4		0		5	1	1	25	0	0	0	0
5:00 PM				0	3		3	0	2	3		1		7	2	0	20	0	0	0	0
5:15 PM				0	1		5	1	1	6		1		11	2	1	26	0	0	0	0
5:30 PM				0	4		6	0	6	9		1		9	3	1	37	0	1	0	0
5:45 PM				0	0		2	0	4	5		1		11	1	0	23	1	2	1	0
Total Survey				0	20		38	1	20	42		7		62	14	4	196	5	4	2	1

Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	0	0	0	0	36	18	54	1	32	55	87	3	40	35	75	3	108
%HV	0.0%				0.0%				0.0%				2.5%				0.9%
PHF	0.00				0.64				0.53				0.67				0.73

Pedestrians Crosswalk			
North	South	East	West
0	1	0	0

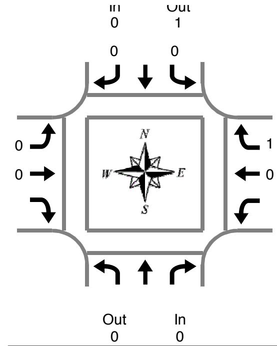
By Movement	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	13		23	36	10	22		32		32	8	40	108
%HV	NA	NA	NA	0.0%	0.0%	NA	0.0%	0.0%	0.0%	0.0%	NA	0.0%	NA	0.0%	12.5%	2.5%	0.9%
PHF				0.00	0.65		0.64	0.64	0.42	0.55		0.53		0.67	0.67	0.67	0.73

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total	Pedestrians Crosswalk			
				Bikes	L		R	Bikes	L	T		Bikes		T	R	Bikes		North	South	East	West
4:00 PM				0	12		22	0	7	19		3		24	6	2	90	4	1	1	1
4:15 PM				0	13		21	0	7	19		4		25	8	2	93	1	1	0	1
4:30 PM				0	11		22	1	4	19		2		29	7	3	92	1	0	0	1
4:45 PM				0	13		23	1	10	22		3		32	8	3	108	0	1	0	0
5:00 PM				0	8		16	1	13	23		4		38	8	2	106	1	3	1	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:45 PM to 5:45 PM

N 26th St & Applegate St

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	0		0	0	0	0		0		0	0	0	0
4:05 PM				0	0		0	0	0	0		0		1	0	1	1
4:10 PM				0	0		0	0	0	0		0		0	0	0	0
4:15 PM				0	0		0	0	0	0		0		0	0	0	0
4:20 PM				0	0		0	0	0	0		0		0	0	0	0
4:25 PM				0	0		0	0	0	0		0		0	0	0	0
4:30 PM				0	0		0	0	0	0		0		0	0	0	0
4:35 PM				0	1		0	1	0	0		0		0	0	0	1
4:40 PM				0	0		0	0	0	0		0		0	0	0	0
4:45 PM				0	0		0	0	0	0		0		0	0	0	0
4:50 PM				0	0		0	0	0	0		0		0	1	1	1
4:55 PM				0	0		0	0	0	0		0		0	0	0	0
5:00 PM				0	0		0	0	0	0		0		0	0	0	0
5:05 PM				0	0		0	0	0	0		0		0	0	0	0
5:10 PM				0	0		0	0	0	0		0		0	0	0	0
5:15 PM				0	0		0	0	0	0		0		0	0	0	0
5:20 PM				0	0		0	0	0	0		0		0	0	0	0
5:25 PM				0	0		0	0	0	0		0		0	0	0	0
5:30 PM				0	0		0	0	0	0		0		0	0	0	0
5:35 PM				0	0		0	0	0	0		0		0	0	0	0
5:40 PM				0	0		0	0	0	0		0		0	0	0	0
5:45 PM				0	0		0	0	0	0		0		0	0	0	0
5:50 PM				0	0		0	0	0	0		0		0	0	0	0
5:55 PM				0	0		0	0	0	0		0		0	0	0	0
Total Survey				0	1		0	1	0	0		0		1	1	2	3

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	0		0	0	0	0		0		1	0	1	1
4:15 PM				0	0		0	0	0	0		0		0	0	0	0
4:30 PM				0	1		0	1	0	0		0		0	0	0	1
4:45 PM				0	0		0	0	0	0		0		0	1	1	1
5:00 PM				0	0		0	0	0	0		0		0	0	0	0
5:15 PM				0	0		0	0	0	0		0		0	0	0	0
5:30 PM				0	0		0	0	0	0		0		0	0	0	0
5:45 PM				0	0		0	0	0	0		0		0	0	0	0
Total Survey				0	1		0	1	0	0		0		1	1	2	3

Heavy Vehicle Peak Hour Summary
4:45 PM to 5:45 PM

By Approach	Northbound Approach			Southbound N 26th St			Eastbound Applegate St			Westbound Applegate St			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	1	1	0	0	0	1	0	1	1
PHF	0.00			0.00			0.00			0.25			0.25

By Movement	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Total
				Total	L		R	Total	L	T		Total		T	R	Total	
Volume				0	0		0	0	0	0		0		0	1	1	1
PHF				0.00	0.00		0.00	0.00	0.00	0.00		0.00		0.00	0.25	0.25	0.25

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

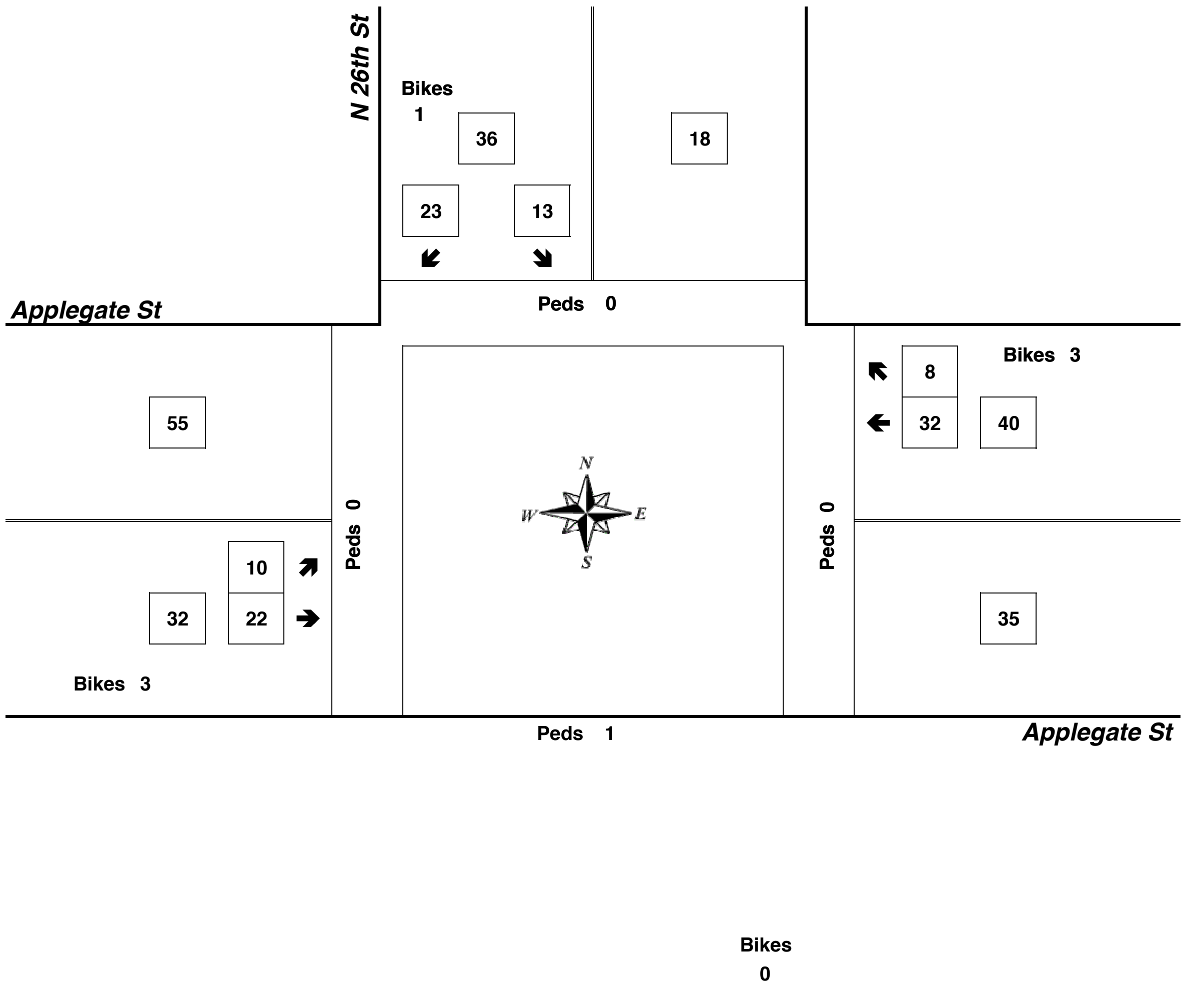
Interval Start Time	Northbound Approach				Southbound N 26th St				Eastbound Applegate St				Westbound Applegate St				Interval Total
				Total	L		R	Total	L	T		Total		T	R	Total	
4:00 PM				0	1		0	1	0	0		0		1	1	2	3
4:15 PM				0	1		0	1	0	0		0		0	1	1	2
4:30 PM				0	1		0	1	0	0		0		0	1	1	2
4:45 PM				0	0		0	0	0	0		0		0	1	1	1
5:00 PM				0	0		0	0	0	0		0		0	0	0	0

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

N 26th St & Applegate St

4:45 PM to 5:45 PM
Wednesday, October 28, 2015

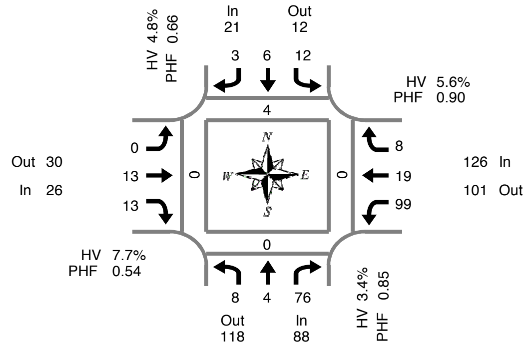


Approach	PHF	HV%	Volume
EB	0.53	0.0%	32
WB	0.67	2.5%	40
NB	0.00	0.0%	0
SB	0.64	0.0%	36
Intersection	0.73	0.9%	108

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
2:40 PM to 3:40 PM

Bellfountain Rd & SW Plymouth Dr

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	1	0	6	0	2	1	0	0	0	1	0	0	9	1	0	0	21	0	0	0	0
2:05 PM	0	1	7	0	0	0	0	0	0	0	1	0	7	2	0	0	18	0	0	0	0
2:10 PM	0	0	5	0	0	1	0	0	0	1	0	0	9	1	1	0	18	0	0	0	0
2:15 PM	2	1	9	0	0	0	0	0	0	3	0	0	2	0	1	0	18	0	0	0	0
2:20 PM	0	0	4	0	0	0	0	0	0	0	0	0	3	2	0	0	9	0	0	0	0
2:25 PM	0	0	3	0	0	0	0	0	0	0	0	0	3	1	1	0	8	0	0	0	0
2:30 PM	0	0	9	0	1	1	0	0	0	3	0	0	4	2	0	0	20	0	0	0	0
2:35 PM	0	0	5	0	2	1	0	0	0	1	0	0	6	0	0	0	15	0	0	0	0
2:40 PM	0	0	10	0	2	2	0	0	0	0	2	0	10	4	1	0	31	0	0	0	0
2:45 PM	1	0	4	0	1	0	1	0	0	2	0	0	11	2	0	0	22	0	0	0	0
2:50 PM	1	1	9	0	1	0	1	0	0	0	0	0	3	1	0	0	17	0	0	0	0
2:55 PM	0	0	6	0	0	3	0	0	0	1	0	0	8	1	0	2	19	0	0	0	0
3:00 PM	0	0	5	0	1	0	0	0	0	0	1	0	6	0	1	0	14	0	0	0	0
3:05 PM	1	0	5	0	1	0	0	0	0	0	4	0	9	2	2	0	24	2	0	0	0
3:10 PM	2	2	6	0	1	0	0	0	0	2	0	0	12	1	1	1	27	0	0	0	0
3:15 PM	1	0	4	0	2	0	0	0	0	3	1	0	7	1	0	0	19	2	0	0	0
3:20 PM	1	0	7	0	0	1	0	0	0	2	1	0	10	1	0	0	23	0	0	0	0
3:25 PM	0	0	8	0	1	0	0	0	0	1	4	0	5	2	0	0	21	0	0	0	0
3:30 PM	1	1	8	0	1	0	0	0	0	0	0	0	11	1	2	0	25	0	0	0	0
3:35 PM	0	0	4	0	1	0	1	0	0	2	0	1	7	3	1	0	19	0	0	0	0
3:40 PM	0	1	9	0	2	0	1	0	0	1	0	0	7	1	0	0	22	0	0	0	0
3:45 PM	2	0	10	0	2	0	0	0	0	3	0	0	6	0	1	0	24	0	0	0	0
3:50 PM	0	2	7	0	0	0	0	0	0	0	0	0	6	0	2	0	17	0	0	0	0
3:55 PM	1	0	9	0	1	0	0	0	0	2	0	0	7	0	1	0	21	0	0	0	0
Total Survey	14	9	159	0	22	10	4	0	0	28	14	1	168	29	15	3	472	4	0	0	0

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	1	1	18	0	2	2	0	0	0	2	1	0	25	4	1	0	57	0	0	0	0
2:15 PM	2	1	16	0	0	0	0	0	0	3	0	0	8	3	2	0	35	0	0	0	0
2:30 PM	0	0	24	0	5	4	0	0	0	4	2	0	20	6	1	0	66	0	0	0	0
2:45 PM	2	1	19	0	2	3	2	0	0	3	0	0	22	4	0	2	58	0	0	0	0
3:00 PM	3	2	16	0	3	0	0	0	0	2	5	0	27	3	4	1	65	2	0	0	0
3:15 PM	2	0	19	0	3	1	0	0	0	6	6	0	22	4	0	0	63	2	0	0	0
3:30 PM	1	2	21	0	4	0	2	0	0	3	0	1	25	5	3	0	66	0	0	0	0
3:45 PM	3	2	26	0	3	0	0	0	0	5	0	0	19	0	4	0	62	0	0	0	0
Total Survey	14	9	159	0	22	10	4	0	0	28	14	1	168	29	15	3	472	4	0	0	0

Peak Hour Summary
2:40 PM to 3:40 PM

By Approach	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	88	118	206	0	21	12	33	0	26	30	56	1	126	101	227	3	261	4	0	0	0
%HV	3.4%				4.8%				7.7%				5.6%				5.0%				
PHF	0.85				0.66				0.54				0.90				0.93				

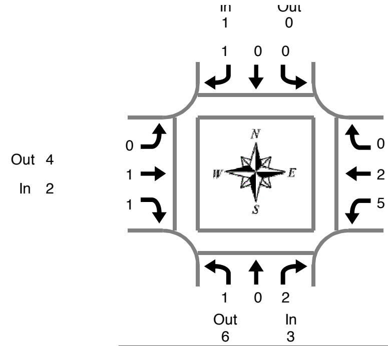
By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	8	4	76	88	12	6	3	21	0	13	13	26	99	19	8	126	261
%HV	12.5%	0.0%	2.6%	3.4%	0.0%	0.0%	33.3%	4.8%	0.0%	7.7%	7.7%	7.7%	5.1%	10.5%	0.0%	5.6%	5.0%
PHF	0.50	0.50	0.83	0.85	0.75	0.50	0.38	0.66	0.00	0.46	0.54	0.54	0.85	0.68	0.50	0.90	0.93

Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
2:00 PM	5	3	77	0	9	9	2	0	0	12	3	0	75	17	4	2	216	0	0	0	0
2:15 PM	7	4	75	0	10	7	2	0	0	12	7	0	77	16	7	3	224	2	0	0	0
2:30 PM	7	3	78	0	13	8	2	0	0	15	13	0	91	17	5	3	252	4	0	0	0
2:45 PM	8	5	75	0	12	4	4	0	0	14	11	1	96	16	7	3	252	4	0	0	0
3:00 PM	9	6	82	0	13	1	2	0	0	16	11	1	93	12	11	1	256	4	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Bellfountain Rd & SW Plymouth Dr

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Peak Hour Summary
2:40 PM to 3:40 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:10 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:35 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
2:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
2:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:05 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:10 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
3:20 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:25 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
3:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
3:35 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
3:40 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2
3:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Survey	1	0	4	5	0	0	2	2	0	2	1	3	8	2	0	10	20

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
2:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
2:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	2
3:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	2	3
3:15 PM	0	0	1	1	0	0	0	0	0	0	1	1	2	0	0	2	4
3:30 PM	1	0	0	1	0	0	1	1	0	1	0	1	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	2	3
Total Survey	1	0	4	5	0	0	2	2	0	2	1	3	8	2	0	10	20

Heavy Vehicle Peak Hour Summary
2:40 PM to 3:40 PM

By Approach	Northbound Bellfountain Rd			Southbound Bellfountain Rd			Eastbound SW Plymouth Dr			Westbound SW Plymouth Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	6	9	1	0	1	2	4	6	7	3	10	13
PHF	0.38			0.25			0.25			0.44			0.54

By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	0	2	3	0	0	1	1	0	1	1	2	5	2	0	7	13
PHF	0.25	0.00	0.25	0.38	0.00	0.00	0.25	0.25	0.00	0.25	0.25	0.25	0.42	0.50	0.00	0.44	0.54

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
2:00 PM	0	0	2	2	0	0	1	1	0	0	0	0	3	1	0	4	7
2:15 PM	0	0	2	2	0	0	1	1	0	0	0	0	4	2	0	6	9
2:30 PM	0	0	3	3	0	0	1	1	0	0	1	1	5	2	0	7	12
2:45 PM	1	0	2	3	0	0	2	2	0	1	1	2	4	1	0	5	12
3:00 PM	1	0	2	3	0	0	1	1	0	2	1	3	5	1	0	6	13

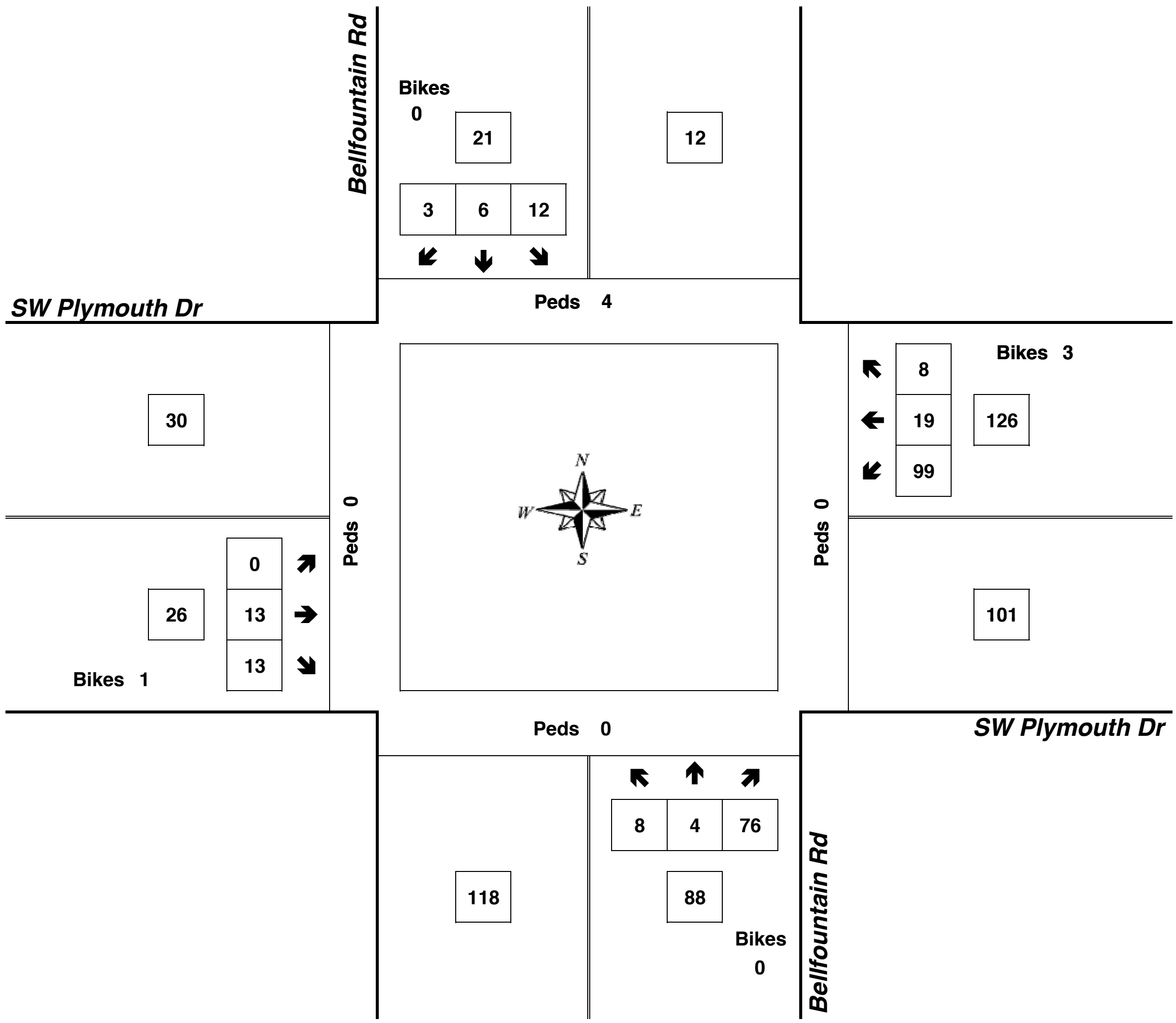
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Bellfountain Rd & SW Plymouth Dr

2:40 PM to 3:40 PM
Wednesday, October 28, 2015



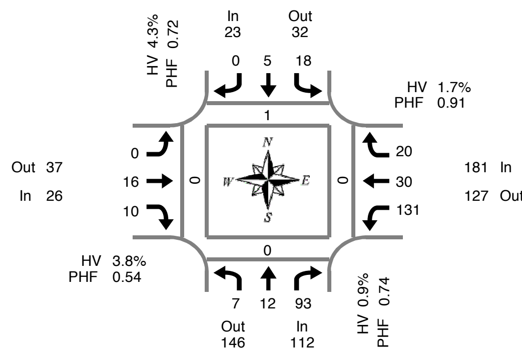
Approach	PHF	HV%	Volume
EB	0.54	7.7%	26
WB	0.90	5.6%	126
NB	0.85	3.4%	88
SB	0.66	4.8%	21
Intersection	0.93	5.0%	261

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

Bellfountain Rd & SW Plymouth Dr

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	1	0	7	0	0	0	1	0	0	2	0	0	12	3	0	0	26	0	0	0	0
4:05 PM	1	0	10	0	1	0	0	0	0	0	1	0	13	1	0	0	27	0	0	0	0
4:10 PM	1	0	3	0	0	0	0	0	0	0	0	0	9	2	0	0	15	0	0	0	0
4:15 PM	0	0	4	0	0	0	0	0	0	0	1	0	14	2	4	0	25	0	0	0	0
4:20 PM	0	0	6	0	0	0	0	0	0	0	0	0	11	1	4	0	22	0	0	0	0
4:25 PM	0	0	8	0	0	1	0	0	0	1	0	0	7	1	1	0	19	0	0	0	0
4:30 PM	1	2	4	0	0	0	1	0	0	0	3	1	9	0	2	0	22	0	0	0	0
4:35 PM	0	0	4	0	1	0	0	0	0	1	0	0	9	3	3	0	21	0	0	0	0
4:40 PM	0	2	6	0	0	1	0	0	0	1	1	0	8	0	2	0	21	0	0	0	0
4:45 PM	2	0	5	0	0	1	0	0	0	0	0	1	8	3	1	0	20	0	0	0	0
4:50 PM	0	1	8	0	1	1	0	0	0	0	0	0	16	3	1	0	31	0	0	0	0
4:55 PM	0	2	4	0	1	0	0	0	0	2	0	0	11	3	2	0	25	0	0	0	0
5:00 PM	0	3	8	0	1	0	0	0	0	1	1	0	8	2	2	0	26	0	0	0	0
5:05 PM	0	1	8	0	3	1	0	0	0	0	1	0	10	4	1	0	29	0	0	0	0
5:10 PM	1	3	7	0	2	0	0	0	0	1	0	0	12	3	1	0	30	0	0	0	0
5:15 PM	1	0	11	0	2	0	0	0	0	0	1	0	6	1	1	0	23	1	0	0	0
5:20 PM	2	2	9	0	0	0	0	0	0	3	1	0	9	4	2	0	32	0	0	0	0
5:25 PM	1	0	12	0	3	0	0	0	0	1	2	0	11	0	3	0	33	0	0	0	0
5:30 PM	2	0	8	0	0	0	0	0	0	4	1	0	13	6	2	0	36	0	0	0	0
5:35 PM	0	0	6	0	2	3	0	0	0	2	1	0	10	0	3	0	27	0	0	0	0
5:40 PM	0	0	5	0	2	0	0	0	0	1	2	0	13	1	2	0	26	0	0	0	0
5:45 PM	0	0	7	0	1	0	0	0	0	1	0	0	12	3	0	0	24	0	0	0	0
5:50 PM	0	0	5	0	1	0	0	0	0	0	1	0	7	2	1	0	17	0	0	0	0
5:55 PM	1	1	6	0	1	2	0	0	0	0	0	0	12	1	0	0	24	0	0	0	0
Total Survey	14	17	161	0	22	10	2	0	0	21	17	2	250	49	38	0	601	1	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	3	0	20	0	1	0	1	0	0	2	1	0	34	6	0	0	68	0	0	0	0
4:15 PM	0	0	18	0	0	1	0	0	0	1	1	0	32	4	9	0	66	0	0	0	0
4:30 PM	1	4	14	0	1	1	1	0	0	2	4	1	26	3	7	0	64	0	0	0	0
4:45 PM	2	3	17	0	2	2	0	0	0	2	0	1	35	9	4	0	76	0	0	0	0
5:00 PM	1	7	23	0	6	1	0	0	0	2	2	0	30	9	4	0	85	0	0	0	0
5:15 PM	4	2	32	0	5	0	0	0	0	4	4	0	26	5	6	0	88	1	0	0	0
5:30 PM	2	0	19	0	4	3	0	0	0	7	4	0	36	7	7	0	89	0	0	0	0
5:45 PM	1	1	18	0	3	2	0	0	0	1	1	0	31	6	1	0	65	0	0	0	0
Total Survey	14	17	161	0	22	10	2	0	0	21	17	2	250	49	38	0	601	1	0	0	0

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	112	146	258	0	23	32	55	0	26	37	63	0	181	127	308	0	342	1	0	0	0
%HV	0.9%				4.3%				3.8%				1.7%				1.8%				
PHF	0.74				0.72				0.54				0.91				0.85				

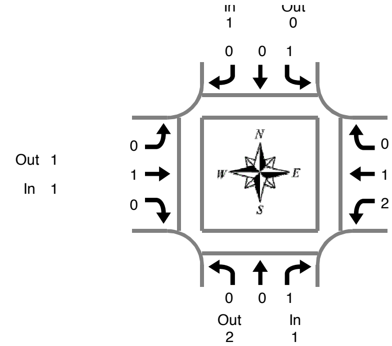
By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	7	12	93	112	18	5	0	23	0	16	10	26	131	30	20	181	342
%HV	0.0%	0.0%	1.1%	0.9%	5.6%	0.0%	0.0%	4.3%	0.0%	6.3%	0.0%	3.8%	1.5%	3.3%	0.0%	1.7%	1.8%
PHF	0.35	0.43	0.73	0.74	0.64	0.42	0.00	0.72	0.00	0.50	0.63	0.54	0.91	0.75	0.63	0.91	0.85

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
4:00 PM	6	7	69	0	4	4	2	0	0	7	6	2	127	22	20	0	274	0	0	0	0
4:15 PM	4	14	72	0	9	5	1	0	0	7	7	2	123	25	24	0	291	0	0	0	0
4:30 PM	8	16	86	0	14	4	1	0	0	10	10	2	117	26	21	0	313	1	0	0	0
4:45 PM	9	12	91	0	17	6	0	0	0	15	10	1	127	30	21	0	338	1	0	0	0
5:00 PM	8	10	92	0	18	6	0	0	0	14	11	0	123	27	18	0	327	1	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Bellfountain Rd & SW Plymouth Dr

Wednesday, October 28, 2015

4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
4:05 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	3
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
4:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:40 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:50 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
5:05 PM	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	2
5:10 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:40 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:50 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	1	0	2	3	1	0	0	1	0	2	1	3	4	1	2	7	14

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	1	2	0	0	0	0	0	0	0	0	1	0	0	1	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	3
4:30 PM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	2
4:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	1	0	0	1	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	1	0	2	3	1	0	0	1	0	2	1	3	4	1	2	7	14

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound Bellfountain Rd			Southbound Bellfountain Rd			Eastbound SW Plymouth Dr			Westbound SW Plymouth Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	1	0	1	1	1	2	3	3	6	6
PHF	0.25			0.25			0.25			0.75			0.50

By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	1	0	0	1	0	1	0	1	2	1	0	3	6
PHF	0.00	0.00	0.25	0.25	0.25	0.00	0.00	0.25	0.00	0.25	0.00	0.25	0.50	0.25	0.00	0.75	0.50

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound SW Plymouth Dr				Westbound SW Plymouth Dr				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
4:00 PM	1	0	2	3	0	0	0	0	0	1	1	2	2	0	2	4	9
4:15 PM	0	0	1	1	1	0	0	1	0	2	1	3	2	0	2	4	9
4:30 PM	0	0	1	1	1	0	0	1	0	2	1	3	2	0	0	2	7
4:45 PM	0	0	1	1	1	0	0	1	0	1	0	1	2	1	0	3	6
5:00 PM	0	0	0	0	1	0	0	1	0	1	0	1	2	1	0	3	5

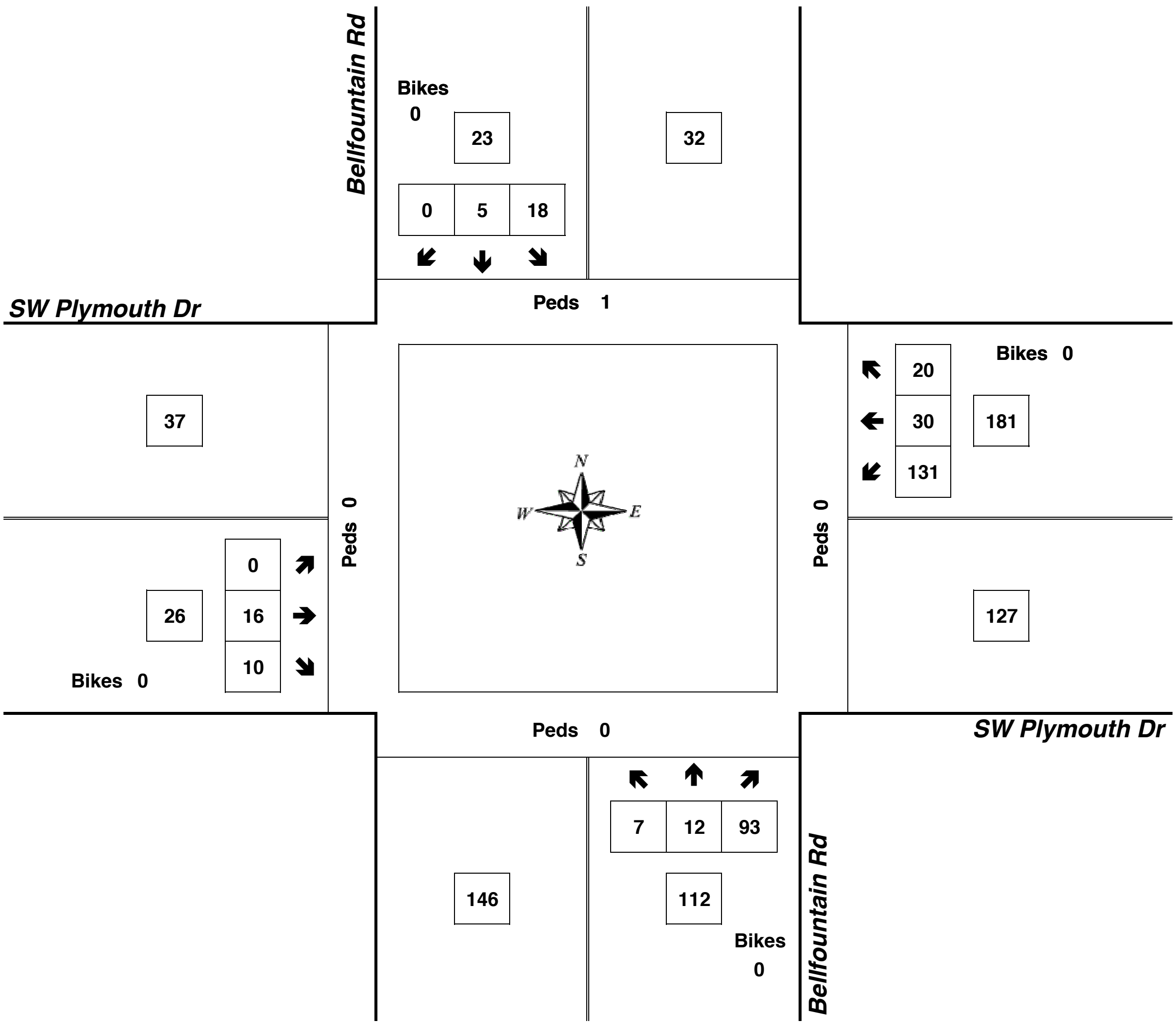
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Bellfountain Rd & SW Plymouth Dr

4:50 PM to 5:50 PM
Wednesday, October 28, 2015

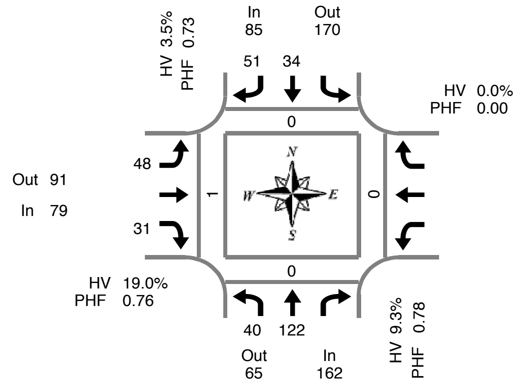


Approach	PHF	HV%	Volume
EB	0.54	3.8%	26
WB	0.91	1.7%	181
NB	0.74	0.9%	112
SB	0.72	4.3%	23
Intersection	0.85	1.8%	342

Count Period: 4:00 PM to 6:00 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

Bellfountain Rd & Chapel Dr

Tuesday, May 15, 2012
6:30 AM to 9:30 AM

15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Bellfountain Rd L	T		Bikes	Southbound Bellfountain Rd	T	R	Bikes	Eastbound Chapel Dr L		R	Bikes	Westbound Chapel Dr			Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
6:30 AM	4	9		1		2	2	0	3		4	0				0	24	0	0	0	0
6:45 AM	7	12		0		6	2	0	2		7	0				0	36	0	0	0	0
7:00 AM	8	10		0		4	5	0	2		4	0				0	33	0	0	0	0
7:15 AM	5	26		1		10	11	1	5		5	0				0	62	0	0	0	0
7:30 AM	16	36		1		4	9	0	18		8	1				0	91	0	0	0	0
7:45 AM	7	37		0		6	23	0	13		13	1				0	99	0	0	0	0
8:00 AM	12	23		0		14	8	0	12		5	0				0	74	0	0	0	1
8:15 AM	2	18		1		16	5	0	4		5	0				0	50	0	0	0	0
8:30 AM	6	22		0		6	2	1	6		2	1				0	44	0	0	0	0
8:45 AM	8	17		0		6	2	0	7		5	0				0	45	0	0	0	0
9:00 AM	5	11		0		4	3	0	5		6	0				0	34	0	0	0	0
9:15 AM	9	9		0		4	4	0	5		8	0				0	39	0	0	0	0
Total Survey	89	230		4		82	76	2	82		72	3				0	631	0	0	0	1

Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound Bellfountain Rd In	Out	Total	Bikes	Southbound Bellfountain Rd In	Out	Total	Bikes	Eastbound Chapel Dr In	Out	Total	Bikes	Westbound Chapel Dr In	Out	Total	Bikes	Total	Pedestrians Crosswalk North	South	East	West
Volume	162	65	227	2	85	170	255	1	79	91	170	2	0	0	0	0	326	0	0	0	1
%HV	9.3%				3.5%				19.0%				0.0%				10.1%				
PHF	0.78				0.73				0.76				0.00				0.82				

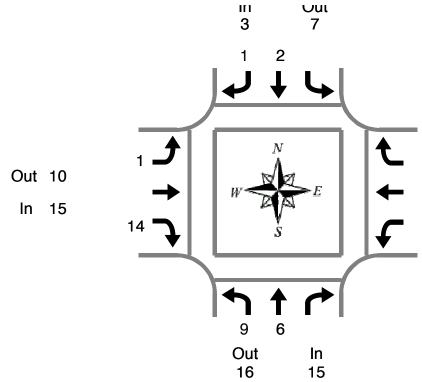
By Movement	Northbound Bellfountain Rd L	T		Total	Southbound Bellfountain Rd	T	R	Total	Eastbound Chapel Dr L		R	Total	Westbound Chapel Dr			Total	Total
Volume	40	122		162		34	51	85	48		31	79				0	326
%HV	22.5%	4.9%	NA	9.3%	NA	5.9%	2.0%	3.5%	2.1%	NA	45.2%	19.0%	NA	NA	NA	0.0%	10.1%
PHF	0.63	0.82		0.78		0.61	0.55	0.73	0.67		0.60	0.76				0.00	0.82

Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Bellfountain Rd L	T		Bikes	Southbound Bellfountain Rd	T	R	Bikes	Eastbound Chapel Dr L		R	Bikes	Westbound Chapel Dr			Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
6:30 AM	24	57		2		22	20	1	12		20	0				0	155	0	0	0	0
6:45 AM	36	84		2		24	27	1	27		24	1				0	222	0	0	0	0
7:00 AM	36	109		2		24	48	1	38		30	2				0	285	0	0	0	0
7:15 AM	40	122		2		34	51	1	48		31	2				0	326	0	0	0	1
7:30 AM	37	114		2		40	45	0	47		31	2				0	314	0	0	0	1
7:45 AM	27	100		1		42	38	1	35		25	2				0	267	0	0	0	1
8:00 AM	28	80		1		42	17	1	29		17	1				0	213	0	0	0	1
8:15 AM	21	68		1		32	12	1	22		18	1				0	173	0	0	0	0
8:30 AM	28	59		0		20	11	1	23		21	1				0	162	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

Bellfountain Rd & Chapel Dr

Tuesday, May 15, 2012
6:30 AM to 9:30 AM

Heavy Vehicle 15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
6:30 AM	0	0		0		0	0	0	1		2	3				0	3
6:45 AM	2	0		2		0	0	0	0		4	4				0	6
7:00 AM	3	0		3		1	0	1	0		3	3				0	7
7:15 AM	1	1		2		1	0	1	1		4	5				0	8
7:30 AM	2	1		3		0	0	0	0		4	4				0	7
7:45 AM	2	3		5		0	0	0	0		4	4				0	9
8:00 AM	4	1		5		1	1	2	0		2	2				0	9
8:15 AM	1	1		2		1	0	1	0		0	0				0	3
8:30 AM	5	0		5		0	0	0	0		1	1				0	6
8:45 AM	0	1		1		0	0	0	0		3	3				0	4
9:00 AM	1	0		1		0	0	0	0		2	2				0	3
9:15 AM	3	0		3		1	0	1	1		3	4				0	8
Total Survey	24	8		32		5	1	6	3		32	35				0	73

Heavy Vehicle Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Total
	In	Out	Total		In	Out	Total		In	Out	Total		In	Out	Total		
Volume	15	16	31		3	7	10		15	10	25		0	0	0		33
PHF	0.29				0.25				0.29				0.00				0.33

By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	9	6		15		2	1	3	1		14	15				0	33
PHF	0.23	0.30		0.29		0.25	0.25	0.25	0.25		0.29	0.29				0.00	0.33

Heavy Vehicle Rolling Hour Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
6:30 AM	6	1		7		2	0	2	2		13	15				0	24
6:45 AM	8	2		10		2	0	2	1		15	16				0	28
7:00 AM	8	5		13		2	0	2	1		15	16				0	31
7:15 AM	9	6		15		2	1	3	1		14	15				0	33
7:30 AM	9	6		15		2	1	3	0		10	10				0	28
7:45 AM	12	5		17		2	1	3	0		7	7				0	27
8:00 AM	10	3		13		2	1	3	0		6	6				0	22
8:15 AM	7	2		9		1	0	1	0		6	6				0	16
8:30 AM	9	1		10		1	0	1	1		9	10				0	21

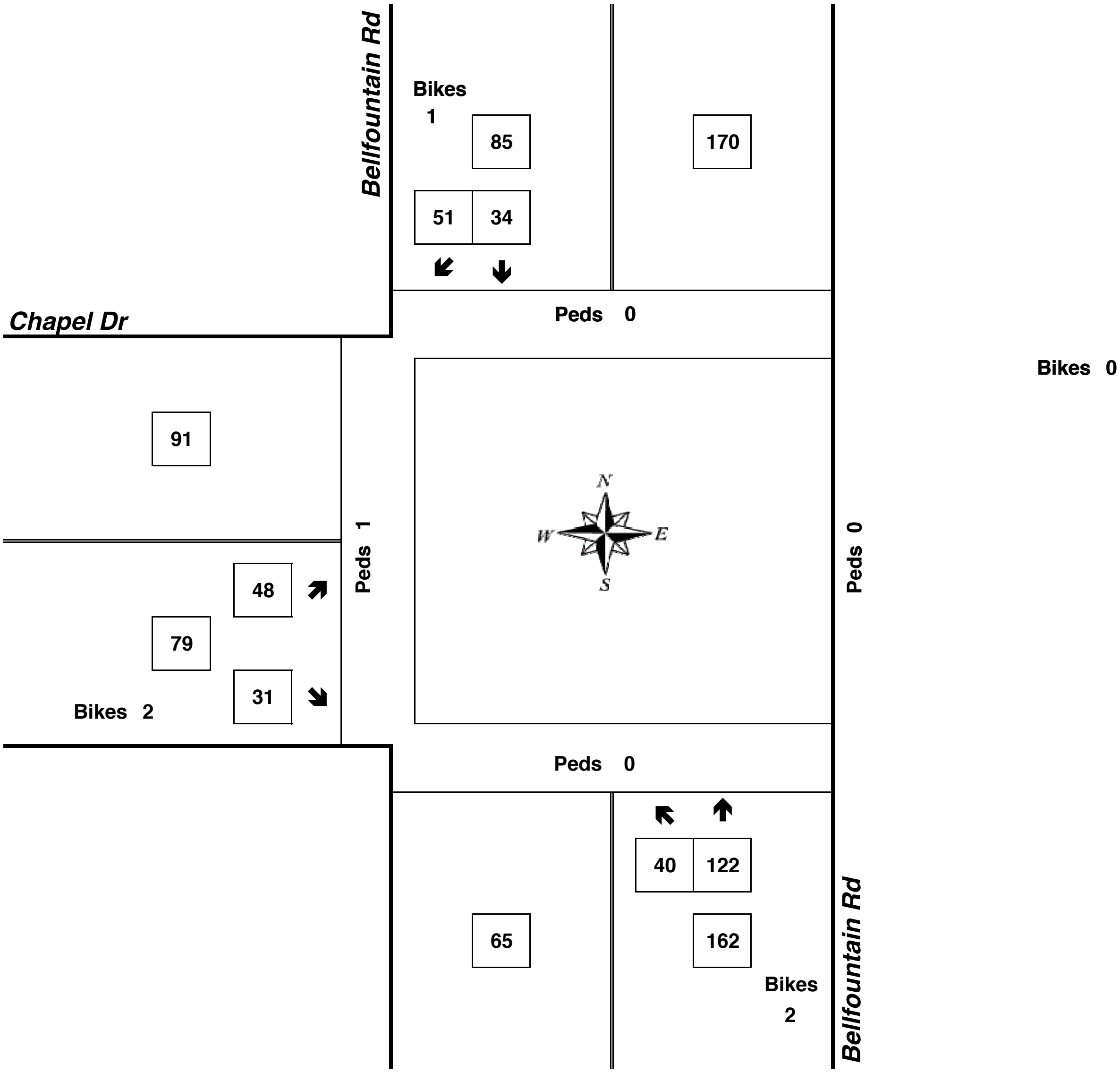
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Bellfountain Rd & Chapel Dr

7:15 AM to 8:15 AM
Tuesday, May 15, 2012

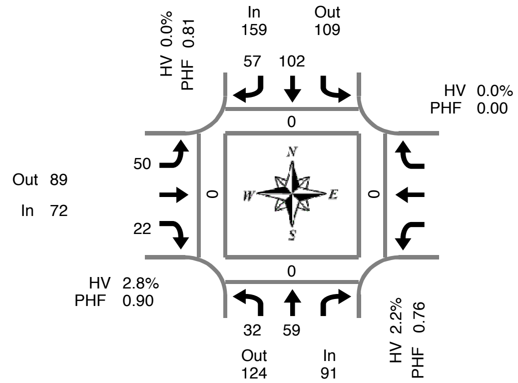


Approach	PHF	HV%	Volume
EB	0.76	19.0%	79
WB	0.00	0.0%	0
NB	0.78	9.3%	162
SB	0.73	3.5%	85
Intersection	0.82	10.1%	326

Count Period: 6:30 AM to 9:30 AM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

Bellfountain Rd & Chapel Dr

Tuesday, May 15, 2012
3:30 PM to 6:30 PM

15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound Bellfountain Rd L	T		Bikes	Southbound Bellfountain Rd	T	R	Bikes	Eastbound Chapel Dr L		R	Bikes	Westbound Chapel Dr			Bikes	Interval Total
3:30 PM	8	15		0		12	6	1	5		12	0				0	58
3:45 PM	5	15		0		13	12	1	7		11	0				0	63
4:00 PM	8	15		0		16	7	2	10		7	0				0	63
4:15 PM	6	18		0		23	11	1	6		7	0				0	71
4:30 PM	5	12		0		21	9	2	5		12	1				0	64
4:45 PM	9	18		0		20	7	2	3		4	0				0	61
5:00 PM	9	21		2		22	11	0	15		5	2				0	83
5:15 PM	11	17		1		30	19	2	10		7	1				0	94
5:30 PM	6	9		0		27	12	0	13		4	1				0	71
5:45 PM	6	12		3		23	15	3	12		6	0				0	74
6:00 PM	1	14		0		28	9	3	7		3	0				0	62
6:15 PM	1	10		2		13	9	1	8		3	1				0	44
Total Survey	75	176		8		248	127	18	101		81	6				0	808

Interval Start Time	Pedestrians Crosswalk North	South	East	West
3:30 PM	0	0	1	0
3:45 PM	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
6:00 PM	0	0	0	0
6:15 PM	0	0	0	0
Total Survey	0	0	1	0

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound Bellfountain Rd In	Out	Total	Bikes	Southbound Bellfountain Rd In	Out	Total	Bikes	Eastbound Chapel Dr In	Out	Total	Bikes	Westbound Chapel Dr In	Out	Total	Bikes	Total
Volume	91	124	215	6	159	109	268	5	72	89	161	4	0	0	0	0	322
%HV	2.2%				0.0%				2.8%				0.0%				1.2%
PHF	0.76				0.81				0.90				0.00				0.86

	Pedestrians Crosswalk North	South	East	West
Volume	0	0	0	0

By Movement	Northbound Bellfountain Rd L	T		Total	Southbound Bellfountain Rd	T	R	Total	Eastbound Chapel Dr L		R	Total	Westbound Chapel Dr			Total	Total
Volume	32	59		91		102	57	159	50		22	72				0	322
%HV	6.3%	0.0%	NA	2.2%	NA	0.0%	0.0%	0.0%	2.0%	NA	4.5%	2.8%	NA	NA	NA	0.0%	1.2%
PHF	0.73	0.70		0.76		0.85	0.75	0.81	0.83		0.79	0.90				0.00	0.86

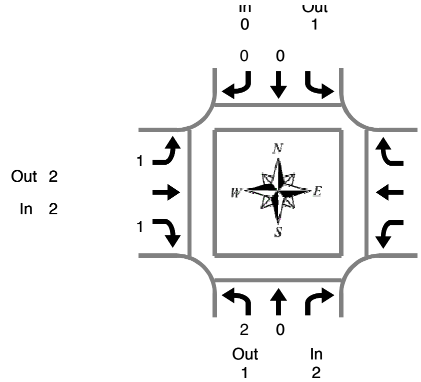
Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound Bellfountain Rd L	T		Bikes	Southbound Bellfountain Rd	T	R	Bikes	Eastbound Chapel Dr L		R	Bikes	Westbound Chapel Dr			Bikes	Interval Total
3:30 PM	27	63		0		64	36	5	28		37	0				0	255
3:45 PM	24	60		0		73	39	6	28		37	1				0	261
4:00 PM	28	63		0		80	34	7	24		30	1				0	259
4:15 PM	29	69		2		86	38	5	29		28	3				0	279
4:30 PM	34	68		3		93	46	6	33		28	4				0	302
4:45 PM	35	65		3		99	49	4	41		20	4				0	309
5:00 PM	32	59		6		102	57	5	50		22	4				0	322
5:15 PM	24	52		4		108	55	8	42		20	2				0	301
5:30 PM	14	45		5		91	45	7	40		16	2				0	251

Interval Start Time	Pedestrians Crosswalk North	South	East	West
3:30 PM	0	0	1	0
3:45 PM	0	0	0	0
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0

Heavy Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

Bellfountain Rd & Chapel Dr

Tuesday, May 15, 2012
3:30 PM to 6:30 PM

Heavy Vehicle 15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
3:30 PM	4	2		6		1	0	1	0		2	2				0	9
3:45 PM	1	0		1		0	0	0	1		1	2				0	3
4:00 PM	3	1		4		0	0	0	1		0	1				0	5
4:15 PM	4	3		7		1	0	1	0		4	4				0	12
4:30 PM	0	0		0		1	0	1	0		1	1				0	2
4:45 PM	1	0		1		0	0	0	0		0	0				0	1
5:00 PM	2	0		2		0	0	0	0		1	1				0	3
5:15 PM	0	0		0		0	0	0	1		0	1				0	1
5:30 PM	0	0		0		0	0	0	0		0	0				0	0
5:45 PM	0	0		0		0	0	0	0		0	0				0	0
6:00 PM	1	0		1		0	0	0	0		1	1				0	2
6:15 PM	0	0		0		0	0	0	1		1	2				0	2
Total Survey	16	6		22		3	0	3	4		11	15				0	40

Heavy Vehicle Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound Bellfountain Rd			Southbound Bellfountain Rd			Eastbound Chapel Dr			Westbound Chapel Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	1	3	0	1	1	2	2	4	0	0	0	4
PHF	0.04			0.00			0.07			0.00			0.05

By Movement	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Total
	L	T		Total		T	R	Total	L		R	Total				Total	
Volume	2	0		2		0	0	0	1		1	2				0	4
PHF	0.06	0.00		0.04		0.00	0.00	0.00	0.13		0.05	0.07				0.00	0.05

Heavy Vehicle Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound Bellfountain Rd				Southbound Bellfountain Rd				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total
	L	T		Total		T	R	Total	L		R	Total				Total	
3:30 PM	12	6		18		2	0	2	2		7	9				0	29
3:45 PM	8	4		12		2	0	2	2		6	8				0	22
4:00 PM	8	4		12		2	0	2	1		5	6				0	20
4:15 PM	7	3		10		2	0	2	0		6	6				0	18
4:30 PM	3	0		3		1	0	1	1		2	3				0	7
4:45 PM	3	0		3		0	0	0	1		1	2				0	5
5:00 PM	2	0		2		0	0	0	1		1	2				0	4
5:15 PM	1	0		1		0	0	0	1		1	2				0	3
5:30 PM	1	0		1		0	0	0	1		2	3				0	4

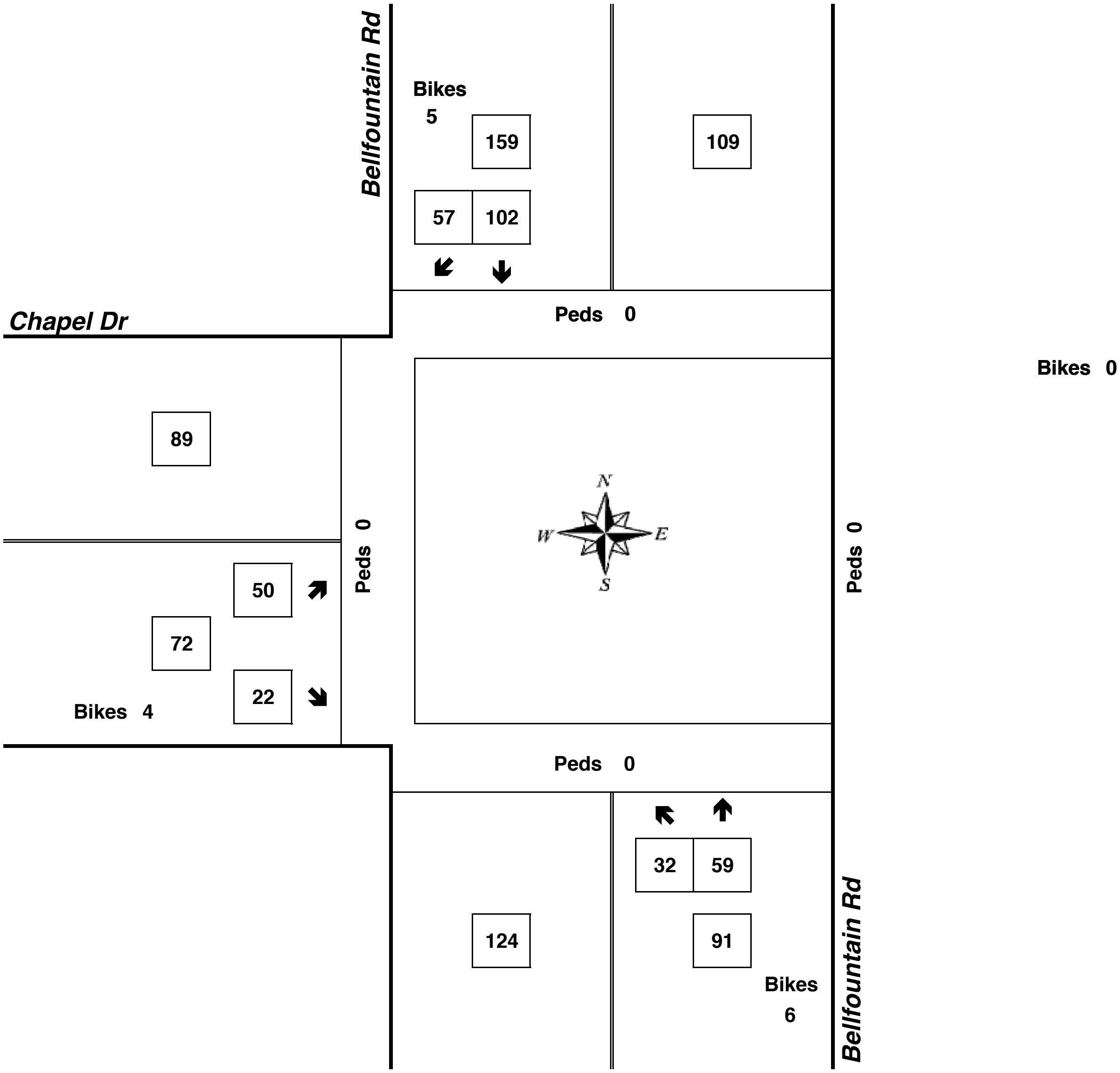
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

Bellfountain Rd & Chapel Dr

5:00 PM to 6:00 PM
Tuesday, May 15, 2012

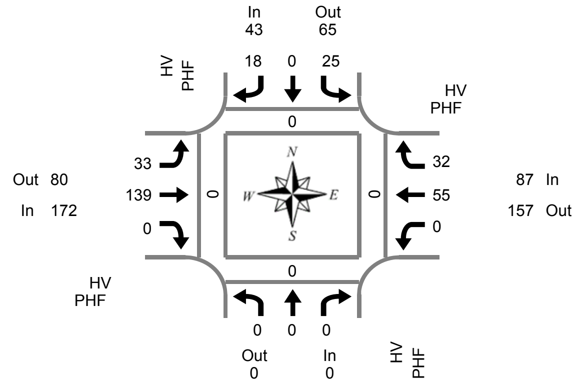


Approach	PHF	HV%	Volume
EB	0.90	2.8%	72
WB	0.00	0.0%	0
NB	0.76	2.2%	91
SB	0.81	0.0%	159
Intersection	0.86	1.2%	322

Count Period: 3:30 PM to 6:30 PM

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
7:15 AM to 8:15 AM

19th St & Chapel Dr

Wednesday, May 16, 2012
6:30 AM to 9:30 AM

15-Minute Interval Summary
6:30 AM to 9:30 AM

Interval Start Time	Northbound L	T	R	Bikes	Southbound 19th St L	T	R	Bikes	Eastbound Chapel Dr L	T	R	Bikes	Westbound Chapel Dr L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
6:30 AM	0	0	0	0	1	0	0	0	0	8	0	0	0	0	3	0	12	0	0	0	0
6:45 AM	0	0	0	0	4	0	6	0	6	12	0	0	0	1	3	0	32	0	0	0	0
7:00 AM	0	0	0	0	2	0	4	0	8	11	0	0	0	2	4	0	31	0	0	0	0
7:15 AM	0	0	0	0	5	0	1	0	4	19	0	0	0	9	7	0	45	0	0	0	0
7:30 AM	0	0	0	0	2	0	2	0	9	34	0	0	0	12	3	0	62	0	0	0	0
7:45 AM	0	0	0	0	9	0	11	0	15	68	0	0	0	26	14	0	143	0	0	0	0
8:00 AM	0	0	0	0	9	0	4	0	5	18	0	0	0	8	8	0	52	0	0	0	0
8:15 AM	0	0	0	0	4	0	2	0	1	4	0	0	0	7	5	0	23	0	1	0	0
8:30 AM	0	0	0	0	4	0	2	0	3	9	0	0	0	4	8	1	30	0	0	0	0
8:45 AM	0	0	0	1	1	0	2	0	3	12	0	0	0	7	5	0	30	3	0	0	0
9:00 AM	0	0	0	0	5	0	4	0	7	7	0	0	0	6	5	0	34	0	0	0	0
9:15 AM	0	0	0	0	4	0	3	0	3	6	0	0	0	6	6	0	28	0	0	0	0
Total Survey	0	0	0	1	50	0	41	0	64	208	0	0	0	88	71	1	522	3	1	0	0

Peak Hour Summary
7:15 AM to 8:15 AM

By Approach	Northbound 19th St In	Out	Total	Bikes	Southbound 19th St In	Out	Total	Bikes	Eastbound Chapel Dr In	Out	Total	Bikes	Westbound Chapel Dr In	Out	Total	Bikes	Total	Pedestrians Crosswalk North	South	East	West
Volume	0	0	0	0	43	65	108	0	172	80	252	0	87	157	244	0	302	0	0	0	0
%HV																					
PHF																					

By Movement	Northbound 19th St L	T	R	Total	Southbound 19th St L	T	R	Total	Eastbound Hwy 34 L	T	R	Total	Westbound Hwy 34 L	T	R	Total	Total
Volume	0	0	0	0	25	0	18	43	33	139	0	172	0	55	32	87	302
%HV																	
PHF					0.69		0.41		0.55	0.51				0.53	0.57		0.53

PEAK

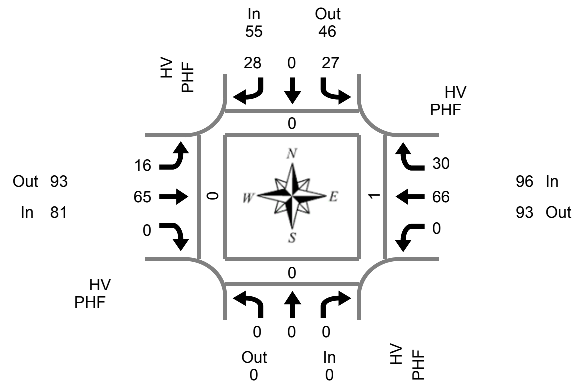
Rolling Hour Summary
7:15 AM to 8:15 AM

Interval Start Time	Northbound 19th St L	T	R	Bikes	Southbound 19th St L	T	R	Bikes	Eastbound Chapel Dr L	T	R	Bikes	Westbound Chapel Dr L	T	R	Bikes	Interval Total	Pedestrians Crosswalk North	South	East	West
6:30 AM	0	0	0	0	12	0	11	0	18	50	0	0	0	12	17	0	120	0	0	0	0
6:45 AM	0	0	0	0	13	0	13	0	27	76	0	0	0	24	17	0	170	0	0	0	0
7:00 AM	0	0	0	0	18	0	18	0	36	132	0	0	0	49	28	0	281	0	0	0	0
7:15 AM	0	0	0	0	25	0	18	0	33	139	0	0	0	55	32	0	302	0	0	0	0
7:30 AM	0	0	0	0	24	0	19	0	30	124	0	0	0	53	30	0	280	0	1	0	0
7:45 AM	0	0	0	0	26	0	19	0	24	99	0	0	0	45	35	1	248	0	1	0	0
8:00 AM	0	0	0	1	18	0	10	0	12	43	0	0	0	26	26	1	135	3	1	0	0
8:15 AM	0	0	0	1	14	0	10	0	14	32	0	0	0	24	23	1	117	3	1	0	0
8:30 AM	0	0	0	1	14	0	11	0	16	34	0	0	0	23	24	1	122	3	0	0	0

Total Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
5:00 PM to 6:00 PM

19th St & Chapel Dr

Wednesday, May 16, 2012
3:30 PM to 6:30 PM

15-Minute Interval Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	0	0	0	0	9	0	2	0	3	7	0	2	0	16	12	1	49	0	0	0	0
3:45 PM	0	0	0	0	4	0	6	0	4	10	0	0	0	21	8	0	53	0	0	0	0
4:00 PM	0	0	0	0	6	0	4	2	11	8	0	1	0	9	5	0	43	2	0	0	0
4:15 PM	0	0	0	0	2	0	3	0	2	11	0	0	0	15	7	0	40	0	0	0	0
4:30 PM	0	0	0	0	6	0	4	1	4	12	0	2	0	15	6	0	47	0	0	0	0
4:45 PM	0	0	0	0	8	0	5	0	5	14	0	1	0	13	10	2	55	0	0	0	0
5:00 PM	0	0	0	0	9	0	5	0	3	15	0	0	0	12	9	0	53	0	0	0	0
5:15 PM	0	0	0	0	9	0	5	0	2	16	0	0	0	15	9	0	56	0	0	1	0
5:30 PM	0	0	0	0	6	0	8	1	7	24	0	0	0	15	7	0	67	0	0	0	0
5:45 PM	0	0	0	0	3	0	10	0	4	10	0	1	0	24	5	0	56	0	0	0	0
6:00 PM	0	0	0	0	5	0	5	1	2	10	0	1	0	13	7	2	42	0	0	0	0
6:15 PM	0	0	0	0	10	0	3	0	2	11	0	1	0	10	6	0	42	0	0	0	0
Total Survey	0	0	0	0	77	0	60	5	49	148	0	9	0	178	91	5	603	2	0	1	0

Peak Hour Summary
5:00 PM to 6:00 PM

By Approach	Northbound 19th St				Southbound 19th St				Eastbound Chapel Dr				Westbound Chapel Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	0	0	0	0	55	46	101	1	81	93	174	1	96	93	189	0	232	0	0	1	0
%HV																					
PHF																					

By Movement	Northbound 19th St				Southbound 19th St				Eastbound Chapel Dr				Westbound Chapel Dr				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	27	0	28	55	16	65	0	81	0	66	30	96	232
%HV																	
PHF					0.75		0.70		0.57	0.68				0.69	0.83		0.87

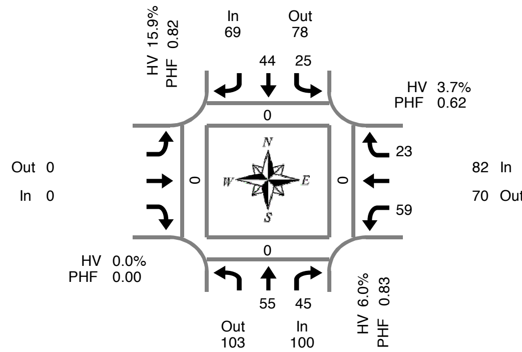
PEAK

Rolling Hour Summary
3:30 PM to 6:30 PM

Interval Start Time	Northbound 19th St				Southbound 19th St				Eastbound Chapel Dr				Westbound Chapel Dr				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:30 PM	0	0	0	0	21	0	15	2	20	36	0	3	0	61	32	1	185	2	0	0	0
3:45 PM	0	0	0	0	18	0	17	3	21	41	0	3	0	60	26	0	183	2	0	0	0
4:00 PM	0	0	0	0	22	0	16	3	22	45	0	4	0	52	28	2	185	2	0	0	0
4:15 PM	0	0	0	0	25	0	17	1	14	52	0	3	0	55	32	2	195	0	0	0	0
4:30 PM	0	0	0	0	32	0	19	1	14	57	0	3	0	55	34	2	211	0	0	1	0
4:45 PM	0	0	0	0	32	0	23	1	17	69	0	1	0	55	35	2	231	0	0	1	0
5:00 PM	0	0	0	0	27	0	28	1	16	65	0	1	0	66	30	0	232	0	0	1	0
5:15 PM	0	0	0	0	23	0	28	2	15	60	0	2	0	67	28	2	221	0	0	1	0
5:30 PM	0	0	0	0	24	0	26	2	15	55	0	3	0	62	25	2	207	0	0	0	0

Total Vehicle Summary

Clay Carney
(503) 833-2740



Peak Hour Summary
2:40 PM to 3:40 PM

S 13th St & SW Chapel Dr

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
2:00 PM		1	2	0	0	8		0				0	3		1	0	15	0	0	0	0
2:05 PM		4	1	0	2	3		0				0	0		3	0	13	0	0	0	0
2:10 PM		8	2	0	2	5		0				0	3		1	0	21	0	0	0	0
2:15 PM		3	3	0	1	3		0				0	2		3	0	15	0	0	0	0
2:20 PM		2	4	0	2	5		0				0	2		0	0	15	0	0	0	0
2:25 PM		3	1	0	3	2		0				0	1		1	0	11	0	0	0	0
2:30 PM		3	2	0	4	4		0				0	0		3	0	16	0	0	0	0
2:35 PM		4	0	0	3	3		0				0	2		1	0	13	0	0	0	0
2:40 PM		7	7	0	2	3		0				0	3		3	0	25	0	0	0	0
2:45 PM		4	6	0	2	4		0				0	1		2	0	19	0	0	0	0
2:50 PM		3	3	0	4	6		0				0	6		0	0	22	0	0	0	0
2:55 PM		5	5	0	1	4		0				0	3		0	0	18	0	0	0	0
3:00 PM		6	4	0	4	2		0				0	7		1	0	24	0	0	0	0
3:05 PM		6	4	0	2	3		0				0	0		2	0	17	0	0	0	0
3:10 PM		6	4	0	3	4		0				0	5		3	0	25	0	0	0	0
3:15 PM		4	5	0	1	2		0				0	11		0	0	23	0	0	0	0
3:20 PM		3	2	0	2	3		0				0	7		3	0	20	0	0	0	0
3:25 PM		4	1	0	2	5		0				0	7		5	0	24	0	0	0	0
3:30 PM		2	1	2	2	7		0				0	6		2	0	20	0	0	0	0
3:35 PM		5	3	0	0	1		0				0	3		2	0	14	0	0	0	0
3:40 PM		6	3	0	0	1		0				0	2		1	0	13	0	0	0	0
3:45 PM		3	3	0	3	7		0				0	2		1	0	19	0	0	0	0
3:50 PM		4	4	1	2	7		0				0	3		3	0	23	0	0	0	0
3:55 PM		2	0	0	2	2		0				0	3		2	0	11	0	0	0	0
Total Survey		98	70	3	49	94		0				0	82		43	0	436	0	0	0	0

15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
2:00 PM		13	5	0	4	16		0				0	6		5	0	49	0	0	0	0
2:15 PM		8	8	0	6	10		0				0	5		4	0	41	0	0	0	0
2:30 PM		14	9	0	9	10		0				0	5		7	0	54	0	0	0	0
2:45 PM		12	14	0	7	14		0				0	10		2	0	59	0	0	0	0
3:00 PM		18	12	0	9	9		0				0	12		6	0	66	0	0	0	0
3:15 PM		11	8	0	5	10		0				0	25		8	0	67	0	0	0	0
3:30 PM		13	7	2	2	9		0				0	11		5	0	47	0	0	0	0
3:45 PM		9	7	1	7	16		0				0	8		6	0	53	0	0	0	0
Total Survey		98	70	3	49	94		0				0	82		43	0	436	0	0	0	0

Peak Hour Summary
2:40 PM to 3:40 PM

By Approach	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Total
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	
Volume	100	103	203	2	69	78	147	0	0	0	0	0	82	70	152	0	251
%HV	6.0%				15.9%				0.0%				3.7%				8.0%
PHF	0.83				0.82				0.00				0.62				0.92

Pedestrians Crosswalk			
North	South	East	West
0	0	0	0

By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		55	45	100	25	44		69				0	59		23	82	251
%HV	NA	7.3%	4.4%	6.0%	20.0%	13.6%	NA	15.9%	NA	NA	NA	0.0%	5.1%	NA	0.0%	3.7%	8.0%
PHF		0.76	0.70	0.83	0.69	0.73		0.82				0.00	0.59		0.58	0.62	0.92

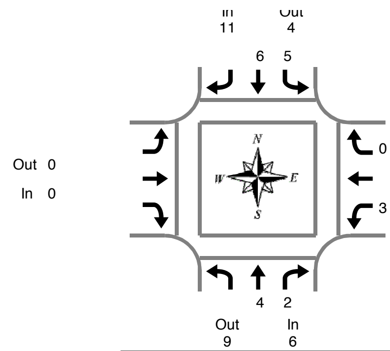
Rolling Hour Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
2:00 PM		47	36	0	26	50		0				0	26		18	0	203	0	0	0	0
2:15 PM		52	43	0	31	43		0				0	32		19	0	220	0	0	0	0
2:30 PM		55	43	0	30	43		0				0	52		23	0	246	0	0	0	0
2:45 PM		54	41	2	23	42		0				0	58		21	0	239	0	0	0	0
3:00 PM		51	34	3	23	44		0				0	56		25	0	233	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740



Peak Hour Summary
2:40 PM to 3:40 PM

S 13th St & SW Chapel Dr

Wednesday, October 28, 2015
2:00 PM to 4:00 PM

Heavy Vehicle 5-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St			Southbound S 13th St			Eastbound	Westbound SW Chapel Dr			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0
2:05 PM	0	1	1	1	0	1	0	0	2	2	4
2:10 PM	2	0	2	2	1	3	0	0	0	0	5
2:15 PM	0	0	0	0	0	0	0	1	2	3	3
2:20 PM	0	0	0	1	1	2	0	0	0	0	2
2:25 PM	0	0	0	2	0	2	0	1	0	1	3
2:30 PM	0	0	0	0	1	1	0	0	2	2	3
2:35 PM	0	0	0	1	0	1	0	0	0	0	1
2:40 PM	2	0	2	0	0	0	0	0	0	0	2
2:45 PM	0	1	1	1	0	1	0	0	0	0	2
2:50 PM	0	0	0	0	3	3	0	0	0	0	3
2:55 PM	1	0	1	0	0	0	0	0	0	0	1
3:00 PM	0	1	1	1	0	1	0	1	0	1	3
3:05 PM	0	0	0	0	1	1	0	0	0	0	1
3:10 PM	0	0	0	0	0	0	0	1	0	1	1
3:15 PM	0	0	0	1	0	1	0	0	0	0	1
3:20 PM	0	0	0	0	0	0	0	0	0	0	0
3:25 PM	0	0	0	1	0	1	0	1	0	1	2
3:30 PM	0	0	0	1	2	3	0	0	0	0	3
3:35 PM	1	0	1	0	0	0	0	0	0	0	1
3:40 PM	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	1	1	0	0	0	0	1	0	1	2
3:50 PM	0	0	0	0	0	0	0	0	0	0	0
3:55 PM	0	0	0	2	0	2	0	0	0	0	2
Total Survey	6	4	10	14	9	23	0	6	6	12	45

Heavy Vehicle 15-Minute Interval Summary
2:00 PM to 4:00 PM

Interval Start Time	Northbound S 13th St			Southbound S 13th St			Eastbound	Westbound SW Chapel Dr			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
2:00 PM	2	1	3	3	1	4	0	0	2	2	9
2:15 PM	0	0	0	3	1	4	0	2	2	4	8
2:30 PM	2	0	2	1	1	2	0	0	2	2	6
2:45 PM	1	1	2	1	3	4	0	0	0	0	6
3:00 PM	0	1	1	1	1	2	0	2	0	2	5
3:15 PM	0	0	0	2	0	2	0	1	0	1	3
3:30 PM	1	0	1	1	2	3	0	0	0	0	4
3:45 PM	0	1	1	2	0	2	0	1	0	1	4
Total Survey	6	4	10	14	9	23	0	6	6	12	45

Heavy Vehicle Peak Hour Summary
2:40 PM to 3:40 PM

By Approach	Northbound S 13th St			Southbound S 13th St			Eastbound			Westbound SW Chapel Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	6	9	15	11	4	15	0	0	0	3	7	10	20
PHF	0.50			0.69			0.00			0.38			0.71

By Movement	Northbound S 13th St			Southbound S 13th St			Eastbound	Westbound SW Chapel Dr			Total
	T	R	Total	L	T	Total	Total	L	R	Total	
Volume	4	2	6	5	6	11	0	3	0	3	20
PHF	0.50	0.50	0.50	0.63	0.50	0.69	0.00	0.38	0.00	0.38	0.71

Heavy Vehicle Rolling Hour Summary
2:00 PM to 4:00 PM

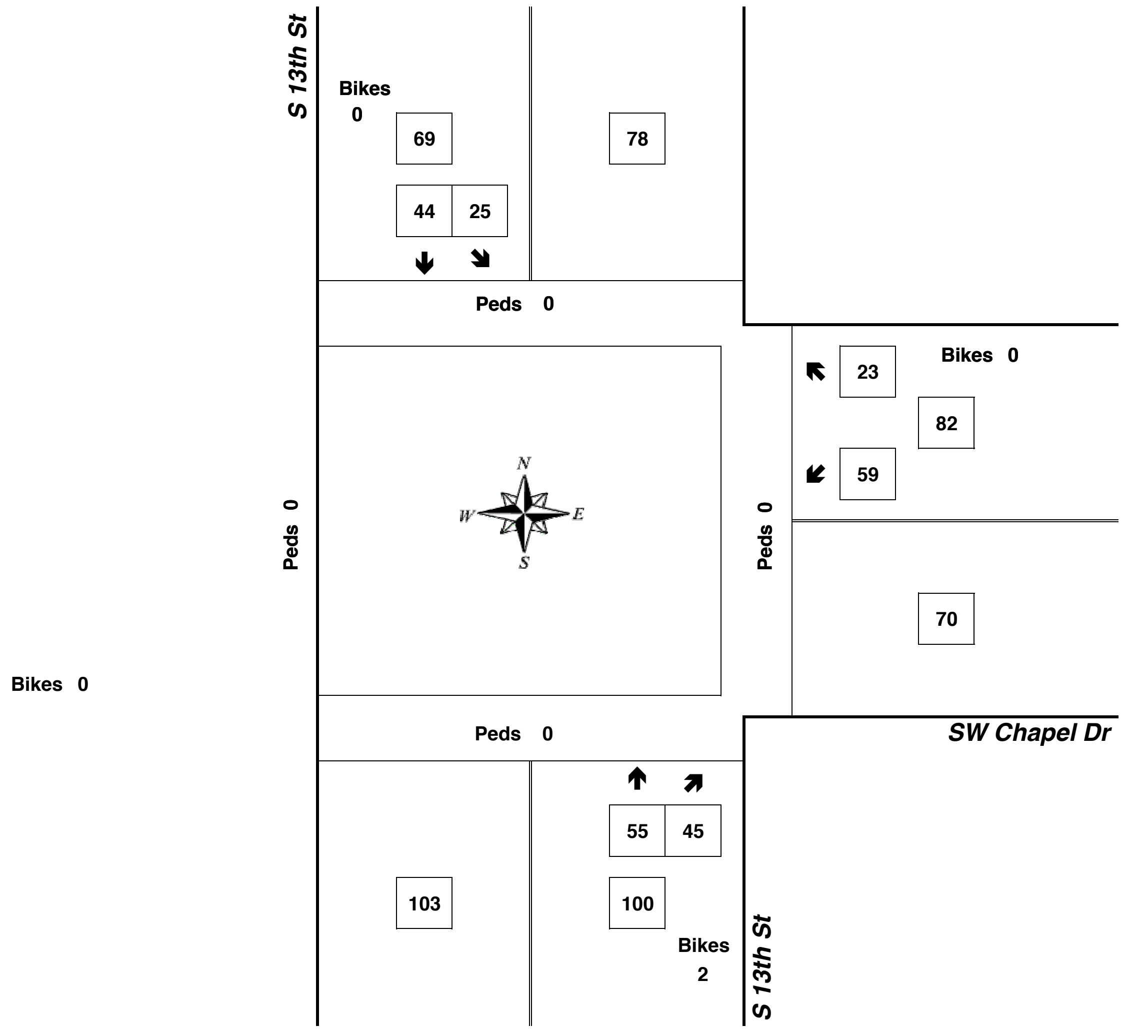
Interval Start Time	Northbound S 13th St			Southbound S 13th St			Eastbound	Westbound SW Chapel Dr			Interval Total
	T	R	Total	L	T	Total	Total	L	R	Total	
2:00 PM	5	2	7	8	6	14	0	2	6	8	29
2:15 PM	3	2	5	6	6	12	0	4	4	8	25
2:30 PM	3	2	5	5	5	10	0	3	2	5	20
2:45 PM	2	2	4	5	6	11	0	3	0	3	18
3:00 PM	1	2	3	6	3	9	0	4	0	4	16

Peak Hour Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740

S 13th St & SW Chapel Dr

2:40 PM to 3:40 PM
Wednesday, October 28, 2015

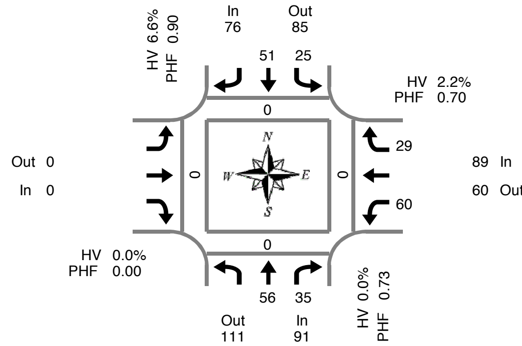


Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.62	3.7%	82
NB	0.83	6.0%	100
SB	0.82	15.9%	69
Intersection	0.92	8.0%	251

Count Period: 2:00 PM to 4:00 PM

Total Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



S 13th St & SW Chapel Dr

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Peak Hour Summary
4:50 PM to 5:50 PM

5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM		4	2	0	3	3		0				0	2		0	0	14	0	0	0	0
4:05 PM		4	3	0	0	4		0				0	5		1	0	17	0	0	0	0
4:10 PM		9	3	0	2	4		0				0	9		4	0	31	1	0	0	0
4:15 PM		2	1	0	2	4		0				0	2		1	1	12	0	0	0	0
4:20 PM		6	0	0	2	4		0				0	3		4	0	19	0	0	0	0
4:25 PM		2	2	0	3	7		0				0	4		3	0	21	0	0	0	0
4:30 PM		4	3	0	4	4		0				0	1		1	0	17	0	0	0	0
4:35 PM		3	1	0	4	9		0				0	2		2	0	21	0	0	0	0
4:40 PM		2	3	0	2	4		0				0	0		2	0	13	0	0	0	0
4:45 PM		4	1	0	1	2		0				0	2		1	0	11	0	0	0	0
4:50 PM		4	4	0	3	8		0				0	4		2	0	25	0	0	0	0
4:55 PM		4	4	0	1	6		0				0	4		0	0	19	0	0	0	0
5:00 PM		4	2	0	2	1		1				0	7		3	0	19	0	0	0	0
5:05 PM		5	6	1	4	3		0				0	0		1	0	19	0	0	0	0
5:10 PM		8	2	0	2	3		0				0	7		2	0	24	0	0	0	0
5:15 PM		5	4	0	1	3		0				0	8		1	0	22	0	0	0	0
5:20 PM		8	4	1	3	4		0				0	3		3	0	25	0	0	0	0
5:25 PM		5	1	1	1	6		0				0	4		4	0	21	0	0	0	0
5:30 PM		5	3	0	2	5		0				0	6		6	0	27	0	0	0	0
5:35 PM		4	1	0	0	4		0				0	7		5	0	21	0	0	0	0
5:40 PM		0	1	0	4	4		0				0	4		0	1	13	0	0	0	0
5:45 PM		4	3	0	2	4		0				0	6		2	0	21	0	0	0	0
5:50 PM		6	2	0	0	1		0				0	9		2	0	20	0	0	0	0
5:55 PM		4	1	0	0	2		0				0	8		1	0	16	0	0	0	0
Total Survey		106	57	3	48	99		1				0	107		51	2	468	1	0	0	0

15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM		17	8	0	5	11		0				0	16		5	0	62	1	0	0	0
4:15 PM		10	3	0	7	15		0				0	9		8	1	52	0	0	0	0
4:30 PM		9	7	0	10	17		0				0	3		5	0	51	0	0	0	0
4:45 PM		12	9	0	5	16		0				0	10		3	0	55	0	0	0	0
5:00 PM		17	10	1	8	7		1				0	14		6	0	62	0	0	0	0
5:15 PM		18	9	2	5	13		0				0	15		8	0	68	0	0	0	0
5:30 PM		9	5	0	6	13		0				0	17		11	1	61	0	0	0	0
5:45 PM		14	6	0	2	7		0				0	23		5	0	57	0	0	0	0
Total Survey		106	57	3	48	99		1				0	107		51	2	468	1	0	0	0

Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	91	111	202	3	76	85	161	1	0	0	0	0	89	60	149	1	256	0	0	0	0
%HV	0.0%				6.6%				0.0%				2.2%				2.7%				
PHF	0.73				0.90				0.00				0.70				0.88				

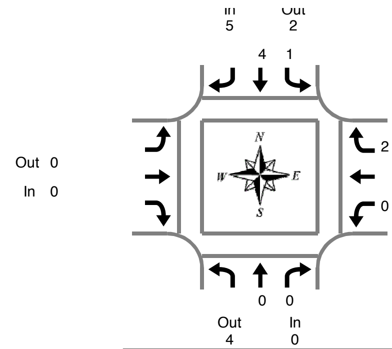
By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		56	35	91	25	51		76				0	60		29	89	256
%HV	NA	0.0%	0.0%	0.0%	4.0%	7.8%	NA	6.6%	NA	NA	NA	0.0%	0.0%	NA	6.9%	2.2%	2.7%
PHF		0.67	0.73	0.73	0.78	0.85		0.90				0.00	0.83		0.48	0.70	0.88

Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total	Pedestrians Crosswalk			
		T	R	Bikes	L	T		Bikes				Bikes	L		R	Bikes		North	South	East	West
4:00 PM		48	27	0	27	59		0				0	38		21	1	220	1	0	0	0
4:15 PM		48	29	1	30	55		1				0	36		22	1	220	0	0	0	0
4:30 PM		56	35	3	28	53		1				0	42		22	0	236	0	0	0	0
4:45 PM		56	33	3	24	49		1				0	56		28	1	246	0	0	0	0
5:00 PM		58	30	3	21	40		1				0	69		30	1	248	0	0	0	0

Heavy Vehicle Summary

All Traffic Data Services Inc.
Clay Carney
(503) 833-2740



Peak Hour Summary
4:50 PM to 5:50 PM

S 13th St & SW Chapel Dr

Wednesday, October 28, 2015
4:00 PM to 6:00 PM

Heavy Vehicle 5-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		0	0	0	1	0		1				0	0		0	0	1
4:05 PM		0	0	0	0	0		0				0	0		0	0	0
4:10 PM		1	0	1	0	0		0				0	0		0	0	1
4:15 PM		0	1	1	1	1		2				0	0		0	0	3
4:20 PM		0	0	0	0	0		0				0	0		0	0	0
4:25 PM		0	0	0	1	0		1				0	0		1	1	2
4:30 PM		0	0	0	2	1		3				0	0		0	0	3
4:35 PM		0	0	0	0	0		0				0	1		0	1	1
4:40 PM		0	0	0	1	0		1				0	0		0	0	1
4:45 PM		0	0	0	1	0		1				0	0		0	0	1
4:50 PM		0	0	0	1	0		1				0	0		0	0	1
4:55 PM		0	0	0	0	3		3				0	0		0	0	3
5:00 PM		0	0	0	0	0		0				0	0		1	1	1
5:05 PM		0	0	0	0	0		0				0	0		0	0	0
5:10 PM		0	0	0	0	0		0				0	0		0	0	0
5:15 PM		0	0	0	0	0		0				0	0		0	0	0
5:20 PM		0	0	0	0	0		0				0	0		1	1	1
5:25 PM		0	0	0	0	0		0				0	0		0	0	0
5:30 PM		0	0	0	0	1		1				0	0		0	0	1
5:35 PM		0	0	0	0	0		0				0	0		0	0	0
5:40 PM		0	0	0	0	0		0				0	0		0	0	0
5:45 PM		0	0	0	0	0		0				0	0		0	0	0
5:50 PM		0	0	0	0	0		0				0	0		0	0	0
5:55 PM		1	0	1	0	0		0				0	0		0	0	1
Total Survey		2	1	3	8	6		14				0	1		3	4	21

Heavy Vehicle 15-Minute Interval Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		1	0	1	1	0		1				0	0		0	0	2
4:15 PM		0	1	1	2	1		3				0	0		1	1	5
4:30 PM		0	0	0	3	1		4				0	1		0	1	5
4:45 PM		0	0	0	2	3		5				0	0		0	0	5
5:00 PM		0	0	0	0	0		0				0	0		1	1	1
5:15 PM		0	0	0	0	0		0				0	0		1	1	1
5:30 PM		0	0	0	0	1		1				0	0		0	0	1
5:45 PM		1	0	1	0	0		0				0	0		0	0	1
Total Survey		2	1	3	8	6		14				0	1		3	4	21

Heavy Vehicle Peak Hour Summary
4:50 PM to 5:50 PM

By Approach	Northbound S 13th St			Southbound S 13th St			Eastbound			Westbound SW Chapel Dr			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	4	4	5	2	7	0	0	0	2	1	3	7
PHF	0.00			0.31			0.00			0.50			0.35

By Movement	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Total
		T	R	Total	L	T		Total				Total	L		R	Total	
Volume		0	0	0	1	4		5				0	0		2	2	7
PHF		0.00	0.00	0.00	0.25	0.33		0.31				0.00	0.00		0.50	0.50	0.35

Heavy Vehicle Rolling Hour Summary
4:00 PM to 6:00 PM

Interval Start Time	Northbound S 13th St				Southbound S 13th St				Eastbound				Westbound SW Chapel Dr				Interval Total
		T	R	Total	L	T		Total				Total	L		R	Total	
4:00 PM		1	1	2	8	5		13				0	1		1	2	17
4:15 PM		0	1	1	7	5		12				0	1		2	3	16
4:30 PM		0	0	0	5	4		9				0	1		2	3	12
4:45 PM		0	0	0	2	4		6				0	0		2	2	8
5:00 PM		1	0	1	0	1		1				0	0		2	2	4

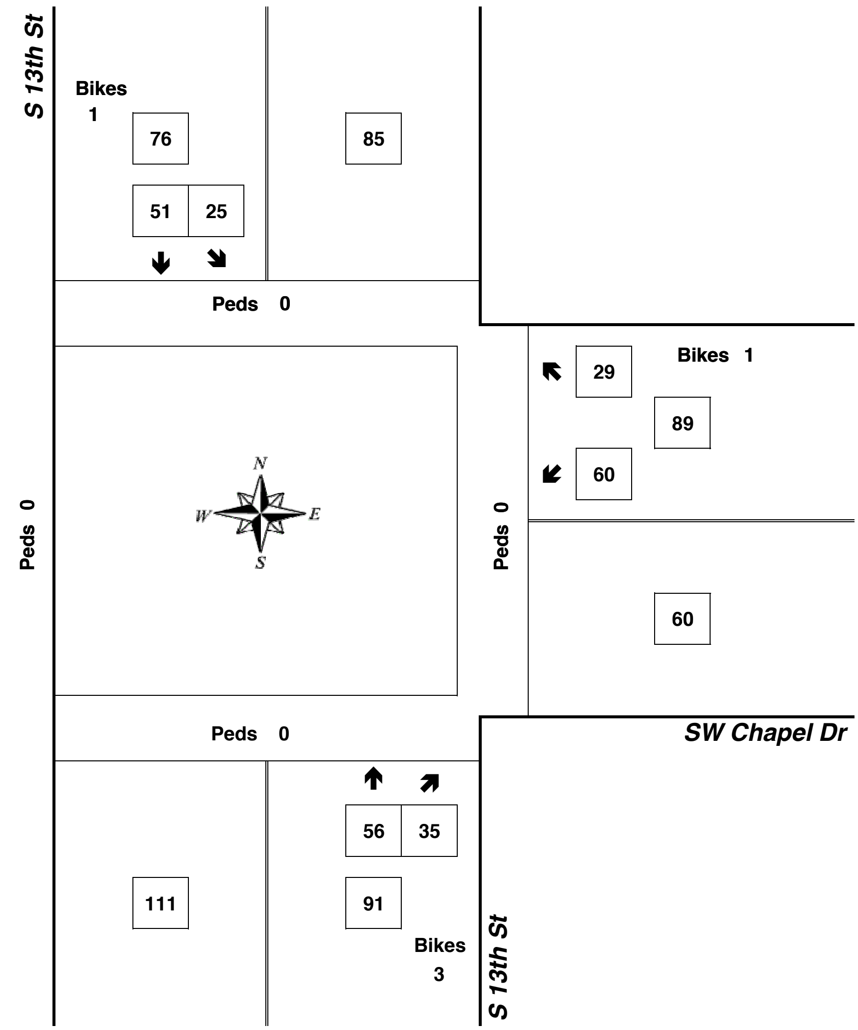
Peak Hour Summary

All Traffic Data Services Inc.

Clay Carney
(503) 833-2740

S 13th St & SW Chapel Dr

4:50 PM to 5:50 PM
Wednesday, October 28, 2015



Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.70	2.2%	89
NB	0.73	0.0%	91
SB	0.90	6.6%	76
Intersection	0.88	2.7%	256

Count Period: 4:00 PM to 6:00 PM

Intersection Traffic Operations

Intersection	
Intersection Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NEL	NER
Vol, veh/h	315	10	225	410	15	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	220	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	11	0	2	6	7	7
Mvmt Flow	332	11	237	432	16	153

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	1242	337
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	905	-
Follow-up Headway	-	-	2	-	4	3
Pot Capacity-1 Maneuver	-	-	1217	-	188	694
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	387	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1217	-	151	694
Mov Capacity-2 Maneuver	-	-	-	-	151	-
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	312	-

Approach	EB	WB	NE
HCM Control Delay, s	0	3	14

Minor Lane / Major Mvmt	NELn1	NELn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	151	694	-	-	1217	-
HCM Lane V/C Ratio	0.105	0.22	-	-	0.195	-
HCM Control Delay (s)	31.6	11.6	-	-	8.671	-
HCM Lane LOS	D	B			A	
HCM 95th %tile Q(veh)	0.343	0.835	-	-	0.721	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	675	40	15	30	0	0	15	65
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					0.99			1.00			0.89	
Flt Protected					1.00			0.98			1.00	
Satd. Flow (prot)					3138			1720			1504	
Flt Permitted					1.00			0.86			1.00	
Satd. Flow (perm)					3138			1497			1504	
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)	0	0	0	21	711	42	16	32	0	0	16	68
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	59	0
Lane Group Flow (vph)	0	0	0	0	769	0	0	48	0	0	25	0
Confl. Peds. (#/hr)	6					6	2					2
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	7%	5%	0%	0%	0%	0%	0%	0%	3%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			4			8	
Permitted Phases				6			4					
Actuated Green, G (s)					27.6			5.1			5.1	
Effective Green, g (s)					28.6			5.6			5.6	
Actuated g/C Ratio					0.68			0.13			0.13	
Clearance Time (s)					5.0			4.5			4.5	
Vehicle Extension (s)					6.0			2.5			2.5	
Lane Grp Cap (vph)					2126			198			199	
v/s Ratio Prot											0.02	
v/s Ratio Perm					0.25			c0.03				
v/c Ratio					0.36			0.24			0.13	
Uniform Delay, d1					2.9			16.4			16.1	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			0.5			0.2	
Delay (s)					3.2			16.9			16.3	
Level of Service					A			B			B	
Approach Delay (s)		0.0			3.2			16.9			16.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	45	690	40	45	25	0	0	15	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					0.99			1.00			0.93	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3112			1652			1621	
Flt Permitted					1.00			0.91			1.00	
Satd. Flow (perm)					3112			1557			1621	
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)	0	0	0	47	726	42	47	26	0	0	16	16
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	811	0	0	73	0	0	18	0
Confl. Peds. (#/hr)	4					4	2		8	8		2
Confl. Bikes (#/hr)						3						
Heavy Vehicles (%)	0%	0%	0%	4%	6%	0%	4%	0%	0%	0%	0%	0%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			4			8	
Permitted Phases				6			4					
Actuated Green, G (s)					25.0			3.1			3.1	
Effective Green, g (s)					25.5			3.6			3.6	
Actuated g/C Ratio					0.69			0.10			0.10	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					6.0			2.5			2.5	
Lane Grp Cap (vph)					2138			151			157	
v/s Ratio Prot											0.01	
v/s Ratio Perm					0.26			c0.05				
v/c Ratio					0.38			0.48			0.11	
Uniform Delay, d1					2.5			15.9			15.3	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.3			1.8			0.2	
Delay (s)					2.8			17.6			15.5	
Level of Service					A			B			B	
Approach Delay (s)		0.0			2.8			17.6			15.5	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	37.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	515	45	0	0	0	0	60	50	25	50	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3081						1587			1677	
Flt Permitted		1.00						1.00			0.85	
Satd. Flow (perm)		3081						1587			1441	
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)	16	542	47	0	0	0	0	63	53	26	53	0
RTOR Reduction (vph)	0	9	0	0	0	0	0	37	0	0	0	0
Lane Group Flow (vph)	0	596	0	0	0	0	0	79	0	0	79	0
Confl. Peds. (#/hr)			8	8			4					4
Confl. Bikes (#/hr)			5									
Heavy Vehicles (%)	0%	7%	0%	0%	0%	0%	0%	3%	4%	0%	4%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2									8		
Actuated Green, G (s)		18.3						4.9			4.9	
Effective Green, g (s)		19.3						5.4			5.4	
Actuated g/C Ratio		0.59						0.17			0.17	
Clearance Time (s)		5.0						4.5			4.5	
Vehicle Extension (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		1818						262			237	
v/s Ratio Prot								0.05				
v/s Ratio Perm		0.19									c0.05	
v/c Ratio		0.33						0.30			0.33	
Uniform Delay, d1		3.4						12.0			12.1	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.1						0.9			1.1	
Delay (s)		3.5						12.9			13.2	
Level of Service		A						B			B	
Approach Delay (s)		3.5			0.0			12.9			13.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	32.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	65	10	15	65	5	5	0	10	5	0	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	3	0	19	0	0	39	0	0	0	0	0
Mvmt Flow	5	68	11	16	68	5	5	0	11	5	0	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.9	7.7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	6%	18%	50%
Vol Thru, %	0%	81%	76%	0%
Vol Right, %	67%	12%	6%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	80	85	10
LT Vol	0	65	65	0
Through Vol	10	10	5	5
RT Vol	5	5	15	5
Lane Flow Rate	16	84	89	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.02	0.092	0.108	0.012
Departure Headway (Hd)	4.538	3.95	4.332	4.012
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	778	904	826	878
Service Time	2.627	1.991	2.364	2.103
HCM Lane V/C Ratio	0.021	0.093	0.108	0.013
HCM Control Delay	7.7	7.4	7.9	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.4	0

Notes

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

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	40	25	20	25	75	20	100	15	45	115	55
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	4	0	0	0	3	0	4	0	0	3	0
Mvmt Flow	16	42	26	21	26	79	21	105	16	47	121	58
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.5	8.5	9	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	19%	17%	100%	0%
Vol Thru, %	0%	87%	50%	21%	0%	68%
Vol Right, %	0%	13%	31%	62%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	115	80	120	45	170
LT Vol	0	100	40	25	0	115
Through Vol	0	15	25	75	0	55
RT Vol	20	0	15	20	45	0
Lane Flow Rate	21	121	84	126	47	179
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.033	0.175	0.112	0.16	0.074	0.246
Departure Headway (Hd)	5.719	5.191	4.807	4.565	5.637	4.957
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	624	689	743	783	634	723
Service Time	3.469	2.942	2.855	2.608	3.384	2.704
HCM Lane V/C Ratio	0.034	0.176	0.113	0.161	0.074	0.248
HCM Control Delay	8.7	9.1	8.5	8.5	8.8	9.3
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.6	0.4	0.6	0.2	1

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	145	410	35	75	545	40	90	65	45	85	105	160
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.99		1.00	0.99		1.00	0.94		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1552	3134		1659	3186		1612	1576		1658	1547	
Flt Permitted	0.32	1.00		0.48	1.00		0.44	1.00		0.68	1.00	
Satd. Flow (perm)	517	3134		844	3186		743	1576		1192	1547	
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)	153	432	37	79	574	42	95	68	47	89	111	168
RTOR Reduction (vph)	0	7	0	0	6	0	0	25	0	0	55	0
Lane Group Flow (vph)	153	462	0	79	610	0	95	90	0	89	224	0
Confl. Peds. (#/hr)	8		6	6		8	4		5	5		4
Confl. Bikes (#/hr)			2			3			5			4
Heavy Vehicles (%)	7%	5%	0%	0%	3%	4%	3%	3%	4%	0%	0%	3%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	31.6	24.4		27.0	22.1		14.6	14.6		14.6	14.6	
Effective Green, g (s)	31.6	25.4		28.0	23.1		15.1	15.1		15.1	15.1	
Actuated g/C Ratio	0.55	0.44		0.48	0.40		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0		2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	410	1374		484	1271		193	411		310	403	
v/s Ratio Prot	c0.05	0.15		0.02	c0.19			0.06			c0.14	
v/s Ratio Perm	0.16			0.06			0.13			0.07		
v/c Ratio	0.37	0.34		0.16	0.48		0.49	0.22		0.29	0.56	
Uniform Delay, d1	7.0	10.7		8.1	12.9		18.1	16.8		17.1	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.4		0.1	0.8		1.4	0.2		0.4	1.3	
Delay (s)	7.4	11.1		8.2	13.7		19.6	17.0		17.5	19.8	
Level of Service	A	B		A	B		B	B		B	B	
Approach Delay (s)		10.2			13.1			18.2			19.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	57.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	1.6

Movement	EBL	EBR	NEL	NET	SWT	SWR
Vol, veh/h	60	15	20	225	335	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	0	7	7	7	7
Mvmt Flow	63	16	21	237	353	174

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	718	439	526	0	-	0
Stage 1	439	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	394	622	1016	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	385	622	1016	-	-	-
Mov Capacity-2 Maneuver	385	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	EB	NE	SW
HCM Control Delay, s	15	1	0

Minor Lane / Major Mvmt	NEL	NET	EBLn1	EBLn2	SWT	SWR
Capacity (veh/h)	1016	-	385	622	-	-
HCM Lane V/C Ratio	0.021	-	0.164	0.025	-	-
HCM Control Delay (s)	8.618	0	16.2	10.9	-	-
HCM Lane LOS	A	A	C	B		
HCM 95th %tile Q(veh)	0.063	-	0.58	0.078	-	-

Notes

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

Intersection	
Intersection Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	525	15	25	720	5	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	4	0	0	4	0	0
Mvmt Flow	553	16	26	758	5	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	568	0	1372	561
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	811	-
Follow-up Headway	-	-	2	-	4	3
Pot Capacity-1 Maneuver	-	-	1014	-	163	531
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	440	-
Time blocked-Platoon, %	-	-		-		
Mov Capacity-1 Maneuver	-	-	1014	-	156	531
Mov Capacity-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	379	-	-	1014	-
HCM Lane V/C Ratio	0.083	-	-	0.026	-
HCM Control Delay (s)	15.4	-	-	8.645	0
HCM Lane LOS	C			A	A
HCM 95th %tile Q(veh)	0.271	-	-	0.08	-

Notes

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

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	15	25	45	10	10	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	26	47	11	11	21
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.3	7.2	6.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	38%	0%	33%
Vol Thru, %	62%	82%	0%
Vol Right, %	0%	18%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	40	55	30
LT Vol	25	45	0
Through Vol	0	10	20
RT Vol	15	0	10
Lane Flow Rate	42	58	32
Geometry Grp	1	1	1
Degree of Util (X)	0.048	0.062	0.033
Departure Headway (Hd)	4.073	3.877	3.737
Convergence, Y/N	Yes	Yes	Yes
Cap	880	925	953
Service Time	2.093	1.897	1.779
HCM Lane V/C Ratio	0.048	0.063	0.034
HCM Control Delay	7.3	7.2	6.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1

Notes

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

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	15	15	160	30	20	10	10	100	20	5	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	10	0	3	5	0	0	0	0	7	0	0
Mvmt Flow	0	16	16	168	32	21	11	11	105	21	5	0
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.6	9.1	7.9	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	0%	0%	76%	80%
Vol Thru, %	50%	0%	50%	14%	20%
Vol Right, %	0%	100%	50%	10%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	100	30	210	25
LT Vol	10	0	15	30	5
Through Vol	0	100	15	20	0
RT Vol	10	0	0	160	20
Lane Flow Rate	21	105	32	221	26
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.031	0.129	0.038	0.272	0.037
Departure Headway (Hd)	5.368	4.413	4.37	4.436	5.018
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	669	815	820	811	715
Service Time	3.083	2.128	2.391	2.452	3.038
HCM Lane V/C Ratio	0.031	0.129	0.039	0.273	0.036
HCM Control Delay	8.3	7.8	7.6	9.1	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.4	0.1	1.1	0.1

Notes

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

Intersection	
Intersection Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	55	25	35	65	115	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	6	8	0	0	0
Mvmt Flow	58	26	37	68	121	68

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	297	155	189	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	692	880	1350	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	673	880	1350	-	-	-
Mov Capacity-2 Maneuver	673	-	-	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	3	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1350	-	726	-	-
HCM Lane V/C Ratio	0.027	-	0.116	-	-
HCM Control Delay (s)	7.741	0	10.6	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.084	-	0.392	-	-

Notes

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

Intersection	
Intersection Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	20	75	75	35	30	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	6	5	10	0
Mvmt Flow	21	79	79	37	32	32

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	116	0	-	0	218	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	121	-
Follow-up Headway	2	-	-	-	4	3
Pot Capacity-1 Maneuver	1485	-	-	-	753	965
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	885	-
Time blocked-Platoon, %		-	-	-		
Mov Capacity-1 Maneuver	1485	-	-	-	742	965
Mov Capacity-2 Maneuver	-	-	-	-	742	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	10

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	839
HCM Lane V/C Ratio	0.014	-	-	-	0.075
HCM Control Delay (s)	7.459	0	-	-	9.6
HCM Lane LOS	A	A			A
HCM 95th %tile Q(veh)	0.043	-	-	-	0.244

Notes

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

Intersection	
Intersection Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	80	35	65	35	25	45
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	8	3	0	0	4
Mvmt Flow	84	37	68	37	26	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	189	89	0	0	107	0
Stage 1	89	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Follow-up Headway	4	3	-	-	2	-
Pot Capacity-1 Maneuver	805	953	-	-	1497	-
Stage 1	940	-	-	-	-	-
Stage 2	929	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	789	951	-	-	1497	-
Mov Capacity-2 Maneuver	789	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	912	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	3

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	832	1497	-
HCM Lane V/C Ratio	-	-	0.145	0.018	-
HCM Control Delay (s)	-	-	10.1	7.448	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.508	0.054	-

Notes

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

Intersection Crash Rates

Intersection Population Type Crash Rate				
Average Crash Rate per intersection type				
Intersection Pop. Type	Number	Sum of Crashes	Sum of 5-year MEV	Avg Crash Rate for Ref Pop.
3-Leg Signalized	1	0	0	0.275
3-Leg Stop Control	2	25	79	0.131
4-Leg Singalized	3	21	78	0.477
4-Leg Stop Control	4	4	21	0.198
	5	0	0	
	6	0	0	

Critical Rate Calculation										
Intersection	AADT Entering Intersection	5-year MEV	Crash Total	Intersection Population Type	Intersection Crash Rate	Reference Population Crash Rate	Critical Rate	Over Critical	90th Percentile Rate from Exhibit 4-1	Exceeds 90% Rate?
US 20--OR 34	11,200	20.4	8	2	0.39	0.13	0.29	**Over**	0.29	**Over**
S 16th St & Applegate St	1,900	3.5	0	4	0.00	0.20	0.74	Under	0.41	Under
S 19th St & Applegate St	5,500	10.0	4	4	0.40	0.20	0.48	Under	0.41	Under
N 19th St & West Hills Rd	8,000	14.6	3	2	0.21	0.13	0.32	Under	0.29	Under
26th St--Hwy 34	13,500	24.6	9	2	0.37	0.13	0.27	**Over**	0.29	**Over**
N 26th St & Applegate St	1,250	2.3	0	2	0.00	0.13	0.74	Under	0.29	Under
ellfountain Rd & SW Plymouth Dr	3,850	7.0	0	4	0.00	0.20	0.55	Under	0.41	Under
Bellfountain Rd--Chapel Dr	3,600	6.6	3	2	0.46	0.13	0.44	**Over**	0.29	**Over**
19th St--Chapel Dr	2,650	4.8	0	2	0.00	0.13	0.51	Under	0.29	Under
S 13th St & SW Chapel Dr	2,850	5.2	2	2	0.38	0.13	0.49	Under	0.29	**Over**

Collision Data

Crash ID	Crash Date	1st Street	2nd Street	Road Character	Collision Description	Most Sever	Weather	Road Surface	Lighting	Crash Cause
1357839	2/22/2010	APPLEGATE ST	19TH ST	ALLEY	Sideswipe	PDO	CLEAR	DRY	DARK-NO ST LIGHTS	IMPROPER TURN
1358550	2/8/2010	MAIN ST	19TH ST	INTER	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1360735	1/8/2010	19TH ST		INTER	Turning	INJC	RAIN	WET	DAYLIGHT	NO YIELD
1362786	3/25/2010	MAIN ST	19TH ST	INTER	Turning	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1362805	3/26/2010	MAIN ST	7TH ST	STRGHT	Sideswipe	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1365297	5/6/2010	13TH ST	PIONEER ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DARK-ST LIGHTS	IMPROPER OVERTAKE
1365301	5/10/2010	12TH ST	PIONEER ST	ALLEY	Other	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1366191	6/7/2010	MAIN ST	17TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER TURN
1366239	6/9/2010	19TH ST	MAIN ST	STRGHT	Rear End	INJC	CLOUDY	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1366278	6/13/2010	CLEMENS MILL RD	MAIN ST	INTER	Rear End	INJC	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1366295	6/15/2010	PIONEER ST	9TH ST	INTER	Turning	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1374710	7/7/2010	MAIN ST	10TH ST	INTER	Turning	INJC	CLEAR	DRY	DAYLIGHT	IMPROPER TURN
1375674	7/30/2010	MAIN ST	26TH ST	STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	INATTENTION
1379897	8/1/2010	MAIN ST	NEWTON ST	INTER	Rear End	INJC	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1380394	8/24/2010	MAIN ST	14TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1383401	9/12/2010	APPLEGATE ST	14TH ST	INTER	Pedestrain	INJC	CLEAR	DRY	DARK-NO ST LIGHTS	NON-MOTORIST - NOT VISBL
1388225	11/25/2010	US20	OR34	INTER	Rear End	INJC	CLEAR	DRY	DARK-ST LIGHTS	FOLLOW TOO CLOSE
1388437	11/29/2010	JAMES ST	NEWTON ST	INTER	Bicycle	INJB	RAIN	WET	DUSK	NO YIELD
1388470	11/28/2010	MAIN ST	14TH ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER LANE CHANGE
1394408	1/24/2010	MAIN ST	19TH ST	INTER	Turning	INJC	RAIN	WET	DARK-NO ST LIGHTS	DISREGARD TRAF SIG
1394904	9/1/2010	14TH ST	MAIN ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	TOO FAST FOR COND
1395731	12/17/2010	WEST HILLS RD		STRGHT	Fixed Object	INJA	FOG	ICE	DAYLIGHT	CARELESS
1395740	1/13/2010	MAIN ST	19TH ST	INTER	Turning	PDO	CLOUDY	WET	DAYLIGHT	DISREGARD TRAF SIG
1400470	1/5/2011	WEST HILLS RD		STRGHT	Rear End	PDO	CLOUDY	WET	DAYLIGHT	CARELESS
1402117	2/14/2011	N 9TH		CURVE	Fixed Object	PDO	RAIN	WET	DAYLIGHT	TOO FAST FOR COND
1402271	3/15/2011	WEST HILLS RD		ALLEY	Turning	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1402303	3/18/2011	COLLEGE ST	13TH ST	INTER	Angle	PDO	CLEAR	DRY	DAYLIGHT	PASSED STOP SIGN
1404368	1/21/2011	MAIN ST	GREEN ST	STRGHT	Sideswipe	PDO	CLOUDY	DRY	DAYLIGHT	IMPROPER LANE CHANGE
1404370	1/5/2011	APPLEGATE ST	13TH ST	STRGHT	Sideswipe	PDO	RAIN	WET	DAWN	PHANTOM VEHICLE
1404663	2/18/2011	MAIN ST	26TH ST	STRGHT	Rear End	INJC	CLEAR	DRY	DAYLIGHT	CARELESS
1404888	3/2/2011	US20	OR34	INTER	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1405066	3/14/2011	APPLEGATE ST	14TH ST	INTER	Angle	PDO	RAIN	WET	DARK-NO ST LIGHTS	NO YIELD
1405260	3/28/2011	19TH ST	WEST HILLS RD	INTER	Turning	INJC	RAIN	WET	DAYLIGHT	NO YIELD
1405289	3/28/2011	US20	OR34	INTER	Rear End	INJC	CLOUDY	WET	DAWN	PHANTOM VEHICLE
1405866	4/15/2011	MAIN ST	15TH ST	STRGHT	Rear End	PDO	CLOUDY	WET	DAYLIGHT	FOLLOW TOO CLOSE
1412888	6/25/2011	FERN RD	CHAPEL DR	INTER	Fixed Object	PDO	CLEAR	DRY	DARK-NO ST LIGHTS	TOO FAST FOR COND
1438067	7/2/2011	MAIN ST	26TH ST	INTER	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1438075	7/2/2011	MAIN ST	14TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	CARELESS
1438227	6/27/2011	US20	OR34	STRGHT	Rear End	INJC	RAIN	WET	DAYLIGHT	FOLLOW TOO CLOSE
1439047	9/8/2011	MAIN ST	19TH ST	INTER	Turning	PDO	CLEAR	DRY	DARK-NO ST LIGHTS	IMPROPER TURN
1439054	9/9/2011	APPLEGATE ST	12TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER TURN
1439114	9/15/2011	US20	OR34	INTER	Rear End	INJC	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1439844	9/4/2011	MAIN ST	26TH ST	STRGHT	Turning	INJC	CLEAR	DRY	DARK-NO ST LIGHTS	NO YIELD
1441159	12/30/2011	MAIN ST	CLEMENS MILL RD	STRGHT	Rear End	PDO	RAIN	WET	DAYLIGHT	FOLLOW TOO CLOSE
1443171	7/29/2011	19TH ST		STRGHT	Fixed Object	INJB	CLEAR	DRY	DAYLIGHT	SPEEDING
1443214	6/21/2011	13TH ST	APPLEGATE ST	STRGHT	Other	PDO	CLEAR	DRY	DAYLIGHT	TOO FAST FOR COND
1443942	6/19/2011	BELLFOUNTAIN RD		INTER	Fixed Object	INJB	CLOUDY	DRY	DAYLIGHT	CARELESS
1445818	10/13/2011	APPLEGATE ST	19TH ST	INTER	Angle	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1446013	8/15/2011	26TH ST	GREEN ST	STRGHT	Rear End	PDO	UNKNOWN	UNKNOWN	DAYLIGHT	TOO FAST FOR COND
1446160	11/1/2011	19TH ST	MAPLE ST	ALLEY	Bicycle	INJB	CLEAR	DRY	DAWN	NO YIELD
1446376	11/30/2011	COLLEGE ST	15TH ST	INTER	Angle	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1447275	12/31/2011	WEST HILLS RD	19TH ST	INTER	Fixed Object	PDO	CLEAR	ICE	DAYLIGHT	TOO FAST FOR COND
1447352	12/5/2011	WEST HILLS RD		STRGHT	Other	INJA	FOG	ICE	DAYLIGHT	TOO FAST FOR COND
1447362	12/5/2011	WEST HILLS RD		STRGHT	Rear End	PDO	FOG	ICE	DAYLIGHT	FOLLOW TOO CLOSE
1447623	10/29/2011	WEST HILLS RD		STRGHT	Fixed Object	INJB	CLOUDY	WET	DARK-ST LIGHTS	RECKLESS
1461946	1/25/2012	BELLFOUNTAIN RD		INTER	Turning	INJC	CLOUDY	WET	DAYLIGHT	NO YIELD
1461990	2/1/2012	MAIN ST	NEWTON ST	INTER	Turning	INJC	CLEAR	DRY	DARK-NO ST LIGHTS	NO YIELD
1462168	1/5/2012	APPLEGATE ST	EB MAIN ST	CURVE	Other	INJB	CLOUDY	WET	DAYLIGHT	TOO FAST FOR COND
1463411	2/20/2012	N 9TH		CURVE	Fixed Object	PDO	CLOUDY	WET	DAYLIGHT	TOO FAST FOR COND
1463597	2/25/2012	N 9TH	HERHILL	INTER	Fixed Object	INJB	SLEET	ICE	DARK-ST LIGHTS	TOO FAST FOR COND
1463634	2/28/2012	WEST HILLS RD		ALLEY	Turning	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1463871	1/16/2012	MAIN ST	NEWTON ST	STRGHT	Sideswipe	PDO	SNOW	ICE	DAYLIGHT	TOO FAST FOR COND
1463962	1/17/2012	COLLEGE ST	17TH ST	INTER	Angle	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1465464	3/27/2012	MAIN ST	26TH ST	ALLEY	Other	PDO	RAIN	WET	DARK-ST LIGHTS	RECKLESS
1465583	4/5/2012	MAIN ST	19TH ST	INTER	Angle	INJC	CLEAR	DRY	DAYLIGHT	DISREGARD TRAF SIG
1465602	4/9/2012	COLLEGE ST	19TH ST	INTER	Angle	PDO	CLEAR	DRY	DAYLIGHT	PASSED STOP SIGN
1465734	4/17/2012	APPLEGATE ST	13TH ST	INTER	Turning	PDO	RAIN	WET	DAYLIGHT	IMPROPER TURN
1470938	5/3/2012	APPLEGATE ST	13TH ST	INTER	Angle	INJC	RAIN	WET	DAYLIGHT	DISREGARD TRAF SIG
1470959	5/4/2012	MAIN ST	14TH ST	INTER	Turning	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1471141	5/16/2012	APPLEGATE ST	21ST ST	CURVE	Rear End	PDO	CLEAR	DRY	DAYLIGHT	TOO FAST FOR COND
1471325	5/25/2012	MAIN ST	19TH ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	OTHR IMPROPER DRIVING
1471932	7/8/2012	APPLEGATE ST	19TH ST	INTER	Angle	INJB	CLEAR	DRY	DAYLIGHT	NO YIELD
1472221	8/4/2012	MAIN ST	12TH ST	INTER	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER LANE CHANGE
1472629	8/26/2012	MAIN ST	NEWTON ST	INTER	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1474730	9/5/2012	MAIN ST	17TH ST	INTER	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1474817	9/13/2012	MAIN ST	15TH ST	INTER	Rear End	INJC	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1475480	10/5/2012	19TH ST	WEST HILLS RD	INTER	Fixed Object	PDO	CLEAR	DRY	DARK-ST LIGHTS	OTHR IMPROPER DRIVING
1475812	10/23/2012	WEST HILLS RD		INTER	Turning	PDO	CLOUDY	WET	DAYLIGHT	NO YIELD
1484806	11/2/2012	N 9TH		CURVE	Fixed Object	INJC	CLOUDY	WET	DARK-ST LIGHTS	TOO FAST FOR COND
1484965	11/11/2012	BELLFOUNTAIN RD		INTER	Fixed Object	PDO	UNKNOWN	UNKNOWN	DAYLIGHT	TOO FAST FOR COND
1485112	11/18/2012	MAIN ST	13TH ST	INTER	Turning	PDO	RAIN	WET	DAYLIGHT	IMPROPER TURN
1485647	12/4/2012	APPLEGATE ST	13TH ST	INTER	Pedestrain	INJC	RAIN	WET	DARK-NO ST LIGHTS	NO YIELD
1486043	12/27/2012	WEST HILLS RD		STRGHT	Fixed Object	PDO	CLOUDY	ICE	DAYLIGHT	TOO FAST FOR COND
1501540	1/26/2013	MAIN ST	19TH ST	INTER	Turning	PDO	CLOUDY	WET	UNKNOWN	NO YIELD
1514364	3/6/2013	MAIN ST	26TH ST	STRGHT	Rear End	INJC	RAIN	WET	DUSK	FOLLOW TOO CLOSE
1514381	3/9/2013	WEST HILLS RD		ALLEY	Angle	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1514674	3/27/2013	US20	OR34	STRGHT	Rear End	INJC	RAIN	WET	DAYLIGHT	FOLLOW TOO CLOSE
1514982	4/10/2013	N 9TH		STRGHT	Fixed Object	INJC	CLOUDY	WET	DAYLIGHT	OTHR IMPROPER DRIVING
1515180	4/23/2013	MAIN ST	20TH ST	STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1515451	5/5/2013	WEST HILLS RD		STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE

Crash ID	Crash Date	1st Street	2nd Street	Road Character	Collision Description	Most Sever	Weather	Road Surface	Lighting	Crash Cause
1515653	5/24/2013	12TH ST	PIONEER ST	ALLEY	Other	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1515767	6/4/2013	WEST HILLS RD		ALLEY	Angle	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1515786	6/5/2013	APPLEGATE ST	9TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	TOO FAST FOR COND
1515977	6/19/2013	MAIN ST	24TH ST	INTER	Rear End	PDO	CLOUDY	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1516013	6/21/2013	PIONEER ST	11TH ST	ALLEY	Bicycle	INJB	CLEAR	DRY	DAYLIGHT	TOO FAST FOR COND
1516173	6/29/2013	MAIN ST	26TH ST	STRGHT	Rear End	INJC	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1516189	7/1/2013	N BENTON VIEW DR	31ST ST	STRGHT	Other	PDO	CLEAR	DRY	DAYLIGHT	OTHR IMPROPER DRIVING
1516227	7/6/2013	MAIN ST	17TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	NO YIELD
1516751	7/24/2013	11TH ST	MAIN ST	STRGHT	Fixed Object	PDO	CLEAR	DRY	DARK-ST LIGHTS	SPEEDING
1516787	7/26/2013	APPLEGATE ST	11TH ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER LANE CHANGE
1516955	8/9/2013	WEST HILLS RD		STRGHT	Other	PDO	CLEAR	DRY	DUSK	OTHER
1516964	8/11/2013	MAIN ST	14TH ST	INTER	Turning	PDO	CLOUDY	DRY	DAYLIGHT	IMPROPER TURN
1517310	9/6/2013	FERN RD	CHAPEL DR	INTER	Fixed Object	INJB	CLEAR	DRY	DARK-ST LIGHTS	PASSED STOP SIGN
1521011	10/14/2013	COLLEGE ST	15TH ST	INTER	Angle	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1524791	11/3/2013	WEST HILLS RD		INTER	Fixed Object	PDO	RAIN	WET	DARK-ST LIGHTS	TOO FAST FOR COND
1525008	12/2/2013	19TH ST	MAIN ST	STRGHT	Rear End	PDO	CLOUDY	WET	DARK-NO ST LIGHTS	TOO FAST FOR COND
1525160	12/13/2013	19TH ST		STRGHT	Fixed Object	INJB	CLEAR	ICE	DARK-ST LIGHTS	TOO FAST FOR COND
1525166	12/16/2013	19TH ST	MAIN ST	ALLEY	Turning	PDO	CLEAR	SNOW	DAYLIGHT	IMPROPER TURN
1537571	8/2/2013	WEST HILLS RD		INTER	Turning	FATAL	CLEAR	DRY	DAYLIGHT	PASSED STOP SIGN
1539262	9/6/2013	SCHOOL FIRE LANES		ALLEY	Bicycle	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1569481	2/5/2014	APPLEGATE ST	19TH ST	INTER	Angle	PDO	SNOW	SNOW	DAYLIGHT	NO YIELD
1569563	2/17/2014	MAIN ST	13TH ST	INTER	Rear End	INJC	RAIN	WET	DARK-NO ST LIGHTS	FOLLOW TOO CLOSE
1569604	2/22/2014	MAIN ST	26TH ST	STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	CARELESS
1569670	2/27/2014	CEDAR ST	15TH ST	INTER	Other	PDO	UNKNOWN	WET	DAYLIGHT	OTHR IMPROPER DRIVING
1569721	3/10/2014	APPLEGATE ST	14TH ST	STRGHT	Fixed Object	INJC	RAIN	WET	DAYLIGHT	OTHR IMPROPER DRIVING
1573241	4/12/2014	US20	OR34	INTER	Rear End	INJC	CLEAR	WET	DAYLIGHT	FOLLOW TOO CLOSE
1573511	5/4/2014	MAIN ST	26TH ST	INTER	Rear End	INJC	RAIN	WET	DAYLIGHT	FOLLOW TOO CLOSE
1573586	5/9/2014	WEST HILLS RD		STRGHT	Fixed Object	PDO	RAIN	WET	DARK-ST LIGHTS	SPEEDING
1573629	5/13/2014	WEST HILLS RD		CURVE	Other	PDO	CLEAR	DRY	DAYLIGHT	OTHER
1576209	6/13/2014	APPLEGATE ST	14TH ST	INTER	Fixed Object	PDO	CLEAR	DRY	DAYLIGHT	OTHR IMPROPER DRIVING
1576362	6/18/2014	MAIN ST	19TH ST	INTER	Turning	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1576434	6/25/2014	MAIN ST	19TH ST	INTER	Turning	PDO	CLEAR	DRY	DUSK	NO YIELD
1576613	7/5/2014	MAIN ST	NEWTON ST	STRGHT	Rear End	INJB	CLEAR	DRY	DARK-NO ST LIGHTS	FATIGUE
1577117	8/2/2014	NEWTON ST	26TH ST	INTER	Turning	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER TURN
1577259	8/12/2014	MELVILL CRES		GRADE	Other	INJC	CLEAR	DRY	DAYLIGHT	OTHR IMPROPER DRIVING
1577309	8/17/2014	SCHOOL FIRE LANES		STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER PARKING
1578208	9/21/2014	MAIN ST	19TH ST	STRGHT	Rear End	PDO	CLEAR	DRY	DAYLIGHT	FOLLOW TOO CLOSE
1578813	10/9/2014	JAMES ST	NEABEACK HILL DR	INTER	Turning	INJC	CLEAR	DRY	DAYLIGHT	NO YIELD
1578844	10/12/2014	MAIN ST	GREEN ST	STRGHT	Sideswipe	PDO	CLEAR	DRY	DAYLIGHT	IMPROPER LANE CHANGE
1579013	10/22/2014	US20	OR34	INTER	Rear End	PDO	RAIN	WET	DARK-ST LIGHTS	FOLLOW TOO CLOSE
1580275	12/11/2014	COLLEGE ST	17TH ST	INTER	Angle	PDO	RAIN	WET	DAYLIGHT	NO YIELD
1580537	12/24/2014	MAIN ST	12TH ST	STRGHT	Other	INJC	CLEAR	DRY	DAYLIGHT	OTHR IMPROPER DRIVING

SECTION 6

TECH MEMO SIX

TRANSPORTATION FUNDING

Technical Memorandum #6

DATE: January 19, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE, DKS Associates
Ben Chaney, EIT, DKS Associates

SUBJECT: **Philomath Transportation System Plan Update**
Task 4.2 Transportation Funding Assumptions

This memorandum details the transportation funding that is expected to be available through 2040. The funding assumptions will help prioritize the investments the City can make in the transportation system, and will be used to develop reasonable budgeting assumptions when selecting a set of transportation improvements to meet identified needs through the next 20 years.

Current Funding Sources

The City uses five general funding sources for transportation, including funds from the federal Surface Transportation Program (STP), State Highway Trust Fund, Street Utility Fees, Franchise Fees, and a System Development Charge (SDC).

Federal Surface Transportation Program

The current federal surface transportation funding law, the Fixing America's Surface Transportation (FAST) Act, was signed into law in December of 2015, and provides a five-year allocation of funds through various programs. The FAST Act distributes money from the Federal Highway Trust Fund, which receives money from federal motor vehicle fuel tax, truck-related weight-mile charges, and through Congressional transfers from the General Fund of the US Treasury.

Federal Highway Trust Funds from the Surface Transportation Program (STP) flow to the states that use them primarily for safety, highway, and bridge projects. Philomath receives a portion of these funds based upon actual population. Additional funds are available through the Corvallis Area Metropolitan Planning Organization (CAMPO) on a competitive basis. Although Philomath has not historically sought significant competitive funding through CAMPO, this is an opportunity for future projects.

State Highway Trust Fund

The State Highway Trust Fund makes distributions from the state motor vehicle fuel tax, vehicle registration fees, and truck weight-mile fees on a per capita basis. Cities and counties receive a share of State Highway Trust Fund monies, and by statute may use the money for any road-related purpose, including walking, biking, bridge, street, signal, and safety improvements.

The state gas tax funds previously have failed to keep up with cost increases and inflation. With increased fuel efficiency of vehicles and the State's emphasis on reducing vehicle miles traveled, the real revenue collected has gradually eroded over time. In an effort to offset the relative decline in contribution of state funds, the 2009 legislature passed the Oregon Jobs and Transportation Act (Oregon House Bill 2001). It increases transportation-related fees including the state gas tax and vehicle registration fees as a fixed amount at the time a vehicle is registered with the Department of Motor Vehicles. Vehicle registration fees in Oregon increased from $27 to $43 per vehicle per year for passenger cars, with similar increases for other vehicle types. The gas tax in Oregon increased on January 1, 2011 by six cents, to the current rate of 30 cents per gallon, the first increase in the state gas tax since 1993.

Franchise Fees

The City of Philomath collects franchise fees from companies that utilize the public right-of-way to provide their services. Franchise fees can be used for any legal purpose. Currently, franchise fees collected from Comcast (cable and internet provider), Pioneer (telephone provider), and Republic Services (recycling and waste) are deposited into the City's street fund. After 2016, franchise fees from Comcast will be deposited into the City's general fund and will not be available for street projects. To make up for lost revenue, the City will double the street utility fee rates.

Street Utility Fee

A street utility fee is a recurring monthly charge that is paid by all residences and businesses within the city to support the provision and maintenance of the local street system. The City collects the fee through its regular utility billing. The City bases the fee on number and type of residential units, with category-based flat rates for non-residential customers. Rates will be increasing in 2016, to compensate for lower franchise fees as discussed above. Philomath's Street Utility Fee structure is shown in Table 1.

Table 1: Philomath Street Utility Fee Rates (2015 Dollars)

Customer Type	Monthly Rates (2015)	Monthly Rates (2016+)
Single Family House	\$2.00/each	\$4.00/each
Duplex	\$3.50/each	\$7.00/each
Multi-residential	\$1.60/unit	\$3.20/unit
Non-Residential (fees depend on user category)	\$6.80 - \$22.75	\$13.60 - \$45.50

Existing law places no express restrictions on the use of street utility fee funds, other than the restrictions that normally apply to the use of government funds. However, The City of Philomath has established clear guidance for program administration that defines the amount, composition, and use of revenues from the street utility fee in authorizing Resolution No. 03-13. Funds collected shall be dedicated and used exclusively for street maintenance and reconstruction to provide a safe and functioning street system. The overall amount collected by the fee shall be equal to the amount of additional revenue needed to accomplish a reasonable pavement management program. The street utility fee structure is designed so that residential developments account for 75% of total revenue, and non-residential developments account for 25% of total revenue.

System Development Charges

The City of Philomath collects system development charges (SDCs) from new developments, which are intended to offset the burden of development on the transportation system. The funds collected are kept in a dedicated SDC fund, apart from the City's general-purpose street operations, maintenance, and capital improvements fund. State law restricts the use of SDC funds to capacity-adding projects, generally for constructing or improving portions of roadways impacted by applicable development. The SDC is a one-time fee. The vehicle SDC rate is currently \$4,440 per equivalent dwelling unit.

Estimated Future Funding Levels

The funding sources above provide relatively stable revenue for the City of Philomath. Based on recent and expected expenditure levels, this section discusses funding assumed to be available for the projects that will be recommended in the Transportation System Plan update. Calculations presented here include impacts of a 24% total increase in population over the next 25 years, based on the regional travel forecasting model for the MPO area. Estimated Philomath transportation funding is summarized in Table 2.

Table 2: Current and Projected Philomath Transportation Funding (2015 Dollars)

Revenue Source	Funding Restrictions	Average Annual Amount	Estimated Amount Through 2040
Surface Transportation Program (STP) and State Gas Tax and License Fees (for general use)	Unrestricted	$285,200	$7,130,000
Bikeway/Walkway (1% of State Gas Tax and License Fees)	Bikeway / Walkway	$2,300	$57,500
ODOT Surface Transportation Improvement Program (STIP)	Improvements that Benefit State Highway Corridors	-	$2,000,000
Street Utility Fees	Operations and Maintenance	$120,500	$3,012,500
Franchise Fees	Unrestricted	$40,500	$1,012,500
System Development Charge	Capacity Projects	$76,500	$1,912,500
Miscellaneous Income	Unrestricted	$3,500	$87,500
Total Revenues (5-year Average)		***$528,500***	***$15,212,500***
Expenditures	**Funding Eligibility**	**Average Annual Amount**	**Estimated Amount Through 2040**
Personnel Services	Operations and Maintenance	$187,000	$4,675,000
Materials and Services	Operations and Maintenance	$203,500	$5,087,500
Capital Outlay	Capacity Projects	$89,500	$2,237,500
Total Expenditures (5-year Average)		***$480,000***	***$12,000,000***
Expected Funds for City Capital Improvements	**Funding Type**	**Average Annual Amount**	**Estimated Amount Through 2040**
Revenue minus Operations and Maintenance	Unrestricted Funds	$59,200	$1,480,000
System Development Charges	Capacity Projects	$76,500	$1,912,500
Dedicated for Active Transportation Construction or Maintenance	Bikeway / Walkway	$2,300	$57,500
ODOT Surface Transportation Improvement Program (STIP)	Improvements that Benefit State Highway Corridors	-	$2,000,000
Total Expected Funds		**$138,000**	**$5,450,000**

Revenues

The current transportation revenue sources are estimated to provide over $15 million through 2040 (see Table 2). This estimate is based on the assumption that the average amounts received over the previous five years will continue to be received at that per capita rate through 2040. Some annual estimates have been adjusted from the five-year average based on discussions with City staff. These adjustments reflect anticipated changes in franchise fee participation, increased street utility fee rates, and recent growth over historically low levels of development that pay SDCs.

State law requires that the City must set aside a minimum of one percent of the state gas tax and vehicle registration funds received for construction and maintenance of walking and bicycling facilities. In Philomath, this represents up to $2,300 per year or $57,500 through 2040. While shown to be available for capital improvements, it is likely that this will only be used on maintenance of walking and bicycling facilities, given the low amount of these funds.

System development charges likely will provide nearly $2 million for transportation capacity improvements through 2040, contingent on actual levels of future development. The Oregon Revised Statutes sections 223.205 through 223.295 (Bancroft Bonding Act) provide property owners with a deferred financing option for SDC's. Since residents can defer SDC payments up to a period of 10 years in accordance with the state law, the City may not realize the full SDC revenue until several years beyond 2040. The City will continue to receive deferred payments from residents who chose this payment method from previous years, however, so estimates of the SDC revenue estimate are roughly the same through 2040.

ODOT has indicated that approximately $2 million in additional discretionary state and/or federal funds may be available to invest in Philomath over the next 20 years for as yet undetermined system modernization and enhancement projects that benefit state highway corridors. Separately, and not included in the accounting presented in this memorandum, ODOT may within the next few years be able to fund their portion (approximately $3.7 million) of the Downtown Multimodal Connectivity and Streetscape Improvement Project along Main Street and Applegate Street.[1]

Expenditures

Expenditures will be $12 million through 2040, assuming the same rate of expenditures as over the past five years. The City will spend the majority of the funds (over $5 million through 2040) on materials and services. In addition, the City will spend over $4.6 million on personnel services. Together, this

[1] The State has not committed any future funding for projects in Philomath. This assumption is for long-range planning purposes only. The estimate is based on assuming that Philomath will receive a reasonable share of the state/federal funding projected to be available over the 20-year planning horizon in Region 2 and based on ODOT sustaining their current revenue structure. It is used to illustrate the degree of financial constraints faced by ODOT as of the writing of this document. Actual funding through discretionary state and federal sources may be higher or lower than this estimate, which does not include projects that the federal Highway Safety Improvement Program (HSIP) could fund.

represents almost $10 million providing for street operations and typical maintenance. An additional $2.2 million will be spent on capital outlay, providing a foundational funding supply for major projects.

Funding Summary

Based on current funding levels, the City expects to have $5.45 million available through the year 2040 to fund the projects that will be recommended as part of the TSP. Some funds have usage restrictions, as described in Table 2 above. It is likely that, when identified, the total project list will exceed the amount of funding expected to be available. Therefore, the City may wish to consider expanding its funding options in order to fund more of the desired improvements in a timely manner.

Potential Additional Funding Sources

New transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. Factors that constrain these resources include the willingness of local leadership and the electorate to burden citizens and businesses with taxes and fees; the portion of available local funds dedicated or diverted to transportation issues from other competing City programs; and the availability of additional state and federal funds.

The City should consider all opportunities for providing or enhancing funding for the transportation improvements to be included in the TSP. Other cities have used the following sources to fund the capital and maintenance aspects of their transportation programs.

Local Gas Tax

Seventeen cities and two counties in Oregon have adopted local gas taxes ranging from one to ten cents per gallon.[2] The fuel distributers pay collected taxes to the jurisdictions monthly. Some cities increase the local gas tax during the summer months to place more of a burden on visitors than on year-round residents. Philomath also may want to implement a local gas tax. The process for presenting such a tax to voters would need to be consistent with Oregon State law (ORS 319.950) as well as the laws of the City. As an example, the City of Sandy has a local gas tax that generates approximately $150,000 annually for each cent per gallon tax. Philomath, with about half the population and half the highway traffic, might expect to generate $50,000-$100,000 annually for each cent per gallon tax.

It is important to consider that if the City were to implement a local gas tax alone, there could be significant "leakage" of the potential taxes if drivers switch to buying fuel outside the city. If the City can partner with other jurisdictions to create a regional gas tax, this would be less of a concern.

[2] Includes Portland's recently approved temporary 4-year tax at 10 cents per gallon, the highest in the state. For other jurisdictions, see Current Oregon Fuel Tax Rates at http://www.oregon.gov/odot/cs/ftg/pages/current_ft_rates.aspx

ODOT Statewide Transportation Improvement Program (STIP) Enhance Funding

ODOT has modified the process for selecting projects that receive STIP funding to allow local agencies to receive funding for projects off the state system. Projects that enhance system connectivity and improve multi-modal travel options are the focus. The updated TSP prepares the City to apply for STIP funding.

ODOT Highway Safety Improvement Program (HSIP) Funding

With significantly more funding under the HSIP and direction from the Federal Highway Administration to address safety challenges on all public roads, ODOT has committed to increase the amount of funding available for safety projects on local roads. ODOT distributes safety funding to each ODOT region, which then collaborate with local governments to select projects that can reduce fatalities and serious injuries, regardless of whether they lie on a local road or a state highway.

ODOT's All Roads Transportation Safety (ARTS) Program includes two separate processes for location-specific hot spots and wide-application systemic projects. The 2016-2018 selection cycle projects have been selected, and the 2019-2021 selection cycle is in progress.

Federal Competitive Grant and Loan Programs

The FAST Act authorizes a number of competitive grant and loan programs, the most prominent of which is the Transportation Investment Generating Economic Recovery (TIGER) grant program. Competitive grant and loan programs would require the City to complete an application that makes a compelling case for a specific project, often multi-jurisdictional. Some of these programs focus on a particular outcome or mode of transportation. For example, the new FASTLANE grants focus on freight movement.

General Fund Revenues

At the discretion of the City Council, the City can allocate General Fund revenues to pay for its Transportation program. General Fund revenues primarily include property taxes, use taxes, and any other miscellaneous taxes and fees imposed by the City. As a part of the City's annual budget process, competing community priorities set by the City Council constrain the funding potential for transportation projects, and recently City Council has not chosen to transfer General Funds for use on street projects. However, General Fund resources could fund any aspect of the program, from capital improvements to operations, maintenance, and administration. Additional revenues available from this source are only available to the extent that the City Council either increases general fund revenues or directs and diverts funding from other City programs to transportation.

Local Improvement Districts

Local Improvement Districts (LIDs) can fund capital transportation projects that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments against benefiting properties pay for improvements. LIDs can supply match for other funds where a project has system wide benefit beyond benefiting the adjacent properties. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street. Property owners pay fees through property tax bills over a specified number of years.

Transient Room Tax

The Transient Room Tax, also known as a lodging tax, is a tax paid by occupants of hotels, motels, and other short-term rental. This allows the City to offset the impact of visitors on the transportation system, similar to the way street utility fees offset the impact of residents and SDCs of new development. The State of Oregon and the City of Corvallis both impose a transient room tax. While this is a valid option for revenue generation, with few lodging options in Philomath, it may not be effective.

Federal Lands Access Program

The Federal Lands Access Program (FLAP) was established in 23 U.S.C. 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program provides grants to supplement state and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. Projects are selected by a Programming Decision Committee (PDC) established in each state. The PDCs request project applications through a call for projects. The frequency of the calls is established by the PDCs. Types of projects generally accepted include:

- Capital Improvements: construction and rehabilitation of roads and bridges, safety improvements, widening, surfacing, etc.
- Enhancements: viewpoints, kiosks, adjacent parking areas, rest areas, trailheads, pedestrian and bicycle provisions, etc.
- Surface Preservation (limited): chip sealing, crack sealing, etc.
- Transit: construction of transit facilities and limited duration operation/maintenance of transit services and facilities
- Planning: engineering studies, corridor management planning, bicycle/pedestrian and alternative modes planning that could inform future FLAP proposals
- Research: evaluating solutions that enhance access, safety, or sustainability - must be broad-based and applicable to multiple Federal Land Management Areas

Given Philomath's location as a gateway to the Siuslaw National Forest, applying for FLAP grants may be a feasible transportation revenue source for select project types, especially if pursued in partnership with other jurisdictions such as Benton and Lincoln Counties and the cities of Alsea and Waldport.

Debt Financing

Cities can use debt financing to pay for significant capital improvement projects by spreading costs over the useful life of the projects. This equitable funding strategy spreads the burden of repayment over existing and future customers who will benefit from the projects. Debt service must have a funding source to fulfill annual interest and repayment obligations.

SECTION 7

TECH MEMO SEVEN

FUTURE CONDITIONS

Technical Memorandum #7

DATE: January 19, 2017

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE, DKS Associates
Ben Chaney, EIT, DKS Associates

SUBJECT: **Philomath Transportation System Plan Update**
Task 5.1 Future Transportation Conditions and Needs Analysis

This memorandum provides a summary of the forecasted future traffic volumes and transportation conditions for the city of Philomath through the planning horizon year of 2040.

Future Traffic Forecasting

Future land use changes and growth in population, housing, and employment within Philomath's urban growth boundary (UGB) will have a significant impact on the existing transportation system and will create new travel demands. These growth projections and how they translate to new trips on the transportation network are key elements of the future conditions and performance analysis. This section summarizes the methods, assumptions, and outcomes related to traffic volume forecasting for the planning horizon year of 2040.

Intro to the Regional Travel Demand Model

The Corvallis Albany Lebanon Model (CALM) travel demand model is the primary tool used to determine future traffic volumes in Philomath and the surrounding region. CALM forecasts travel changes in response to future land use and transportation scenarios. This model translates estimated land uses into person trips, selects travel modes and assigns motor vehicle trips to the roadway network. The CALM model was developed by the Oregon Department of Transportation's (ODOT) Transportation Planning and Analysis Unit, with input provided by affected Metropolitan Planning Organizations (MPOs) and local agencies. It is an informational tool to assist with decision making, providing objective and quantitative information exploring the potential impacts of alternative transportation system investments.

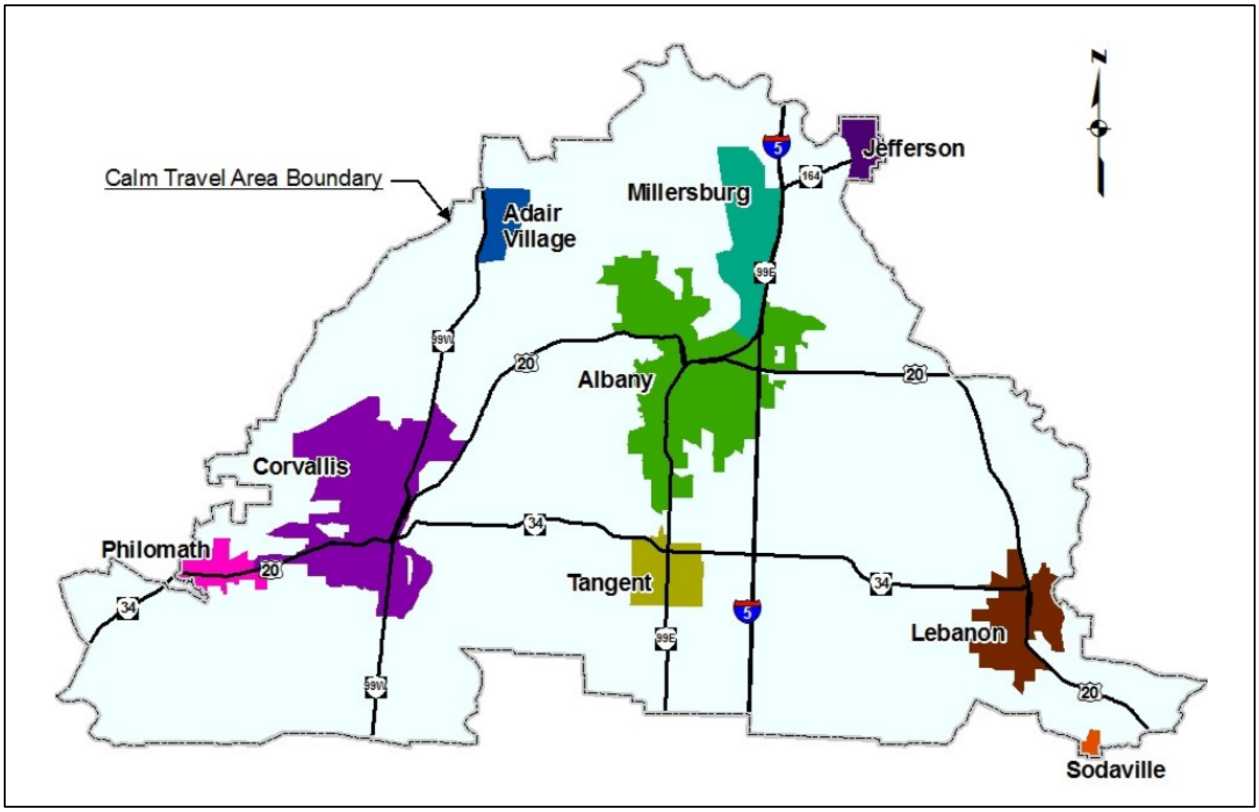


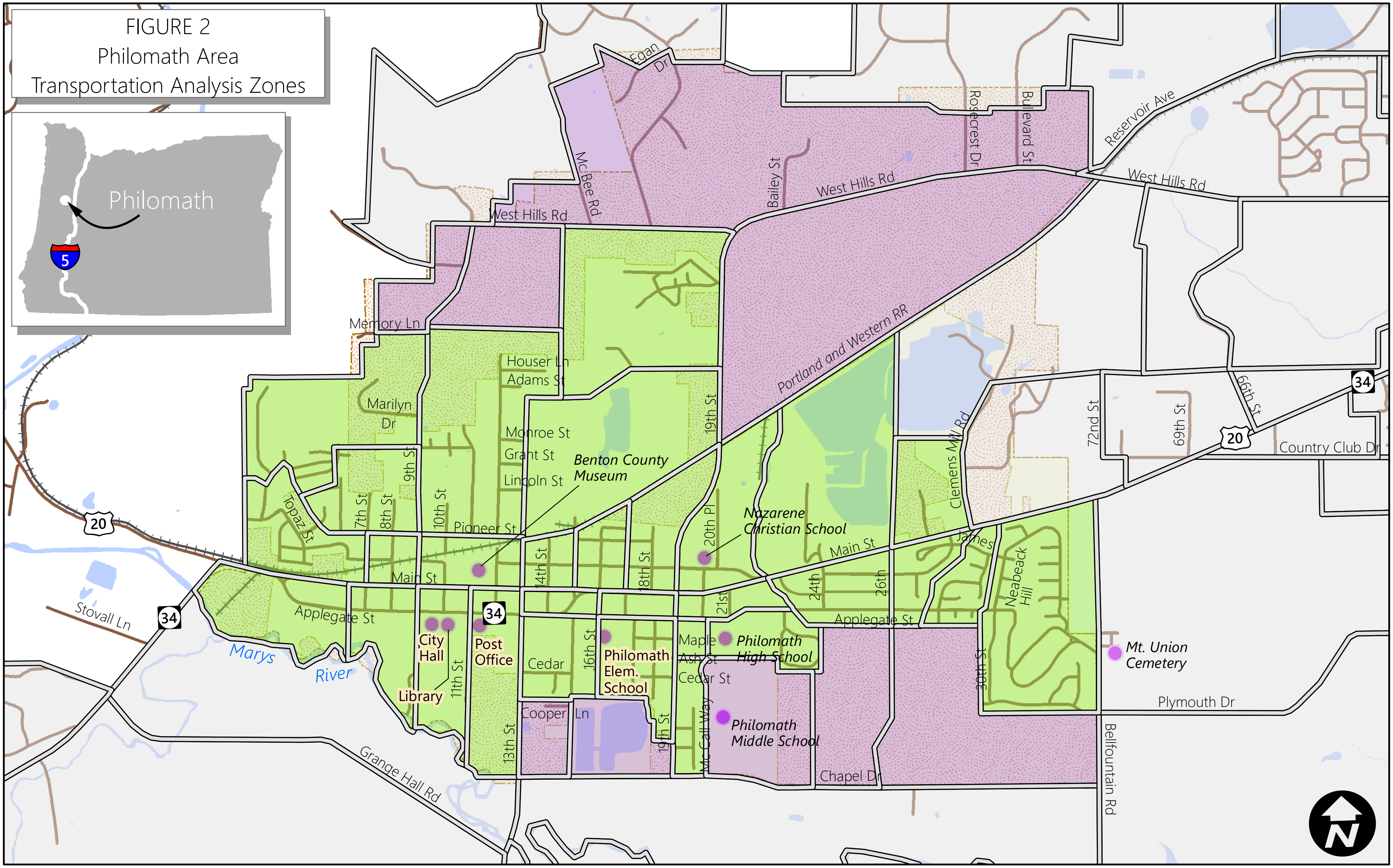
Figure 1: CALM Travel Demand Model Area (source: ODOT)

The extents of the CALM model include the Corvallis and Albany Area MPOs, as well as some surrounding areas, as shown in Figure 1. It includes a specialized overlay to account for the unique travel patterns associated with the Oregon State University campus. Forecasts include travel by private motor vehicle, transit, walking, and biking.

The travel area is divided into a series of smaller geographic areas called Transportation Analysis Zones (TAZs), which provide the building blocks of the model. Figure 2 shows the TAZs which cover the city of Philomath and the area within Philomath's UGB. The highlighted TAZs compose the Philomath TSP update study area for the 2010 (base year) and 2040 (future year) scenarios in the CALM model.[1]

[1] The TSP study area aligns approximately with the Philomath UGB. The land use data presented is an aggregation of CALM model TAZs whose boundaries do not precisely match the UGB limits. Therefore, the land use information presented in this memo should be considered approximations.

FIGURE 2
Philomath Area
Transportation Analysis Zones



City of Philomath

Transportation System Plan

November 2016

0 0.125 0.25 0.5 Miles

CITY OF PHILOMATH 1882 Transportation System Plan OREGON

Legend

Corvallis Albany Lebanon Model (CALM) Transportation Analysis Zones (TAZs)
- Philomath, Within City Limits
- Philomath, Within Urban Growth Boundary
- Outside Philomath TAZs
- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

Population and Employment Growth Areas

Understanding the influence of area land uses on the transportation system is a key factor in transportation system planning. The amount of land that is to be developed, the types of land uses, and their proximity to each other have a direct relationship to expected demands on the transportation system.

The CALM model includes forecasted land uses for the Philomath TSP study area. The land uses reflect Philomath's Comprehensive Plan and growth assumptions identified for the year 2040. Complete land use data sets are developed for both the 2010 base year and 2040 future year (planning horizon). Local land uses were developed with input and review from local agencies. The land use information has been coordinated with all the other jurisdictions in the CALM travel area.

The future land uses represented in the CALM model and TSP 2040 Baseline reflect one potential future scenario. The project team recognizes the inherent uncertainty to forecasting. There are many caveats that apply, including the uncertainty related to OSU enrollment projections that go beyond the timeline of the University's own future projections. The future land use scenario represents a "best guess" for the sake of analyzing the needs of the future transportation system and for evaluating the impacts of alternative strategies.

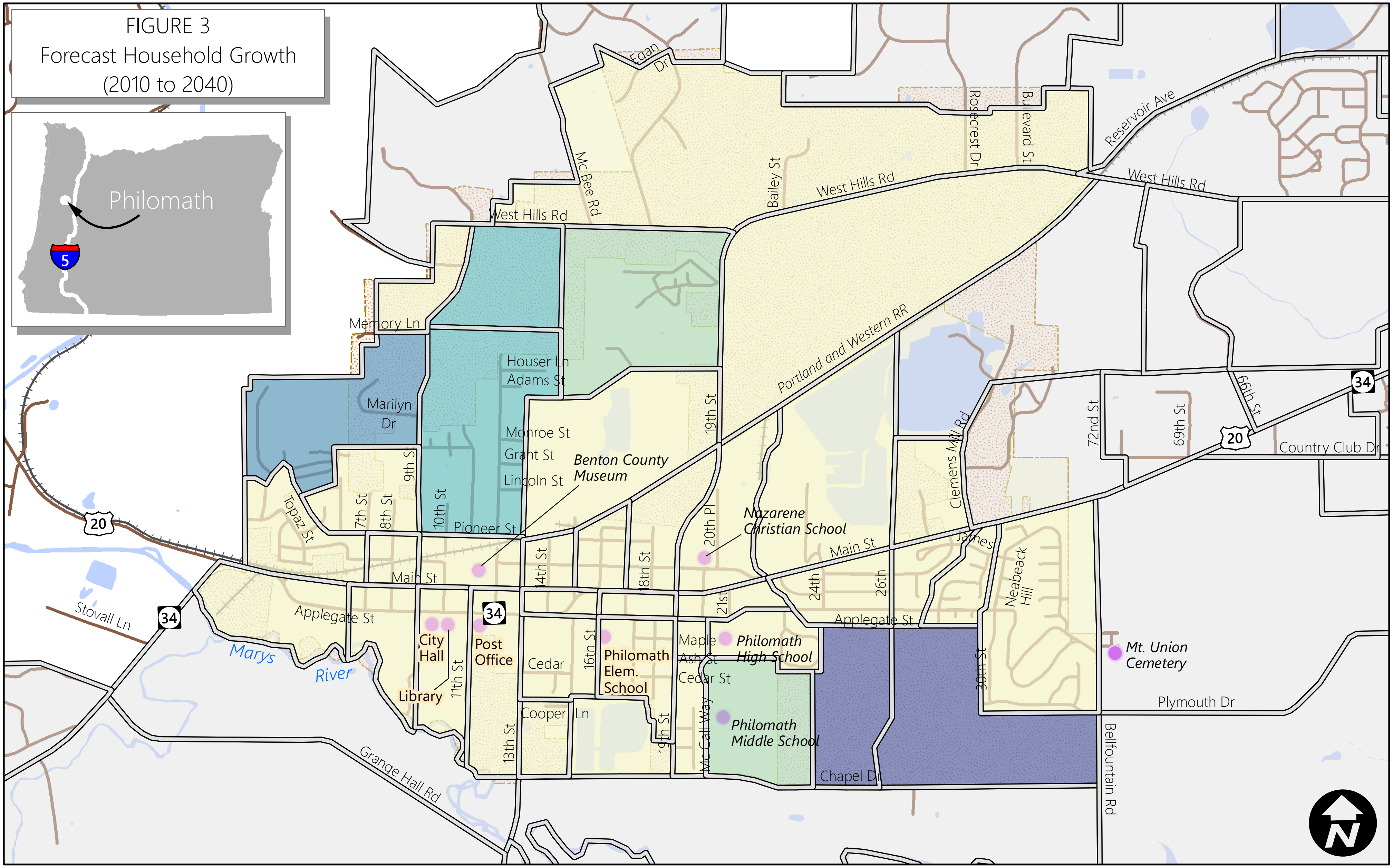
Table 1 summarizes the aggregated land use inputs within the Philomath TSP update study area for the 2010 and 2040 scenarios. These values indicate that growth in employment is expected to outpace residential development, both overall and as a percentage increase.

Table 1:Philomath TSP Study Area Land Use Summary

Land Use	2010	2040	Increase	Percent Increase
Population	4,985	5,668	683	13.7%
Households	1,879	2,385	506	26.9%
Employees (Total)	1,395	2,512	1,117	80.1%
- Retail Employees	252	510	258	102.4%
- Other Employees (Non-Retail)	1,143	2,002	859	75.2%

SOURCE: CALM Model Land Use data

The aggregated land use totals shown in Table 1 are allocated to the smaller geographic areas of the TAZs. Each TAZ contains a portion of the households and employees within the entire study area. Figures 2 and 3 illustrate the growth in households and employees, respectively, for each TAZ within the Philomath study area. Note: TAZ boundaries and parcel boundaries may not be the same.



City of Philomath

Transportation System Plan

November 2016

0 0.125 0.25 0.5 Miles

Legend

Corvallis Albany Lebanon Model (CALM)
Forecast Household Growth (2010 - 2040)

- 10 or fewer
- 11 - 30
- 31 - 50
- 51 - 70
- More than 70 (max value 219)
- Outside Philomath UGB

- Railroad
- Roadway
- Water
- City Limit
- Urban Growth Boundary

DKS

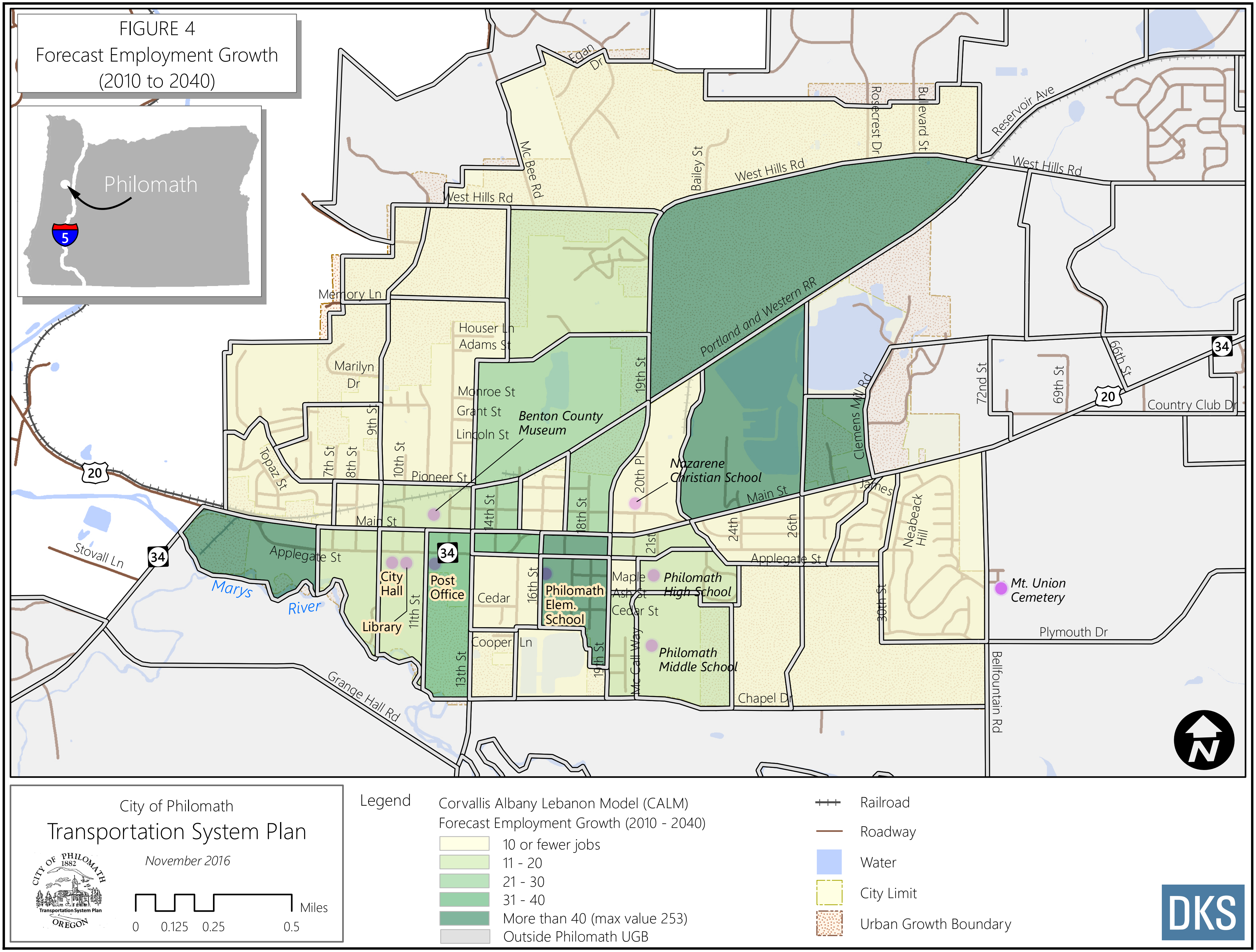


FIGURE 4
Forecast Employment Growth
(2010 to 2040)

Forecast Travel Demand

A determination of future traffic system needs in Philomath requires the ability to accurately forecast travel demand resulting from estimates of future population and employment for the city. The objective of the transportation planning process is to provide the information necessary to make decisions on where and when improvements should be made to the transportation system to meet future travel demand.

The CALM model uses computer-based transportation modeling programs to process the large amounts of data related to land use and person trips for all modes of travel for the CALM area. The modeling process for the Philomath TSP update uses the 2010 and 2040 travel demand models during the p.m. peak period to develop future forecasts within the city of Philomath.

Future travel demand forecasting can be divided into several distinct but integrated components that represent the logical sequence of travel behavior:

- Why: Trip Generation – This stage of the modeling process converts the land use into total person trips.
- Where: Trip Distribution – This step determines the locations that these trips would go to and come from within the region.
- How: Mode Choice – This step determines which mode of travel (i.e., motor vehicle, bicycle, pedestrian, transit, carpool, etc.) that each person trip uses.
- Which way: Traffic Assignment – The final step in the modeling process assigns the motor vehicle trips by mode to specific routes in the transportation network that match the trip distribution locations.

In this process, trips from one zone to another are ultimately assigned to specific travel routes in the network, and resulting trip volumes are accumulated on links of the network until all trips are assigned.

Network travel times are updated to reflect the congestion effects of the traffic assigned through an equilibrium process that takes into account the specific characteristics of each roadway link, such as capacity, speed, traffic control, and facility type. This allows the model to reflect roadway and traffic conditions in a natural manner.

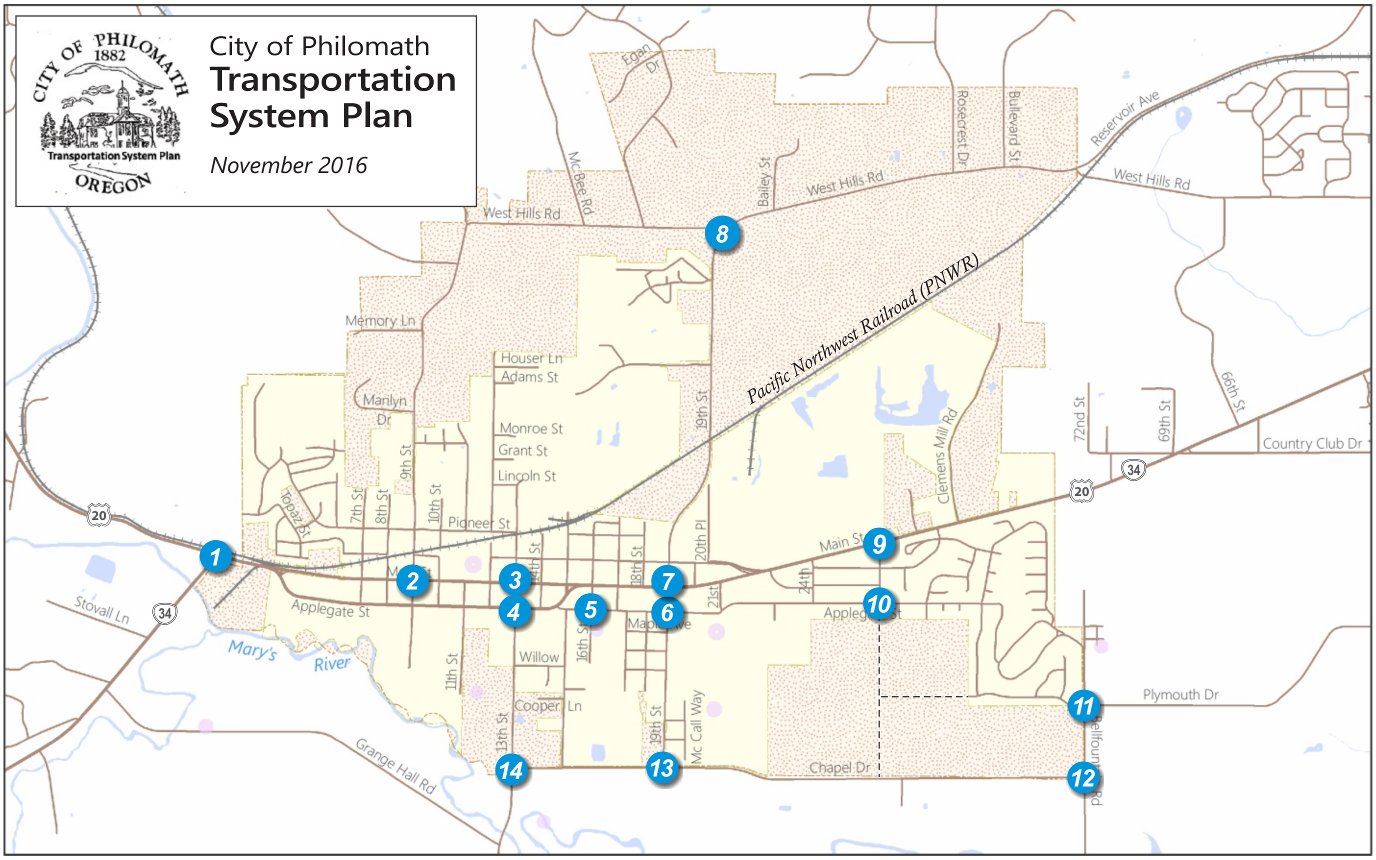
The base roadway network in the 2010 model reflects the current street and roadway system. The future 2040 roadway system in the model consists of a financially-committed system, which means it includes only projects that would change the capacity of the system and for which funding has been currently identified. Within the Philomath study area, the only financially-committed project that was added was the extension of 26th Street south to connect with Chapel Drive, which would likely be constructed by development.

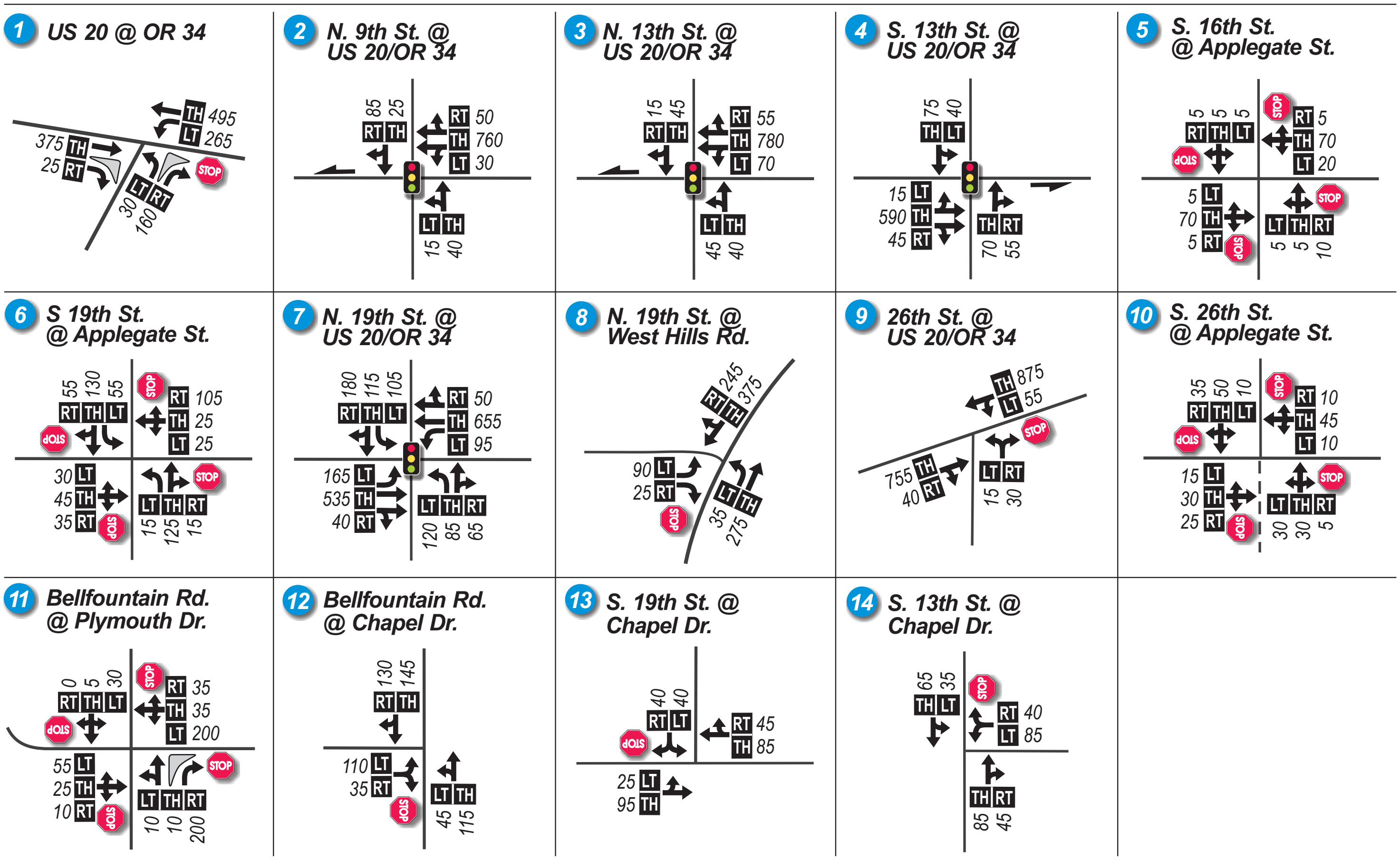
Post-Processing and Traffic Volumes

Model volumes were extracted at study area intersections for both the base year 2010 and forecast year 2040 scenarios. A "post processing" technique was utilized to refine model travel forecasts to the volume forecasts needed for 2040 intersection analysis.

Post processing is a methodology that uses existing count data together with base year and future year model data to help determine future volumes. The increment of growth in volumes between the future and base year models is added to the existing count data. This methodology minimizes the effects of model error by adding the increment of growth to the base year counts. The approach is consistent with NCHRP Report 765.[2] The post processed design hour[3] turn movement volumes for the 2040 Baseline scenario (representing the financially-committed system) are documented in Figure 5.

[2] Analytical Travel Forecasting Approaches for Project-Level Planning and Design - National Cooperative Highway Research Program Report 765, Transportation Research Board, Washington D.C., 2014.
[3] The "design hour" is comparable to the future "30th highest annual hour" of traffic that was used for evaluating existing conditions.





LEGEND

- \# - Study Intersection
- Traffic Signal
- STOP - Stop Sign
- Lane Configuration
- LT TH RT (Left•Thru•Right) - Volume Turn Movement
- *000* - Peak Hour Traffic Volumes

Note: Traffic volumes shown represent the Design Hour of traffic.

DKS

No Scale

Figure 5

2040 Baseline Traffic Volumes

Future Transportation Conditions

This section describes how transportation conditions are likely to change in the future considering forecasted land use and traffic volume growth.

Motor Vehicle Congestion

Using the forecast design hour motor vehicle volumes developed for the 2040 Baseline scenario (Figure 5), operations at the study intersections were compared to established mobility targets/standards. As shown in Table 2 below, all study intersections continue to meet their mobility targets/standards as they do under existing conditions.

Overall, this reflects that the 2040 Baseline forecast does not include significant increases in delay on the motor vehicle network in Philomath. This includes US 20/OR 34, which is designated as a Statewide Freight Route though Philomath. Because the analysis indicates that mobility targets will be met, an assessment of the need for alternative mobility targets on the highway is not necessary.

Table 2: 2040 Baseline Design Hour Intersection Operations

Intersection	Mobility Target/ Standard	Design Hour Volumes		
		Delay (seconds)	*LOS*	*V/C*
Signalized Intersections				
US 20/OR 34 and N 9th Street	V/C ≤ 0.85	5.7	A	0.39
US 20/OR 34 and N 13th Street	V/C ≤ 0.85	5.5	A	0.47
US 20/OR 34 and S 13th Street	V/C ≤ 0.85	6.9	A	0.39
US 20/OR 34 and 19th Street	V/C ≤ 0.85	18.1	B	0.57
Unsignalized Intersections				
US 20 and OR 34	V/C ≤ 0.85*	56.1	A/F	0.31
S 16th Street and Applegate Street	LOS D	7.9	A/A	0.12
S 19th Street and Applegate Street	LOS D	10.0	A/A	0.28
N 19th Street and West Hills Road	LOS D	22.4	A/C	0.32
US 20/OR 34 and 26th Street	V/C ≤ 0.95	38.7	A/E	0.31
26th Street and Applegate Street	LOS D	7.9	A/A	0.11
Plymouth Drive and Bellfountain Road	LOS D	10.7	B/A	0.38
Bellfountain Road and Chapel Drive	LOS D	13.0	A/B	0.25
S 19th Street and Chapel Drive	LOS D	10.0	A/B	0.11
S 13th Street and Chapel Drive	LOS D	10.6	A/B	0.17

*This intersection is outside of the UGB. The mobility target shown applies to the stopped approach.

Signalized intersections:
Delay = Average Intersection Delay (sec.)
V/C = Volume-to-Capacity Ratio
LOS = Level of Service

Unsignalized intersections:
Delay = Critical Movement Delay (sec.)
V/C = Critical Movement Volume-to-Capacity Ratio on Minor Street
LOS = Level of Service (Major/Minor Road)

Preliminary Signal Warrant Analysis

Although no study intersections failed to meet established mobility targets/standards in the 2040 Baseline scenario, preliminary warrant analyses were performed at two locations to help determine if future signalization should be considered. The two locations, US 20/OR 34 at 26th Street and US 20 at OR 34, were identified through local discussions and the previously adopted Philomath TSP as potential locations for intersection improvements such as traffic signals or roundabouts.

ODOT's Transportation Planning and Analysis Unit (TPAU) provides a Preliminary Signal Warrant worksheet that uses Signal Warrants 1, Case A and Case B (MUTCD), which deal primarily with high volumes on the intersecting minor street and high volumes on the major street. Meeting preliminary signal warrants does not guarantee that a signal shall be installed. Before a signal can be installed a field warrant analysis is conducted by the ODOT Region. If warrants are met, the State Traffic Engineer will make the final decision on the installation of a signal. Preliminary signal warrant worksheets are included in the appendix.

The intersection of US 20/OR 34 and 26th Street experiences growth in total entering traffic volume during the design hour from 1,000 vehicles per hour to 1,350 vehicles per hour, or 35% growth. The posted speed limit of 40 mph allows for 70 percent warrants using lower volume thresholds. Although the major street (US 20/OR 34) approach volume is sufficient, the minor street (26th Street) approach volume is not high enough to meet the preliminary signal warrant.

The intersection of US 20 at OR 34 (outside the Philomath UGB) experiences growth in total entering traffic volume during the design hour from 1,145 vehicles per hour to 1,610 vehicles per hour, or 41% growth. The posted speed limit of 40 mph allows for 70 percent warrants using lower volume thresholds. Although the major street (US 20) approach volume is sufficient, the minor street (OR 34) approach volume is not high enough to meet the preliminary signal warrant.

In conclusion, under the 2040 forecast volumes, it does not appear that construction of a traffic signal or roundabout will be warranted. However, conditions should be monitored and reevaluated as development occurs over time.

Freight Conditions

Generally, freight travel through Philomath is not forecast to be significantly impacted by future growth, as the overall level of motor vehicle congestion is expected to remain within mobility targets. Freight vehicle volumes may increase in the future, due to the October 2016 completion of ODOT's Pioneer Mountain to Eddyville project. This project realigned a portion of US 20 west of Philomath in Lincoln County and will better accommodate freight vehicles. Project impact data is not currently available, as completion of the project occurred after the Existing Conditions data collection period and ODOT cannot measure significant changes in traffic volumes until the fall of 2017. However, the project overview estimated that at least 100 freight vehicles per day from Toledo would prefer to use US 20 to access I-5 if the Pioneer Mountain to Eddyville improvements were completed.[4]

The current pattern of regional routing of trucks through the southern end of Philomath between US 20/OR 34 and OR 99W will continue to be an issue. Designated truck routes used for this bypass include South 13th Street, South 19th Street, Chapel Drive, and Bellfountain Road. Increases in truck traffic and conflicting residential growth could potentially become a safety and livability concern. South 13th Street will likely require an upgrade to accommodate increased vehicle stress, as the roadway is currently in a state of disrepair and is not built to appropriate city standards for a freight route.

Growth in truck volumes will also continue to strain locations on the street network where geometric deficiencies impact truck travel. This includes a vertical crest issue at US 20/OR 34 at 19th Street, where trucks routinely hit and damage the pavement on the northbound approach.

The location and operations of the ODOT freight scale and weigh station at the intersection of US 20/OR 34 and 26th Street will continue to be a safety concern if it remains as is.

Transit Conditions

The Existing Conditions Memorandum identified key opportunities to improve transit within Philomath including:

- Increasing the frequency and service hours of bus service, making more trips convenient or possible.
- Improving transit access to the central area of the city.
- Including additional amenities, such as shelters and benches.

The forecasted population and employment growth modeled in the 2040 Baseline scenario may lead to new areas of the city that would benefit from transit access. These could include:

- The area of high employment growth north of US 20/OR 34 and west of 19th Street.
- The northwest and southeast areas of the city with higher residential growth.

New growth may also lead to increased ridership whether service is expanded or not. This may require further investment in transit service just to maintain current service levels if bus overcrowding occurs.

Pedestrian Conditions

A Pedestrian Qualitative Multimodal Assessment (QMA)[5] was completed for roadway segments in the Existing Conditions memorandum to characterize the quality of service provided on arterial and collector corridors. The quality of service is identified by considering various roadway characteristics and

[4] ODOT Pioneer Mountain Eddyville Project Overview. Accessed January 2017. https://www.oregon.gov/ODOT/HWY/REGION2/Pages/The-US-20-Project-Overview-and-Benefits.aspx

[5] ODOT. *Analysis Procedure Manual Version 2.* Sept. 2015.

applying a context-based, subjective “Excellent/Good/Fair/Poor” rating. Roadway characteristics that were considered to impact the comfort and safety of pedestrian travel include:

- The width of the outside travel lane,
- The width of a bicycle lane or shoulder,
- The presence of buffers from traffic (landscaped or others),
- The presence of sidewalks or paths,
- The presence of lighting,
- The number of motor vehicle travel lanes, and
- The speed of motorized traffic.

Roadways that had at least three of these characteristics (e.g., lighting, more than a 4-foot wide bicycle lane or shoulder, and sidewalks) received an “Excellent” rating; at least two characteristics received a “Good” rating; at least one characteristic received a “Fair” rating; no positive characteristics received a “Poor” rating. It should be noted that the Pedestrian QMA performed does not consider the difficulty of crossing streets and that residents have commented that crossing US 20/OR 34 is challenging and at times unsafe. With increased motor vehicle traffic volumes on US 20/OR 34, crossing may become even more challenging.

The Pedestrian QMA analysis does not change based on either motor vehicle volume or pedestrian volume, and there are no streetscape projects in the 2040 Baseline scenario that would affect the Pedestrian QMA. Therefore, the results summarized in the Existing Conditions memorandum are unchanged for the 2040 Baseline scenario. However, increased speed or more lanes of traffic will reduce the Pedestrian QMA. This will be considered when evaluating the impact of potential projects in later phases of the TSP update process.

Bicycle Conditions

The Bicycle Level of Traffic Stress (LTS) analysis was used to characterize the bicycling experience on the arterial and collector system in the Existing Conditions memorandum. Road segments are divided into four classifications (LTS 1-4) for measuring the effects of traffic-based stress on bicycle riders. The measure of traffic stress quantifies the perceived safety issue of being in close proximity to vehicles, primarily considering the physical distance to traffic and the speed of traffic. Figure 10 in the Existing Conditions memorandum summarizes the results of the Bicycle LTS analysis. Factors considered in the Bicycle LTS analysis include:

- Bicycle facility type (separated bike path, bike lane, or mixed with traffic),
- Bike lane width,
- Number of motor vehicle travel lanes,
- Traffic speed (posted or prevailing),

- Presence of parking, and
- Frequency of bike lane blockage (due to driveways, loading zones, busses, parking, etc.).

The Bicycle LTS analysis is not directly dependent on motor vehicle volume or bicycle volume, and there are no streetscape projects in the 2040 Baseline scenario that would affect the Bicycle LTS analysis. Therefore, the results summarized in the Existing Conditions memorandum are unchanged for the 2040 Baseline scenario. However, increased speed, more lanes of traffic, and more frequent bicycle lane blockage will reduce the Bicycle LTS. This will be considered when evaluating the impact of potential projects in later phases of the TSP update process.

Other Opportunities for Improvements

In addition to the conditions discussed above, there are some additional opportunities for improvements that are not directly informed by the 2040 Baseline forecast. This section discusses safety concerns and Transportation System Management and Operations (TSMO) opportunities. Rail, air, pipeline, and water transportation opportunities are also briefly reviewed.

Safety Concerns

The Existing Conditions memorandum performed a safety analysis at study intersections and along segments of US 20/OR 34, and also reviewed the composition of crashes throughout the city. The analysis used the most recent five years of available crash data (2010-2014) for all roadways in Philomath. Over that five-year period, there were 132 crashes within the UGB (average of about 26 per year). Most crashes resulted in only property damage or minor injuries (about 89 percent).

Two locations stand out for having both a high crash rate and a high overall number of crashes, primarily rear-end collisions:

- The intersection of US 20/OR 34 at 26th Street
- The intersection of US 20 at OR 34 (just outside of the Philomath UGB)

These locations are both expected to have significant growth in motor vehicle traffic volume as previously noted. As volumes increase, it is likely that crash frequency will increase as well. However, neither location is projected to meet the requirements for a traffic signal warrant based on crash history, which requires five or more crashes per year that are likely to be prevented by a traffic signal. Therefore, other approaches to mitigating safety issues at these locations will need to be considered. For example, a roundabout could be considered as a possible solution at the intersection of US 20 and OR 34. Roundabouts generally improve safety, and might provide an additional benefit by reducing delay for left turn movements.

The ODOT freight scale and weigh station located at the intersection of US 20/OR 34 at 26th Street is also a factor in considering any improvements to the intersection. Although none of the nine reported crashes at the intersection involved heavy freight vehicles, public feedback has emphasized that freight traffic using the weigh station can contribute to limited sight distances and an environment that feels unsafe.

Transportation System Management and Operations

Transportation System Management and Operations (TSMO) provides opportunities to improve the transportation network without major capital projects. Access management, intelligent transportation systems (ITS), demand management, and connected vehicles and infrastructure will play an increasing role in providing safe and efficient mobility approaching the 2040 the future forecast year.

Although the Central Willamette Valley Intelligent Transportation Systems (ITS) Plan[6] identifies US 20/OR 34 as a low priority communications infrastructure corridor in the central Willamette Valley, it does recommend that an integrated regional virtual traffic operations center should be established to provide real time management of traffic conditions in the region. Additionally, Philomath has an opportunity as regional partners develop transit and freight priority technology at traffic signals on US 20/OR 34 to ensure these technologies benefit travel in and through Philomath.

Rail Needs

The Existing Conditions memorandum provides information on the freight rail lines that run through Philomath. As documented there, no crashes or other incidents have occurred at the five at-grade rail crossings within the Philomath UGB. However, the at-grade crossings are a barrier to multimodal connectivity and are not fully served by pedestrian facilities.

No additional rail needs were identified for the future forecast 2040 Baseline scenario.

Air, Pipeline, and Water-based Transportation

There are no airports within the city limits of Philomath, and the inter-regional travel demand satisfied by airports is not considered in the 2040 Baseline forecast. However, it is reasonable to conclude that with increasing overall regional travel demands, access to airports will remain important. The two closest public airports for Philomath residents are the Corvallis Municipal Airport and the Eugene public airport. More information is provided in the Existing Conditions memorandum.

No pipeline or water-based transportation facilities were identified in the Existing Conditions memorandum, and there are no additional needs forecast for the 2040 Baseline scenario.

Summary of Future Transportation Conditions and Needs Findings

In addition to the transportation issues and needs identified in the Existing Conditions memorandum, the following additional findings have been identified as a result of forecast growth through 2040:

[6] ODOT, DKS Associates, and IBI Group. *Central Willamette Valley ITS Plan.* December 2010.

- Motor vehicle congestion will remain within acceptable levels, with all study intersections meeting the established mobility targets/standards for the 2040 design hour.
- No intersections are projected to meet preliminary signal warrants, and no locations have a crash history significant enough to warrant a traffic signal.
- The Pedestrian Qualitative Multimodal Assessment will remain unchanged from existing conditions.
- The Bicycle Level of Traffic Stress will remain unchanged from existing conditions.
- There will likely continue to be safety concerns at two intersections, US 20/OR 34 at 26th Street and US 20 at OR 34 (outside the Philomath UGB).
- There may be needs for expanded transit service to support high growth areas, such as high projected housing growth in the northwest and southeast areas of the city and high projected employment growth in the northeast area of the city.
- Conditions for freight travel will not change significantly, but increased urbanization in the south part of the city may lead to more conflicts with regional truck traffic traveling between US 20/ OR 34 and OR 99W and prompt improvements to South 13th Street.
- Transportation System Management and Operations will offer opportunities for improved safety and mobility especially through access management, a regional virtual traffic operations center, and traffic signal priority systems for freight and transit.
- No major new rail, air, pipeline, or water-based transportation needs were identified.

Technical Memorandum #7

Appendix

Synchro Intersection Operations Reports

ODOT Preliminary Signal Warrant Worksheets

Synchro Intersection Operations Reports

Intersection	
Int Delay, s/veh	4.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	375	25	265	495	30	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	220	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	10	0	1	5	7	3
Mvmt Flow	395	26	279	521	32	168

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	421	0	1487	408
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	1079	-
Critical Hdwy	-	-	4.11	-	6.47	6.23
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.209	-	3.563	3.327
Pot Cap-1 Maneuver	-	-	1144	-	133	641
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	319	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1144	-	101	641
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	241	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	101	641	-	-	1144	-
HCM Lane V/C Ratio	0.313	0.263	-	-	0.244	-
HCM Control Delay (s)	56.1	12.6	-	-	9.2	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	1.1	-	-	1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	30	760	50	15	40	0	0	25	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			0.99	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					0.99			1.00			0.90	
Flt Protected					1.00			0.99			1.00	
Satd. Flow (prot)					3163			1726			1528	
Flt Permitted					1.00			0.87			1.00	
Satd. Flow (perm)					3163			1518			1528	
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)	0	0	0	32	800	53	16	42	0	0	26	89
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	77	0
Lane Group Flow (vph)	0	0	0	0	881	0	0	58	0	0	38	0
Confl. Peds. (#/hr)	5					5	1					1
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	0%	0%	6%	4%	0%	0%	0%	0%	0%	0%	2%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			4			8	
Permitted Phases				6			4					
Actuated Green, G (s)					28.6			5.4			5.4	
Effective Green, g (s)					29.6			5.9			5.9	
Actuated g/C Ratio					0.68			0.14			0.14	
Clearance Time (s)					5.0			4.5			4.5	
Vehicle Extension (s)					6.0			2.5			2.5	
Lane Grp Cap (vph)					2152			205			207	
v/s Ratio Prot											0.02	
v/s Ratio Perm					0.28			c0.04				
v/c Ratio					0.41			0.28			0.18	
Uniform Delay, d1					3.1			16.9			16.7	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.4			0.6			0.3	
Delay (s)					3.4			17.5			17.0	
Level of Service					A			B			B	
Approach Delay (s)		0.0			3.4			17.5			17.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	70	780	55	45	40	0	0	45	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			1.00			1.00	
Frpb, ped/bikes					1.00			1.00			1.00	
Flpb, ped/bikes					1.00			1.00			1.00	
Frt					0.99			1.00			0.97	
Flt Protected					1.00			0.97			1.00	
Satd. Flow (prot)					3135			1678			1685	
Flt Permitted					1.00			0.80			1.00	
Satd. Flow (perm)					3135			1379			1685	
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)	0	0	0	74	821	58	47	42	0	0	47	16
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	14	0
Lane Group Flow (vph)	0	0	0	0	947	0	0	89	0	0	49	0
Confl. Peds. (#/hr)	3					3	1		7	7		1
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	0%	0%	0%	3%	5%	0%	3%	0%	0%	0%	0%	0%
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			4			8	
Permitted Phases				6			4					
Actuated Green, G (s)					23.8			4.8			4.8	
Effective Green, g (s)					24.3			5.3			5.3	
Actuated g/C Ratio					0.65			0.14			0.14	
Clearance Time (s)					4.5			4.5			4.5	
Vehicle Extension (s)					6.0			2.5			2.5	
Lane Grp Cap (vph)					2026			194			237	
v/s Ratio Prot											0.03	
v/s Ratio Perm					0.30			c0.06				
v/c Ratio					0.47			0.46			0.21	
Uniform Delay, d1					3.4			14.8			14.3	
Progression Factor					1.00			1.00			1.00	
Incremental Delay, d2					0.5			1.3			0.3	
Delay (s)					3.9			16.1			14.6	
Level of Service					A			B			B	
Approach Delay (s)		0.0			3.9			16.1			14.6	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	37.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	590	45	0	0	0	0	70	55	40	75	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		0.95						1.00			1.00	
Frpb, ped/bikes		1.00						1.00			1.00	
Flpb, ped/bikes		1.00						1.00			1.00	
Frt		0.99						0.94			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3111						1607			1687	
Flt Permitted		1.00						1.00			0.85	
Satd. Flow (perm)		3111						1607			1454	
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)	16	621	47	0	0	0	0	74	58	42	79	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	38	0	0	0	0
Lane Group Flow (vph)	0	678	0	0	0	0	0	94	0	0	121	0
Confl. Peds. (#/hr)			7	7			3					3
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	6%	0%	0%	0%	0%	0%	2%	3%	0%	3%	0%
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		2						4			8	
Permitted Phases	2									8		
Actuated Green, G (s)		18.1						7.8			7.8	
Effective Green, g (s)		19.1						8.3			8.3	
Actuated g/C Ratio		0.54						0.23			0.23	
Clearance Time (s)		5.0						4.5			4.5	
Vehicle Extension (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		1678						376			340	
v/s Ratio Prot								0.06				
v/s Ratio Perm		0.22									c0.08	
v/c Ratio		0.40						0.25			0.36	
Uniform Delay, d1		4.8						11.0			11.3	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		0.2						0.5			0.9	
Delay (s)		5.0						11.5			12.2	
Level of Service		A						B			B	
Approach Delay (s)		5.0			0.0			11.5			12.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	35.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	5	70	5	0	20	70	5	0	5	5	10	0	5	5	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	0	2	0	7	16	0	0	7	34	0	0	7	0	0	0
Mvmt Flow	0	5	74	5	0	21	74	5	0	5	5	11	0	5	5	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.9	7.8	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	6%	21%	33%
Vol Thru, %	25%	88%	74%	33%
Vol Right, %	50%	6%	5%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	80	95	15
LT Vol	5	5	20	5
Through Vol	5	70	70	5
RT Vol	10	5	5	5
Lane Flow Rate	21	84	100	16
Geometry Grp	1	1	1	1
Degree of Util (X)	0.027	0.094	0.12	0.018
Departure Headway (Hd)	4.559	4.015	4.311	4.203
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	773	887	829	857
Service Time	2.658	2.065	2.351	2.203
HCM Lane V/C Ratio	0.027	0.095	0.121	0.019
HCM Control Delay	7.8	7.5	7.9	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.4	0.1

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	30	45	35	0	25	25	105	0	15	125	15	0	55	130	55
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	0	3	0	7	0	0	2	7	0	3	0	7	0	2	0
Mvmt Flow	0	32	47	37	0	26	26	111	0	16	132	16	0	58	137	58
Number of Lanes	0	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.1	9.1	9.7	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	27%	16%	100%	0%
Vol Thru, %	0%	89%	41%	16%	0%	70%
Vol Right, %	0%	11%	32%	68%	0%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	140	110	155	55	185
LT Vol	15	0	30	25	55	0
Through Vol	0	125	45	25	0	130
RT Vol	0	15	35	105	0	55
Lane Flow Rate	16	147	116	163	58	195
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.026	0.222	0.161	0.214	0.094	0.28
Departure Headway (Hd)	5.946	5.417	5.017	4.721	5.849	5.169
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	597	657	709	754	608	689
Service Time	3.731	3.201	3.092	2.789	3.627	2.946
HCM Lane V/C Ratio	0.027	0.224	0.164	0.216	0.095	0.283
HCM Control Delay	8.9	9.8	9.1	9.1	9.2	10
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.8	0.6	0.8	0.3	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	535	40	95	655	50	120	85	65	105	115	180
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.5	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.99		1.00	0.99		1.00	0.94		1.00	0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	3166		1660	3215		1628	1585		1658	1555	
Flt Permitted	0.21	1.00		0.42	1.00		0.41	1.00		0.63	1.00	
Satd. Flow (perm)	352	3166		732	3215		704	1585		1105	1555	
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	563	42	100	689	53	126	89	68	111	121	189
RTOR Reduction (vph)	0	6	0	0	7	0	0	25	0	0	53	0
Lane Group Flow (vph)	174	599	0	100	735	0	126	132	0	111	257	0
Confl. Peds. (#/hr)	7		5	5		7	3		4	4		3
Confl. Bikes (#/hr)			1			2			4			3
Heavy Vehicles (%)	6%	4%	0%	0%	2%	3%	2%	2%	3%	0%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6			4			8		
Actuated Green, G (s)	42.0	31.8		32.8	27.1		23.0	23.0		23.0	23.0	
Effective Green, g (s)	42.0	32.8		33.8	28.1		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.56	0.44		0.45	0.38		0.32	0.32		0.32	0.32	
Clearance Time (s)	4.5	5.0		4.5	5.0		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	2.5	6.0		2.5	6.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	368	1393		409	1212		222	499		348	490	
v/s Ratio Prot	c0.07	0.19		0.02	c0.23			0.08			0.17	
v/s Ratio Perm	0.20			0.09			c0.18			0.10		
v/c Ratio	0.47	0.43		0.24	0.61		0.57	0.26		0.32	0.53	
Uniform Delay, d1	9.6	14.4		11.8	18.7		21.3	19.0		19.4	20.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.6		0.2	1.5		2.7	0.2		0.4	0.8	
Delay (s)	10.3	15.0		12.1	20.3		24.0	19.2		19.8	21.7	
Level of Service	B	B		B	C		C	B		B	C	
Approach Delay (s)		14.0			19.3			21.3			21.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	74.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	90	25	35	275	375	245
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	75	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	2	1
Mvmt Flow	95	26	37	289	395	258

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	887	524	653	0	-	0
Stage 1	524	-	-	-	-	-
Stage 2	363	-	-	-	-	-
Critical Hdwy	6.42	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	315	557	943	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	557	943	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.1	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	943	-	300	557	-	-
HCM Lane V/C Ratio	0.039	-	0.316	0.047	-	-
HCM Control Delay (s)	9	0	22.4	11.8	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	755	40	55	875	15	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	0	0	3	0	0
Mvmt Flow	795	42	58	921	16	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	837	0	1853	816
Stage 1	-	-	-	-	816	-
Stage 2	-	-	-	-	1037	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	806	-	82	380
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	806	-	70	380
Mov Cap-2 Maneuver	-	-	-	-	70	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	294	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	38.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	153	-	-	806	-
HCM Lane V/C Ratio	0.31	-	-	0.072	-
HCM Control Delay (s)	38.7	-	-	9.8	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.2	-

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	15	30	25	0	10	45	10	0	30	30	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	0	0	7	7	7	0	0	7	7	7	7
Mvmt Flow	0	16	32	26	0	11	47	11	0	32	32	5
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	7.6	7.8	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	21%	15%	11%
Vol Thru, %	46%	43%	69%	53%
Vol Right, %	8%	36%	15%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	70	65	95
LT Vol	30	15	10	10
Through Vol	30	30	45	50
RT Vol	5	25	10	35
Lane Flow Rate	68	74	68	100
Geometry Grp	1	1	1	1
Degree of Util (X)	0.083	0.086	0.084	0.111
Departure Headway (Hd)	4.495	4.178	4.408	4.103
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	802	862	817	879
Service Time	2.495	2.18	2.411	2.103
HCM Lane V/C Ratio	0.085	0.086	0.083	0.114
HCM Control Delay	7.9	7.6	7.8	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.3	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	10	50	35
Peak Hour Factor	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	0	7	0
Mvmt Flow	0	11	53	37
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.6
HCM LOS	A

Lane

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Vol, veh/h	0	55	25	10	0	200	35	35	0	10	10	200	0	30	5	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	7	0	8	0	7	2	4	0	7	0	0	0	7	6	0	0
Mvmt Flow	0	58	26	11	0	211	37	37	0	11	11	211	0	32	5	0
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	8.8	10.7	9.3	8.9
HCM LOS	A	B	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	0%	61%	74%	86%
Vol Thru, %	50%	0%	28%	13%	14%
Vol Right, %	0%	100%	11%	13%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	200	90	270	35
LT Vol	10	0	55	200	30
Through Vol	10	0	25	35	5
RT Vol	0	200	10	35	0
Lane Flow Rate	21	211	95	284	37
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.033	0.278	0.13	0.377	0.056
Departure Headway (Hd)	5.714	4.756	4.956	4.769	5.502
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	624	752	719	750	646
Service Time	3.469	2.51	3.019	2.818	3.575
HCM Lane V/C Ratio	0.034	0.281	0.132	0.379	0.057
HCM Control Delay	8.7	9.4	8.8	10.7	8.9
HCM Lane LOS	A	A	A	B	A
HCM 95th-tile Q	0.1	1.1	0.4	1.8	0.2

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	110	35	45	115	145	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	5	7	0	0	0
Mvmt Flow	116	37	47	121	153	137

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	437	221	289	0	-	0
Stage 1	221	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.42	6.25	4.17	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.345	2.263	-	-	-
Pot Cap-1 Maneuver	577	811	1245	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	554	811	1245	-	-	-
Mov Cap-2 Maneuver	554	-	-	-	-	-
Stage 1	816	-	-	-	-	-
Stage 2	787	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	600	-	-
HCM Lane V/C Ratio	0.038	-	0.254	-	-
HCM Control Delay (s)	8	0	13	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	25	95	85	45	40	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	5	4	8	0
Mvmt Flow	26	100	89	47	42	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	137	0	-	0	266	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	4.1	-	-	-	6.48	6.2
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	2.2	-	-	-	3.572	3.3
Pot Cap-1 Maneuver	1459	-	-	-	710	945
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	861	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1459	-	-	-	697	945
Mov Cap-2 Maneuver	-	-	-	-	697	-
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	845	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1459	-	-	-	802
HCM Lane V/C Ratio	0.018	-	-	-	0.105
HCM Control Delay (s)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	4.5					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	85	40	85	45	35	65
Conflicting Peds, #/hr	0	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	7	2	0	0	3
Mvmt Flow	89	42	89	47	37	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	256	114	0	0	138	0
Stage 1	114	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.4	6.27	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	-	-	2.2	-
Pot Cap-1 Maneuver	737	925	-	-	1458	-
Stage 1	916	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	717	924	-	-	1458	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	772	1458	-
HCM Lane V/C Ratio	-	-	0.17	0.025	-
HCM Control Delay (s)	-	-	10.6	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

ODOT Preliminary Signal Warrant Worksheets

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	US 20 / OR 34	**Minor Street:**	26th Street
Project:	Philomath TSP	**City/County:**	Philomath
Year:	2040	**Alternative:**	2040 No-Build

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	7400	17250	N
	Minor	1	1850	150	
Case B	Major	2	11100	17250	N
	Minor	1	950	150	
Analyst and Date:			Reviewer and Date:		

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	US 20	**Minor Street:**	OR 34
Project:	Philomath TSP	**City/County:**	Philomath
Year:	2040	**Alternative:**	2040 No-Build

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
	100 percent of standard warrants				
X	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	7400	11600	N
	Minor	1	1850	300	
Case B	Major	2	11100	11600	N
	Minor	1	950	300	
Analyst and Date:			Reviewer and Date:		

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

SECTION 8

TECH MEMO NINE

STANDARDS AND SOLUTIONS

Technical Memorandum #9

DATE: January 15, 2018

TO: Philomath TSP Project Management Team and Stakeholders

FROM: John Bosket, PE | DKS Associates
Ben Chaney, EIT | DKS Associates
Kamilah Buker, EIT | DKS Associates

SUBJECT: **Philomath Transportation System Plan**
Task 7.1 Transportation Standards and Solutions

This memorandum recommends transportation system standards and solutions for the Philomath Transportation Plan that address the future transportation needs identified in the previous evaluation of existing and future conditions. These strategies were developed through feedback received from the Project Management Team, Technical Advisory Committee, Citizen Advisory Committee, and the general public.

The standards and solutions provided here are intended to help the City take a balanced approach to enhancing and managing the transportation system while accommodating future growth. This includes transportation system management practices to extend the life of investments made in transportation infrastructure, projects to improve the motor vehicle, bicycle, and pedestrian systems, policies to support a growing transit system, and transportation demand management options to reduce single occupancy motor vehicle travel.

Although evaluation of and proposed improvements to non-City facilities are included, the TSP does not obligate its governmental partners to take any action or construct any projects. Without additional action by the governmental entity that owns the subject facility or land (e.g., Benton County, ODOT) any project that involves a non-City facility is merely a recommendation. As in most facility planning efforts, moving towards a well-connected network depends on the cooperation of multiple jurisdictions. The TSP is intended to facilitate discussions between the City and its governmental partners to work together to achieve transportation system goals and objectives.

Transportation Standards

Philomath applies transportation standards and regulations to the construction of new transportation facilities and to the operation of all facilities to ensure the system functions as intended and investments are not wasted. These standards reflect the goals of the City for a safe and efficient transportation system and enable consistent future actions. This section highlights recommended modifications to the standards to be adopted as part of the Transportation System Plan update.

Street Functional Classification

Street functional classification is an important tool for managing the roadway network. The street functional classification system recognizes that individual streets do not act independently of one another but instead form a network that works together to serve travel needs on a local and regional level. By designating the management and design requirements for each roadway classification, this hierarchal system supports a network of streets that perform as desired.

Consistency with Federal Naming Conventions

Aligning Philomath's functional classification naming conventions with federal naming conventions may facilitate future efforts to obtain federal funding for local improvement projects. Recommended updates to the City's classification designations are shown in Table 1. All functional classifications are considered "Urban" because the Federal Aid Urban Boundary (FAUB) includes all lands inside the Philomath UGB. Inside a FAUB, only Local Streets are not Federal Aid eligible.

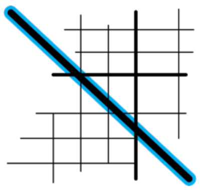
Table 1: Proposed Federally-Aligned Functional Classification Naming Conventions

Existing Classification Name	Proposed Aligned Classification Name
Major Arterial	Principal Arterial Minor Arterial
Collector	Major Collector Minor Collector
Local Street	Local Street

Recommended Functional Classification System

The recommended functional classification system for roadways in the City of Philomath is described below. The functional classification map, Figure 1, shows the recommended classification for all roadways in the city, including new street extensions proposed as part of the motor vehicle system improvements.

Classifications shown for County roads inside the Philomath UGB reflect the City's desired function for those facilities. These classifications may not match those shown in Benton County's TSP. However, Benton County policy is to apply City standards to County facilities within UGBs. Therefore, it is anticipated that Philomath standards will be applied to County roads.

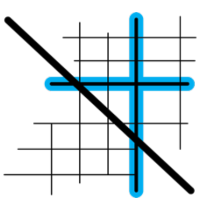


Principal and Minor Arterials

Principal Arterials serve major centers of metropolitan areas, provide a high degree of mobility, and can also provide mobility through rural areas. They serve high volumes of traffic over long distances, typically maintain higher posted speeds, and minimize direct access to adjacent land to support the safe and efficient movement of people and goods. Inside urban growth boundaries, speeds may be reduced to reflect the roadside environment and surrounding land uses.

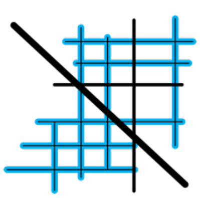
Minor Arterials provide service for trips of moderate length and serve geographic areas that are smaller than their higher-volume Principal Arterial counterparts. Because they primarily serve longer trips within the city, they should, where feasible, be provided in continuous lengths of multiple miles rather than in short segments. In an urban context, they are often used as a transition between Principal Arterials and Collectors. Minor Arterials typically serve higher volumes of traffic at moderate to high speeds, with posted speeds generally no lower than 30 mph.

The spacing of Minor Arterial streets typically varies from 2 to 3 miles in suburban fringes. Normally, the spacing should not exceed 1 mile in fully developed areas. Access to adjacent land is provided but is a low priority.



Major and Minor Collectors

Collectors serve a critical role in the roadway network by connecting traffic from Local Streets with the Arterial network. Major Collector routes are generally distinguished from Minor Collector routes by longer length; lower connecting driveway densities; higher speed limits; greater spacing intervals; higher traffic volumes; and may have more travel lanes. The maximum interval for spacing Collector streets should be approximately 1,500 feet. While access and mobility are more balanced than on Arterials, new driveways serving residential units should not be permitted where traffic volume forecasts exceed 5,000 vehicles per day.

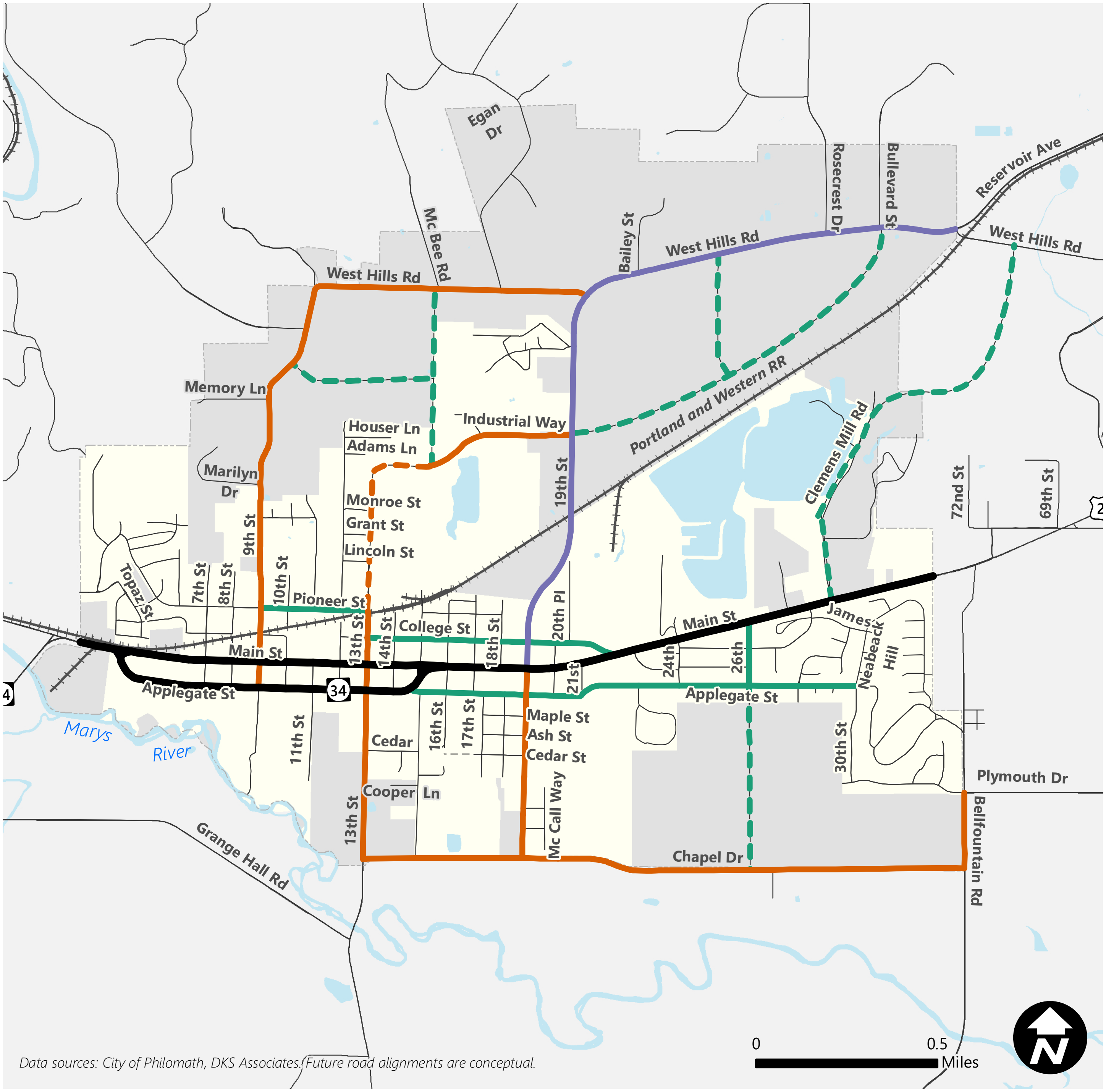


Local Streets

Local streets prioritize provision of immediate access to adjacent land. These streets should be designed to enhance the livability of neighborhoods and should generally accommodate less than 2,000 vehicles per day. When traffic volumes reach 1,000 to 1,200 vehicles per day through residential areas, safety and livability can be degraded. A well-connected grid system of relatively short blocks can minimize excessive volumes of motor vehicles and encourage more use by pedestrians and bicyclists, which commonly share the road with motor vehicles. Speeds are not normally posted, with a statutory 25 mph speed limit in effect. Local streets are not intended to support long distance travel and are often designed to discourage through traffic.

FIGURE 1
Proposed Functional Classification and Future Roadways

City of Philomath
Transportation System Plan
October 2017



Functional Classification (Dashed Lines Indicate Future Roads)

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Street
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Proposed Functional Classification Changes in Philomath

The following changes to street functional classifications are proposed to improve the network design and mobility within the City of Philomath and to achieve consistency with the Federal Functional Classification system. Changes to the existing functional classifications will require coordination with ODOT to follow the formal process to update the federal classification map.

Table 2: Proposed Functional Classification Changes to Existing Roadways

Route	Existing Functional Classification	*Proposed Functional Classification*
US20/OR34	Major Arterial	Principal Arterial
19th Street from SW West Hills Road to US20/OR30	Collector	Minor Arterial
19th Street from US20/OR30 to Chapel Drive	Collector	Major Collector
SW West Hills Road from N 19th Street to SW Reservoir Avenue (east UGB)	Collector	Minor Arterial
N 9th Street/SW West Hills Road from Main Street to N 19th Street	Collector	Major Collector
N 9th Street from Applegate Street to Main Street	Local Street	Major Collector
S 13th Street from Chapel Drive to Main Street	Collector	Major Collector
Chapel Drive from S 13th Street to Bellfountain Road	Collector	Major Collector
Bellfountain Road from Chapel Drive to SW Plymouth Drive	Collector	Major Collector
N 13th Street from Main Street to Pioneer Street	Local Street	Major Collector
Industrial Way	Local Street	Major Collector
Applegate Street from US20/OR34 to 26th Street	Collector	Minor Collector
Applegate Street from 26th Street to S 30th Street	Local Street	Minor Collector
26th Street from US20/OR34 to Applegate Street	Collector	Minor Collector
College Street from US20/OR34 to N 13th Street	Local Street	Minor Collector
Pioneer Street from N 13th Street to N 9th Street	Local Street	Minor Collector
Clemens Mill Road	Collector	Minor Collector

Table 3: Classifications Applied to Future Roadways

Future Route	Proposed Functional Classification
New street from N 19th Street eastward to SW West Hills Road	Minor Collector
New 26th Street extension from Applegate Street to Chapel Drive	Minor Collector
New north-south street from Industrial Way to SW West Hills Road	Minor Collector
New east-west street from N 9th Street to new north-south Minor Collector between Industrial Way and SW West Hills Road	Minor Collector

Truck Route Designations

Figure 2 reflects the routes recommended to be designated as Truck Routes in the Philomath TSP. These are the same routes identified as Truck Routes in the current TSP, with the exception of S 19th Street, and the proposed extensions of Industrial Way and N 13th Street. For this TSP update, it is recommended that S 19th Street no longer be designated as a Truck Route to discourage unnecessary truck traffic through an area heavily traveled by school children and to avoid routing trucks over the poor grade change on the south approach to US20/OR34. Truck Route designations on Industrial Way and N 13th Street would better serve the industrial land uses in the north half of the city, and would provide a continuous north-south connection via the existing S 13th Street Truck Route to important destinations such as OR99W South.

Significance of Truck Route Designations

Philomath is located within the state's Western Freight Corridor, which contains some of the major intermodal facilities in the state and moves both heavy and valuable goods to markets around the world. Safe and efficient truck freight movement to and through Philomath is important for both the local and statewide economies.

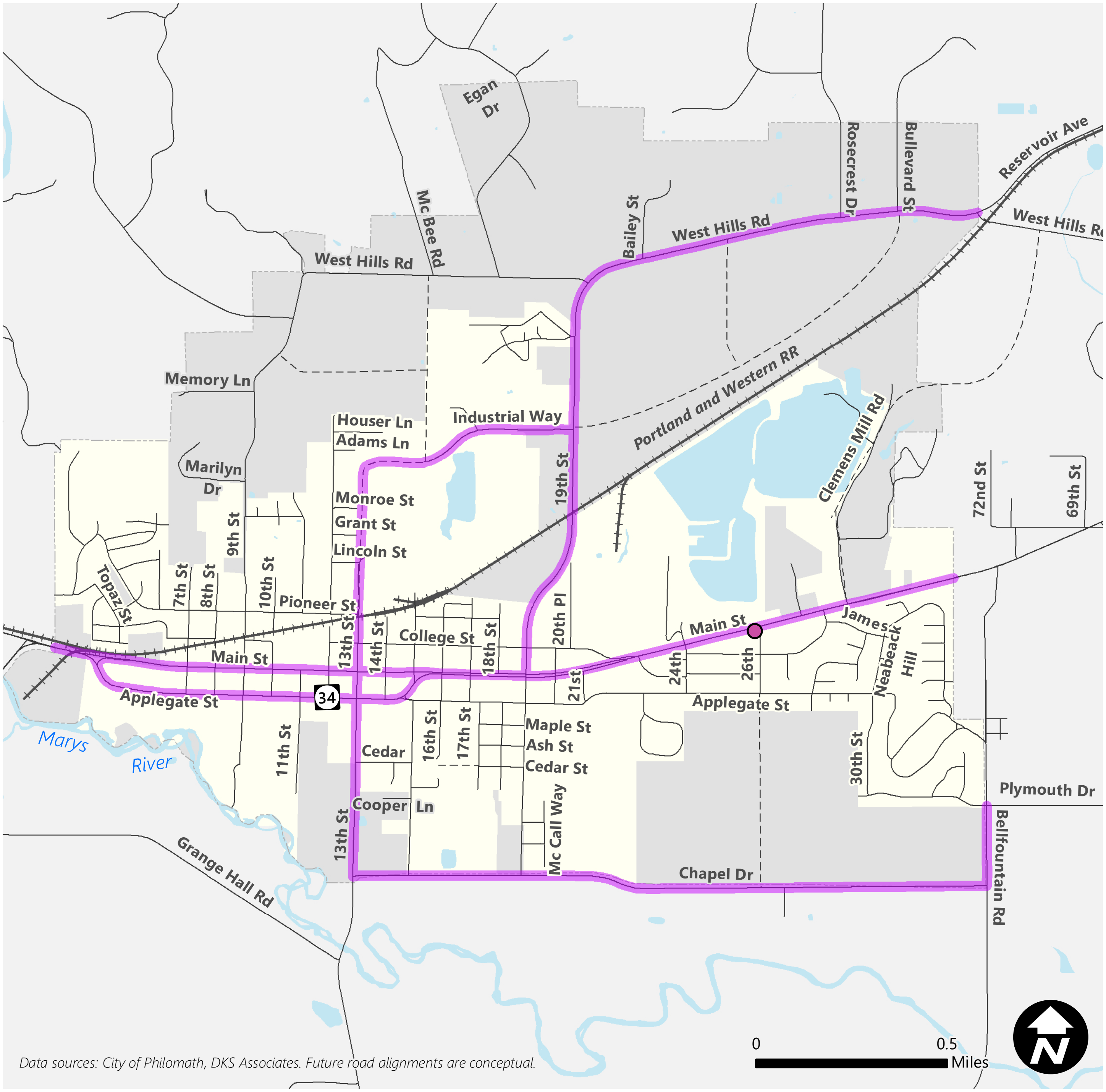
Streets designated as Truck Routes in Philomath are recognized as being appropriate and commonly traveled corridors for truck passage. Decisions affecting maintenance, operation, or construction on a designated truck route must address potential impacts on the safe and efficient movement of truck traffic. However, the intent is not to compromise the safety of other street users to accommodate truck traffic, especially in areas where many conflicts may be present. In such areas, the operational objectives of the street should prioritize safe travel for vulnerable users (e.g., pedestrians and bicyclists) while continuing to accommodate passage by truck traffic. On-street parking along truck routes should be discouraged where feasible.

As noted previously in Technical Memorandum #2, US20/OR34 (Corvallis-Newport Highway, No. 33) is classified as a Statewide Highway, part of the National Highway System (NHS), a Federal Truck Route, an Oregon Freight Route, and a Reduction Review Route. Therefore, the design and management of the highway through Philomath is subject to a number of policies and standards in the Oregon Highway Plan and Highway Design Manual intended to maintain safe and efficient movement of large vehicles. As an example, Reduction Review Routes are highways that require review with any proposed changes to determine if there will be a reduction of vehicle-carrying capacity.[1]

[1] See ORS 366.215.

FIGURE 2
Proposed Truck Route Network

City of Philomath
Transportation System Plan
October 2017



Data sources: City of Philomath, DKS Associates. Future road alignments are conceptual.

Truck Routes

- Truck Route
- ODOT Weigh Station Current Location
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Typical Roadway Cross-Section Standards

Roadway Cross-Section Standards identify the design characteristics needed to meet the function and demand for each facility type for City of Philomath streets. Since the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, this system allows standardization of key characteristics to provide consistency, while providing application criteria that allows some flexibility while meeting the design standards.

Figures 3, 4, 5, 6, and 7 illustrate the standard cross-sections for minor arterials, major collectors, minor collectors, local streets, and shared-use paths in the City of Philomath. These street standards are compliant with the Oregon Transportation Planning Rule, which specifies that local governments limit excessive roadway widths.[2] They are intended to be used as guidelines in the development of new roadways and the upgrade of existing roadways. Planning level right-of-way needs can be determined using these figures. Under some conditions a variance to the street standards may be requested from the Public Works Director to consider the alternative minimum cross-section or other adjustments. Typical conditions that may warrant consideration of a variance include:

- Infill sites
- Innovative designs (e.g., roundabouts)
- Severe constraints presented by topography, environmental, or other resources present
- Existing developments and/or buildings that make it extremely difficult or impossible to meet the standards

Figure 8 illustrates a proposed concept cross-section for US20/OR34 between Green Street and the east UGB, which is under ODOT jurisdiction. Roadways under ODOT jurisdiction are subject to design standards in ODOT's Highway Design Manual. The illustrated cross-section is provided as an example that satisfies the current design standards for urban/suburban fringe highways as defined in Table 6-4 of the ODOT Highway Design Manual. The actual design would be determined at a later date, but this cross-section may be used for right-of-way dedication and planning.

[2] OAR 660-012-0045 (7)

Proposed Minor Arterial Typical Cross-Section Standards

Figure 3: Proposed Standard Minor Arterial Cross-Section

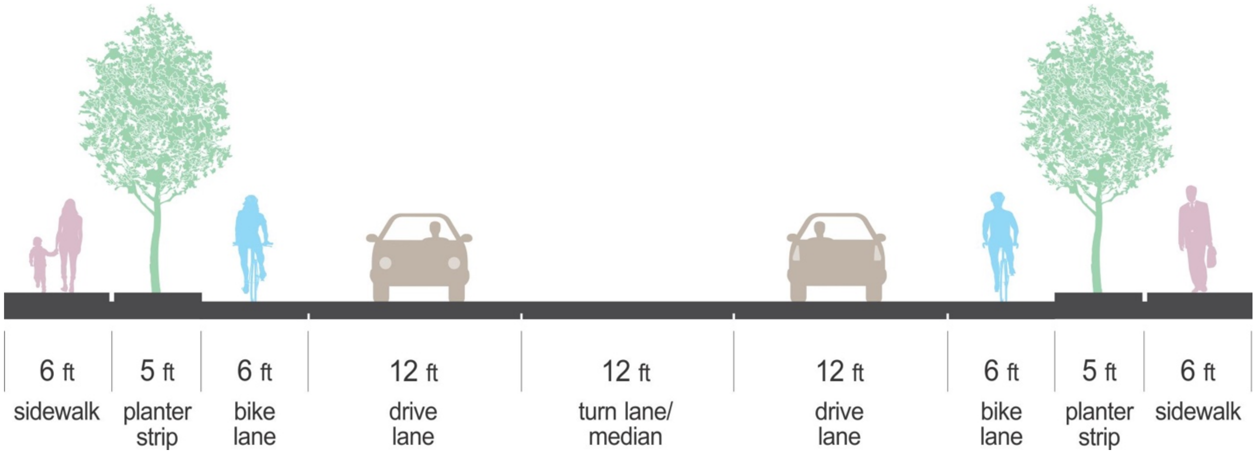


Table 4: Proposed Minor Arterial Cross-Section Standards and Alternative Minimum Standards

Width	Standard	Alternative Minimum	Considerations
Right-of-Way	70 ft.	61 ft.	Center left turn lane is optional depending on surrounding land use and available right-of-way.
Paved Width Curb-to-Curb	48 ft.	41 ft.	The Standard design should be provided where feasible. In constrained areas where providing the Standard widths are not practical, Alternative Minimum design requirements may be applied with approval of the Public Works Director.
Drive Lane	12 ft.	10 ft.	
Turn Lane/ Median	12 ft.	11 ft.	On designated Truck Routes, reductions in the Standard roadway paved width (curb-to-curb) are discouraged and should be limited to only short, constrained segments.
On-Street Parking	Not permitted	Not permitted	
Bike Lane	6 ft.	5 ft.	On-street parking is not permitted on minor arterial streets.
Planter Strip	5 ft.	5 ft.	
Sidewalk	6 ft.	5 ft.	

Proposed Major Collector Typical Cross-Section Standards

Figure 4: Proposed Standard Major Collector Cross-Section

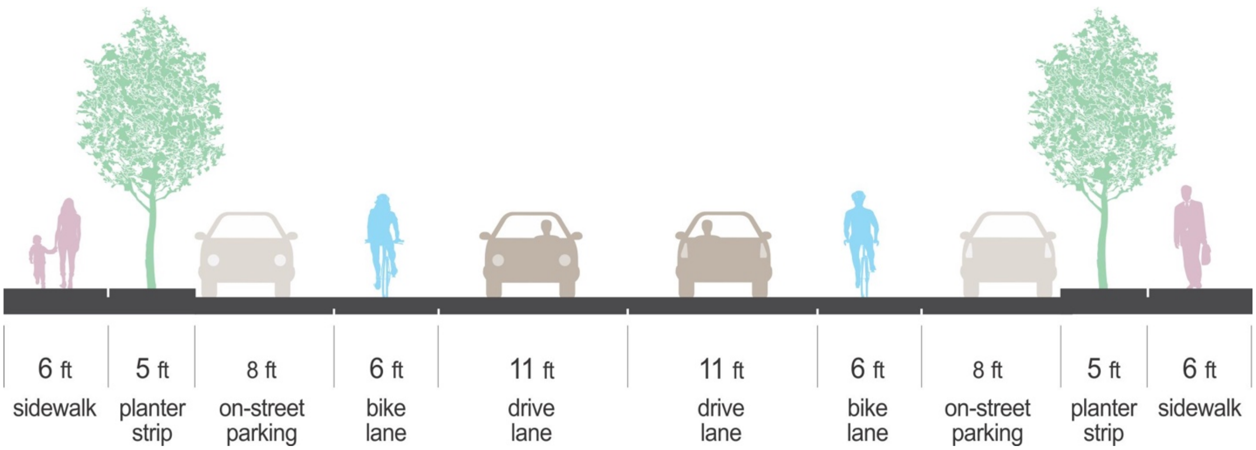


Table 5: Proposed Major Collector Cross-Section Standards and Alternative Minimum Standards

Width	Standard	Alternative Minimum	Considerations
Right-of-Way	72 ft.	64 ft.	The Standard design should be provided where feasible. In constrained areas where providing the Standard widths are not practical, Alternative Minimum design requirements may be applied with approval of the Public Works Director. On designated Truck Routes, reductions in the Standard roadway paved width (curb-to-curb) are discouraged and should be limited to short, constrained segments. On-street parking is optional and may be provided where it would support adjacent land uses. On-street parking is discouraged where posted speeds are greater than 35 mph.
Curb-to-Curb	50 ft.	44 ft.	
Drive Lane	11 ft.	10 ft.	
Bike Lane	6 ft.	5 ft.	
On-Street Parking	8 ft.	7 ft.	
Planter Strip	5 ft.	5 ft.	
Sidewalk	6 ft.	5 ft.	

Proposed Minor Collector Typical Cross-Section Standards

Figure 5: Proposed Standard Minor Collector Cross-Section

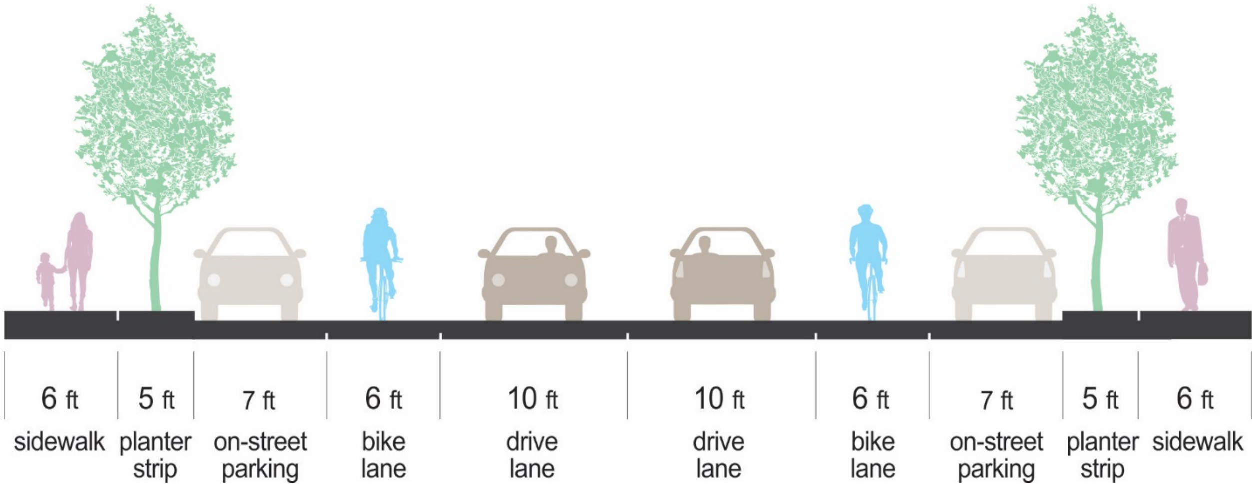


Table 6: Proposed Minor Collector Cross-Section Standards and Alternative Minimum Standards

Width	Standard	Alternative Minimum	Considerations
Right-of-Way	68 ft.	64 ft.	The Standard design should be provided where feasible. In constrained areas where providing the Standard widths are not practical, Alternative Minimum design requirements may be applied with approval of the Public Works Director. On-street parking is optional and may be provided where it would support adjacent land uses. On-street parking is discouraged where posted speeds are greater than 35 mph.
Curb-to-Curb	46 ft.	44 ft.	
Drive Lane	10 ft.	10 ft.	
Bike Lane	6 ft.	5 ft.	
On-Street Parking	7 ft.	7 ft.	
Planter Strip	5 ft.	5 ft.	
Sidewalk	6 ft.	5 ft.	

Proposed Local Street Typical Cross-Section Standards

Figure 6: Proposed Standard Local Street Cross-Section

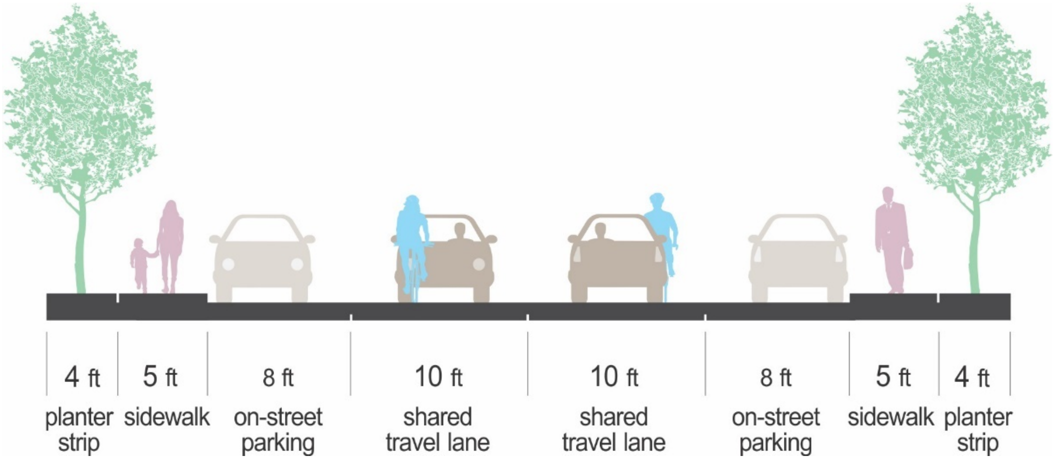
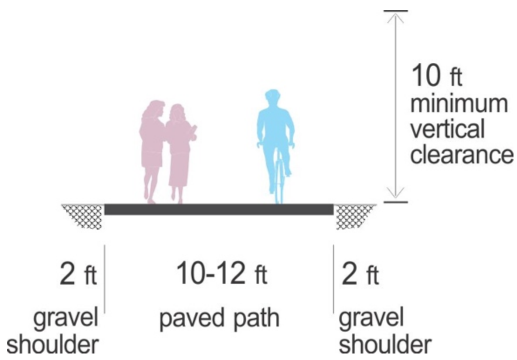


Table 7: Local Street Collector Cross-Section Standards and Alternative Minimum Standards

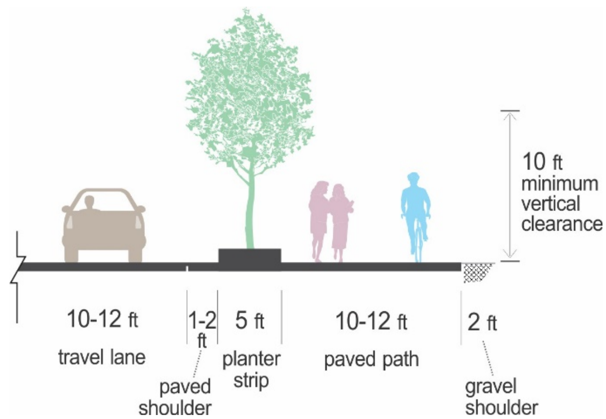
Width	Standard	Alternative Minimum	Considerations
Right-of-Way	54 ft.	54 ft.	Parking on residential neighborhood streets is allowed and may be allowed on one side only in constrained areas or where approved by the Public Works Director, resulting in a curb-to-curb width of 28 feet and overall right-of-way width of 46 feet.
Curb-to-Curb	36 ft.	36 ft.	
Shared Travel Lane	10 ft.	10 ft.	
On-Street Parking	8 ft.	8 ft.	
Planter Strip	4 ft.	4 ft.	
Sidewalks	5 ft.	5 ft.	

Proposed Shared-Use Path Typical Cross-Section Standards

Figure 7: Proposed Standard Shared-Use Path Cross-Sections



a. ***Shared-Use Path***



b. Shared-Use Path in place of sidewalk and bike lane

Table 8: Shared-Use Path Cross-Section Standards and Alternative Minimum Standards

Width	Standard	Alternative Minimum	Considerations
Right-of-Way	16 ft.	16 ft.	Paved path width may be narrowed to 8 feet wide only over short segments in constrained areas.
Paved Path	10-12 ft.	8 ft.	Path surface must be ADA accessible.
Gravel Shoulder	2 ft.	2 ft.	In areas with significant walking or biking demand, the paved shared use path should be at least 12 feet wide.
Vertical Clearance	10 ft.	10 ft.	In corridors served by a shared-use path, the Public Work Director may grant variance to allow a shared-use path to replace a sidewalk and bike lane on one side of a roadway cross-section standard. Where this is done, the treatment should be continuous along the corridor. Standard cross-section is a 10-12 foot drive lane, a 1-2 food paved shoulder, a 5 foot planter strip, and a 10-12 foot shared-use path.

Proposed Concept for US20/OR34: Green Street to East UGB

Figure 8: Proposed Concept for US20/OR34: Green Street to East UGB

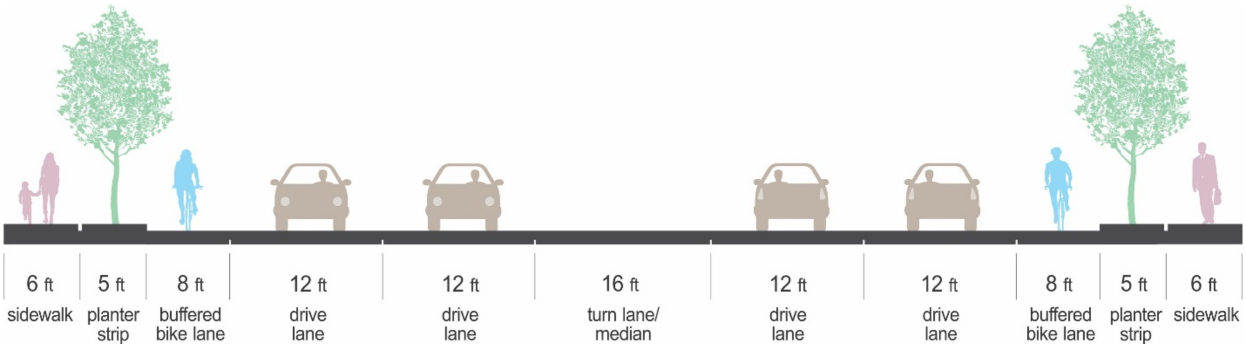


Table 9: US20/OR34 Cross-Section Standards and Alternative Minimum Standards

Width	Standard	Considerations
Right-of-Way	102 ft.	This proposed concept cross-section for US20/OR34 between Green Street and the east UGB, which is under ODOT jurisdiction. Roadways under ODOT jurisdiction are subject to design standards in ODOT's Highway Design Manual and design approval through ODOT. The illustrated cross-section is provided as an example that satisfies the current design standards for urban/suburban fringe highways with a 45 MPH design speed as defined in Table 6-4 of the ODOT Highway Design Manual. The actual design would be determined at a later date, but this cross-section may be used for right-of-way dedication and planning
Curb-to-Curb	80 ft.	
Drive Lane	12 ft.	
Turn Lane/Median	16 ft	
Buffered Bike Lanes	8 ft	
On-Street Parking	None	
Planter Strip	5 ft.	
Sidewalks	6 ft.	

Access Management

The number and spacing of access points, such as driveways and street intersections, along a roadway affects its function and capacity. Access Management is the control of these access points to match the functionality and capacity intended by the roadway's functional classification.

Access management is especially important on arterial and collector facilities to reduce congestion and crash rates and to provide for safe and efficient travel. Since each access point is an additional conflict point, reducing or consolidating driveways on these facilities can decrease collisions and preserve capacity on high volume roads, maintaining traffic flow and mobility within the city.

Balancing access and good mobility can be achieved through various access management strategies, including establishing access management spacing standards for driveways and intersections.

Philomath Access Spacing Standards

Table 10 contains recommended access spacing standards under the City of Philomath's jurisdiction and a comparison with the current access spacing standards provided in the 1999 TSP. New access points shall meet or exceed these minimum spacing requirements. However, where no reasonable alternatives exist or where strict application of the standards would create a safety hazard, the City may allow a variance.

Table 10: Recommended Access Spacing Standards (1)(2)(3)

Functional Classification	Current Minimum Access Spacing (4)	*Recommended Minimum Access Spacing*
Minor Arterial	100 - 500 ft.	300 ft.
Major Collector	100 ft.	150 ft.
Minor Collector	100 ft.	100 ft.
Local Street (5)	15 ft.	15 ft.

(1) Access spacing standards are for the minimum separation required between all access points (public or private) to a roadway, measured from center to center of adjacent access points on the same side of the roadway.

(2) For corner lots, accesses must be at least 35 feet or ½ the lot width from the intersection, whichever is greater.

(3) Access spacing standards for Major Arterials are based on ODOT criteria.

(4) Due to the recommended changes in the functional classification system, the "current" minimum access spacing standards represent a best match to those documented in the 1999 TSP.

(5) Local Street access spacing is measured from edge of driveway to edge of driveway.

Benton County and State of Oregon Access Management Standards

Both Benton County and ODOT maintain access regulations for roadways under their jurisdiction. Benton County's access regulations are documented in the Benton County TSP in Appendix B, however, the County defers to City standards inside Urban Growth Boundaries. Access Management regulations for the state highways are provided through the *1999 Oregon Highway Plan* and OAR 734-051.

Local Street Connectivity

Local street connectivity is required by the state Transportation Planning Rule (OAR 660-012) and is important for Philomath's continued development. Providing adequate connectivity can reduce the need for wider roads, traffic signals, and turn lanes. Increased connectivity can reduce a city's overall vehicle miles traveled (VMT), balance the traffic load on major facilities, encourage citizens to seek out other travel modes, and reduce emergency vehicle response times. While improvement to local street connectivity is easier to implement in newly developed areas, retrofitting existing areas to provide greater connectivity should also be attempted.

Philomath's existing street connectivity is limited primarily by natural features such as hills and wetlands, railroads, large industrial developments, and by undeveloped areas of future development or annexation. The proposed Local Street Connectivity Plan shown in Figure 9 identifies approximate locations where new local street connections should be installed as areas continue to develop. The connection locations shown were located to reduce neighborhood impacts by balancing traffic on neighborhood routes.

The Philomath Municipal Code[3] regulates proposed development to ensure good transportation system connectivity is provided. Table 11 highlights key requirements and some proposed changes to consider.

Table 11: Proposed Changes to Connectivity Requirements

Existing Requirement	Proposed Change
In residential districts, the maximum block length and perimeter shall not exceed 600 feet and 1,600 feet, respectively.	No change
In commercial districts, the maximum block length and perimeter shall not exceed 400 feet and 1,200 feet, respectively.	No change
No block length or perimeter maximums are placed on industrial districts.	No change
Cul-de-sacs or dead end streets should be no more than 600 feet long and shall only be used when environmental or topographical constraints, existing development patterns, or compliance with other standards in this title preclude street extension and through-circulation.	Recommend reducing maximum allowed cul-de-sac or dead end street length to 300 feet, with Public Works Director having discretion to allow maximum lengths up to 600 feet where environmental or topographical constraints, existing development patterns, or compliance with other standards preclude street extension and through-circulation.
Pathways (for pedestrians and bicycles) shall be provided at or near mid-block where the block length exceeds the length required by PMC 18.65.020. Pathways shall also be provided where cul-de-sacs or dead-end streets are planned to connect the ends of the streets together, to other streets, and/or to other developments, as applicable.	No change

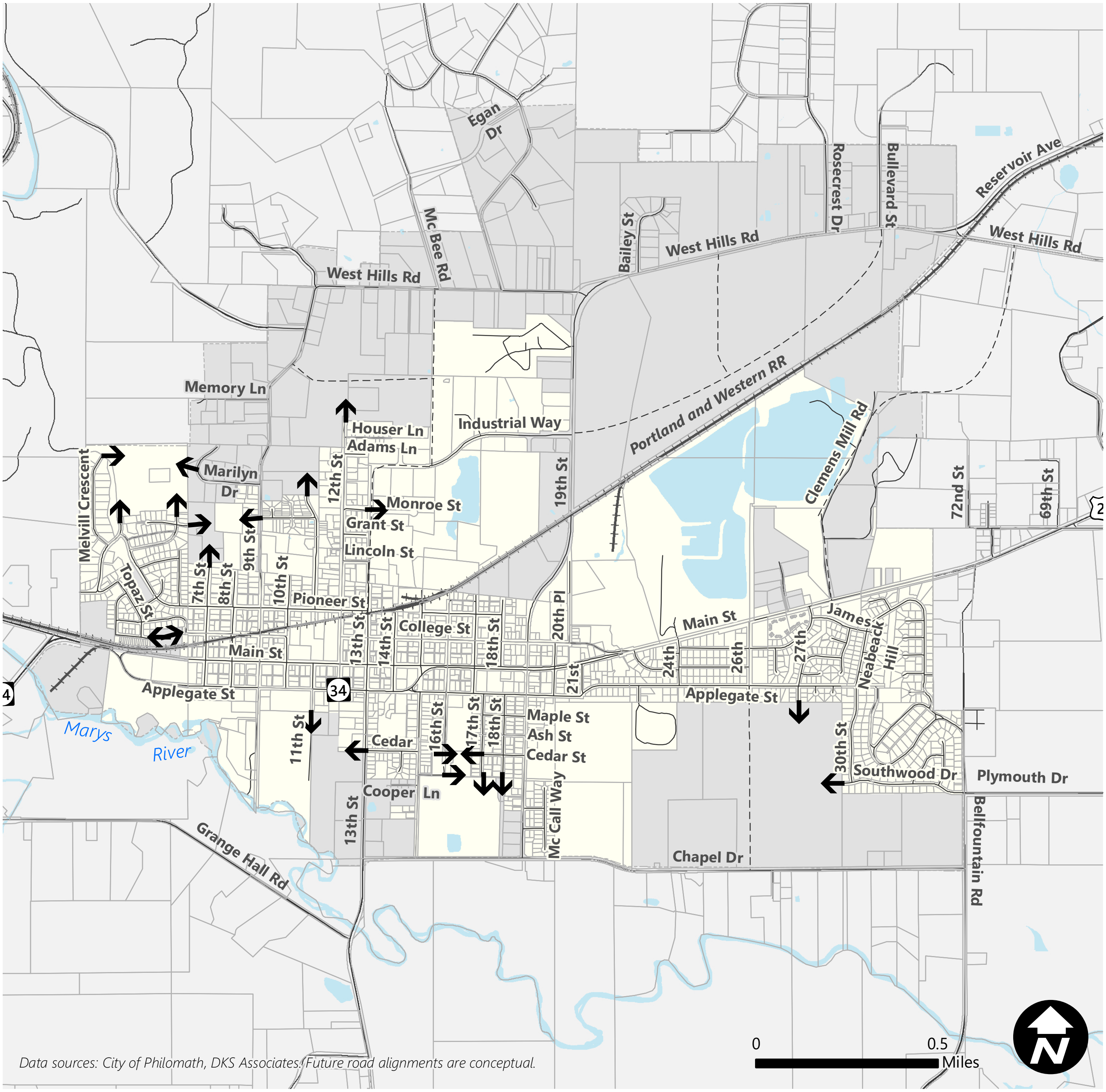
The design and construction of connector roadways should evaluate whether neighborhood traffic management strategies are necessary to protect existing neighborhoods from potential traffic impacts caused by extending stub end streets. In addition, in order to establish appropriate expectations, the City should require the installation of signs indicating the potential for future connectivity when development constructs stub streets.

[3] PMC 18.65.020(J), 18.65.030(A), and 18.80.020(J)

FIGURE 9
Local Street Connectivity Plan

City of Philomath
Transportation System Plan
October 2017

DKS



Local Street Connection Opportunities

- New Connection Direction
- Existing Taxlots
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Mobility Standards

Mobility standards, or targets, are the thresholds set by an agency for the maximum amount of congestion that is acceptable for a given roadway. Philomath uses “level of service” (LOS) as the measure of congestion for their mobility standards and has adopted LOS D as the minimum acceptable operating condition for both signalized and unsignalized intersections during the peak hour. LOS D equates to a maximum allowed average delay per vehicle of 55 seconds at signalized intersections and 35 seconds at stop-controlled intersections.

The assessment of traffic operating conditions under existing and future (year 2040) conditions conducted in Technical Memoranda #5 and #7, found that all studied intersections under City jurisdiction comply with the adopted LOS D mobility standard and will continue to do so through 2040. Therefore, it is recommended that Philomath continue to apply the LOS D mobility standard.

For roadways within the City of Philomath that are under ODOT or Benton County jurisdiction, the mobility standards/targets of those agencies will apply. However, Philomath may choose to continue to apply City mobility standards, with the more restrictive standard of the two accepted.

Traffic Impact Analyses

Philomath’s development review process is designed to manage growth in a responsible and sustainable manner. By assessing the transportation impacts associated with land use proposals and requiring that adequate facilities be in place to accommodate those impacts, the City is able to maintain a safe and efficient transportation system concurrently with new development, diffusing the cost of system expansion.

Technical Memorandum #3 included a review of Philomath’s Municipal Code (PMC) and an assessment of the potential gaps that should be addressed in order to maintain compliance with the state Transportation Planning Rule (OAR 660-012) and to help the transportation system keep up with planned growth. That review found that the existing PMC already includes requirements for traffic impact analyses (TIAs) as part of development proposals.

The PMC also includes a process for applying conditions to development proposals to minimize impacts and protect transportation facilities. It is recommended that Philomath add provisions to the existing TIA requirements that specify that requiring transportation improvements may be a condition of approval. Adding multimodal transportation improvements to mitigate impacts as a potential condition of approval for Type II (administrative) and III (quasi-judicial) review procedures would help protect the function and operation of the planned transportation system.

Although the PMC currently includes a requirement that a TIA be provided, the minimum transportation content requirements of the TIA is defined only as an assessment of the development’s impact on “the transportation system, including pedestrian ways and bikeways.” It is recommended that Philomath provide formal guidelines to developers specifying the topics to be addressed in a TIA. A recommended set of guidelines is attached as Appendix A to this memo.

Intelligent Transportation Systems

The Central Willamette Valley Intelligent Transportation System (ITS) Plan (ITS Action Plan) defines advanced technologies that support regional transportation initiatives such as promoting travel options, optimizing transportation system performance, and reducing the frequency and effects of incidents. The Plan was developed collaboratively with a Steering Committee made up of key stakeholders from across the region.

The ITS Action Plan includes advanced technologies and management strategies that improve the safety and efficiency of the transportation system and improve the traveler experience for all modes in the Central Willamette Valley. The ITS Action Plan includes 43 specific ITS projects and deployment priorities in support of the region's vision and goals; these projects can be summarized as follows:

- **Expand Traveler Information Services –** Provide traveler information on arterial roadways and support multimodal route planning and guidance.
- **Implement Transit Service Enhancements –** Improve transit speed and reliability and broadcast real-time vehicle location and stop arrival information.
- **Enhance Safety of Alternative Modes –** Improve bicycle detection and provide bicycle signal timing.
- **Improve Corridor System Management Capabilities –** Enhance traffic signal operations (timing and signal system), provide video monitoring, provide vehicle detection (speeds and volumes), install communications, update coordinated signal timings, and support transit signal priority.
- **Construct a Regional Communications Network between Agencies –** Provide a network that supports transportation data exchange and video sharing.
- **Construct Virtual Traffic Operations Centers –** Provide staff and physical space to support active corridor management.

The ITS Plan identifies US20/OR34 as a low priority communications infrastructure corridor in the central Willamette Valley, and recommends that an integrated regional virtual traffic operations center should be established to provide real time management of traffic conditions in the region.

Philomath does not own or operate any ITS systems, or even traffic signals at this time. It is unlikely that the City of Philomath will invest in ITS systems on its own, but there may be opportunities to work with regional partners on larger scale efforts that would benefit Philomath residents. Such cooperation could range from agreements to share information and data or allow use of City right-of-way for regional ITS infrastructure to advocating for enhancement of the traffic signals in the US20/OR34 corridor to include freight priority and detection for bicycles.

Neighborhood Traffic Management Tools

Neighborhood Traffic Management (NTM) describes strategies that can be deployed to slow traffic, and potentially reduce volumes, creating a more inviting environment for pedestrians and bicyclists. NTM strategies are primarily traffic calming techniques for improving neighborhood livability on local streets, though a limited set of strategies can also be applied to collectors and arterials. Mitigation measures for neighborhood traffic impacts must balance the need to manage vehicle speeds and volumes with the need to maintain mobility, circulation, and function for service providers, such as emergency responders. Figure 10 includes a visual summary of common neighborhood traffic management strategies.

Figure 10: Summary of Neighborhood Traffic Management Strategies

Chicanes

www.pedbikeimages.org/Dan Burden

Chokers

www.pedbikeimages.org/Dan Burden

Curb Extensions

www.pedbikeimages.org/Carl Sundstrom

Diverters

www.pedbikeimages.org/Adam Fukushima

Median Islands

www.pedbikeimages.org/Dan Burden

Raised Crosswalks

www.pedbikeimages.org/Tom Harned

Speed Cushions

NACTO Urban Street Design Guide

Speed Hump

www.pedbikeimages.org/Dan Burden

Traffic Circles

www.pedbikeimages.org/Carl Sundstrom

Table 13 lists common NTM applications. Any NTM project should include coordination with emergency response staff to ensure that public safety is not compromised. NTM strategies implemented on a state freight route such as US20/OR34 will require input from ODOT regarding freight mobility considerations.

Table 13: Application of Neighborhood Traffic Management Strategies

NTM Application	Use by Function Classification			Impact	
	Arterials	Collectors	Local Streets	Speed Reduction	Traffic Diversion
Chicanes			✓	✓	✓
Chokers			✓	✓	✓
Curb Extensions	✓	✓	✓	✓	
Diverters (with emergency vehicle pass-through)		✓	✓		✓
Median Islands	✓	✓	✓	✓	
Raised Crosswalks			✓	✓	✓
Speed Cushions (with emergency vehicle pass-through)			✓	✓	✓
Speed Hump			✓	✓	✓
Traffic Circles			✓	✓	✓

The City of Philomath currently does not have a formal neighborhood traffic management program. If such a program were desired to help respond to future issues, suggested elements include:

- Provide a formalized process for citizens who are concerned about the traffic on their neighborhood street. The process could include filing a citizen request with petition signatures and a preliminary evaluation. If the evaluation finds cause for concern, a neighborhood meeting would be held and formal data would be collected and evaluated. If a problem is found to exist, solutions would be identified and the process continued with neighborhood meetings, feedback from service and maintenance providers, cost evaluation, and traffic calming device implementation. Six months after implementation the device would be evaluated for effectiveness.
- For land use proposals, in addition to assessing impacts to the entire transportation network, traffic studies for new developments must also assess impacts to residential streets. A recommended threshold to determine if this additional analysis is needed is if the proposed project at ultimate buildout increases through traffic on any one residential street by 200 or more vehicles per day. Once the analysis is performed, the threshold used to determine if residential streets are impacted would be if their daily traffic volume exceeds 1,200 vehicles.

Transportation System Solutions

The following section presents recommended transportation system solutions to address travel needs in Philomath. Included is a summary of the process used to develop and evaluate the recommended solutions, descriptions of the projects identified, and guidance for project prioritization with consideration to available funding.

Solutions Development Process

The project team developed the recommended transportation solutions using guidance provided by the project goals and objectives and with input from three main sources:

- Stakeholders (via committee meetings, public open house, and project website comments)
- Previous Plans (such as the 1999 TSP and Philomath Safe Routes to School Plan)
- Independent Project Team Evaluation (Technical Memoranda #5 and #7)

Consistent with the project goals, solutions development focused on creating a balanced system able to provide travel options for a wide variety of needs and users. The project team has ensured that the solutions included lower-cost improvements to enhance existing infrastructure and extend its useful life rather than relying solely on the construction of new facilities, which require substantial funding and may have greater impacts on the environment and adjacent property.

Solutions Evaluation Process

All recommended solutions were compared to a set of qualitative evaluation criteria to aid in project prioritization decisions. The evaluation criteria, listed below, were developed directly from the project goals and objectives outlined in Technical Memorandum #4 and are intended to indicate how strongly each solution supports community-expressed interests.

Goal 1: Maintain efficient motor vehicle travel along the street network and through US20/OR34.

Evaluation Criteria

a. Project creates new network connections for motor vehicles.
b. Project improves existing connections.
c. Project improves a specific operational bottleneck.

Goal 2: Develop a transportation system that provides mobility and accessibility for all members of the community and reduces reliance on motor vehicle travel.

Evaluation Criteria

a. Project improves the transportation network for active transportation modes.
b. Project is near or serves a community activity generator.
c. Project improves safe routes to schools.
d. Project improves pedestrian roadway crossings.
e. Project includes an ADA improvement component.
f. Project improves transit service.
g. Project improves pedestrian or bicycle access across US20/OR34.

Goal 3: Enhance transportation safety.

Evaluation Criteria

a. Project improves safe routes to school.
b. Project is primarily a safety improvement.
c. Project is a safety improvement for pedestrians or bicyclists.
d. Project improves a route used for emergency response or evacuation.

Goal 4: Develop and maintain a transportation system that supports economic vitality.

Evaluation Criteria

a. Project improves downtown core pedestrian and bicyclist environment.
b. Project provides improvements for freight travel.
c. Project increases access to employment centers.

Goal 5: Provide a sustainable transportation system through responsible stewardship of financial and environmental resources.

Evaluation Criteria

a. Project preserves and maintains existing transportation network.
b. Project involves funding collaboration with other agencies or groups.
c. Project minimizes impacts to natural resources.
d. Project uses technology to improve the transportation network.

Goal 6: Maintain coordination with local and state agencies and plans.

Evaluation Criteria

a. Project includes regional connections.

As shown, a selection of the objectives was translated into project-oriented evaluation criteria for each goal. Each project was scored independently for each goal, receiving one point per evaluation criteria met. The goal total was converted to a percentage (100% if all evaluation criteria for that goal were met, 0% if none were met). The total project score is the average of all six goals, with goals being evenly weighted. These project scores were converted into High, Medium, and Low Priority groupings. Currently, projects scoring better than 50% are rated "High", between 50% and 30% are rated "Medium," and at or under 30% are rated "Low." The project descriptions in Tables 14, 16, 17, and 18 show how each solution was rated.

Recommended Solutions

Tables 14 through 18 and Figures 11 through 17 describe the recommended solutions for Philomath's transportation system through the year 2040. Solutions are presented in four categories (order does not imply priority):

1. Connectivity and Congestion
2. Safety
3. Active Transportation
4. Transit

Each solution was assigned a primary source of funding for planning purposes (City, County, State, or private development), although such designations do not create any obligation for funding. The TSP will provide a prioritized list of "City" projects (where the City is assumed to be the primary contributor of funding) that is constrained to a 20-year funding estimate. The TSP will also provide a prioritized list of "State" projects that the City could use to make decisions for applying for grants or other funding mechanisms. While there may be "County" projects that the City would like to be prioritized in the next 20 years, these decisions are ultimately up to the County. The City can, however, choose to provide funds to help support State or County projects—thus, expediting the timeline on those projects the City would like prioritized. "Private development" projects will likely be built in coordination with land use actions and future development. Only projects associated with new development on vacant parcels were assumed to occur within the planning horizon of the TSP. While projects related to property redevelopment may occur within the TSP planning horizon, no funding was assumed.

Connectivity and Congestion

These projects seek to create a connected local and regional transportation network in Philomath and address a limited number of key bottlenecks.

New roadways should be aligned with existing street intersections when constructed. Alignments shown on maps within this document are conceptual. Final alignments will be dependent on approved development plans at the time of construction.

Table 14: Proposed Connectivity and Congestion Solutions

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
ITS-2	ITS	Freight Traffic Signal Priority	N/A	ODOT	High	Central Willamette Valley ITS Plan 2010
	Support regional efforts to implement advanced traffic signal technologies for freight traffic, such as phase priority, dynamic green light extension, and dilemma zone monitoring. Project is subject to ODOT approval.					
NR-1	New Road	Extend Clemens Mill Road to West Hills Road	$10,000,000 / $1,100,000	Private Development / County	Medium	TSP 1999
	Extend Clemens Mill Road to connect with West Hills Road east of the Portland and Western Railroad Crossing. Project is dependent on forecasted development and should be implemented along with development; project alignment is conceptual. Coordination with Benton County and the City of Corvallis needed to extend road outside of Philomath UGB and into the Corvallis UGB, and will require approval of a Statewide Planning Goal exception from DLCD since the road serves urban purposes. Project is related to Clemens Mill Road Modernization, project NR-7					
NR-2	New Road	Extend 26th Street to Chapel Drive	$6,000,000 / $3,000,000	Private Development / City	Low	TSP 1999
	Connect South 26th Street to Chapel Drive as a minor collector.					
NR-3	New Road	New Minor Collector (North 19th Street to West Hills Road)	$12,500,000 / $6,300,000	Private Development / City	Low	New Project
	New east-west minor collector, connecting North 19th Street eastward to West Hills Road.					
NR-4	New Road	New Minor Collector (West Hills Road to New Minor Collector)	$4,000,000 / $2,000,000	Private Development / City	Low	New Project
	New north-south minor collector, connecting West Hills Road southward to New Minor Collector NR-3.					
NR-5	New Road	New Minor Collector (Industrial Way to West Hills Road)	$5,700,000 / $2,900,000	Private Development / City	Low	New Project
	New north-south minor collector, connecting Industrial Way northward to West Hills Road.					
NR-6	New Road	New Minor Collector (North 9th Street to New Minor Collector)	$4,800,000 / $2,400,000	Private Development / City	Low	New Project

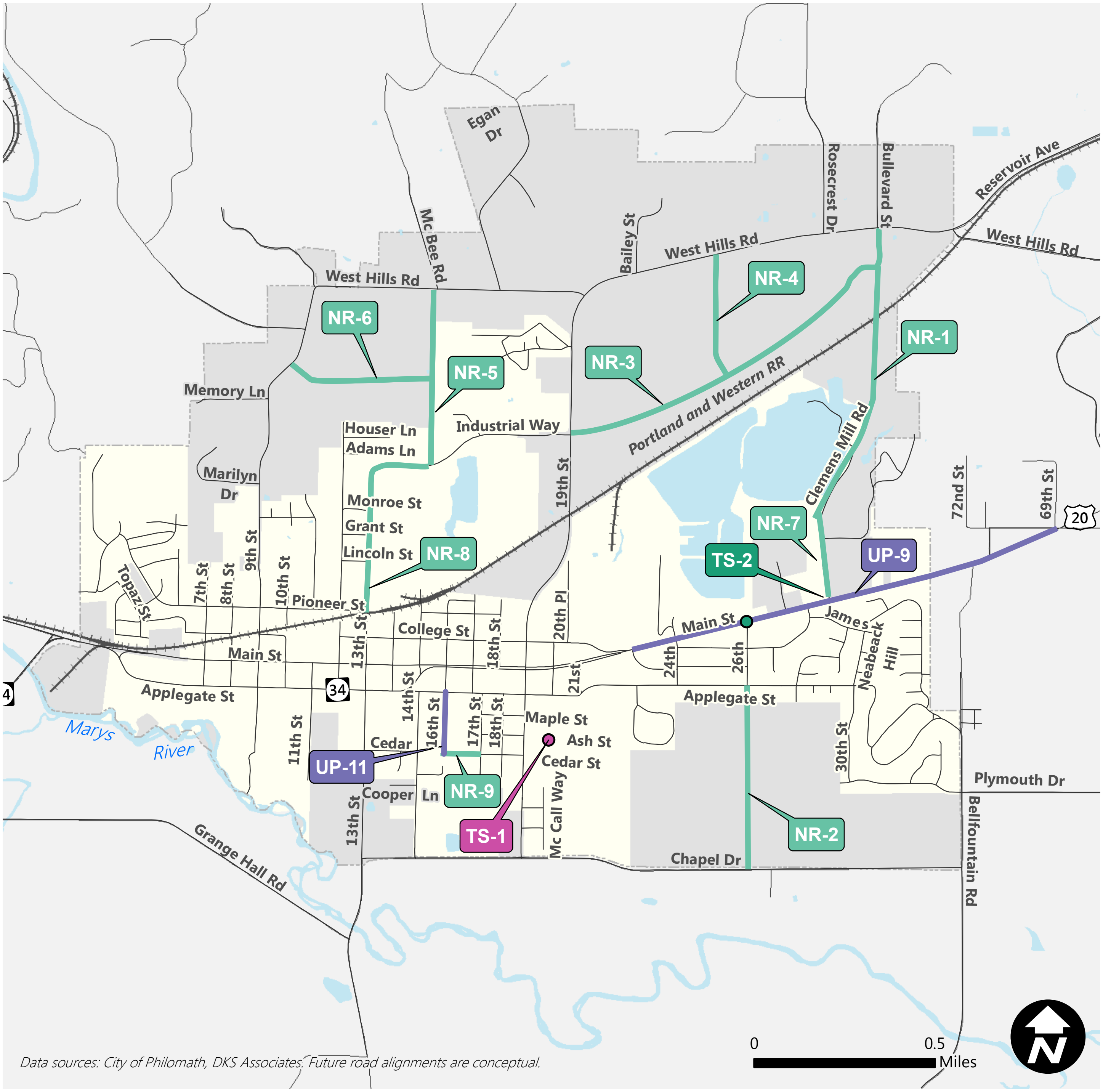
Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
	New east-west minor collector, connecting North 9th Street eastward to New Minor Collector.					
NR-7	New Road Modernization	Clemens Mill Road Modernization	$4,400,000 / $2,200,000	Private Development / City	Low	TSP 1999
	Modernize Clemens Mill Road to Minor Collector standards with adjacent shared-use path (project SUP-6). Project is dependent on forecasted development and should be implemented along with development; project alignment is conceptual. Project is related to traffic signal TS-2, when warranted. *Before a signal can be installed, an engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward intersection traffic control recommendations to ODOT headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.*					
NR-8	New Road	North 13th Street Extension	$4,100,000 / $2,900,000	Private Development / City	Low	New Project
	North 13th Street Extension to Industrial Way. May include access management such as cul-de-sacs on Grant Street and Lincoln Street to limit access on 13th Street.					
NR-9 / Up-11	New Road / Upgrade	South 16th Street Modernization and Extension	$2,200,000	City	Medium	New Project
	Extend South 16th Street to 17th Street opposite Cedar Street, and modernize South 16th Street from Applegate to new extension. Construct to Local Street standard.					
TS-1	Traffic Study	School Vehicle Circulation Study	$20,000	City	Medium	Stakeholders
	Develop analysis and design options to address issues with bus access, private vehicle access, school student highway crossings, local neighborhood access and turn movement restrictions.					
TS-2	Traffic Signal	Install a Traffic Signal at the Intersection of US20/OR34 (Main Street) and Clemens Mill Road	$600,000	ODOT	Medium	Modified from TSP 1999
	Install traffic signal, when warranted. Project is subject to ODOT approval. *Before a signal can be installed, an engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward intersection traffic control recommendations to ODOT headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway. Meeting a signal warrant does not guarantee approval for signal installation.*					
Up-9	Full Street Upgrade	US20/OR34 Widening Project	$43,200,000	ODOT	High	CAMPO RTP 2012
	Widen US20/OR34 to four lanes east of Newton Creek to SW Country Club Drive, per CAMPO RTP project. Project is subject to ODOT approval.					
Up-10	Full Street Upgrade	US20/OR34 Widening Project: Corridor Refinement Plan and Preliminary Engineering	$1,000,000	ODOT	High	New Project

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
	Corridor refinement plan and preliminary engineering for the US20/OR34 Widening Project (Up-9). Provide updated design that meets current community needs and provides guidance for private development and funding opportunities.					

FIGURE 11
Proposed Connectivity and Congestion Solutions

City of Philomath
Transportation System Plan
October 2017

DKS



Project Categories

- Full Street Upgrade (Up-#)
- New Road (NR-#)
- Traffic Signal (TS-#)
- Traffic Study (TS-#)
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Safety

Safety projects are motivated primarily by a documented crash history or reported concerns. These projects seek to create a safer transportation system and reduce the harm done by vehicle collisions.

Table 15: Proposed Safety Solutions

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
Cr-1	Crossings	US20/OR34 & 17th Street Highway Crossing Improvements	$80,000	ODOT	Medium	Philomath Safe Routes to School Plan 2011
	Install highway crossing improvements which could include: provide second crosswalk on east leg of intersection, replace existing beacon light with street-level Rectangular Rapid Flash Beacons (RRFBs) system, enhance signing and stop bar distance, provide bicycle cut-through in median. Project is subject to ODOT approval.					
Int-1	Intersection Modification	Relocate ODOT Weigh Station	$1,500,000	ODOT	High	New Project
	Remove the weigh station on US20/OR34 at 26th Street. The weigh station will be relocated outside of the Philomath UGB by ODOT. Project is subject to ODOT approval.					
Int-2	Intersection Modification	US20/OR34 & 26th Street Intersection Improvements	$950,000	ODOT	High	New Project
	Provide a left turn lane on the highway and consider access management treatments for nearby driveways. Related projects include removal of ODOT weigh station (Int-1). Project is subject to ODOT approval.					
Int-3	Intersection Modification	US20/OR34 & 19th Street Intersection Improvement	$950,000	ODOT	Medium	TSP 1999 and Stakeholders
	Re-grade roadway to remove vertical crest issue at US20/OR34 at 19th Street, where trucks routinely hit and damage the pavement on the northbound approach. Project is subject to ODOT approval.					
ITS-1	ITS	9th Street Hill Improvements	$75,000	County	Medium	Stakeholders
	Implement active safety treatment to warn motorists of bicyclists and pedestrians in the roadway. Examples include driver speed feedback signs or actuated flashers with signs (activated by bicycles or pedestrians).					
Li-1	Lighting	US20/OR34 at 13th St. and 14th St. Intersection Lighting Analysis and Enhancement	$150,000	City	Low	Stakeholders
	Ensure crosswalk lighting and sight distance meets applicable standards, provide additional street lighting as needed. Coordinate with Downtown Streetscape design. ODOT does not generally provide lighting at unsignalized intersections.					
Li-2	Lighting	19th Street and Applegate Street Lighting Improvement	$75,000	City	Low	Stakeholders
	Improve lighting at 19th Street and Applegate Street					
Li-3	Lighting	North 12th Street Lighting	$2,011,000	City	High	Stakeholders

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
	Add street lighting to 12th Street north of Main Street.					

ODOT Weigh Station Relocation

The relocation of the ODOT Weigh Station on US20/OR34 at 26th Street would provide benefits to both ODOT and the Philomath community. Although originally installed outside of the city limits on a rural highway, due to the growth of the city the weigh station is now located within an urbanized area. Removal would provide additional right-of-way for intersection improvements, enhance sight distance for vehicles leaving 26th Street, and reduce conflicts with large trucks.

ODOT Motor Carrier Field Services advises that the scale is operationally substandard and functionally obsolete for many reasons, including:

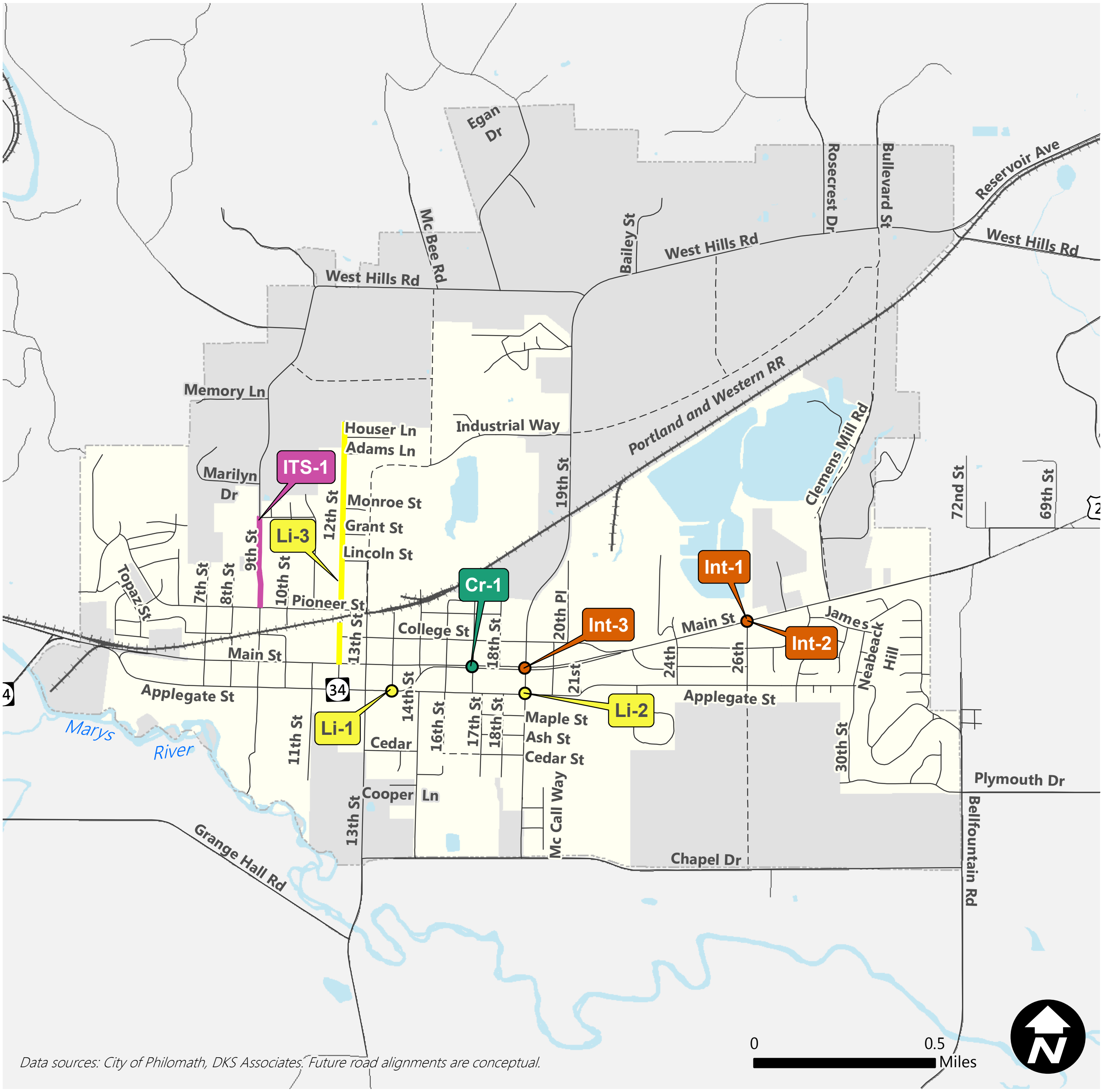
- A lack of adequate & safe stacking for trucks waiting for the weigh station, which results in trucks being “waved off” and not getting weighed.
- A lack of clearance between lanes and the weigh station.
- Insufficient security within the scale office to allow the weigh station operator to review sensitive information such as truck operator licensing status.

The need for improved truck scale operations is significant, as ODOT Freight Division anticipates that the recent completion of the Pioneer Mountain-Eddyville/US 20 project in October 2016 will increase the number of trucks traveling along this route.

Motor carrier supports relocation of the truck scale. However, the actual cost, future location and funding source(s) are unknown at this time. The TSP will reference the Freight Scale relocations in the Plan – but will not include it on the list of financially constrained projects that are expected to occur within the next 20 years – since actual funding sources have not been identified.

FIGURE 12
Proposed Safety Solutions

City of Philomath
Transportation System Plan
October 201.



Project Categories

- Intelligent Transportation Systems (ITS-#)
- Crossings (Cr-#)
- Intersection Modification (Int-#)
- Lighting (Li-#)
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Active Transportation

Active transportation investments provide safer designated space for walking and biking that makes travel by these modes more comfortable and attractive in Philomath.

Table 16: Proposed Active Transportation Solutions

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
Bicycle Projects						
B-1	Bicycle	Regional Bike Hub	$25,000	City	Low	Stakeholders
	Support a Regional Bike Hub and integrate with the Corvallis-to-the-Sea Trail. Provide bicycle parking and amenities, such as local route and services wayfinding, bike repair info, and water. See below for example photos.					
B-2	Bicycle	Bicycle Wayfinding	$50,000	City	High	Stakeholders
	Develop a plan and provide a bicycle wayfinding signage network to help guide bicyclists to and from the regional path connections (such as the Hunsacker Bike Path) and to local destinations via bike routes. Publish and publicize maps of the local bike network.					
SR-1	Shared Roadway	North 13th Street Safe Routes to School Upgrades	$5,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install shared lane markings on 13th Street between Pioneer Street and College Street. Related to projects Cr-1 and Cr-2 / BL-1					
SR-2	Shared Roadway	North 17th Street Safe Routes to School Upgrades	$5,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install shared lane markings on 17th Street between College Street and Applegate Street. Related to projects Cr-1 and Cr-2 / BL-1					
SR-3	Shared Roadway	Plymouth Drive Bike Route	$10,000	City	Low	TSP 1999
	Create bike route with route signing and shared roadway markers connecting Applegate Street with Plymouth Drive via. Southwood Drive and 30th Street.					
ITS-3	ITS	Bike Signal Detection	$25,000	ODOT	Medium	Stakeholders
	Add bicycle detection and placement stencils to signalized side street approaches on US20/OR34. Project is subject to ODOT approval.					
Pedestrian Projects						
Cr-3	Crossings	Cedar Street (13th Street to Willow Street & 15th Street)	$7,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install two new curb ramps on the NE and SE corners of 15th Street and Cedar Street, install new crosswalks on the north leg of the intersection of 15h Street and Cedar Street					

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
SW-4	Sidewalk	17th Street Sidewalks (Applegate Street to 19th Street & Cedar Street)	$50,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Replace 120 feet of sidewalk on the east side of 17th Street south of Maple Street, install ten new curb ramps					
SW-6	Sidewalk	Westbrook Park Sidewalk	$10,000	City	Low	Stakeholders
	Complete the sidewalk (north and east sides) around Westbrook Park					
Pedestrian and Bicycle Projects						
Cr-2 / BL-1	Crossings and Bike Lane	College Street Safe Routes to School Upgrades	$30,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install new crosswalks on north and east legs of the intersection of College Street and 13th Street, and on the north and south legs of the intersection of College Street and 15th Street. Install 5 ft. bike lanes along College Street between 13th Street and 20th Place, which will require removal of parking on the north side of the street between 19th Street and 20th Place. Related to projects SR-1 and SR-2.					
SUP-1	Shared-Use Path	19th Street Shared-Use Path	$5,000,000	County	High	Stakeholders
	Shared-Use Path providing access to residential areas on 19th Street, and providing a connection between Philomath and Corvallis. From US 20/OR 34 to Reservoir Ave., path follows the east side of the road (greenfield), after Reservoir Ave. crosses to the north side to avoid conflicts with railroad and to connect with the Bald Hill and Midge Cramer paths.					
SUP-2	Shared-Use Path	Philomath Rodeo Grounds Path	$125,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install 750 feet of new Shared-Use Path through the Philomath Rodeo Grounds connecting 11th Street, Marys River Park and the intersection of 13th Street and Cedar Street, construct new curb ramp at the NW corner of 13th Street and Cedar Street, install new crosswalk on the north leg of the intersection of 13th Street and Cedar Street.					
SUP-3	Shared-Use Path	Willow Street/Cedar Street Path (Willow Street to Cedar Street)	$225,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install 650 feet of new Shared-Use Path following the existing informal trail between 17th Street and Cedar Street and Willow Street through Philomath Public Works, install signage on Willow Street to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.					
SUP-5	Shared-Use Path	US20/OR34 & Applegate Bike	$250,000	City	High	Stakeholders

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
		Access Improvements				
	Improve bike facilities and routing at US20/OR34 and Applegate. For westbound traffic, provide wayfinding signing to route bicyclists to 17th Street for US20/OR34 westbound. For eastbound traffic, provide wayfinding and safety improvement to better separate bike traffic from vehicle traffic encroaching in the bike lane on the curve. Examples would be to provide a shared-use path adjacent to the highway from South 14th Street to South 16th Street or enhanced delineation along fog line between South 15th Street and South 16th Street. Project components on ODOT right-of-way are subject to ODOT approval.					
SUP-6	Shared-Use Path	Clemens Mill Road	$455,000	City (Parks)	Medium	Philomath Park Master Plan (2012)
	This 8 ft. wide hard surface trail would run approximately 1.36 miles, following the alignment of the extended Clemens Mill Road and connecting to the existing Hunsacker Bike Path at US20/OR34. The trail width would be a minimum of 10 feet when running adjacent to Clemens Mill Road.					
SUP-7	Shared-Use Path	Hunsaker Trail South to Chapel Drive and North	$120,000	City (Parks)	Medium	Philomath Park Master Plan (2012)
	This 8 ft. wide hard surface trail would run approximately 1 mile along the western and eastern branches of Newton Creek through the City Park and connect with other new shared-use paths connecting to Chapel Drive, Plymouth Drive, and Applegate Street. The path connects to the existing Hunsacker bike path.					
SUP-8	Shared-Use Path	Industrial Way to N. 9th Street	$79,000	City (Parks)	Medium	Philomath Park Master Plan (2012)
	The northwest quadrant of the City would benefit from a trail from Industrial Way (city park property) west along the riparian corridor to N 9th Street. This trail would feed into a north/south trails system on N. 12th that would serve this developing area and bicyclists on West Hills Road. Approximate length of .57 miles.					
SUP-9	Shared-Use Path	12th Street to West Hills	$79,000	City (Parks)	Medium	Philomath Park Master Plan (2012)
	The 12th Street path is intended to be coordinated with improvements to 12th Street as an off-street path. This path will run from Pioneer Street to connect with West Hills Road; it is to be coordinated with possible Benton County bike paths and will intersect with the possible park and the east/west path that would run into 9th Street, thereby avoiding the steep elevation changes on that street. The overall length of this north/south leg is 0.89 miles.					
SUP-10	Shared-Use Path	Southside Bikeway: Bellfountain Road to Marys River Park	$292,000	City (Parks)	Medium	Philomath Park Master Plan (2012)
	This path will run from Bellfountain Road, through the Lowther Property then to Marys River Park. The overall length of this south leg is 2.11 miles.					

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
SUP-11	Shared-Use Path	Chapel Drive	$4,607,000 / $328,000	Private Development / County	High	Adapted from CAMPO RTP 2012
	Add Shared-Use Path, separated from road by a 5’ planter strip, to north side of Chapel Drive. Requires coordination with County CIP project for Chapel Drive improvements.					
SUP-12	Shared-Use Path	Bellfountain Road	$562,000 / $0	Private Development / County	Medium	New Project
	Add Shared-Use Path, separated from road by a 5’ planter strip, to west side of Bellfountain Road (Plymouth to Chapel).					
SW-2 / SR-4	Sidewalk and Bike Route	Pioneer Street Safe Routes to School Upgrades (Adelaide Drive to 9th Street)	$80,000	City	Low	Philomath Safe Routes to School Plan 2011
	Install 310 feet of new sidewalk on north side of Pioneer Street between 7th Street and 8th Street, install seven new curb ramps, install four new crosswalks, install shared lane markings along Pioneer Street between Adelaide Drive and 9th Street					
SW-3 / SR-5	Sidewalk and Bike Route	Pioneer Street Safe Routes to School Upgrades (9th Street to 13th Street)	$25,000	City	Low	Philomath Safe Routes to School Plan 2011
	Repair or replace heaved and damaged sidewalk on the north side of Pioneer Street between 10th Street and 11th Street, install five new curb ramps. Install two new crosswalks, control intersection of Pioneer Street and 13th Street as an all-way stop when 13th Street is extended to Industrial Drive, install shared lane markings along Pioneer Street between 9th Street and 13th Street.					
SW-5 / BL-2	Sidewalk and Bike Lanes	Applegate Street (16th Street to 21st Street)	$25,000	City	Medium	Philomath Safe Routes to School Plan 2011
	Install new curb ramp on south side of Applegate Street at the intersection with 17th Street, install bike lanes on Applegate Street from 16th to 21st Street by removing on-street vehicle parking from one side of the street.					
Up-1	Full Street Upgrade	Downtown Safety and Streetscape Project	$5,300,000 / $4,000,000 / $3,700,000	City / Urban Renewal District / ODOT	High	Downtown Streetscape Plan
	The Downtown Safety and Streetscape Project Plan is for the downtown Philomath area along Main Street and Applegate Street between 7th Street and 14th Street. The project includes sidewalks, bike lanes, intersection bulb-out crosswalks with improved signing and striping, pedestrian-scale lighting, and landscaping. Project is subject to ODOT approval.					

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
Up-2	Full Street Upgrade	Enhance Existing Local Streets	Variable	City	Low	Stakeholders
	Upgrade existing local streets to City standards. As an interim improvement, apply a Rural Yield Roadway design, maintaining full local street standards for new construction.					
Up-3	Full Street Upgrade	19th Street Urban Upgrade	$19,900,000 / $0	Private Development / County	High	New Project
	Upgrade North 19th Street to Collector standards, including bike lanes on both sides and sidewalks on the west side. Paired with project SUP-1; a Shared-Use Path on the east side.					
Up-4	Full Street Upgrade	North 9th Street Urban Upgrade	$4,250,000 / $4,250,000	Private Development / County	Medium	New Project
	Upgrade North 9th Street to Major Collector standards. Project would be implemented in three phases. Phase 1 includes Pioneer Street to Quail Glenn Drive ($1,190,000 County). Phase 2 includes US20/OR34 to Pioneer Street ($710,000 County). Phase 3 includes Quail Glenn Drive to North 19th Street ($6,600,000 Private Development).					
Up-5	Full Street Upgrade	West Hills Road Urban Upgrade	$5,900,000 / $0	Private Development / County	Medium	New Project
	Upgrade West Hills Road to Major Collector standards.					
Up-7	Full Street Upgrade	South 13th Street Urban Upgrade	$2,100,000 / $2,100,000	Private Development / County	High	CAMPO RTP 2012
	Improve South 13th Street to major collector standards (includes bike lanes and sidewalks).					

A regional bike hub (Project B-1) is a way for the City to support bicycle travel within the city and regionally, by providing a central location for bicycle wayfinding, water, basic repair tools, and other bicycle outreach materials. These are often located near major regional trails or civic locations, such as the City Hall. Figure 13 below shows an example from Estacada, Oregon.

Figure 13: Example Regional Bike Hub from Estacada, Oregon

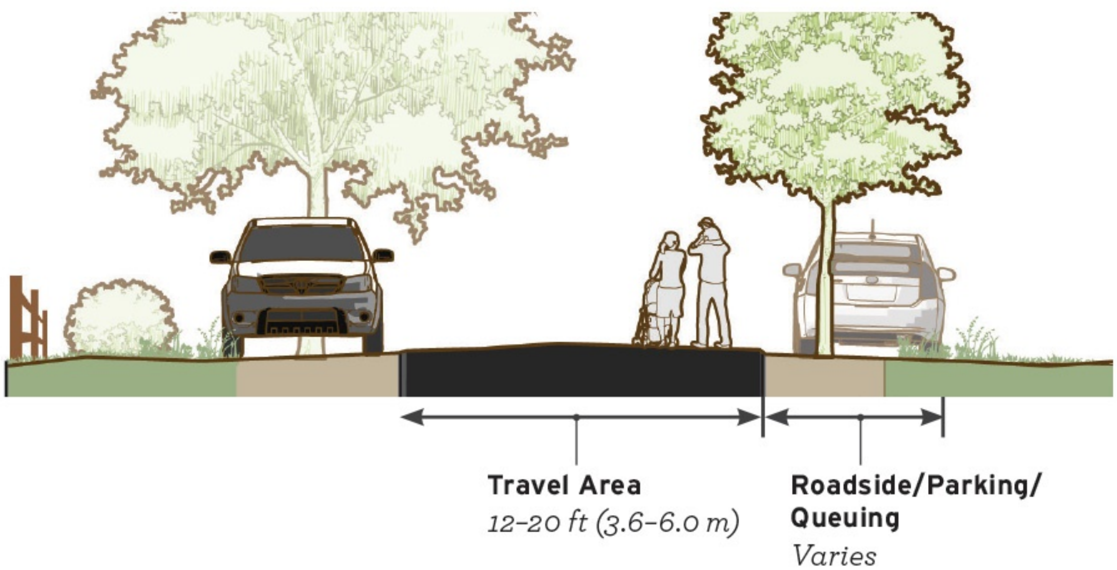
Interim Local Street Improvements

Philomath's established neighborhoods have many existing local streets that do not provide separated sidewalks for pedestrians. Ultimately, the City should construct sidewalks on such streets. However, recognizing that sidewalk construction through existing neighborhoods can be challenging and costly and that it will likely take a long time to complete such an effort, it is recommended that low-cost interim improvements be implemented to support pedestrian safety.

The Federal Highway Administration's recently published Small Town and Rural Multimodal Networks[4] guidebook describes treatments that may be appropriate for these situations. In particular, a treatment referred to as a "Yield Roadway" would provide near-term benefits at a minimal investment.

Yield Roadways are intended for very low volume (up to 400 vehicles per day) and very low speed local streets. As illustrated in Figure 14, the paved two-way travel lane should be narrow (12 to 20 feet) to encourage slow travel speeds and require courtesy yielding when vehicles traveling in opposite directions meet. The shoulders are unpaved, typically consisting of gravel or earth, and allow for natural stormwater management. The shoulders can be used for parking, as a pullout for passing vehicles on narrower roadways, or intermittent landscaping to visually narrow the corridor and add aesthetic value. Pedestrians walk on the paved street surface.

Figure 14: Illustration of a typical Yield Roadway cross-section



Source: Small Town and Rural Multimodal Networks guidebook

No pavement markings should be applied as part of a Yield Roadway treatment, but warning signing should be installed to increase motorist awareness that they are sharing the road with pedestrians. Potential signage could include a pedestrian warning sign with ON ROADWAY legend plaque, as shown at right.

[4] http://ruraldesignguide.com/

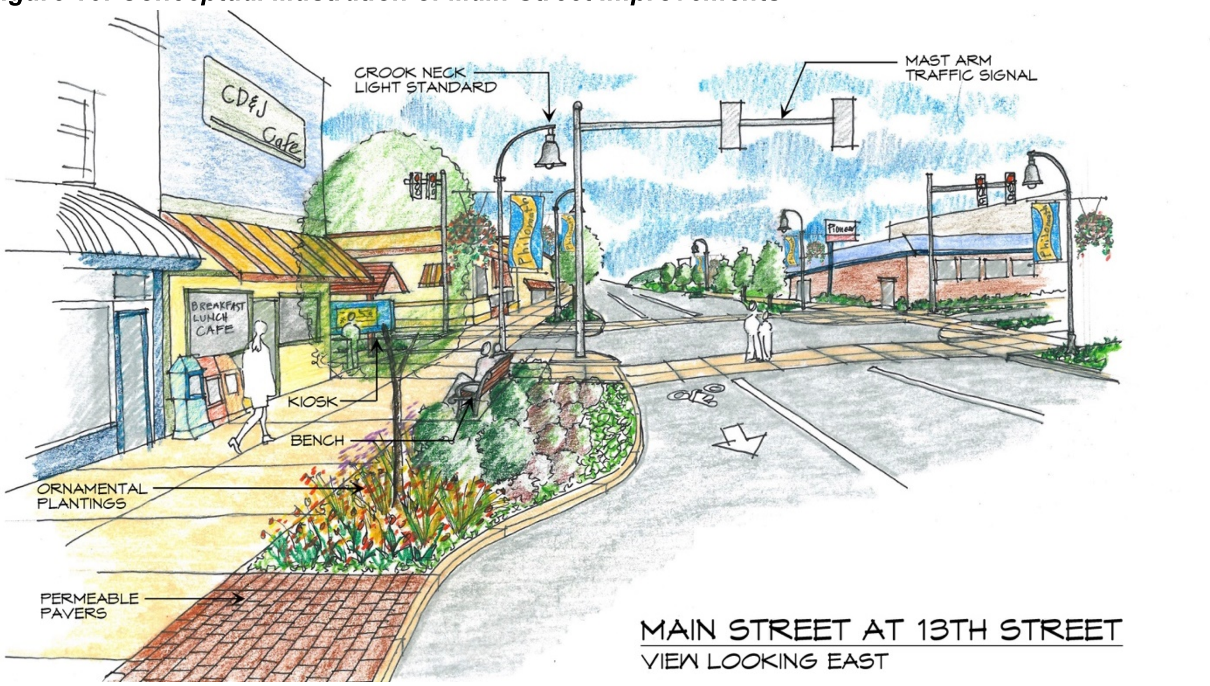
Downtown Safety and Streetscape Project Review

The 2007 couplet reconfiguration of US20/OR34 successfully improved the flow of traffic through Philomath's downtown core. However, due to funding constraints, that project did not address the area along Main Street and Applegate Street between 7th Street and 14th Street.

The City recognizes this gap and has actively taken steps to address it. Aided by the Philomath Downtown Association (PDA), the City completed the Downtown Design Plan and Business Mix Study in 2009. This study included conceptual level plans for public improvements within the central business district, as shown in Figure 15. The Urban Renewal District (URD) Area and URD Plan, amended in 2010, includes the Downtown Multi-Modal Connectivity & Streetscape Improvements Project as a Plan project. It has since been renamed as the Downtown Safety and Streetscape Project.

The City has recently secured substantial funding from the Philomath URD and ODOT for construction of the downtown improvements. The first phase, the size of which will depend on the City's ability to secure remaining funding, is expected to be complete in the fall of 2019.

Figure 15: Conceptual illustration of Main Street Improvements



While design details are currently under consideration by a stakeholder committee, previously proposed key elements affecting transportation include:

- Widening sidewalks from 10 feet to 17 feet. This extra width would be taken from the existing parking lanes, which would be reduced from 14-16 feet to 8 feet.
- Adding curb extensions on most corners. Curb extensions would be 8 feet wide, covering the width of the parking lanes at corners.

Along with aesthetic treatments such as pedestrian-scale light poles, street furniture, and landscaping, these elements would significantly improve the walkability of downtown Philomath. The experience of crossing the highway on foot would be much improved by the project's ability to slow auto traffic, improve pedestrian visibility, and shorten crossing distances. Given the width available, the City should consider adding a 2' painted buffer to the bike lanes.

Potential Impacts on Freight Movement

US20/OR34 (i.e., Main Street and Applegate Street) through downtown Philomath has been designated as a Reduction Review Route by ODOT. ORS 366.215 states that the Oregon Transportation Commission may not permanently reduce the vehicle-carrying capacity of identified freight routes, though exceptions are allowed for safety or access considerations or if a determination is made that the reduction is in the best interest of the state.

When determining if a reduction in vehicle-carrying capacity will occur, the key element considered is whether the area needed (width and height) to accommodate legal loads and annual permitted over-dimension loads will be affected. In short, if these loads can pass through the highway segment today, they should be able to continue to do so in the future. Table 17 below summarizes the proposed changes to the area within which legal and permitted over-dimension loads pass.

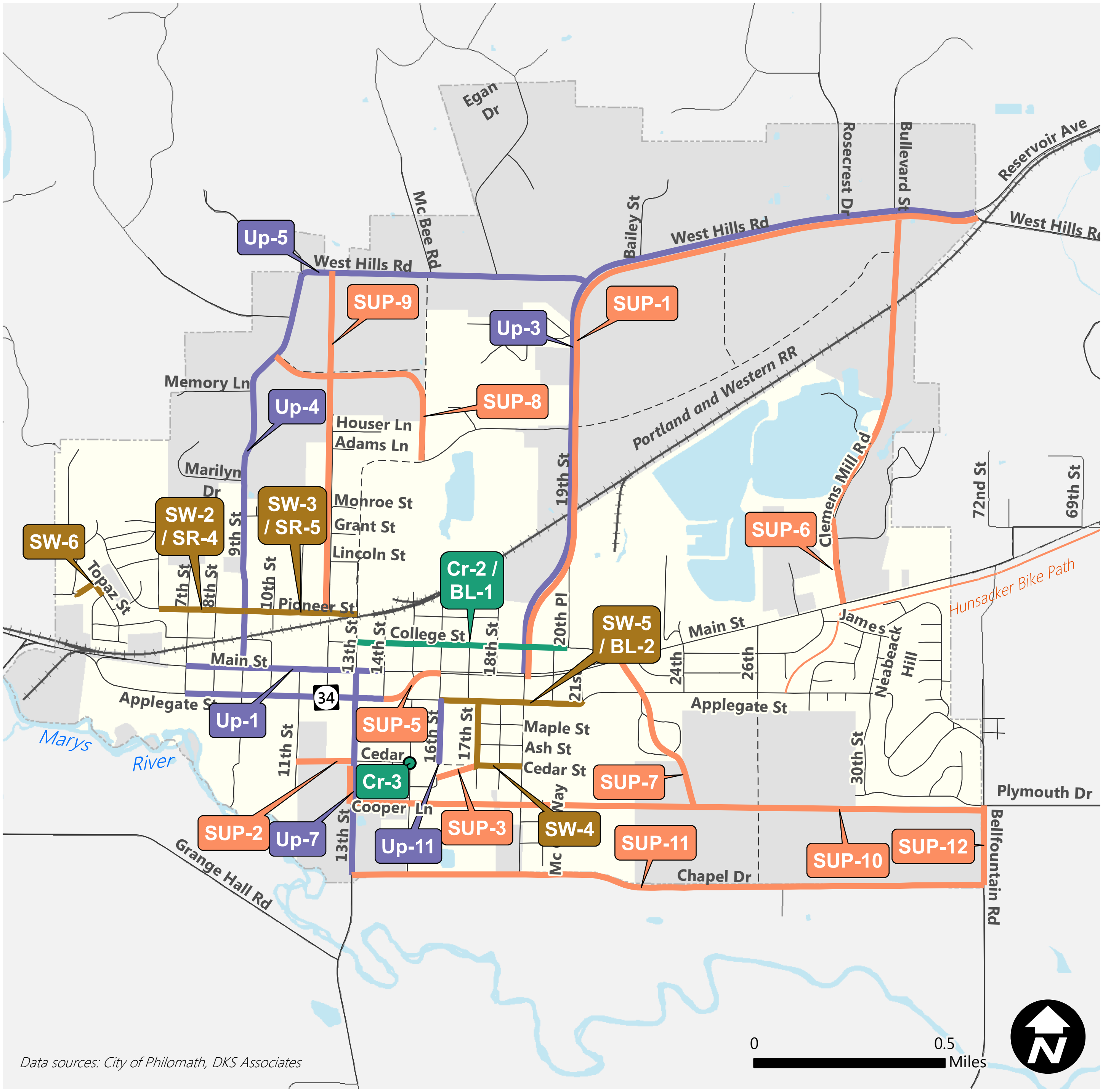
Table 17: US20/OR34 cross-section changes proposed in Downtown Philomath

Cross-section Elements	Existing Widths	Proposed Widths
Travel Lanes	12’	12’
Bike Lanes	6’	6’
Parking Lanes	14’-16’	8’
Sidewalk (includes landscape/furniture zone)	10’	17’
Curb-to-Curb	60’	46’
Curb-to-Curb at Curb Extensions	60’	30’
ROW	80’	80’

A key consideration is the curb-to-curb distance, which will be reduced from 60 feet to only 30 feet at each corner where curb extensions are constructed. Typically, this could be considered a significant reduction in the vehicle-carrying capacity of the highway. However, the segment of US20/OR34 immediately to the east, between 15th Street and College Street, has intermittent islands constructed in the median. The curb-to-curb distance through that segment is typically 28 feet wide, which is shorter than the narrowest point proposed as part of the downtown improvements. Freight vehicles may be able to straddle the medians to maneuver through this segment but because the adjacent segment between 15th Street and College Street could be considered the “pinch-point”, the construction of the downtown improvements as proposed might not result in a reduction in the vehicle-carrying capacity of US20/OR34 through Philomath. Regardless of the design details and local pinch-points, ODOT Motor Carrier Transportation Division will still have review authority.

FIGURE 16
Proposed Pedestrian Solutions

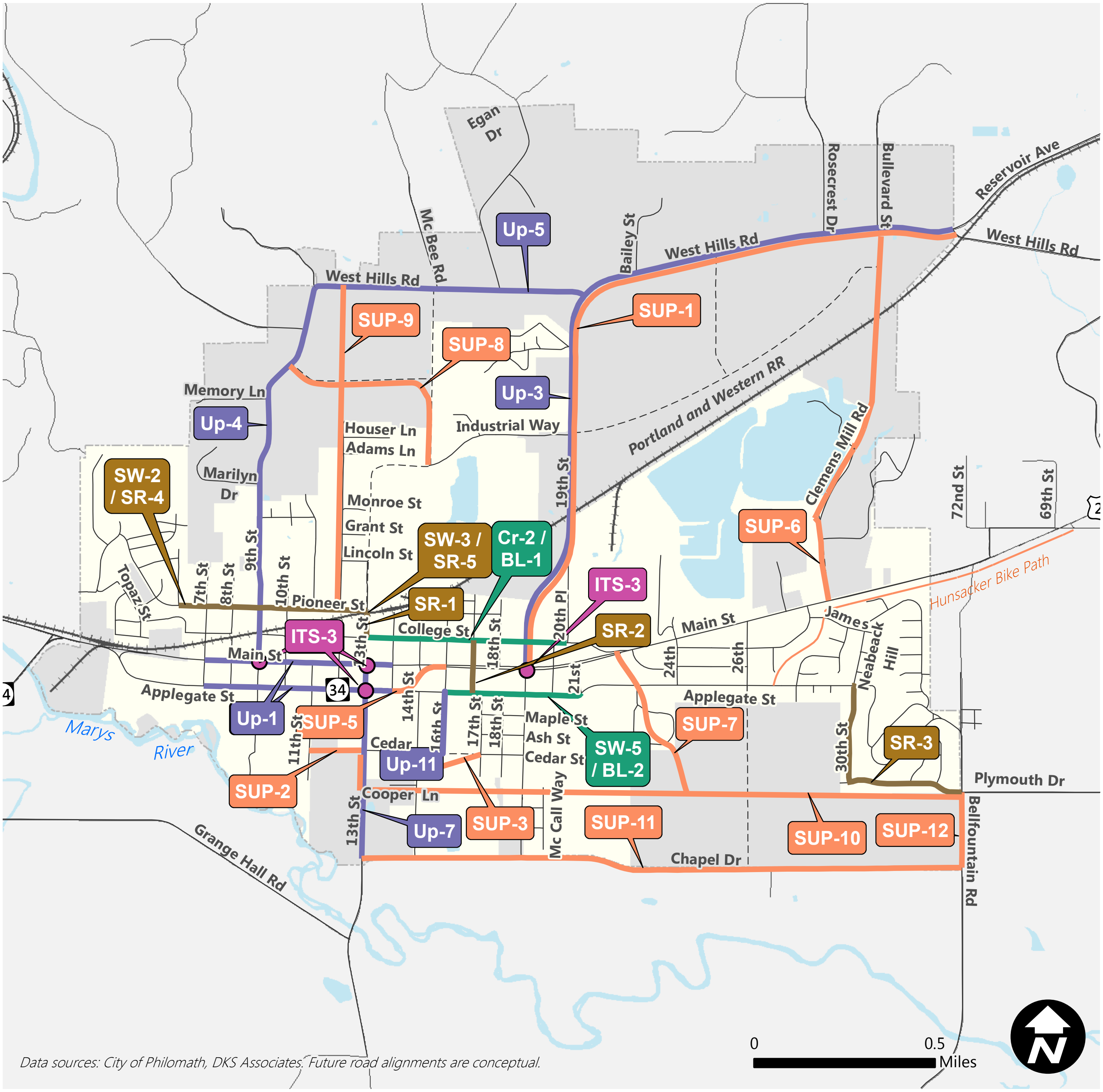
City of Philomath
Transportation System Plan
October 2017



Project Categories

Full Street Upgrade (Up-#)	Railroad
Shared-Use Path (SUP-#)	Roadway
Crossings (Cr-#)	Roadway (Future)
Sidewalk (SW-#)	Water
Crossings (Cr-#)	City Limit
	Urban Growth Boundary

FIGURE 17
Proposed Bicycle Solutions



Project Categories

- Full Street Upgrade (Up-#)
- Shared-Use Path (SUP-#)
- Shared Roadway (SR-#)
- Bike Lane (BL-#)
- Intelligent Transportation Systems (ITS-#)
- Railroad
- Roadway
- Roadway (Future)
- Water
- City Limit
- Urban Growth Boundary

Transit

These projects are suggested to promote the utility and attractiveness of transit in Philomath, and would be implemented in partnership with the Corvallis Transit System.

Table 18: Proposed Transit Solutions

Project ID	Project Type	Project Name	Cost Estimate (2017 dollars)	Primary Funding Source	Evaluation Rating	Source
Tr-1	Service Expansion	Expanded Philomath Connection Schedule	$500,000 (10-year cost)	City	Medium	Stakeholders
	Expand bus service from 6pm to 8pm during weekdays. Consider coordinating with OSU class schedule to better accommodate return trips from evening classes. Annual cost assumed to be $50,000.					
Tr-2	Amenities	Bus Stop Amenities	$40,000	City	Medium	New Project
	Improve high-usage bus stops with additional amenities. Improvements assume a bench, shelter, pad, and schedule at two locations. Cost assumed to be approximately $20,000 each.					
Tr-3	Service Expansion	Expand Transit Service Area	Variable	City	Medium	New Project
	Consider expanding transit service area where new residential and employment growth plans are substantial.					
Tr-4	Outreach	Program to Encourage Bus Ridership	$0/ $10,000	City / Council of Governments	Medium	Stakeholders
	Ridership encouragement program, such as using free bus passes to promote transit service for events or for target populations. Cost assumes two free day events per year for 20 years.					
Tr-5	Amenities	Expanded On-Bus Bike Rack Capacity	$3,000	City	Medium	Stakeholders
	Provide 3-Bike capacity on-bus bike racks for Philomath Connection busses.					

Transportation Demand Management

Transportation Demand Management (TDM) is the general term used to describe actions that remove single occupant vehicle trips from the roadway network during peak travel demand periods. As growth in the Philomath area occurs, the number of vehicle trips and travel demand in the area will also increase. Changing people's travel behavior and providing alternative mode choices will help accommodate this growth by reducing the need to build new or expanded roadways. Potential projects such as sidewalks, bicycle routes and transit enhancements which support TDM are detailed as part of the active transportation and transit system project sections. However, other TDM strategies described below should be pursued as well.

Research has shown that a comprehensive set of complementary policies implemented over a large geographic area can influence the number of vehicle miles traveled to/from that area.[5] Because Philomath is a small city with few large employers, many TDM strategies may not be widely applicable. However, as part of the Corvallis Area Metropolitan Planning Organization (CAMPO), Philomath has an opportunity to work with regional partners to implement and benefit from larger scale efforts.

The CAMPO Regional Transportation Plan (RTP)[6] identifies several TDM strategies of interest for the region. It is recommended that Philomath work with regional partners to implement these strategies where opportunities arise:

- **Trip Reduction Strategies** – Philomath should work with larger employers (e.g., 50 employees or more) to provide incentives for reducing single occupancy vehicle trips.
- **Transit Improvements** – Advancing recommended transit improvements could encourage less single occupancy vehicle use.
- **Provision of Bike and Pedestrian Facilities** – In addition to the many projects in the active transportation list, Philomath should increase bicycle parking availability in the downtown.
- **Park and Ride Facilities** – If interest in a local park and ride lot arises, Philomath could help secure public right-of-way or an agreement to use an existing private lot.[7]

Parking Supply and Management

Currently, there is not a known parking deficiency in downtown Philomath. With the Downtown Safety and Streetscape Project in place, overall parking supply will not be reduced. However, if future parking demand significantly outpaces supply, there are a variety of management options that Philomath may want to consider. Some options include:

- Time-limited parking regulations. These set time limits on continuous parking duration, and encourage vehicle turn-over thereby providing more parking opportunities.
- Pay-to-park meters. These put a cost on parking, often paired with time limits, that applies economic incentives to encourage vehicle turn-over thereby providing more parking opportunities. Various systems are available that could allow the City to price and manage parking differentially during high-demand time periods or in high-demand locations.
- Resident and Employer permits. These may be used with any other management system, to allow exemptions for local residents and employers from a time-limited or pay-to-park system. This encourages visitors to limit their parking duration while allowing flexibility for other uses.

[5] *The Potential for Land Use Demand Management Policies to Reduce Automobile Trips*, ODOT, by ECO Northwest, June 1992.
[6] CAMPO Regional Transportation Plan Update – March 30, 2017 (DRAFT)
[7] Technical Memorandum #3 recommends a code modification to allow portions of parking areas/required parking to be developed for transit-oriented uses. (PMC 18.75.030)

In the event that management does not provide adequate parking availability, off-street parking lots or structures are an option for increasing the supply of parking. If off-street parking capacity is created, it is important that it is implemented as part of an overall parking management plan that encourages drivers to choose off-street parking. Ideally, off-street parking structures should be designed in a way that maintains the potential for current mixed-use or future repurposing. Mixed-use designs include features such as ground-floor retail, while design for future repurposing includes features such as level floors and exterior access ramps.

Other elements to consider when implementing parking policy reform include:

- Bicycle parking. Convenient and secure bicycle parking is an essential element of a complete multimodal transportation system. The City can improve the supply of bicycle parking by installing additional racks and setting standards for high-quality designs.
- Loading zones. In areas where business activity requires dedicated loading zones, or where private pickup and drop off activity is high, a loading zone can ensure curb availability even during high parking demand.
- Minimum parking requirements. The City could consider revising the minimum on-site parking requirements for small downtown lots to remove potential barriers to new development and encourage shared parking lots for compatible businesses.

Future Performance of the Improved Transportation System

If constructed, the recommended projects would significantly improve transportation to and through Philomath for all modes of travel and would achieve the community's goals. The projects provide a balance of investments that advances safer and more connected alternatives to motor vehicles, while focusing investment into a limited number of locally important locations in a manner that promotes economic vitality and responsible stewardship.

As noted previously, no significant motor vehicle congestion is anticipated in Philomath through 2040 and adopted mobility standards are projected to be met even without improvements. However, the recommended new streets will enhance connectivity and ensure efficient travel routes are provided when future development occurs. By providing more local street travel options, the projects work to reduce the burden on the critical highway links while increasing resilience to non-recurring disruptive events. The greatest source of recurring congestion for Philomath residents is on US20/OR34 east of the UGB, where local and regional travel converge to create a major bottleneck. Therefore, continued cooperation with regional partners to advance improvements in the corridor should be a priority.

The Downtown Streetscape Improvements may have a significant impact on the economic vitality of the downtown area and will dramatically improve the safety and attractiveness of walking and biking. With increasing motor vehicle traffic on the highway, including freight traffic, the investment in the walking and biking environment will greatly reduce the barrier effect of the highway and provide improved accessibility for all members of the community.

The network of active transportation facilities, including several new shared-use paths will provide non-motorized travel access across town and to regional attractions beyond the UGB. Integration with regional active transportation networks provides new opportunities for healthy living and economic vitality, and will let more visitors experience the community of Philomath.

Investing in expanded transit service hours will provide greatly enhanced utility by allowing more interested riders to make round trips to and from work or school or complete other types of trips later in the day. A more useful transit system, along with user-friendly investments such as bus stop amenities, may promote increased ridership.

Financially Constrained and Aspirational Project Lists

The recommended projects include all identified projects for improving Philomath's transportation system, regardless of their priority or their likelihood to be funded. The TSP planning process eliminates any project that may not be feasible for reasons other than financial limitations (such as environmental or existing development limitations). The recommended projects will be divided into two lists based on their priority and likelihood to be funded. The Financially Constrained Project List identifies the highest priority projects that could be constructed with anticipated funding through 2040. The Aspirational Project List refers to all other recommended projects that are not included in the Financially Constrained Project List.

With an estimated $200.2 million worth of recommended transportation system projects identified in Tables 14 through 18, the City must make reasonable investment decisions to develop a set of transportation improvements that will likely be funded to meet identified needs through 2040. As detailed in Technical Memorandum #6, the City expects to have approximately $3.45 million ($1.48 million unrestricted) to spend on the more than 30 transportation improvements for which they will be the primary source of funding through 2040. It would take over $25 million to construct all the projects, meaning over $21.5 million in investments will not be funded.

The City has also identified over $60.4 million worth of investments along US20/OR34. The City has recently secured $3.7 million from ODOT for the US20/OR34 Downtown Improvement project, and the Philomath Urban Renewal District is contributing another $4 million. In addition, ODOT has indicated that it would be reasonable to assume that up to $2 million would be available to fund other new projects in Philomath over the next 20 years. Again, over $52.7 million worth of projects on the state system are not expected to be funded within the TSP planning horizon.

Finding the right mix of projects for the Financially Constrained list can depend on which project goals are being prioritized. Should the City seek a balance of all goals, or choose to emphasize efficient travel for motor vehicles, safety improvements, or projects that enhance walking and biking options?

Table 19 provides a Financially Constrained list, focused on achieving a relatively even balance of goal areas and high-impact projects, informed by conversations with the CAC, TAC, and general public. By cost, this list is about 53% connectivity and congestion projects, 39% safety projects, and 8% active transportation projects.

Table 20 presents a Tier 2 list of highly supported projects that, due to cost or jurisdiction, were unable to be included in the Financially Constrained list. By cost, this list is about 73% connectivity and congestion projects, 24% active transportation projects, 3% safety projects, and less than 1% transit projects.

It should be noted that the City is not required to implement projects identified on the Financially Constrained list first. Priorities may change over time and unexpected opportunities may arise to fund particular projects. The City is free pursue any of these opportunities at any time. The purpose of the Financially Constrained project list is to establish reasonable expectations for the level of improvements that will occur and give the City initial direction on where funds should be allocated.

Table 19: Financially Constrained List for Achieving a Balance of Goal Areas

Project ID	Project Name	Cost Estimate (2017 dollars)
City Funded Projects		
Cr-2 / BL-1	College Street Safe Routes to School Upgrades	$30,000
Li-1	US20/OR34 at 13th St. and 14th St. Intersection Lighting Analysis and Enhancement	$150,000
SUP-3	Willow Street/Cedar Street Path (Willow Street to Cedar Street)	$225,000
SUP-7	Hunsaker Trail south to Chapel Drive and North	$120,000
SW-4	17th Street Sidewalks (Applegate Street to 19th Street & Cedar Street)	$50,000
SW-5 / BL-2	Applegate Street (16th Street to 21st Street)	$25,000
Up-1	Downtown Safety and Streetscape Project (Assumed Phase 1)	$1,000,000
TS-1	School Vehicle Circulation Study	$20,000
NR-9 / Up-11	South 16th Street Modernization and Extension	$2,200,000
	City Subtotal	**$3,820,000**
ODOT Funded Projects		
Cr-1	US20/OR34 & 17th Street Highway Crossing Improvements	$80,000
Int-1	Relocate ODOT Weigh Station	$1,500,000*
Int-2	US20/OR34 & 26th Street Intersection Improvements	$950,000
ITS-3	Bike Signal Detection	$23,000
Up-10	US20/OR34 Widening Project: Corridor Refinement Plan and Preliminary Engineering	$1,000,000
	ODOT Subtotal*	**$2,053,000**

**The TSP will reference the Freight Scale relocations in the Plan – but will not include it on the list of financially constrained projects that are expected to occur within the next 20 years – since actual funding sources have not been identified.*

Table 20: Tier 2 List of Highly Supported Projects

Project ID	Project Name	Cost Estimate (2017 dollars)
City Funded Projects (Not SDC Eligible)		
B-1	Regional Bike Hub	$25,000
B-2	Bicycle Wayfinding	$50,000
Cr-3	Cedar Street (13th Street to Willow Street & 15th Street)	$7,000
SR-1	North 13th Street Safe Routes to School Upgrades	$5,000
SR-2	North 17th Street Safe Routes to School Upgrades	$5,000
SR-3	Plymouth Drive Bike Route	$10,000
SW-2 / SR-4	Pioneer Street Safe Routes to School Upgrades (Adelaide Drive to 9th Street)	$80,000
SW-3 / SR-5	Pioneer Street Safe Routes to School Upgrades (9th Street to 13th Street)	$25,000
Tr-2	Bus Stop Amenities	$40,000
	City Subtotal	**$247,000**
ODOT Funded Projects		
ITS-2	Freight Traffic Signal Priority	n/a
UP-9	US20/OR34 Widening Project	43,200,000
	ODOT Subtotal	**$43,200,000**
County Funded Projects*		
ITS-1	9th Street Hill Improvements	$75,000
SUP-1	19th Street Shared-Use Path	$5,000,000
SUP-11	Chapel Drive Shared Use Path	$4,935,000
SUP-12	Bellfountain Road Shared Use Path	$562,000
Up-7	South 13th Street Urban Upgrade	4,200,000
	County Subtotal	**$14,772,000**

**Although there is no committed or identified funding source for these projects, the City will coordinate with the County to secure funding. A portion of projects SUP-11, SUP-12, and Up-7 are assumed to be funded by development, see Table 15 for more information.*

Appendix

A – Recommended TIA Guidelines

B – Synchro Report

US20/OR34 and 26th Street (with Clemens Mill Road Realignment)

C – Preliminary Signal Warrant Worksheet

US20/OR34 and 26th Street (with Clemens Mill Road Realignment)

Technical Memorandum #9
Appendix A

Recommended Traffic Impact Analysis Guidelines

The following guidelines are intended to provide assistance to transportation planners/traffic engineers who will prepare transportation impact analysis (TIA) for developments located within the City of Philomath's planning jurisdiction. Transportation impact assessments will be required for any of the following land use actions:

- All proposed subdivisions of greater than four units;
- All Comprehensive Plan Map Amendments/Zone Changes, Master Plans, and Planned Unit Developments (PUD's); and,
- Applicable Design Review and Conditional Use Permit (CUP) applications.

The preparation of the transportation impact report is the responsibility of the land owner or applicant. The applicant can choose any qualified traffic engineer. All transportation impact reports shall be reviewed by the City Public Works Director or designated responsible party (referred to as "City" in this document). Chapter 18.105 of the Philomath Municipal Code establishes the procedures for development applications and reviews; this document provides guidance to help prepare a successful Traffic Impact Study.

The transportation impact report shall be prepared under the supervision of a Registered Traffic Engineer in Oregon or a Registered Civil Engineer in Oregon with a traffic engineering background. Studies that do not address the requirements set by the City Public Works Director shall be returned to the engineer for modification.

Study Scope

The firm preparing the transportation impact report should contact the City at the project's outset. The City will then establish the project study area, intersections for analysis, scenarios to be evaluated and any other pertinent information concerning the study. In general, studies will fall into one of two categories based on their estimated trip generation:

- Projects that generate fewer than 100 daily trips (total, in and out)
- Projects that generate 100 or more daily trips (total, in and out)

If a phased buildout is proposed, the ultimate full buildout will be used to determine the trip generation. If three years have passed since a TIA was completed, the City may evaluate if the TIA must be updated and may require an update with new scope. Report content for each category are described below:

Report Outline (Fewer than 100 daily trips)

Trip generation should be estimated for the proposed project using the latest version of the ITE Trip Generation Manual and/or trip generation surveys conducted at similar facilities[1]. If the estimated trip generation for the proposed project is less than 100 daily trips, a 2-3 page letter report would be required, including a discussion of the following items:

- Weekday AM/PM peak hour and daily trip generation estimate
- Sight distance at project access point(s) (verified by a registered Traffic or Civil Engineer in Oregon)
- On site circulation and street connectivity to adjacent parcels discussion/evaluation

It is at the City's discretion whether additional analysis would be required once this initial information is collected. In general, addressing the items listed above would be sufficient analysis.

Report Outline (100 or more daily trips)

If the estimated trip generation for the proposed project is 100 or more daily trips, a full transportation impact report will be required. The report shall include the following components:

Introduction and Summary

Brief description of the project and summary of project impacts. Any recommended mitigation measures and/or operational issues shall be discussed.

Existing Conditions

This section shall include the following elements:

- description of roadways in the study area, including roadway classification, number of lanes, average daily traffic volume, roadway width, presence or absence of sidewalks and/or bicycle facilities, nearest transit route, posted speed, presence or absence of on-street parking, etc.
- existing geometric deficiencies at study intersections
- existing traffic volumes at the study intersections measured within the previous twelve months
- crash data at study intersections for the most recent three-year period available
- other pertinent features

Study area intersections shall be determined by the City, generally based on the following criteria:

- all intersections of regional significance (arterials, collectors and local streets) where the traffic generated by the proposed project exceeds ten percent of existing AM or PM peak hour total intersection traffic volumes within the Philomath City limits
- all project access points onto the public roadway system

Intersection analysis shall be determined for study area intersections for the weekday AM and PM peak periods using the most recent version of the Highway Capacity Manual. The analysis shall include level of service, average delay, and volume to capacity ratio.

Figures showing the study area roadway network and AM and PM peak hour intersection turn movement volumes shall be provided.

[1] Use of trip generation surveys collected independently from ITE should be verified with the City prior to use.

Impacts

A detailed description of the proposed project shall be provided including the intended land use and intensity of use. Trip generation shall be estimated using the most recent version of the *ITE Trip Generation Manual* (as discussed previously), or other sources previously agreed upon with the City and shown in a table.

The following figures shall be provided (combining them is allowable as long as data is clearly shown):

- Existing peak hour traffic volumes (AM and PM—listed previously)
- Project trip distribution (percentages)
- Added project peak hour traffic volumes (AM and PM)
- Existing plus project peak hour traffic volumes (AM and PM)
- Existing plus approved project (trips from projects that have been approved but not yet constructed/occupied) peak hour traffic volumes (PM)
- Total peak hour traffic volumes (existing plus project plus approved—PM)
- If applicable, planning horizon future peak hour traffic volumes (PM)

Intersection analysis shall be conducted for the following scenarios:

- Existing plus project (AM and PM)
- Existing plus approved (PM)
- Existing plus project plus approved (PM)
- In the case of Comprehensive Plan Map Amendments/Zone Changes, the applicant must demonstrate conformance with the Transportation Planning Rule, including PM peak period analysis to the applicable Planning Horizon Year of the most recent Transportation System Plan.

Information regarding approved project traffic will be provided by the City. Information to be provided in the appendix includes the following:

- Map showing location of approved projects in the City
- Trips associated with each approved project (i.e. remaining trips associated with unoccupied portion of project)
- Figures from individual projects' transportation impact reports showing trip generation, distribution and assignment, if available.

The intersection analysis for each scenario shall be summarized in a table with the calculation sheets provided in an appendix to the report.

A list of planned improvements (Philomath CIP, Benton County CIP, and ODOT STIP) assumed in the intersection analysis shall be provided.

Signal warrant analysis based on the *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)* shall be conducted at unsignalized study area intersections that are at or below minimum level of service thresholds. The peak hour warrant (Warrant 3) should be checked and, if met, Warrants 1 and 2 (8-hour and 4-hour warrants) should be checked.

Left-turn and right-turn lane needs shall be evaluated using the current ODOT left turn and right turn siting criteria of the *Highway Design Manual (Appendix F)*.

Sight distance at project access points shall be evaluated using *American Association of State Highway and Transportation Officials,* AASHTO methodology.

A brief review of the site plan, including a site plan layout shall be provided. On-site circulation/connectivity issues shall be discussed.

Bicycle and pedestrian issues shall be discussed and planned facilities shall be compared with the *Philomath Transportation System Plan* (TSP) to make sure any facilities proposed in the TSP on the proposed project site are included as part of the proposed project. For residential projects within ½ mile of a school, a safe (walking) route to school shall be described. Potential path connections to adjacent parcels shall be determined and discussed.

Mitigation

Project specific and area-wide specific mitigation measures shall be recommended where study intersections don't meet minimum level of service standards (provided in Philomath Transportation System Plan). At a minimum, the study shall consider improvements identified in the Philomath CIP, Benton County CIP, and ODOT STIP. The study shall clearly state the mitigation measures recommended by the analysis to mitigate project impacts.

Appendix

The following items shall be in the appendix:

- Existing traffic counts
- Approved project information
- Level of service calculations
- Current site plan

B – Synchro Report

US20/OR34 and Clemens Mill Road

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	5	725	905	15	110	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.998		0.979	
Flt Protected	0.950				0.959	
Satd. Flow (prot)	1554	1683	1679	0	1536	0
Flt Permitted	0.198				0.959	
Satd. Flow (perm)	324	1683	1679	0	1536	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3		15	
Link Speed (mph)		40	40		25	
Link Distance (ft)		1565	1125		394	
Travel Time (s)		26.7	19.2		10.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	4%	4%	7%	7%	7%
Adj. Flow (vph)	5	763	953	16	116	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	763	969	0	137	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15			9	15	9
Number of Detectors	2	2	2		2	
Detector Template	Side St	Det35	Det35		Side St	
Leading Detector (ft)	78	223	223		78	
Trailing Detector (ft)	2	107	107		2	
Detector 1 Position(ft)	2	107	107		2	
Detector 1 Size(ft)	16	16	16		16	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)	72	217	217		72	
Detector 2 Size(ft)	6	6	6		6	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)	0.0	0.0	0.0		0.0	
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Detector Phase	4	4	8		6	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Split (s)	20.8	20.8	20.8		20.0	
Total Split (s)	40.0	40.0	40.0		20.0	
Total Split (%)	66.7%	66.7%	66.7%		33.3%	
Maximum Green (s)	35.2	35.2	35.2		16.0	
Yellow Time (s)	4.3	4.3	4.3		3.5	
All-Red Time (s)	0.5	0.5	0.5		0.5	
Lost Time Adjust (s)	-0.8	-0.8	-0.8		0.0	
Total Lost Time (s)	4.0	4.0	4.0		4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	Min	Min	Min		None	
Walk Time (s)	5.0	5.0	5.0		5.0	
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0		0	
Act Effct Green (s)	42.9	42.9	42.9		10.0	
Actuated g/C Ratio	0.75	0.75	0.75		0.17	
v/c Ratio	0.02	0.61	0.77		0.49	
Control Delay	4.2	8.4	14.2		25.9	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	4.2	8.4	14.2		25.9	
LOS	A	A	B		C	
Approach Delay		8.3	14.2		25.9	
Approach LOS		A	B		C	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 57.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.6 Intersection LOS: B
Intersection Capacity Utilization 67.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 99: US 20/OR 34 & Clemens Mill

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	5	725	905	15	110	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1554	1683	1678		1537	
Flt Permitted	0.20	1.00	1.00		0.96	
Satd. Flow (perm)	323	1683	1678		1537	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	763	953	16	116	21
RTOR Reduction (vph)	0	0	1	0	13	0
Lane Group Flow (vph)	5	763	968	0	124	0
Heavy Vehicles (%)	7%	4%	4%	7%	7%	7%
Turn Type	Perm	NA	NA		Perm	
Protected Phases		4	8			
Permitted Phases	4				6	
Actuated Green, G (s)	40.9	40.9	40.9		8.4	
Effective Green, g (s)	41.7	41.7	41.7		8.4	
Actuated g/C Ratio	0.72	0.72	0.72		0.14	
Clearance Time (s)	4.8	4.8	4.8		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	231	1207	1204		222	
v/s Ratio Prot		0.45	c0.58			
v/s Ratio Perm	0.02				c0.08	
v/c Ratio	0.02	0.63	0.80		0.56	
Uniform Delay, d1	2.4	4.2	5.5		23.1	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.1	4.0		3.0	
Delay (s)	2.4	5.3	9.5		26.2	
Level of Service	A	A	A		C	
Approach Delay (s)		5.3	9.5		26.2	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

C – Preliminary Signal Warrant Worksheet

US20/OR34 and Clemens Mill Road

Oregon Department of Transportation

Transportation Development Branch

Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis[1]

Major Street:	US 20 / OR 34	**Minor Street:**	Clemens Mill Rd.
Project:	Philomath TSP	**City/County:**	Philomath
Year:	2040	**Alternative:**	2040 No-Build

Preliminary Signal Warrant Volumes

Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	Percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8850	6200	2650	1850
2 or more	1	10600	7400	2650	1850
2 or more	2 or more	10600	7400	3550	2500
1	2 or more	8850	6200	3550	2500
Case B: Interruption of Continuous Traffic					
1	1	13300	9300	1350	950
2 or more	1	15900	11100	1350	950
2 or more	2 or more	15900	11100	1750	1250
1	2 or more	13300	9300	1750	1250
X	100 percent of standard warrants				
	70 percent of standard warrants[2]				

Preliminary Signal Warrant Calculation

	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	10600	16500	N
	Minor	1	2650	1375	
Case B	Major	2	15900	16500	Y
	Minor	1	1350	1375	

Analyst and Date: BLC 9/18/2017	Reviewer and Date:

[1] Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. When preliminary signal warrants are met, project analysts need to coordinate with Region Traffic to initiate the traffic signal engineering investigation as outlined in the Traffic Manual. Before a signal can be installed, the engineering investigation must be conducted or reviewed by the Region Traffic Manager who will forward signal recommendations to headquarters. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

[2] Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

SECTION 9

TECH MEMO TWELVE A

PROPOSED COMPREHENSIVE PLAN AMENDMENTS

Technical Memorandum #12a

DATE: March 21, 2018

TO: Philomath TSP Technical Advisory Committee and Community Advisory Committee

FROM: Darci Rudzinski, AICP | Angelo Planning Group
Shayna Rehberg, AICP | Angelo Planning Group

SUBJECT: **Philomath Transportation System Plan**
Task 8.3 Implementing Regulations and Policy Amendments: Proposed Comprehensive Plan Amendments

---

The 2018 Transportation System Plan (TSP) will be adopted as the transportation element of the Philomath Comprehensive Plan document. The purpose of this memorandum is to provide recommended modifications to transportation goals and policies in the Comprehensive Plan. Updated policies are recommended to be consistent with and implement the updated TSP and to be consistent with the requirements of the Oregon Transportation Planning Rule (OAR 660-012, the "TPR").

Recommended goal and policy amendments reflect issues identified through the TSP update and the need for consistency between the TSP and Comprehensive Plan. The City's existing Comprehensive Plan was adopted in 1983; transportation policies in Chapter VI were updated in 2003 and again in 2011.[1] The current TSP update planning process provides an opportunity to ensure that the transportation-related policy language in the Comprehensive Plan is consistent with the objectives and recommendations of the updated TSP and to clarify the role each document serves in providing guidance for transportation planning in the City.

New language is principally based on the draft TSP. Proposed goals and policies also support related modifications to Title 18 of the Philomath Municipal Code; proposed modifications to development requirements in Title 18 are provided in separate draft memorandum (Technical Memorandum #12b).

The six transportation Goals from the draft TSP are appropriate to include in the Comprehensive Plan. The Goals in the Comprehensive Plan (p. 1) do not specifically address transportation; TSP Goals can be added to the list in the first section of the Comprehensive Plan, can be included prior to the list of (proposed) policies in Chapter VI, or can precede policies that specifically implement each goal, as demonstrated in the draft TSP organization. Table 1 includes the proposed goal language to be included in the Comprehensive Plan.

The policy recommendations in Table 2 are proposed to replace the existing policies in Chapter VI and serve as the City's primary policy direction. Table 2 presents draft policy language in the first column; the comment column indicates the origin of the policy (e.g., the numbered objectives from the draft TSP or existing Comprehensive Plan policy). Note that many policies expand and implement the corresponding TSP objective and do not mirror TSP language exactly; proposed language is intended to provide policy guidance for land use and transportation decision making after the TSP is adopted.

In addition to the proposed policies, new draft background text is provided that will update existing Comprehensive Plan text. The proposed introduction text for Chapter VI follows the table.

---

[1] The 2003 amendment added pedestrian, bicycle, and transit policies. The 2011 changes amended a few of these policies and added policies related to Safe Routes to School.

Proposed Transportation Goals

Table 1: Recommended Comprehensive Plan Transportation Goals

Proposed Goal	Comments
Goal 1: Maintain efficient motor vehicle travel along the street network and through US20/OR34.	The Goals in the Comprehensive Plan (p. 1) do not specifically address transportation. The addition of transportation goals can be added to the list in the first section of the Comprehensive Plan, can be included prior to the list of (proposed) policies in Chapter VI, or can precede policies that specifically implement each goal, as demonstrated in the draft TSP organization. Proposed Goals are consistent with the draft TSP Goals.
Goal 2: Develop a transportation system that provides mobility and accessibility for all members of the community and reduces reliance on motor vehicle travel.	
Goal 3: Enhance transportation safety.	
Goal 4: Develop and maintain a transportation system that supports economic vitality.	
Goal 5: Provide a sustainable transportation system through responsible stewardship of financial and environmental resources.	
Goal 6: Maintain coordination with local and state agencies and plans.	

Proposed Transportation Policies

Table 2: Recommended Comprehensive Plan Transportation Chapter VI Policies

Proposed Policies	Comments
1. The City shall preserve corridors for future street locations, especially in north Philomath and the Newton Creek industrial area, consistent with the Local Street Connectivity Plan in the adopted Transportation System Plan.	Draft TSP Goal 1, Objective a. (revised)
2. The City shall work to develop and implement an arterial and collector street system to improve cross-town (both north-south and east-west) circulation and connectivity, consistent with the adopted Transportation System Plan.	Proposed policy is consistent with Draft TSP Goal 1, Objective b.: *Improve cross-town (both north-south and east-west) circulation and connectivity*.

Proposed Policies	Comments
3. The City shall maintain acceptable roadway and intersection operations where feasible considering environmental, land use, and topographical factors. The acceptability of roadway and intersection operations is defined by the City's mobility standard requiring operation at a level of service D or better.	Draft TSP Goal 1, Objective c.
4. The City shall continue to work with the Oregon Department of Transportation (ODOT) and regional partners to reduce congestion along US 20/OR 34 between Philomath and Corvallis. The City supports widening the corridor to four lanes from Newton Creek to SW Country Club Drive, consistent with the Regional Transportation Plan, and enhancing overall corridor travel efficiency through transportation demand management measures that could reduce peak hour demand.	Draft TSP Goal 1, Objective d. (revised) Proposed policy updates existing Comprehensive Plan VI. Transportation Policies 5. and 18.
5. The City shall use transportation impact analysis guidelines to determine an appropriate level of required analysis to ensure that land use and development proposals are consistent with the identified function, capacity and performance standards of impacted transportation facilities.	Proposed policy is consistent with Draft TSP Goal 1, Objective e.: *Develop street functional classifications with complementary operational guidance and standards to ensure streets are able to serve their intended purpose.*
6. The City will work to maintain sufficient parking in the downtown to support businesses and patrons. When warranted, the City will undertake a parking study to evaluate parking supply and demand and explore near- and longer-term improvements.	Proposed policy is consistent with Draft TSP Goal 1, Objective f.: *Evaluate transportation and parking improvements that have the potential to improve downtown traffic flow.* Proposed policy is also consistent with Draft TSP Goal 4, Objective e.: *Explore options to improve parking availability in the downtown.*
7. The City shall plan for and develop a network of streets, accessways, and other improvements, including bikeways, sidewalks, and safe street crossings to promote safe and convenient bicycle, pedestrian, and transit circulation within the community.	Proposed policy is consistent with Draft TSP Goal 2, Objective a.: *Improve circulation for pedestrians, bicyclists, and transit riders within Philomath and to Corvallis*. Proposed policy updates existing Comprehensive Plan VI. Transportation Policies 7. and 14.

Proposed Policies	Comments
8. The City will seek to improve pedestrian and bicycle circulation within and between major activity generators such as neighborhoods, parks, schools, and commercial centers.	Draft TSP Goal 2, Objective b.
9. The City will continue to work with the school district and citizens to improve and maintain safe routes to school, consistent with the recommendations of the Safe Routes to School Plan and the planned projects in the Transportation System Plan.	Proposed policy is consistent with Draft TSP Goal 2, Objective c. and Draft TSP Goal 3, Objective h.: *Implement the Safe Routes to Schools Plan recommendations.* Proposed policy updates existing Comprehensive Plan VI. Transportation Policy 3.
10. The City shall ensure that new development and redevelopment provide pedestrian connections within the site and to adjacent sidewalks, existing and planned developments, and transit streets and facilities, consistent with and proportionate to the needs and impacts of the proposed development.	Proposed policy is consistent with Draft TSP Goal 2, Objective d.: *Ensure connections to the existing pedestrian system (i.e., sidewalks, crosswalks, shared use paths) are made as part of new developments.* Proposed policy updates existing Comprehensive Plan VI. Transportation Policies 3. and 16.
11. The City shall prioritize enhanced pedestrian safety at roadway crossings, including improvements at intersections and key mid-block locations.	Draft TSP Goal 2, Objective e.
12. The City will seek to continuously improve existing transportation facilities to meet applicable City of Philomath and Americans with Disabilities Act (ADA) standards.	Draft TSP Goal 2, Objective f.
13. The City shall maintain maximum block length standards to minimize travel distances.	Draft TSP Goal 2, Objective g. (modified) Proposed policy updates existing Comprehensive Plan VI. Transportation Policy 22.
14. The City shall work to ensure that pedestrian and bike throughways are clear of obstacles and obstructions (e.g., utility poles, grates).	Draft TSP Goal 2, Objective h.

Proposed Policies	Comments
15. The City shall require that existing streets are improved to City standards and that they provide complete pedestrian and bicycle facilities, consistent with cross-section standards in the Transportation System Plan.	Draft TSP Goal 2, Objective i. (modified) Proposed policy updates existing language in Comprehensive Plan VI. Transportation, Bicycle Policies and Pedestrian Ways.
16. The City shall continue to work with Corvallis Transit System and through development permitting with private property owners to provide for transit user needs beyond basic provision of service (e.g., by providing sidewalk and bicycle connections, landing pads, easements or dedications for shelters and benches) to encourage higher levels of use.	Draft TSP Goal 2, Objective j. (modified) Proposed policy updates existing language in Comprehensive Plan VI. Transportation, Transit Policies.
17. The City will continue to explore the potential for a park-and-ride location within the city, either through an agreement with private property owner(s) or property acquisition.	Proposed policy is consistent with Draft TSP Goal 2, Objective k.: *Identify potential park-and-ride locations within the city.* Proposed policy updates existing language in Comprehensive Plan VI. Transportation, Transit Policies.
18. The City supports expanded service hours for transit.	Draft TSP Goal 2, Objective l. Proposed policy updates existing language in Comprehensive Plan VI. Transportation, Transit Policies.
19. The City will assess potential of the railroad system for commuter rail, commercial rail, and excursion uses.	Draft TSP Goal 2, Objective m.
20. The City will work to improve pedestrian and bicycle access across US 20/OR 34, especially in locations where better access would support safer travel to schools, parks, and public buildings.	Draft TSP Goal 2, Objective n.
21. The City will continue to assess options to reduce traffic volumes and speeds near schools.	Draft TSP Goal 3, Objective a.

Proposed Policies	Comments
22. The City shall establish and maintain designated Truck Routes that facilitate goods movement through and to the City and that minimize and avoid conflicts with schools, residential areas, and the downtown core.	Draft TSP Goal 3, Objective b. (revised) Proposed policy is also consistent with Draft TSP Goal 4, Objective f.: *Provide efficient freight movement on regional travel routes.*
23. The City shall work to implement improvements to address high collision locations, improve safety at railroad crossings, and improve safety for walking, biking, and driving in the City.	Proposed policy is consistent with Draft TSP Goal 3, Objective c.: *Improve safety at locations with known issues.*
24. The City shall work to reduce traffic-related fatalities and serious injury collisions, especially those involving vulnerable users (e.g., elderly, children, pedestrians, and cyclists).	Draft TSP Goal 3, Objective d. and Draft TSP Goal 3, Objective e.
25. The City shall preserve the function and prioritize investments on routes and transportation facilities critical for emergency response and evacuation.	Draft TSP Goal 3, Objective f.
26. The City shall evaluate the need for improved street lighting, specifically on US20/OR34 at the 13th Street and 14th Street intersections.	Proposed policy is consistent with Draft TSP Goal 3, Objective i.: *Evaluate the need for improved street lighting.* Reflects Project Li-1: *US20/OR34 at 13th St. and 14th St. Intersection Lighting Analysis and Enhancement.*
27. The City shall improve multi-modal mobility, safety, and comfort through the implementation of the Downtown Safety and Streetscape Project, including sidewalks, bike lanes, intersection bulb-out crosswalks with improved signing, striping, pedestrian-scale lighting, and landscaping.	Proposed policy is consistent with Draft TSP Goal 3, Objective j. (*Address speeding in the downtown*) and k. (*Improve the comfort and safety of pedestrian crossings along US 20/OR 34*). Proposed policy is also consistent with Draft TSP Goal 4, Objective a.: *Improve the pedestrian and bicycle realm in the downtown.*
28. The City shall balance the need for efficient travel with business visibility and accessibility in the downtown.	Draft TSP Goal 4, Objective b.
29. The City shall provide access to local businesses and business districts by all modes of transportation.	Draft TSP Goal 4, Objective c.

Proposed Policies	Comments
30. The City shall implement, through state and local funding, and encourage private investment in streetscape improvements in the downtown to make it aesthetically pleasing and signify it as a destination.	Proposed policy is consistent with Draft TSP Goal 4, Objective d.: *Consider streetscape improvements in the downtown to make it aesthetically pleasing and signify it as a destination.*
31. The City shall encourage employment opportunities and enhance economic development through safe and efficient access to major employment centers.	Proposed policy is consistent with Draft TSP Goal 4, Objective g.: *Increase the accessibility of major employment centers.*
32. The City shall work to preserve and protect the safe and efficient function of locally and regionally significant transportation corridors through access management and implementing improvements, consistent with their functional classification.	Proposed policy is consistent with Draft TSP Goal 5, Objective a: *Preserve and protect the function of locally and regionally significant transportation corridors.* Proposed policy updates existing Comprehensive Plan VI. Transportation Policies 12., 19., 20. and 21. (in part).
33. The City shall prioritize preserving and maintaining the existing transportation system assets to extend their useful life and improving travel reliability and efficiently of existing major travel routes before adding capacity.	Draft TSP Goal 5, Objective b. and Goal 5, Objective c.
34. The City shall pursue grants/programs or collaboration with other agencies to efficiently fund transportation improvements and supporting programs.	Draft TSP Goal 5, Objective d.
35. The City shall seek to maintain stable and diverse revenue sources to meet the need for transportation investments in the city.	Draft TSP Goal 5, Objective e.
36. The City shall implement, where cost-effective, environmentally friendly materials and design approaches (water reduction, protect waterways, solar infrastructure, impervious materials).	Draft TSP Goal 5, Objective f.
37. The City shall avoid or minimize impacts to natural resources, which may include alternative transportation facility designs in constrained areas.	Draft TSP Goal 5, Objective g. Proposed policy updates existing Comprehensive Plan VI. Transportation Policy 10 (in part).

Proposed Policies	Comments
38. The City shall support technology applications that improve travel mobility and safety with less financial and environmental impact than traditional infrastructure projects.	Draft TSP Goal 5, Objective h.
39. The City shall work with the Cascades West Area Commission on Transportation and the South Valley Regional Solutions Center to promote projects that improve regional linkages.	Draft TSP Goal 6, Objective a.
40. The City shall coordinate transportation projects, policy issues, and development actions with all affected government agencies in the area, including Benton County, the City of Corvallis, the Corvallis Area Metropolitan Planning Organization, and ODOT.	Draft TSP Goal 6, Objective b.
41. The City shall seek funding for and develop shared-use paths identified in the adopted Transportation System Plan to improve non-motorized connections, including connections between Philomath and Corvallis, to and through the Rodeo Grounds, and on the Willow Street/Cedar Street Path.	Proposed policy is consistent with the Draft TSP Standards and Solutions chapter and updated existing Comprehensive Plan VI, Transportation Policies 4 and 13.
42. The City and developers shall protect residential neighborhoods from excessive through traffic and travel speeds. When required, the application of traffic calming measures will be proportional to the identified need and appropriate for the facility on which it is located, based on street functional classification.	New proposed policy is consistent with Draft TSP Neighborhood Traffic Management (NTM) section.
43. The City shall ensure that the transportation system provides equitable access to underserved and vulnerable populations as well as users with a range of ages.	New proposed policy is consistent with the multi-modal emphasis in the Draft TSP .

Proposed Policies	Comments
44. Require that proposed land developments mitigate adverse traffic impacts and ensure that all new development contributes a fair and proportionate share toward on-site and off-site transportation system improvements.	New proposed policy is consistent with the Draft TSP (see Traffic Impact Analysis Guidelines in Volume 2, Technical Memorandum #9, Appendix A) and supports proposed Development Code requirements.

Proposed Chapter VI Introduction Text

The following introduction language modifies existing language in Comprehensive Plan VI–Transportation. Proposed new text is shown as underlined; proposed deletions are shown as ~~struck through~~.

VI. TRANSPORTATION

A good transportation system is essential for transporting people and goods. The provision of many services also depends on a good transportation network. ~~Streets and highways are probably the most important component of this network, although sidewalks and bikepaths are also important. More bikepaths and bike lanes may be needed in order to accommodate safe bicycling and to promote energy conservation.~~ Philomath's transportation system is multi-modal – it provides facilities for freight, passenger vehicles, transit, bicyclists, and pedestrians. It also provides access to air travel via the Corvallis Airport.

~~Air service provide by the Corvallis Airport is adequate to meet most of Philomath's needs; however, a heliport for emergency medical use may be needed sometime in the future.~~

The Transportation element includes policies directed toward improving Philomath's transportation system. ~~A Street Improvement Program, including specific proposals for street improvements, is included in the Data Base.~~ These policies are consistent with the goals and objectives of the adopted 2018 Transportation System Plan (TSP), which is the transportation element of the Comprehensive Plan. The TSP is a long-range document that guides the expansion and operation of our transportation network for all modes of travel.

SECTION 10

TECH MEMO TWELVE B

IMPLEMENTING REGULATIONS AND DEVELOPMENT CODE AMENDMENTS

Technical Memorandum #12b

DATE: March 16, 2018

TO: Philomath TSP Technical Advisory Committee and Community Advisory Committee

FROM: Darci Rudzinski, AICP | Angelo Planning Group
Shayna Rehberg, AICP | Angelo Planning Group

SUBJECT: **Philomath Transportation System Plan**
Task 8.3 Implementing Regulations and Development Code Amendments

Overview

The purpose of this memorandum is to provide recommended modifications to Title 18 of the Philomath Municipal Code (PMC), the Philomath Development Code ("code"). Updated development requirements are recommended in order to be consistent with and implement the 2018 Philomath Transportation System Plan (TSP) and to be consistent with the Oregon Transportation Planning Rule (OAR 660-012, the "TPR"). Updated transportation goals and policies have also been prepared for these purposes and to support the code amendments recommended in this memorandum. Proposed transportation goals and policies are presented in Technical Memorandum #12a.

Proposed code amendments are based on the recommendations in Technical Memorandum #3, Regulatory Framework Review (Table 1 in the March 14, 2016 memorandum) and the draft TSP. The recommended changes to the Development Code are summarized in Table 1, which includes comments regarding the basis for the changes, such as references to applicable TPR requirements and recommendations in the draft TSP.

Following the summary table, the draft proposed code amendments are presented according to numbering in the summary table and in an adoption-ready format, with text that is proposed to be added shown as underlined and text that is proposed to be removed shown as ~~struck through~~. In both Table 1 and the adoption-ready text format, the amendments are presented sequentially as they would appear in PMC Title 18. The proposed code amendment language is based primarily on the State of Oregon Transportation and Growth Management's Model Development Code for Small Cities, 3rd Edition ("Model Code") and secondarily on development code language from peer jurisdictions around Oregon.

"Other Issues for Consideration" follows the proposed code amendment language section and explores the following as they relate to code requirements:

- Street and path design standards – Creating consistency between design standards in the TSP and Public Works Design Standards
- Downtown parking requirements – Presenting options regarding evaluation of and changes in requirements
- Neighborhood traffic management – Presenting options for implementing a neighborhood traffic management program

Proposed Development Code Amendments

Summary

As described in the overview, Table 1 provides a summary of the recommended development code amendments and commentary about the basis for these amendments as well as other useful information. The adoption-ready code language itself follows the table, presented in the same order (with the same numbering) as in Table 1.

Table 1: Summary of Proposed Development Code (Philomath Municipal Code Title 18) Amendments

#	Proposed Amendments	Comments
	PMC DIVISION 2. LAND USE DISTRICTS	
1	Existing building orientation standards in residential districts (for higher-density housing and uses) and in commercial districts modified to ensure that the building entrances will provide direct access to streets, particularly streets with existing or planned transit stops.	Consistent with OAR 660-012-0045(4)(b), it is recommended that standards be modified to provide access to transit. While existing building orientation standards already generally require that buildings be oriented to the street, there are exceptions to this that should not be permitted when the development is adjacent to existing or planned transit stops.
2	Existing transit amenities provisions in commercial districts augmented by a new section on transit access and supportive facilities under Transportation Improvements standards. A reference to that new section added to existing transit amenities provisions.	OAR 660-012-0045(4)(b) addresses transit-supportive actions and facilities that can be provided at transit stops. While the supportive actions and facilities themselves are addressed in a new code section in Proposed Amendments #16, a reference to that new code section should be included in existing transit amenity-related provisions here in the commercial districts code section.
3	Reference to a new traffic assessment letter/traffic impact study code section added to existing provisions regarding traffic impact studies in industrial districts.	A minor update is necessary to refer to proposed traffic assessment letter and traffic impact study requirements, recommended in Proposed Amendments #15.
	PMC CHAPTER 18.65 ACCESS AND CIRCULATION	
4	Reference to a new traffic assessment letter/traffic impact study code section added to existing provisions regarding traffic impact studies in Vehicular Access and Circulation standards.	A minor update is necessary to refer to proposed traffic assessment letter and traffic impact study requirements recommended in Proposed Amendment #15.

#	Proposed Amendments	Comments
5	Driveway access spacing on local streets updated to be consistent with the 2018 TSP.	Access control measures, such as spacing standards, are required to be adopted pursuant to OAR 660-012-0045(2)(a). Subsection (2) requirements are intended to protect transportation facilities for their identified functions; they serve to promote safety as well. Access spacing is addressed in PMC 18.65.020(G) as well as in the draft TSP (Table 8, Access Spacing Standards), so requirements need to be consistent between the two documents. Proposed Amendments #5 consist of a simple amendment to the Development Code to create this consistency.
6	Pedestrian Access and Circulation standards modified to more clearly encompass bicycle access and circulation; and to address dedications for future pedestrian/bicycle improvements and potential required off-site improvements.	OAR 660-012-0045(3)(b) establishes requirements for pedestrian and bicycle connections to “neighborhood activity centers” (including schools, parks, transit stops, shopping areas, and employment centers). These proposed amendments articulate the possibility that dedications of land and off-site improvements may be required of development, granted dedications are based on adopted City standards and off-site improvements are tied to development impacts demonstrated by a traffic impact study.
PMC CHAPTER 18.75 VEHICLE AND BICYCLE PARKING		
7	Restrictions on exemptions for off-street parking standards in the Central Commercial (C-1) district removed. Minimum parking space requirements for key Downtown land uses reduced.	An initial set of amendments is proposed here for consideration based on an evaluation of requirements in similarly-sized cities and Model Code (see the Downtown Parking Requirements discussion under “Other Issues for Consideration” in this memorandum). These proposed amendments could also be suspended and used as inputs in a future evaluation and discussion about Downtown parking. The amendments are intended to further reduce parking requirements for the C-1 district and bring requirements for general retail, services, office, and restaurant uses – predominant uses in Downtown – into closer alignment with requirements in the Model Code and other jurisdictions of similar size.
8	Requirements for carpool, vanpool, and rideshare parking added.	Proposed amendments require larger employers to provide preferential parking spaces for carpools, vanpools, and similar ridesharing modes. These amendments are consistent with OAR 660-012-0045(4)(b) and are intended to be one of several measures to encourage more efficient transportation.

#	Proposed Amendments	Comments
9	Standards for providing pedestrian connections through parking lots added.	Establishing thresholds for when connections through parking lots are required as well as design standards for these connections implement connectivity requirements emphasized in OAR 660-012-0045(3)(b).
10	Provisions permitting portions of parking lots to be developed for transit-related uses added.	Consistent with OAR 660-012-0045(4)(e), these proposed amendments clarify, and thereby support, allowable development of transit-related facilities.
11	General and commercial district bicycle parking requirements increased. Requirements added for transit uses.	Modest bicycle parking requirements have been added for transit stops, as required by OAR 660-012-0045(3)(a) and to further support the use of transit and active transportation. The minimum numbers of bicycle parking spaces generally required and required in commercial districts are proposed to be increased based on guidance in the State's Model Code and requirements in peer Oregon jurisdictions.
PMC 18.80.020 TRANSPORTATION IMPROVEMENTS		
12	Reference to street design standards in TSP and Public Works Design Standards added to Transportation Improvements section.	Transportation improvement standards already include one reference to the TSP, in PMC 18.80.020(A)(1). It is recommended that this be reinforced by adding a reference to the TSP and Public Works Design Standards in a transportation improvements subsection regarding minimum rights-of-way and street sections. This is a minor, administrative amendment.
13	References to TSP Local Street Connectivity Plan added to the Transportation Improvements section.	Multimodal connectivity is emphasized in OAR 660-012-0045(3)(b). This minor proposed amendment provides a link to the connectivity plan included in the 2018 TSP.
14	Requirement for signage indicating future street connections from stub streets added. Maximum allowable cul-de-sac length reduced, with authority granted to the Public Works Director to allow a longer cul-de-sac if necessary for site-specific conditions.	Consistent with the recommendation in the draft TSP (Local Street Connectivity section), a proposed modification to the City's street improvement requirements addresses signage for stub streets to indicate that future connections to the street system are expected. As recommended in Technical Memorandum #9, Table 11 (Proposed Changes to Connectivity Requirements), proposed amendments generally reduce the maximum allowable length of a cul-de-sac. This change also aligns with the reduction in pavement called for in OAR 660-012-0045(7).

#	Proposed Amendments	Comments
15	A new code subsection for traffic assessment letter and traffic impact study requirements added to Transportation Improvements section. New section addresses applicability criteria, who prepares the study, determination of study scope and content, review criteria, and conditions of approval.	OAR 660-012-0045(2)(b) requires that standards to protect transportation facilities be adopted in local jurisdictions' land use regulations. The existing Development Code has general language about impact studies. However, Technical Memorandum #3 and the Technical Memorandum #9 recommend that transportation-specific impact study requirements be developed and adopted. The proposed new requirements articulate that all development proposals require findings related to traffic generation and set daily trip thresholds for when the City will require a higher level of traffic impact analysis. Proposed language implements OAR 660-012-0045(2)(b), enabling the City to make informed decisions regarding protecting the planned function of transportation facilities impacted by proposed development. Proposed language also clarifies that the City may impose conditions of approval based on the finding of the traffic impact study, consistent with TPR requirements, (OAR 660-012-0045(2)(e) and OAR 660-012-0045(3)(c)).
16	A new subsection regarding transit access and transit supportive facilities (e.g., landing pad, easement or dedication) added to the Transportation Improvements section.	Based on transit-related requirements in OAR 660-012-0045(4)(b), it is recommended that standards be established to clearly require access to transit stops and to provide for transit stop improvements identified in adopted plans and in coordination with transit service provider staff. Proposed transit-supportive facility requirements can be modified if needed to share more of the cost and responsibility of transit stop improvements with the transit service provider, while ensuring that land for planned transit stop improvements will be protected for those future improvements.
	PMC 18.105 TYPES OF APPLICATIONS AND REVIEW PROCEDURES	
17	New section added that codifies that specified transportation activities, including operation and maintenance as well as construction of transportation facilities identified in the TSP, do not require land use permitting approval.	These proposed procedural amendments are based on allowances made by OAR 660-012-0045(1)(a), which establish that specified transportation activities should be exempt from land use permitting. The amendments are intended to clarify land use permitting in Philomath, codifying what is likely already existing City practice.

#	Proposed Amendments	Comments
18	Specific references to the new traffic assessment letter/traffic impact study subsection added to impact study provisions under Type II and Type III procedures.	These proposed amendments are minor amendments intended to establish that discrete requirements exist for traffic assessment letters and traffic impact studies and to clearly direct administrators and applicants to these requirements.
	PMC CHAPTER 18.120 CONDITIONAL USE PERMITS	
19	List of possible conditions of approval modified to reflect the multimodal improvements that may be required as a part of development.	These proposed amendments are minor additions to an existing list of possible conditions that may be attached to approval of a conditional use. The proposed language provides more detail about the nature of dedications that may be required and expands the type of multimodal improvements that may be required to include transit. These amendments are driven by requirements related to conditions of approval in OAR 660-012-0045(2)(e) and (3)(c), in addition to a TSP recommendation that: "[a]dding multimodal transportation improvements to mitigate impacts as a potential condition of approval for Type II (administrative) and III (quasi-judicial) review procedures would help protect the function and operation of the planned transportation system." (Technical Memorandum #9, p. 18)
	PMC CHAPTER 18.135 ANNEXATION AND AMENDMENTS	
20	Existing TPR compliance requirements updated to more simply refer to TPR Section -0060.	OAR 660-012-0060 has been amended since the City adopted PMC 18.135.050 (Transportation planning rule compliance), which applies to legislative amendments. The most recent amendments to Section -0060, effective in 2012, included new language that allows a local government to exempt a zone change from the "significant effect" determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP. Amendments also included a new "balancing test" available for jurisdictions to weigh land use amendments that will create industrial or traded-sector jobs, as defined by the TPR. Instead of updating the existing code section to duplicate current Section -0060 language, it is recommended that the code language be modified to simply refer to Section -0060. This approach prevents the code section from becoming lengthy and, more importantly, will accommodate future amendments of Section -0060 without necessitating amendment of the code section.

#	Proposed Amendments	Comments
		A minor, "housekeeping" type of amendment is also proposed: to expand the title of the chapter to reflect that the chapter addresses development code and land use district map amendments, and not just annexations.
	PMC CHAPTER 18.155 VARIANCES	
21	Criteria for transportation improvement variances added to an existing section on Class B variances.	These proposed amendments can also be considered as code "housekeeping." As noted in Technical Memorandum #3, Class B variance criteria for transportation improvements are currently not in established in either PMC 18.80.020(B) or PMC 18.155.050(A)(6). The proposed criteria are modeled after criteria for a Type II variance to vehicle access requirements, variance procedures outlined in Public Works Design Standards Section 1.1(e), and variance criteria discussed in Technical Memorandum #9 (p. 8).

Adoption-Ready Code Amendment Language

Note: The symbol […] is used to represent where code language exists but has been removed in order to create briefer, more focused and readable proposed code amendment language.

Proposed Amendments #1 – Building Orientation to Transit Stops

PMC Division 2 Land Use Districts

Chapter 18.35 RESIDENTIAL DISTRICTS
18.35.080 Building orientation.
[…]
B. Applicability. This section applies to: single family attached townhomes that are subject to site design review (three or more attached units); multifamily housing; neighborhood commercial buildings; and public and institutional buildings, which receive the public.
C. Building Orientation Standards. All developments listed in subsection (B) of this section shall be oriented to a street. The building orientation standard is met when all of the following criteria are met:

> *1. Compliance with the setback standards in PMC 18.35.030.*
> *2. All buildings shall have their primary entrance(s) oriented to the street. Multifamily and neighborhood commercial building entrances may include entrances to individual units, lobby entrances, or breezeway/courtyard entrances (i.e., to a cluster of units or commercial spaces). Alternatively, a building may have its entrance oriented to a side yard when a direct pedestrian walkway is provided between the building entrance and the street in accordance with the standards in Chapter 18.65 PMC, Access and Circulation. In this case, at least one entrance shall be provided not more than 20 feet from the closest sidewalk or street.*
> *<u>3. Where applicable, the primary building entrance shall be oriented to the site's frontage that is adjacent to an existing or planned transit stop in order to provide more direct access to transit. Where a transit stop exists or is planned on, or directly adjacent to, the site, orienting the primary entrance to a side yard shall not be permitted.</u>*

Chapter 18.40 COMMERCIAL DISTRICTS
18.40.050 Block layout and building orientation.
[…]
D. Building Orientation Standard. All of the developments listed in subsection (A) of this section shall be oriented to a street. The building orientation standard is met when all of the following criteria are met:

1. The minimum and maximum setback standards in PMC 18.40.030.

2. Buildings have their primary entrance(s) oriented to (facing) the street. Building entrances may include entrances to individual units, lobby entrances, entrances oriented to pedestrian plazas, or breezeway/courtyard entrances (i.e., to a cluster of units or commercial spaces). Alternatively, a building may have its entrance facing a side yard when a direct pedestrian walkway not exceeding 20 feet in length is provided between the building entrance and the street right-of-way, except where the site's frontage is adjacent to an existing or planned transit stop, in which case the primary building entrance shall be oriented to that frontage to provide more direct access to transit.

Chapter 18.50 PUBLIC DISTRICTS
18.50.040 Property development standards.
[…]
D. Building Height. The maximum height shall conform to that of the abutting property zone requirements. Where two or more different zones are applicable the most restrictive shall apply. There shall be no windows or doors in walls facing a residential zone unless greater than 15 feet of separation is provided, except emergency exit doors.
E. Building Orientation. Buildings in this district with public access shall have their primary entrance(s) oriented to (facing) the street. Where the site's frontage is adjacent to an existing or planned transit stop, the primary building entrance shall be oriented to that frontage to provide more direct access to transit. Where there are no existing or planned transit stops adjacent to the site, a building may have its entrance facing a side yard when a direct pedestrian walkway not exceeding 20 feet in length is provided between the building entrance and the street right-of-way.
F~~E~~. Access. Every newly created lot shall have a legal access. No street frontage shall be required by this or any other provision of this title.
G~~F~~. Exterior Lighting. Exterior lighting shall be located in such a manner as not to face directly, shine or reflect glare onto an adjacent street or property.

Proposed Amendments #2 – Transit Amenities and Supportive Facilities

PMC Division 2 Land Use Districts

Chapter 18.40 COMMERCIAL DISTRICTS
18.40.080 Pedestrian and transit amenities.
[…]
A. Purpose and Applicability. This section is intended to complement the building orientation standards in PMC 18.40.050, and the street standards in Chapter 18.65 PMC, by providing comfortable and inviting pedestrian spaces within the commercial districts. Pedestrian amenities serve as informal gathering places for socializing, resting, and enjoyment of the city and contribute to a walkable district. This section applies to all of the following types of buildings:

1. Three or more single-family attached townhomes on their own lots (i.e., townhomes subject to site design review) and multifamily dwellings;

2. Public and institutional buildings, except that the standard shall not apply to buildings which are not subject to site design review or those that do not receive the public (e.g., buildings used solely to house mechanical equipment and similar uses); and

3. Commercial and mixed-use buildings subject to site design review.

B. Guidelines and Standards. Every development shall provide pedestrian amenities such as but not limited to the following listed in subsections (B)(1) through (B)(5) of this section. Pedestrian amenities may be provided within a public right-of- way when approved by the applicable jurisdiction.

1. A plaza, courtyard, square or extra-wide sidewalk next to the building entrance with a minimum width of 10 feet.

2. Sitting space (i.e., dining area, benches or ledges) between the building entrance and sidewalk (minimum of 16 inches in height and 30 inches in width).

3. Building canopy, awning, pergola, or similar weather protection (minimum projection of four feet over a sidewalk or other pedestrian space).

4. Public art that incorporates seating (e.g., fountain, sculpture, etc.).

5. Transit amenity, such as bus shelter or pullout, in accordance with the city's transportation plan and adopted transit service provider plans. See PMC 18.80.020(W), Transit Access and Supportive Facilities.

Proposed Amendments #3 – References to Traffic Assessment Letter/Traffic Impact Study Requirements

PMC Division 2 Land Use Districts

Chapter 18.45 INDUSTRIAL DISTRICTS
18.45.070 Special standards for certain uses.
A. Uses with Significant Noise, Light/Glare, Dust, Vibration, or Traffic Impacts.

[…]

2. Traffic. ~~Uses that are likely to generate unusually high levels of vehicle traffic due to shipping and receiving. "Unusually high levels of traffic" means that the average number of daily trips on any existing street would increase by 15 percent or more as a result of the development.~~ The city may require a traffic impact study ~~analysis~~ prepared by a qualified professional and in accordance with traffic assessment letter and traffic impact study requirements in PMC 18.80.020(V) prior to deeming a land use application complete, and determining whether the proposed use requires conditional use approval. Applicants may be required to provide a traffic analysis for review by ODOT for developments that increase traffic on state highways.

Proposed Amendments #4 – References to Traffic Assessment Letter/Traffic Impact Study Requirements

PMC Chapter 18.65 ACCESS AND CIRCULATION

18.65.020 Vehicular access and circulation.
[…]
D. Traffic Impact Study Requirements. The city or other agency with access jurisdiction may require a traffic impact study prepared by a qualified professional to determine access, circulation and other transportation requirements. (See also PMC 18.80.020, Transportation improvements, including traffic assessment letter and traffic impact study requirements in PMC 18.80.020(V).)

Proposed Amendments #5 – Access Spacing Consistent with the TSP

PMC Chapter 18.65 ACCESS AND CIRCULATION

18.65.020 Vehicular access and circulation.
[…]
G. Access Spacing. Driveway accesses shall be separated from street intersections in accordance with the following standards and procedures:

1. Local Streets. A minimum of ~~35~~15 feet separation as measured from the sides of the driveway to a parallel street shall be required, except as provided in subsection (G)(3) of this section.

Proposed Amendments #6 – On-Site and Off-Site Pedestrian and Bicycle Improvements

PMC Chapter 18.65 ACCESS AND CIRCULATION

18.65.030 Pedestrian and bicycle access and circulation.

A. Pedestrian and Bicycle Access and Circulation. To ensure safe, direct and convenient pedestrian and bicycle circulation, all developments, except single-family detached housing (i.e., on individual lots), shall provide a continuous pedestrian and/or multi-use pathway system. (Pathways only provide for pedestrian circulation. Multi-use pathways accommodate pedestrians and bicycles.)

[…]

3. Connections within Development. For all developments subject to site design review, pathways shall connect all building entrances to one another. In addition, pathways shall connect all parking areas, storage areas, recreational facilities and common areas, and adjacent developments to the site, as applicable. Dedications also may be required in order to allow existing facilities to be improved to city standards in the future or to otherwise provide for the construction of pedestrian and bicycle improvements identified in adopted plans.

4. Connections from Development. Off-site pedestrian and bicycle facilities that provide connections from the proposed development may be required consistent with findings from a traffic impact study. See PMC 18.80.020(V) for traffic impact study requirements.

Proposed Amendments #7 – Parking Requirements for Commercial Uses

PMC Chapter 18.75 VEHICLE AND BICYCLE PARKING

18.75.030 Vehicle parking requirements.

[…]

In the C-1, central commercial zone, any building or structure ~~constructed prior to January 1, 2015,~~ shall be exempt from the off-street parking standards if the owner signs and records on the property a non-remonstrance agreement against the formation of a future parking district. Such buildings or structures may be modified internally, allow for a change of use, or expand the use provided the gross building volume is not increased. If an increase in gross building floor area is requested, off-street parking will only be required for that incremental increase.

A. Vehicle Parking – Minimum Standards.

[…]

2. Commercial Uses.

[…]

b. Business, General Retail, Personal Services.

General: One space for ~~350~~400 square feet of gross floor area. Furniture and appliances: One space per ~~750~~1,000 square feet of gross floor area.

[…]

e. Offices. Medical and dental offices, one space per 350 square feet of gross floor area; general offices, one space per ~~450~~500 square feet of gross floor area.

f. Restaurants, Bars, Ice Cream Parlors and Similar Uses. One space per four seats or one space per ~~100~~[150-200] square feet of gross leasable floor area, whichever is less.

Proposed Amendments #8 – Carpool/Vanpool/Rideshare Parking

PMC Chapter 18.75 VEHICLE AND BICYCLE PARKING

18.75.030 Vehicle parking standards.
[…]
F. Disabled Person Parking Spaces.
G. Carpool/Vanpool/Rideshare Parking. Parking areas that have designated employee parking and more than 20 vehicle parking spaces shall provide at least 10% of the employee parking spaces (minimum two spaces) as preferential carpool, vanpool, and similar rideshare parking spaces. Preferential carpool, vanpool, and rideshare parking spaces shall be closer to the employee entrance of the building than other parking spaces, with the exception of ADA accessible parking spaces.

Proposed Amendments #9 – Pedestrian Connections Through Parking Lots

PMC Chapter 18.75 VEHICLE AND BICYCLE PARKING

18.75.030 Vehicle parking standards.
[…]
F. Disabled Person Parking Spaces.
G. Carpool/Vanpool Parking…
H. Internal Pedestrian Connections. Internal pedestrian connections shall be provided in parking lots with more than ten (10) parking spaces located in commercial districts and in parking lots with more than thirty (30) parking spaces located in non-commercial districts. These connections shall be a minimum of five (5) feet wide and distinguished from vehicular areas through changes in elevation or contrasting paving materials (such as light-color concrete inlay between asphalt). Paint or thermo-plastic striping and similar types of non-permanent applications may be approved for crossings of parking lot areas that do not exceed 24 feet in crossing length.

Proposed Amendments #10 – Transit-Related Uses in Parking Lots

PMC Chapter 18.75 VEHICLE AND BICYCLE PARKING

18.75.030 Vehicle parking standards.
[…]
F. Disabled Person Parking Spaces.
G. Carpool/Vanpool Parking…
H. Internal Pedestrian Connections…
I. Transit-Related Facilities in Parking Lots. Parking spaces and portions of parking lots may be used for transit-related uses such as transit stops and park-and-ride or rideshare areas, provided minimum parking space requirements can still be met.

Proposed Amendments #11 – Bicycle Parking

PMC Chapter 18.75 VEHICLE AND BICYCLE PARKING

18.75.040 Bicycle parking requirements.
A. Number of Bicycle Parking Spaces. A minimum of two bicycle parking spaces per use for all uses with greater than ~~10~~5 vehicle parking spaces. The following additional standards apply to specific types of development:

[…]

5. Commercial Districts. Within the commercial districts, bicycle parking for customers shall be provided at a rate of at least ~~one~~two (2) spaces per use. Individual uses may provide their own parking,
or spaces may be clustered to serve up to six (6) bicycles. Bicycle parking spaces should be located in front of the uses~~stores~~ along the street, either on the sidewalks or in specially constructed areas such as pedestrian curb extensions. Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 48 inches between bicycles and other existing and potential obstructions. Customer spaces may or may not be sheltered. When provided, sheltered parking (within a building, or under an eave, overhang, or similar structure) should be provided at a rate of one space per 10 employees, with a minimum of one space per use~~store~~.
[…]
7. Transit stops. A minimum of two spaces shall be provided per transit stop. A greater number of spaces may be required for transit centers and transit park-and-rides, as determined through a discretionary site design review or conditional use permit process.

Proposed Amendments #12 – References to Street Design Cross-Sections

PMC Chapter 18.80 PUBLIC FACILITIES STANDARDS

18.80.020 Transportation improvements.
[…]
G. Minimum Rights-of-Way and Street Sections.
Street rights-of-way and improvements shall conform to the applicable design specification in the transportation system plan and public works design standards.
~~Where a range of width is indicated, the width shall be~~ Final design and location shall be determined by the decision-making authority based upon the following factors:

1. Street classification in the comprehensive plan and/or transportation system plan;
2. Anticipated traffic generation;
3. On-street parking needs;
4. Sidewalk and bikeway requirements based on anticipated level of use;
5. Requirements for placement of utilities;
6. Street lighting;
7. Minimize drainage, slope, and sensitive lands impacts, as identified in Chapter 18.55 PMC and/or the comprehensive plan;
8. Street tree location, as provided for in Chapter 18.70 PMC;
9. Protection of significant vegetation, as provided for in Chapter 18.70 PMC;
10. Safety and comfort for motorists, bicyclists, and pedestrians;
11. Street furnishings (e.g., benches, lighting, bus shelters, etc.), when provided;
12. Access needs for emergency vehicles; and
13. Transition between different street widths (i.e., existing streets and new streets), as applicable.

Proposed Amendments #13 – References to Local Street Connectivity Plan

PMC Chapter 18.80 PUBLIC FACILITIES STANDARDS

18.80.20 Transportation improvements
[…]
H. Future Street Plan and Extension of Streets.

1. A future street plan shall be filed by the applicant in conjunction with an application for a subdivision or partition in order to facilitate orderly development of the street system. The plan shall show the pattern of existing and proposed future streets from the boundaries of the proposed land

division consistent with the Local Street Connectivity Plan in the transportation system plan and shall include other parcels within 100 feet surrounding and adjacent to the proposed land division. The street plan is not binding; rather, it is intended to show potential future street extensions with future development.
[…]
4. Proposed streets or street extensions shall be located to provide direct access to existing or planned commercial services and other neighborhood facilities, such as schools, shopping areas and parks and transit facilities, consistent with the Local Street Connectivity Plan in the transportation system plan.

Proposed Amendments #14 – Street Connectivity

PMC Chapter 18.80 PUBLIC FACILITIES STANDARDS

18.80.020 Transportation improvements.
[…]
H. Future Street Plan and Extension of Streets
[…]

2. Streets shall be extended to the boundary lines of the parcel or tract to be developed to permit a satisfactory future division of adjoining land. The point where the streets temporarily end shall conform to subsections (H)(2)(a) through (H)(2)(~~c~~d) of this section:
a. These extended streets or street stubs to adjoining properties are not considered to be cul-de-sacs since they are intended to continue as through-streets when the adjoining property is developed.
b. A barricade (e.g., fence, bollards, boulders or similar vehicle barrier) shall be constructed at the end of the street by the subdivider and shall not be removed until authorized by the city or other applicable agency with jurisdiction over the street. The cost of the barricade shall be included in the street construction cost.
c. Temporary turnarounds (e.g., hammerhead or bulb-shaped configuration) shall be constructed for stub streets over 150 feet in length.
d. Notification that the stub street is planned for future extension shall be posted where the street improvement ends.
[…]
J. Cul-de-Sacs. A dead-end street shall be no more than 300~~600~~ feet long. The public works director may approve longer cul-de-sac lengths, not to exceed 600 feet, where site-specific conditions such as ~~and shall only be used when~~ environmental or topographical constraints, existing development patterns, or compliance with other standards in this title preclude street extension and through-circulation.

Proposed Amendments #15 – Traffic Assessment Letter/Traffic Impact Study Requirements

PMC Chapter 18.80 PUBLIC FACILITIES STANDARDS

18.80.020 Transportation standards.
[…]
U. Street Cross-Sections...
V. Traffic Assessment Letter and Traffic Impact Study.
1. Traffic Assessment Letter - Applicability – A traffic assessment letter shall be submitted with a land use application to document the expected trip generation of the proposal, where trip generation is expected not to exceed 100 daily trips. Trip generation shall be estimated for the proposed project

using the latest edition of the Institute of Engineers Trip Generation Manual or, when verified with the city prior to use, trip generation surveys conducted at similar facilities. The traffic assessment shall be prepared consistent with city engineering guidelines, Appendix X of the transportation system plan, and shall include a description of the following:

a. Weekday a.m./p.m. peak hour and daily trip generation estimate.
b. Sight distance at proposed access point(s), verified by a traffic or civil engineer registered in Oregon.
c. On-site circulation and street connectivity to adjacent parcels.

2. Traffic Impact Study - Applicability – A traffic impact study shall be submitted with a land use application if any of the conditions in 18.80.020(V)(2)a-e apply.

a. The proposed development is estimated to generate 100 or more trips daily;
b. The proposal is immediately adjacent to an intersection that is functioning at a level of service below LOS D, the city's minimum acceptable operating condition during the weekday peak hour;
c. An amendment to the Comprehensive Plan Map or a zone change is proposed;
d. The road authority indicates in writing that the proposal may have operational or safety concerns along its facility(ies); or
e. A Traffic Impact Analysis is required by Benton County or by ODOT pursuant to OAR 734-051.

2. Preparation. The traffic impact study shall be prepared by a professional engineer registered in the State of Oregon. The study scope and content shall be determined in coordination with the city public works director or designee, consistent with the traffic impact study guidelines appended to the transportation system plan. Traffic Impact Analyses required by Benton County or ODOT shall be prepared in accordance with the requirements of those road authorities. Preparation of the study report is the responsibility of the land owner or applicant.

3. Approval Criteria. The traffic assessment letter and traffic impact study report shall be reviewed according to the following criteria:

a. The study complies with the content requirements set forth by the city and/or other road authorities as appropriate;
b. The study demonstrates that adequate transportation facilities exist to serve the proposed land use action or identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the road authority;
c. For affected city facilities, the study demonstrates that the project meets mobility and other applicable performance standards established in the adopted transportation system plan, and includes identification of multi-modal solutions used to meet these standards, as needed; and
d. Proposed design and construction of transportation improvements are in accordance with the design standards and the access spacing standards specified in the transportation system plan.

4. Conditions of Approval.

a. The city may deny, approve, or approve a proposal with conditions necessary to meet operational and safety standards; provide the necessary right-of-way for planned improvements; and require construction of improvements to ensure consistency with the future planned transportation system.
b. Construction of off-site improvements may be required to mitigate impacts resulting from development that relate to capacity deficiencies and public safety; and/or to upgrade or construct public facilities to city standards.
c. Where the existing transportation system is shown to be impacted by the proposed use, improvements such as paving; curbing; installation of or contribution to traffic signals; and/or construction of sidewalks, bikeways, access ways, paths, or streets that serve the proposed use may be required.
d. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities. Findings in the development approval shall indicate how the required improvements directly relate to and are roughly proportional to the impact of development.

Proposed Amendments #16 – Transit Access and Supportive Facilities

PMC Chapter 18.80 PUBLIC FACILITIES STANDARDS

18.80.020 Transportation improvements.
[…]
U. Street Cross-Sections...
<u>V. Traffic Assessment Letter and Traffic Impact Study…</u>
<u>W. Transit Access and Supportive Facilities. Development that is proposed adjacent to an existing or planned transit stop, as designated in an adopted transportation or transit plan, shall provide the following transit access and supportive facilities in coordination with the transit service provider:</u>

> *<u>1. Reasonably direct pedestrian connections between the transit stop and primary entrances of the buildings on site. For the purpose of this Section, "reasonably direct" means a route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for users.</u>*
> *<u>2. The primary entrance of the building closest to the street where the transit stop is located is oriented to that street.</u>*
> *<u>3. A transit passenger landing pad that is ADA accessible.</u>*
> *<u>4. An easement or dedication for a passenger shelter or bench if such an improvement is identified in an adopted plan.</u>*
> *<u>5. Lighting at the transit stop.</u>*
> *<u>6. Other improvements identified in an adopted transportation or transit plan.</u>*

Proposed Amendments #17 – Permitting for Transportation Activities

PMC Chapter 18.105 TYPES OF APPLICATIONS AND REVIEW PROCEDURES

<u>18.105.025 Exclusions from permits.</u>
<u>The following activities are permitted in each land use district but are excluded from the requirement of obtaining a land use permit. Exclusion from the permit requirement does not exempt the activity from otherwise complying with applicable standards, conditions, and other provisions of the Philomath development code.</u>
<u>A. Operation, maintenance, and repair of existing transportation facilities identified in the transportation system plan;</u>
<u>B. Dedication of right-of-way, authorization of construction, and the construction of transportation facilities and improvements, where the improvements are planned improvements identified in the transportation system plan or are otherwise consistent with clear and objective dimensional standards;</u>
<u>C. Changes in transit services.</u>

Proposed Amendments #18 – References to Traffic Assessment Letter/Traffic Impact Study Requirements

PMC Chapter 18.105 TYPES OF APPLICATIONS AND REVIEW PROCEDURES

18.105.040 Type II procedure (administrative).
[…]
B. Application Requirements.

> *[…]*
> *2. Submittal Information. The application shall:*
>
> > *[…]*
> > *d. Include an impact study for all land division applications. The impact study shall quantify/assess the effect of the development on public facilities and services. The study shall address, at a minimum, the transportation system (pursuant to traffic assessment letter and traffic impact study requirements in PMC 18.80.020(V)), including pedestrian ways and bikeways, the*

drainage system, the parks system, the water system, the sewer system, and the noise impacts of the development. For each public facility system and type of impact, the study shall propose improvements necessary to meet city standards and to minimize the impact of the development on the public at large, public facilities systems, and affected private property users. In situations where this title requires the dedication of real property to the city, the applicant shall either specifically agree to the dedication requirement, or provide evidence that shows that the real property dedication requirement is not roughly proportional to the projected impacts of the development.

18.105.050 Type III procedure (quasi-judicial).
[…]
B. Application Requirements.
[…]
2. Content. Type III applications shall:
[…]
d. Include an impact study for all Type III applications <u>and a traffic assessment letter or traffic impact study for land use actions pursuant to PMC 18.80.020(V)</u>. The impact study shall quantify/assess the effect of the development on public facilities and services. The study shall address, at a minimum, the transportation system, including pedestrian ways and bikeways, the drainage system, the parks system, the water system, the sewer system, and the noise impacts of the development. For each public facility system and type of impact, the study shall propose improvements necessary to meet city standards and to minimize the impact of the development on the public at large, public facilities systems, and affected private property users. In situations where this title requires the dedication of real property to the city, the applicant shall either specifically agree to the dedication requirement, or provide evidence that shows that the real property dedication requirement is not roughly proportional to the projected impacts of the development.

Proposed Amendments #19 – Multimodal Improvements in Conditions of Approval

PMC Chapter 18.120 CONDITIONAL USE PERMITS

18.120.040 Criteria, standards and conditions of approval.
[…]
C. Conditions of Approval. The city may impose conditions that are found necessary to ensure that the use is compatible with other uses in the vicinity, and that the negative impact of the proposed use on the surrounding uses and public facilities is minimized. These conditions include, but are not limited to, the following:

1. Limiting the hours, days, place and/or manner of operation;
2. Requiring site or architectural design features which minimize environmental impacts such as noise, vibration, exhaust/emissions, light, glare, erosion, odor and/or dust;
3. Requiring larger setback areas, lot area, and/or lot depth or width;
4. Limiting the building height, size or lot coverage, and/or location on the site;
5. Designating the size, number, location and/or design of vehicle access points or parking areas;
6. Requiring street right-of-way to be dedicated and street(s), sidewalks, curbs, planting strips, pathways, or trails to be improved;
7. Requiring landscaping, screening, drainage, water quality facilities, and/or improvement of parking and loading areas;
8. Limiting the number, size, location, height and/or lighting of signs;
9. Limiting or setting standards for the location, design, and/or intensity of outdoor lighting;

10. Requiring berms, screening or landscaping and the establishment of standards for their installation and maintenance;
11. Requiring and designating the size, height, location and/or materials for fences;
12. Requiring the protection and preservation of existing trees, soils, vegetation, watercourses, habitat areas, drainage areas, historic resources, cultural resources, and/or sensitive lands (Chapter 18.85 PMC);
13. Requiring the dedication of sufficient land to the public in accordance with adopted plans and standards, and/or construction of pedestrian~~/~~, bicycle, and transit-related ~~pathways~~ facilities in accordance with the adopted plans.

Proposed Amendments #20 – Compliance with TPR Section -0060

PMC Chapter 18.135 ANNEXATIONS AND AMENDMENTS

18.135.050 Transportation planning rule compliance.
~~A.~~ When a development application includes a proposed comprehensive plan amendment or land use regulation (including land use district) change, the proposal shall demonstrate it is consistent with the adopted transportation system plan and the planned function, capacity, and performance standards of the impacted facility or facilities. Proposals shall be reviewed to determine whether they significantly affect a transportation facility pursuant to Oregon Administrative Rule (OAR) 660-012-0060 (Transportation Planning Rule - TPR). Where it is found that a proposed amendment would have a significant effect on a transportation facility in consultation with the applicable roadway authority, the city shall work with the roadway authority and applicant to modify the request or mitigate the impacts in accordance with the TPR and applicable law~~the proposal shall be reviewed to determine whether it significantly affects a transportation facility, in accordance with OAR 660-012-0060. Significant means the proposal would:~~

~~1. Change the functional classification of an existing or planned transportation facility. This would occur, for example, when a proposal causes future traffic to exceed the capacity of "collector" street classification, requiring a change in the classification to an "arterial" street, as identified by the comprehensive plan/transportation system plan; or~~
~~2. Change the standards implementing a functional classification system; or~~
~~3. Allow types or levels of land use that would result in levels of travel or access what are inconsistent with the functional classification of a transportation facility; or~~
~~4. Reduce the level of service of the facility below the minimum acceptable level identified in the comprehensive plan/transportation system plan.~~

~~B. Amendments to the comprehensive plan and land use standards which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and level of service of the facility identified in the transportation system plan. This shall be accomplished by one of the following:~~

~~1. Limiting allowed land uses to be consistent with the planned function of the transportation facility;~~
~~2. Amending the transportation system plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the transportation planning rule; or~~
~~3. Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes of transportation.~~

Proposed Amendments #21 – Variances for Transportation Improvements

PMC Chapter 18.155 VARIANCES

18.155.030 Class B variances.
A. Class B Variances. Due to their discretionary nature, the following types of variances shall be reviewed using a Type II procedure, in accordance with Chapter 18.105 PMC:
[…]

6. Variances to Transportation Improvement Requirements (PMC 18.80.020). The city may approve, approve with conditions, or deny a variance to the transportation improvement standards of PMC 18.80.020~~, based on the criteria for granting variances provided in PMC 18.80.020(B)~~after finding compliance with criteria in PMC 18.155.030(A)(6)(a)-(d). When the ~~provisions of that chapter cannot support a~~ variance request cannot meet these criteria, then the request shall be reviewed as a Class C variance.

a. There is a significant constraint presented by existing topography, physical and environmental conditions, right-of-way, development, and/or legal agreements;
b. There are opportunities identified for implementing innovative transportation treatments;
c. The variance meets the intent of the transportation improvement standards; and
d. The requested variance will not compromise safety, nor adversely impact other properties.

Other Issues for Consideration

Street and Path Design Standards

The Philomath Development Code does not include transportation design standards; code requirements refer to the TSP for transportation design standards and to Public Works standard specifications for public facilities construction standards. Consistency between the design standards on which the draft TSP is based and the Public Works Design Standards (PWDS) is needed.

To assist the City in identifying PWDS updates, Table 2 identifies design standards that have been proposed for the City's transportation system (see Technical Memorandum 9, Figures 3-8 and Tables 4-9) and Standard Detail Drawings that are included in Appendix A of the PWDS. The dimensions noted in the table are "curb to curb" pavement widths.

Table 2: Summary of Design Standards in the Draft TSP and PWDS

Updated Transportation System	PWDS
28'-36' Local Street Cross-Section (Figure 6 and Table 7, Tech. Memo. #9)	36' Residential (Local) Street Minimum Section (Detail No. 201) 28' Residential Cul-de-Sac Minimum Section (Detail No. 201A)
44'-46' Minor Collector Cross-Section (Figure 5 and Table 6, Tech. Memo. #9)	36' Minor Collector Street Minimum Section (Detail No. 202)
44'-50' Major Collector Cross-Section (Figure 4 and Table 5, Tech. Memo. #9)	36' Major Collector Street Minimum Section (Detail No. 202A)
-	36' Commercial/Industrial Street Minimum Section (Detail No. 203)
41'-48' Minor Arterial Cross-Section (Figure 3 and Table 4, Tech. Memo. #9)	42' Arterial Street Minimum Section (Detail No. 204)

In addition, the TSP update process addressed standards for new types of transportation facilities and treatments. These facilities and standards are listed below.

- Proposed shared-use path typical cross-section standards (Figures 7a and 7b and Table 8, Tech. Memo. #9)

- Proposed concept for US20/OR34: Green Street to East UGB (Figure 8 and Table 9, Tech. Memo. #9)
- “Yield roadways” as interim local street improvements (Figure 12, Tech. Memo. #9)
- Conceptual Main Street improvements (Figure 13, Tech. Memo. #9 and figures in 2009 Downtown Design Plan and Business Mix Study)

These standards are not included in the PWDS or in the body of the draft TSP. The City should consider how these recommended treatments and standards will be referred to for future facility design guidance.

Downtown Parking Requirements

With the implementation of the Downtown Safety and Streetscape Project, and to respond to future commercial development, it is expected that the City will re-evaluate minimum parking requirements in Downtown. Parking requirements are organized in the code by land use, not land use district, except for existing special provisions that apply to the C-1 district that exempt the district from off-street parking requirements (with some restrictions).

Outside of the special C-1 district parking provisions, parking requirements for predominant uses in Downtown (retail, general services, offices, and restaurants) were reviewed in preparing this memorandum. Table 2 provides a comparison of existing requirements in Philomath and requirements in Model Code[1] and two other similarly sized jurisdictions. In this comparison, Philomath’s existing parking requirements are slightly higher for selected uses.

An initial set of potential changes to special parking provisions in the C-1 district and to minimum parking requirements in “Downtown” use categories is presented in this memorandum as Proposed Amendments #7. There are several options available to the City related to Downtown parking requirements, including: pursuing these proposed amendments as part of the TSP adoption process; creating and adopting a policy as part of this process, which expresses the City’s intention to evaluate and “right-size” Downtown parking (see draft proposed policies in Technical Memorandum #12a); and/or carrying this information into a future evaluation and discussion about Downtown parking.

Table 3: Comparison of Minimum Parking Requirements

Use	Philomath	Model Code	Scappoose	Talent
Retail	1 space per 350 sf Bulk: 1 space per 750 sf	1 space per 400 sf Bulk: 1 space per 1,000 sf	1 space per 400 sf (min. 4 spaces)	1 space per 400 sf
Office	1 space per 450 sf	1 space per 500 sf	1 space per 500 sf	1 space per 450 sf
Restaurant	1 space per 100 sf	1 space per 200 sf	1 space per 120 sf	1 space per 100 sf

Neighborhood Traffic Management

Technical Memorandum #9 noted that the City does not have currently a formal neighborhood traffic management program, and provided guidance regarding program elements if such a program were

[1] *Transportation Growth Management, Model Development Code for Small Cities (3rd Edition; October 2012).*

desired. One thread of the guidance proposed providing a formalized process for community members who are concerned about the traffic on their neighborhood streets. New policy can provide the basis for this kind of process, which is addressed in Technical Memorandum #12a.

Another thread of the guidance in Technical Memorandum #9 stated the following:

> *For land use proposals, in addition to assessing impacts to the entire transportation network, traffic studies for new developments must also assess impacts to residential streets. A recommended threshold to determine if this additional analysis is needed is if the proposed project at ultimate buildout increases through traffic on any one residential street by 200 or more vehicles per day. Once the analysis is performed, the threshold used to determine if residential streets are impacted would be if their daily traffic volume exceeds 1,200 vehicles.*

The Beaverton Development Code provides an example of what implementing this guidance could look like:

> *Traffic Management Plan. [ORD 4302; June 2004] Where development will add 20 or more trips in any hour on a residential street, a Traffic Management Plan acceptable to the City Engineer shall be submitted in order to complete the application. A residential street is any portion of a street classified as a Local Street or Neighborhood Route and having abutting property zoned R2, R4, R5, R7, or R10. [ORD 4584; June 2012]*
>
> *1. For each development application that requires a Traffic Management Plan, the Plan shall identify:*
>
> > *A. The hours when the added trips from the development will be 20 or more vehicles per hour.*
> >
> > *B. The existing volume of trips on the residential street during each of those same hours.*
> >
> > *C. The volume of trips that the development will add on the residential street during each of those same hours.*
> >
> > *D. Recommended traffic management strategies designed to City standards to mitigate the impacts of the increased trips attributed to the development. Potential traffic management strategies include, but are not limited to, any combination of speed humps, curb extensions, intersection treatments, and traffic control devices.*
>
> *2. The Traffic Management Plan shall discuss whether the recommended improvements both on-site and off-site are justified, reasonably related to, and roughly proportional to the impacts of the proposed development and shall include information sufficient for the City to assess whether the proposed mitigation strategies are reasonably related and roughly proportional to the level of impact.* (BDC *Section 60.55.15)*

If the City wishes to codify a Neighborhood Traffic Management program, then development code language like the language above can be considered for inclusion in proposed code amendments. Otherwise, the guidance and sample language in this section can be retained for potential future reference and use.