

2017 Columbia County Transportation System Plan: Volume 2



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Columbia County Transportation System Plan

Prepared for:

Columbia County

Oregon Department of Transportation

Prepared by:

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Acknowledgements

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Volume 2 Contents

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

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Section A

Glossary

Glossary

- **Access Management:** Access management is a broad set of techniques that balance the need to provide for efficient, safe, and timely travel with the ability to allow access to individual destinations. Measures may include but are not limited to restrictions on the type and amount of access to roadways, and use of physical controls such as signals and channelization including raised medians, to reduce impacts of approach road traffic on the main facility.
- **Alternative Modes:** Transportation alternatives other than single-occupant automobiles such as rail, transit, bicycles and walking.
- **Aspirational Projects:** Projects that are not reasonably likely to be funded during the 20-year planning horizon, but do address an identified problem and are supported by the County and ODOT.
- **Capacity:** The maximum number of vehicles or individuals that can traverse a given segment of a transportation facility with prevailing roadway and traffic conditions.
- **Constrained Projects:** Constrained projects are those projects that the County and ODOT believe are reasonably likely to be funded during the 20-year planning horizon based on the constrained funding threshold established through County and ODOT funding analysis.
- **Level of Service (LOS):** LOS is a “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay is excessive and demand exceeds capacity, typically resulting in long queues and delays.
- **Local Roads:** These roadways provide more direct access to residences. These roadways are often lined with homes and are designed to serve lower volumes of traffic.
- **Major Collector Roadways:** These roadways are intended to serve local traffic traveling to and from principal arterial or minor arterial roadways. These roadways provide greater accessibility to neighborhoods, often connecting to major activity generators and providing efficient through movement for local traffic.
- **Minor Arterial Roadways:** These roadways are intended to move traffic between principal arterials and major collector roadways. These roadways generally experience higher traffic volumes and often act as a corridor connecting many parts of the County.
- **Minor Collector Roadways:** These roadways often connect the neighborhoods to the major collector roadways. These roadways serve as major neighborhood routes and generally provide more direct access to properties or driveways than arterial or major collector roadways.
- **Mobility Targets:** The level of congestion the corresponding jurisdiction has defined as acceptable. Mobility targets are in the form of LOS or v/c ratios.
- **Multi-Modal:** Involving several modes of transportation including bus, rail, bicycle, motor vehicle, etc.
- **Oregon Highway Plan (OHP):** The document that establishes long range policies and investment strategies for the state highway system in Oregon.

- **Peak Period or Peak Hour:** The period of the day with the highest number of travelers. This is normally between 4-6 p.m. on weekdays.
- **Principal Arterial Roadways:** These are state roadways. These roadways serve the highest volume of motor vehicle traffic and are primarily used for longer distance regional trips.
- **Right-Of-Way (ROW):** A general term denoting publicly-owned land or property upon which public facilities and infrastructure is placed.
- **Safety Priority Index System (SPIS):** An indexing system used by Oregon Department of Transportation to prioritize safety improvements based on crash frequency and severity on state facilities.
- **Shared-Use Path:** Off-street route (typically recreationally focused) that can be used by several transportation modes, including bicycles, pedestrians and other non-motorized modes (i.e. skateboards, roller blades, etc.).
- **Transportation Demand Management (TDM):** A policy tool as well as any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods.
- **Transportation Impact Analysis (TIA):** A study that evaluates the potential impacts a project may have on the transportation system, and determines mitigations required to meet transportation standards. These are necessary for projects to be approved (e.g., proposed developments, roadway extensions, zone changes).
- **Transportation Road Advisory Committee (TRAC):** A committee comprised of local residents, business representatives, and agency technical staff that reviewed and commented on each memorandum and met with the project team at key stages during the project. This group helped the project team find agreement on project issues and alternatives.
- **Transportation System Management (TSM):** Management strategies such as signal improvements, traffic signal coordination, traffic calming, access management, local street connectivity, and intelligent transportation systems.
- **Transportation System Management and Operations (TSMO):** Strategies and policies that work towards improving mobility through cost-effective methods, and can be categorized as transportation system management or transportation demand management.
- **Transportation System Plan (TSP):** Is a comprehensive plan that is developed to provide a coordinated, seamless integration of continuity between modes at the local level as well as integration with the regional transportation system.
- **Urban Growth Boundary (UGB):** The regional boundary that encompasses zoning designations in an urban area.
- **Volume-to-capacity (v/c) ratio:** A v/c ratio is a decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used at a turn movement, approach leg, or intersection. The ratio is the peak hour traffic volume divided by the hourly capacity of a given intersection or movement. A lower ratio indicates smooth operations and minimal delays. A ratio approaching 1.00 indicates increased congestion and reduced performance.

Section A

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Section B

Memo I: Public and Stakeholder Involvement Strategy

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.



MEMORANDUM

DATE: June 26, 2014

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Garth Appanaitis, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update

Technical Memorandum #1: Public and Stakeholder Involvement Strategy P11086-022

Columbia County has recognized that citizen involvement is necessary in making wise and legitimate decisions through its Comprehensive Plan. The following strategy provides specific actions for engaging citizens and stakeholders in the Transportation System Plan (TSP) update process.

The county will involve the public and stakeholders primarily through a series of stakeholder interviews, committee meetings, public open houses, and work sessions with elected officials, in addition to the distribution of project information through a variety of media, including a project website. The following describes each of these outreach mechanisms and a milestone schedule showing the public process is attached.

Transportation Road Advisory Committee

Columbia County’s existing Transportation Road Advisory Committee (TRAC) will be asked to inform and guide the TSP update. Their primary function in this process will be to review drafts and provide comments on technical and regulatory memoranda/reports, as well as provide recommendations for the TSP. This committee maintains representation from a variety of public agency and private interests in the county. Committee members are listed in Table 1.

The TRAC is currently scoped to meet six times throughout the plan development process. The first meeting will provide a project orientation and begin the discussion of the goals and objectives that best describe how the transportation system should be developed and managed in Columbia County. The second meeting will be a review and discussion of existing and future transportation conditions. The third meeting will discuss how transportation solutions will be identified, how much funding the county is expected to have, and updated standards to manage the transportation system. In the

Name	Affiliation
Jeff Burch	Vernonia Public Work
Jeff Flatt	Mid Columbia Bus Company, Inc.
Nita Greene	Land Owner
Mike Greisen	Scappoose Rural Fire District
Jim Jackson	Wildish Standard Paving Co.
Pat LaPointe	Onward Communications
Rosemary Lohrke	Land Owner
Rodney Moore	M.E. Moore Construction
Eric Oien	Teevin Bros.
Don Rose	West Oregon Electric Company
Paul Simmons	Clatskanie Bus Services

fourth meeting, the TRAC will review and discuss potential transportation solutions. The fifth meeting will be a review of recommended projects and programs with projected planning-level cost estimates for each. The final meeting will be a review of recommended modifications to existing ordinances and a draft TSP, prior to beginning the public hearings process.

TRAC meetings will be open to the general public, but general public comments will be allowed only during designated periods at the end of the meetings.

Stakeholder Interviews

At the outset of the project, up to 10 key community stakeholders will be interviewed to inquire about interests in transportation within the county and the surrounding region. This input will be used to direct the development of recommended improvements, establish priorities, and evaluate plan outcomes.

Public Open House Meetings

Two public open house meeting series' will be held during the project. For each series, an open house will be held in the north half of the county and another one in the south half of the county, for a total of four meetings. The first meeting series will introduce the TSP project, obtain input regarding existing and future transportation needs and interests, as well as key areas of interest for inclusion in the goals and objectives. The second meeting series will again provide an overview of the project and obtain input on potential solutions to address transportation needs.

Advertisement of public open houses will be made through the project website, the County's website, and media notices in local newspapers. The county may supplement advertising through local radio stations and posters/flyers displayed in public areas or at other community events.

Board of Commissioners Work Sessions

The County Board of Commissioners will be directly engaged in the TSP update process through two work sessions held at key milestones that precede the public open houses.

Engaging Seniors, Non-English Speakers, and Low Income Populations

As part of the outreach to engage citizens and stakeholders in the TSP update process, efforts will be made to involve minority and low-income groups within the county.

Estimates based on the 2010 census show that approximately 90% of the population of Columbia County is Caucasian, with people of Hispanic or Latino origin making up the next largest race at less than 5%. Compared to the statewide average, Columbia County has a greater percentage of Caucasians and lower percentages of every other race identified. The county also has a slightly lower percentage compared to the statewide average that are living below the poverty level and approximately the same percentage of residents over the age of 65.

With only the English language being spoken in more than 95% of Columbia County homes, project documentation will be written in English. However, translation services will be made available upon request.



The county will also post project advertisements in locations where representatives or members of Native American tribes in the region, such as the Confederated Tribes of the Grand Ronde, Confederated Tribes of Siletz Indians, Confederated Tribes of Warm Springs, Clatsop-Nehalem Confederated Tribes, and the Chinook Indian Nation are likely to see them.

To assist those that cannot drive, public meetings will be at locations accessible via transit when feasible. The county will provide downloadable materials on the project website. Hard copies of project documents will be available upon request for those without internet access.

To help engage senior citizens, the county 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.

Distribution and Review of Work Products

The county will distribute project work products to TRAC members, work products will also be available on the project website for access by the general public. The project website will provide information on the schedule of events, and will provide access to relevant draft and final deliverables. TRAC members will be able to comment directly through regular committee meetings. The general public will be able to comment during the public comment period at the end of TRAC meetings, at open house meetings, and through the project website. The project website will facilitate public input by including a comment mapping feature and online surveys. The project team will review comments input through the website and include them as part of the project record of public comments.

Section B

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Section C

Memo 2: Stakeholder Interviews

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TECHNICAL MEMORANDUM #2

DATE: October 13, 2014

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates
Edith Lopez Victoria, DKS Associates

SUBJECT: **Columbia County Transportation System Plan Update**
Technical Memorandum #2: Stakeholder Interviews

P11086-022

Stakeholder Interviews

Project staff performed telephone interviews with sixteen local stakeholders between May 12th and July 3rd 2014. The purpose of these interviews was to identify the transportation needs that stakeholders feel are the most important in Columbia County and to gather input on potential improvements that are needed to the transportation system. This document summarizes the outcome of those meetings, with input provided from the following stakeholders:

- Dave Carpenter, Dyno Nobel Business Operations Superintendent.
- Paul Langner, Teeven Brothers Rainier.
- Mark Buffington, Clatskanie ODOT Maintenance Manager.
- Janine Salisbury, St. Helens School District Business Manager.
- Scott Parker, President Scappoose Sand & Gravel.
- Scott Jensen, Port Planner.
- Charley O'Hare, Clatskanie PUD.
- Kerry Kallunki, Clatskanie PUD.
- Glen Crinklaw, Citizen.
- Brad Brooks, St. Helens Post Master.
- Trevor Kaech, Timber Industry.
- Earl Fisher, Columbia County Commissioner.
- Henry Heinmuller, Columbia County Commissioner.
- Jay Tappan, Chief Columbia River Fire and Rescue.

- Janet Wright, Columbia County Rider Transit Director.
- Tony Hyde, Columbia County Commissioner.

Driving

Safety

Stakeholders identified safety issues along the following streets or at the following locations:

- There is a need for more signage along county roads to alert drivers of warnings and advisory speeds.
- Overhead and horizontal clearances mandated by the State are not maintained on all roads.
- Collisions occur on narrow roads when large logging trucks turn sharp corners and encroach into the opposite lane.
- There are sight line issues along Tide Creek Road, Apiary Road, and at US 30 and Gable Road, and US 30.
- Upper McDermott Road is vulnerable to wash-outs.
- Apiary Road and the Scappoose-Vernonia Highway have inadequate superelevation, sharp turns, and missing guardrails.

Congestion

The following locations were identified as having a congestion problem:

- Queuing on the Longview Bridge.
- Congestion at the intersections of US 30 and Gable Road, and US 30 and Havlik Drive.
- Congestion on the segments of US 30 between Scappoose and St. Helens, particularly in the beach travel months of July and August.
- Other roads with congestion issues include Wyeth Road and Timber Road.
- Apiary Road is overly used by heavy vehicles.

Other

- Major thoroughfares are in need of resurfacing, there is not enough funding to keep up with maintenance, and some roads have deteriorated to the extent that they have to be converted to gravel.
- Roads are not kept clear during winter maintenance and most drivers are not notified when the road restrictions are lifted after a heavy freeze.

Main Highways

Stakeholders feel the following corridors need to be reviewed for improvements:

US 30

- Bridges along US 30 were designed for trucks of significantly less weight and length than the trucks presently being served.
- All of US 30 within Columbia County should be four lanes or include passing lanes to ease the circulation of trucks and emergency vehicles, and prevent bottlenecks.
- There should be an alternative route to US 30 to prevent bottlenecks during traffic incidents, thus it is imperative that all incidents are cleared in a timely manner.
- Striping along US 30 gets worn off from winter maintenance and there are visibility issues when vegetation is not maintained.
- Safer school connections are needed on US 30 across from St. Helens High School.

OR 202, OR 47 and Scappoose-Vernonia Highway

- There are traffic safety concerns along OR 202, OR 47 and Scappoose-Vernonia Highway because these highways are narrow, there are land sliding issues, and they are heavily trafficked by heavy vehicles.

Cornelius Pass

- Cornelius Pass Road is a significant commuter route to Columbia County residents and it is windy, narrow, congested, and heavily trafficked by heavy vehicles.

Bridges

Stakeholders provided the following information regarding bridges in Columbia County:

- Bridges along main arterial and collector roads do not have the weight capacity to accommodate most of the heavy vehicles that circulate along them. This includes mainly logging trucks and emergency vehicles.
- Agencies responsible for maintaining bridges throughout Columbia County should be clearly designated.
- Reevaluate bridge weight restrictions. Some bridges may have capacity to accommodate heavier trucks than what is currently allowed and vice-versa.
- A new bridge is needed to connect Columbia County and Washington State.

Transit

Existing Services

Stakeholders provided the following information regarding bus service in Columbia County:

- Existing service routes include commuter routes between Westport and St Helens, Rainier and Longview, and other routes that connect the County to the Portland metro area.
- Stakeholder were aware of transit flex routes that run between Scappoose and St. Helens and to other major destinations.

Transit Needs

Stakeholders feel that the following are existing issues or needs of the Columbia County Transit System:

- General infrastructural improvements are needed to facilitate transit access, such as safe transit stops along US 30, transit centers in Clatskanie and Rainier, and Park-and-Rides at key locations throughout the County.
- Additional funds are needed to maintain or improve existing transit operations, to provide demand response services and to use as matching funds when federal grants become available.
- Additional transit connections are needed between the northern part of the county and Portland and Astoria.
- Public transportation needs to be incorporated in the improvement of major thoroughfares as part of new land development, and at interfaces with existing business.
- Improve flexible connections to Portland to provide better access for people that need to travel for medical services, shopping, and college.

Bike and pedestrian

Stakeholders stated that due to geography and size, Columbia County is not conducive to biking and walking, however, they would like to see improvements in the following intersections and roadway segments:

- Improve bike connectivity along US 30.
- Define designated bike paths, routes, and lanes throughout Columbia County
- Provide a pedestrian crossing at US 30 and Gable Road.
- Promote bicycle education for commuter and recreational bike riders.
- Improve bike detection on major intersections.
- Provide pedestrian crossings along major thoroughfares, especially at bus stop locations along US 30.
- Promote the use of buses to transport bikes to reduce bike-vehicle conflicts along US 30.
- Provide more and better connections to recreational bike facilities and/or shared-use paths.

Rail

Stakeholders provided the following information regarding rail transportation:

- A second rail track is needed at single rail track locations to expand rail capacity and promote commerce.
- Improve rail crossings in terms of safety and vehicular access to accommodate all modes of transportation, including heavy vehicles.
- There are frequent problems with trains blocking traffic, which affects all users of the transportation system, such as school traffic, public transportation and emergency services. Train blockages of up to 20 minutes regularly occur.

Needs of Disadvantaged Populations

Stakeholders feel that the following are transportation needs of disadvantaged populations:

- Improve overall public transportation for the elderly, in particular demand response transit, which includes non-emergency medical transportation and Dial-a-Ride programs.
- Provide public transportation to the mental health facility in St. Helens and to health providers outside of Columbia County.
- Meals on Wheels offers meals to seniors, but participation of this service is limited because there are not enough drivers.
- Veterans need medical transportation to get to Portland.
- Transportation services that can serve lower-income minorities; options are not always well communicated to the elderly and the disabled.

Funding Allocation

Stakeholders feel that the following transportation areas should be prioritized as funding becomes available; topics are ranked in order of importance:

1. Prioritize maintenance and repair of existing county roads and highways.
2. Prioritize investments that support economic development and help create new revenue for further transportation improvements.
3. Increase funding for transit.
4. Improve the safety of railroad crossings and reduce crossing closure times.
5. Improve overall transportation safety.
6. Provide improvements for bicycle and pedestrian infrastructure, including recreational shared-use paths.

Additional Stakeholders

Stakeholders identified the following entities as additional stakeholders that should be consulted in the development of the Transportation System Plan:

- ODOT Public Transit Division
- County Transportation Safety Committee
- Columbia County Emergency Management
- Pacific Gas & Electric Company
- Police and fire districts
- Towing truck companies
- Bicycle groups
- School district administrators
- Industrial park residents
- US Gypsum
- Kiwanis
- Rotary Clubs
- Chambers of Commerce

Other

Stakeholders provided the following information regarding other transportation topics:

- Increase law enforcement to enforce weight limits and posted speeds.
- Provide parking for public transportation, currently public transportation has to rely on private parking lots.
- Provide access to the Columbia River to promote development near port facilities and expand the use of maritime transportation.

Section C

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Section D

Memo 3: Plan Review Summary

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TECHNICAL MEMORANDUM #3

DATE: July 11, 2014

TO: Columbia County TSP Project Management Team

FROM: John Bosket, PE - DKS Associates
Garth Appanaitis, PE - DKS Associates
Edith Lopez Victoria - DKS Associates
Darci Rudzinski - Angelo Planning Group
Shayna Rehberg - Angelo Planning Group

SUBJECT: Columbia County Transportation System Plan

Technical Memorandum #3: Plan Review Summary

P11086-022

This memorandum summarizes planning documents, policies, and regulations that are applicable to the 2014 Columbia County Transportation System Plan (TSP) update (see Attachment A for a complete list). The County's current TSP 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 2035. 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.

Transportation System Planning in Oregon

Transportation system planning in Oregon is required by Statewide Planning Goal 12 – Transportation.¹ The Transportation Planning Rule (TPR), OAR 660-012, describes how to implement Statewide Planning Goal 12.²

By implementing Statewide Planning Goal 12 (Transportation), the TPR promotes the development of safe, convenient, and economically supportive transportation systems that are designed to reduce reliance on single occupant vehicle travel. Key elements include direction for preparing, coordinating, and implementing transportation system plans. In particular, OAR 660-012-0060 addresses amendments to plans and land use regulations and includes measures to be taken to ensure allowed land uses are consistent with the identified function and capacity of existing and planned transportation facilities. This rule includes criteria for identifying significant effects of plan or land use

¹ Statewide Planning Goals: <http://www.oregon.gov/LCD/goals.shtml>

² Transportation Planning Rule: http://arcweb.sos.state.or.us/rules/OARS_600/OAR_660/660_012.html

regulation amendments on transportation facilities, actions to be taken when a significant effect would occur, identification of planned facilities, and coordination with transportation facility providers.

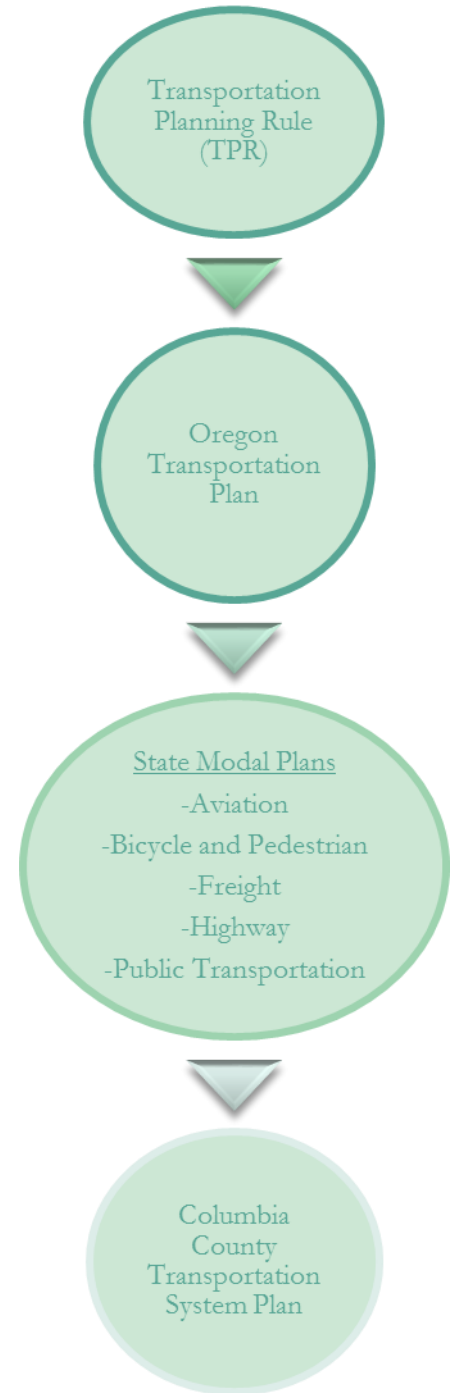
Recent amendments to the TPR (effective January 1, 2012) include new language in 660-012-060 that allows a local government to exempt a zone change from the “significant effect” determination if the proposed zoning is consistent with the comprehensive plan map designation and the TSP (Section 9). The amendments also allow a local government to amend a functional plan, comprehensive plan, or land use regulation without applying mobility standards if the subject area is within a designated multi-modal mixed-use area (MMA). In order to implement these recent amendments to the TPR, the plan amendment language in the county’s zoning code may need to be revised during the implementation phase of this TSP update.

OAR 660-012-0045 requires each local government to amend its land use regulations to implement the TSP. It also requires local government to 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. This policy is achieved through a variety of measures, including access control measures, standards to protect future operations of roads, and expanded notice requirements and coordinated review procedures for land use applications. Measures also include a process to apply conditions of approval to development proposals, and regulations assuring 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.

Specifically, the TPR requires:

- The state to prepare a TSP, referred to as the Oregon Transportation Plan (OTP); and
- Counties and cities to prepare local TSPs that are consistent with the OTP.

As the guiding document for local TSPs, the OTP³ establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing transportation in Oregon. The goals and



³ Oregon Transportation Plan: <http://www.oregon.gov/ODOT/TD/TP/OTP.shtml>

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, 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 Columbia County TSP Update:** The TSP update will promote the growth of existing and future centers of economic activity, routes and modes connecting passenger facilities and freight facilities, intermodal facilities, and major intercity and intra-city transportation corridors and supporting transportation networks. It will also promote the most cost-effective modes and solutions over the long term 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, 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 Columbia County TSP Update:** The TSP update will promote travel demand management and transportation system operations techniques that fine tune existing systems and policies over costly major roadway capacity improvements.*

OTP Goal 3, Economic Vitality, 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 Columbia County 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 Columbia County.*

OTP Goal 4, Sustainability, 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 Columbia County TSP Update:** The TSP update will identify solutions that support the movement of people over vehicles, 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, 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 Columbia County TSP Update:** The TSP update will develop transportation projects to maintain and improve individual safety and security and maximize public safety and service access.*

OTP Goal 6, Funding the Transportation System, 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 Columbia County 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 County'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, pursue 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 Columbia County TSP Update:** The TSP update will offer public involvement opportunities to all stakeholders and residents, and will coordinate with other jurisdictions and agencies to ensure the transportation system limits barriers and functions as one system.*

Why does Columbia County need an Updated TSP?

The County's current Transportation System Plan was adopted in 1998. Since then, several regulations and requirements have been integrated or modified in the TPR, OTP, and State Modal Plans. The current effort will develop a TSP for Columbia County that brings them into compliance with the TPR and more appropriately serves the County's transportation needs. In addition, new improvement lists are needed as projects have been constructed and transportation needs have changed over time.

How is the County's Transportation System Defined?

The following sections summarize the state and local roadway classifications and land use designations for areas of Columbia County derived from the identified documents. This information ultimately determines the adopted standards, regulations, and policies that apply to the transportation system in Columbia County.

ODOT Classifications for State Highways in Columbia County

OHP Goal 1, Policy 1A (State Highway Classification System) categorizes state highways for planning and management decisions. Within Columbia County, state highways are either classified as Statewide or District Highways (see summary at the end of this section). 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.

District Highways are facilities of county-wide significance and function largely as county and city arterials or collectors. They provide connections and links between small urbanized areas, rural centers and urban hubs, and also serve local access and traffic. The management objective is to provide for safe and efficient, moderate to high-speed continuous-flow operation in rural areas reflecting the surrounding environment and moderate to low-speed operation in urban and urbanizing areas for traffic flow and for pedestrian and bicycle movements.

What this means for the Columbia County TSP Update: *While this policy places importance on the efficient travel of through motor vehicle trips on the 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.*

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 Columbia County, US 30 is classified as an Oregon Freight Route and a Federal Truck Route.

What this means for the Columbia County TSP Update: *Transportation solutions along US 30 through Columbia County must be accommodating to the Truck Route designations.*

Reduction Review Routes: An Administrative Rule was recently adopted to provide clear direction in the implementation of ORS 366.215 (Creation of state highways; reduction in vehicle – carrying capacity. 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.

What this means for the Columbia County TSP Update: Changes in cross-sections to roadways on Reduction Review Routes require review by the Freight Advisory Committee. For Columbia County, this may affect US 30 if additions of sidewalks, bike lanes or other improvements alter the vehicle carrying capacity of the roadway.

Lifeline Routes: OHP Goal 1, Policy 1E designates certain routes to be maintained for emergency response in the event of an earthquake. Seismic Lifeline Routes were originally identified by local emergency coordinators in 1995. Based on the geological analysis available at the time, these routes were determined to most likely be available after a seismic event. The routes were initially used to help assess the need for retrofitting state and local bridges. ODOT has updated the list of designated routes, and recommended US 30 as a Tier 1 Lifeline Route. Tier 1 routes are considered to be the most significant and necessary to ensure a functioning statewide transportation network.⁴

What this means for the Columbia County TSP Update: The County can use the TSP update to designate US 30 as a Lifeline Route to ensure its intended function is considered in system investment and management decisions.

Summary of ODOT Classifications

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

- US 30 (Lower Columbia River Highway, No. 2W (92)) is classified as a Statewide Highway, part of the NHS, a Federal Truck Route, an Oregon Freight Route, a Reduction Review Route, and a Tier 1 Lifeline Route.
- OR 47 (Nehalem Highway, No. 102, Mist-Clatskanie Highway, No. 110) is classified as a District Highway.
- OR 202 (Nehalem Highway, No. 102) is classified as a District Highway until it meets OR 47 in Mist and becomes OR 47.

⁴ Lifeline Selection Summary Report:

<http://www.oregon.gov/ODOT/TD/TP/Reports/Lifeline%20Selection%20Summary%20Report.pdf>

Columbia County Classification for Roadways

To manage the roadway network, the County classified roadways based on a hierarchy according to the intended purpose of each road. From highest to lowest intended usage, the classifications are major arterials, minor arterials, major collectors, minor collectors and local streets. Roadways with a higher intended usage generally provide more efficient traffic movement (or mobility) through the county, while roadways with lower intended usage provide greater access for shorter trips to local destinations such as businesses or residences.

In rural Columbia County, the only two roadways classified as arterials are Scappoose-Vernonia Road and Apiary Road. Except for the minor collector Honeyman Road, near Scappoose Industrial Airport, and the three roads classified as state highways (US 30, OR 47, and OR 202), all other county roads are rural major collectors or local roads.

What this means for the Columbia County TSP Update: *The functional classification system for the County will be revisited for the TSP update.*

How is the Transportation System Managed?

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 highways in Columbia County (pursuant to 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.

Highway (classification)	Inside Urban Growth Boundary			Outside Urban Growth Boundary	
	Non-MPO Outside of STAs where non-freeway posted <=35 mph, or a Designated UBA	Non-MPO Outside of STAs where non-freeway posted > 35 mph, but <45 mph	Non-MPO where non-freeway speed limit >=45mph	Unincorporated Communities	Rural Lands
US 30 (Statewide)	0.85	0.80	0.80	0.70	0.70
OR 47 (District)	0.95	0.90	0.90	0.75	0.75
OR 202 (District)	0.95	0.90	0.90	0.75	0.75

Source: 1999 Oregon Highway Plan, Policy 1F Revisions, Table 6

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, 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 Columbia County TSP Update: System performance for the highways will be measured, in part, using the adopted mobility targets. The TSP update will evaluate the need for adopting alternate mobility targets for the highways if there are no feasible project alternatives identified to meet the existing mobility targets.

County Mobility Targets: Columbia County does not have adopted mobility targets for intersections under their jurisdiction. The existing County TSP measures traffic Level of Service (LOS) at a corridor level for rural County roads classified as major collector or higher.

Access Management on Highways: The Oregon Access Management Rule⁵ (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 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.

OHP Goal 3, Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system.⁶ The standards are based on state highway classification and differ based on posted speed. The applicable standards for highways in Columbia County can be seen in Table 2a and Table 2b.

⁵ Access Management Rule: http://arcweb.sos.state.or.us/rules/OARS_700/OAR_734/734_051.html

⁶ ODOT Access Management Standards (Appendix C): www.oregon.gov/ODOT/TD/TP/OHP_AM.shtml

Table 2a: Highway Access Spacing Standards – US30 (min. distance feet)

Highway	Posted Speed Limit (mph)	5,000 AADT or less			Over 5,000 AADT	
		Rural Areas	Urban Areas	Unincorporated Communities in Rural Areas	Rural Areas	Urban Areas
US 30 (Statewide Highway)	30 & 35	770	250	425	770	500
	40 & 45	990	360	750	990	800
	50	1,100	1,100	1,100	1,100	1,100
	55 or higher	1,320	1,320	1,320	1,320	1,320

Source: 1999 Oregon Highway Plan, State Highway Classification System and Appendix C Revisions to Address Senate Bill 264

Table 2b: Highway Access Spacing Standards – OR 47 and OR 202 (min. distance feet)

Highway	Posted Speed Limit (mph)	5,000 AADT or less		Over 5,000 AADT	
		Rural and Urban Areas		Rural Areas	Urban Areas
OR 47	30 & 35	250		400	350
OR 202 (District Highway)	40 & 45	360		500	500
	50	425		550	550
	55 or higher	650		700	700

Source: 1999 Oregon Highway Plan, State Highway Classification System and Appendix C Revisions to Address Senate Bill 264

What this means for the Columbia County 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.

Access Management on County Roadways: Columbia County requires that access to County roads, public roads, and private roads shall conform to the Columbia County Approach Roads Ordinance and an access approach permit must be obtained from the Columbia County Road Department prior

to construction. The TSP identifies locations of access points, promotes shared driveways and offset drive spacing, and dictates a spacing of 150 feet on arterial roads.

What this means for the Columbia County TSP Update: *The TSP update will review and adjust if necessary access spacing standards for streets in Columbia County.*

Major Projects: OHP Goal 1, Policy 1G requires maintaining performance and improving safety by improving efficiency and management before adding capacity. The intent of policy 1G and Action 1G.2 is to ensure that major improvement projects to state highway facilities have been through a planning process that involves coordination between state, regional, and local stakeholders and the public, and that there is substantial support for the proposed improvement.

What this means for the Columbia County TSP Update: *The TSP update will consider project alternatives that improve or manage the existing transportation system before implementing higher cost street capacity enhancement projects.*

Projects off 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 Columbia County 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 the 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. ODOT's Safety Priority Index System (SPIS) will also be used to identify potential safety problems on state highways. 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 Columbia County TSP Update: *The TSP update will develop projects that ensure the transportation system maintains and improves individual 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 Columbia County TSP Update: *The TSP update will identify improvements that could enhance safety, increase connectivity and provide seamless connections between walking and biking facilities and other travel modes.*

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 Columbia County 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 Highways: The Highway Design Manual⁷ (HDM) provides uniform design standards and procedures for ODOT and is in general agreement with the 2011 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 highways in Columbia County to determine design requirements, including the minimum required volume to capacity ratios for use in the design of highway projects.

What this means for the Columbia County TSP Update: *System performance of 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.*

Oregon Bike and Pedestrian Plan: The provision of safe and accessible bicycling and walking facilities in an effort to encourage increased levels of bicycling and walking is the goal of the Oregon Bicycle and Pedestrian Plan, which is an element of the Oregon Transportation Plan. The plan identifies actions that will assist local jurisdictions in understanding the principals and policies that ODOT follows in providing bike and walkways along state highways. In order to achieve the plan's objectives, the strategies for system design are outlined, including:

- Providing bikeway and walkway systems and integrating with other transportation systems
- Providing a safe and accessible biking and walking environment
- Developing educational programs that improve bicycle and pedestrian safety

The Policy & Action section contains background information, legal mandates and current conditions, goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. The Bikeway & Walkway Planning Design, Maintenance & Safety section assists ODOT, cities and counties in designing, constructing and maintaining pedestrian and bicycle facilities. Design standards are recommended and information on safety is provided.

What this means for the Columbia County TSP Update: *The TSP update will incorporate the recommendations from the Oregon Bicycle and Pedestrian Plan, from Local TSP's, the Columbia County Community-wide Transit Plan and US 30 Transit Access Plan and the Columbia County Rider, and will consider additional solutions that will enhance multi-modal travel in Columbia County.*

⁷ ODOT Highway Design Manual: http://www.oregon.gov/ODOT/HWY/ENGSERVICES/hwy_manuals.shtml

Other Background Information for the TSP Update

The following sections summarize additional background information or guidance documents that will be used in updating the Columbia County TSP.

Public Involvement: OHP Goal 2, Policy 2D requires that citizens, businesses, regional and local governments, state agencies, and tribal governments have opportunities to have input into decisions regarding proposed policies, plans, programs, and improvement projects that affect the state highway system.

***What this means for the Columbia County TSP Update:** The TSP update will offer public involvement opportunities to all stakeholders and residents.*

Environmental Resources: OHP Goal 5, Policy 5A requires that the design, construction, operation, and maintenance of the state highway system should maintain or improve the natural and built environment including air quality, fish passage and habitat, wildlife habitat and migration routes, sensitive habitats (i.e. wetlands, designated critical habitat, etc.), vegetation, and water resources where affected by ODOT facilities.

***What this means for the Columbia County TSP Update:** The TSP update will consider the potential for environmental impacts of all proposed solutions.*

Columbia County Transportation System Plan: The long-range transportation plan that forms the basis of this project was last updated in 1998. The guiding objectives of the document were:

- Objective 1: To utilize the various modes of transportation that are available in the County to provide services for the residents.
- Objective 2: To encourage and promote an efficient and economical transportation system to serve the commercial and industrial establishments in the County.
- Objective 3: To improve the existing transportation system.

By the completion of the TSP, Columbia County had outlined priorities for the transportation system for the next 20 years. The TSP focused on preservation and reconstruction of the primary County roads that serve as connections between the cities and rural communities. Deferred maintenance and reconstruction to meet updated design standards for roads was also a key feature. The TSP planned for increasing vehicle capacity on US 30 through intersection improvements, and turning and passing lanes. For bicyclists and pedestrians, emphasis was placed on constructing shoulders on primary County roads and near incorporated cities.

***What this means for the Columbia County TSP Update:** The TSP update will offer an opportunity for the public to provide input on goals and objectives to guide the next twenty years of transportation projects. Through a visioning process, cataloguing of existing conditions, and evaluation of proposed projects, the updated TSP will feature a prioritized list transportation projects to be funded and built.*

Columbia County Road Standards: The Columbia County Road Standards manual, adopted by the Columbia County Board of Commissioners, documents the standards required for the construction of all roadways in Columbia County. This includes roadway width, materials, drainage, grades, access spacing, design speed and more. This document also outlines cross section standards for each roadway classification.

What this means for the Columbia County TSP Update: Projects proposed in the updated TSP will need to meet Columbia County Road Standards, particularly new or reconstructed roadways. Alternatively, the Columbia County Road Standards manual may need to be amended to be consistent with the updated TSP and implement its recommendations, as well as to comply with state transportation regulations such as the TPR.

Columbia County Comprehensive Plan (Last Updated 2012): The Columbia County Comprehensive Plan is the County’s long range plan (i.e., a plan with a 20-year horizon) for developing and protecting land and water in the county. The vision for development and resource protection is expressed in a series of goals and policies. The Comprehensive Plan policies summarized below are those that most directly relate to transportation planning and its coordination with land use planning in the county.

- **Agriculture** – Encourage roads through agricultural areas to locate where they will have minimum impacts on agricultural management and the existing lot pattern (Policy 10, Part V).
- **Rural Communities** – Allow construction or expansion of public facilities to a level that is consistent with the character of the Rural Community, up to but not exceeding the provision of public and community facilities including arterial access (Policy 5, Part VIII).
- **Urbanization** – Review all subdivision plats in the urban growth areas – areas within urban growth boundaries (UGBs) but outside city limits – to ensure the establishment of a safe and efficient road system (Policy 13, Part IX). Limit development outside of UGBs to densities that do not require an urban level of public facilities or services (Policy 20, Part IX).
- **Economy and Industrial Development** – Support local improvements in order to make the area attractive to private capital investment, including measures such as capital improvements programming (Policy 10, Part X). Encourage new industrial growth within the urban areas so as to utilize existing public facilities (Policy 12, Part X). Encourage industry that needs or can benefit from locating adjacent to one of the airports in the county (Policy 13, Part X).
- **Resource Industrial Development** – Restrict industrial development on land zoned Resource Industrial Planned Development to uses that meet criteria, including sites where there is adequate rail, vehicle, deep water port, and/or airstrip access, and development that does not require facility and/or service improvements to be paid for by the public (Policy 3, Part XII).
- **Public Facilities** – Require that the level of facilities and provided be appropriate for, but limited to, the needs and requirements of the area(s) to be served; urban levels of streets and other public facilities are inappropriate within forestry and agricultural resource areas (Policy 2, Part XIV). Review facility plans for urbanizable areas to assure proper coordination of facilities consistent with the long-range plans and procedures established within urban growth management agreements (Policy 11, Part XIV).
- **Open Space** – Encourage the design of residential development to include corridors of open space along streams, waterways, cliffs, and other special features by using clustering and other

development techniques. Support public access to the Columbia River and other scenic and recreational features; work with commercial, industrial, and residential developers to promote public use and provide public access to these areas whenever possible (Policies 2 and 3, Part XVI, Article V).

- **Oregon Recreational Trails** – Cooperate with the Oregon Department of Transportation (ODOT) in identifying a specific route for the Portland-to-the-Coast trail (Policy 1, Part XVI, Article XII). Support efforts to extend the Banks-Vernonia Linear Trail, primarily along the Crown Zellerbach Logging Road right-of-way, from Vernonia to Scappoose and the Multnomah Channel (Policy 2, Part XVI, Article XII).
- **Scenic Sites, Views and Highways** – Support the designation of scenic corridors by federal and state land management agencies for land under their jurisdiction (Policy 3, Part XVI, Article XIII).

Transportation policies in the Comprehensive Plan are found in Part XII, and were updated and adopted as part of the 1998 TSP. These existing policies address multi-modal transportation, transit for the transportation disadvantaged, right-of-way dedication, off-site improvements, access management, port development, and airport protection. Transportation goals and policies will be reviewed in detail in Technical Memorandum #5.

***What this means for the Columbia County TSP Update:** The updated Columbia County TSP should consider and reflect the goals and policies of the Comprehensive Plan. The Comprehensive Plan may also need to be amended to reflect findings and implement updated transportation recommendations that result from this planning process.*

Washington County, Transportation System Plan (2003): The Washington County TSP is currently being updated to address compliance with Metro’s Regional Functional Transportation Plan (RTFP). In addition, the existing plan has a future horizon year of 2020, which will be updated to 2035. The existing plan (and update that is underway) generally has a focus on the urban/suburban County areas that are within the urban growth boundary and/or general proximity to the established suburban communities. Due to the shared border with Columbia County, several roads extend into Washington County and link the two counties. Arterial and collector roads that link the two counties include: Timber Road, Highway 47 (identified as a freight route), and Bacona Road. Due to the rural nature of these corridors, future projects would likely be focused on site-specific safety improvements.

***What this means for the Columbia County TSP Update:** The updated Columbia County TSP should account for improvement projects or strategies in the Washington County TSP that may influence roads that cross into Columbia County. As the Washington County TSP is updated the project team should remain vigilant to the recommended outcomes and assess how potential projects may influence Columbia County.*

Clatsop County, Transportation System Plan (2003): The Clatsop County TSP is currently being updated to address TPR requirements and extend the plan horizon. The only two roads classified as collector or higher that connect the two counties (OR 202 and US 30) are both under ODOT’s jurisdiction. Capacity and safety improvements along both routes are identified in the existing plan.

***What this means for the Columbia County TSP Update:** The updated Columbia County TSP should account for improvement projects or strategies in the Clatsop County TSP that may influence roads that cross into*

Columbia County. As the Clatsop County TSP is updated the project team should remain vigilant to the recommended outcomes and assess how potential projects may influence Columbia County.

City of St. Helens Comprehensive Plan (Last Updated 2013): There is a significant amount of urban growth area – the area between the city limits and UGB – in St. Helens, which is an area of planning coordination between the City and the County. St. Helens shares its border with Columbia City, to the north.

Land use and transportation policies in the St. Helens Comprehensive Plan that are related to or that have implications for County transportation facilities are summarized below. Current governing transportation-specific policies were adopted as part of the 2011 TSP update and were updated in the Comprehensive Plan transportation policy section accordingly.

Land use policies

- Establish joint review procedures with the County Planning Commission for land partitions/divisions, conditional use permits, annexations, and service extensions.
- Coordinate with the County to ensure land partitions/divisions are done in a manner that does not hinder future urbanization.
- Consider rezoning land designated rural suburban unincorporated residential to R-5 and Apartment Residential (AR) if street capacity is sufficient for higher density development, amongst other conditions.

Economic policies

- Develop program strategies with agencies, groups, and businesses in an effort to improve the local economy. Strategies should include but not be limited to land use controls and capital improvement programming.
- Develop the local tourist and recreation sectors of the economy.
- Encourage land uses that are compatible with the transportation facilities.

Transportation policies

- Continue to coordinate with Columbia County regarding development, land uses, and transportation planning in areas of future urban growth, outside of the current city limits.
- Review all subdivision plats and road dedications to ensure the establishment of a safe and efficient street system that accommodates all modes of transportation appropriate for the surrounding land uses.
- Support an eventual extension of Pittsburg Road/West Road between Wyeth Street and Deer Island Road over or under both US 30 and the railroad to improve safety and mobility and reduce conflict between rail and road users.
- Acknowledge and support future expansion of both freight and potential commuter rail operations along the Lower Columbia River and continue to work with ODOT and Portland & Western Railroad and Columbia County Rider to take advantage of this growth and to mitigate potential conflicts.

- Coordinate and cooperate with neighboring cities, Columbia County, ODOT, and other transportation agencies to develop and fund transportation projects that benefit the city, region, and the State.

Transit policies

- Work with Columbia County and other agencies in their efforts to meet the needs of the transportation disadvantaged in the community.
- Support public transit planning in Columbia County. Transit improvements within city limits shall be guided by the findings and recommendations of the County Community-wide Transit Plan, as adopted by Columbia County.
- Work in partnership with the County in planning for public transit facilities located within city limits and, when feasible, facilitate the siting and operation of such facilities.

What this means for the Columbia County TSP Update: *St. Helens Comprehensive Plan policies will be reflected in the updated Columbia County TSP with regards to jurisdiction coordination of economic development, transit development, and combined transportation/ land use planning.*

City of St. Helens Transportation System Plan: Updated in 2011, the St. Helens TSP outlines individual transportation elements for development of the future transportation network. These include near-term, mid-term, and long-term improvements, broken out by pedestrian, bicycle and roadway improvement projects. The near-term projects, planned for years 2011 to 2016 total \$13,888,000.

Table 3. Near-term Transportation Projects in St. Helens TSP

Mode	Number of Projects	Total Cost of Projects
Roadways Improvement Projects	3	\$132,000
Bicycle Improvement Projects	13	\$4,049,000
Pedestrian Improvement Projects	18	\$9,707,000

As evidenced by the breakdown in funding, near-term improvements primarily focus on increasing the comfort, convenience, and safety of pedestrian and bicycle travel within the city. Mid-term and long-term project lists include all travel modes, but focus more heavily on roadway improvement projects, primarily installing left-turn lanes and reconstructing roadways to meet City street standards. The analysis of existing conditions within St. Helens identified significant gaps in the existing network and the opportunity to fill those gaps before significant increases in traffic volumes require vehicular capacity improvements.

What this means for the Columbia County TSP Update: *Three bicycle and three pedestrian projects listed on the near-term project list are on Columbia County roads. The projects widen the roadway to add bike lanes, curbs and sidewalks to Bachelor Flat Road, Gable Road, and Columbia Boulevard.*

City of Scappoose Comprehensive Plan (Last Updated 2008): There is a significant amount of urban growth area in Scappoose where land is currently zoned for rural uses, but planned for urban expansion. The Scappoose Industrial Airport is located within city limits but immediately adjacent to

urban growth area served by County roads (Crown Zellerbach Road, West Lane Road, and Honeyman Road). Development in the vicinity of the airport is governed by a City Airport Safety and Compatibility Overlay Zone (Section 17.88).

Policies in the City of Scappoose Comprehensive Plan that address coordination between the City and County regarding land use and transportation are summarized below. Transportation policies cited below are draft policies that have been developed as part of the update of the Scappoose TSP, currently in progress. Transportation policies in the Comprehensive Plan will be updated as they are finalized as part of TSP adoption.

Economic policies

- Cooperate with other agencies, interest groups and businesses in efforts to develop program strategies for improving the local economy.

Transportation policies

- Develop an arterial and collector street system that provides additional north-south local access routes and an alternative route to US 30.
- Establish and maintain transit stops in locations that are safe and convenient for users and that are consistent with the Columbia County Community-Wide Transit Plan.
- Encourage increased opportunities for local and regional public transit routes and facilities
- Ensure that transportation planning provides for future freight facility needs at the Scappoose Industrial Airpark.

Transportation coordination policies

- Coordinate and cooperate with adjacent jurisdictions and other transportation agencies to develop transportation projects that benefit the City, Region, and State as a whole.
- Coordinate with the County and State agencies to ensure that improvements to County and State highways within the City benefit all modes of transportation.
- Participate with ODOT and Columbia County in the revision of their transportation system plans, and coordinate land development outside of the Scappoose area to ensure provision of a transportation system that serves the needs of all users.
- Participate in updates of the ODOT State Transportation Improvement Program (STIP) and Columbia County Capital Improvement Program (CIP) to promote the inclusion of projects identified in the Scappoose TSP.
- Coordinate public transit planning improvements within city limits with Columbia County to ensure that future transit routes and facilities are consistent with the findings and recommendations of the adopted Columbia County Community-Wide Transit Plan.

What this means for the Columbia County TSP Update: Transportation policies that are being updated as part of the Scappoose TSP update will be coordinated with the Columbia County TSP update process. Transportation-related policies in Scappoose that emphasize economic development (particularly related to the airport), connectivity, transit, and general jurisdiction coordination will be reflected in the updated Columbia County TSP.

City of Scappoose Transportation System Plan (TSP): The Scappoose TSP is a long range transportation plan, last updated in 1997. The TSP focused on a combination of local street improvements to serve local access traffic circulation to relieve pressure on US 30. This includes an improved east-west collector system to provide access across US 30 and Scappoose Creek to relieve the use of US 30 for east-west cross-town movement, thus improving local accessibility and mobility on the highway.

The TSP breaks out projects in terms of short-range, intermediate range, and long-range project phasing, and focus equally on motor vehicle, bicycle and pedestrians. In many cases, projects are on roadways may be under the jurisdiction of ODOT or the County. The following table represents short and intermediate-term projects identified in the Scappoose TSP as being under the primary jurisdiction of Columbia County. These projects come to a total cost of \$4,978,500.

Table 4. County Led Transportation Projects in Scappoose

Project Location	Mode	Phasing	Cost
E.M. Watts Road. US 30 to 4 th St. W (No. 7)	Vehicle, Bicycle & Ped	Short-term	\$473,000
J.P. West Road. US 30 to First Street W. (No. 15)	Vehicle, Bicycle & Ped	Short-term	\$72,000
J.P. West Road. First Street W. to Fourth Street W. (No. 16)	Vehicle, Bicycle & Ped	Short-term	\$252,000
Old Portland Road, UGB to US 30 (No. 17)	Vehicle, Bicycle & Ped	Intermediate	\$1,377,500
E.J. Smith Road, Wickstrom Drive to Fifth Street W. (No. 27)	Vehicle, Bicycle & Ped	Intermediate	\$288,000
E.J. Smith Road, Fifth Street W to UGB (No. 28)	Vehicle, Bicycle & Ped	Intermediate	\$1,088,000
E.J. Smith Road, Scappoose Creek Crossings (No.29)	Vehicle, Bicycle & Ped	Intermediate	\$140,000
Columbia Avenue E. US 30 to West Lane Road (No. 32)	Bicycle & Ped	Intermediate	\$700,000
Forest Road. US 30 to West Lane Road (No. 33)	Vehicle, Bicycle & Ped	Intermediate	\$588,000

What this means for the Columbia County TSP Update: *Columbia County should continue to coordinate with the City of Scappoose as they undergo their TSP update.*

City of Rainier Comprehensive Plan (Last Updated 2003): The City of Rainier is another city in the county with a significant urban growth area, where the County has jurisdiction over roadways where future city growth will occur. The City of Rainier Comprehensive Plan has adopted policies that address coordinated land use and transportation planning between the City and County; these are summarized below. The transportation-specific policies in the Comprehensive Plan were updated by the adopted 1997 TSP.

Land use and urbanization policies

- The first priority for future urbanization outside the current UGB is the Beaver Creek Valley area around the Rainier High School Complex because facilities are or can be made available amongst other factors.
- The City shall coordinate its planning programs and activities with affected public agencies and utilities, including Columbia County.
- Procedures for notice and coordination between the City and the County for the urban growth area are outlined in the Urban Growth Management Agreement.

Open space and recreation policies

- The City will work with relevant agencies, including Columbia County, the Department of Fish and Wildlife, the Department of Transportation and the Division of State Lands to preserve open space and recreational uses of Red Mill Beach. In addition, Rainier will cooperate with state agencies and Columbia County on efforts to maintain the open space and recreational uses of Dibblee Point.
- The City will create a Parks Plan for the urban growth area. The plan will consider options such as establishment of a system of pedestrian and bicycle trails and the need for parks in different areas of the city.

Transportation policies

- The City will take the following actions to enhance connectivity with the I-5 Corridor: Work with Columbia County, ODOT, the Longview-Kelso-Rainier Metropolitan Planning Organization (MPO), and other appropriate agencies to plan for greater connectivity, including evaluating alternatives for repair or replacement of the Lewis and Clark Bridge.
- The City may require that any subdivision, planned development and development allowed as a conditional use be accompanied by a traffic impact statement describing the potential on-site and off-site impacts of the proposed development, including the need for off-site transportation improvements.
- The City will support the efforts of Columbia County to meet the needs of the transportation disadvantaged of Rainier.
- Include bikeways in the roadway standards for all new arterials and collectors and sidewalks in the roadway standards for all new streets within the UGB.

What this means for the Columbia County TSP Update: The updated Columbia County TSP will reflect policies regarding general land use/transportation planning coordination, I-5 connectivity, open space access, trail system development, and multimodal transportation facilities and services, consistent with policies adopted by the City of Rainier.

City of Rainier Transportation System Plan (TSP): Rainier last updated its TSP in 1997. At the time, analysis of existing conditions found that all roads operated at acceptable levels of service. Therefore, the City focused on the insufficient infrastructure for cyclists and pedestrians to cross US 30. It was also determined that a parallel route to US 30 would be useful in reducing reliance on the highway for local travel. These projects were ranked for phase one, defined as years 1997-2006, and subsequent projects for years 2007-2016.

The TSP also evaluates current dial-a-ride transit program currently provided by the Columbia County Rider, with a desire to increase the Rainier fleet and make them all ADA accessible with lifts. The track and structural conditions of the freight rail was also analyzed, and future connections between Longview and Rainier, as well as a reopening of Wauna-Astoria Segment were endorsed for future economic opportunities.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, City of Rainier policies about safe crossings of US30 for pedestrians and cyclists, as well as other multimodal accommodation.*

City of Clatskanie Comprehensive Plan (1978): Similar to other cities in Columbia County, the City of Clatskanie has a significant urban growth area, where the County has jurisdiction over roadways where future city growth will occur. Policies in the City of Clatskanie Comprehensive Plan that address coordination of land use and transportation planning between the City and County are summarized below. Transportation policies were proposed as amendments to the Comprehensive Plan Transportation Element in the City’s 1997 TSP but have not been incorporated into the Comprehensive Plan.

Land use policies and actions

- The City will coordinate with Columbia County within the urban growth area on zoning, subdivision, and development regulation matters to ensure consistency with the County Comprehensive Plan.

Economic policies

- Encourage the location of labor-intensive non-polluting industries in the city and UGB.

Transportation policies

- The City will consider the probable development pattern of future growth in the UGB when considering whether a proposed street has appropriate design capacity.
- The City supports County efforts to meet the needs of citizens who are transportation disadvantaged.

What this means for the Columbia County TSP Update: *The updated Columbia County TSP will reflect or be consistent with City of Clatskanie policies regarding economic development, the needs of the transportation disadvantaged, and general planning coordination.*

City of Clatskanie Transportation System Plan (TSP): The Clatskanie TSP was updated in 1997. The TSP has indicated that the primary policy guiding future land development is to protect the operation of the US 30 corridor, including the highway, pedestrian and bikeways and rail line. Similar to other communities throughout Columbia County, road operations were all functioning at acceptable levels of service, however pedestrians and cyclists encountered difficulties safely crossing US 30. There was also a recommendation to develop one or more parallel alternative routes to US 30 to reduce community reliance on the highway. At the time of the TSP, the City also noted that Columbia County was seeking to transfer jurisdiction of County roads in Clatskanie to the City.

The TSP indicates efforts to work with ODOT to limit private driveway access onto US 30, as well as consolidate access points to future development along the span.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, City of Clatskanie policies about safe crossings of US 30 for pedestrians and cyclists and preservation of mobility through access*

City of Clatskanie Transportation Refinement Plan (2005): The Clatskanie Transportation Refinement Plan (TRP) studied potential improvements to US 30 not previously identified in the Clatskanie TSP. The purpose of this study was to identify ways to increase the safety of the traveling public, and to promote economic development. The main goals for the study were to:

- Review the addition of a continuous two way left turn lane (CTWLTL) on US 30 at Van Street and the impacts at the Clatskanie River Bridge.
- Review and recommend improvements to access management within the city.
- Review and recommend solutions to the lack of continuity and connectivity of pedestrian facilities along US 30.

The study recommended several areas of improvement for US 30. First, the CTWLTL should be implemented, both east and west from the Clatskanie River Bridge. Relocation and consolidation of several driveways were recommended to better regulate access to US 30. Further, ADA compliant sidewalk installation was suggested as a means to both define access points through reducing existing wide access approaches and improve pedestrian continuity and connectivity. Bike lanes were suggested to improve connectivity for bicyclists. Lastly, the study recommended widening the Clatskanie River Bridge to improve pedestrian and bicyclist connectivity through the installation of bike lanes and sidewalks on the bridge. Widening the bridge would also improve safety by reducing conflicts between bicyclists and vehicles, and providing better vehicle lane and shoulder continuity.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, City of Clatskanie policies regarding US 30 access, pedestrian and bicycle connectivity and continuity across the Clatskanie River, and identify pedestrian facilities along US 30 that need improvements to meet ADA standards.*

City of Vernonia Comprehensive Plan (1996): The major transportation facility serving the City of Vernonia is Highway/OR 47. The Banks-Vernonia State Trail runs along the east side of Highway/OR 47 as the highway enters the city in the south. A substantial urban growth area is located in the southwest corner of the City's UGB adjacent to Highway/OR 47.

Policies in the City of Vernonia Comprehensive Plan that address coordination of transportation planning between the City and County are summarized below. The Comprehensive Plan was last updated in 1996. The City's TSP was adopted in 1999. Transportation policies in the TSP appear to add to transportation policies in the Comprehensive Plan, and thus transportation policies from the TSP are also summarized below

Policies in the City of Vernonia Comprehensive Plan that address coordination of land use and transportation planning between the City and County are summarized below.

Transportation policies.

- The City continues to support the Banks-Vernonia Linear State Park as a safe means of providing bicycle/pedestrian/horseback travel along Highway 47 from the south into the City.

- The City continues to adopt Columbia County street and road improvement standards as a means of ensuring that new and existing roads and streets meet transportation needs of the City of Vernonia.
- The City will continue to plan for airport improvements designed to provide for increased usage and maintenance of safe operations; the City shall encourage the potential for destination resort development in conjunction with the airport and the adjacent City riverside park property and the Vernonia Golf Course.

What this means for the Columbia County TSP Update: *The updated Columbia County TSP should address, as appropriate, City of Vernonia policies pertaining to design and operation standards, the Bank-Vernonia State Trail, transportation options, transit connections to other Columbia County communities, airport facilities and area development, and collaborative funding of transportation improvements.*

City of Vernonia Transportation System Plan (2011): The City of Vernonia updated their transportation plan in 2011. Analysis of the existing conditions revealed the pavement condition of the most heavily used roads, including OR 47 and the State Avenue are in good to excellent condition. However many streets in Vernonia have inadequate width to provide for all users.

Based on the relatively low number of recorded collisions over the last 10 years, a focused crash analysis was not conducted. However ongoing safety issues for Vernonia include limited sight distance in the downtown core, bicycle and parking conflicts in the downtown core, and speeding on OR 47/ Rose Avenue as traffic enters the city.

While level of service and delay were at acceptable levels, connectivity has been an ongoing issue due to the challenging geography involving water, hills and bluffs. The major improvement identified in the Vernonia TSP was developing street standards, including the inclusion of bicycle lane on collectors, and better access to the Banks-Vernonia Trail via Nehalem River Bridge.

Transportation System Goals:

Operations and Safety

- Preserve and improve function, capacity, level of service, and safety of the roadway system

Transportation Alternatives

- Support use of other modes, especially bicycles and pedestrians, but including transit, etc.
- Maintain and look into expansion of airport facilities
- Support Safe Routes to New Schools programming and projects

Finance

- Sound fiscal approach to financing transportation system improvements

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, City of Vernonia policies about safe crossings of OR 47 for pedestrians and cyclists and the extension of the Banks-Vernonia Trail.*

City of Columbia City Comprehensive Plan (2010): Columbia City shares a border with St. Helens, to the south and does not include large areas of unincorporated area within its UGB. Policies in the City of Columbia City Comprehensive Plan that address coordination of land use and transportation planning between the City and County are summarized below. The TSP was adopted in 1997 and includes additional transportation goals and objectives. For this reason, both Comprehensive Plan and TSP policies relevant to the County's TSP are included in the following list.

Land use planning policies

- Continue to seek funding to support increased City participation in coordinated planning efforts with Columbia County, the City of St. Helens and affected state agencies.

Transportation and public facilities policies

- [Comprehensive Plan] Approve new developments only if provisions can be made for an acceptable level of public services including roads.
- [Comprehensive Plan] Require new development to plan, design, and develop street systems in accordance with the anticipated future land use and activity patterns in the area and the City, connecting new streets to existing streets whenever possible.
- [TSP] Provide safe, accessible, and connected pedestrian and bicycle facilities including: across and along US 30 and other collectors and arterials; to and along the waterfront; within neighborhoods; and to other towns.
- [TSP] Provide solutions to reduce conflicts between through and local traffic and improve traffic flow.
- [TSP] Improve town continuity by providing safe and easy access to and across US 30 and railroad crossings for all modes of travel.

What this means for the Columbia County TSP Update: The updated Columbia County TSP will reflect City of Columbia City policies pertaining to coordinated planning, local and regional pedestrian and bicycle facilities, and balance between needs associated with local and regional transportation facilities.

City of Columbia City Transportation System Plan (TSP): The TSP was most recently amended in 2001, and included updates to the street system, pedestrian, bicycle, transit, and air/rail/water/pipeline plan. The primary objectives of the plan are to maximize the efficiency and improve safety of the existing roadway system, while also promoting alternative modes of travel and improved connections. The City of Columbia City used the following goals and objectives to evaluate proposed projects for the next twenty years:

Goal Transportation: measured by mobility, vehicle miles traveled (VMT), vehicle hours of travel (VHT), level of service (LOS), and maximized system safety.

Goal Community: measured by accessibility to different modes and to varying levels of destinations, minimization of land uses impacts, and availability of transit.

Goal Resources: measured by minimization of environmental impacts.

Based on these evaluation criteria, Columbia City has a project prioritization list for the first decade and second decade. The near-term list provides a balance of roadway projects (constructing new roadways and widening existing roadways) and sidewalk construction. There is also a small budget to

add bicycle parking at City parks and buildings. The second decade includes bridge replacement, roadway reconstruction, sidewalk additions and a proposal to construct a bicycle trail connecting the US 30 trail to 6th Street.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, City of Columbia City policies about safe crossings of US 30 for pedestrians and the proposed bicycle trail connection between 6th Street and the US 30 trail.*

Columbia Countywide Transit Plan: This plan was passed in 2004, responding to many changes in the transit needs of the community, as well as a reduction in resources to meet these needs. Columbia County is a large geographic area, with spread out population centers. Some cities within Columbia County can share resources, while distance and geography make it more difficult for others. Communities such as St. Helens and Scappoose are near enough to Portland that they have intercity commuting needs; similarly Hillsboro serves as the closest major city to Vernonia.

At the time of the plan, ODOT withdrew funding from the organization providing transit service at the time, Columbia County Council of Seniors (COLCO). The transit plan was shaped based on the key findings that:

- ODOT terminated funding for the transit provider program COLCO
- The geography of the county creates challenges with each of the five cities needing its own service. However some cities are close enough to potentially share resources
- Resources for any transit operator are limited
- Ridership has significantly declined between the 1990s and 2004
- Citizens identified a greater need for both intra-city and intercity services

Together with an analysis of existing needs and extensive public outreach, Columbia County crafted the following goals to guide the Transit Plan:

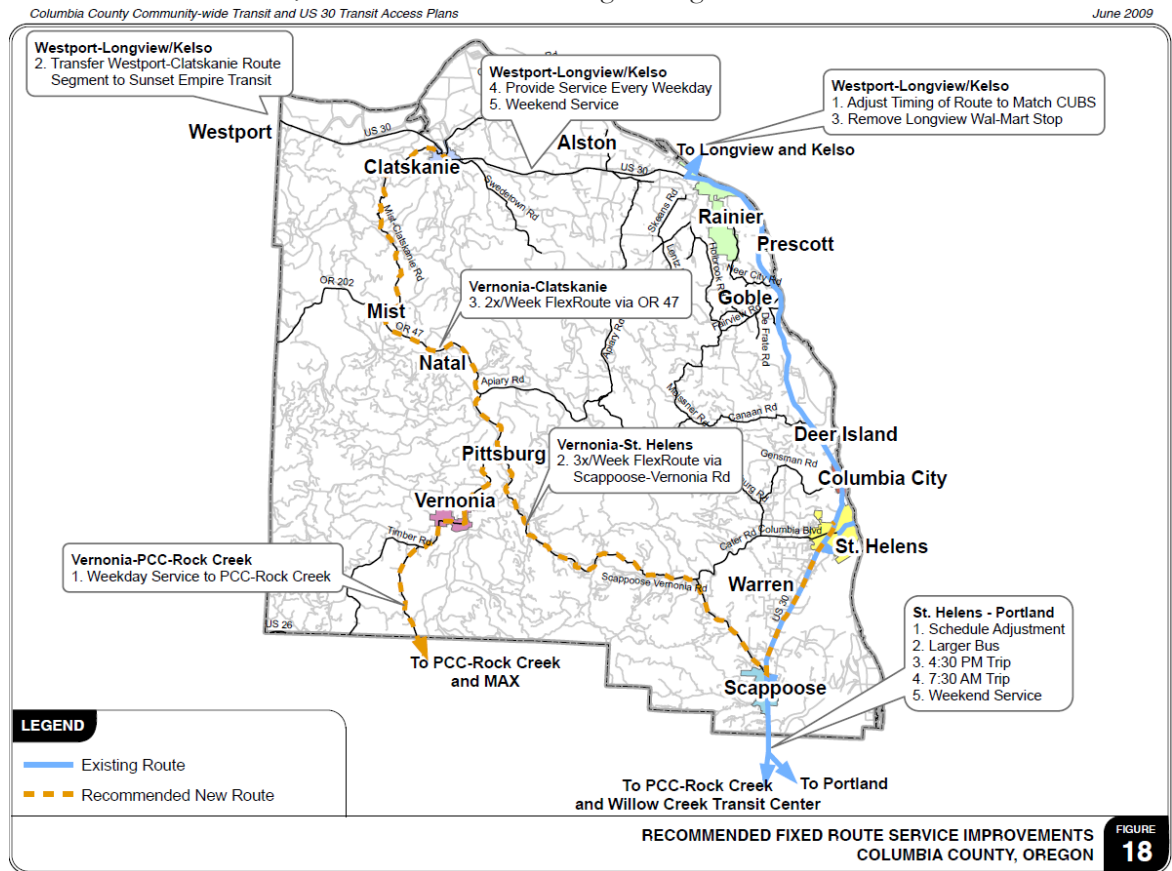
- Provide lifeline transit service focusing on the needs of the elderly, disabled and transportation disadvantaged. Transportation disadvantaged riders are people who are unable to provide their own transportation as a result of disability, an age-related condition, or an income constraint.
- Provide sustainable cost effective service to as many people as possible.
- Create opportunities to leverage additional resources to the program.

Columbia County Community-wide Transit Plan and US 30 Transit Access Plan (2009):

In 2009 Columbia County updated previous community-wide and coordinated transit service plans, drafted in 2002 and 2008 respectively. This update provides direction to the County for planning and implementing transit services, operations, facilities, and funding within a 10-year horizon. This plan also incorporates the US 30 Transit Access Plan for transit facility improvements along the US 30 transit corridor.

The Plan provides a set of recommendations for transit services throughout Columbia County. These include fixed routes bus, demand-response bus, vanpool, and carpool, supported by transit facilities, including upgraded bus stops and new park and ride lots. Additionally, the document addresses fares,

current and future routes, and coordination with neighboring transit services.



What this means for the Columbia County TSP Update: *The Transit Plan includes code amendments that need to be adopted by County (and cities) comprehensive plans, transportation system plans, land use ordinances, and roadway standards. There are projects with county-wide impacts, and transit plans for the Columbia County TSP update should reflect the recommendations of this plan.*

Lower Columbia River Rail Corridor Rail Safety Study: This document analyzes the transportation corridors between Portland and Astoria, primarily the Portland & Western Railroad’s Portland-Astoria Line and US 30, also known as the Lower Columbia River Highway. These two corridors form the backbone for commerce, job access, connectivity between the communities and more. Specifically the study was undertaken to assess rail safety implications of longer, more frequent freight trains serving local industry. In particular, at-grade crossing conditions and issues and the delay faced by vehicles, bicyclists and pedestrians to make turning movements from US 30 when trains are blocking crossings.

Several types of projects were recommended, from closing streets to adding pedestrian gates. There are varying levels of support for each intervention, and the brief field inspection conducted during the study did not allow verification of ODOT’s Rail Divisions’ suggested closures in rural Columbia and Clatsop County.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, the findings and recommended projects of the Rail Safety Study where feasible. In Rainier the railroad runs down the center of “A” Street, the main street of the community, leading to safety challenges.*

Portland-Astoria (US 30) Corridor: This plan was drafted in 1999 in partnership with the Oregon Department of Transportation (ODOT), local and regional governments, industry interests, stakeholders, and the general public to develop a long-term improvement plan to the US 30 corridor between the cities of Portland and Astoria. The plan focused on all travel modes, and recommended both short and long term management strategies.

Project prioritization focused foremost on maintaining the safety and functionality of the facilities. Additionally, projects were evaluated based on the following items (in order): preserving, optimizing, improving safety and capacity, and completing projects that support economic development, especially recreation and tourism. The Corridor Plan also calls for development of the local street network to relieve pressure on US 30 from local trips.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, the findings and recommended actions from the corridor plan to maintain its function at the primary intercity travel and freight route through the county.*

US 30 Road Safety Audit Butterfield Road to Neer Creek Road and Carlson Road to Lindberg Road: In 2011, ODOT undertook a safety audit on two sections of US 30 in Columbia County that experience disproportionate number of crashes for its roadway type. The top features believed to be contributing to high and medium severity crashes in these sections were:

- High frequency near Tide Creek Road
- Short passing zones
- Adverse weather conditions in winter months
- Limited law enforcement
- Animals crossing roadway
- Limited delineation of intersections and horizontal curves
- Lack of turn lanes on US 30

The plan suggests a variety of roadway treatments at varying costs to help mitigate specifically identified safety issues within the study area at each individual location.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, the findings and recommended actions on US 30 from the safety audit, including recommended projects or safety strategies.*

Cornelius Pass Road Safety Evaluation Jobs and Transportation Act (JTA) : In 2009 ODOT, in coordination with Multnomah, Columbia and Washington Counties, developed design alternatives to improve safety on a five-mile section of Cornelius Pass Road. The study focused on identifying safety projects that could be considered as funding becomes available, some of these alternatives include improvements in vertical alignment, sight distance and lighting.

What this means for the Columbia County TSP Update: *The TSP should support, as appropriate, the findings and recommended alternatives of the Cornelius Pass Safety Evaluation.*

Port of St. Helens Airpark Master Plan Update: In 2004, the Port of St. Helens undertook a master plan update to the Airpark. Located in the City of Scappoose off US 30, the airport is 20 miles from downtown Portland. The airport is primarily used by recreationists, but as other regional airports become busier, it has begun to attract more itinerant and local aircrafts. The Port has undertaken master planning for an industrial park on the west side of the airport, on land zoned for light industrial. Access to the industrial park and between the park and airport was identified as a critical component to the success of the endeavor.

The Westside Rural Multnomah County Transportation System Plan: In 1998, western Multnomah County updated its TSP based on future land use and population growth. Existing roadways are expected to continue to function adequately through 2015, with the exception of Newberry Road. Newberry Road is classified as a local road, but carries high traffic volumes traveling between Portland and Washington County bypassing Cornelius Pass Road between Skyline Boulevard and US 30. The documents identifies transportation demand management strategies to manage projected growth, including high occupancy vehicles lanes along US 30.

What this means for the Columbia County TSP Update: *The TSP should address, as appropriate, projects identified in the Westside Rural Multnomah TSP, that fall under Columbia County's jurisdiction. This includes a proposed commuter van pool or transit service from Columbia County to Washington County via Cornelius Pass Road.*

The Columbia County Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO) regulate the use of land in unincorporated areas of the county. They are intended to implement the goals and policies established in the County Comprehensive Plan. Provisions related to transportation planning in these ordinances include:

- transportation uses permitted in some zones;
- site design requirements including an access and circulation plan and impact assessment;
- procedures and criteria for zone changes as well as general administration and review procedures;
- land division review and approval authorities; and
- block and street standards for land divisions, including street layout and pedestrian access ways.

Standards for access and street design are also established in the County Roads Standards document. The CCZO and CCSPO are reviewed in detail for compliance with the State of Oregon Transportation Planning Rule (TPR) in Technical Memorandum #4 (Regulatory Review).

What this means for the Columbia County TSP Update: *The CCZO and CCSPO may need to be amended to be consistent with the updated Columbia County TSP, implement its recommendations, and comply with TPR.*

Pipeline Infrastructure: Gas transmission pipelines in Columbia County exist along US 30, OR 47 and OR 202 segments. Northwest Natural Gas Co operates the largest natural gas pipeline in the county, bounding most of US 30 and OR 47 Highways within Columbia County. There are other

minor pipelines that do not lay along major corridors within the county, operators for these pipelines include: KB Pipeline, Beaver Plant - Portland General Electric, Northwest Pipeline Corp (WGP), and United States Gypsum Co.

What this means for the Columbia County TSP Update: *The general type and location of pipeline infrastructure may need to be documented in the TSP and considered, as appropriate, when developing cost estimates and feasibility of major transportation projects.*

Attachment A: Applicable Plans and Policies

The following plans and policies were reviewed for the Columbia County TSP Update:

Columbia County

- Columbia County TSP, June 1998
- Columbia County Comprehensive Plan, August 2012
- Columbia County Road Standards Document
- Columbia County Community-wide Transit Plan and US 30 Transit Access Plan, June 2009
- US 30 Road Safety Audit: Butterfield Road to Neer Creek Road and Carlson Road to Lindberg Road, November 2011
- Columbia County Zoning Ordinance (Further information included in TM #4 for TPR Compliance)
- Columbia County Subdivision and Partitioning Ordinance (Further information included in TM #4 for TPR Compliance)

State of Oregon

- 1999 Oregon Highway Plan, amended August 2013
- Oregon Transportation Plan, September 2006
- Oregon Bicycle and Pedestrian Plan, 1995
- Oregon Rail Plan, 2001
- Oregon Freight Plan, June 2011
- Oregon Aviation Plan, 2007
- Transportation Planning Rule (OAR 660-012), amended December 2011
- Access Management Rules (OAR 734-051), amended December 2011
- Statewide Transportation Improvement Program (STIP), June 2012

Regional Documents

- Lower Columbia River Rail Corridor Rail Safety Study, May 2009
- Portland-Astoria (US 30) Corridor Plan, November 1999
- Cornelius Pass Road Safety Evaluation JTA, 2011
- Crown Zellerbach Trail Development Concept Plan, May 2007
- Clatsop County TSP, 2003
- Washington County TSP, 2003
- Port of St. Helens Plan, 2004
- St. Helens TSP, 2011
- St. Helens Comprehensive Plan, 2013
- Scappoose TSP, 1997
- Scappoose Comprehensive Plan
- Rainer TSP, 1997
- Rainier Comprehensive Plan, 2003

- Clatskanie TSP, 1997
- Clatskanie Transportation refinement Plan, 2005
- Clatskanie Comprehensive Plan, 1978
- Vernonia TSP, 2011
- Vernonia Comprehensive Plan
- Columbia City TSP
- Columbia City Comprehensive Plan, 2010
- Land Use proposals in Columbia County
- Westside Rural Multnomah County TSP, 1998

Section D

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Section E

Memo 4: Regulatory Review

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #4

DATE: July 11, 2014

TO: Columbia County TSP Project Management Team

FROM: Darci Rudzinski, Angelo Planning Group
Shayna Rehberg, Angelo Planning Group

SUBJECT: Columbia County Transportation System Plan Update
Technical Memorandum #4: Regulatory Review

P11086-022

The purpose of this memorandum is to discuss and identify Columbia County Comprehensive Plan and Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO) provisions that may need to be updated in order to: (1) to be consistent with and implement the updated Transportation System Plan (TSP); and (2) to comply with the Oregon Transportation Plan (OTP) and the Transportation Planning Rule (TPR).

Draft Transportation System Plan (TSP)

The objectives, outcomes, and recommendations of the TSP update process are expected to result in needed policy and regulatory amendments to ensure consistency between adopted County documents. These amendments are likely to be related to issues that have received state and local attention since the TSP was adopted in 1998, such as the emphasis on multimodal transportation, planning and implementation coordination, and finding ways to better manage and maximize the existing transportation system.

Policy amendments will reflect issues identified through the TSP update. Current transportation policies for the County are identical between the Comprehensive Plan and the TSP; the policies were updated as part of the 1998 TSP development and adoption process. These current policies address multi-modal transportation, transit for the transportation disadvantaged, right-of-way dedication, off-site improvements, access management, port development, and airport protection. Transportation goals and policies will be reviewed in detail in Technical Memorandum #5.

Transportation-related policy language may need to be modified to reflect recommendations from locally adopted City TSPs, as they pertain to County facilities, as well as recent state policy changes, such as those focused on greenhouse gas reduction, mobility, and access management.

Code amendments may also be necessary to implement the recommendations of the updated TSP. Examples include modifying street standards and other multi-modal, system and transportation facility

design standards.¹ Some preliminary recommended changes are identified in Table 1, based on State requirements related to implementing local TSPs (see Transportation Planning Rule section in this memorandum). These and potentially other code changes, as well as recommended policy amendments, will be identified and developed as part of the TSP update.

Oregon Transportation Plan (OTP)

The OTP, updated in 2006, is the State’s comprehensive transportation plan. The planning horizon of the current plan extends through 2030. Its purpose is to establish goals, policies, strategies, and initiatives for long-range transportation planning in the state. A summary of the OTP is provided in Technical Memorandum #3 (Plan Review Summary).

The OTP emphasizes maximizing the investment in the existing transportation system, integrating transportation and land use regulations, and integrating the transportation system across jurisdictions and modes. The following are key initiatives in the OTP:

- Maintain the existing transportation system to maximize the value of the assets. If funds are not available to maintain the system, develop a triage method for investing available funds.
- Optimize system capacity and safety through information technology and other methods.
- Integrate transportation, land use, economic development and the environment.
- Integrate the transportation system across jurisdictions, ownerships and modes.
- Create a sustainable funding plan for Oregon transportation.
- Invest strategically in capacity enhancements.

OTP policy and investment strategies are translated into plans for specific transportation modes in order to implement statewide multimodal priorities. The Oregon Highway Plan, the Oregon Bicycle and Pedestrian Plan, the Oregon Public Transportation Plan, Oregon Aviation Plan, and the Oregon Rail Plan are modal plans that have been reviewed for this project to ensure that the updated TSP will be consistent with policies, strategies, and design guidelines in these modal plans (see Technical Memorandum #3).

Transportation Planning Rule (TPR)

The Transportation Planning Rule (TPR) (OAR 660-012) implements Statewide Planning Goal 12 (Transportation), which is intended to promote the development of safe, convenient, and economic transportation systems that are designed to maximize the benefit of investment and reduce reliance on the automobile. The TPR includes direction for preparing, coordinating, and implementing TSPs. In particular, TPR Section -0045 (Implementation of the Transportation System Plan) requires local governments to amend their land use regulations to implement the TSP. It also requires local

¹ At the time that TSP-related amendments to the Development Code are considered for adoption, the County may wish to take the opportunity to make other procedural amendments to the Development Code.

governments to adopt land use and subdivision regulations to protect transportation facilities for their identified functions.

TPR Section -0060 (Plan and Land Use Regulation Amendments) addresses amendments to plans and land use regulations. It specifies measures to be taken to ensure that allowed land uses are consistent with the identified function and capacity of existing and planned transportation facilities. These include access control measures, standards to protect future operations of roads, expanded notice requirements and coordinated review procedures for land use applications, a process to apply conditions of approval to development proposals, 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. Section -0060 also establishes criteria for identifying the significant effects of plan or land use regulation amendments on transportation facilities, actions to be taken when a significant effect would occur, identification of planned facilities, and coordination with transportation facility providers.

Table 1 provides an evaluation of the CCZO and CCSPO based on Sections -0045 and -0060 of the TPR.² The evaluation includes findings confirming whether existing code language complies with the TPR and, where necessary, recommendations for amending the code to better address TPR requirements. Notes regarding potential provisions to incorporate or update in the County Road Standards document and TSP, which are related to potential code amendments, are also included in the table.

² Note that the focus of the TPR evaluation is on how the County implements the local transportation plan through land use and development requirements. As such, Table 1 does not include an evaluation of existing policy language. However, as stated earlier in this memorandum, a review and update of policy language will be part of and outcome of the TSP update process.

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
OAR 660-012-0045	
(1) Each local government shall amend its land use regulations to implement the TSP.	
<p>(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:</p> <p>(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;</p> <p>(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;</p> <p>(C) Uses permitted outright under ORS 215.213(1)(m) through (p)³ and 215.283(1)(k) through (n)⁴, consistent with the provisions of 660-012-0065⁵; and</p>	<p>CCZO Section 303 and 503 permit transportation uses specified in ORS 215.213 and ORS 215.283 in the Primary Agriculture (PA) and Primary Forest (PF) zones respectively. Transportation uses identified in TPR Section -0045(1)(a) are not addressed in other zones in the CCZO.</p> <p><u>Recommendation:</u> Amend the CCZO to permit transportation uses that do not have a significant impact on land use either by including as permitted uses under individual County zones or as a global provision, preceding the sections on County zones.</p>

³ Transportation uses in ORS 215.213 and .283 include:

- Climbing and passing lanes within the right of way existing as of July 1, 1987.
- Reconstruction or modification of public roads and highways, including the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right of way, but not including the addition of travel lanes, where no removal or displacement of buildings would occur, or no new land parcels result.
- Temporary public road and highway detours that will be abandoned and restored to original condition or use at such time as no longer needed.
- Minor betterment of existing public road and highway related facilities, such as maintenance yards, weigh stations and rest areas, within right of way existing as of July 1, 1987, and contiguous public-owned property utilized to support the operation and maintenance of public roads and highways.

⁵ OAR 660-012-0065 (Transportation Improvements on Rural Lands); (1) This rule 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.

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
<p>(D) Changes in the frequency of transit, rail and airport services.</p> <p>(b) To the extent, if any, that a transportation facility, service, or improvement concerns the application of a comprehensive plan provision 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.</p>	
<p>(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.</p>	<p>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.</p> <p>Site Design Review and Conditional Use Review may be conducted concurrently in Community Service-Recreation and Surface Mining zones pursuant to CCZO Section 1024 and Section 1045, respectively. Otherwise, there are no other provisions for concurrent, coordinated, or consolidated review in the code.</p> <p><u>Recommendation:</u> Add a provision to Article VIII (Administration) to allow for consolidated review of land use decisions in cases when project development requires land use decision-making.</p>
<p>(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:</p>	
<p>(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;</p>	<p>The CCZO addresses access control generally in the following sections.</p> <ul style="list-style-type: none"> ■ Section 806 of the Highway Commercial zone prohibits access along a designated arterial or “thoroughfare” within 60 feet from the right-of-way of an intersecting street. ■ Sections 1003, 1014, and 1024 of Community Service Institutional, Utility, and Recreation zones allows the Planning Commission to limit the number of access points onto County roads and “public ways” as conditions to mitigate potential adverse impacts of these community service uses on adjacent land uses. <p>The CCSPO addresses access control in sections on blocks on streets.</p> <ul style="list-style-type: none"> ■ Section 1004 (Blocks) limits block length in subdivisions where average lot size is less than one

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
	<p>acre to 1,000 feet, and requires blocks along arterials or collector streets to be at least 1,000 feet long.</p> <ul style="list-style-type: none"> ■ Section 1005 (Streets) allows the Planning Commission to limit access to an existing or proposed arterial when a major partition or subdivision is proposed to abut the arterial. The section allows the Planning Commission to limit access through means including access onto a parallel local street. <p>Access spacing standards are established in the Columbia County Approach Road Ordinance.</p> <p><u>Recommendations:</u> Existing County code mostly addresses this TPR requirement. However the following is recommended to ensure that the code better addresses this TPR requirement.</p> <ul style="list-style-type: none"> ■ Consider whether a shorter maximum block size in subdivisions is desired to increase roadway connectivity and create a more walkable environment. ■ Make standards in CCZO Section 806 and CCSPO Section 1004 consistent with updated spacing standards in the TSP, as needed. <p><u>Note for the County Road Standards:</u> Update the access spacing standards in the County Road Standards as needed through the TSP update process.</p> <p><u>Notes for the TSP:</u></p> <ul style="list-style-type: none"> ■ Refer to the County Road Standards document in the updated TSP; and ■ Consider adding references to local/city and state spacing standards in the updated TSP.
<p>(b) Standards to protect the future operations of roads, transitways and major transit corridors</p>	<p>Mobility standards for County roads are not clearly established in the 1998 TSP.</p> <p>Existing site design review submittal requirements (Section 1555) include an “impact assessment;” which could potentially include a traffic impact analysis (TIA).</p> <p>Information required for the preliminary plat of a subdivision (Section 403) does not specify a traffic impact analysis; however, the provisions allow the Planning Commission to require additional information from an applicant, which could potentially include a TIA.</p> <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> ■ Establish TIA requirements in the code that apply to subdivision proposals, development proposals that are expected to generate a threshold number of trips, zone changes, plan amendments, and any other threshold criteria that the County and ODOT find appropriate.

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
	<p>■ Refer to the performance standards established in the TSP in the TIA requirements.</p> <p>Note for the TSP: Establish mobility and/or other performance standards in the updated TSP.</p>
<p>(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;</p>	<p>CCZO Section 3.920 (Aircraft Land Field Overlay) allows for “the establishment and expansion of airport facilities, while preventing air space conflicts in approach and departure zones. This zone includes all areas lying within the approach, departure, horizontal and conical zones of the airport facility as shown on the zoning maps.”</p> <p>Recommendation: Existing code provisions address this TPR requirement. No changes to the code are recommended.</p>
<p>(d) A process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites;</p>	<p>See response to -0045(1)(c).</p>
<p>(e) A process to apply conditions to development proposals in order to minimize impacts and protect transportation facilities, corridors or sites;</p>	<p>CCZO Sections 1003, 1014, 1024, and 1503 authorize the Planning Commission to attach conditions of approval to proposed uses in Community Service zones and proposed conditional uses to mitigate potential impacts on adjacent land uses.</p> <p>CCZO Sections 1557 and 1558 allow the Planning Director and Planning Commission to attach conditions of approval to Type 1 and Type 2 design reviews, respectively.</p> <p>CCZO Sections 1601 and 1619 further allow the Planning Director to approve administrative and discretionary permits with conditions.</p> <p>Recommendation: Existing code provisions address this requirement. No changes to the code are recommended.</p>
<p>(f) Regulations to provide notice to public agencies providing transportation facilities and services, MPOs, and ODOT of:</p> <p>(A) Land use applications that require public hearings;</p> <p>(B) Subdivision and partition applications;</p> <p>(C) Other applications which affect private access to roads; and</p> <p>(D) Other applications within airport noise corridor and imaginary surfaces which affect airport operations.</p>	<p>CCZO Section 1609 and CCSPO Section 213 require notice to be sent to property owners within 100 to 500 feet of the subject property. Notice requirements do not explicitly include agencies that manage or own facilities that may be affected by the proposal.</p> <p>The Columbia County Community-wide Transit Plan/US 30 Transit Access Plan includes draft language to add to Sections 1550, 1603, and 1606 about including agencies such as the County Transit Agency (Columbia County Rider) in pre-application conferences for site design review as well as notices for public hearings for quasi-judicial and legislative hearings.</p> <p>Recommendations:</p> <p>■ Include provisions for inviting transportation facility and service providers to site design review pre-applications conferences (CCZO Section 1553).</p>

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
	<ul style="list-style-type: none"> ■ Add provisions to CCZO Sections 1603, 1606, and 1609 and to CCSPO Section 213 that include transportation facility and service providers and other agencies in notice requirements for applications that may affect a transportation facility or service.
(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.	See response related to traffic impact study requirements, Section -0045(2)(b), and to plan and land use regulation amendments, Section -0060.
(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 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.	<p>The CCZO does not include provisions for bicycle parking.</p> <p>Recommendation: Add requirements addressing the number of bicycle parking spaces and general design for new multi-family residential developments of four units or more, new retail, office and institutional developments, and all transit centers (if applicable) to CCZO Section 1400 (Off-Street Parking and Loading).</p>
(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 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,	<p>Provisions of this TPR requirement are addressed in the following ways:</p> <ul style="list-style-type: none"> ■ CCZO Section 1561 requires that site plans show the location and dimension of pedestrian and bicycle circulation, and related access ways. The Columbia County Community-wide Transit Plan/US 30 Transit Access Plan provides draft code language (new Section 1561.E, Pedestrian Access and Circulation) to strengthen requirements for safe, direct, and convenient pedestrian and bicycle access and circulation. The plan also provides draft language about expanded requirements for walkways (new Section 1563.F, Walkway Design and Construction). ■ CCSPO Section 1004 limits block length on local streets to 1,000 feet in length and requires a "cross walkway" of not less than 10 feet in width "near the middle" of the block. Blocks along arterials or collector streets must be at least 1,000 feet long. The Planning Commission may require the reservation of an easement for "pedestrianways" at least 12 feet wide through the center of blocks that more than 800 feet long "where deemed essential to provide circulation or access to schools, parks, shopping centers, public transportation, or other community facilities." ■ CCSPO Section 1005 requires additional right-of-way to be dedicated in conformance with County Road Standards at the time of subdivision or partition when the following conditions the

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
<p>collectors and most local streets in urban areas except that sidewalks are not required along controlled access roadways, such as freeways;</p> <p>(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;</p> <p>(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;</p> <p>(E) Streets and accessways need not be required where one or more of the following conditions exist:</p> <p>(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;</p> <p>(ii) Buildings or other existing development on adjacent lands physically preclude a connection now or in the future considering the potential for redevelopment; or</p> <p>(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.</p>	<p>subject property is located within a UGB and fronts on a County road, or the subject property is subdivided or partitioned into lots or parcels of two acres or less.</p> <ul style="list-style-type: none"> ■ Bikeways and sidewalks – The County Road Standards include bikeways (lane or shoulder) on arterials and collectors, and sidewalks along arterials, collectors, and most local urban streets. ■ Parking lots – Existing off-street parking provisions require a parking and loading plan (CCZO Section 1405). The plan must show proposed vehicle circulation and landscaping, but pedestrian access and circulation are not specified. ■ Cul-de-sacs – CCSP0 Section 1005 (Streets) limits cul-de-sac to six times the minimum lot width, serving no more than 18 dwelling units, and not exceeding 400 feet in length in urban areas and 800 feet in rural areas. Dead-end streets are permitted at the boundary of subdivisions with the provision that reserve strips and street plans are required to allow for extension of these streets in the future (CCSP0 Section 1007). ■ Street spacing standards – See findings and recommendations related to access standards, Section -0045(2)(a). Also, CCSP0 Section 1005 (Streets) requires local streets to be laid out so as to discourage through traffic and limit the number of streets to only those necessary to provide convenient and safe access to properties. ■ Exceptions for streets and accessways – CCSP0 Section 1005 (Streets) requires local streets to be laid out to conform to topography and permit efficient drainage and utility systems. Other conditions for exempting streets and accessways identified in this TPR requirement are not specified in the code. Note that Section 1005 also requires that local streets be laid out so that through traffic is discouraged and that the number of streets be limited to only those necessary to provide convenient and safe access to properties <p>Recommendations:</p> <ul style="list-style-type: none"> ■ Add definitions for access ways, bikeways, paths, and walkways to the CCZO (Section 100) and for access ways, “pedestrianways,” and walkways to the CCSPO (Section 103). ■ Add draft code language from the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan regarding pedestrian access and circulation as a new Section 1561.E (Pedestrian Access and Circulation) and a new Section 1563.F (Walkway Design and Construction). ■ Parking lots – Add provisions for pedestrian access and circulation in parking lots in parking plan requirements in CCZO Section 1405.

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TPR Requirement	Local Development Code References and Recommendations
	<ul style="list-style-type: none"> ■ Add provisions to CCSPO Sections 1004 and 1005 to exempt streets and access ways in cases of physical, topographic, development, and legal constraints identified in TPR Section -0045(3)(b). ■ Review the local streets provisions in CCSPO Section 1005 and discuss if the limitations therein are at odds with connectivity objectives in this TPR requirement. <p>Note for the County Road Standards: Ensure that the County Road Standards are consistent with recommendations in the updated TSP related to bikeways and sidewalks. In particular, review and modify if necessary bikeway standards for arterial- and collector-level facilities and sidewalk standards for arterials, collectors, and local streets serving suburban zone districts.</p>
(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	<p>See findings and recommendations related to conditions of approval, Section -0045(2)(e). Also, CCZO Section 1563 allows the Planning Commission, Planning, Director, or Public Works Director to require off-site transportation facilities consistent with the County Road Standards and Columbia County TSP as conditions of approval in site design review.</p> <p>Recommendation: Existing code provisions address this requirement. No changes to the code are recommended.</p>
(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.	<p>See findings and recommendations related to accessways, Section -0045(3)(b).</p>
(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 a determination has been made that a public transit system is feasible, local governments shall adopt land use and subdivision regulations 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;	<p>Existing code does not address this TPR requirement. However, code language addressing this requirement (new CCZO Section 1500, Transit Improvements) was drafted as part of the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan (2009). The new code section allows the County to require pedestrian connections between transit facilities and building entrances, transit passenger landing pads, easements or dedications for shelters or benches, and lighting for sites adjacent to existing or planned transit facilities.</p> <p>In addition, draft language in the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan addresses permitting transit facilities and related signs in CCZO Articles IV, V, and VI and Section 1311.</p>

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
	<p>Recommendations:</p> <ul style="list-style-type: none"> ■ Update the code to include new Section 1500 (Transit Improvements), as presented in the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan. ■ Add draft language from in the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan that permits transit facilities and related signs in CCZO Articles IV, V, and VI and Section 1311. <p>Notes for the TSP: Include existing and planned transit route maps in the TSP transit plan, with designations that are consistent with the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan. Include transit features in figures and/or discussion of roadway design in the TSP roadway plan.</p>
<p>(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.</p> <p>(A) Walkways shall be provided connecting building entrances and streets adjoining the site;</p> <p>(B) Pedestrian connections to adjoining properties shall be provided except where such a connection is impracticable as provided for in OAR 660-012-0045(3)(b)(E). Pedestrian connections shall connect the on site circulation system to existing or proposed streets, walkways, and driveways that abut 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;</p>	<p><i>See the findings and recommendations for TPR Sections -0045(3)(b).</i></p>
<p>(C) In addition to (A) and (B) above, on sites at major transit stops provide the following:</p>	<p><i>See the findings and recommendations for TPR Sections -0045(3)(b) and -0045(4)(a).</i></p>

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TPR Requirement	Local Development Code References and Recommendations
<p>(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 a street intersection;</p> <p>(ii) A reasonably direct pedestrian connection between the transit stop and building entrances on the site;</p> <p>(iii) A transit passenger landing pad accessible to disabled persons;</p> <p>(iv) An easement or dedication for a passenger shelter if requested by the transit provider; and</p> <p>(v) Lighting at the transit stop.</p>	
<p>(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;</p>	<p>The City is not proposing to designate a pedestrian district at this time.</p> <p><u>Recommendation:</u> No code changes are recommended.</p>
<p>(d) Designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools;</p>	<p>Existing code does not address this TPR requirement.</p> <p><u>Recommendation:</u> Add requirements in Section 1415 (Parking Areas) for preferential parking for carpools and vanpools in designated employee parking areas in new developments.</p>
<p>(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;</p>	<p>Existing code does not address this TPR requirement.</p> <p><u>Recommendation:</u> Add provisions in Section 1415 (Parking Areas) and in proposed new Section 1500 (Transit Improvements) that allow existing development to redevelop a portion of existing parking areas for transit-oriented improvements identified in the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan.</p>
<p>(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</p>	<p><i>See the findings and recommendations related to transit access in TPR Sections -0045(3)(b) and -0045(4)(a).</i></p>

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
accessways to minimize travel distances;	
(g) Along existing or planned transit routes, designation of types and densities of land uses adequate to support transit.	<p>Existing code and zoning is generally consistent with this TPR requirement to the extent that transit facility improvements recommended in the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan are primarily sited in cities within the county designated with urban zoning.</p> <p><u>Recommendation:</u> No code changes are recommended.</p>
<p>(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.</p>	<p>This requirement will be addressed by the TSP update planning process. The requirement can be met by adopting improvements in developed areas that meet the needs identified in the TSP’s pedestrian and bicycle circulation elements.</p> <p>Specific measures identified in this TPR requirement are addressed by the code in the following ways.</p> <ul style="list-style-type: none"> ■ Walkways between cul-de-sacs and adjacent roads – Existing code requires access ways through long blocks and limits the length of cul-de-sacs, and allows for but does not require access ways between cul-de-sacs and adjacent roads. ■ Walkways between buildings – See findings and recommendations related to pedestrian circulation on-site, Section -0045(3)(b). ■ Access between adjacent uses – See findings and recommendations related to connections to community destinations, Section -0045(3)(b). <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> ■ Strengthen the provisions in CCSPO Section 1011 (Pedestrianways) to require pedestrian access ways between cul-de-sacs and adjacent roads, except in cases of constraints such as slope, environmentally sensitive lands, and existing development (i.e., conditions identified in TPR Section -0045(3)(b)). ■ Revise provisions for cul-de-sacs in CCSPO Section 1005 (Streets) to require access ways –walkways or multi-use paths - where roadways cannot be extended.

Table I: TPR Review of Columbia Co. Zoning Ordinance (CCZO) and Subdivision and Partitioning Ordinance (CCSPO)

TPR Requirement	Local Development Code References and Recommendations
<p>(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.</p>	<p>County roadway right-of-way and improvement standards are provided in the County Road Standards document. Rural road standards consist of pavement widths of approximately 32 feet (12-foot travel lanes and four-foot bike lanes) for collector roads and approximately 26 feet (10-foot travel lanes and three-foot aggregate shoulders) for local roads. These are not excessive pavement widths.</p> <p>Right-of-way widths for arterials, collectors, and local roads are also established in CCSPO Section 1005 (Streets).</p> <p>Recommendation: Ensure that the road standards in the CCSPO are consistent with the County Road Standards document, particularly if road standards are modified as part of the TSP update process.</p>
<p>OAR 660-12-0060</p>	
<p>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.</p>	<p>CCZO Section 1502 (Zone Changes) requires proposed zone changes and map amendments to demonstrate consistency with the Comprehensive Plan and Statewide Planning Goals and demonstrate that “the property and affected area are presently provided with adequate facilities, services, and transportation networks to support the use, or such facilities, services and transportation networks are planned to be provided concurrently with the development of the property.”</p> <p>CCZO Section 1607 requires all amendments to the CCZO text and maps to be consistent with the Comprehensive Plan text and maps.</p> <p>Recommendations: Existing code provisions generally address this TPR requirement. However, the following amendments are recommended to more clearly and thoroughly address this TPR requirement.</p> <ul style="list-style-type: none"> ■ Add provisions to CCZO Section 1502 and Section 1607 that clarify that consistency with the Comprehensive Plan includes ensuring that changes to CCZO text and maps, which significantly affect an existing or planned transportation facility, are consistent with the identified function, capacity, and performance standards of the facility. ■ Add similar provisions related to proposed amendments to Comprehensive Plan text.

Section E

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Section F

Memo 5: Goals, Objectives, and Evaluation Criteria

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #5

DATE: July 11, 2014

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
 Garth Appanaitis, DKS Associates
 Edith Lopez Victoria, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
 Technical Memorandum #5: Goals, Objectives, and Evaluation Criteria

P11086-022

The purpose of this memorandum is to facilitate the process of developing the transportation-related goals and objectives for Columbia County. The development of the goals and objectives will continue throughout the planning process, shaped by input received from the County Transportation Road Advisory Committee (TRAC), the general public, and other key stakeholders. An initial set of potential evaluation criteria has also been identified as a guide to measure how well strategy/project alternatives considered through the Transportation System Plan (TSP) update process address these goals.

A Guiding Framework for Transportation Planning

The process of identifying a vision, goals, and objectives helps describe the transportation system that best fits Columbia County’s values and guides how the 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 County’s core values.

Goals and objectives create manageable steps 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. **Policy** statements to guide future transportation decisions will be developed in conjunction with the refinement of these goals and objectives. A final set of proposed transportation goals, objectives, and policies will be



developed during implementation tasks toward the end of the process in order to implement recommendations in the updated TSP and create consistency with other plans and State transportation planning requirements.

Draft Transportation Goals and Objectives

A draft set of goals and objectives have been prepared for consideration. These goals and objectives are based on the existing transportation goal, the Future Transportation Needs section outlined in the 1998 TSP, and the Columbia County Comprehensive Plan.

The previous (1998) Columbia County TSP, and Comprehensive Plan state the following transportation goal and objectives for the County's transportation system:

Goal:

The creation of efficient, safe, and diverse transportation system to serve the needs of Columbia County residents.

Objectives:

1. To utilize the various modes of transportation that are available in the County to provide services for the residents.
2. To encourage and promote an efficient and economical transportation system to serve the commercial and industrial establishments of the County.
3. To improve the existing transportation system.

The following goals and objectives have been developed for consideration and use in the current TSP update to broaden the goals and incorporate additional elements that address emerging local interests and statewide transportation planning requirements. The goals represent an initial set of elements to consider, which can be further refined to address the specific needs and vision of Columbia County through the review process. In addition to statements that define the County's vision for transportation, the draft goals will provide the basis for evaluation criteria that will be used to measure potential transportation projects and strategies developed through the TSP update.

Note: The following draft goals and objectives will be refined through stakeholder and public input.

Goal I: Provide for efficient and convenient motor vehicle travel.

- Objective 1a: Establish and maintain mobility standards to maintain the minimum level of motor vehicle travel efficiency. State and City standards for mobility will be supported on facilities under the respective jurisdiction.
- Objective 1b: Provide a mechanism to address the impacts of a proposed development and to fairly impose mitigation provisions.
- Objective 1c: Maintain the existing system of roads and bridges to a level suitable to the function of the road, allowing for smooth and comfortable travel, and reducing vehicle maintenance costs, through the preservation of pavements, and prevention of damage by overweight vehicles.
- Objective 1d: Keep County roads and bridges maintained and operable so that they continue to provide the primary function of connecting the transportation system, and

coordinate with the State to ensure proper maintenance of their facilities.

- Objective 1e: Incorporate new technologies such as Intelligent Transportation System (ITS) elements, as appropriate, to maximize the use of the existing transportation system
- Objective 1f: Establish and maintain a functional classification system that provides a plan for system purpose and design.
- Objective 1g: Manage access to arterials and highways where practical to reduce congestion and conflicting travel patterns.

Goal 2: Provide for the safety and security of all transportation modes.

- Objective 2a: Identify improvements to address high collision locations to enhance safety for all modes.
- Objective 2b: Identify locations in the county where enhanced street crossings, shoulder improvements or road widening is needed for the safety of walking and biking users.
- Objective 2c: Support measures that enhance the safety at railroad crossings.
- Objective 2d: Identify investments needed along Lifeline Routes to preserve emergency response access and mobility.
- Objective 2e: Identify strategies to enhance emergency response to incidents.

Goal 3: Provide an equitable, and connected multi-modal transportation system.

- Objective 3a: Provide facilities for all modes of transportation.
- Objective 3b: Distribute the benefits and impacts of transportation decisions fairly and address the transportation needs and safety of all users, including youth, the elderly, people with disabilities, and people of all races, ethnicities and income levels.
- Objective 3c: Provide connections for all modes that meet applicable County and Americans with Disabilities Act (ADA) standards.

Goal 4: Increase the quality and availability of pedestrian and bicycle facilities.

- Objective 4a: Consider walking and biking user needs that complement the basic provision of services to encourage higher levels of usage (e.g., street lighting, bike parking, and way finding signage).
- Objective 4b: Identify necessary changes to the land development code to support connectivity between compatible land uses and to provide internal site access and connections for pedestrian and bicycle travel.
- Objective 4c: Provide pedestrian and bicycle access to key activity centers such as transit facilities, employment centers, schools, parks and community facilities.
- Objective 4d: Promote walking, bicycling, and sharing the road through public information and organized events.

- Objective 4e: Identify new or improved transportation connections to improve compatibility and transfer between modes and system efficiency.
- Objective 4f: Improve bicycle access along all major corridors to provide intercity bicycle connectivity, including high quality bicycle access along Highway 30. Support the development of the CZ Trail and connection to the Banks-Vernonia Trail.

Goal 5: Work with transit service providers to provide transit service and amenities that encourage and increase ridership.

- Objective 5a: Identify areas that support additional transit services, and coordinate with transit providers and transit plans (e.g., the 2009 Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan) to improve the coverage, reliability and frequency of services.
- Objective 5b: Promote transit accessibility to transportation-disadvantaged groups.
- Objective 5c: Support efforts to make transit more time-competitive with automobile travel, where feasible, for high-demand connections.
- Objective 5d: Enhance intercity transit connectivity.
- Objective 5e: Implement bus stops, park-and-ride lots, and transit centers that are identified for Columbia County in the 2009 Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan.
- Objective 5f: Identify needs for services to regional employment and activity centers.
- Objective 5g: Consider transit user needs that complement the basic provision of service to encourage higher levels of usage (e.g., sidewalk and bicycle connections, shelters, benches). Implement projects addressing these needs that are identified for Columbia County in the 2009 Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan.

Goal 6: Manage the transportation system to support a prosperous and competitive economy.

- Objective 6a: Enhance access to major employment and industrial centers.
- Objective 6b: Enhance the freight system efficiency, access, capacity and reliability.
- Objective 6c: Enhance access to intermodal facilities such as ports, airports, and transit centers.
- Objective 6d: Increase the distribution of travel information to maximize the reliability and effectiveness of highways, which serve as the primary freight corridors.

Goal 7: Provide transportation facilities and services that are fiscally responsible and economically feasible.

- Objective 7a: Plan for an economically viable and cost-effective transportation system that makes the best use of limited transportation funds.

Objective 7b: Identify and develop diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for road maintenance and transportation improvement projects.

Objective 7c: Actively seek State and Federal Transportation funds to finance programs and improvements.

Goal 8: Provide a transportation system that conserves energy, and protects and improves the environment.

Objective 8a: Support alternative vehicle types and identify potential electric vehicle plug-in stations and develop implementation code provisions.

Objective 8b: Minimize impacts to preserve the natural, scenic, and cultural resources in the county.

Objective 8c: Provide public access to designated public water bodies, natural resource areas, scenic and cultural resources.

Objective 8d: Work with watershed councils for the priority replacement of barriers to migrating fish species.

Goal 9: Coordinate with local and state agencies and transportation plans.

Objective 9a: Work with the Northwest Area Commission on Transportation (NWACT) to promote projects that improve regional linkages.

Objective 9b: Coordinate with the Oregon Transportation Plan and associated modal plans.

Objective 9c: Coordinate with local agency Transportation System Plans for communities within Columbia County.

Objective 9d: Coordinate with local agencies and entities within Columbia County including major employers, incorporated and unincorporated communities, Port of St. Helens, and other stakeholders or groups, as appropriate, for transportation matters involving areas that impact such entities.

Objective 9e: Coordinate with ODOT, Clatsop County, Washington County, and Multnomah County on projects that improve and impact regional connections within Oregon.

Objective 9f: Coordinate with ODOT, WSDOT, Rainier, Longview, Cowlitz County, and FHWA on matters regarding the Lewis and Clark Bridge and connections to Washington.

Objective 9g: Coordinate with cities and ODOT to review and assess potential impacts and appropriate mitigation of proposed development applications.

Draft Evaluation Criteria

Project alternatives developed through this update will be evaluated by criteria that are an extension of the goals and objectives. These project level criteria provide a point-based technical rating method that will be used to evaluate how well proposed design alternatives align with County interests. By summing

ratings (and weighting if desired), alternatives can be compared. In this way, a consistent method will be used to evaluate and rank the alternatives.

Evaluation Criteria and Scoring Methodology

The evaluation criteria were selected based on the County’s proposed transportation goals and objectives. The criteria focus on compliance with state and local plans and policies, engineering design requirements, and a desire to maximize positive (and minimize negative) economic, social (livability), and environmental impacts. Table 1 lists the evaluation criteria and the corresponding scoring methodology.

Note: The following draft evaluation criteria will be refined through stakeholder and public input. Establishing weights to apply to the Goals will also be development through public outreach.

Table 1: Columbia County TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score
Goal 1: Provide for efficient and convenient motor vehicle travel.	
Traffic Capacity Optimize traffic capacity to reduce delay.	+4 Significantly optimizes traffic capacity
	+2 Optimizes traffic capacity
	0 No change
	-2 Reduces traffic capacity
	-4 Significantly reduces traffic capacity
System Function (Connectivity and Access) Appropriate balance of system connectivity to link system in an efficient manner.	+4 Improves system connectivity for a major connection (arterial or collector) that is appropriately located
	+2 Improves efficiency of a localized area (or local street connection) and is consistent with spacing targets
	0 No net change (may improve one local area at the cost of another)
	-2 Decreases efficiency of a localized area and/or does not meet spacing targets
	-4 Negative impact on system function
Improved Roadway Efficiency Implements Transportation Demand Management (TDM) and Transportation System Management (TSM) or other strategies to create greater mobility, reduce auto trips, and make more efficient use of the roadway system.	+4 Significantly improves roadway efficiency
	+2 Improves roadway efficiency
	0 No change
	-2 Negatively impacts roadway efficiency
	-4 Significantly negative impact on roadway efficiency
Goal 2: Provide for the safety and security of all transportation modes.	
Improve Safety Implement strategies and/or projects that are likely to reduce crash rate and/or severity	+4 Improves safety countywide or at specific location identified as a safety need
	+2 Improves safety, but not at identified need location
	0 No change
	-2 Potentially reduces safety for some users
	-4 Potentially reduces safety at location that is identified as a safety need
Emergency Response Routes Enhances access and mobility for emergency response.	+4 Significantly enhance access to or travel along emergency response routes
	+2 Enhance access to or travel along emergency response routes
	0 No change
	-2 Degrade access to or travel along emergency response routes
	-4 Significantly degrade access to or travel along emergency response routes
Goal 3: Provide an equitable, and connected multi-modal transportation system.	

Table 1: Columbia County TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score
Multiple Travel Modes Connection or improvement serves a variety of travel modes.	+4 Serves more than two travel modes
	+2 Serves more than one travel mode
	0 Serves single travel mode
	-2 Serves single travel mode, but has a negative impact on another
	-4 Serves single travel mode, but has negative impact on more than one travel mode
Accommodate all Ages Improves accessibility for all ages and supports travel independence in the county.	+4 Connection or improvement benefits residents of all ages
	+2 Connection or improvement benefits some residents, but not all
	0 No change
	-2 Connection or improvement benefits some residents, but has a negative impact on another age group
	-4 Connection or improvement benefits some residents, but has a negative impact on more than one age group
General Consideration for Equity (not scored)	
Note: Equity is not scored on an individual project basis, but it is an important element of the plan. The overall project list will serve the overall needs and users of the county. Based on specific project location and system needs, individual projects may not serve all users.	
Goal 4: Increase the quality and availability of pedestrian and bicycle facilities.	
Pedestrian and Bicycle Connectivity Adds pedestrian and bicycle improvements that fill in system gaps, enhance system connectivity, and are accessible to all users.	+4 Significantly improves pedestrian or bicycle connectivity or accessibility
	+2 Improves pedestrian or bicycle connectivity or accessibility
	0 No change
	-2 Reduces pedestrian or bicycle connectivity or accessibility
	-4 Significantly reduces pedestrian or bicycle connectivity or accessibility
Intercity Pedestrian and Bicycle Connectivity Adds pedestrian and bicycle improvements that provide intercity connectivity.	+4 Significantly improves intercity pedestrian or bicycle connectivity
	+2 Improves intercity pedestrian or bicycle connectivity
	0 No change
	-2 Reduces intercity pedestrian or bicycle connectivity
	-4 Significantly reduces intercity pedestrian or bicycle connectivity
Facility Amenities or Furnishings Improves user experience and comfort to encourage higher levels of walking and biking trips (e.g., provide benches, planter strips, lighting, wayfinding).	+4 Significantly improves facility amenities
	+2 Improves facility amenities
	0 No change
	-2 Negatively impacts facility amenities
	-4 Significantly negative impacts on facility amenities

Table 1: Columbia County TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score
Goal 5: Work with transit service providers to provide transit service and amenities that encourage and increase ridership.	
Transit Access Improves access to transit facilities. Promotes transit as a viable alternative to the single occupant vehicle.	+4 Significantly improves access to transit facilities
	+2 Improves access to transit facilities
	0 No change
	-2 Negatively impacts access to transit facilities
	-4 Significantly negative impacts on access to transit facilities
Transit Amenities or Facilities Improves user experience and comfort to encourage higher levels of transit ridership (e.g., provide benches, shelters, lighting, schedules).	+4 Significantly improves amenities or facilities for transit
	+2 Improves amenities or facilities for transit
	0 No change
	-2 Negative impact on amenities or facilities for transit
	-4 Significantly negative impacts on amenities or facilities for transit
Goal 6: Manage the transportation system to support a prosperous and competitive economy.	
Employment Enhances access to employment.	+4 Significantly enhances travel comfort and convenience to employment in the county.
	+2 Enhances travel comfort and convenience to employment in the county.
	0 No change
	-2 Negative impact on travel comfort and convenience to employment in the county.
	-4 Significantly negative impacts on travel comfort and convenience to employment in the county.
Freight mobility Improve the movement of goods along freight routes.	+4 Significantly enhances freight mobility.
	+2 Enhances freight mobility
	0 No change
	-2 Negatively impacts freight mobility.
	-4 Significant negative impacts to freight mobility
Goal 7: Provide transportation facilities and services that are fiscally responsible and economically feasible.	
Fundability Available funding sources exist to implement projects in a timely fashion.	+4 Partial funding identified and secured
	+2 Potential funding partners/grant opportunities exist
	-2 No likely partner/grant funding opportunities
	-4 Potential for losing or conflicting with secured funding

Table 1: Columbia County TSP Evaluation Criteria and Scoring

Measure of Effectiveness	Evaluation Score
Cost Effectiveness Assume project benefits exceed projects costs	+4 Highly cost-effective, low-cost option
	+2 Moderately cost-effective, low-cost option
	0 Average cost solution
	-2 Moderately cost-effective, high-cost option
	-4 High-cost option, not cost-effective
Goal 8: Provide a transportation system that conserves energy, and protects and improves the environment.	
Environment Minimized impact on the natural, scenic, and cultural resources.	+4 Significantly enhances the natural environment
	+2 Enhances the natural environment
	0 No change
	-2 Negatively impacts the natural environment
	-4 Negatively impacts the natural environment in significant ways
Goal 9: Coordinate with local and state agencies and transportation plans.	
No evaluation criteria for Goal 8, this is required for all solutions.	

Section F

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Section G

Memo 6: Existing Transportation System Conditions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #6

DATE: January 28, 2015

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates
Edith Lopez Victoria, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
Technical Memorandum #6: Existing Transportation System Conditions

P11086-022

This memorandum provides a summary of the existing transportation conditions for Columbia County, providing answers to the following questions:

- What makes Columbia County unique?
- Where do people want to go?
- How do people get there?
- Where do people come from?
- What factors determine how people travel?
- How is the transportation system managed?
- What is the condition of the existing transportation system?

What Makes Columbia County Unique?

Bordered by 62 miles of Columbia River shoreline, Columbia County is home to several waterfront cities, including St. Helens, Columbia City and Rainier, in addition to other communities including Scappoose, Clatskanie and Vernonia (see Figure 1). The county provides a convenient location for both commuters and recreational activities, with residents in the south part of the county generally within a one hour drive of the Portland metropolitan area, and residents near the western county line generally within a one hour drive of the Pacific Ocean.



Figure 1: Columbia County Major Roadways

Columbia County visitors are drawn to popular recreational activities along the Columbia River, such as fishing, boating, and windsurfing. The county also offers the only two marine parks in Oregon: Sand Island on the Columbia River and J.J. Collins Memorial Marine Park on the Multnomah Channel.

Historically, Columbia County's economy has been largely driven by commercial fishing, water transportation, and lumber. Today, timber, dairy, natural gas, and horticulture remain major contributors to the county's economy.

Where do People Want to Go?

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 county. These destination points are referred to as activity generators (or trip attractors).

Columbia County, most known for its Columbia River waterfront, is home to numerous destinations that attract tourists and residents alike. The most common categories of activity generators in the county include (see Figure 2) for the general locations of some of these activity generators:

- Recreational/Entertainment (e.g., Hudson Park, Big Eddy Park, Prescott Beach, Camp Wilkerson, Scaponia Park, Laurel Beach, Gilbert River Boat Ramp, Scappoose R.V. Park, Sand Island on the Columbia River, J.J. Collins Memorial Marine Park)
- Schools (e.g., Portland Community College in Scappoose and St. Helens, St. Helens High School, North Columbia Academy, Columbia City School)
- Places of employment (e.g., logging, surface mining, business areas, industrial areas, offices)
- Shopping (e.g., Scappoose, St. Helens)
- Cultural (e.g., Historic Court House Museum in St. Helens, Vernonia Pioneer Museum)

There are also destinations outside of Columbia County that add traffic to the roadway network, such as:

- Nearby employment, shopping, services, recreation and events in Longview, Washington County and the Portland metropolitan area.
- The Oregon Coast.
- Local Colleges (e.g., Portland State University, the Portland Community College, University of Portland.

How do People Get There?

Most Columbia County residents commuted to work between the years of 2008 and 2012 via single occupant motor vehicles (about 79 percent). A notable number of residents carpooled (about 12 percent) to work. Approximately two percent walked, one percent biked, and one percent used public transit. Table 1 compares the commute patterns of Columbia County residents to other neighboring counties. More employees walked, or biked to work in Clatsop and Washington County, than in Columbia County. Columbia County employees drove alone to work more than neighboring counties, except Cowlitz County.

Table 1: Transportation Modes Use to Commute to Work

Transportation Mode	Percent of Commuters			
	Columbia County	Clatsop County	Washington County	Cowlitz County
<i>Workers over 16 years</i>	20,200	16,900	256,200	39,259
Motor Vehicle- Single Occupant	79%	73%	74%	80%
Motor Vehicle- Carpool	12%	12%	10%	13%
Walked	2%	6%	3%	2%
Biked / Other	1%	2%	2%	2%
Public Transportation	1%	1%	6%	0%
Worked at Home	5%	6%	5%	3%

Source: US Census Bureau, 2008-2012 American Community Survey

Figure 2 - Activity Generators



Legend Activity Generators

- | | | | |
|---|-------------------|---|-----------------------|
| ☆ | Point of Interest | ■ | Park |
| ⊠ | Medical Center | ■ | City Limits |
| 📖 | Library | ■ | Urban Growth Boundary |
| ▲ | School | ⬜ | Columbia County |

Although the U.S. Census Bureau is a valuable source of information for work-related commute patterns in Columbia County, it does not truly represent the transportation modes utilized to other activity generators like schools, recreation, shopping or access to transit. Non-motorized vehicle transportation modes are likely higher within the city limits of Clatskanie, Vernonia, Rainier, Columbia City, St. Helen's, and Scappoose.

How Transportation Modes are used in the County

Detailed traffic counts of pedestrian, bicycle, and motor vehicle activity at key intersections throughout Columbia County were recorded during the weekday evening peak period (3:00 p.m. to 6:00 p.m.) in early June 2014. Analysis of seasonal trends using data from automatic traffic recorders shows that activity levels in late May/early June or mid-September generally represent typical average weekday traffic conditions in the county (see Figure 3). During the summer, traffic volumes increase as much as 20 percent on major highways throughout the county. This summer increase is due to the overall pleasant weather and longer days enticing residents and visitors of Columbia County to get out and travel to various activity generators throughout the county. There is also an increase in summer traffic related to drivers traveling to and from the coast.

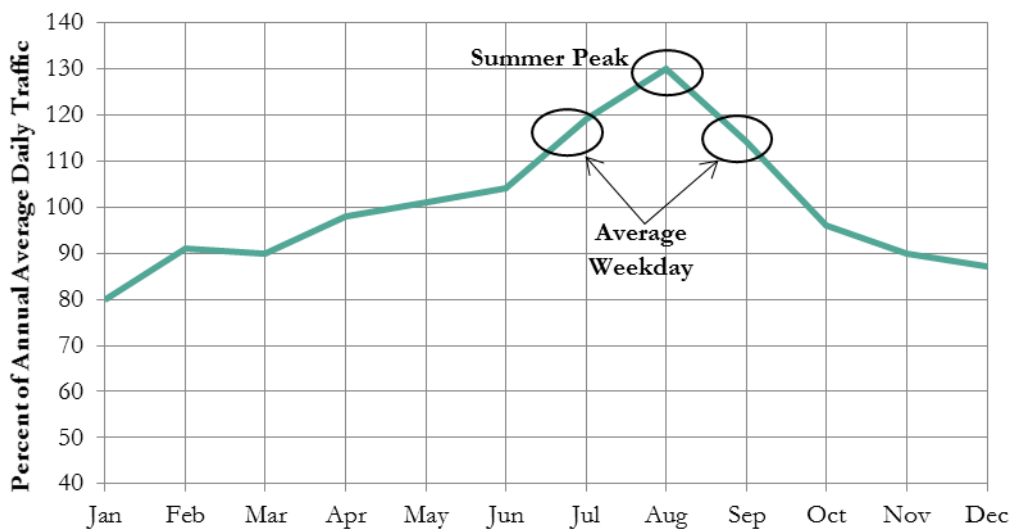


Figure 3: Typical Traffic Volume Profile for Highways in Columbia County

- Pedestrian volumes** are generally higher within the downtown cores of the major cities in Columbia County (e.g., Scappoose, St. Helens). Outside of these downtown cores, pedestrian volumes are relatively low. During this three-hour evening peak observation period, there was no pedestrian activity at 16 of the 19 study intersections. This low level of pedestrian activity is expected due to the rural nature of many roads in the county. Pedestrian activity levels are displayed in Figure A1 in the Appendix.
- Bicycle volumes** observed were also generally low during the weekday evening peak period, with 12 of the 19 intersections having no bicycle activity. Bicycle activity is generally higher on rural roads than pedestrian activity due to recreational bicycle riding and the fact that people are able to travel longer distances than on foot. The US 30/Berg Road intersection in Warren had

the highest observed bicycle volumes, with 26 bicyclists in the three-hour evening peak period. Bicycle activity levels are displayed in Figure A1 in the Appendix.

- **Motor vehicle volumes** on the roadways in Columbia County most commonly peak during the evening around 4:15 p.m., but generally vary depending on the time of year. During the summer months, traffic volumes increase due to an influx of visitors. For this reason, the traffic count data was adjusted to represent two separate conditions: summer and average weekday. The final p.m. peak summer and average weekday traffic volumes developed for the study intersections are displayed in Figures A2a and A2b, while the seasonal adjustment summaries can be seen in Table A1a, A1b, and A1c in the Appendix.

Intersections outside of city urban growth boundaries with significant p.m. peak hour motor vehicle volumes in Columbia County include the US 30 intersections with Berg Road, Wonderly Road, Heath Road, and Old Rainier Road. Volumes at intersections along OR 47 and OR 202 are up to 90 percent lower than those along US 30 during the p.m. peak hour.

- **Transit Usage**—Columbia County’s transit system had a total of 87,500 passengers during the fiscal year of June 2013/June 2014. The routes with most riders include PDX (48,020 passengers), PCC Shuttle (10,000 passengers) and SO CO Flex (9,000 passengers).
- **Freight volumes** – based on ODOT’s Automatic Traffic Recorder¹ located about one mile west of Rainier on US 30, heavy vehicle traffic accounts for 12 percent of daily traffic, ranging from about 1,000 to 1,500 heavy vehicles.

Where do People Come From?

Most of the trip destinations in Columbia County are related to employment. These trips either originate within the county or enter from the various regional facilities connecting Columbia County to adjacent counties.

¹ Automatic Traffic Recorders (05-006), US 30; MP 53.33; Lower Columbia River Highway, 2012.

Columbia County Employees

Much of the traffic in Columbia County, especially during the more congested weekday p.m. peak periods, is often related to employment travel. As shown in Table 2, most Columbia County residents work in another county (over 70 percent). Over 65 percent of these

Columbia County residents who:	Percent of Columbia County Residents	Distance from Columbia County
Work in Columbia County	27%	-
Work outside Columbia County	73%	-
<i>Work in Multnomah County</i>	29%	20+ miles
<i>Work in Washington County</i>	17%	20+ miles
<i>Work in Clackamas County</i>	6%	30+ miles
<i>Work in Cowlitz County, WA</i>	5%	5+ miles
<i>Work in Other Counties</i>	16%	20+ miles

Source: On The Map, US Census Bureau, 2011

commuters travel to employment locations at least 20 miles outside of the county. The commute mode for employees that travel outside of the county is often dependent on the regional transportation system. If there are walking, biking, transit or other facility deficits outside the county, then a commuter may be discouraged from utilizing those travel modes.

Throughout Columbia County, over 75 percent of the commuters travel to work via single occupant motor vehicle (see Table 3). Carpooling is less frequent in the northeast region of Columbia County (9 percent compared to 13 to 15 percent in other parts of the county). The greatest percent of residents walking to their place of employment occurs in northwest Columbia County (six percent of residents). Biking accounts for about three percent of commuting in northeast Columbia County, compared to one percent elsewhere in the county. Less than one percent of commuters use public transit throughout the county.

Table 3: Work Commute Mode by Area of Columbia County

Transportation Mode	Percent of Commuters			
	Northwest County (1)	Northeast County (2)	Southwest County (3)	Southeast County (4)
Motor Vehicle- Single Occupant	74%	80%	75%	79%
Motor Vehicle- Carpool	15%	9%	15%	13%
Walked	6%	3%	2%	3%
Biked / Other	1%	3%	1%	1%
Public Transportation	<1%	<1%	<1%	<1%
Worked at Home	4%	6%	7%	3%

Source: US Census Bureau, 2008-2012 American Community Survey

1. Includes Clatskanie
2. Includes Rainier and Prescott
3. Includes Vernonia
4. Includes Columbia City, Scappoose, and St. Helens

Columbia County Tourism

With its numerous parks, marinas, riverfront activities, and forest trails located within a short drive of the Portland metropolitan region, Columbia County attracts a notable amount of tourism. Visitors from within Oregon primarily enter the county via US 30, and Washington visitors enter from the Lewis and Clark Bridge (WA 433). There is also a considerable amount of pass by traffic traveling to and from the coast. Tourists primarily travel to Columbia County via motor vehicle.

What Factors Affect How People Travel?

Travelers are often influenced by a number of factors when deciding how to get to a destination. Whether the trip will be via motor vehicle, walking, bicycle, or public transportation, the choice is often a balance between cost, time, and convenience of travel.

Where are you going? Whether you are going to work, school, shopping, or to a park, your trip type often influences the mode of transportation you choose. The distance of that destination plays a role in mode choice. Trips that are shorter generally present a better opportunity to walk or bicycle; longer distance trips more often require transit or motor vehicle modes.

Will you have to cross a busy road or walk along a road without sidewalks? The availability of sidewalks, curb ramps to provide wheelchair access, crosswalks, and bicycle lanes increases the comfort and access of walking and biking. 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. Columbia County residents who work outside of the county are likely to commute via motor vehicle due to travel distance and commute time. As previously discussed, over 70 percent of Columbia County residents commute outside the county to work. Over 65 percent of these commuters travel to employment locations at least 20 miles outside of the county.

What public transportation service is available? 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, transit 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. Columbia County residents with lower incomes, as well as the youngest and oldest residents, often account for more trips via walking, biking, and public transportation. As seen in Table 4, school-age children and residents over 65 make up about 40 percent of the population in the county. Columbia City has the highest median household income of any of the cities within Columbia County (around \$66,000).

Table 4: Key Demographics in Columbia County

	Clatskanie	Prescott	Rainier	Scappoose	St. Helens	Vernonia	Columbia City	Columbia County
Age (By Percent of Residents)								
<i>Under 18</i>	24%	3%	17%	26%	26%	22%	24%	26%
<i>18 to 64</i>	56%	62%	68%	59%	66%	64%	58%	60%
<i>Over 65</i>	20%	35%	14%	15%	8%	14%	17%	14%
Median Household Income								
	\$36,000	\$24,000	\$59,000	\$58,000	\$53,000	\$55,000	\$66,000	\$55,000

Source: US Census Bureau, 2008-2012 American Community Survey

Is it cold or raining? Weather plays a role in determining how trips are made. Columbia County experiences cool, rainy winters, with mild and generally dry summers. According to the Oregon Climate Service, average temperatures in the winter months (November to March) are around 40 degrees Fahrenheit, with measurable rainfall occurring about 15 days each winter month. The spring and fall months (April, May, and October) are slightly warmer and dryer, with average temperatures around 50 degrees Fahrenheit, and about 10 days of measurable rainfall. The summer months (June to September) are typically very pleasant, with average temperatures around 60 degrees Fahrenheit, with less than 5 days of measurable rainfall each month.² While most areas in the lower elevations of the county experience little snow, residents in the higher elevations of the county, including those in Vernonia, experience an average of five inches of snow each year. Cold, rainy weather generally

² Climate Summary for Clatskanie, Oregon Climate Service.

discourages walking and biking trips, often leading to users to make a trip via motor vehicle when they would otherwise walk or bike.

Are you able to walk or bike on a steep hill? Sloping and hilly topography can be a deterrent to walking and bicycling. Many of the rural roads in Columbia County are hilly and meandering. While there are some significantly sloping roads in the urban areas of the county (e.g., in Rainier), most roads are relatively flat.

How is the Transportation System Managed?

A variety of measures are used to assess the condition and performance of Columbia County's transportation system. These measures help to ensure acceptable quality of the transportation system for its residents, and visitors. These measures include:

Transportation Infrastructure Inventory: The TSP reviews existing transportation facilities, with a focus on gaps and deficiencies in the pedestrian, bicycle, transit, and roadway systems.

Roadway Jurisdiction: In Columbia County, roadways are under the jurisdiction of ODOT, Columbia County, and the various cities within the county. Each responsible agency sets standards for its roadways based on intended use (known as functional classification), as shown in Figure A3 in the Appendix.

Highway Capacity Analysis: To understand the utilization and potential for capacity issues along major roadways in the county, the TSP compares peak roadway volumes to the maximum throughput of the facilities. Roadway segments are monitored through two measures:

- **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 mobility standards are based on v/c ratios.
- **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. LOS was utilized as a secondary performance measure in Columbia County, but is not a standard.

Intersection Mobility Targets: The TSP compares intersections in Columbia County to mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Intersection mobility targets vary by jurisdiction of the roadways. All intersections under state jurisdiction in Columbia County must comply with the v/c ratio targets in the Oregon Highway Plan (OHP). The OHP v/c targets are based on highway classification, area type, and posted speed. Columbia County does not have adopted mobility targets for intersections under their jurisdiction. As a baseline for

evaluation, the TSP will compare intersection operations on county roads to the OHP v/c mobility target for District/Local Interest Roads.

Access Spacing: Proper access spacing balances efficient, safe, and timely travel with access to individual destinations. Proper spacing between accesses (driveways and roads) can reduce congestion, collision rates, and the need for additional roadway capacity.

ODOT access spacing standards for driveways and approaches to state highways are based on state highway classification, area type, and posted speed (see Table 5a and 5b). Generally, the faster the speed limit, the greater the minimum required distance between accesses. Columbia County does not identify minimum intersection spacing standards for driveways or public roadways under their jurisdiction.

Table 5a: Highway Access Spacing Standards – US 30 (min. distance feet)

Highway	Posted Speed Limit (mph)	5,000 AADT or less			Over 5,000 AADT	
		Rural Areas	Urban Areas	Unincorporated Communities in Rural Areas	Rural Areas	Urban Areas
US 30 (Statewide Highway)	30 & 35	770	250	425	770	500
	40 & 45	990	360	750	990	800
	50	1,100	1,100	1,100	1,100	1,100
	55 or higher	1,320	1,320	1,320	1,320	1,320

Source: 1999 Oregon Highway Plan, State Highway Classification System and Appendix C Revisions to Address Senate Bill 264

Table 5b: Highway Access Spacing Standards – OR 47 and OR 202 (min. distance feet)

Highway	Posted Speed Limit (mph)	5,000 AADT or less	Over 5,000 AADT	
		Rural and Urban Areas	Rural Areas	Urban Areas
OR 47	30 & 35	250	400	350
OR 202 (District Highway)	40 & 45	360	500	500
	50	425	550	550
	55 or higher	650	700	700

Source: 1999 Oregon Highway Plan, State Highway Classification System and Appendix C Revisions to Address Senate Bill 264

Collision Evaluation: Collision data is useful in monitoring the safety of the roadways and intersections in the county. Study intersection evaluation and network screening techniques help to identify locations with potential safety problems. High crash rates, fatal or severe injuries, and crashes involving pedestrians and bicyclists are all indicators of dangerous roadways. Analysis of the collision data can identify patterns in the collisions and suggest possible countermeasures and safety improvements.

Seismic Lifeline Routes: The Oregon Highway Plan (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. US 30 is the only lifeline route in Columbia County, designated as Tier 1.

In addition, other major roads within the Portland/Vancouver metropolitan area have been identified as Emergency Transportation Routes (ETR). These routes are needed during a major regional emergency or disaster to move response resources such as personnel, supplies, and equipment to heavily damaged areas. Designated routes in Columbia County include US 30, OR 47, OR 202, Timber Road, Apiary Road, and Scappoose Vernonia Highway.

Lifeline and Emergency Transportation Routes in Columbia County are shown in Figure A4 in the Appendix, along with bridges.

What is the Condition of the Existing Transportation System?

The measures described in the previous section were used to assess the existing transportation system. Findings are summarized in this section.

Pedestrian System

Walking plays a key role for the county's urban transportation network. Planning for pedestrians not only helps to provide a complete, multi-modal transportation system, it supports healthy lifestyles and ensures that the young, the elderly, and those not financially able to afford motorized transport have access to goods, services, employment, and education. It is important to ensure that county and state facilities within city limits provide pedestrian facilities to support the city's pedestrian network. Outside of the city limits, it is still important that collector and arterial roadways provide ample space for pedestrian travel (e.g., a shoulder area) to separate those walking from motor vehicles along these higher volume and speed facilities.

Existing Pedestrian Infrastructure

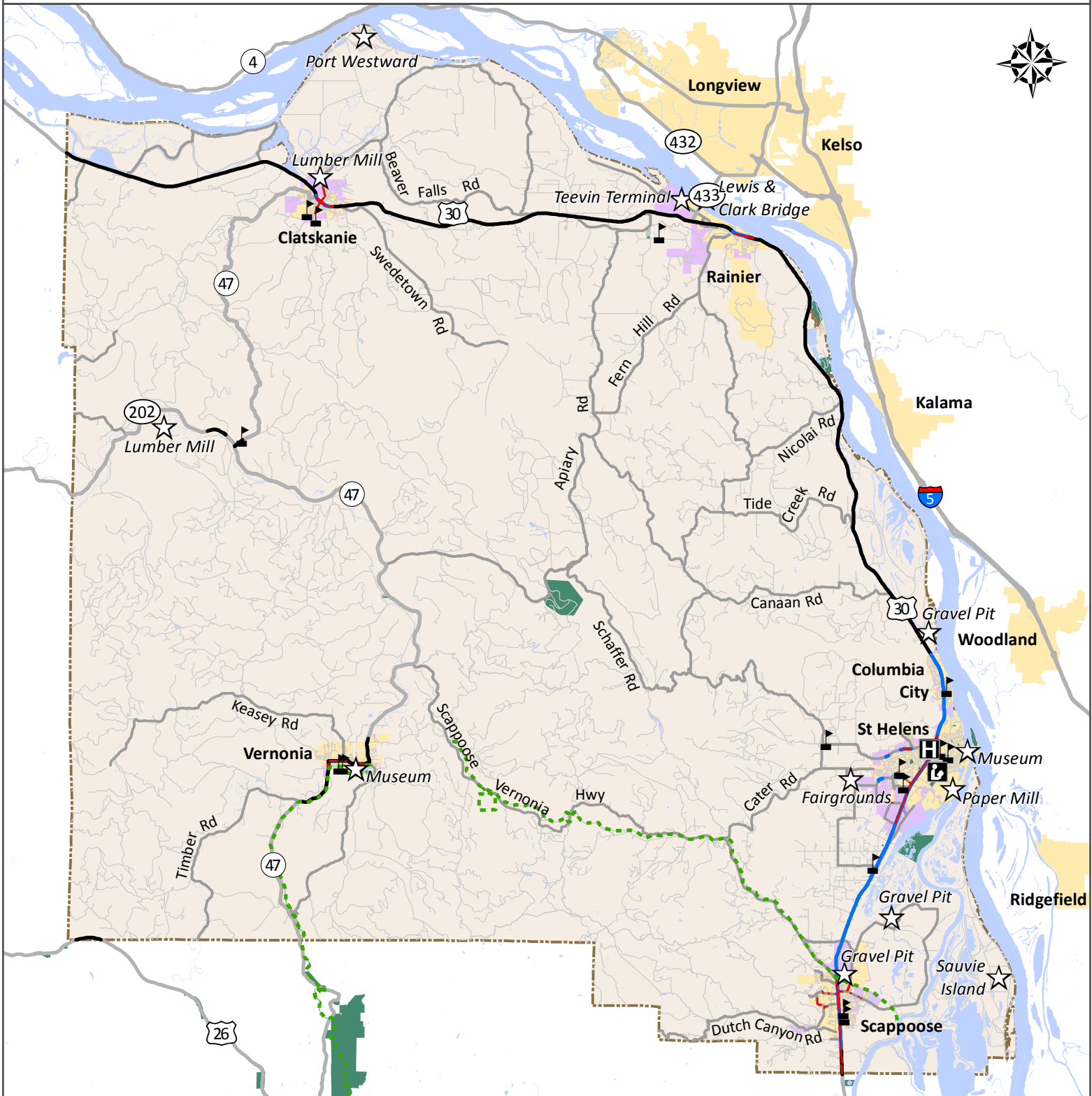
County and state pedestrian facilities along arterials and collectors, shown in Figure 4, include sidewalks, shared-use paths, and roadway shoulders.

Sidewalks located along roadways, are often separated from the roadway with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. The Oregon Department of Transportation (ODOT) standard for sidewalk width in urban areas is six feet. Columbia County requires sidewalks to be five feet for arterial and collector roads. Sidewalks are typically appropriate within city limits. Sidewalks are present on state and county roadways in Scappoose, St. Helens, Rainier, Clatskanie, and Vernonia.

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. Two shared use paths currently exist, the Vernonia-Banks Trail along OR 47 in Vernonia, and the Crown Zellerbach Trail along the Scappoose Vernonia Highway, in Scappoose. The Vernonia-Banks trail is Oregon's first rail-to-trail project, and accommodates non-motorized transportation modes including biking, walking, and horseback riding. It is 21 miles long and has trailheads at Manning, Buxton, Tophill, Beaver Creek, Banks and Vernonia. The Crown Zellerbach Trail is 17 miles long and accommodates walking, jogging, bicycling, and horseback riding. It connects the Multnomah Channel in Scappoose to the area just east of Vernonia, approximately two miles from the Banks-Vernonia Trail.

Roadway shoulders serve as pedestrian routes in rural communities. On roadways within city limits with slow speeds and low traffic volumes (i.e., less than 3,000 vehicles per day) or on roadways outside of city limits, shoulders may be adequate for pedestrian travel. These shoulders must be wide enough so that both pedestrians and bicyclists can use them, usually six feet or wider.

Figure 4 - Existing Pedestrian and Bicycle Facilities



Legend Pedestrian and Bicycle Facilities

- Road with shoulder >4 feet
- Bicycle Lane
- Sidewalk
- Shared Use Path
- Park
- City Limits
- Urban Growth Boundary
- Columbia County

Deficiencies in the Pedestrian System

The presence of adequate pedestrian facilities along major roads (arterial and collectors) in Columbia County is limited to roads within urban areas. Here, existing sidewalks are sparse and discontinuous (see Figure 4). In areas next to railroads, sidewalks are often absent due to higher costs resulting from requirements to also construct barriers separating pedestrians from rail traffic.

Due to the geographic configuration of the county and distance between cities, walking is generally not practical along rural roads. Deficient pedestrian systems may discourage walking in developed communities, and presents a safety concern in rural areas.

Sidewalk gaps along state highways in Scappoose, St. Helens, Rainier, Clatskanie and Vernonia:

State highways act as the transportation backbone for walking in urban areas of the county, especially in Scappoose and St. Helens. The disconnected and sometimes absent sidewalk system along the highways in these cities creates a major pedestrian barrier.

Inadequate shoulders along rural sections of state and county facilities: Outside of city limits, roadway shoulders are typically adequate as a pedestrian facility. However, many of the state and county roadway shoulders in Columbia County are too narrow to be safe for pedestrian travel. This is an especially dangerous situation on high speed or limited visibility roadways.

Bicycle System

The bicycle system provides a non-motorized travel option for trips that are longer than a comfortable walking distance. A well-developed bicycle system promotes a healthy and active lifestyle for residents and visitors. Recreational bicyclists can be found touring regional highways and shared-use paths in Columbia County, including along US 30, and the Crown Zellerbach and Banks-Vernonia Trails.

Existing Bicycle Infrastructure

Columbia County's bicycling network, also shown in Figure 4, consists of bike lanes, shared-use paths, and roadway shoulders.

Bike lanes are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. ODOT standard width of a bicycle lane is six feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is five feet. A bicycle lane may be as narrow as four feet, but only in very constrained situations. Columbia County requires bike lanes to be five feet wide on collector and local roads, and six feet wide on arterial roads. Bike lanes are most appropriate in developed communities where separation of motor vehicle, bicycle, and pedestrian modes is essential, but are also desired in rural areas where higher travel speeds may warrant separated facilities (typically in the form of shoulder bikeways). Existing designated bike lanes can be found along portions of US 30 in Scappoose, Warren, St. Helens, Columbia City, Rainier and Clatskanie, and along various local roads within Scappoose and St. Helens.

Shared-use paths see Existing Pedestrian Infrastructure for shared-use paths description.

Shoulder bikeways are paved roadways that have striped shoulders wide enough for bicycle travel. ODOT recommends a six-foot paved shoulder to adequately provide for bicyclists, and a four-foot

minimum width in constrained areas. Shoulder bikeways can be signed to alert motorists to expect bicycle travel along the roadway. Shoulder bikeways are typically adequate for bicycle travel along rural facilities. Adequate shoulder bikeways exist along US 30, with the exception of a few narrow segments where bridges and guardrails exist.

Deficiencies in the Bicycle System

Columbia County’s bicycle system has several deficiencies that may discourage potential users. Continuous paved roadway shoulders of adequate width (5 feet or greater), do not exist along most rural county roadways. Most of the Vernonia-Scappoose Highway, OR 47 and OR 202 have paved shoulder widths of less than 5 feet or lack paved shoulders altogether.

Bike lane gaps along state highways in Rainier, Clatskanie and Vernonia: While bike lanes are available along most state highways within incorporated cities in Columbia County, there are several gaps within the network (See Figure 4).

Inadequate shoulders along rural sections of state and county facilities: Outside city limits, roadway shoulders provide separated travel for bicyclists from the motor vehicle travel way. There are roadway shoulders adequate for biking along US 30, however many of the state and county rural roadways, do not provide standard shoulder widths for bicycle travel.

Transit System

Columbia County Rider (CC Rider) provides transit service in Columbia County connecting Westport, Clatskanie, Rainier, St. Helens, Scappoose, Hillsboro, Downtown Portland, and Kelso. There are four fixed routes, and a flex route that operate Monday through Friday from approximately 6:00 a.m. to 7:00 p.m. Limited service is also provided between Vernonia and Beaverton on Monday, Wednesday, and Friday between 6:00 a.m. and 8:00 a.m., and 4:30 p.m. and 6:30 p.m. Figure 5 shows the fixed

Table 6: Columbia County Rider Operating Summary

Route	Connections	Days of Operations	Hours of Operation	Approximate Headways
St. Helens/Beaverton/ PCC Rock Creek	St. Helens to Hillsboro	Monday to Friday	6:30 a.m. to 6:30 p.m.	2 Hours
Westport/Clatskanie/ Rainier/St. Helens	Westport to St. Helens	Monday to Friday	7:30 a.m. to 5:30 p.m.	4 Hours
Rainier/Longview/ Kelso	Rainier to Kelso	Monday to Friday	8:00 a.m. to 5:00 p.m.	4 Hour
St. Helens/ Scappoose/Portland	St. Helens to Portland	Monday to Friday	6:00 a.m. to 7:00 p.m.	½ – 2 Hours
South Flex- St. Helens/Scappoose	St. Helens to Scappoose	Monday to Friday	7:30 a.m. to 6:00 p.m.	1.5 Hours
Nehalem Valley- Vernonia/Beaverton	Vernonia to Beaverton	Monday, Wednesday, Friday	6:15 a.m. to 6:30 p.m.	2 Stops Per Day



transit routes in Columbia County. As shown in Table 6, headways between buses generally vary between 30 minutes to four hours.

The Columbia County Rider Transit Center, located on Deer Island Road near Oregon Road in St Helens, offers a transfer point between four of the bus routes. The transit center offers a park and ride location for users and provides a shelter, bench and bicycle parking for riders.



Figure 5 - Existing Transit Routes



Legend Transit Facilities

- CC Rider Stop
- Transfer Point
- CC Rider Route
- STS Route
- Park
- City Limits
- Urban Growth Boundary
- Columbia County

Dial-a-Ride Service is provided by CC Rider for persons with disabilities who are unable to use regular fixed route buses. This Americans with Disabilities Act (ADA) paratransit service is a curb-to-curb service through wheelchair lift equipped mini-buses, mini-vans, and sedans.

TriMet provides regional transit service in the Portland Metropolitan area, and connects to the CC Rider system in Portland and Beaverton.

Sunset Transportation Services is a Clatsop County regional transit service that connects to the CC Rider system at Westport.

North by Northwest Connector is a regional transit partnership that coordinates services and marketing for five transit agencies in northwest Oregon: Lincoln County Transit, CC Rider, Sunset Transportation Services, The Wave, and Benton County Rural Transportation. When combined, the regional transit system connects destinations such as Portland Union Station, US 30 from Astoria to Portland, US 101 from Astoria to Newport, and Albany Multimodal Transportation Center. The goal of North by Northwest Connector is to enhance livability and economic vitality through the implementation of regional transit strategies. Transit passes purchased from North by Northwest Connector are valid on all partnering agency routes to provide convenient access to the regional transit system.

Deficiencies in the Transit System

While Columbia County's existing transit system generally serves the ridership needs given their limited resources, there are a number of deficiencies in the transit system that may limit transit use.

Transit Coverage: The existing transit routes serve the communities along US 30, which make up most of the county's population. With the exception of Vernonia residents, those who live more than a mile from US 30 do not have convenient access to transit options. However, fixed route service for those currently unserved by transit may not be a cost-effective measure if ridership demand is insufficient to cover the expected increase in maintenance and operating costs of the expanded transit service.

Transit Access: Transit access should be a comfortable experience for passengers and those considering riding transit. Several streets adjacent to existing transit stops lack sidewalk coverage and safe crossing opportunities, some locations include the stops near NW Laurel Street and US 30 in Scappoose, and at the Warren Baptist Church Park & Ride. This creates uncomfortable conditions for transit passengers seeking to access their bus stop or final destination. It is also a deterrent for some potential transit users, including elderly users and persons with disabilities.

Transit Operations: The hours of operation should be convenient to encourage transit ridership. As shown in Table 6, service is infrequent throughout the county, with waits generally more than one hour between buses. This is typical for transit service in rural counties, with service generally being adequate for the demand. Transit service is currently not provided over the weekend on any of the routes, and only three days per week on the route serving Vernonia. While transit service is provided every weekday along US 30 and serves the typical business hour employee, the existing hours of service is not convenient for those making trips outside of typical business hours.

Transit Amenities: Attractive stops with clear signage, user information, and amenities help promote transit as an easy, comfortable way to get around. Transit stops with distinctive signage and amenities are lacking in Columbia County’s transit system. While some stops may provide shelter, seating, signage, and route information, others only provide a sign designating the stop location, including the stop near the Deer Island Store and the Columbia City Mini Mart. Bus stops can at times be difficult to find, which may discourage ridership. It is also important to provide route information at stops to help riders navigate the system.

Roadway System

The major transportation routes through the county include US 30, OR 47, OR 202, Scappoose Vernonia Highway, and Apiary Road. US 30 runs along the Columbia River, connecting the county to Astoria and the Portland metropolitan area. OR 47 runs north-to-south through the county, connecting US 30 and US 26, while OR 202 runs east-to-west, connecting OR 47 to Astoria. Scappoose Vernonia Highway and Apiary Road are county facilities, providing connections between OR 47 and US 30.










Functional Classification

To manage the roadway network, the county classified the roadways based on a hierarchy according to the intended purpose of each road (as shown in Figure 6). From highest to lowest intended usage, the classifications are principal arterial, minor arterial, major collector, minor collector, and local roadways. Roadways intended for high usage generally provide more efficient traffic movement (or mobility) through the county; roadways that primarily provide access to local destinations, such as businesses or residences, have lower usage.

- **Principal Arterials** serve as the main travel routes through the county. The only roadways in the county classified as principal arterials are US 30, OR 47 and OR 202. These roads serve the highest volume of motor vehicle traffic in the county. Principal arterials are generally for longer motor vehicle trips with limited local access.
- **Minor Arterials** are intended to act as a corridor connecting many parts of the county and serve traffic traveling to and from state highways. These roadways provide greater accessibility, often connecting to major activity generators and provide efficient through movement for local traffic. In Columbia County, Scappoose Vernonia Highway and Apiary Road are classified as minor arterials.
- **Major Collectors** connect neighborhoods to minor arterials. These roadways serve as major neighborhood routes and generally provide more direct property access or driveways than arterial roadways.
- **Minor Collectors** provide more direct access to residences in Columbia County and only serve limited-through travel.
- **Local Roadways** provide more direct access to residences without serving through travel in Columbia County. These roadways are often lined with residences and are designed to serve lower volumes of traffic with a statutory speed limit of 25 miles per hour.

Figure 6 - Roadway Functional Classification



Legend	
Functional Classification	
	Principal Arterial
	Minor Arterial
	Major Collector
	Minor Collector
	Local Road
	Park
	City Limits
	Urban Growth Boundary
	Columbia County



ODOT also classifies roadways in Columbia County under their jurisdiction. US 30, OR 47 and OR 202 are all under ODOT jurisdiction. US 30 is classified by the state as a Statewide Highway, while OR 47 and OR 202 are classified as District Highways. State Highways are also given a Federal functional classification to determine federal funding eligibility. US 101 is federally classified as a principal arterial, OR 202 as a major collector, and OR 47 as a major collector, except for the segment between Apiary Road and Scappoose Vernonia Highway, which is classified as a minor arterial.

Access Spacing

An access inventory was conducted along state highways in Columbia County, comparing the number of existing driveways to the applicable ODOT access spacing standards (previously documented in Table 5a and Table 5b). The purpose of this inventory is to document deficient locations so when a property develops or redevelops, alternative access options will be explored. It is important to note that this process will not recommend closure of existing access locations in deficient areas.

Table 7 documents the segments of highways that fail to meet ODOT access spacing standards. As shown, highway segments that do not meet access spacing include: US 30 through Scappoose, Warren, McNulty, St. Helens, Lindbergh, Rainier, and Clatskanie and OR 47 through Vernonia.

Table 7: Summary of State Highway Segments that do not meet ODOT Access Spacing Standards

Roadway Segment	Allowed Number of Accesses	Number of Accesses on Critical Side of the Highway
US 30 (Lower Columbia River Highway)		
Bonneville Drive to W Lane Road	15	83
W Lane Road to Millard Road	16	56
Millar Road to E Road	17	31
Butterfield Road to Jones Road	3	8
Jacquish Road to Neer City Road	3	5
Through Lindbergh and Rainier	18	54
Nelson Hill Lane to Leloff Lane	3	5
Through Clatskanie	9	19
OR 47 (Nehalem Highway)		
Biggs Road To E Grove Road	14	16

Note: Segment groups are composed of one or more adjacent analysis segments that exceed ODOT standards—values reported are the sum of component segments. The critical side approach value for a segment is for the side of the roadway with the greater number of accesses.

Intersection and Road Operating Conditions

Motor vehicle conditions in Columbia County vary based on the time of year. During the summer peak (typically in August), traffic volumes are higher than during the average weekday (typically in May and September) and, therefore, intersection operations are worse. For this reason, the TSP evaluated motor vehicle conditions at the 19 study intersections during both summer and average weekday conditions. The evaluation utilized 2010 Highway Capacity Manual methodology³ for unsignalized intersections.

As shown in Figure 7 and Tables A2a and A2b in the Appendix, all intersections operate well within the Oregon Highway Plan mobility targets for both summer and average weekday p.m. peak hour conditions. It is important to note that while the US 30 and Berg Road intersection meets its mobility target, the side road experiences significant delays during the p.m. peak hour (approximately 23 seconds per vehicle in the summer and 19 seconds per vehicle in average weekday).

Highway capacity analysis was also performed for 20 rural roads segments in the county, including portions of US 30, OR 47, OR 202, Scappoose-Vernonia Highway, and Apiary Road. As shown in Table A3 in the Appendix, all segments currently operate well under capacity, with V/C ratios less than 0.60. For two-lane highway segments, v/c ratios do not provide a good performance measure since they do not reflect driver behavior. Therefore, the highway capacity analysis was evaluated again with LOS as the performance measure. As shown in Figure 7, this evaluation indicated that the eastbound direction of US 30 from the east Clatskanie UGB to the west Rainier UGB, and the westbound direction of US 30 between the west Rainier UGB and the Heath Road intersection experiences moderate congestion, operating with a LOS D. All other segments operate with a LOS C or better.

Evening peak hour motor vehicle speeds were compared to posted speed limits on major roadways in the county during both summer and average weekday conditions. The motor vehicle speeds during the p.m. peak hour were assessed using INRIX historical traffic flows for major roadways where data was available on OR 47 and US 30.⁴ The data, obtained from ODOT, is based on collected speed values between 2011 and 2013. As shown in Figure A5 in the Appendix, drivers generally experienced unimpeded travel speeds along US 30 and OR 47 during both the summer and average weekday evening peak hour.

³ 2010 *Highway Capacity Manual*, Transportation Research Board, Washington DC, 2010.

⁴ INRIX free-flow travel speed is based on the 85th percentile speed over the entire year. Complete data sets were only available for US 30 and OR 47. Free-flow speed data was compared to measured speed data and the averages of all data sets were normalized to annual conditions.

Figure 7 - Existing 2014 Vehicle Operation Conditions (PM Peak)



Legend	Roadway Level of Service (LOS)	Intersection Operations (V/C Ratio)	
	Free-Flowing Conditions (LOS A)	Good	Park
	Reasonably Unimpeded Conditions (LOS B)	Approaching Target	City Limits
	Slowing Conditions (LOS C)	Does Not Meet Target	Urban Growth Boundary
	Unstable Conditions (LOS D)		Columbia County
	Congested Conditions (LOS E/F)		

Pavement Conditions

Columbia County currently maintains 542 miles of roadway. As shown in Figure 8, 62 percent of their roadways are in acceptable condition. However, 38 percent of their roadways are in poor or very poor condition, with 171 miles of these roadways being gravel. Considering the fiscal constraints of the County and the rising maintenance costs, the roadway surfaces are generally being adequately maintained.

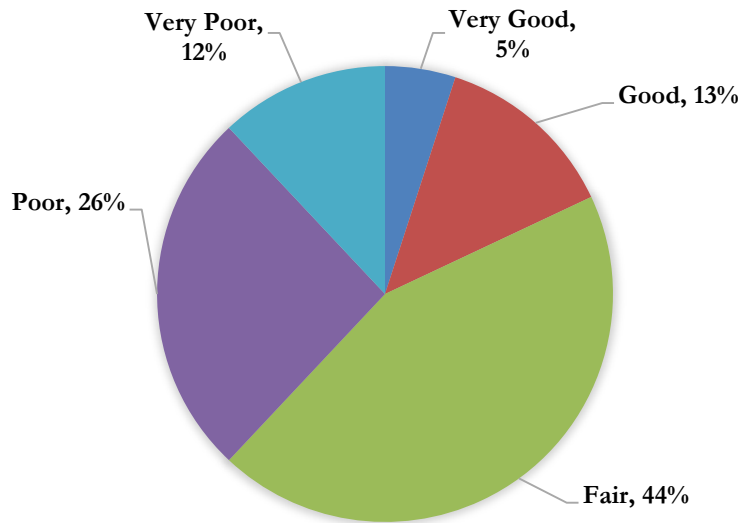


Figure 8: Pavement Conditions

Transportation System Management and Operations (TSMO)

Transportation System Management and Operations (TSMO) is a set of integrated transportation solutions for improving the performance of existing transportation infrastructure through a combination of system and demand management strategies and programs.

Transportation System Management (TSM): TSM solutions attempt to better manage the flow of traffic to achieve maximum efficiency of the current roadway system, and to increase safety through increased driver awareness of unexpected roadway conditions. In Columbia County, US 30 benefits from TSM infrastructure, as described below:

- A Variable Message Sign (VMS) facing westbound traffic on US 30 in the Lindberg community (approximately 1.75 miles south of Rainier).

Transportation Demand Management (TDM): TDM solutions encourage travelers to choose alternatives to driving alone in their car by providing services, incentives, supportive infrastructure and awareness of travel options. These strategies improve the performance of the existing infrastructure and services, and may result in fewer vehicles on the roadway system. The TDM measures currently being implemented in Columbia County include the transit services previously mentioned.

Safety Evaluation

A review of collision data identified patterns of motor vehicle, pedestrian, and bicyclist collisions.

ODOT's collision data from 2008 to 2012 (the most recent five years of available data) for all roadways outside City limits in Columbia County showed a total of 978 collisions (an average of 196 collisions a year). Over the past five years, 2012 had the fewest collisions at 178. In general, the number of collisions fluctuated every year ranging from 178 to 213 per year. The most

predominant of the collisions (about 44 percent) were fixed-object collisions (see Figure 9). There were also a considerable proportion of rear-end and turning collisions (about 14 percent each). There were six collisions involving a pedestrian, and one involving a bicycle in the five-year period.

While nearly 70 percent of the collisions involved property damage only (no injuries) or minor injuries, there were 26 fatalities over the past five years (about three percent of the collisions). Of these 26 fatalities, 2 were pedestrian collisions. The other fatal collisions were mostly fixed object (12) or head-on (6) collisions. The most common causes of the fatal collisions were driving too fast for roadway conditions/speeding (9) and driving left of center (7). In addition, about 7 percent of the collisions involved severe injuries and 20 percent involved moderate injuries.

Pedestrian Safety

Of the six collisions involving pedestrians, four resulted in injury crashes of various severities and two were fatal. Five of the six occurred along US 30, while one occurred along Bennett Road (see Figure 10). The causes of these crashes were attributed to disregard of traffic control device, fatigue, driver inattention, driver failing to yield, pedestrian illegally in roadway, and pedestrian not visible. The two fatal crashes occurred west of US 30 and NE 5th Street, and south of US 30 and Slavens Way. Two injury crashes occurred on US 30 segment between Alston Road and Old Rainier Road. The majority of pedestrian crashes occurred at locations with no sidewalks, pedestrian crossings or street lighting.

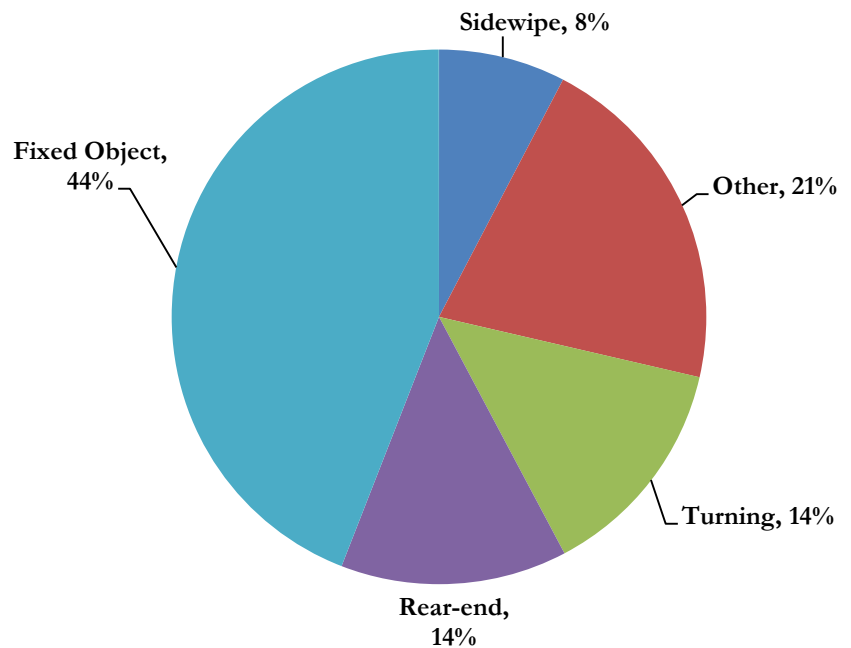


Figure 9: Collision Types (2008 to 2012)

Bicycle Safety

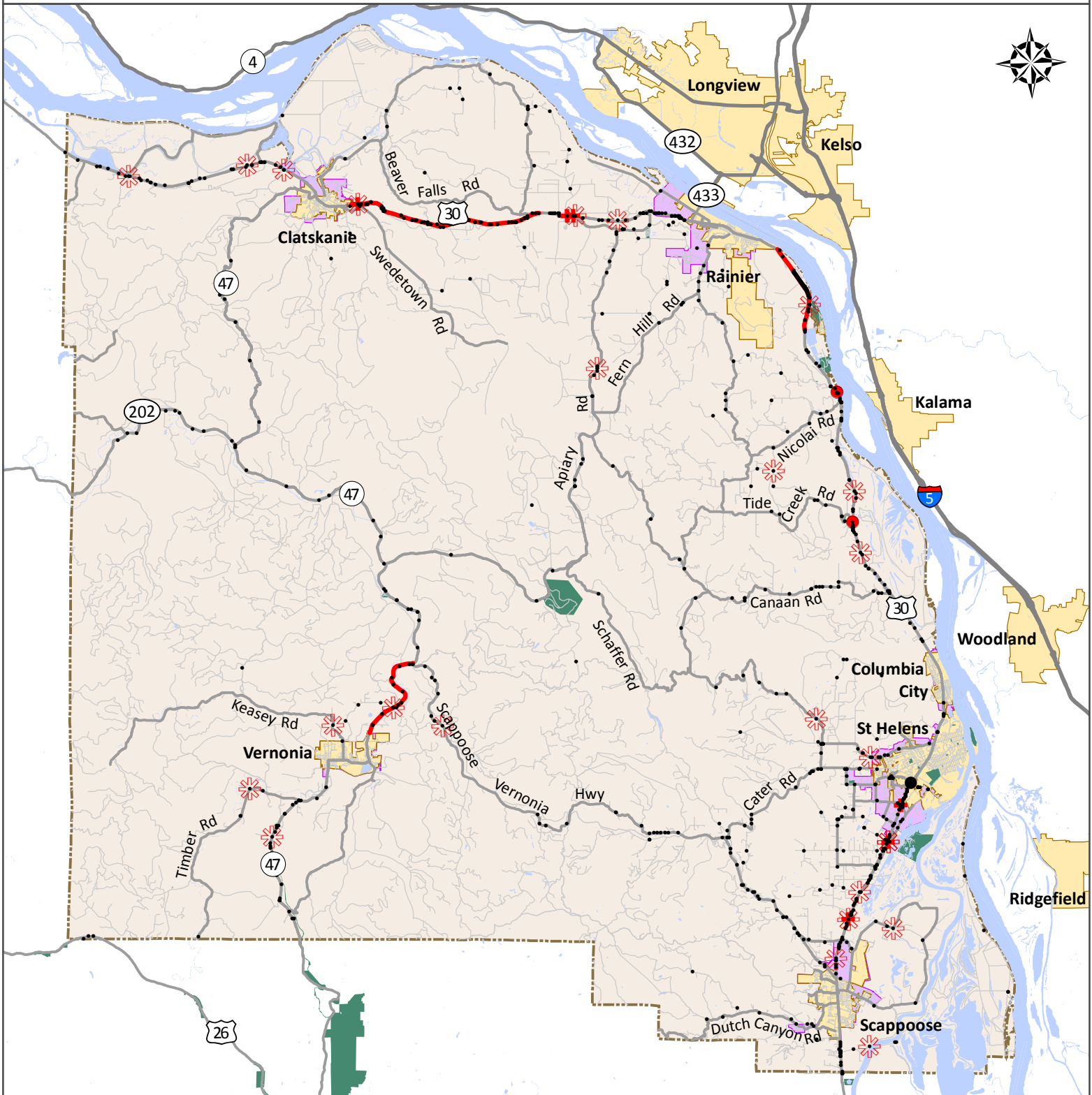
From 2008 to 2012, there was only one reported bicycle collision within Columbia County, outside of city limits. The bicycle collision occurred along Reeder Road and involved a parked vehicle. The cyclist sustained major injuries. Generally bicycle activity is low outside city limits, thus it is expected to have low number of bicycle crashes on rural roadways.

Intersection Safety

Collision rates for each of the 19 study intersections in Columbia County can be found in Table A4 in the Appendix and summarized in Figure 10. Crash rates at two of the study intersections were high compared to similar intersections in the county.

- **US 30/Tide Creek Road** is a three-leg one-way stop controlled intersection, with free northbound and southbound movement along US 30. There were eleven collisions at this intersection, eight were rear-end and three were fix-object type crashes. Six of the crashes at this intersection involved drivers traveling too fast for road conditions and four were following too close. The severity of the collisions was low, with all involving property damage only (no injuries) or minor injuries.
- **US 30/Neer City Road** is a three-leg one-way stop controlled intersection with free northbound and southbound movement along US 30. There were eight collisions at this intersection; four were rear end and two fix-object type crashes. Seven of the crashes were attributed to drivers following too close and one to driver inattention. The severity of the crashes was generally low, with two crashes resulting in minor injuries and six in property damage only.

Figure 10 - High Collision Locations



Legend High Collision Locations (2008-2012)

- | | | | | | |
|--|--------------------------------|--|------------------------|--|-----------------------|
| | Collision Involving Pedestrian | | SPIS Segment | | Park |
| | High Collision Intersection | | High Collision Segment | | City Limits |
| | Fatal Collision | | | | Urban Growth Boundary |
| | Collision | | | | Columbia County |
| | SPIS Intersection | | | | |

*Not all crashes are mapped due to incomplete crash data records.

0 1 2 4 6 Miles

Roadway Segment Safety

Table 8 shows roadway segments where non-intersection crash rates were found to be higher than Columbia County averages for similar facilities. Comparisons were made using the critical crash rate method. The critical crash rate method from the Highway Safety Manual is a statistical method that identifies values that are significantly higher than average while adjusting for the effects of low-volume segments.⁵

Critical crash rates were developed using the average crash rates by functional class of roads within Columbia County. An additional critical crash rate comparison was made using statewide average crash rates. Columbia County roadways generally have lower crash rates than the state as a whole, with the exception of five segments, including the OR 47 segment that was already identified in the countywide comparison. The analysis results can be found in Table A5 in the Appendix.

Table 8: Road Segments Exceeding Critical Crash Rates

Roadway	Roadway Segment	Crash Rate*	Critical Crash Rate**	Statewide Average Rate ***
Statewide and District Highways				
US 30	Graham Rd - East Rainier UGB	0.65	0.62	0.81
US 30	Beaver Falls Rd - East Clatskanie UGB	0.63	0.54	0.81
OR 47	Scappoose-Vernonia Hwy - North Vernonia UGB	2.29	2.16	1.43

* Crash rate is the number of non-intersection crashes per million vehicle-miles traveled during 2008-2012.

** Critical crash rates developed using a 95% confidence level, grouping facilities by functional class. County averages developed using 2008-2012 data by DKS, statewide averages from ODOT Table II: 2008-2012 Crash Rates.

*** ODOT, 2012 State Highway Crash Rate Tables, November 2013

- **US 30 between Graham Road and East Rainier UGB** is a two-lane segment in the community of Lindberg with a crash rate of 0.65 MVMT, which is below the statewide average rate of 0.81 MVMT. There were a total of 20 collisions, seven occurred along a portion with vertical curves, and more than half of these collisions (eleven) were fix-object type. Crash severity included one fatal, eleven injury and eight property damage only crashes. There was one fatal collision involving a vehicle that drove off center at the vertical curve. The most common causes attributed to all crashes were fatigue (four) and driving too fast for roadway conditions (four).

⁵ 2010 Highway Safety Manual, AASHTO.

- **US 30 between Beaver Falls Road and East Clatskanie UGB** is a two-lane segment with a passing lane and multiple vertical curved sections and narrow roadway shoulders. This segment has a crash rate of 0.63 MVMT, below the statewide average rate of 0.81 MVMT. There were a total of 55 collisions, with 26 of those being fix-object type crashes. Collision severity included one fatal, 29 injury and 25 property damage only crashes. There was one fatal collision attributed to driver fatigue. The most common cause of collision along this segment involved motorists driving too fast for roadway conditions.
- **OR 47 between Scappoose-Vernonia Highway and North Vernonia UGB** is a two-lane segment with multiple vertical curved sections and narrow roadway shoulders. This segment has a crash rate of 2.29 MVMT, which is above the statewide average rate of 1.43 MVMT. While the low volume of traffic served may be inflating the crash rate, there were a total of 13 collisions, with the majority (eleven) being fix-object type crashes. Collision severity included one fatal, six injury and six property damage only crashes. There was one fatal collision at one of the vertical curved sections attributed to driver inattention. The most common cause of collisions (seven) along this segment was improper driving.

Safety Priority Index System (SPIS) Assessment

The Safety Priority Index System (SPIS) is a method developed by ODOT for identifying and ranking hazardous locations on state highways. The score for each 0.10-mile segment of highway is based on three years of crash data, considering crash frequency, rate, and severity. Segments meeting a minimum crash criterion are ranked from most hazardous to least hazardous. The SPIS ranking for a segment indicates safety performance relative to other highways throughout the state.

According to the ODOT 2013 SPIS ratings (data reported between 2010 and 2012), US 30 near the Gable Road intersection and the segment US 30 between Little Jack Falls Road and Laurel Wood Road rank in the top ten percent of SPIS segments. These are among the most hazardous sections of state highways in Oregon. The identified locations are shown in Figure 10.

The following is a discussion of each SPIS segment:

- **US 30 at the Gable Road Intersection**

This segment includes the US 30 and Gable Road intersection, which is the first signalized intersection entering St. Helens from the south. This protected-left turn phasing in the City of St. Helens. There were twenty-one collisions at this intersection: one serious injury collision, two moderate injury collisions, twelve minor injury collisions, and six collisions with no reported injuries. This segment ranks in the top five percent of SPIS segments.

- **US 30 between Little Jack Falls Road and Laurel Wood Road**

This segment includes a curved section of the roadway just to the east of Rainier. There were four crashes along this segment: two were serious injury collisions and two were collisions with no reported injuries. Two of the crashes occurred on a horizontal curve along this segment, one involving a fix object and the second was a non-collision type crash. While this segment ranks in the top ten percent of SPIS segments, it includes only a very short section of the highway (0.09 miles).

Bridges

Within Columbia County there are a total of 130 bridges—33 of which are along state facilities and 97 along county facilities, as shown in Figure A4 in the Appendix. ODOT has flagged three bridges along state facilities as structurally deficient, including:

- Clatskanie River, Hwy 2W; located along US 30 in Clatskanie, just east of SE True Haak Road
- Nehalem River, Hwy 102 (61.28); located along OR 47 in Vernonia, just west of Mist Drive
- Beaver Creek, Hwy 102 (64.21); located along OR 47 south of Vernonia, just north of Timber Road

See Figure A4 in the Appendix for sufficiency ratings on all state and county bridges within Columbia County. Furthermore, the County has imposed weight restrictions on some bridges, which can restrict the movement of freight.

Freight

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement, while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system.

In Columbia County, US 30 is the only designated freight route. It is a federally designated truck route (see Figure A6 in the Appendix), and is designated by ODOT as a statewide freight route and a reduction review route. Federal truck routes generally require 12-foot travel lanes. State freight routes are subject to reduction of capacity review. Reduction review routes are highways that require review with any proposed changes to determine if there will be a reduction of vehicle-carrying capacity.

US 30 is not only used by freight traveling between the Portland metropolitan area and the coast, but is also part of a corridor including Cornelius Pass Road, SR 432, and SR 433 that is used by trucks traveling between Washington County and I-5.

Rail

The Portland & Western Railroad (PNWR) is a 520-mile short line freight railroad that runs a 95-mile line parallel to US 30 through Columbia County from the Portland Metropolitan area to Astoria. On average, there are two train movements daily, traveling at speeds between 25 and 30 miles per hour. This railroad line has links with the Albany & Eastern Railroad, BNSF Railway, Central Oregon & Pacific Railroad, Coos Bay Rail Link, Hampton Railway, Port of Tillamook Bay Railroad, and Union Pacific Railroad outside of Columbia County. These trains travel through urban areas of Columbia County, including Columbia City, St. Helens, and Scappoose, to reach destinations outside the County. Motor vehicle travel delay up to 20 minutes often occurs in these areas due to at-grade rail crossings.

The PNWR railroad is used to transport commodities that include aggregates, brick and cement, chemicals, construction and demolition debris, food and feed products, forest products, metallic ores and minerals, and steel and scrap. There is also an emergence of oil trains that carry export oil to and from Port Westward near Clatskanie.

The Astoria line is an active line with notable activity through Columbia County. Due to a landslide west of Westport, the segment between Astoria and Westport is currently inoperable. However, east of Westport, rail transport continues to operate.

Air

The Vernonia Municipal Airport and the Scappoose Industrial Airpark (KSPB) are the only public airports in Columbia County. The Vernonia Municipal Airport, owned by the city of Vernonia, is a public airport with a grass landing strip. It is located west of OR 47, off of Timber Road, and is primarily used for recreational purposes.

The Scappoose Industrial Airpark, owned and operated by the Port of St. Helens, is located to the east of US 30 in Scappoose, covering an area of 196 acres (see Figure A6 in the Appendix). The airport has two runways and it can accommodate single and multi-engine airplanes, helicopters and ultralights. There are 117 aircrafts based on the field and there is an average of 164 aircraft operations per day. This airport is primarily use for transient general aviation (56%), local general aviation (39%), and to a lesser extent air taxi (4%) and military (1%).

Portland International Airport (PDX), owned and operated by the Port of Portland, provides regional and international air service for passengers and freight. The airport is located approximately 25 miles (or about 40 minutes) to the east of Columbia County and is connected via US 30 and Columbia Boulevard in Portland.

In addition, the Southwest Washington Regional Airport, located just across the Lewis and Clark Bridge in Kelso, provides private aircraft use.

Waterway

Columbia County is bordered by the Columbia River along its northern and eastern edges. The Multnomah Channel, fed from the Willamette River, ties into the Columbia River in St. Helens. Near the mouth of the Multnomah Channel is Scappoose Bay. All of these waterways are populated with piers and boat activity. While there are high concentrations of private piers along the Columbia River in Rainier, Goble, and Columbia City, the St. Helens Marina provides public access to the river, as well as direct access to Sand Island Marine Park. The Multnomah Channel is home to the Scappoose Moorage, which houses numerous floating homes and boats. The Port of St. Helens owns the Scappoose Bay Marine Park, which is home to Scappoose Bay Kayaking, floating homes, and boat housing.

A significant commercial waterway facility in Columbia County is the Teevin Terminal in Rainier. This is an intermodal connection point that links water transportation to rail. This terminal includes an 800 foot wharf and mooring system, two rail spurs and convenient access to Interstate 5. The facility is generally used to transport timber, lumber, construction products, and other cargo along the Columbia River.

Pipeline

Natural Gas transmission pipelines in Columbia County exist along US 30, OR 47 and OR 202 segments. Northwest Natural Gas Co operates the largest natural gas pipeline in the county, paralleling most of US 30 and OR 47 within Columbia County. There are other minor pipelines that do not follow major corridors within the county, operators for these pipelines include: KB Pipeline, Beaver Plant - Portland General Electric, Northwest Pipeline Corp (WGP), and United States Gypsum Co.

Summary of Existing Conditions (Deficiencies)

Several existing transportation system gaps and deficiencies were noted in this memorandum.

Key transportation system gaps for pedestrians in Columbia County include:

- Lack of sidewalk along state highways in urban areas.
- Lack of adequate roadway shoulder along rural state and county roads.

Key transportation system gaps for bicyclists in Columbia County include:

- Lack of bike lanes along state highways in urban areas.
- Lack of adequate roadway shoulder along rural state and county roads.

Key transportation system gaps for transit users in Columbia County include:

- Lack of transit service to residents who live further than a mile away from US 30 (with the exception of Vernonia residents).
- Lack of pedestrian facilities (including pedestrian crossings) near bus stops.
- Long wait times between buses.
- Lack of bus stop amenities.

Key transportation system issues for drivers in Columbia County include:

- High side road delays at the US 30 and Berg Road intersection during the p.m. peak period.
- US 30 eastbound segment from the east Clatskanie UGB to the west Rainier UGB.
- US 30 westbound segment between the west Rainier UGB and the Heath Road intersection.

Key locations with safety issues in Columbia County include:

Intersections:

- US 30 and Tide Creek Road.
- US 30 and Neer City Road.

Segments:

- US 30 between Graham Rd and East Rainier UGB.
- US 30 Beaver Falls Rd and East Clatskanie UGB.
- OR 47 Scappoose Vernonia Hwy and North Vernonia UGB.

Safety Priority Index System Segments:

- US 30 at the Gable Road intersection.
- US 30 between Little Jack Falls Road and Laurel Wood Road.

Key ODOT bridges that are structurally deficient in Columbia County include:

- Clatskanie River, Hwy 2W; located along US 30 in Clatskanie, just east of SE True Haak Street.
- Nehalem River, Hwy 102 (61.28); located along OR 47 in Vernonia, just west of Mist Drive.
- Beaver Creek, Hwy 102 (64.21); located along OR 47 south of Vernonia, just north of Timber Road.



TECHNICAL MEMORANDUM #6

Appendix

**Columbia County Transportation System Plan
Existing Transportation Conditions**

December 17, 2014

Figure A1: Pedestrian and Bicycle Peak Period Activity



Figure A1 - Existing 2014 Pedestrian and Bicycle Activity (PM Peak)



Legend	Pedestrian Volume	Bicycle Volume
	None	None
	Low (1-10)	Low (1-10)
	Moderate (11-20)	Moderate (11-20)
	High (21-26)	High (21-26)

note: maximum pedestrian count is 12

- Park
- City Limits
- Urban Growth Boundary
- Columbia County

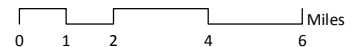
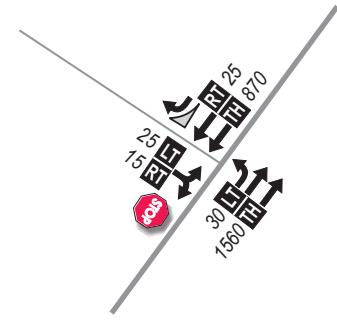


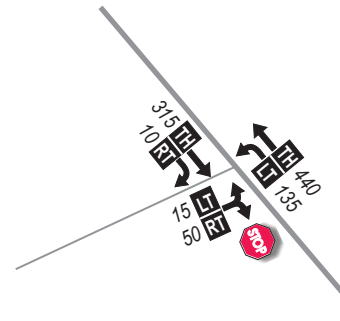
Figure A2a: Motor Vehicle Volumes (30 HV)



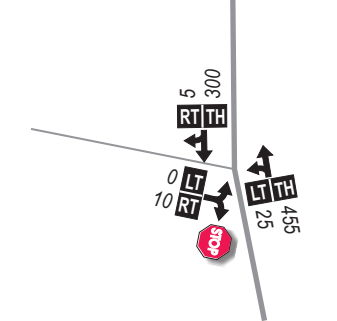
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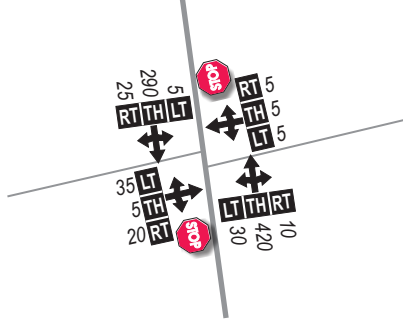
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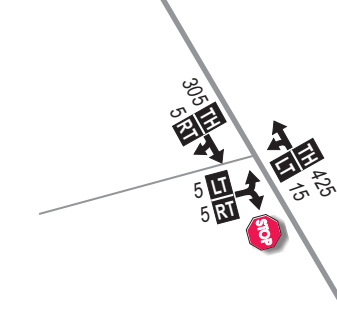
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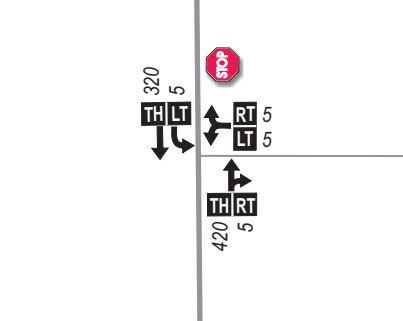
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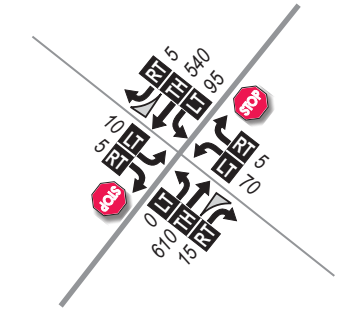
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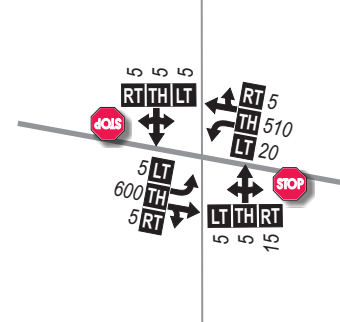
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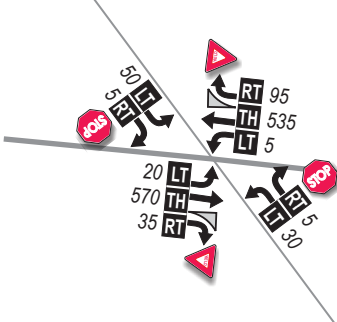
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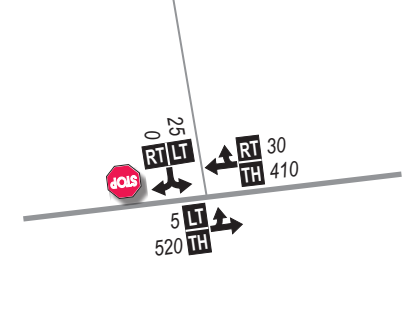
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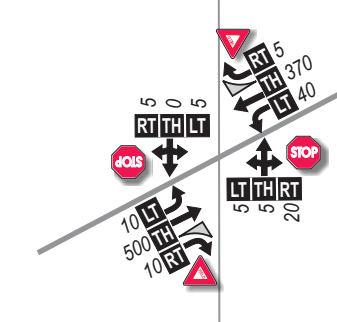
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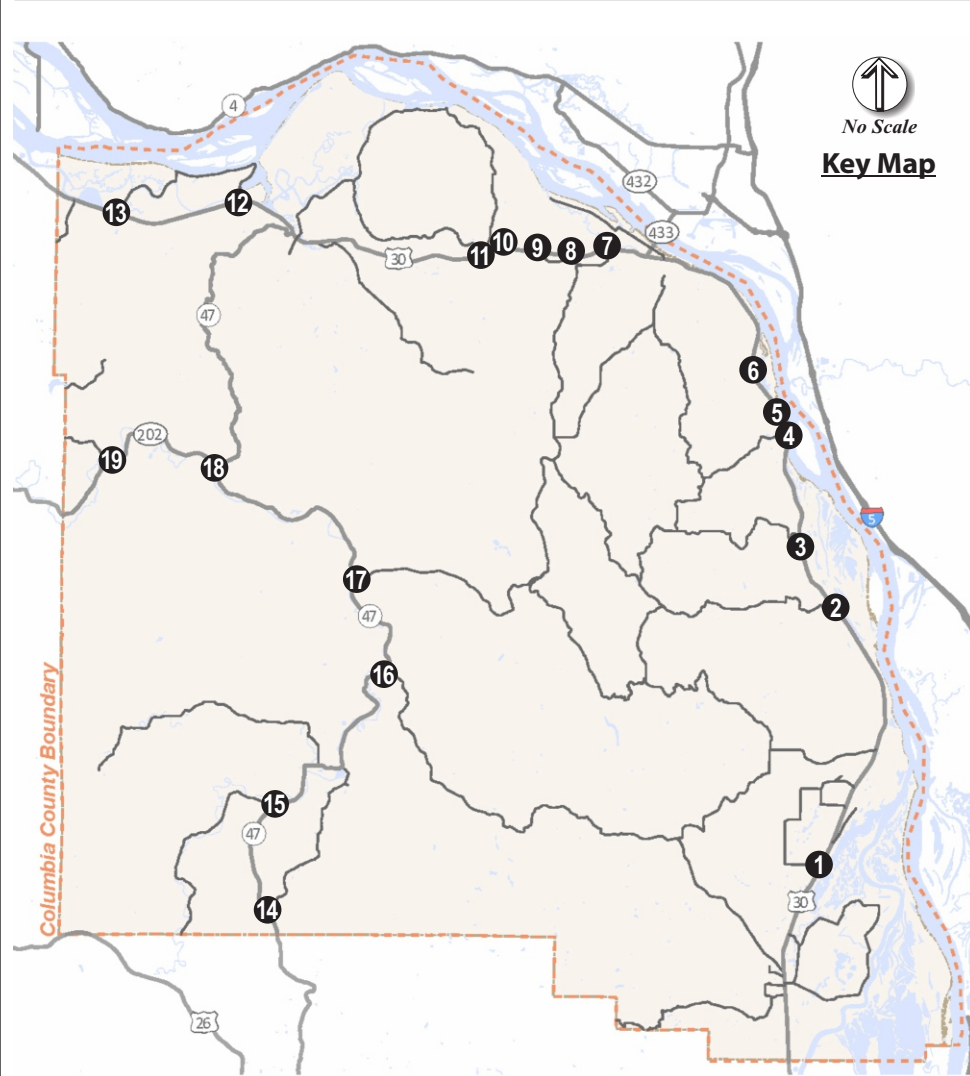
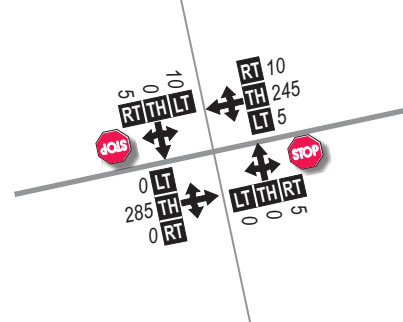
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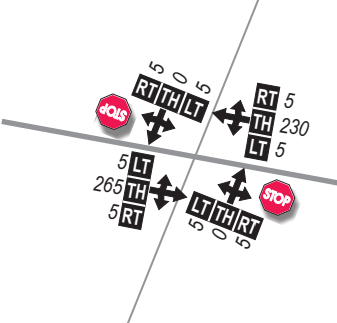
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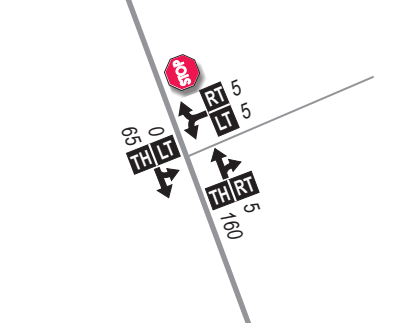
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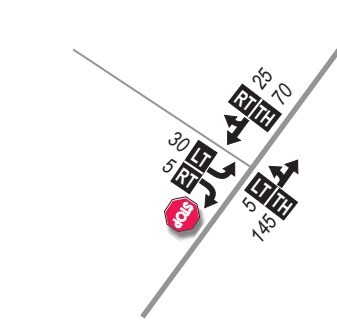
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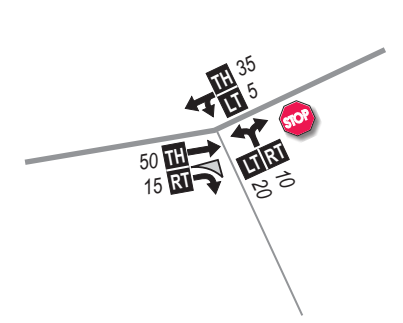
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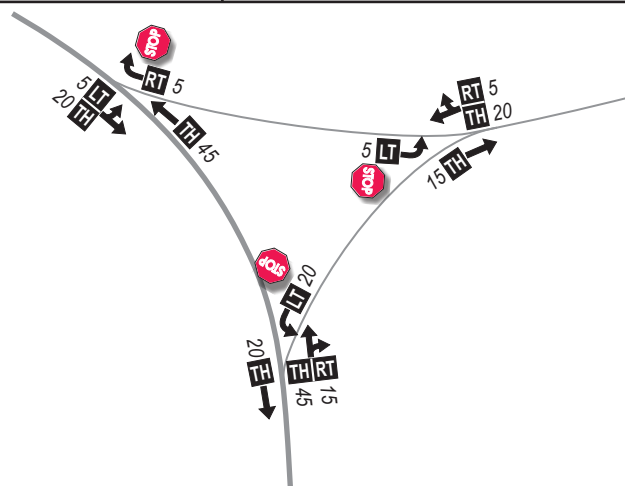
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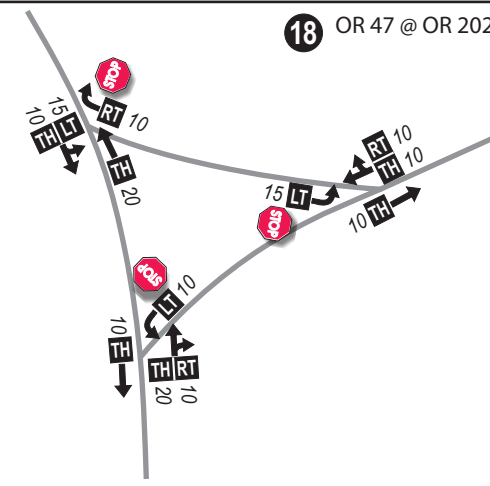
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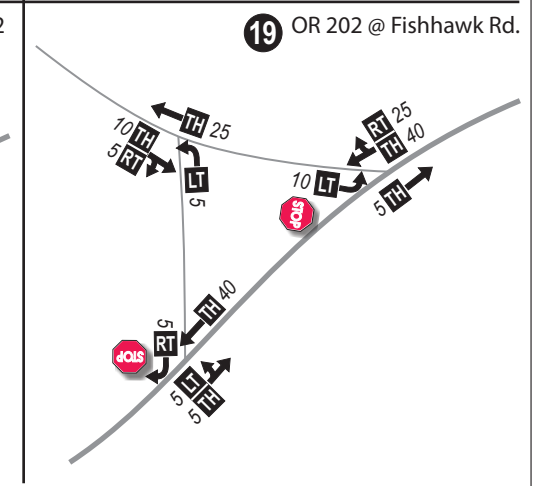
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18 OR 47 @ OR 202



19 OR 202 @ Fishhawk Rd.



LEGEND

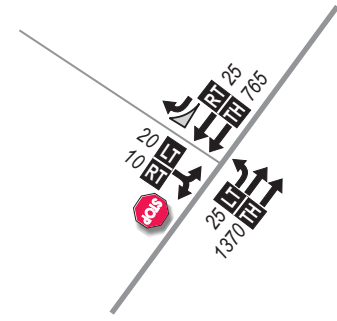
- # - Study Intersection
- STOP - Stop Sign
- Traffic Signal
- Yield Sign
- Lane Configuration
- 000 - PM Peak Hour Traffic Volumes
- LT/TH/RT - Volume Turn Movement (Left-Thru-Right)

DKS

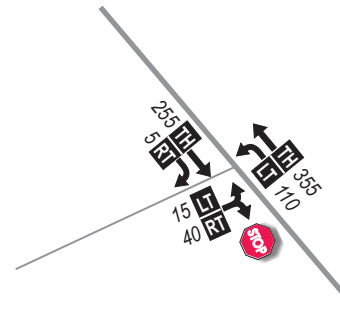
Figure A2a
2014 Existing 30 HV
Motor Vehicle Volumes
(PM Peak Hour)

Figure A2b: Motor Vehicle Volumes (Average Weekday)

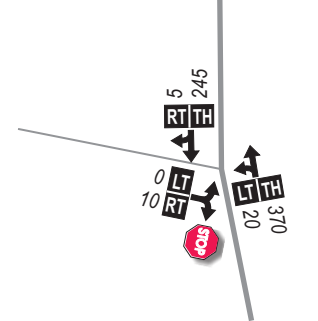
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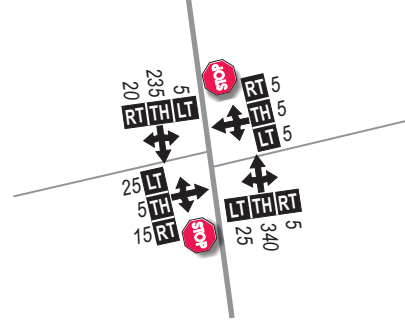
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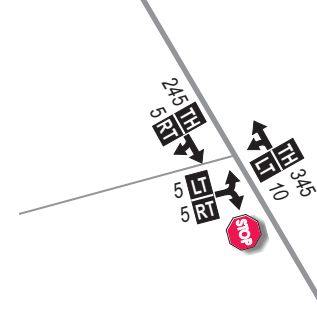
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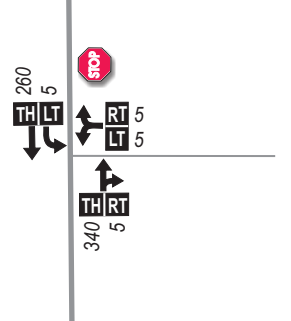
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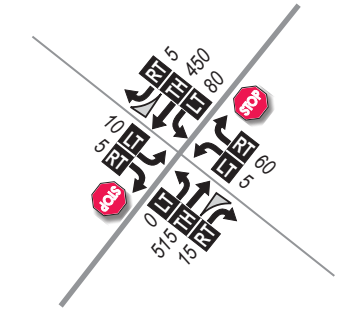
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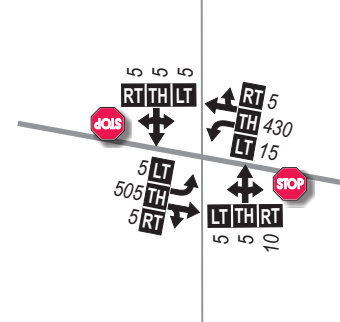
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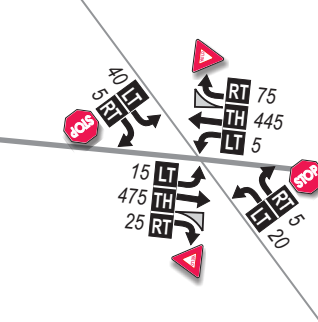
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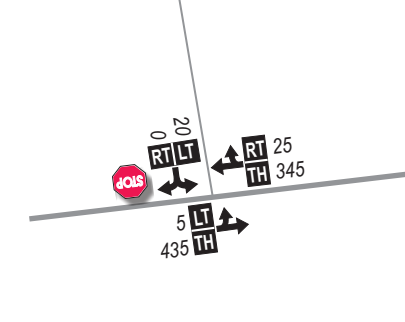
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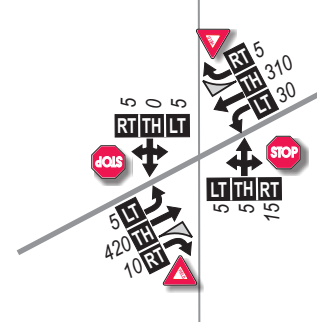
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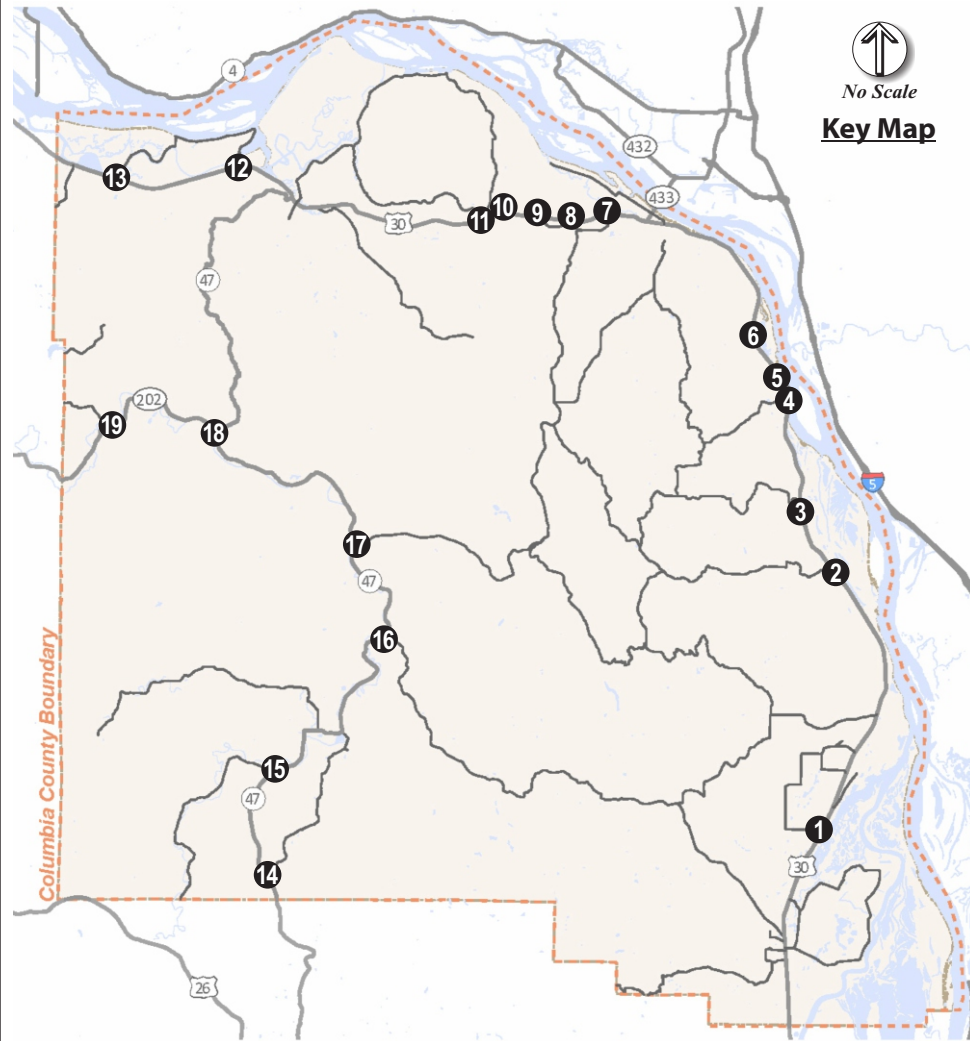
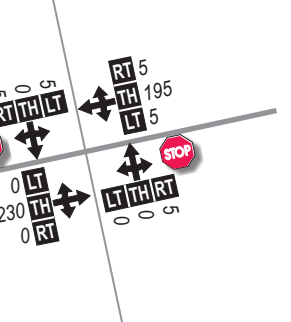
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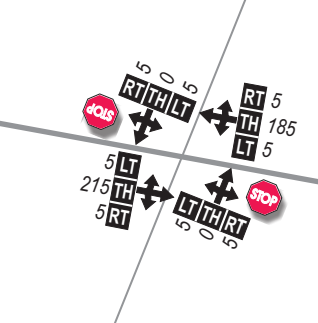
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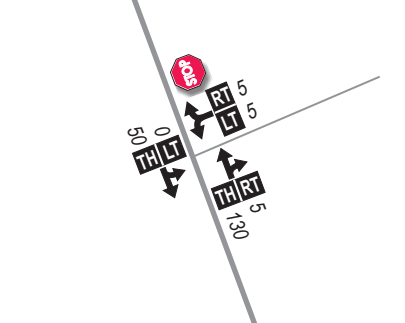
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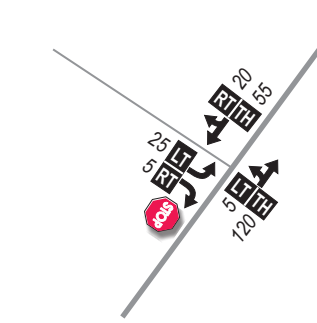
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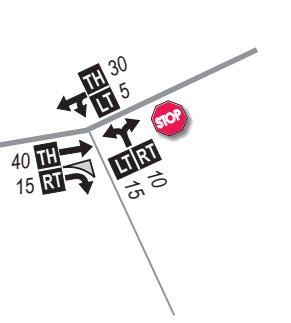
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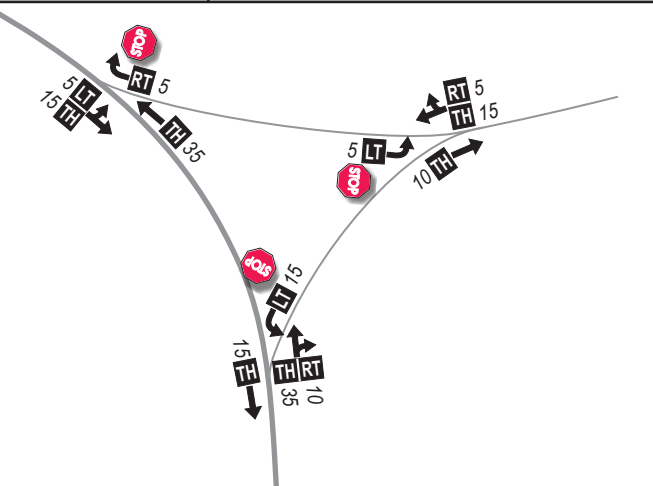
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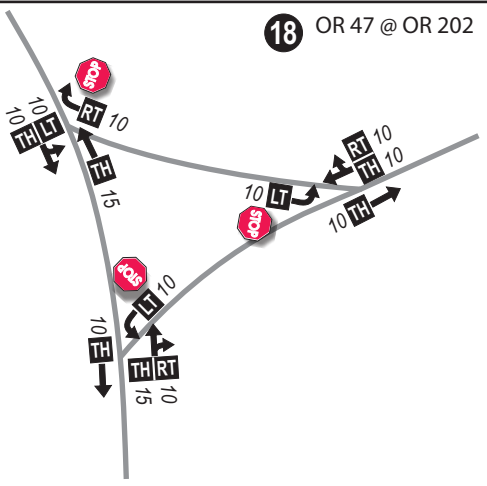
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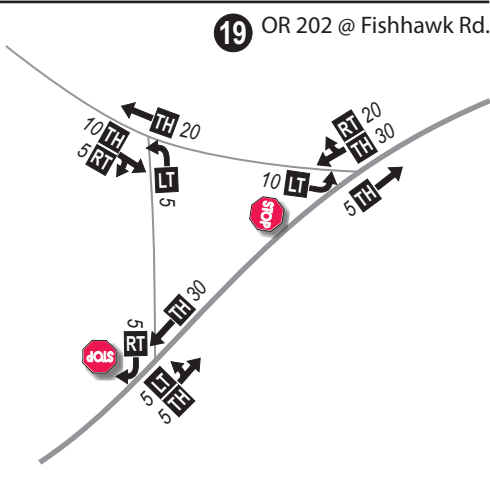
17 OR 47 @ Apiary Rd.



18 OR 47 @ OR 202



19 OR 202 @ Fishhawk Rd.



LEGEND

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

DKS

No Scale

Figure A2b
2014 Existing Average Weekday
Motor Vehicle Volumes
 (PM Peak Hour)

Figure A3: Roadway Jurisdiction



Figure A3 - Roadway Jurisdiction











Legend	
	State of Oregon
	State of Washington
	Columbia County
	County / City
	Park
	City Limits
	Urban Growth Boundary
	Columbia County



Figure A4: Other Transportation Facilities

Figure A4 - Other Transportation Facilities

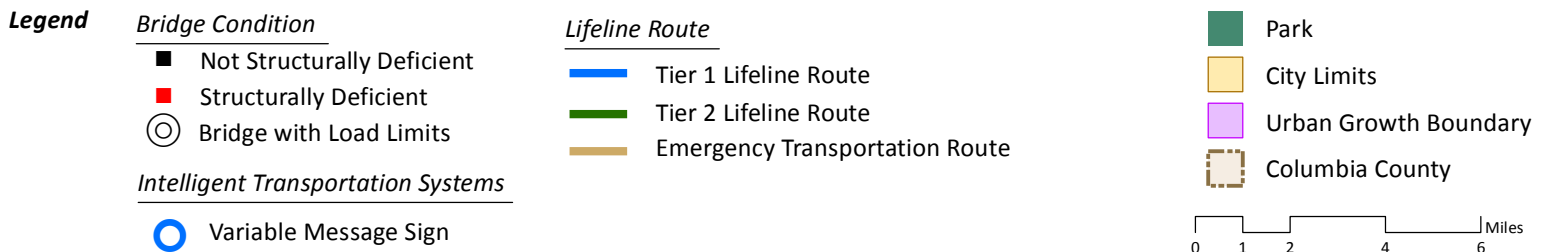


Figure A5: INRIX Historical Traffic Flow Conditions (PM Peak)



Figure A5 - INRIX Historical Traffic Flow Conditions (PM Peak)



Legend

Roadway Level of Service (LOS)	
—	Free-Flowing Conditions (LOS A)
—	Reasonably Unimpeded Conditions (LOS B)
—	Slowing Conditions (LOS C)
—	Unstable Conditions (LOS D)
—	Congested Conditions (LOS E/F)

■	Park
■	City Limits
■	Urban Growth Boundary
	Columbia County

0 1 2 4 6 Miles

Figure A6: Other Modes







Figure A6 - Other Modes



Legend

Other Modes

-  ODOT Freight Route and Federal Truck Route
-  Railroad
-  Airport
-  Major Harbor





-  Park
-  City Limits
-  Urban Growth Boundary
-  Columbia County



Table A1a: Seasonal Adjustment Factors



Table A1b: Adjusted Volumes- 30 HV



		Original Counts						Total Vehicle Volumes								
Intersection#	Intersection	Count Date	System Peak	Northbound			Southbound			Eastbound			Westbound			
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
1	Hwy 30 & Berg Rd	6/3/2014	4:15 PM	29	1461	0	0	816	25	22	0	13	0	0	0	
2	Hwy 30 & Canaan Rd	6/3/2014	4:15 PM	121	389	0	0	277	8	15	0	45	1	0	0	
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	23	402	0	0	267	5	0	0	11	0	0	0	
4	Hwy 30 & Nicolai Rd	6/3/2014	4:15 PM	26	370	7	3	255	23	29	1	17	3	2	1	
5	Hwy 30 & Neer City Rd	6/3/2014	4:15 PM	12	376	0	0	268	6	4	0	2	0	0	0	
6	Hwy 30 & Graham Rd	6/3/2014	4:15 PM	0	373	4	5	285	0	0	0	0	3	0	4	
7	Hwy 30 & Wonderly Rd	6/3/2014	4:15 PM	0	525	8	82	465	4	5	2	1	5	0	63	
8	Health Rd & Hwy 30	6/3/2014	4:15 PM	2	2	12	6	2	3	1	525	1	17	447	5	
9	Old Rainier Rd & Hwy 30	6/3/2014	4:15 PM	16	7	1	31	13	6	16	481	18	3	393	74	
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:15 PM	0	0	0	20	0	0	4	453	0	0	358	24	
11	Delena Rd & Hwy 30	6/3/2014	4:15 PM	2	1	18	2	0	3	7	437	8	33	324	1	
12	Colvin Rd & Hwy 30	6/3/2014	4:15 PM	0	0	5	7	0	1	0	260	0	5	221	8	
13	Woodson Rd & Hwy 30	6/3/2014	4:15 PM	2	0	2	5	0	4	2	239	1	4	209	5	
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:15 PM	0	143	6	0	57	0	0	0	0	3	0	1	
15	Timber Rd & Hwy 47	6/10/2014	4:15 PM	0	0	0	26	0	2	6	131	0	0	62	24	
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	4:15 PM	17	0	11	0	0	0	0	46	15	2	34	0	
17	Hwy 47 & Apiary Rd	6/10/2014	4:15 PM	0	41	13	4	17	0	0	0	0	17	0	4	
18	Hwy 202 & Hwy 47	6/10/2014	4:15 PM	0	19	9	14	10	0	0	0	0	11	0	9	
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:15 PM	4	4	0	0	36	21	10	0	2	0	0	0	

		Adjusted 30 HV						Total Vehicle Volumes								
Intersection#	Intersection	Count Date	System Peak	Northbound			Southbound			Eastbound			Westbound			
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
1	Hwy 30 & Berg Rd	6/3/2014	4:15 PM	31	1561	0	0	872	27	24	0	14	0	0	0	
2	Hwy 30 & Canaan Rd	6/3/2014	4:15 PM	137	440	0	0	313	9	17	0	51	1	0	0	
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	26	455	0	0	302	6	0	0	12	0	0	0	
4	Hwy 30 & Nicolai Rd	6/3/2014	4:15 PM	29	419	8	3	289	26	33	1	19	3	2	1	
5	Hwy 30 & Neer City Rd	6/3/2014	4:15 PM	14	425	0	0	303	7	5	0	2	0	0	0	
6	Hwy 30 & Graham Rd	6/3/2014	4:15 PM	0	422	5	6	322	0	0	0	0	3	0	5	
7	Hwy 30 & Wonderly Rd	6/3/2014	4:15 PM	0	602	9	94	533	5	6	2	1	6	0	72	
8	Health Rd & Hwy 30	6/3/2014	4:15 PM	2	2	14	7	2	3	1	602	1	19	512	6	
9	Old Rainier Rd & Hwy 30	6/3/2014	4:15 PM	18	8	1	36	14	7	18	551	21	3	450	85	
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:15 PM	0	0	0	23	0	0	5	519	0	0	410	28	
11	Delena Rd & Hwy 30	6/3/2014	4:15 PM	2	1	21	2	0	3	8	501	9	38	371	1	
12	Colvin Rd & Hwy 30	6/3/2014	4:15 PM	0	0	5	8	0	1	0	286	0	5	243	9	
13	Woodson Rd & Hwy 30	6/3/2014	4:15 PM	2	0	2	5	0	4	2	263	1	4	230	5	
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:15 PM	0	160	7	0	64	0	0	0	0	3	0	1	
15	Timber Rd & Hwy 47	6/10/2014	4:15 PM	0	0	0	29	0	2	7	146	0	0	69	27	
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	4:15 PM	19	0	12	0	0	0	0	50	16	2	37	0	
17	Hwy 47 & Apiary Rd	6/10/2014	4:15 PM	0	45	14	4	19	0	0	0	0	19	0	4	
18	Hwy 202 & Hwy 47	6/10/2014	4:15 PM	0	21	10	15	11	0	0	0	0	12	0	10	
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:15 PM	4	4	0	0	39	23	11	0	2	0	0	0	

		Adjusted 30 HV / Rounded						Total Vehicle Volumes								
Intersection#	Intersection	Count Date	System Peak	Northbound			Southbound			Eastbound			Westbound			
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
1	Hwy 30 & Berg Rd	6/3/2014	4:15 PM	30	1560	0	0	870	25	25	0	15	0	0	0	
2	Hwy 30 & Canaan Rd	6/3/2014	4:15 PM	135	440	0	0	315	10	15	0	50	5	0	0	
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	25	455	0	0	300	5	0	0	10	0	0	0	
4	Hwy 30 & Nicolai Rd	6/3/2014	4:15 PM	30	420	10	5	290	25	35	5	20	5	5	5	
5	Hwy 30 & Neer City Rd	6/3/2014	4:15 PM	15	425	0	0	305	5	5	0	5	0	0	0	
6	Hwy 30 & Graham Rd	6/3/2014	4:15 PM	0	420	5	5	320	0	0	0	0	5	0	5	
7	Hwy 30 & Wonderly Rd	6/3/2014	4:15 PM	0	600	10	95	535	5	5	5	5	5	0	70	
8	Health Rd & Hwy 30	6/3/2014	4:15 PM	5	5	15	5	5	5	5	600	5	20	510	5	
9	Old Rainier Rd & Hwy 30	6/3/2014	4:15 PM	20	10	5	35	15	5	20	550	20	5	450	85	
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:15 PM	0	0	0	25	0	0	5	520	0	0	410	30	
11	Delena Rd & Hwy 30	6/3/2014	4:15 PM	5	5	20	5	0	5	10	500	10	40	370	5	
12	Colvin Rd & Hwy 30	6/3/2014	4:15 PM	0	0	5	10	0	5	0	285	0	5	245	10	
13	Woodson Rd & Hwy 30	6/3/2014	4:15 PM	5	0	5	5	0	5	5	265	5	5	230	5	
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:15 PM	0	160	5	0	65	0	0	0	0	5	0	5	
15	Timber Rd & Hwy 47	6/10/2014	4:15 PM	0	0	0	30	0	5	5	145	0	0	70	25	
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	4:15 PM	20	0	10	0	0	0	0	50	15	5	35	0	
17	Hwy 47 & Apiary Rd	6/10/2014	4:15 PM	0	45	15	5	20	0	0	0	0	20	0	5	
18	Hwy 202 & Hwy 47	6/10/2014	4:15 PM	0	20	10	15	10	0	0	0	0	10	0	10	
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:15 PM	5	5	0	0	40	25	10	0	5	0	0	0	

Table A1c: Adjusted Volumes- Average Weekday



Original Counts				Total Vehicle Volumes											
Intersection#	Intersection	Count Date	System Peak	Northbound			Southbound			Eastbound			Westbound		
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Hwy 30 & Berg Rd	6/3/2014	4:15 PM	29	1461	0	0	816	25	22	0	13	0	0	0
2	Hwy 30 & Canaan Rd	6/3/2014	4:15 PM	21	389	0	0	277	8	15	0	45	1	0	0
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	23	402	0	0	267	5	0	0	11	0	0	0
4	Hwy 30 & Nicolai Rd	6/3/2014	4:15 PM	26	370	7	3	255	23	29	1	17	3	2	1
5	Hwy 30 & Neer City Rd	6/3/2014	4:15 PM	12	376	0	0	268	6	4	0	2	0	0	0
6	Hwy 30 & Graham Rd	6/3/2014	4:15 PM	0	373	4	5	285	0	0	0	0	0	0	4
7	Hwy 30 & Wonderly Rd	6/3/2014	4:15 PM	0	525	8	82	465	4	5	2	1	5	0	63
8	Heath Rd & Hwy 30	6/3/2014	4:15 PM	2	2	12	6	2	3	1	525	1	17	447	5
9	Old Rainier Rd & Hwy 30	6/3/2014	4:15 PM	16	7	1	31	13	6	16	481	18	3	393	74
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:15 PM	0	0	0	20	0	0	4	453	0	0	358	24
11	Delena Rd & Hwy 30	6/3/2014	4:15 PM	2	1	18	2	0	3	7	437	8	33	324	1
12	Colvin Rd & Hwy 30	6/3/2014	4:15 PM	0	0	5	7	0	1	0	260	0	5	221	8
13	Woodson Rd & Hwy 30	6/3/2014	4:15 PM	2	0	2	5	0	4	2	239	1	4	209	5
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:15 PM	0	143	6	0	57	0	0	0	0	3	0	1
15	Timber Rd & Hwy 47	6/10/2014	4:15 PM	0	0	0	26	0	2	6	131	0	0	62	24
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	4:15 PM	17	0	11	0	0	0	0	46	15	2	34	0
17	Hwy 47 & Apiary Rd	6/10/2014	4:15 PM	0	41	13	4	17	0	0	0	0	17	0	4
18	Hwy 202 & Hwy 47	6/10/2014	4:15 PM	0	19	9	14	10	0	0	0	0	11	0	9
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:15 PM	4	4	0	0	36	21	10	0	2	0	0	0

Adjusted AWD				Total Vehicle Volumes											
Intersection#	Intersection	Count Date	System Peak	Northbound			Southbound			Eastbound			Westbound		
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Hwy 30 & Berg Rd	6/3/2014	4:15 PM	27	1368	0	0	764	23	21	0	12	0	0	0
2	Hwy 30 & Canaan Rd	6/3/2014	4:15 PM	111	357	0	0	254	7	14	0	41	1	0	0
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	21	368	0	0	245	5	0	0	10	0	0	0
4	Hwy 30 & Nicolai Rd	6/3/2014	4:15 PM	24	339	6	3	234	21	27	1	16	3	2	1
5	Hwy 30 & Neer City Rd	6/3/2014	4:15 PM	11	345	0	0	246	5	4	0	2	0	0	0
6	Hwy 30 & Graham Rd	6/3/2014	4:15 PM	0	342	4	5	261	0	0	0	0	3	0	4
7	Hwy 30 & Wonderly Rd	6/3/2014	4:15 PM	0	503	8	79	445	4	5	2	1	5	0	60
8	Heath Rd & Hwy 30	6/3/2014	4:15 PM	2	2	11	6	2	3	1	503	1	16	428	5
9	Old Rainier Rd & Hwy 30	6/3/2014	4:15 PM	15	6	1	30	12	6	15	461	17	3	376	71
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:15 PM	0	0	0	19	0	0	4	434	0	0	343	23
11	Delena Rd & Hwy 30	6/3/2014	4:15 PM	2	1	17	2	0	3	7	418	8	32	310	1
12	Colvin Rd & Hwy 30	6/3/2014	4:15 PM	0	0	4	6	0	1	0	232	0	4	197	7
13	Woodson Rd & Hwy 30	6/3/2014	4:15 PM	2	0	2	4	0	4	2	213	1	4	186	4
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:15 PM	0	129	5	0	52	0	0	0	0	3	0	1
15	Timber Rd & Hwy 47	6/10/2014	4:15 PM	0	0	0	24	0	2	5	119	0	0	56	22
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	4:15 PM	15	0	10	0	0	0	0	41	13	2	30	0
17	Hwy 47 & Apiary Rd	6/10/2014	4:15 PM	0	36	11	4	15	0	0	0	0	15	0	4
18	Hwy 202 & Hwy 47	6/10/2014	4:15 PM	0	17	8	12	9	0	0	0	0	10	0	8
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:15 PM	4	4	0	0	32	19	9	0	2	0	0	0

Adjusted AWD / Rounded				Total Vehicle Volumes											
Intersection#	Intersection	Count Date	Peak Hr Start	Northbound			Southbound			Eastbound			Westbound		
				NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	Hwy 30 & Berg Rd	6/3/2014	4:30 PM	25	1370	0	0	765	25	20	0	10	0	0	0
2	Hwy 30 & Canaan Rd	6/3/2014	4:45 PM	110	355	0	0	255	5	15	0	40	5	0	0
3	Hwy 30 & Tide Creek Rd	6/3/2014	4:15 PM	20	370	0	0	245	5	0	0	10	0	0	0
4	Hwy 30 & Nicolai Rd	6/3/2014	4:00 PM	25	340	5	5	235	20	25	5	15	5	5	5
5	Hwy 30 & Neer City Rd	6/3/2014	4:00 PM	10	345	0	0	245	5	5	0	5	0	0	0
6	Hwy 30 & Graham Rd	6/3/2014	4:30 PM	0	340	5	5	260	0	0	0	0	5	0	5
7	Hwy 30 & Wonderly Rd	6/3/2014	4:30 PM	0	505	10	80	445	5	5	5	5	5	0	60
8	Heath Rd & Hwy 30	6/3/2014	4:30 PM	5	5	10	5	5	5	5	505	5	15	430	5
9	Old Rainier Rd & Hwy 30	6/3/2014	4:30 PM	15	5	5	30	10	5	15	460	15	5	375	70
10	Beaver Falls Rd & Hwy 30	6/3/2014	4:30 PM	0	0	0	20	0	0	5	435	0	0	345	25
11	Delena Rd & Hwy 30	6/3/2014	4:30 PM	5	5	15	5	0	5	5	420	10	30	310	5
12	Colvin Rd & Hwy 30	6/3/2014	3:00 PM	0	0	5	5	0	5	0	230	0	5	195	5
13	Woodson Rd & Hwy 30	6/3/2014	3:15 PM	5	0	5	5	0	5	5	215	5	5	185	5
14	Hwy 47 & Mcdonald Rd	6/10/2014	4:00 PM	0	130	5	0	50	0	0	0	0	5	0	5
15	Timber Rd & Hwy 47	6/10/2014	4:00 PM	0	0	0	25	0	5	5	120	0	0	55	20
16	Scappoose Vernonia Hwy & Hwy 47	6/10/2014	3:45 PM	15	0	10	0	0	0	0	40	15	5	30	0
17	Hwy 47 & Apiary Rd	6/10/2014	3:30 PM	0	35	10	5	15	0	0	0	0	15	0	5
18	Hwy 202 & Hwy 47	6/10/2014	3:30 PM	0	15	10	10	10	0	0	0	0	10	0	10
19	Hwy 202 & Fishhawk Rd	6/11/2014	4:30 PM	5	5	0	0	30	20	10	0	5	0	0	0

Motor Vehicle Operations

Intersection Mobility Targets: The intersections in Columbia County are monitored through mobility targets intended to maintain a minimum level of efficiency for motor vehicle travel. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

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 usually results in excessive queues and long delays. ODOT mobility targets for intersections along US 101 are based on v/c ratios.

Level of service (LOS): A “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and traffic is highly congested.

All intersections in Columbia County must operate at or below the performance measures shown Table A1 or mitigation would be necessary to approve future growth. All intersections under State jurisdiction in Columbia County must comply with the v/c ratios in the Oregon Highway Plan (OHP). Because all study intersections are along state highways, all study intersections must comply with ODOT’s mobility targets.

Summer and average weekday intersection operations are summarized in Table A1.

Table A2a: Intersection Operations (30 HV)



Table A2a : Intersection Operations (30HV 2014 p.m. peak)

Study Intersection	Mobility Target (Major/Minor Approach)	Major Approach			Minor Approach		
		V/C	Delay	LOS	V/C	Delay	LOS
US 30 @ Berg Road	0.70/0.80	0.04	10.1	B	0.17	22.5	C
US 30 @ Canaan Road	0.70/0.80	0.12	8.3	A	0.15	14.3	B
US 30 @ Tide Creek Road	0.70/0.75	0.02	7.9	A	0.02	10.3	B
US 30 @ Nicolai Road	0.70/0.80	0.03	8.0	A	0.18	17.8	C
US 30 @ Neer City Road	0.70/0.75	0.01	7.9	A	0.02	13.1	B
US 30 @ Graham Road	0.70/0.80	0.01	8.1	A	0.02	13.3	B
US 30 @ Larson Road	0.70/0.75	0.11	9.5	A	0.20	16.0	C
US 30 @ Heath Road	0.70/0.75	0.03	9.1	A	0.11	21.6	C
US 30 @ Old Rainier Road	0.70/0.75	0.01	8.9	A	0.20	27.4	D
US 30 @ Beaver Falls Road	0.70/0.75	0.01	8.3	A	0.11	21.3	C
US 30 @ Delena Road	0.70/0.75	0.05	8.9	A	0.12	18.3	C
US 30 @ Colvin Road	0.70/0.75	0.01	8.2	A	0.04	13.3	B
US 30 @ Woodson Road	0.75/0.75	0.01	7.9	A	0.02	12.3	B
OR 47 @ McDonald Road	0.75/0.75	0.00	0.0	A	0.02	9.7	A
OR 47 @ Timber Road	0.75/0.75	0.01	7.4	A	0.05	10.1	B
OR 47 @ Scappoose-Vernonia Hwy	0.75/0.75	0.01	7.3	A	0.04	9.1	A
OR 47 @ Apiary Road	0.75/0.75	0.01	7.3	A	0.03	9.2	A
OR 47 @ OR 202	0.75/0.75	0.01	7.3	A	0.02	8.8	A
OR 202 @ Fishhawk Road	0.75/0.75	0.01	7.3	A	0.02	9.1	A

Table A2b: Intersection Operations (Average Weekday)



Table A2b : Intersection Operations (Average Weekday 2014 p.m. peak)

Study Intersection	Mobility Target (Major/Minor Approach)	Major Approach			Minor Approach		
		V/C	Delay	LOS	V/C	Delay	LOS
US 30 @ Berg Road	0.70/0.80	0.03	9.6	A	0.11	19.3	C
US 30 @ Canaan Road	0.70/0.80	0.09	8.1	A	0.11	12.7	B
US 30 @ Tide Creek Road	0.70/0.75	0.02	7.8	A	0.01	9.9	A
US 30 @ Nicolai Road	0.70/0.80	0.02	7.8	A	0.11	14.5	B
US 30 @ Neer City Road	0.70/0.75	0.01	7.8	A	0.02	11.8	B
US 30 @ Graham Road	0.70/0.80	0.01	8.0	A	0.02	12.0	B
US 30 @ Larson Road	0.70/0.75	0.09	9.0	A	0.15	14.0	B
US 30 @ Heath Road	0.70/0.75	0.02	8.7	A	0.08	18.6	C
US 30 @ Old Rainier Road	0.70/0.75	0.02	8.2	A	0.18	20.7	C
US 30 @ Beaver Falls Road	0.70/0.75	0.01	8.1	A	0.07	17.4	C
US 30 @ Delena Road	0.70/0.75	0.03	8.5	A	0.08	15.7	C
US 30 @ Colvin Road	0.70/0.75	0.01	8.0	A	0.02	11.3	B
US 30 @ Woodson Road	0.75/0.75	0.01	7.8	A	0.02	11.3	B
OR 47 @ McDonald Road	0.75/0.75	0.00	0.0	A	0.02	9.4	A
OR 47 @ Timber Road	0.75/0.75	0.01	7.3	A	0.04	9.8	A
OR 47 @ Scappoose-Vernonia Hwy	0.75/0.75	0.01	7.3	A	0.03	9.0	A
OR 47 @ Apiary Road	0.75/0.75	0.01	7.3	A	0.02	9.0	A
OR 47 @ OR 202	0.75/0.75	0.01	7.3	A	0.01	8.8	A
OR 202 @ Fishhawk Road	0.75/0.75	0.01	7.3	A	0.02	8.9	A

Table A3: Segment Operations



Table A3: Highway Capacity Software Results (2014 p.m. peak)

Facility	Location	Begin Milepoint	End Milepoint	Mobility Target	NB/WB V/C	NB/WB LOS	SB/EB V/C	SB/EB LOS
US 30	South Columbia County Border - South Scappose UGB	18.37	19.35	0.70	0.49	B	0.18	A
US 30	North of Scappose UGB - South St Helens UGB	21.37	25.96	0.70	0.38	B	0.21	A
US 30	North St. Helens UGB - South Columbia City UGB	29.66	30.46	0.70	0.27	A	0.15	A
US 30	North Columbia City UGB - Canaan Rd	32.01	34.18	0.70	0.34	C	0.20	B
US 30	Canaan Rd - Tide Creek Rd	34.18	36.52	0.70	0.26	C	0.20	B
US 30	Tide Creek - Nicolai Rd	36.52	40.47	0.70	0.26	C	0.20	B
US 30	Nicolai Rd - Graham Rd	40.47	43.13	0.70	0.27	C	0.22	B
US 30	Graham Rd - East Rainier UGB	43.13	45.87	0.70	0.26	C	0.19	B
US 30	West Rainier UGB - Larson Rd	49.85	50.24	0.70	0.47	D	0.34	C
US 30	Larson Rd - Heath Rd	50.24	52.08	0.70	0.51	D	0.44	D
US 30	Heath Rd - Old Rainier Rd	52.08	53.09	0.70	0.33	C	0.43	D
US 30	Old Rainier Rd - Beaver Falls Rd	53.09	54.28	0.70	0.31	C	0.43	D
US 30	Beaver Falls Rd - East Clatskanie UGB	54.28	60.53	0.70	0.27	C	0.35	D
US 30	West Clatskanie UGB - Colvin Rd	62.41	63.70	0.70	0.17	B	0.24	C
US 30	Colvin Rd - Woodson Rd	63.70	67.94	0.70	0.16	B	0.26	C
US 30	Woodson Rd - West Columbia County Border	67.94	69.96	0.70	0.14	B	0.25	C
OR 47	Timber Rd - McDonald Rd	64.36	68.22	0.75	0.10	A	0.05	A
OR 47	McDonald Rd - South Columbia County Border	68.22	69.13	0.75	0.11	A	0.05	A
OR 47	South Vernonia UGB - Timber Rd	62.79	64.36	0.75	0.10	A	0.07	A
OR 47	Scappose Vernonia Hwy - North Vernonia UGB	57.11	60.39	0.75	0.05	A	0.04	A
OR 47	Apiary Rd - Scappose Vernonia Hwy	53.22	57.11	0.75	0.06	A	0.08	A
OR 47	OR 202 - Apiary Rd	46.14	53.22	0.75	0.03	A	0.03	A
OR 47	West Clatskanie UGB - OR 202	0.00	11.84	0.75	0.03	A	0.03	A
OR 202	West Columbia County - Fishhawk Rd	39.18	41.77	0.75	0.02	A	0.04	A
OR 202	Fishhawk Rd - OR 47	41.77	46.14	0.75	0.02	A	0.04	A
Scappoose-Vernonia Hwy	OR 47 - Cater Rd	0.00	14.33	0.75	0.03	A	0.02	A
Scappoose-Vernonia Hwy	Cater Rd - North Scappose UGB	14.33	19.81	0.75	0.02	A	0.01	A
Apiary Rd	Meissner Rd - OR 47	7.44	19.09	0.75	0.01	A	0.01	A
Apiary Rd	Old Rainier Rd - Fernhill Rd	1.00	6.57	0.75	0.01	A	0.02	A
Apiary Rd	Fern Hill Rd - Meissner Rd	6.57	7.44	0.75	0.01	A	0.02	A

Table A4: Intersection Crash Analysis



General & Site Information	
Analyst:	ELV
Agency/Company:	DKS Associates
Date:	8/28/2014
Project Name:	Columbia County TSP

Intersection Crash Data						
Intersection	Year					Total
	2008	2009	2010	2011	2012	
US 30 @ Berg Road	0	2	4	4	0	10
US 30 @ Canaan Road	4	0	0	3	0	7
US 30 @ Tide Creek Road	1	2	4	3	1	11
US 30 @ Nicolai Road	1	0	1	1	4	7
US 30 @ Neer City Road	1	2	2	0	3	8
US 30 @ Graham Road	0	0	0	1	1	2
US 30 @ Larson Road	2	1	0	2	2	7
US 30 @ Heath Road	0	0	0	0	1	1
US 30 @ Old Rainier Road	0	2	0	2	2	6
US30 @ Beaver Falls Road	0	0	0	2	0	2
US30 @ Delena Road	0	0	3	0	0	3
US30 @ Colvin Road	0	0	2	1	3	6
US30 @ Woodson Road	0	1	1	0	0	2
OR47 @ McDonald Road	0	0	0	1	0	1
OR47 @ Timber Road	0	0	1	3	1	5
OR47 @ Scappoose-Vernonia Hwy	0	0	0	1	1	2
OR47 @ Apiary Road	1	0	0	0	0	1
OR47 @ OR 202	0	0	1	2	0	3
OR202 @ Fishhawk Road	0	0	0	0	1	1
Total	10	10	19	26	20	85

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.
Unsignalized Intersections along Statewide Highway	1	72	205	0.3508
Unsignalized Intersections along District Highway	2	13	14	0.9311

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
US 30 @ Berg Road	22,150	40.4	10	1	0.25	0.35	0.52	Under
US 30 @ Canaan Road	7,850	14.3	7	1	0.49	0.35	0.64	Under
US 30 @ Tide Creek Road	6,500	11.9	11	1	0.93	0.35	0.68	Over
US 30 @ Nicolai Road	6,900	12.6	7	1	0.56	0.35	0.67	Under
US 30 @ Neer City Road	6,150	11.2	8	1	0.71	0.35	0.69	Over
US 30 @ Graham Road	6,200	11.3	2	1	0.18	0.35	0.68	Under
US 30 @ Larson Road	11,250	20.5	7	1	0.34	0.35	0.59	Under
US 30 @ Heath Road	10,000	18.3	1	1	0.05	0.35	0.61	Under
US 30 @ Old Rainier Road	10,100	18.4	6	1	0.33	0.35	0.60	Under
US30 @ Beaver Falls Road	8,300	15.1	2	1	0.13	0.35	0.63	Under
US30 @ Delena Road	8,150	14.9	3	1	0.20	0.35	0.64	Under
US30 @ Colvin Road	4,500	8.2	6	1	0.73	0.35	0.75	Under
US30 @ Woodson Road	4,400	8.0	2	1	0.25	0.35	0.76	Under
OR47 @ McDonald Road	1,950	3.6	1	2	0.28	0.93	1.91	Under
OR47 @ Timber Road	2,300	4.2	5	2	1.19	0.93	1.83	Under
OR47 @ Scappoose-Vernonia Hwy	1,150	2.1	2	2	0.95	0.93	2.27	Under
OR47 @ Apiary Road	850	1.6	1	2	0.64	0.93	2.53	Under
OR47 @ OR 202	650	1.2	3	2	2.53	0.93	2.81	Under
OR202 @ Fishhawk Road	750	1.4	1	2	0.73	0.93	2.65	Under

Table A5: Segment Crash Analysis



Critical Crash Rate Calculator

General & Site Information	
Analyst:	ELV
Agency/Company:	DKS Associates
Date:	8/28/2014
Project Name:	Columbia County TSP

Reference Population Type Crash Rates					
Segment Reference Population Type	Population Type Number	No. of Segs in Reference Population	Sum of Crashes	Sum of MVMT	Avg Crash Rate for Ref Pop.
Statewide Highway	1	16	263	633	0.42
District Highway	2	9	71	55	1.29
Arterial	3	4	73	67	1.10

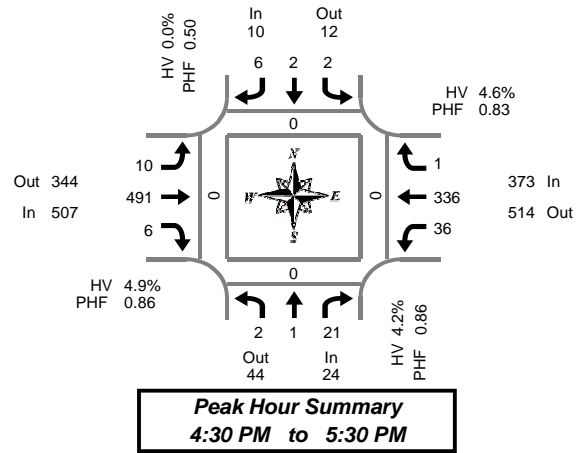
Critical Rate Calculation																	
HWY No.	Segment	Location	Segment	Ref. Pop. Type	Begin Milepoint	End Milepoint	5 Year Crash Total	AADT	Segment Length	Pop. Type Number	MVMT	Segment Crash Rate	Ref. Pop. Crash Rate	Critical Rate	Over Critical	Statewide Average	Over Statewide Average
92	US 30	South Columbia County Border - South Scappoose UGB	1	1	18.37	19.35	25	28355	0.98	1	50.71	0.49	0.42	0.57	Under	0.81	Under
92	US 30	North of Scappoose UGB - South St Helens UGB	2	1	21.37	25.96	67	21650	4.59	1	181.24	0.37	0.42	0.50	Under	0.81	Under
92	US 30	North St. Helens UGB - South Columbia City UGB	3	1	29.66	30.46	4	14379	0.80	1	21.02	0.19	0.42	0.67	Under	0.81	Under
92	US 30	North Columbia City UGB - Canaan Rd	4	1	32.01	34.18	8	6650	2.17	1	26.38	0.30	0.42	0.64	Under	0.81	Under
92	US 30	Canaan Rd - Tide Creek Rd	5	1	34.18	36.52	11	6250	2.34	1	26.65	0.41	0.42	0.64	Under	0.81	Under
92	US 30	Tide Creek - Nicolai Rd	6	1	36.52	40.47	18	6250	3.95	1	45.09	0.40	0.42	0.58	Under	0.81	Under
92	US 30	Nicolai Rd - Graham Rd	7	1	40.47	43.13	9	6000	2.66	1	29.09	0.31	0.42	0.63	Under	0.81	Under
92	US 30	Graham Rd - East Rainier UGB	8	1	43.13	45.87	20	6100	2.74	1	30.55	0.65	0.42	0.62	Over	0.81	Under
92	US 30	West Rainier UGB - Larson Rd	9	1	49.85	50.24	2	10450	0.40	1	7.59	0.26	0.42	0.87	Under	0.81	Under
92	US 30	Larson Rd - Heath Rd	10	1	50.24	52.08	4	9600	1.83	1	32.08	0.12	0.42	0.62	Under	0.81	Under
92	US 30	Heath Rd - Old Rainier Rd	11	1	52.08	53.09	3	9900	1.02	1	18.37	0.16	0.42	0.69	Under	0.81	Under
92	US 30	Old Rainier Rd - Bearver Falls Rd	12	1	53.09	54.28	9	8000	1.19	1	17.39	0.52	0.42	0.70	Under	0.81	Under
92	US 30	Beaver Falls Rd - East Clatskanie UGB	13	1	54.28	60.53	55	7600	6.25	1	86.63	0.63	0.42	0.54	Over	0.81	Under
92	US 30	West Clatskanie UGB - Colvin Rd	14	1	62.41	63.70	4	4400	1.30	1	10.41	0.38	0.42	0.79	Under	0.81	Under
92	US 30	Colvin Rd - Woodson Rd	15	1	63.70	67.94	19	4400	4.23	1	34.00	0.56	0.42	0.61	Under	0.81	Under
92	US 30	Woodson Rd - West Columbia County Border	16	1	67.94	69.96	5	4200	2.02	1	15.46	0.32	0.42	0.72	Under	0.81	Under
102	OR 47	Timber Rd - McDonald Rd	17	2	64.36	68.22	24	2050	3.86	2	14.43	1.66	1.29	1.82	Under	1.43	Over
102	OR 47	McDonald Rd - South Columbia County Border	18	2	68.22	69.13	2	1900	0.91	2	3.16	0.63	1.29	2.50	Under	1.43	Under
102	OR 47	South Vernonia UGB - Timber Rd	19	2	62.79	64.36	2	2050	1.58	2	5.90	0.34	1.29	2.15	Under	1.43	Under
102	OR 47	Scappoose Vernonia Hwy - North Vernonia UGB	20	2	57.11	60.39	13	950	3.28	2	5.68	2.29	1.29	2.16	Over	1.43	Over
102	OR 47	Apiary Rd - Scappoose Vernonia Hwy	21	2	53.22	57.11	10	700	3.88	2	4.96	2.02	1.29	2.23	Under	1.43	Over
102	OR 47	OR 202 - Apiary Rd	22	2	46.14	53.22	6	450	7.08	2	5.82	1.03	1.29	2.15	Under	1.43	Under
110	OR 47	West Clatskanie UGB - OR 202	23	2	0.00	11.84	6	400	11.84	2	8.65	0.69	1.29	1.99	Under	1.43	Under
102	OR 202	West Columbia County - Fishhawk Rd	24	2	39.18	41.77	1	500	2.59	2	2.36	0.42	1.29	2.72	Under	1.43	Under
102	OR 202	Fishhawk Rd - OR 47	25	2	41.77	46.14	7	500	4.37	2	3.99	1.76	1.29	2.35	Under	1.43	Over
na	Scappoose-Vernonia Hwy	OR 47 - Cater Rd	26	3	0.00	14.33	21	522	14.33	3	13.65	1.54	1.10	1.60	Under	1.40	Over
na	Scappoose-Vernonia Hwy	Cater Rd - North Scappoose UGB	27	3	14.33	19.81	26	2384	5.48	3	23.84	1.09	1.10	1.47	Under	1.40	Under
na	Apiary Rd	Meissner Rd - OR 47	28	3	7.44	19.09	9	599	11.65	3	12.74	0.71	1.10	1.62	Under	1.40	Under
na	Apiary Rd	Old Rainier Rd - Meissner Rd	29	3	0.00	7.44	17	1210	7.44	3	16.43	1.03	1.10	1.55	Under	1.40	Under

Raw Traffic Count Data

Total Vehicle Summary



Clay Carney
(503) 833-2740



Delena Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	0	0	3	0	0	0	1	0	2	93	1	0	5	73	0	0	178	0	0	0	0
3:15 PM	1	1	2	0	3	0	3	0	3	90	0	0	5	89	1	0	198	0	0	0	0
3:30 PM	1	0	3	1	1	0	0	0	0	84	2	0	4	87	0	0	182	0	0	0	0
3:45 PM	0	1	4	0	0	1	2	0	4	122	1	0	8	74	0	0	217	0	0	0	0
4:00 PM	1	0	4	0	0	0	5	0	6	101	3	0	2	91	1	0	214	0	0	0	0
4:15 PM	0	0	3	0	0	0	0	0	0	89	3	0	6	78	0	0	179	0	0	0	0
4:30 PM	1	0	5	0	0	0	1	0	1	84	3	0	8	78	0	0	181	0	0	0	0
4:45 PM	1	1	5	0	0	0	0	0	3	128	1	0	10	102	1	0	252	0	0	0	0
5:00 PM	0	0	5	0	2	0	2	0	3	136	1	0	9	66	0	1	224	0	0	0	0
5:15 PM	0	0	6	0	0	2	3	0	3	143	1	0	9	90	0	0	257	0	0	0	0
5:30 PM	1	2	2	0	0	0	2	0	2	75	1	0	5	68	0	0	158	0	0	0	0
5:45 PM	1	0	5	0	1	0	2	0	1	80	0	0	3	73	0	0	166	0	0	0	0
Total Survey	7	5	47	1	7	3	21	0	28	1,225	17	0	74	969	3	1	2,406	0	0	0	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	24	44	68	0	10	12	22	0	507	344	851	0	373	514	887	1	914	0	0	0	0
%HV	4.2%				0.0%				4.9%				4.6%				4.7%				
PHF	0.86				0.50				0.86				0.83				0.89				

By Movement	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	2	1	21	24	2	2	6	10	10	491	6	507	36	336	1	373	914
%HV	0.0%	0.0%	4.8%	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	4.9%	2.8%	4.8%	0.0%	4.6%	4.7%
PHF	0.50	0.25	0.88	0.86	0.25	0.25	0.50	0.50	0.83	0.86	0.50	0.86	0.90	0.82	0.25	0.83	0.89

Rolling Hour Summary

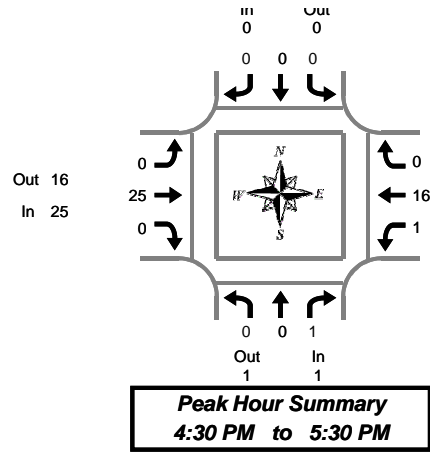
3:00 PM to 6:00 PM

Interval Start Time	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	2	2	12	1	4	1	6	0	9	389	4	0	22	323	1	0	775	0	0	0	0
3:15 PM	3	2	13	1	4	1	10	0	13	397	6	0	19	341	2	0	811	0	0	0	0
3:30 PM	2	1	14	1	1	1	7	0	10	396	9	0	20	330	1	0	792	0	0	0	0
3:45 PM	2	1	16	0	0	1	8	0	11	396	10	0	24	321	1	0	791	0	0	0	0
4:00 PM	3	1	17	0	0	0	6	0	10	402	10	0	26	349	2	0	826	0	0	0	0
4:15 PM	2	1	18	0	2	0	3	0	7	437	8	0	33	324	1	1	836	0	0	0	0
4:30 PM	2	1	21	0	2	2	6	0	10	491	6	0	36	336	1	1	914	0	0	0	0
4:45 PM	2	3	18	0	2	2	7	0	11	482	4	0	33	326	1	1	891	0	0	0	0
5:00 PM	2	2	18	0	3	2	9	0	9	434	3	0	26	297	0	1	805	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Delena Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	4	0	4	16
3:15 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	9	0	9	21
3:30 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	6	0	6	17
3:45 PM	0	0	0	0	0	0	0	0	0	10	0	10	0	7	0	7	17
4:00 PM	0	0	1	1	0	0	0	0	0	10	0	10	0	10	0	10	21
4:15 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	1	5	0	6	12
4:45 PM	0	0	0	0	0	0	0	0	0	7	0	7	0	3	0	3	10
5:00 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	5	0	5	11
5:15 PM	0	0	1	1	0	0	0	0	0	6	0	6	0	3	0	3	10
5:30 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	3	0	3	7
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2	5
Total Survey	0	0	2	2	0	0	0	0	0	92	0	92	1	61	0	62	156

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Delena Rd			Southbound Delena Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	0	0	0	25	16	41	17	26	43	43
PHF	0.25			0.00			0.18			0.18			0.20

By Movement	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	0	0	0	0	0	25	0	25	1	16	0	17	43
PHF	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.18	0.25	0.17	0.00	0.18	0.20

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Delena Rd				Southbound Delena Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	45	0	45	0	26	0	26	71
3:15 PM	0	0	1	1	0	0	0	0	0	43	0	43	0	32	0	32	76
3:30 PM	0	0	1	1	0	0	0	0	0	36	0	36	0	27	0	27	64
3:45 PM	0	0	1	1	0	0	0	0	0	31	0	31	1	26	0	27	59
4:00 PM	0	0	1	1	0	0	0	0	0	28	0	28	1	22	0	23	52
4:15 PM	0	0	0	0	0	0	0	0	0	24	0	24	1	17	0	18	42
4:30 PM	0	0	1	1	0	0	0	0	0	25	0	25	1	16	0	17	43
4:45 PM	0	0	1	1	0	0	0	0	0	23	0	23	0	14	0	14	38
5:00 PM	0	0	1	1	0	0	0	0	0	19	0	19	0	13	0	13	33

Peak Hour Summary

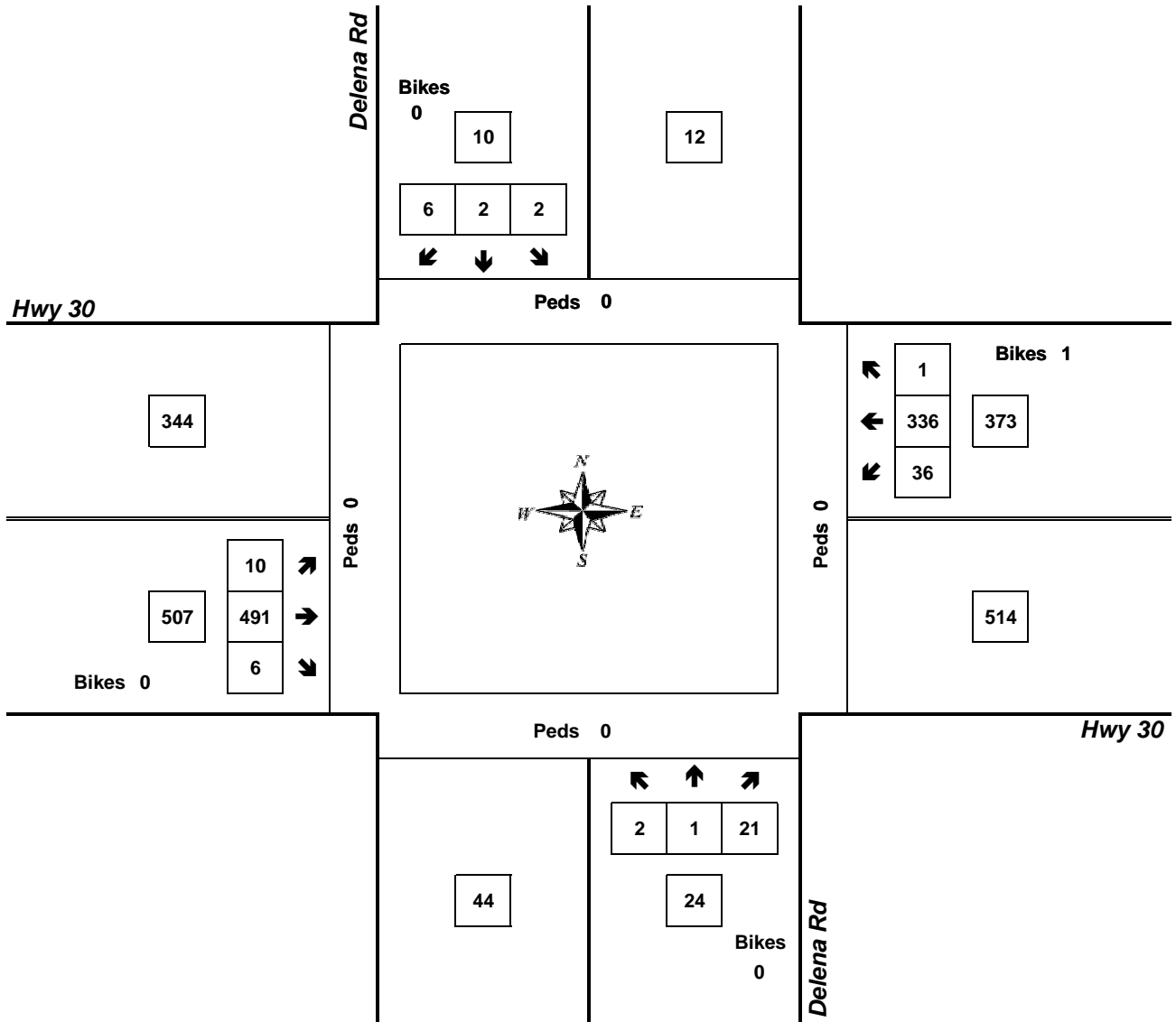


Clay Carney
(503) 833-2740

Delena Rd & Hwy 30

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



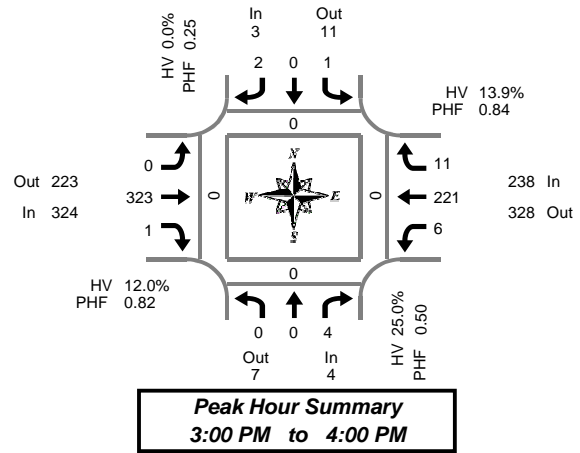
Approach	PHF	HV%	Volume
EB	0.86	4.9%	507
WB	0.83	4.6%	373
NB	0.86	4.2%	24
SB	0.50	0.0%	10
Intersection	0.89	4.7%	914

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Colvin Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk				
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West	
3:00 PM	0	0	2	0	0	0	0	0	0	75	1	0	0	0	53	4	0	135	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	58	0	0	0	3	55	2	0	118	0	0	0	0
3:30 PM	0	0	1	0	1	0	2	0	0	99	0	0	0	1	66	4	0	174	0	0	0	0
3:45 PM	0	0	1	0	0	0	0	0	0	91	0	0	0	2	47	1	0	142	0	0	0	0
4:00 PM	0	0	2	0	1	1	0	0	0	68	0	0	0	1	42	1	0	116	0	0	0	0
4:15 PM	0	0	2	0	3	0	1	0	0	56	0	0	0	0	52	2	0	116	0	0	0	0
4:30 PM	0	0	2	0	0	0	0	0	0	70	0	0	0	2	51	1	0	126	0	0	0	0
4:45 PM	0	0	0	0	2	0	0	0	0	62	0	0	0	2	46	1	0	113	0	0	0	0
5:00 PM	0	0	1	0	2	0	0	0	0	72	0	0	0	1	72	4	0	152	0	0	0	0
5:15 PM	0	1	2	0	0	0	0	0	1	46	0	0	0	3	59	2	0	114	0	0	0	0
5:30 PM	1	0	0	0	0	0	0	0	1	48	1	0	0	0	71	2	0	124	0	0	0	0
5:45 PM	0	0	2	0	3	1	0	0	1	46	0	0	0	1	62	4	0	120	0	0	0	0
Total Survey	1	1	15	0	12	2	3	0	3	791	2	0	0	16	676	28	0	1,550	0	0	0	0

Peak Hour Summary 3:00 PM to 4:00 PM

By Approach	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	4	7	11	0	3	11	14	0	324	223	547	0	238	328	566	0	569	0	0	0	0
%HV	25.0%				0.0%				12.0%				13.9%				12.8%				
PHF	0.50				0.25				0.82				0.84				0.82				

By Movement	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	4	4	1	0	2	3	0	323	1	324	6	221	11	238	569
%HV	0.0%	0.0%	25.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.1%	0.0%	12.0%	0.0%	14.5%	9.1%	13.9%	12.8%
PHF	0.00	0.00	0.50	0.50	0.25	0.00	0.25	0.25	0.00	0.82	0.25	0.82	0.50	0.84	0.69	0.84	0.82

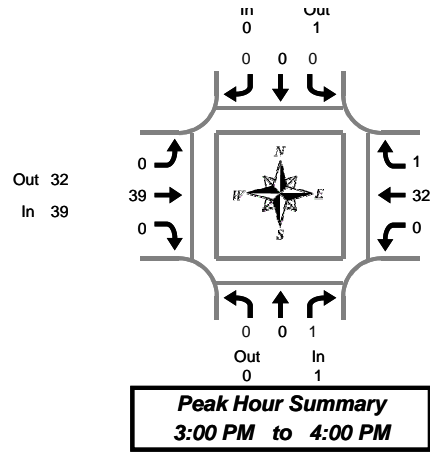
Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk				
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West	
3:00 PM	0	0	4	0	1	0	2	0	0	323	1	0	0	6	221	11	0	569	0	0	0	0
3:15 PM	0	0	4	0	2	1	2	0	0	316	0	0	0	7	210	8	0	550	0	0	0	0
3:30 PM	0	0	6	0	5	1	3	0	0	314	0	0	0	4	207	8	0	548	0	0	0	0
3:45 PM	0	0	7	0	4	1	1	0	0	285	0	0	0	5	192	5	0	500	0	0	0	0
4:00 PM	0	0	6	0	6	1	1	0	0	256	0	0	0	5	191	5	0	471	0	0	0	0
4:15 PM	0	0	5	0	7	0	1	0	0	260	0	0	0	5	221	8	0	507	0	0	0	0
4:30 PM	0	1	5	0	4	0	0	0	1	250	0	0	0	8	228	8	0	505	0	0	0	0
4:45 PM	1	1	3	0	4	0	0	0	2	228	1	0	0	6	248	9	0	503	0	0	0	0
5:00 PM	1	1	5	0	5	1	0	0	3	212	1	0	0	5	264	12	0	510	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Colvin Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	13	0	13	0	12	0	12	25
3:15 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	4	0	4	15
3:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	8	1	9	15
3:45 PM	0	0	1	1	0	0	0	0	0	9	0	9	0	8	0	8	18
4:00 PM	0	0	0	0	0	1	0	1	0	10	0	10	0	4	0	4	15
4:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	0	5	0	5	9
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	1	2	0	3	9
4:45 PM	0	0	0	0	0	0	0	0	0	7	0	7	0	4	0	4	11
5:00 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	6	0	6	12
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3	4
5:30 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	5	0	5	8
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
Total Survey	0	0	1	1	0	1	0	1	0	77	0	77	1	62	1	64	143

Heavy Vehicle Peak Hour Summary 3:00 PM to 4:00 PM

By Approach	Northbound Colvin Rd			Southbound Colvin Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	0	1	0	1	1	39	32	71	33	40	73	73
PHF	0.25			0.00			0.33			0.33			0.33

By Movement	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	1	1	0	0	0	0	0	39	0	39	0	32	1	33	73
PHF	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.33	0.00	0.33	0.25	0.33	0.33

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Colvin Rd				Southbound Colvin Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	1	1	0	0	0	0	0	39	0	39	0	32	1	33	73
3:15 PM	0	0	1	1	0	1	0	1	0	36	0	36	0	24	1	25	63
3:30 PM	0	0	1	1	0	1	0	1	0	29	0	29	0	25	1	26	57
3:45 PM	0	0	1	1	0	1	0	1	0	29	0	29	1	19	0	20	51
4:00 PM	0	0	0	0	0	1	0	1	0	27	0	27	1	15	0	16	44
4:15 PM	0	0	0	0	0	0	0	0	0	23	0	23	1	17	0	18	41
4:30 PM	0	0	0	0	0	0	0	0	0	20	0	20	1	15	0	16	36
4:45 PM	0	0	0	0	0	0	0	0	0	17	0	17	0	18	0	18	35
5:00 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	15	0	15	26

Peak Hour Summary

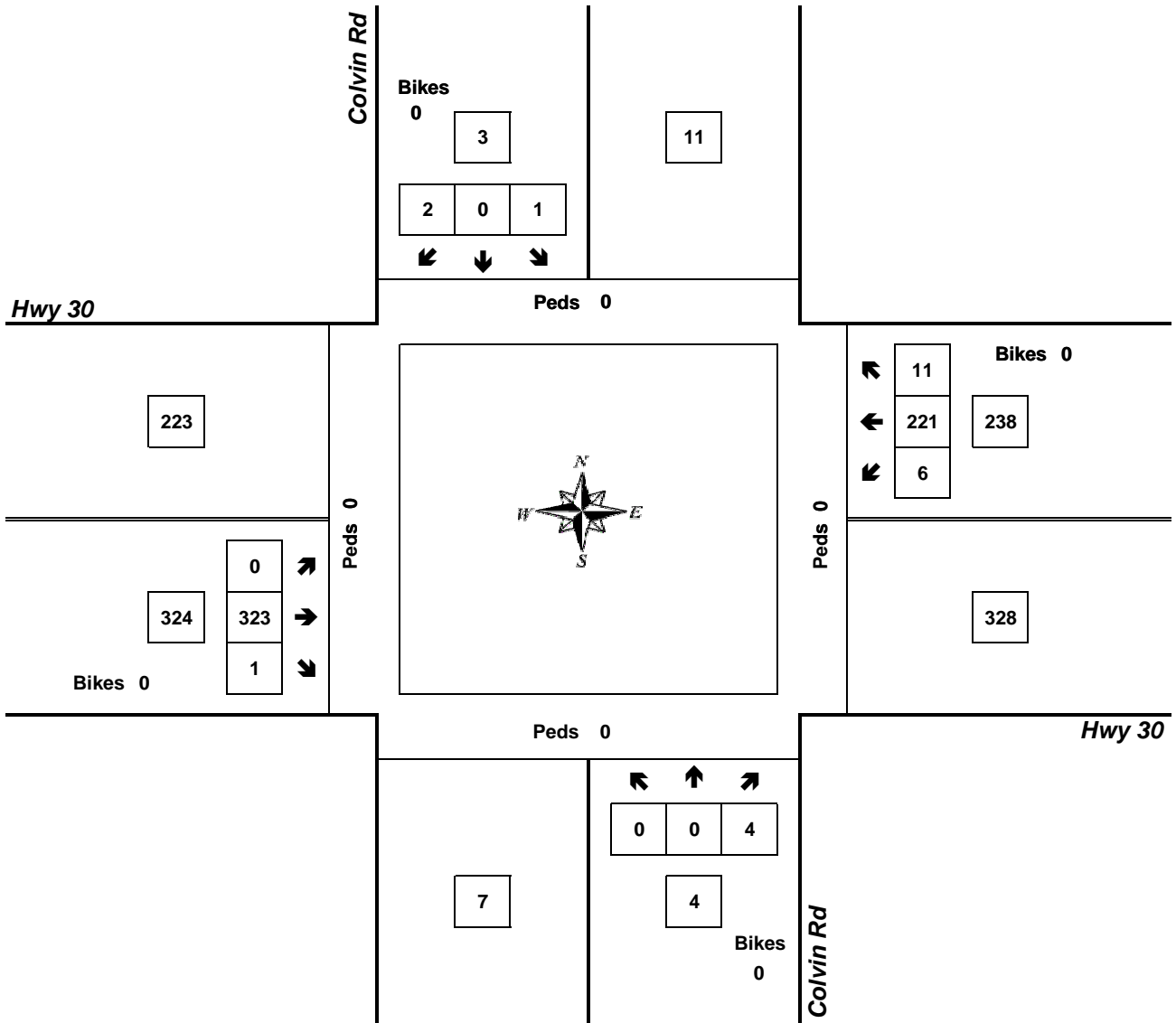


Clay Carney
(503) 833-2740

Colvin Rd & Hwy 30

3:00 PM to 4:00 PM

Tuesday, June 03, 2014



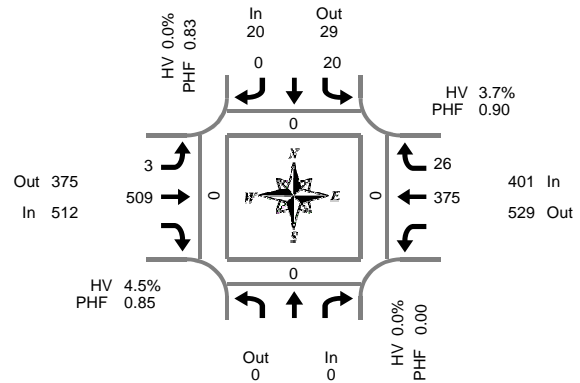
Approach	PHF	HV%	Volume
EB	0.82	12.0%	324
WB	0.84	13.9%	238
NB	0.50	25.0%	4
SB	0.25	0.0%	3
Intersection	0.82	12.8%	569

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Beaver Falls Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Beaver Falls Rd				Southbound Beaver Falls Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	Bikes	L	R	Bikes	L	T	Bikes	T	R	Bikes	T	R	Bikes	North	South	East		West			
3:00 PM	0	4	0	0	0	96	0	80	9	0	189	0	0	0	0						
3:15 PM	0	7	0	0	1	102	0	95	10	0	215	0	0	0	0						
3:30 PM	0	4	0	0	0	90	0	101	9	0	204	0	0	0	0						
3:45 PM	0	6	0	0	0	126	0	77	2	0	211	0	0	0	0						
4:00 PM	0	3	0	0	0	106	0	104	5	0	218	0	0	0	0						
4:15 PM	0	6	0	0	1	95	0	76	4	0	182	0	0	0	0						
4:30 PM	0	5	0	0	1	101	0	96	6	0	209	0	0	0	0						
4:45 PM	0	5	0	0	0	114	0	102	9	0	230	0	0	0	0						
5:00 PM	0	4	0	0	2	143	0	84	5	0	238	0	0	0	0						
5:15 PM	0	6	0	0	0	151	0	93	6	0	256	0	0	0	0						
5:30 PM	0	5	0	0	0	87	0	80	3	0	175	0	0	0	0						
5:45 PM	0	6	0	0	0	90	0	68	6	0	170	0	0	0	0						
Total Survey	0	61	0	0	5	1,301	0	1,056	74	0	2,497	0	0	0	0						

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Beaver Falls Rd				Southbound Beaver Falls Rd				Eastbound Hwy 30				Westbound Hwy 30				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	20	29	49	0	512	375	887	0	401	529	930	0	933	0	0	0	0
%HV	0.0%				0.0%				4.5%				3.7%				4.1%				
PHF	0.00				0.83				0.85				0.90				0.91				

By Movement	Northbound Beaver Falls Rd				Southbound Beaver Falls Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	Total	L	R	Total	L	T	Total	T	R	Total	T	R	Total				
Volume	0	20	0	20	3	509	512	375	26	401	933	0	0				
%HV	NA	0.0%	0.0%	NA	0.0%	0.0%	0.0%	4.5%	NA	4.5%	NA	4.0%	0.0%	3.7%	4.1%		
PHF	0.00	0.83	0.00	0.83	0.38	0.84	0.85	0.92	0.72	0.90	0.91	0	0				

Rolling Hour Summary

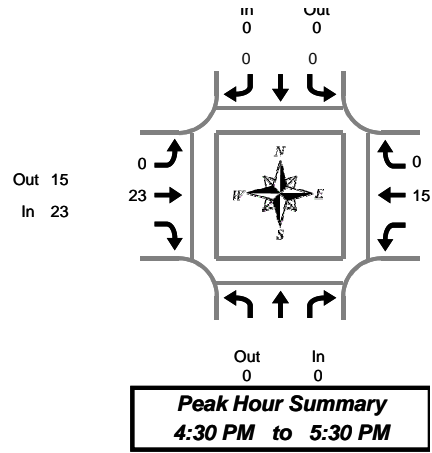
3:00 PM to 6:00 PM

Interval Start Time	Northbound Beaver Falls Rd				Southbound Beaver Falls Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	Bikes	L	R	Bikes	L	T	Bikes	T	R	Bikes	T	R	Bikes	North	South	East		West			
3:00 PM	0	21	0	0	1	414	0	353	30	0	819	0	0	0	0						
3:15 PM	0	20	0	0	1	424	0	377	26	0	848	0	0	0	0						
3:30 PM	0	19	0	0	1	417	0	358	20	0	815	0	0	0	0						
3:45 PM	0	20	0	0	2	428	0	353	17	0	820	0	0	0	0						
4:00 PM	0	19	0	0	2	416	0	378	24	0	839	0	0	0	0						
4:15 PM	0	20	0	0	4	453	0	358	24	0	859	0	0	0	0						
4:30 PM	0	20	0	0	3	509	0	375	26	0	933	0	0	0	0						
4:45 PM	0	20	0	0	2	495	0	359	23	0	899	0	0	0	0						
5:00 PM	0	21	0	0	2	471	0	325	20	0	839	0	0	0	0						

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Beaver Falls Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Beaver Falls Rd			Southbound Beaver Falls Rd			Eastbound Hwy 30			Westbound Hwy 30			Interval Total
	Total	L	R	Total	L	R	Total	T	Total	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	12	12	5	0	5	17
3:15 PM	0	0	0	0	0	0	0	12	12	8	0	8	20
3:30 PM	0	0	0	0	0	0	0	11	11	6	0	6	17
3:45 PM	0	0	0	0	0	0	0	9	9	7	0	7	16
4:00 PM	0	0	0	0	0	0	0	11	11	9	0	9	20
4:15 PM	0	0	0	0	0	0	0	6	6	5	0	5	11
4:30 PM	0	0	0	0	0	0	0	6	6	5	0	5	11
4:45 PM	0	0	0	0	0	0	0	6	6	3	0	3	9
5:00 PM	0	0	0	0	0	0	0	6	6	5	0	5	11
5:15 PM	0	0	0	0	0	0	0	5	5	2	0	2	7
5:30 PM	0	0	0	0	0	0	0	5	5	3	0	3	8
5:45 PM	0	0	0	0	0	0	0	3	3	2	0	2	5
Total Survey	0	0	0	0	0	0	0	92	92	60	0	60	152

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Beaver Falls Rd			Southbound Beaver Falls Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	0	0	0	23	15	38	15	23	38	38
PHF	0.00			0.00			0.16			0.17			0.18

By Movement	Northbound Beaver Falls Rd			Southbound Beaver Falls Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	Total	L	R	Total	L	R	Total	T	Total	T	R	Total	
Volume	0	0	0	0	0	0	0	23	23	15	0	15	38
PHF	0.00	0.00		0.00	0.00		0.00	0.16	0.16	0.17	0.00	0.17	0.18

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Beaver Falls Rd			Southbound Beaver Falls Rd			Eastbound Hwy 30			Westbound Hwy 30			Interval Total
	Total	L	R	Total	L	R	Total	T	Total	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	44	44	26	0	26	70
3:15 PM	0	0	0	0	0	0	0	43	43	30	0	30	73
3:30 PM	0	0	0	0	0	0	0	37	37	27	0	27	64
3:45 PM	0	0	0	0	0	0	0	32	32	26	0	26	58
4:00 PM	0	0	0	0	0	0	0	29	29	22	0	22	51
4:15 PM	0	0	0	0	0	0	0	24	24	18	0	18	42
4:30 PM	0	0	0	0	0	0	0	23	23	15	0	15	38
4:45 PM	0	0	0	0	0	0	0	22	22	13	0	13	35
5:00 PM	0	0	0	0	0	0	0	19	19	12	0	12	31

Peak Hour Summary

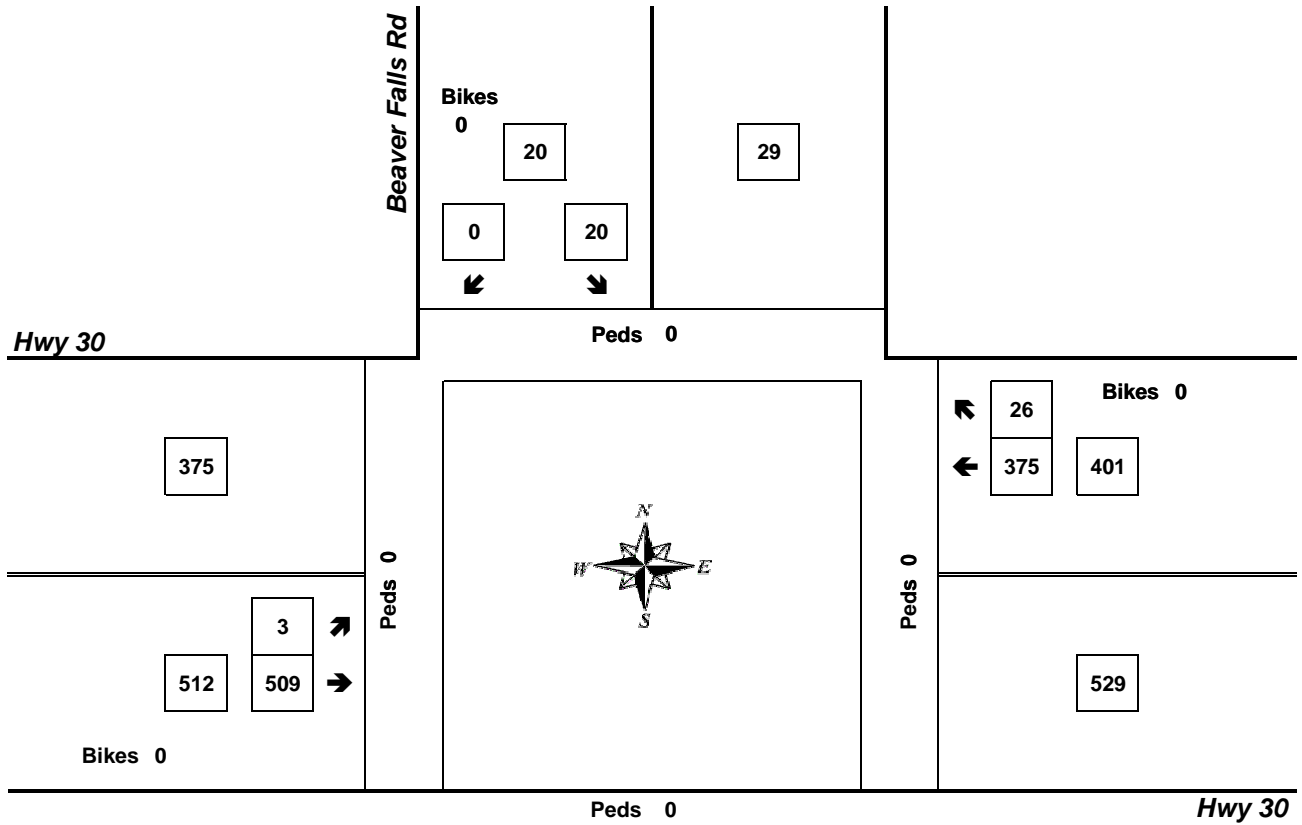


Clay Carney
(503) 833-2740

Beaver Falls Rd & Hwy 30

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



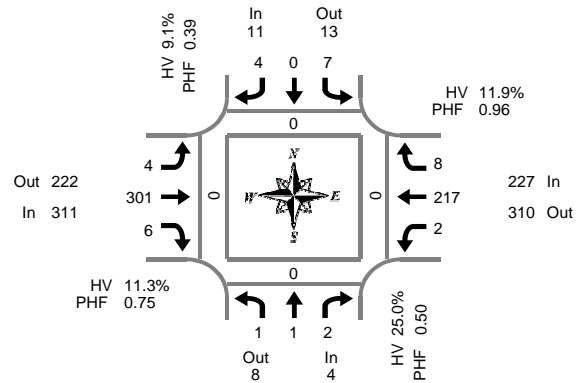
Approach	PHF	HV%	Volume
EB	0.85	4.5%	512
WB	0.90	3.7%	401
NB	0.00	0.0%	0
SB	0.83	0.0%	20
Intersection	0.91	4.1%	933

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Peak Hour Summary
3:15 PM to 4:15 PM

Woodson Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	0	0	0	0	0	0	0	0	2	58	0	0	1	45	2	0	108	0	0	0	0
3:15 PM	0	0	0	0	0	0	1	0	0	63	1	0	0	52	4	0	121	0	0	0	0
3:30 PM	0	0	0	0	1	0	0	0	1	101	2	0	1	56	2	0	164	0	0	0	0
3:45 PM	0	1	1	0	4	0	3	0	2	71	2	0	0	52	2	0	138	0	0	0	0
4:00 PM	1	0	1	0	2	0	0	0	1	66	1	0	1	57	0	0	130	0	0	0	0
4:15 PM	0	0	1	0	1	0	2	0	1	50	0	0	1	43	0	0	99	0	0	0	0
4:30 PM	0	0	0	0	1	0	2	0	0	62	0	0	2	46	2	0	115	0	0	0	0
4:45 PM	0	0	0	0	2	0	0	0	1	54	1	0	1	58	0	0	117	0	0	0	0
5:00 PM	2	0	1	0	1	0	0	0	0	73	0	0	0	62	3	0	142	0	0	0	0
5:15 PM	0	0	0	0	1	0	0	0	1	42	0	0	2	42	2	0	90	0	0	0	0
5:30 PM	0	0	3	0	0	2	0	0	0	47	1	0	0	69	3	0	125	0	0	0	0
5:45 PM	0	0	1	0	0	0	0	0	1	42	1	0	0	50	2	0	97	0	0	0	0
Total Survey	3	1	8	0	13	2	8	0	10	729	9	0	9	632	22	0	1,446	0	0	0	0

Peak Hour Summary

3:15 PM to 4:15 PM

By Approach	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	4	8	12	0	11	13	24	0	311	222	533	0	227	310	537	0	553	0	0	0	0
%HV	25.0%				9.1%				11.3%				11.9%				11.6%				
PHF	0.50				0.39				0.75				0.96				0.84				

By Movement	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	1	2	4	7	0	4	11	4	301	6	311	2	217	8	227	553
%HV	0.0%	#####	0.0%	25.0%	14.3%	0.0%	0.0%	9.1%	50.0%	10.6%	16.7%	11.3%	0.0%	12.4%	0.0%	11.9%	11.6%
PHF	0.25	0.25	0.50	0.50	0.44	0.00	0.33	0.39	0.50	0.75	0.75	0.75	0.50	0.95	0.50	0.96	0.84

Rolling Hour Summary

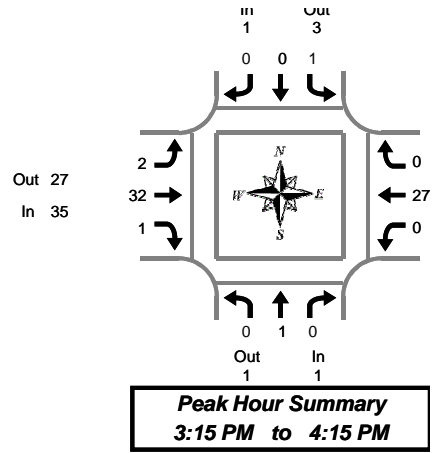
3:00 PM to 6:00 PM

Interval Start Time	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	0	1	1	0	5	0	4	0	5	293	5	0	2	205	10	0	531	0	0	0	0
3:15 PM	1	1	2	0	7	0	4	0	4	301	6	0	2	217	8	0	553	0	0	0	0
3:30 PM	1	1	3	0	8	0	5	0	5	288	5	0	3	208	4	0	531	0	0	0	0
3:45 PM	1	1	3	0	8	0	7	0	4	249	3	0	4	198	4	0	482	0	0	0	0
4:00 PM	1	0	2	0	6	0	4	0	3	232	2	0	5	204	2	0	461	0	0	0	0
4:15 PM	2	0	2	0	5	0	4	0	2	239	1	0	4	209	5	0	473	0	0	0	0
4:30 PM	2	0	1	0	5	0	2	0	2	231	1	0	5	208	7	0	464	0	0	0	0
4:45 PM	2	0	4	0	4	2	0	0	2	216	2	0	3	231	8	0	474	0	0	0	0
5:00 PM	2	0	5	0	2	2	0	0	2	204	2	0	2	223	10	0	454	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Woodson Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	9	0	9	20
3:15 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	7	0	7	18
3:30 PM	0	0	0	0	0	0	0	0	0	6	1	7	0	10	0	10	17
3:45 PM	0	1	0	1	1	0	0	1	2	6	0	8	0	5	0	5	15
4:00 PM	0	0	0	0	0	0	0	0	0	9	0	9	0	5	0	5	14
4:15 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	7	0	7	12
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	2	0	2	8
4:45 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	4	0	4	9
5:00 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	3	0	3	8
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	5	0	5	7
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	3
Total Survey	0	1	0	1	1	0	0	1	2	69	1	72	0	62	0	62	136

Heavy Vehicle Peak Hour Summary 3:15 PM to 4:15 PM

By Approach	Northbound Woodson Rd			Southbound Woodson Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	1	3	4	35	27	62	27	33	60	64
PHF	0.25			0.25			0.30			0.26			0.29

By Movement	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	1	0	1	1	0	0	1	2	32	1	35	0	27	0	27	64
PHF	0.00	0.25	0.00	0.25	0.25	0.00	0.00	0.25	0.25	0.29	0.25	0.30	0.00	0.26	0.00	0.26	0.29

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Woodson Rd				Southbound Woodson Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	1	0	1	1	0	0	1	2	34	1	37	0	31	0	31	70
3:15 PM	0	1	0	1	1	0	0	1	2	32	1	35	0	27	0	27	64
3:30 PM	0	1	0	1	1	0	0	1	2	26	1	29	0	27	0	27	58
3:45 PM	0	1	0	1	1	0	0	1	2	26	0	28	0	19	0	19	49
4:00 PM	0	0	0	0	0	0	0	0	0	25	0	25	0	18	0	18	43
4:15 PM	0	0	0	0	0	0	0	0	0	21	0	21	0	16	0	16	37
4:30 PM	0	0	0	0	0	0	0	0	0	18	0	18	0	14	0	14	32
4:45 PM	0	0	0	0	0	0	0	0	0	14	0	14	0	15	0	15	29
5:00 PM	0	0	0	0	0	0	0	0	0	10	0	10	0	13	0	13	23

Peak Hour Summary

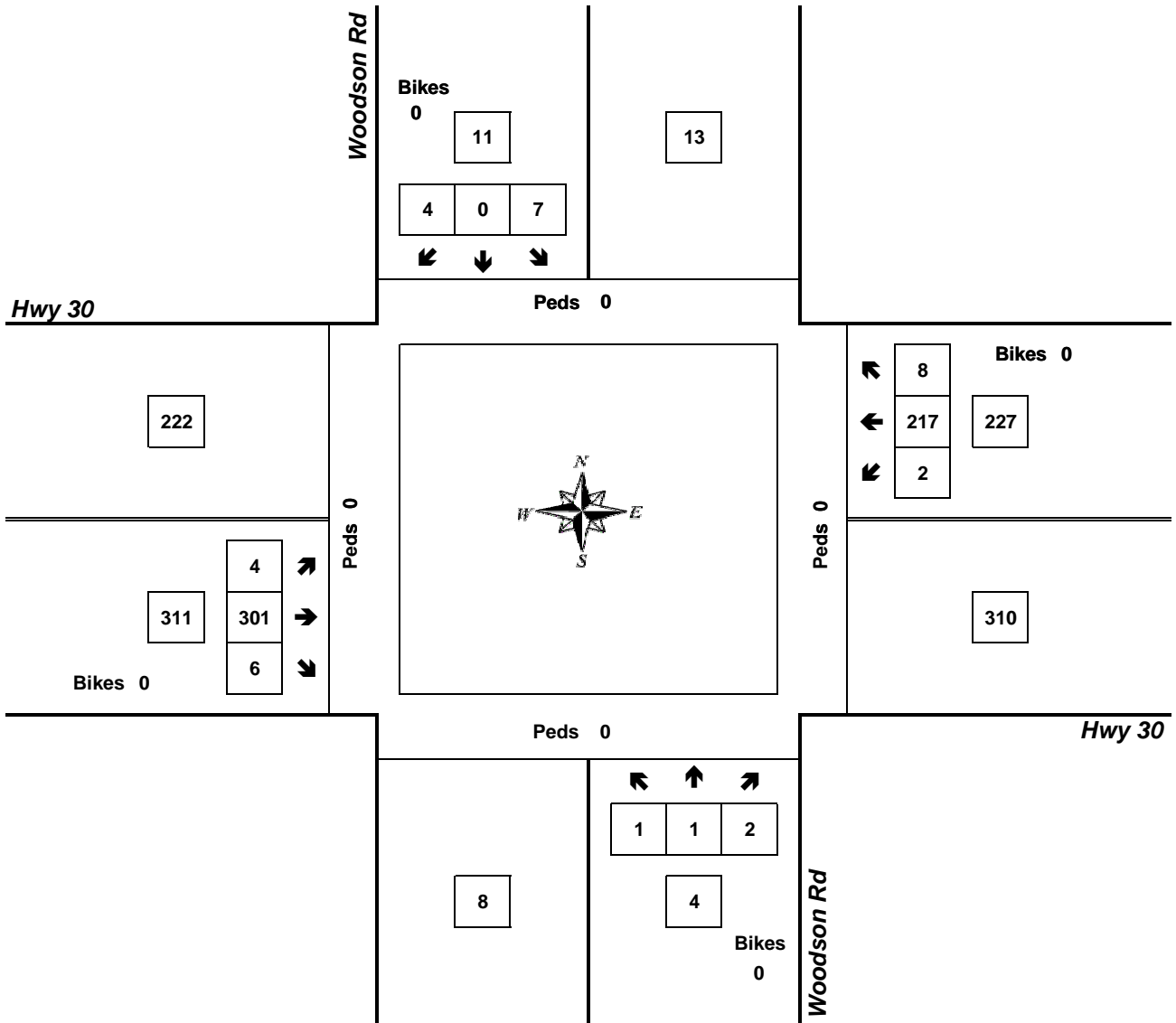


Clay Carney
(503) 833-2740

Woodson Rd & Hwy 30

3:15 PM to 4:15 PM

Tuesday, June 03, 2014



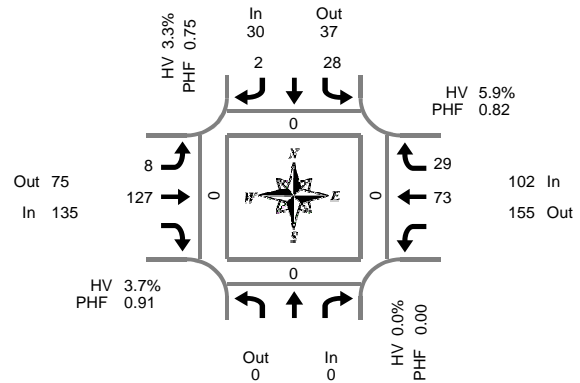
Approach	PHF	HV%	Volume
EB	0.75	11.3%	311
WB	0.96	11.9%	227
NB	0.50	25.0%	4
SB	0.39	9.1%	11
Intersection	0.84	11.6%	553

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Timber Rd & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Timber Rd				Southbound Timber Rd				Eastbound Hwy 47				Westbound Hwy 47				Interval Total	Pedestrians Crosswalk			
	In	Out	Bikes		L	R	Bikes		L	T	Bikes		T	R	Bikes			North	South	East	West
3:00 PM			0		7		2	0		0	13		0	11	3	0		0	0	0	0
3:15 PM			0		10		1	0		0	28		0	18	9	0		0	0	0	0
3:30 PM			0		3		0	0		1	30		0	17	5	0		0	0	0	0
3:45 PM			0		5		0	0		2	28		0	12	6	0		0	0	0	0
4:00 PM			0		9		0	0		2	35		0	20	11	1		0	0	0	0
4:15 PM			0		9		1	0		1	26		0	16	6	0		0	0	0	0
4:30 PM			0		6		0	0		3	31		0	20	9	0		0	0	0	0
4:45 PM			0		4		1	0		2	35		0	17	3	0		0	0	0	0
5:00 PM			0		7		0	0		0	39		0	9	6	0		0	0	0	0
5:15 PM			0		5		1	0		1	24		0	10	5	0		0	0	0	0
5:30 PM			0		9		1	0		1	36		0	6	2	0		0	0	0	0
5:45 PM			0		4		2	0		1	37		0	8	0	0		0	0	0	0
Total Survey			0		78		9	0		14	362		0	164	65	1		0	0	0	0

Peak Hour Summary

4:00 PM to 5:00 PM

By Approach	Northbound Timber Rd				Southbound Timber Rd				Eastbound Hwy 47				Westbound Hwy 47				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	30	37	67	0	135	75	210	0	102	155	257	1		0	0	0	0		
%HV	0.0%				3.3%				3.7%				5.9%				4.5%						
PHF	0.00				0.75				0.91				0.82				0.87						

By Movement	Northbound Timber Rd				Southbound Timber Rd				Eastbound Hwy 47				Westbound Hwy 47				Total	
	In	Out	Total	Bikes	L	R	Total	Bikes	L	T	Total	Bikes	T	R	Total			
Volume			0		28		2	30		8	127		135		73	29	102	267
%HV	NA	NA	NA	0.0%	3.6%	NA	0.0%	3.3%	0.0%	3.9%	NA	3.7%	NA	5.5%	6.9%	5.9%	4.5%	
PHF			0.00		0.78		0.50	0.75		0.67	0.91		0.91		0.66	0.82	0.87	

Rolling Hour Summary

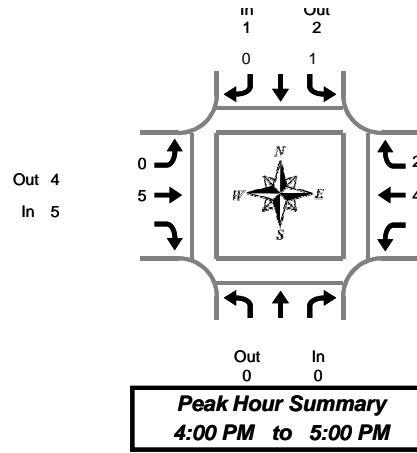
3:00 PM to 6:00 PM

Interval Start Time	Northbound Timber Rd				Southbound Timber Rd				Eastbound Hwy 47				Westbound Hwy 47				Interval Total	Pedestrians Crosswalk			
	In	Out	Bikes		L	R	Bikes		L	T	Bikes		T	R	Bikes			North	South	East	West
3:00 PM			0		25		3	0		3	99		0	58	23	0		0	0	0	0
3:15 PM			0		27		1	0		5	121		0	67	31	1		0	0	0	0
3:30 PM			0		26		1	0		6	119		0	65	28	1		0	0	0	0
3:45 PM			0		29		1	0		8	120		0	68	32	1		0	0	0	0
4:00 PM			0		28		2	0		8	127		0	73	29	1		0	0	0	0
4:15 PM			0		26		2	0		6	131		0	62	24	0		0	0	0	0
4:30 PM			0		22		2	0		6	129		0	56	23	0		0	0	0	0
4:45 PM			0		25		3	0		4	134		0	42	16	0		0	0	0	0
5:00 PM			0		25		4	0		3	136		0	33	13	0		0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Timber Rd & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Timber Rd			Southbound Timber Rd			Eastbound Hwy 47			Westbound Hwy 47			Interval Total	
			Total	L	R	Total	L	T	Total	T	R	Total		
3:00 PM			0	3		3	0	0	0	0	0	0	3	
3:15 PM			0	0		0	0	0	0	0	4	1	5	
3:30 PM			0	0		0	0	0	0	0	1	0	1	
3:45 PM			0	0		0	0	0	1	1	0	0	1	
4:00 PM			0	0		0	0	0	1	1	0	1	2	
4:15 PM			0	0		0	0	0	3	3	0	0	3	
4:30 PM			0	0		0	0	0	1	1	0	1	2	
4:45 PM			0	1		0	1	0	0	0	4	0	4	
5:00 PM			0	0		0	0	0	0	0	0	1	1	
5:15 PM			0	1		0	1	0	0	0	0	0	1	
5:30 PM			0	0		0	0	0	0	0	0	0	0	
5:45 PM			0	0		0	0	0	0	0	0	0	0	
Total Survey			0	5		0	5	0	6	6	9	4	13	24

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

By Approach	Northbound Timber Rd			Southbound Timber Rd			Eastbound Hwy 47			Westbound Hwy 47			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	0	0	1	2	3	5	4	9	6	6	12	12
PHF	0.00			0.08			0.25			0.25			0.30

By Movement	Northbound Timber Rd			Southbound Timber Rd			Eastbound Hwy 47			Westbound Hwy 47			Total	
			Total	L	R	Total	L	T	Total	T	R	Total		
Volume			0	1		0	1	0	5		4	2	6	12
PHF			0.00	0.08		0.00	0.08	0.00	0.25		0.25	0.25	0.25	0.30

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Timber Rd			Southbound Timber Rd			Eastbound Hwy 47			Westbound Hwy 47			Interval Total	
			Total	L	R	Total	L	T	Total	T	R	Total		
3:00 PM			0	3		0	3	0	1	1	5	1	6	10
3:15 PM			0	0		0	0	0	2	2	5	2	7	9
3:30 PM			0	0		0	0	0	5	5	1	1	2	7
3:45 PM			0	0		0	0	0	6	6	0	2	2	8
4:00 PM			0	1		0	1	0	5	5	4	2	6	12
4:15 PM			0	1		0	1	0	4	4	4	2	6	11
4:30 PM			0	2		0	2	0	1	1	4	2	6	9
4:45 PM			0	2		0	2	0	0	0	4	1	5	7
5:00 PM			0	1		0	1	0	0	0	0	1	1	2

Peak Hour Summary

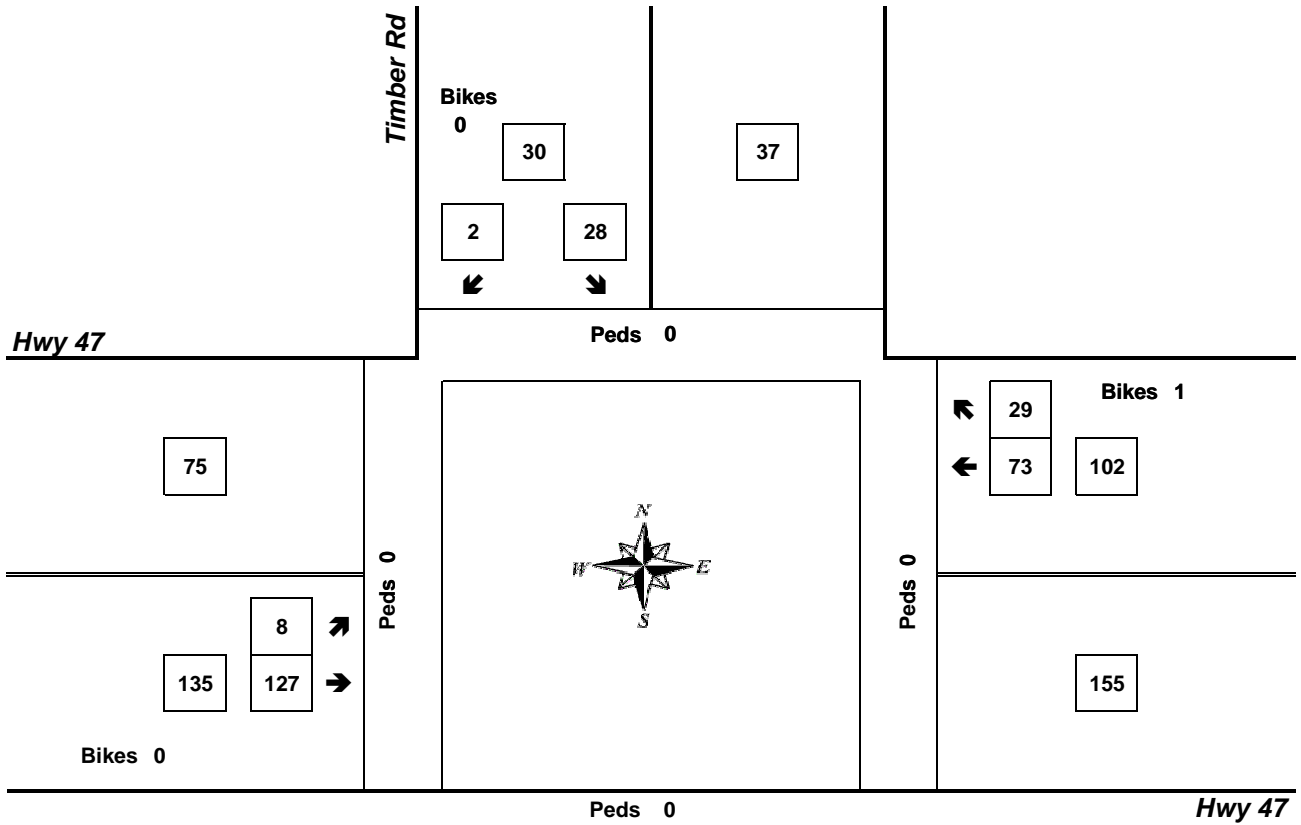


Clay Carney
(503) 833-2740

Timber Rd & Hwy 47

4:00 PM to 5:00 PM

Tuesday, June 10, 2014



Bikes
0

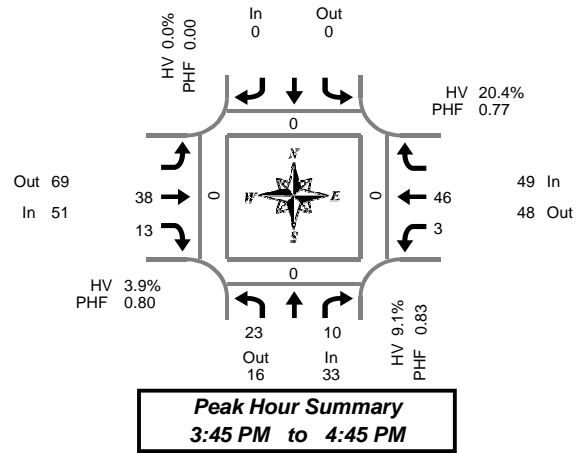
Approach	PHF	HV%	Volume
EB	0.91	3.7%	135
WB	0.82	5.9%	102
NB	0.00	0.0%	0
SB	0.75	3.3%	30
Intersection	0.87	4.5%	267

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Scappoose Vernonia Hwy & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Peak Hour Summary
3:45 PM to 4:45 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Scappoose Vernonia Hwy				Southbound Scappoose Vernonia Hwy				Eastbound Hwy 47				Westbound Hwy 47				Interval Total	Pedestrians Crosswalk			
	L	R	Bikes		In	Out	Total	Bikes	T	R	Bikes		L	T	Bikes			North	South	East	West
3:00 PM	3	0	0					0	8	2	0		2	8	0		0	0	0	0	
3:15 PM	4	1	0					0	11	1	0		2	8	0		0	0	0	0	
3:30 PM	2	2	0					0	8	4	0		1	8	0		0	0	0	0	
3:45 PM	6	0	0					0	9	1	0		1	15	0		0	0	0	0	
4:00 PM	9	1	0					0	7	4	0		0	12	0		0	0	0	0	
4:15 PM	5	5	0					0	11	3	0		1	8	0		0	0	0	0	
4:30 PM	3	4	0					0	11	5	0		1	11	0		0	0	0	0	
4:45 PM	1	0	0					0	16	3	0		0	10	0		0	0	0	0	
5:00 PM	8	2	0					0	8	4	0		0	5	0		0	0	0	0	
5:15 PM	5	2	0					0	4	3	0		5	7	0		0	0	0	0	
5:30 PM	4	3	0					0	5	4	0		1	7	0		0	0	0	0	
5:45 PM	4	3	0					0	7	3	0		1	4	0		0	0	0	0	
Total Survey	54		23	0				0	105	37	0		15	103	0		0	0	0	0	

Peak Hour Summary

3:45 PM to 4:45 PM

By Approach	Northbound Scappoose Vernonia Hwy				Southbound Scappoose Vernonia Hwy				Eastbound Hwy 47				Westbound Hwy 47				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	33	16	49	0	0	0	0	0	51	69	120	0	49	48	97	0	0	0	0	0	
%HV	9.1%				0.0%				3.9%				20.4%				11.3%				
PHF	0.83				0.00				0.80				0.77				0.95				

By Movement	Northbound Scappoose Vernonia Hwy				Southbound Scappoose Vernonia Hwy				Eastbound Hwy 47				Westbound Hwy 47				Total
	L	R	Total		In	Out	Total	Bikes	T	R	Total	Bikes	L	T	Total	Bikes	
Volume	23	10	33				0		38	13	51		3	46	49		
%HV	8.7%	NA	10.0%	9.1%	NA	NA	NA	0.0%	NA	5.3%	0.0%	3.9%	0.0%	21.7%	NA	20.4%	
PHF	0.64		0.50	0.83			0.00		0.86	0.65	0.80		0.75	0.77	0.77	0.95	

Rolling Hour Summary

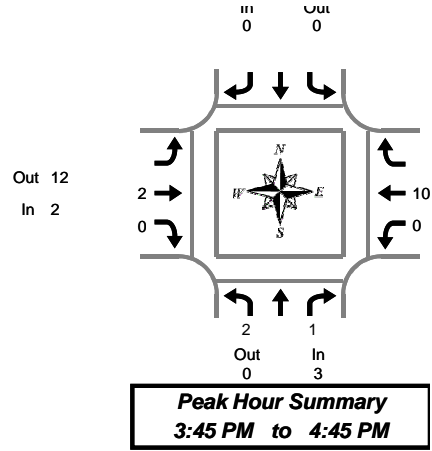
3:00 PM to 6:00 PM

Interval Start Time	Northbound Scappoose Vernonia Hwy				Southbound Scappoose Vernonia Hwy				Eastbound Hwy 47				Westbound Hwy 47				Interval Total	Pedestrians Crosswalk			
	L	R	Bikes		In	Out	Total	Bikes	T	R	Bikes		L	T	Bikes			North	South	East	West
3:00 PM	15	3	0					0	36	8	0		6	39	0		0	0	0	0	
3:15 PM	21	4	0					0	35	10	0		4	43	0		0	0	0	0	
3:30 PM	22	8	0					0	35	12	0		3	43	0		0	0	0	0	
3:45 PM	23	10	0					0	38	13	0		3	46	0		0	0	0	0	
4:00 PM	18	10	0					0	45	15	0		2	41	0		0	0	0	0	
4:15 PM	17	11	0					0	46	15	0		2	34	0		0	0	0	0	
4:30 PM	17	8	0					0	39	15	0		6	33	0		0	0	0	0	
4:45 PM	18	7	0					0	33	14	0		6	29	0		0	0	0	0	
5:00 PM	21	10	0					0	24	14	0		7	23	0		0	0	0	0	

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Scappoose Vernonia Hwy & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Scappoose Vernonia Hwy			Southbound Scappoose Vernonia Hwy			Eastbound Hwy 47			Westbound Hwy 47			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
3:00 PM	0	0	0			0	1	0	1	1	2	3	4
3:15 PM	1	0	1			0	3	0	3	1	2	3	7
3:30 PM	0	0	0			0	0	0	0	1	3	4	4
3:45 PM	0	0	0			0	1	0	1	0	2	2	3
4:00 PM	1	0	1			0	0	0	0	0	0	0	1
4:15 PM	1	1	2			0	1	0	1	0	3	3	6
4:30 PM	0	0	0			0	0	0	0	0	5	5	5
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	1	1	1
5:45 PM	0	0	0			0	0	0	0	0	0	0	0
Total Survey	3	1	4			0	6	0	6	3	19	22	32

Heavy Vehicle Peak Hour Summary 3:45 PM to 4:45 PM

By Approach	Northbound Scappoose Vernonia Hwy			Southbound Scappoose Vernonia Hwy			Eastbound Hwy 47			Westbound Hwy 47			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	3	0	3	0	0	0	2	12	14	10	3	13	15
PHF	0.25			0.00			0.13			0.25			0.25

By Movement	Northbound Scappoose Vernonia Hwy			Southbound Scappoose Vernonia Hwy			Eastbound Hwy 47			Westbound Hwy 47			Total
	L	R	Total			Total	T	R	Total	L	T	Total	
Volume	2	1	3			0	2	0	2	0	10	10	15
PHF	0.25	0.25	0.25			0.00	0.13	0.00	0.13	0.00	0.28	0.25	0.25

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Scappoose Vernonia Hwy			Southbound Scappoose Vernonia Hwy			Eastbound Hwy 47			Westbound Hwy 47			Interval Total
	L	R	Total			Total	T	R	Total	L	T	Total	
3:00 PM	1	0	1			0	5	0	5	3	9	12	18
3:15 PM	2	0	2			0	4	0	4	2	7	9	15
3:30 PM	2	1	3			0	2	0	2	1	8	9	14
3:45 PM	2	1	3			0	2	0	2	0	10	10	15
4:00 PM	2	1	3			0	1	0	1	0	9	9	13
4:15 PM	1	1	2			0	1	0	1	0	9	9	12
4:30 PM	0	0	0			0	0	0	0	0	6	6	6
4:45 PM	0	0	0			0	0	0	0	0	2	2	2
5:00 PM	0	0	0			0	0	0	0	0	1	1	1

Peak Hour Summary



Clay Carney
(503) 833-2740

Scappoose Vernonia Hwy & Hwy 47

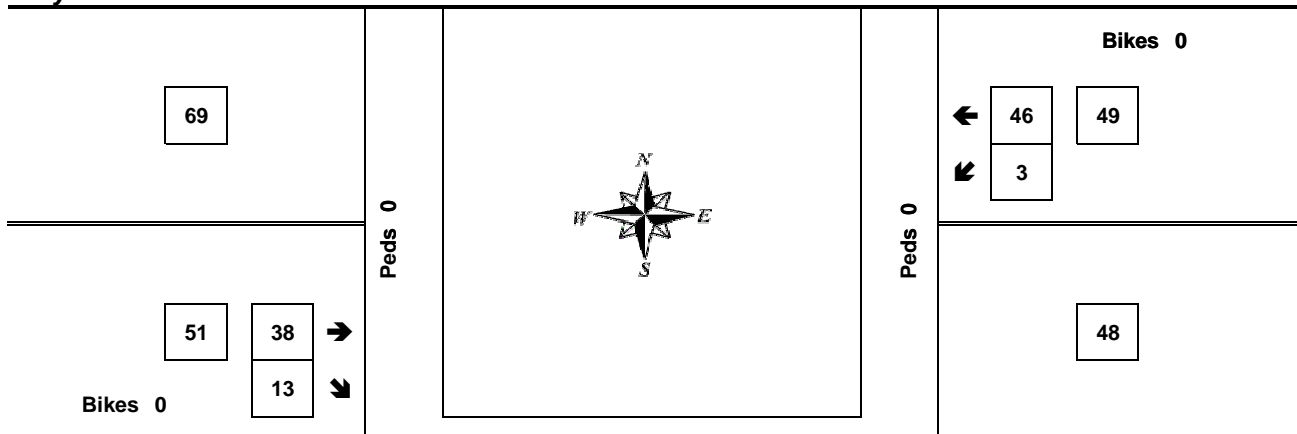
3:45 PM to 4:45 PM

Tuesday, June 10, 2014

Bikes
0

Hwy 47

Peds 0



Peds 0

Hwy 47

Scappoose
Vernonia Hwy

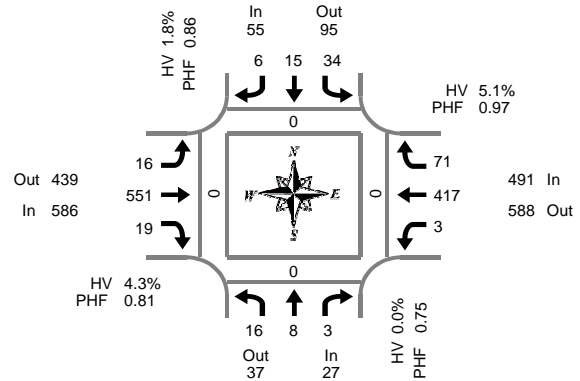
Approach	PHF	HV%	Volume
EB	0.80	3.9%	51
WB	0.77	20.4%	49
NB	0.83	9.1%	33
SB	0.00	0.0%	0
Intersection	0.95	11.3%	133

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Old Rainier Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	6	2	1	0	10	3	1	0	3	95	2	0	0	80	15	0	218	0	0	0	0
3:15 PM	3	1	1	0	9	1	3	0	3	110	5	0	0	78	18	0	232	0	0	0	0
3:30 PM	5	3	0	0	11	2	1	0	3	91	3	0	0	95	19	0	233	0	0	0	0
3:45 PM	3	1	0	0	8	1	1	0	1	123	2	0	0	95	11	0	246	0	0	0	0
4:00 PM	4	2	0	0	12	4	2	0	4	115	4	0	0	92	20	0	259	0	0	0	0
4:15 PM	2	1	0	0	8	2	1	0	2	102	5	0	0	83	17	0	223	0	0	0	0
4:30 PM	6	2	1	0	4	5	2	0	5	93	6	0	1	110	15	0	250	0	0	0	0
4:45 PM	3	1	0	0	10	4	1	0	6	131	2	0	1	105	21	0	285	0	0	0	0
5:00 PM	5	3	0	0	9	2	2	0	3	155	5	0	1	95	21	0	301	0	0	0	0
5:15 PM	2	2	2	0	11	4	1	0	2	172	6	0	0	107	14	0	323	0	0	0	0
5:30 PM	6	1	1	0	12	2	2	0	4	88	3	0	1	78	16	0	214	0	0	0	0
5:45 PM	3	1	1	0	13	2	0	0	1	97	6	0	0	93	19	0	236	0	0	0	0
Total Survey	48	20	7	0	117	32	17	0	37	1,372	49	0	4	1,111	206	0	3,020	0	0	0	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	27	37	64	0	55	95	150	0	586	439	1,025	0	491	588	1,079	0	1,159	0	0	0	0
%HV	0.0%				1.8%				4.3%				5.1%				4.4%				
PHF	0.75				0.86				0.81				0.97				0.90				

By Movement	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	16	8	3	27	34	15	6	55	16	551	19	586	3	417	71	491	1,159
%HV	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	0.0%	1.8%	0.0%	4.5%	0.0%	4.3%	0.0%	5.3%	4.2%	5.1%	4.4%
PHF	0.67	0.67	0.38	0.75	0.77	0.75	0.75	0.86	0.67	0.80	0.79	0.81	0.75	0.95	0.85	0.97	0.90

Rolling Hour Summary

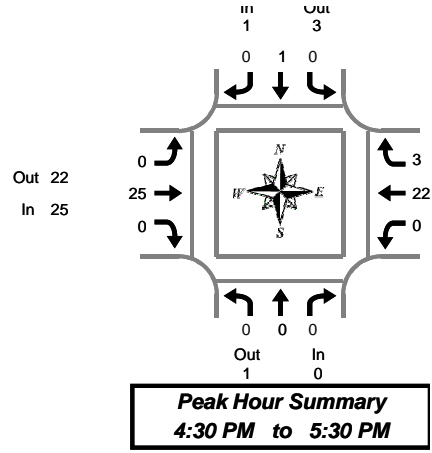
3:00 PM to 6:00 PM

Interval Start Time	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	17	7	2	0	38	7	6	0	10	419	12	0	0	348	63	0	929	0	0	0	0
3:15 PM	15	7	1	0	40	8	7	0	11	439	14	0	0	360	68	0	970	0	0	0	0
3:30 PM	14	7	0	0	39	9	5	0	10	431	14	0	0	365	67	0	961	0	0	0	0
3:45 PM	15	6	1	0	32	12	6	0	12	433	17	0	1	380	63	0	978	0	0	0	0
4:00 PM	15	6	1	0	34	15	6	0	17	441	17	0	2	390	73	0	1,017	0	0	0	0
4:15 PM	16	7	1	0	31	13	6	0	16	481	18	0	3	393	74	0	1,059	0	0	0	0
4:30 PM	16	8	3	0	34	15	6	0	16	551	19	0	3	417	71	0	1,159	0	0	0	0
4:45 PM	16	7	3	0	42	12	6	0	15	546	16	0	3	385	72	0	1,123	0	0	0	0
5:00 PM	16	7	4	0	45	10	5	0	10	512	20	0	2	373	70	0	1,074	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Old Rainier Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	10	0	10	0	7	0	7	17
3:15 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	6	0	6	18
3:30 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	5	1	6	18
3:45 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	7	0	7	18
4:00 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	7	0	7	19
4:15 PM	0	0	0	0	0	0	0	0	0	7	0	7	0	4	0	4	11
4:30 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	7	0	7	13
4:45 PM	0	0	0	0	0	1	0	1	0	8	0	8	0	4	2	6	15
5:00 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	5	1	6	12
5:15 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	6	0	6	11
5:30 PM	0	0	0	0	0	1	0	1	0	3	0	3	0	3	0	3	7
5:45 PM	0	0	0	0	0	0	0	0	0	6	0	6	0	3	0	3	9
Total Survey	0	0	0	0	0	2	0	2	0	98	0	98	0	64	4	68	168

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Old Rainier Rd			Southbound Old Rainier Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	1	3	4	25	22	47	25	25	50	51
PHF	0.00			0.25			0.18			0.31			0.23

By Movement	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	0	1	0	1	0	25	0	25	0	22	3	25	51
PHF	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.18	0.00	0.18	0.00	0.29	0.25	0.31	0.23

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Old Rainier Rd				Southbound Old Rainier Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	45	0	45	0	25	1	26	71
3:15 PM	0	0	0	0	0	0	0	0	0	47	0	47	0	25	1	26	73
3:30 PM	0	0	0	0	0	0	0	0	0	42	0	42	0	23	1	24	66
3:45 PM	0	0	0	0	0	0	0	0	0	36	0	36	0	25	0	25	61
4:00 PM	0	0	0	0	0	1	0	1	0	33	0	33	0	22	2	24	58
4:15 PM	0	0	0	0	0	1	0	1	0	27	0	27	0	20	3	23	51
4:30 PM	0	0	0	0	0	1	0	1	0	25	0	25	0	22	3	25	51
4:45 PM	0	0	0	0	0	2	0	2	0	22	0	22	0	18	3	21	45
5:00 PM	0	0	0	0	0	1	0	1	0	20	0	20	0	17	1	18	39

Peak Hour Summary

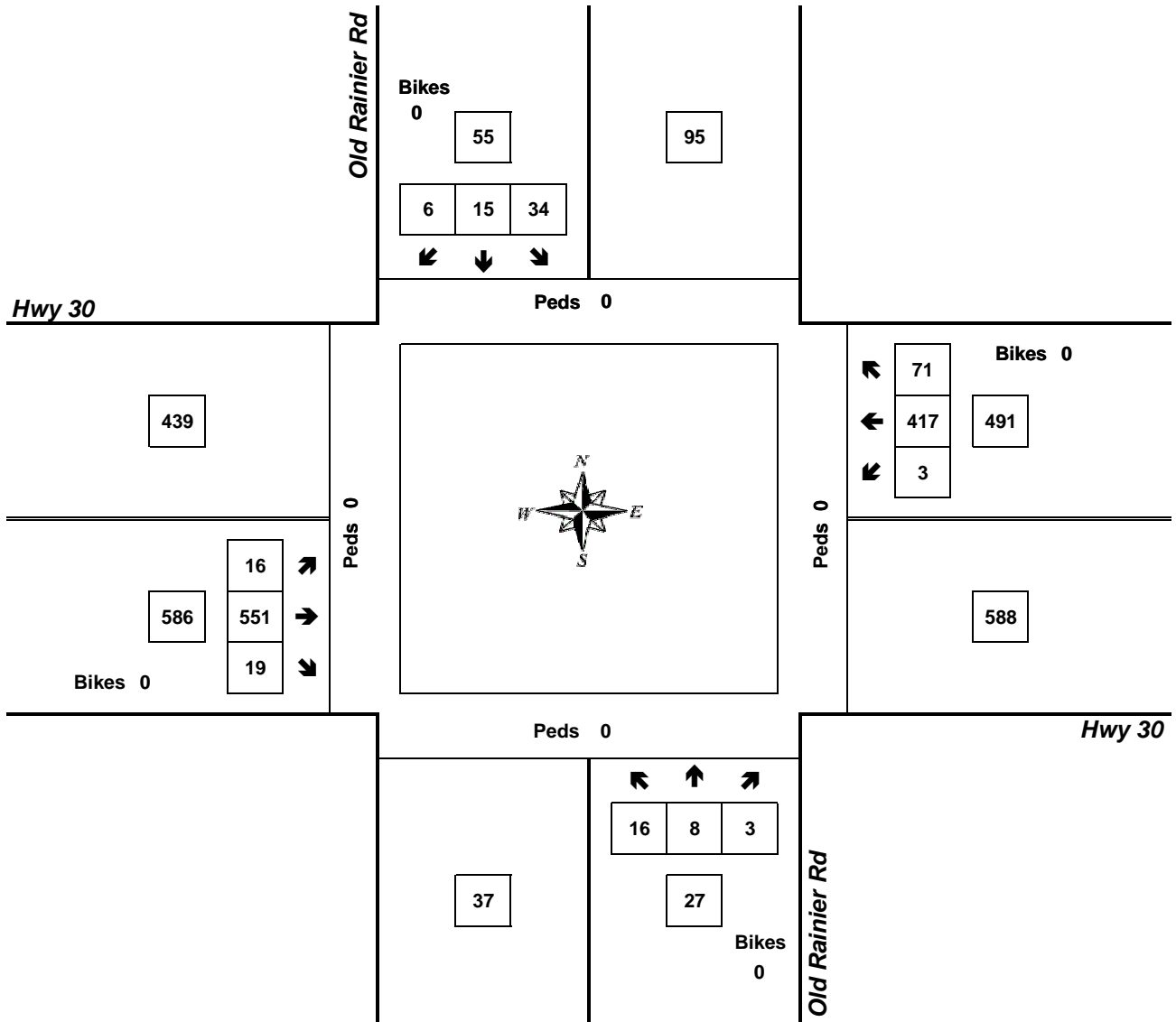


Clay Carney
(503) 833-2740

Old Rainier Rd & Hwy 30

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



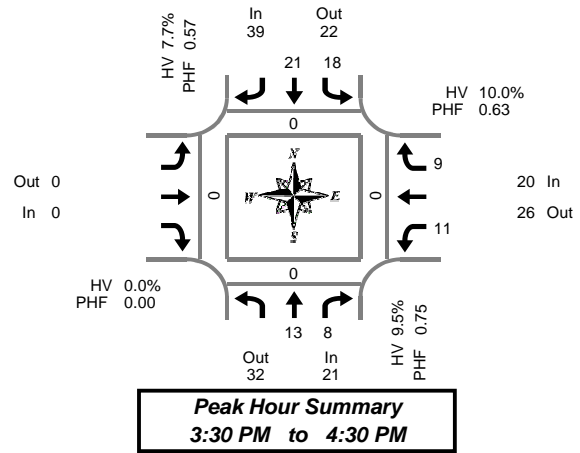
Approach	PHF	HV%	Volume
EB	0.81	4.3%	586
WB	0.97	5.1%	491
NB	0.75	0.0%	27
SB	0.86	1.8%	55
Intersection	0.90	4.4%	1,159

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Interval Total	Pedestrians Crosswalk				
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West	
3:00 PM	0	0	0	0	2	0			0	1		2	0	5	0	0	0	0
3:15 PM	2	2	0	1	1	0			0	1		2	0	9	0	0	0	0
3:30 PM	4	3	0	10	7	0			0	3		5	0	32	0	0	0	0
3:45 PM	2	2	0	6	5	0			0	4		1	0	20	0	0	0	0
4:00 PM	3	2	0	0	6	0			0	1		1	0	13	0	0	0	0
4:15 PM	4	1	0	2	3	0			0	3		2	0	15	0	0	0	0
4:30 PM	5	3	0	6	2	0			0	3		2	0	21	0	0	0	0
4:45 PM	6	4	0	1	0	0			0	1		1	0	13	0	0	0	0
5:00 PM	4	1	0	5	5	0			0	4		4	0	23	0	0	0	0
5:15 PM	4	2	0	2	4	0			0	0		1	0	13	0	0	0	0
5:30 PM	5	2	0	2	6	0			0	1		2	0	18	0	0	0	0
5:45 PM	4	0	0	0	1	0			0	0		1	0	6	0	0	0	0
Total Survey	43	22	0	35	42	0			0	22		24	0	188	0	0	0	0

Peak Hour Summary 3:30 PM to 4:30 PM

By Approach	Northbound Hwy 202				Southbound Hwy 202				Eastbound Hwy 47				Westbound Hwy 47				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	21	32	53	0	39	22	61	0	0	0	0	0	20	26	46	0	80	0	0	0	0
%HV	9.5%				7.7%				0.0%				10.0%				8.8%				
PHF	0.75				0.57				0.00				0.63				0.63				

By Movement	Northbound Hwy 202				Southbound Hwy 202				Eastbound Hwy 47				Westbound Hwy 47				Total
	T	R	Total	Bikes	L	T	Total	Bikes			Total	Bikes	L	R	Total	Bikes	
Volume	13	8	21	0	18	21	39	0			0	0	11		9	20	80
%HV	NA	15.4%	0.0%	9.5%	0.0%	14.3%	NA	7.7%	NA	NA	NA	0.0%	0.0%	NA	22.2%	10.0%	8.8%
PHF	0.81	0.67	0.75	0.45	0.75	0.57	0.00	0.69	0.45	0.63	0.63						

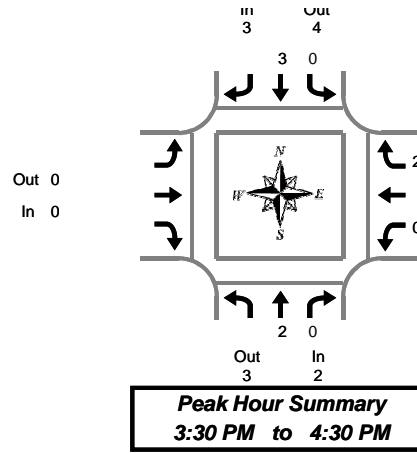
Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Interval Total	Pedestrians Crosswalk				
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West	
3:00 PM	8	7	0	17	15	0			0	9		10	0	66	0	0	0	0
3:15 PM	11	9	0	17	19	0			0	9		9	0	74	0	0	0	0
3:30 PM	13	8	0	18	21	0			0	11		9	0	80	0	0	0	0
3:45 PM	14	8	0	14	16	0			0	11		6	0	69	0	0	0	0
4:00 PM	18	10	0	9	11	0			0	8		6	0	62	0	0	0	0
4:15 PM	19	9	0	14	10	0			0	11		9	0	72	0	0	0	0
4:30 PM	19	10	0	14	11	0			0	8		8	0	70	0	0	0	0
4:45 PM	19	9	0	10	15	0			0	6		8	0	67	0	0	0	0
5:00 PM	17	5	0	9	16	0			0	5		8	0	60	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Hwy 47

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	0	0	0	0	0	0			0	0		0	0
3:15 PM	0	0	0	0	0	0			0	0		1	1
3:30 PM	1	0	1	0	1	1			0	0		1	1
3:45 PM	1	0	1	0	0	0			0	0		1	1
4:00 PM	0	0	0	0	1	1			0	0		0	0
4:15 PM	0	0	0	0	1	1			0	0		0	0
4:30 PM	0	0	0	0	0	0			0	0		1	1
4:45 PM	0	0	0	0	0	0			0	0		0	0
5:00 PM	0	0	0	1	0	1			0	0		0	0
5:15 PM	0	0	0	0	1	1			0	0		1	1
5:30 PM	0	0	0	0	1	1			0	0		0	0
5:45 PM	0	0	0	0	0	0			0	0		0	0
Total Survey	2	0	2	1	5	6			0	0		5	5

Heavy Vehicle Peak Hour Summary 3:30 PM to 4:30 PM

By Approach	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	3	5	3	4	7	0	0	0	2	0	2	7
PHF	0.25			0.25			0.00			0.17			0.29

By Movement	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Total	
	T	R	Total	L	T	Total			Total	L	R	Total		
Volume	2	0	2	0	3	3			0	0		2	2	7
PHF	0.25	0.00	0.25	0.00	0.38	0.25			0.00	0.00		0.17	0.17	0.29

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Hwy 47			Westbound Hwy 47			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	2	0	2	0	1	1			0	0		3	3
3:15 PM	2	0	2	0	2	2			0	0		3	3
3:30 PM	2	0	2	0	3	3			0	0		2	2
3:45 PM	1	0	1	0	2	2			0	0		2	2
4:00 PM	0	0	0	0	2	2			0	0		1	1
4:15 PM	0	0	0	1	1	2			0	0		1	1
4:30 PM	0	0	0	1	1	2			0	0		2	2
4:45 PM	0	0	0	1	2	3			0	0		1	1
5:00 PM	0	0	0	1	2	3			0	0		1	1

Peak Hour Summary

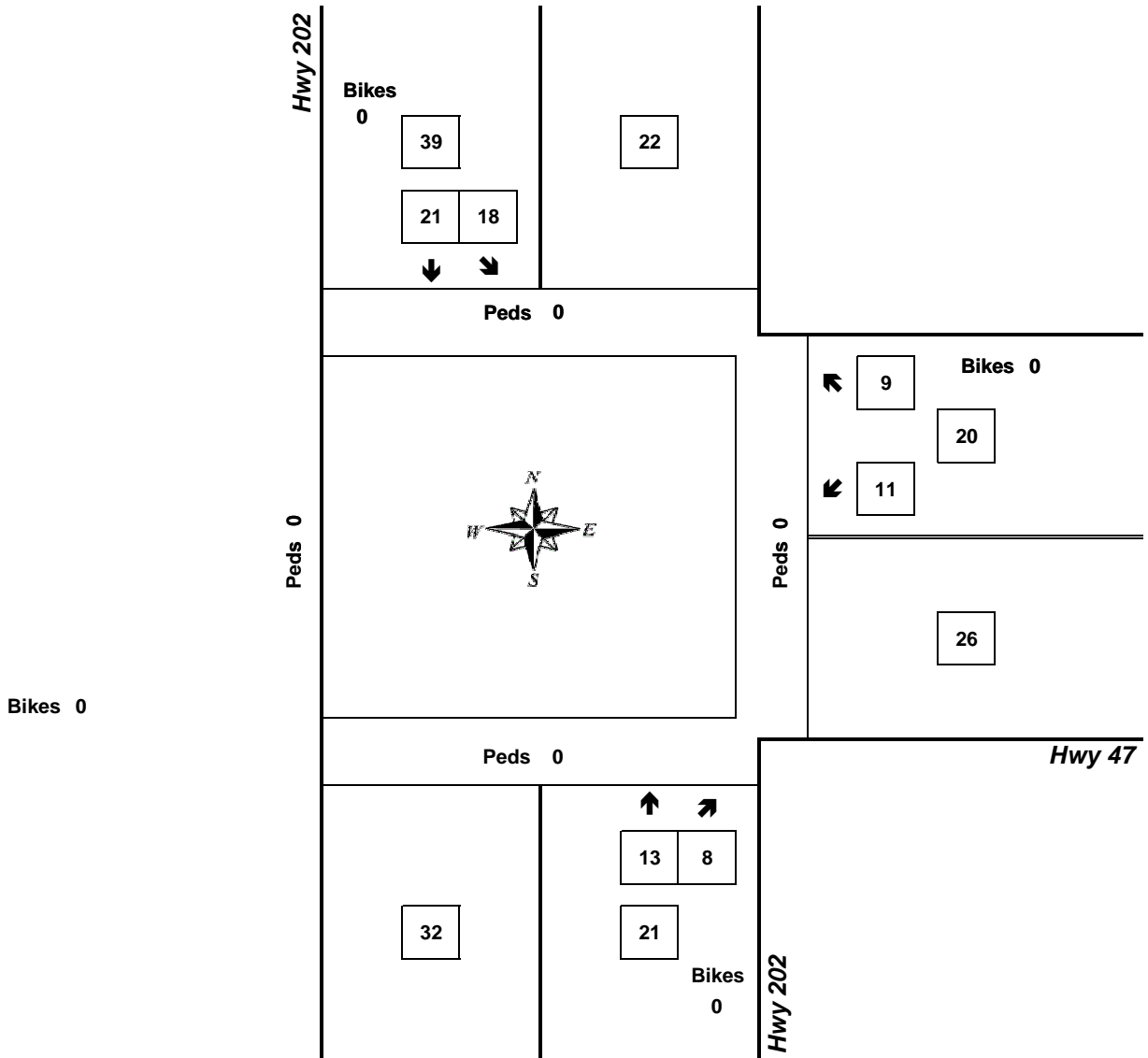


Clay Carney
(503) 833-2740

Hwy 202 & Hwy 47

3:30 PM to 4:30 PM

Tuesday, June 10, 2014



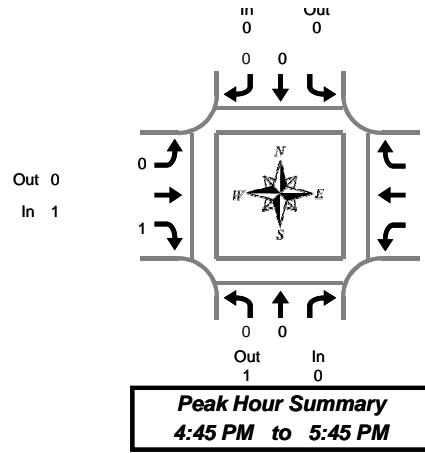
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.63	10.0%	20
NB	0.75	9.5%	21
SB	0.57	7.7%	39
Intersection	0.63	8.8%	80

Count Period: 3:00 PM to 6:00 PM

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Fishhawk Rd

Wednesday, June 11, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	
	L	T	Total	T	R	Total	L	R	Total			Total		
3:00 PM	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
3:30 PM	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
4:00 PM	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
4:30 PM	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
5:00 PM	0	0	0	0	0	0	0	0	0	0			0	0
5:15 PM	0	0	0	0	0	0	0	0	1	1			0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0			0	0
5:45 PM	0	0	0	0	0	0	0	2	0	2			0	2
Total Survey	0	0	0	0	0	0	0	2	1	3			0	3

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

By Approach	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	0	0	0	1	0	1	0	0	0	1
PHF	0.00			0.00			0.08			0.00			0.08

By Movement	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	0	0	0	0	0	0	0	1	1			0	1
PHF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.08			0.00	0.08

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	
	L	T	Total	T	R	Total	L	R	Total			Total		
3:00 PM	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
3:30 PM	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
4:00 PM	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
4:30 PM	0	0	0	0	0	0	0	0	1	1			0	1
4:45 PM	0	0	0	0	0	0	0	0	1	1			0	1
5:00 PM	0	0	0	0	0	0	0	2	1	3			0	3

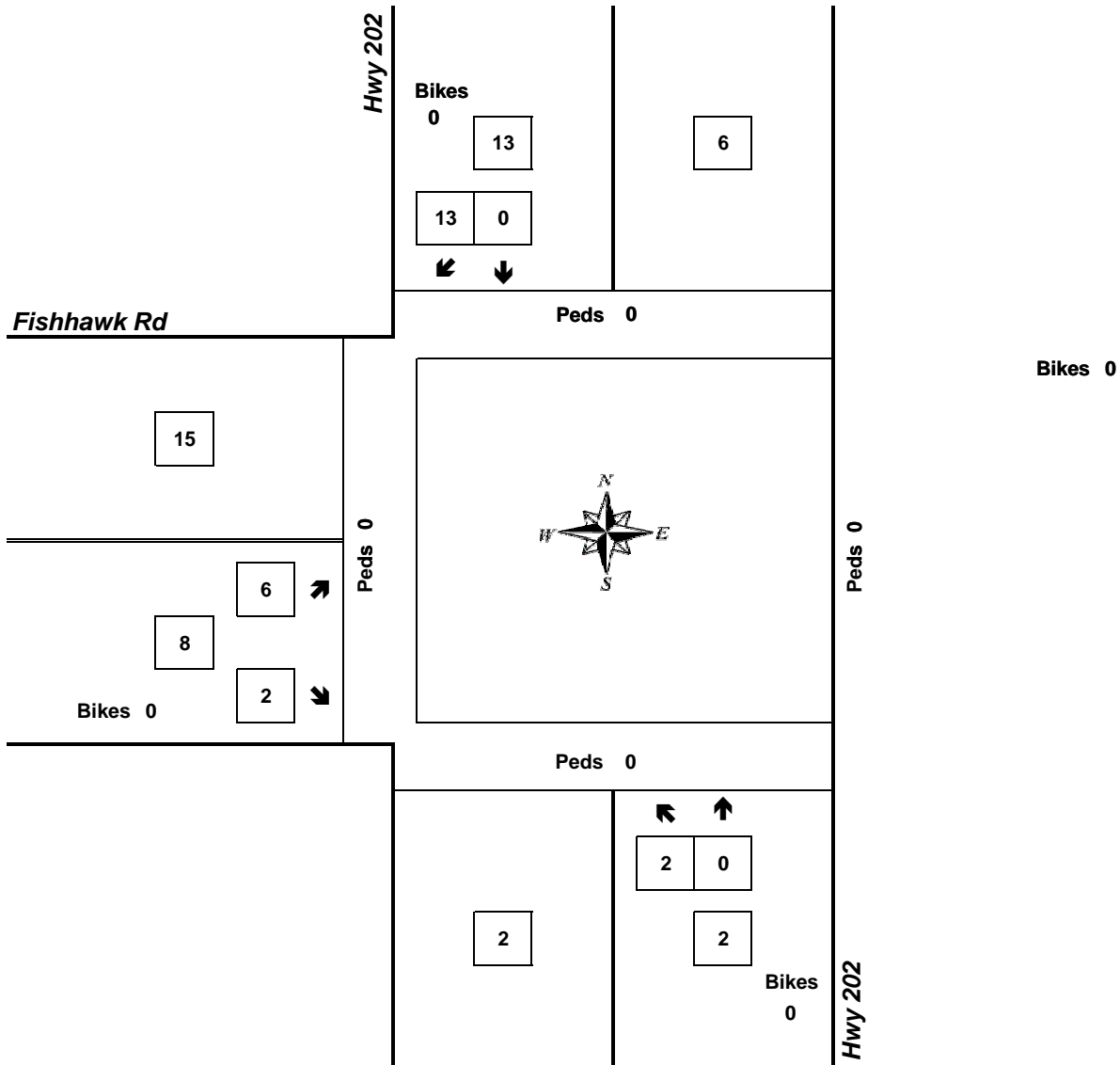
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 202 & Fishhawk Rd

4:45 PM to 5:45 PM
Wednesday, June 11, 2014



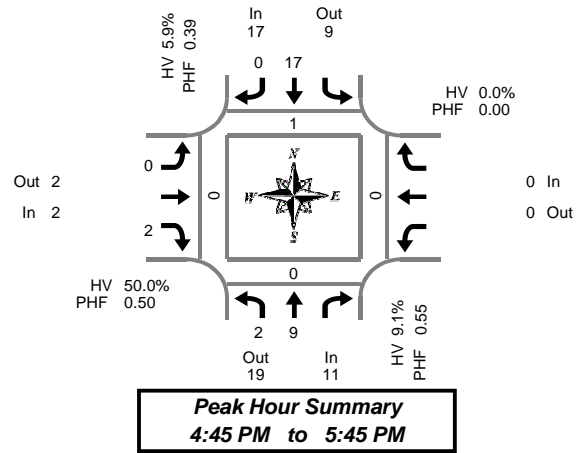
Approach	PHF	HV%	Volume
EB	0.67	12.5%	8
WB	0.00	0.0%	0
NB	0.50	0.0%	2
SB	0.65	0.0%	13
Intersection	0.72	4.3%	23

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Fishhawk Rd

Wednesday, June 11, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	Pedestrians Crosswalk				
	L	T	Bikes	T	R	Bikes	L	R	Bikes	In	Out	Bikes		North	South	East	West	
3:00 PM	0	1	0	1	0	0	0	1	0	0	0	0	0	3	0	0	0	0
3:15 PM	1	3	0	1	0	0	0	1	0	0	0	0	0	6	0	0	0	0
3:30 PM	0	4	0	3	0	0	0	0	0	0	0	0	0	7	0	0	0	0
3:45 PM	0	5	0	3	0	0	0	0	1	0	0	0	0	9	0	0	0	0
4:00 PM	0	1	0	2	0	0	0	0	1	0	0	0	0	4	1	0	0	0
4:15 PM	1	0	0	2	0	0	0	0	1	0	0	0	0	4	0	0	0	0
4:30 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0	0	0	0
4:45 PM	1	1	0	1	0	0	0	0	0	0	0	0	0	3	1	0	0	0
5:00 PM	0	1	0	11	0	0	0	0	0	0	0	0	0	12	0	0	0	0
5:15 PM	0	5	0	1	0	0	0	0	1	0	0	0	0	7	0	0	0	0
5:30 PM	1	2	0	4	0	0	0	0	1	0	0	0	0	8	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Survey	4	23	0	33	0	0	0	0	7	0	0	0	0	67	2	0	0	0

Peak Hour Summary

4:45 PM to 5:45 PM

By Approach	Northbound Hwy 202				Southbound Hwy 202				Eastbound Fishhawk Rd				Westbound Fishhawk Rd				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	11	19	30	0	17	9	26	0	2	2	4	0	0	0	0	0	1	0	0	0	
%HV	9.1%				5.9%				50.0%				0.0%				10.0%				
PHF	0.55				0.39				0.50				0.00				0.63				

By Movement	Northbound Hwy 202				Southbound Hwy 202				Eastbound Fishhawk Rd				Westbound Fishhawk Rd				Total
	L	T	Total	Bikes	T	R	Total	Bikes	L	R	Total	Bikes	In	Out	Total	Bikes	
Volume	2	9	11	0	17	0	17	0	2	2	4	0	0	0	0	0	30
%HV	0.0%	11.1%	NA	9.1%	NA	5.9%	0.0%	5.9%	0.0%	NA	50.0%	50.0%	NA	NA	NA	0.0%	10.0%
PHF	0.50	0.45	0.55	0.55	0.39	0.00	0.39	0.39	0.00	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.63

Rolling Hour Summary

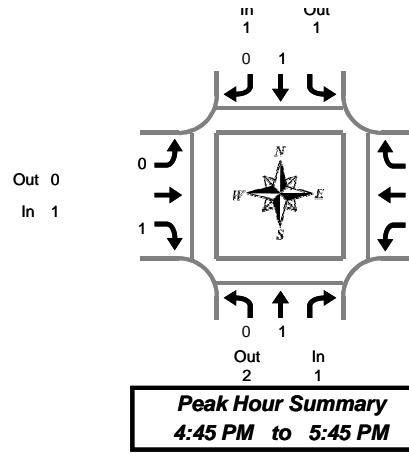
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes	In	Out	Bikes		North	South	East	West
3:00 PM	1	13	0	8	0	0	0	3	0	0	0	0	25	0	0	0	0
3:15 PM	1	13	0	9	0	0	0	3	0	0	0	0	26	1	0	0	0
3:30 PM	1	10	0	10	0	0	0	3	0	0	0	0	24	1	0	0	0
3:45 PM	1	6	0	11	0	0	0	3	0	0	0	0	21	1	0	0	0
4:00 PM	2	2	0	9	0	0	0	2	0	0	0	0	15	2	0	0	0
4:15 PM	2	2	0	18	0	0	0	1	0	0	0	0	23	1	0	0	0
4:30 PM	1	7	0	17	0	0	0	1	0	0	0	0	26	1	0	0	0
4:45 PM	2	9	0	17	0	0	0	2	0	0	0	0	30	1	0	0	0
5:00 PM	1	8	0	16	0	0	0	2	0	0	0	0	27	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Fishhawk Rd

Wednesday, June 11, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	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
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:00 PM	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
4:30 PM	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
5:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
5:15 PM	0	1	1	0	0	0	0	1	1	0	0	0	2
5:30 PM	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
Total Survey	0	1	1	2	0	2	0	1	1	0	0	0	4

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

By Approach	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	2	3	1	1	2	1	0	1	0	0	0	3
PHF	0.25			0.25			0.25			0.00			0.25

By Movement	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	0	1	1	1	0	1	0	1	1			0	3
PHF	0.00	0.25	0.25	0.25	0.00	0.25	0.00	0.25	0.25			0.00	0.25

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:30 PM	0	1	1	1	0	1	0	1	1	0	0	0	3
4:45 PM	0	1	1	1	0	1	0	1	1	0	0	0	3
5:00 PM	0	1	1	1	0	1	0	1	1	0	0	0	3

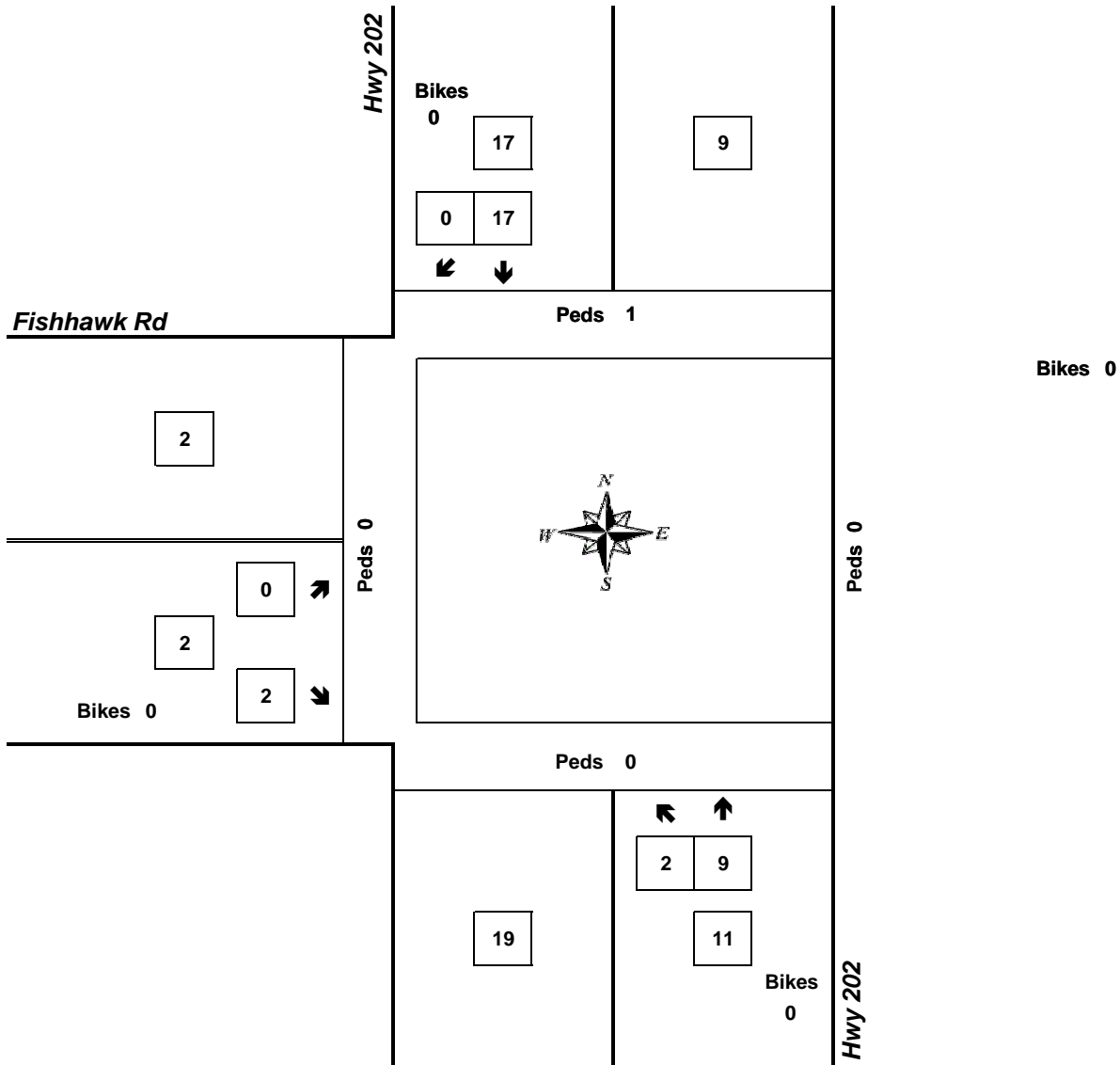
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 202 & Fishhawk Rd

4:45 PM to 5:45 PM
Wednesday, June 11, 2014



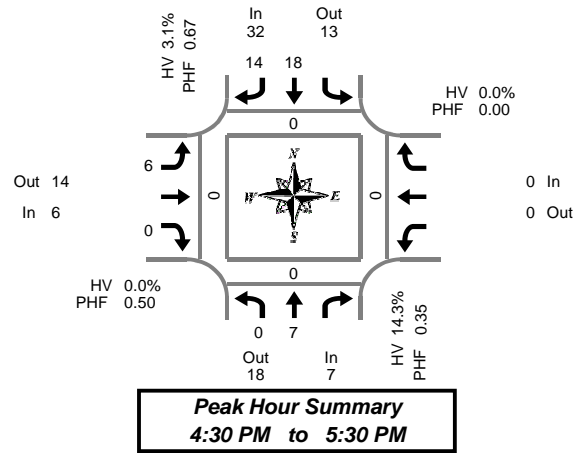
Approach	PHF	HV%	Volume
EB	0.50	50.0%	2
WB	0.00	0.0%	0
NB	0.55	9.1%	11
SB	0.39	5.9%	17
Intersection	0.63	10.0%	30

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Fishhawk Rd

Wednesday, June 11, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202				Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes	In	Out	Bikes	North		South	East	West	
3:00 PM	0	1	0	1	1	0	1	0	0	0	0	0	0	4	0	0	0	0
3:15 PM	0	3	0	1	2	0	0	0	0	0	0	0	0	6	0	0	0	0
3:30 PM	0	4	0	3	2	0	0	0	0	0	0	0	0	9	0	0	0	0
3:45 PM	0	5	0	3	0	0	1	0	0	0	0	0	0	9	0	0	0	0
4:00 PM	0	1	0	2	1	0	0	0	0	0	0	0	0	4	0	0	0	1
4:15 PM	0	0	0	3	2	0	1	0	0	0	0	0	0	6	0	0	0	0
4:30 PM	0	0	0	4	4	0	0	0	0	0	0	0	0	8	0	0	0	0
4:45 PM	0	1	0	1	3	0	1	0	0	0	0	0	0	6	0	0	0	0
5:00 PM	0	1	0	10	2	0	3	0	0	0	0	0	0	16	0	0	0	0
5:15 PM	0	5	0	3	5	0	2	0	0	0	0	0	0	15	0	0	0	0
5:30 PM	0	2	0	3	3	0	0	0	0	0	0	0	0	8	0	0	0	0
5:45 PM	0	0	0	0	1	0	2	0	0	0	0	0	0	3	0	0	0	0
Total Survey	0	23	0	34	26	0	11	0	0	0	0	0	0	94	0	0	0	1

Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Hwy 202				Southbound Hwy 202				Eastbound Fishhawk Rd				Westbound Fishhawk Rd				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	7	18	25	0	32	13	45	0	6	14	20	0	0	0	0	0	0	0	0	0	
%HV	14.3%				3.1%				0.0%				0.0%				4.4%				
PHF	0.35				0.67				0.50				0.00				0.70				

By Movement	Northbound Hwy 202				Southbound Hwy 202				Eastbound Fishhawk Rd				Westbound Fishhawk Rd				Total
	L	T	Total		T	R	Total		L	R	Total		Total				
Volume	0	7	7		18	14	32		6	0	6		0		45		
%HV	0.0%	14.3%	NA		5.6%	0.0%	3.1%		0.0%	NA	0.0%		NA	NA	4.4%		
PHF	0.00	0.35	0.35		0.45	0.70	0.67		0.50	0.00	0.50		0.00		0.70		

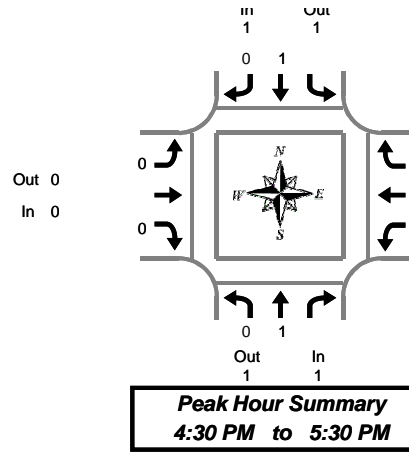
Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202				Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes	In	Out	Bikes	North		South	East	West	
3:00 PM	0	13	0	8	5	0	2	0	0	0	0	0	0	28	0	0	0	0
3:15 PM	0	13	0	9	5	0	1	0	0	0	0	0	0	28	0	0	0	1
3:30 PM	0	10	0	11	5	0	2	0	0	0	0	0	0	28	0	0	0	1
3:45 PM	0	6	0	12	7	0	2	0	0	0	0	0	0	27	0	0	0	1
4:00 PM	0	2	0	10	10	0	2	0	0	0	0	0	0	24	0	0	0	1
4:15 PM	0	2	0	18	11	0	5	0	0	0	0	0	0	36	0	0	0	0
4:30 PM	0	7	0	18	14	0	6	0	0	0	0	0	0	45	0	0	0	0
4:45 PM	0	9	0	17	13	0	6	0	0	0	0	0	0	45	0	0	0	0
5:00 PM	0	8	0	16	11	0	7	0	0	0	0	0	0	42	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 202 & Fishhawk Rd

Wednesday, June 11, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	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
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:00 PM	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
4:30 PM	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
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	1	1	0	1	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	2	0	2	0	0	0	2
Total Survey	0	1	1	2	0	2	2	0	2	0	0	0	5

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	1	1	2	1	1	2	0	0	0	0	0	0	2
PHF	0.25			0.25			0.00			0.00			0.13

By Movement	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	0	1	1	1	0	1	0	0	0	0	0	0	2
PHF	0.00	0.25	0.25	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.13

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 202			Southbound Hwy 202			Eastbound Fishhawk Rd			Westbound Fishhawk Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:15 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
3:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	1
4:00 PM	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
4:30 PM	0	1	1	1	0	1	0	0	0	0	0	0	2
4:45 PM	0	1	1	1	0	1	0	0	0	0	0	0	2
5:00 PM	0	1	1	1	0	1	2	0	2	0	0	0	4

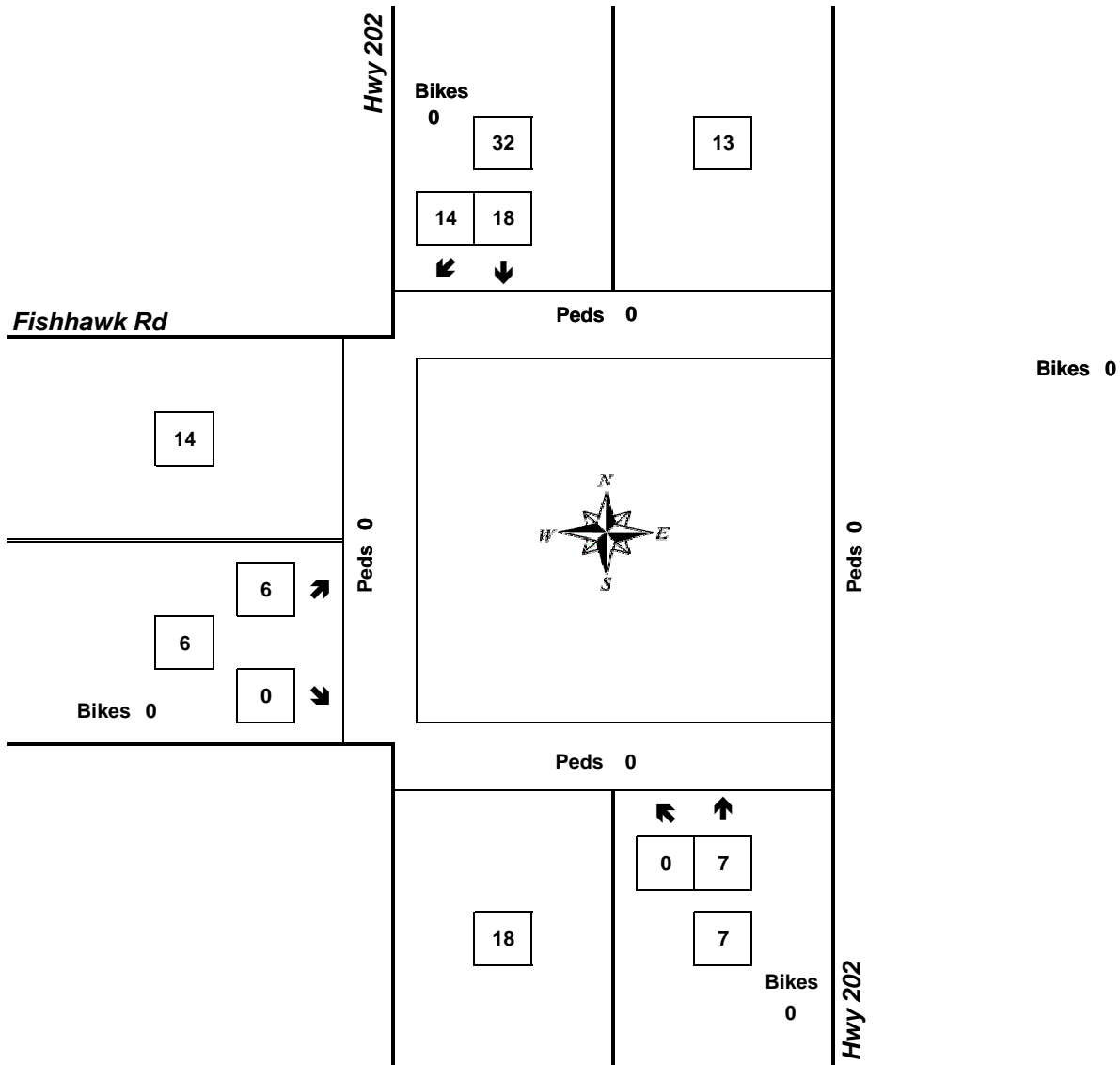
Peak Hour Summary



Clay Carney
(503) 833-2740

Hwy 202 & Fishhawk Rd

4:30 PM to 5:30 PM
Wednesday, June 11, 2014



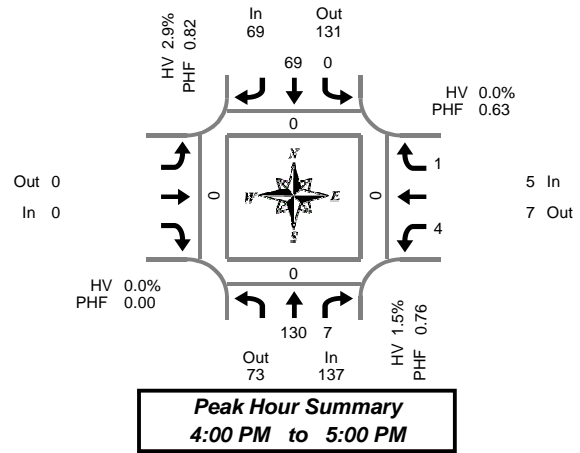
Approach	PHF	HV%	Volume
EB	0.50	0.0%	6
WB	0.00	0.0%	0
NB	0.35	14.3%	7
SB	0.67	3.1%	32
Intersection	0.70	4.4%	45

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 47 & McDonald Rd

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound McDonald Rd			Westbound McDonald Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West
3:00 PM	19	0	0	0	13	0			0	0	0	0	32	0	0	0	0
3:15 PM	20	1	0	0	17	0			0	0	0	0	38	0	0	0	0
3:30 PM	36	1	0	0	16	0			0	0	1	0	54	0	0	0	0
3:45 PM	24	1	0	0	10	0			0	0	0	0	35	0	0	0	0
4:00 PM	34	2	0	0	21	0			0	1	0	0	58	0	0	0	0
4:15 PM	28	2	0	0	16	0			0	1	0	0	47	0	0	0	0
4:30 PM	42	3	0	0	16	0			0	1	1	0	63	0	0	0	0
4:45 PM	26	0	0	0	16	0			0	1	0	0	43	0	0	0	0
5:00 PM	47	1	0	0	9	0			0	0	0	0	57	0	0	0	0
5:15 PM	29	2	0	0	12	0			0	1	0	0	44	0	0	0	0
5:30 PM	42	3	0	0	8	0			0	0	0	0	53	0	0	0	0
5:45 PM	30	0	0	0	11	0			0	0	1	0	42	0	0	0	0
Total Survey	377	16	0	0	165	0			0	5	3	0	566	0	0	0	0

Peak Hour Summary

4:00 PM to 5:00 PM

By Approach	Northbound Hwy 47				Southbound Hwy 47				Eastbound McDonald Rd				Westbound McDonald Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	137	73	210	0	69	131	200	0	0	0	0	0	5	7	12	0	211	0	0	0	0
%HV	1.5%				2.9%				0.0%				0.0%				1.9%				
PHF	0.76				0.82				0.00				0.63				0.84				

By Movement	Northbound Hwy 47			Southbound Hwy 47			Eastbound McDonald Rd			Westbound McDonald Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	130	7	137	0	69	69			0	4	1	5	211
%HV	NA	1.5%	0.0%	1.5%	0.0%	2.9%	NA	2.9%	NA	NA	NA	0.0%	1.9%
PHF	0.77	0.58	0.76	0.00	0.82	0.82			0.00	1.00	0.25	0.63	0.84

Rolling Hour Summary

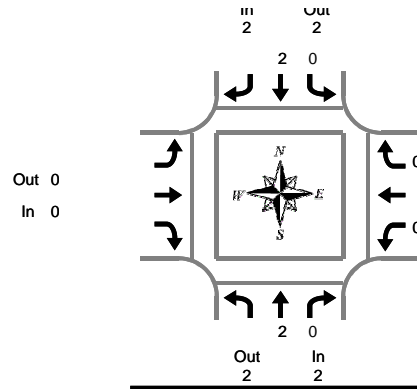
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound McDonald Rd			Westbound McDonald Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West
3:00 PM	99	3	0	0	56	0			0	0	1	0	159	0	0	0	0
3:15 PM	114	5	0	0	64	0			0	1	1	0	185	0	0	0	0
3:30 PM	122	6	0	0	63	0			0	2	1	0	194	0	0	0	0
3:45 PM	128	8	0	0	63	0			0	3	1	0	203	0	0	0	0
4:00 PM	130	7	0	0	69	0			0	4	1	0	211	0	0	0	0
4:15 PM	143	6	0	0	57	0			0	3	1	0	210	0	0	0	0
4:30 PM	144	6	0	0	53	0			0	3	1	0	207	0	0	0	0
4:45 PM	144	6	0	0	45	0			0	2	0	0	197	0	0	0	0
5:00 PM	148	6	0	0	40	0			0	1	1	0	196	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 47 & Mcdonald Rd

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

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

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Mcdonald Rd			Westbound Mcdonald Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	0	0	0	0	0	0			0	0	0	0	0
3:15 PM	0	1	1	0	3	3			0	0	0	0	4
3:30 PM	1	0	1	0	3	3			0	0	0	0	4
3:45 PM	1	0	1	0	0	0			0	0	0	0	1
4:00 PM	0	0	0	0	0	0			0	0	0	0	0
4:15 PM	1	0	1	0	0	0			0	0	0	0	1
4:30 PM	1	0	1	0	0	0			0	0	0	0	1
4:45 PM	0	0	0	0	2	2			0	0	0	0	2
5:00 PM	0	0	0	0	2	2			0	0	0	0	2
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	4	1	5	0	10	10			0	0	0	0	15

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

By Approach	Northbound Hwy 47			Southbound Hwy 47			Eastbound Mcdonald Rd			Westbound Mcdonald Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	2	2	4	2	2	4	0	0	0	0	0	0	4
PHF	0.17			0.08			0.00			0.00			0.11

By Movement	Northbound Hwy 47			Southbound Hwy 47			Eastbound Mcdonald Rd			Westbound Mcdonald Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	2	0	2	0	2	2			0	0	0	0	4
PHF	0.25	0.00	0.17	0.00	0.08	0.08			0.00	0.00	0.00	0.00	0.11

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Mcdonald Rd			Westbound Mcdonald Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	2	1	3	0	6	6			0	0	0	0	9
3:15 PM	2	1	3	0	6	6			0	0	0	0	9
3:30 PM	3	0	3	0	3	3			0	0	0	0	6
3:45 PM	3	0	3	0	0	0			0	0	0	0	3
4:00 PM	2	0	2	0	2	2			0	0	0	0	4
4:15 PM	2	0	2	0	4	4			0	0	0	0	6
4:30 PM	1	0	1	0	4	4			0	0	0	0	5
4:45 PM	0	0	0	0	4	4			0	0	0	0	4
5:00 PM	0	0	0	0	2	2			0	0	0	0	2

Peak Hour Summary

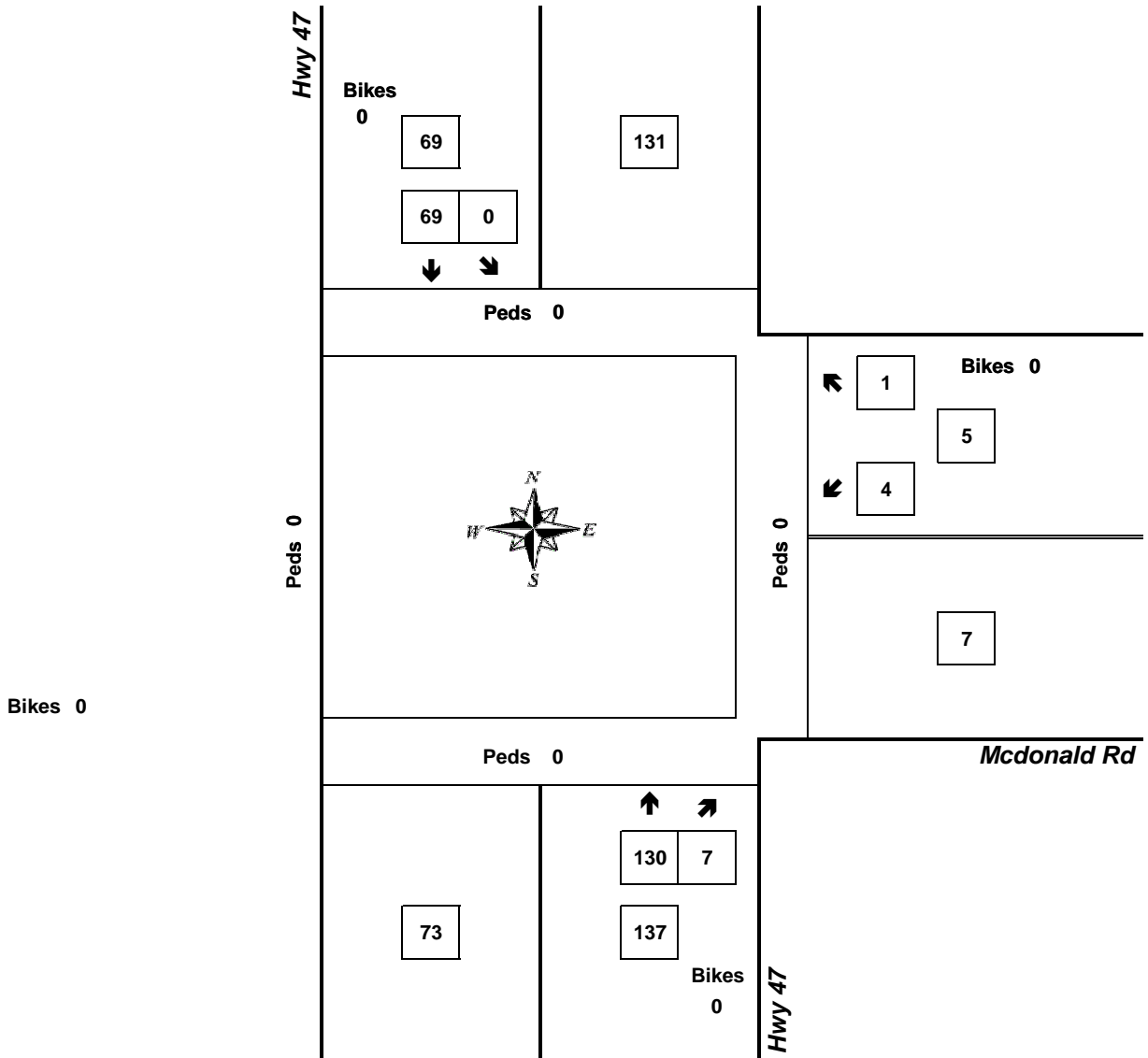


Clay Carney
(503) 833-2740

Hwy 47 & Mcdonald Rd

4:00 PM to 5:00 PM

Tuesday, June 10, 2014



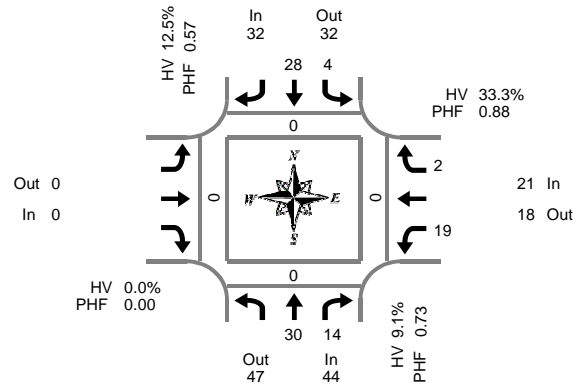
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.63	0.0%	5
NB	0.76	1.5%	137
SB	0.82	2.9%	69
Intersection	0.84	1.9%	211

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 47 & Apiary Rd

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Peak Hour Summary
3:30 PM to 4:30 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West
3:00 PM	3	2	0	0	7	0			0	1	0	0	13	0	0	0	0
3:15 PM	0	3	0	1	5	0			0	5	2	0	16	0	0	0	0
3:30 PM	12	3	0	0	4	0			0	6	0	0	25	0	0	0	0
3:45 PM	6	4	0	2	12	0			0	6	0	0	30	0	0	0	0
4:00 PM	3	3	0	0	6	0			0	2	1	0	15	0	0	0	0
4:15 PM	9	4	0	2	6	0			0	5	1	0	27	0	0	0	0
4:30 PM	7	2	0	1	4	0			0	6	1	0	21	0	0	0	0
4:45 PM	15	3	0	1	4	0			0	6	0	0	29	0	0	0	0
5:00 PM	10	4	0	0	3	0			0	0	2	0	19	0	0	0	0
5:15 PM	7	1	0	0	9	0			0	2	1	0	20	0	0	0	0
5:30 PM	2	0	0	1	7	0			0	1	1	0	12	0	0	0	0
5:45 PM	9	2	0	1	3	0			0	2	0	0	17	0	0	0	0
Total Survey	83	31	0	9	70	0			0	42	9	0	244	0	0	0	0

Peak Hour Summary

3:30 PM to 4:30 PM

By Approach	Northbound Hwy 47				Southbound Hwy 47				Eastbound Apiary Rd				Westbound Apiary Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	44	47	91	0	32	32	64	0	0	0	0	0	21	18	39	0	97	0	0	0	0
%HV	9.1%				12.5%				0.0%				33.3%				15.5%				
PHF	0.73				0.57				0.00				0.88				0.81				

By Movement	Northbound Hwy 47				Southbound Hwy 47				Eastbound Apiary Rd				Westbound Apiary Rd				Total
	T	R	Total	Bikes	L	T	Total	Bikes			Total	Bikes	L	R	Total	Bikes	
Volume	30	14	44	0	4	28	32	0			0	0	19		2	21	97
%HV	NA	6.7%	14.3%	9.1%	25.0%	10.7%	NA	12.5%	NA	NA	NA	0.0%	36.8%	NA	0.0%	33.3%	15.5%
PHF	0.63	0.88	0.73		0.50	0.58	0.57				0.00	0.79	0.50	0.88		0.81	

Rolling Hour Summary

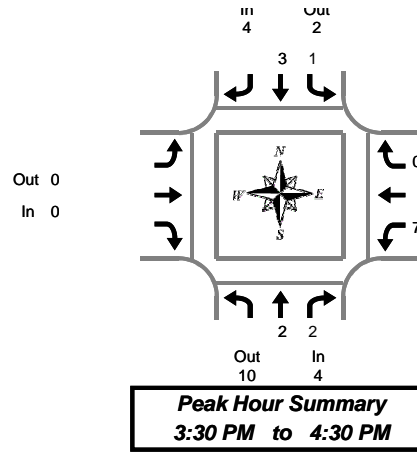
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Interval Total	Pedestrians Crosswalk			
	T	R	Bikes	L	T	Bikes			Bikes	L	R	Bikes		North	South	East	West
3:00 PM	21	12	0	3	28	0			0	18	2	0	84	0	0	0	0
3:15 PM	21	13	0	3	27	0			0	19	3	0	86	0	0	0	0
3:30 PM	30	14	0	4	28	0			0	19	2	0	97	0	0	0	0
3:45 PM	25	13	0	5	28	0			0	19	3	0	93	0	0	0	0
4:00 PM	34	12	0	4	20	0			0	19	3	0	92	0	0	0	0
4:15 PM	41	13	0	4	17	0			0	17	4	0	96	0	0	0	0
4:30 PM	39	10	0	2	20	0			0	14	4	0	89	0	0	0	0
4:45 PM	34	8	0	2	23	0			0	9	4	0	80	0	0	0	0
5:00 PM	28	7	0	2	22	0			0	5	4	0	68	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 47 & Apiary Rd

Tuesday, June 10, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	0	1	1	0	2	2			0	1		1	4
3:15 PM	0	0	0	0	0	0			0	2		2	2
3:30 PM	2	0	2	0	0	0			0	5		5	7
3:45 PM	0	0	0	1	1	2			0	0		0	2
4:00 PM	0	0	0	0	0	0			0	0		0	0
4:15 PM	0	2	2	0	2	2			0	2		2	6
4:30 PM	0	0	0	0	1	1			0	0		0	1
4:45 PM	0	0	0	0	0	0			0	1		1	1
5:00 PM	0	0	0	0	0	0			0	0		0	0
5:15 PM	0	0	0	0	0	0			0	0		0	0
5:30 PM	0	0	0	1	1	2			0	0		0	2
5:45 PM	0	0	0	0	0	0			0	0		0	0
Total Survey	2	3	5	2	7	9			0	11		11	25

Heavy Vehicle Peak Hour Summary 3:30 PM to 4:30 PM

By Approach	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	4	10	14	4	2	6	0	0	0	7	3	10	15
PHF	0.33			0.25			0.00			0.22			0.29

By Movement	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	2	2	4	1	3	4			0	7		7	15
PHF	0.25	0.25	0.33	0.25	0.25	0.25			0.00	0.22		0.00	0.22

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 47			Southbound Hwy 47			Eastbound Apiary Rd			Westbound Apiary Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	2	1	3	1	3	4			0	8		8	15
3:15 PM	2	0	2	1	1	2			0	7		7	11
3:30 PM	2	2	4	1	3	4			0	7		7	15
3:45 PM	0	2	2	1	4	5			0	2		2	9
4:00 PM	0	2	2	0	3	3			0	3		3	8
4:15 PM	0	2	2	0	3	3			0	3		3	8
4:30 PM	0	0	0	0	1	1			0	1		1	2
4:45 PM	0	0	0	1	1	2			0	1		1	3
5:00 PM	0	0	0	1	1	2			0	0		0	2

Peak Hour Summary

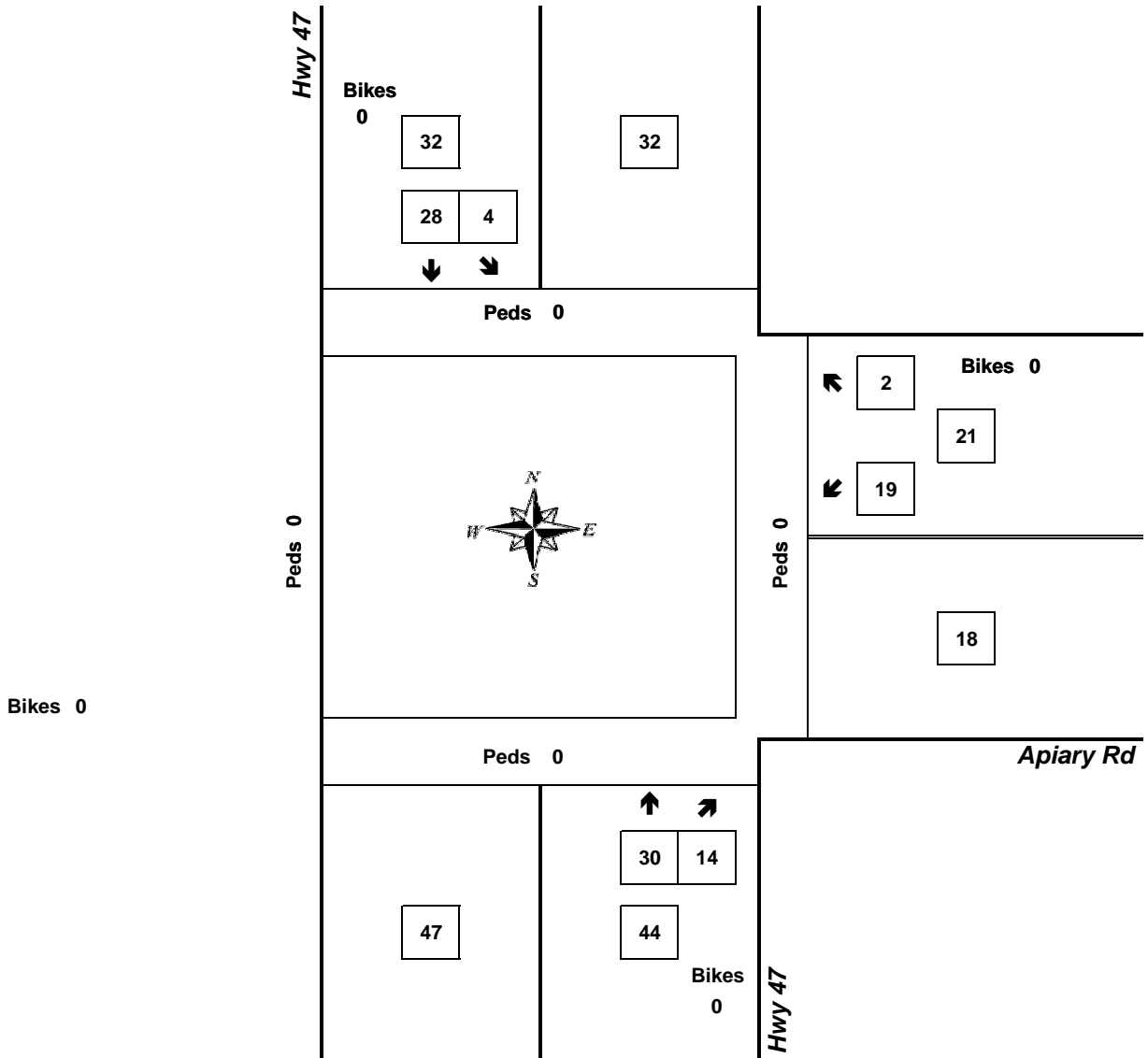


Clay Carney
(503) 833-2740

Hwy 47 & Apiary Rd

3:30 PM to 4:30 PM

Tuesday, June 10, 2014



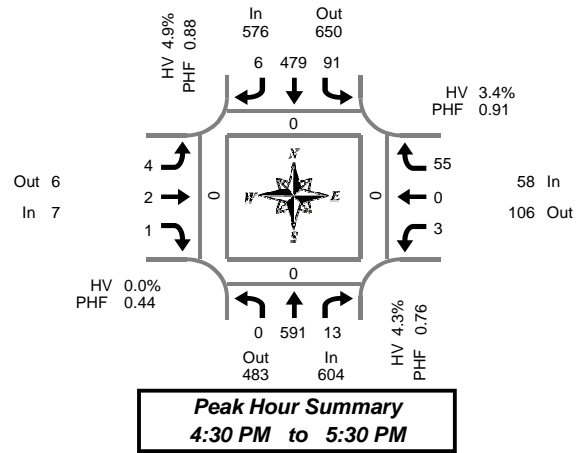
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.88	33.3%	21
NB	0.73	9.1%	44
SB	0.57	12.5%	32
Intersection	0.81	15.5%	97

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Wonderly Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Interval Total	Pedestrians Crosswalk						
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West			
3:00 PM	0	119	3	0	19	105	3	0	2	0	0	0	3	0	33	0	0	0	0	287	0	0	0	0
3:15 PM	0	126	1	0	23	116	2	0	2	0	0	0	5	0	24	0	0	0	0	299	0	0	0	0
3:30 PM	1	102	0	0	17	101	5	0	1	0	0	0	1	0	24	0	0	0	0	252	0	0	0	0
3:45 PM	0	122	5	0	22	121	0	1	2	0	0	0	2	0	20	0	0	0	0	294	0	0	0	0
4:00 PM	0	108	4	0	24	113	2	0	1	0	0	0	0	0	25	0	0	0	0	277	0	0	0	0
4:15 PM	0	124	4	0	25	113	0	0	3	0	0	0	2	0	24	0	0	0	0	295	0	0	0	0
4:30 PM	0	102	1	0	13	114	1	0	0	0	0	0	0	0	16	0	0	0	0	247	0	0	0	0
4:45 PM	0	140	1	0	22	128	1	0	0	0	1	0	1	0	10	0	0	0	0	304	0	0	0	0
5:00 PM	0	159	2	0	22	110	2	0	2	2	0	0	2	0	13	0	0	0	0	314	0	0	0	0
5:15 PM	0	190	9	0	34	127	2	0	2	0	0	0	0	0	16	0	0	0	0	380	0	0	0	0
5:30 PM	1	108	2	0	19	95	1	0	0	0	0	0	0	0	18	0	0	0	0	244	0	0	0	0
5:45 PM	0	94	5	0	12	108	1	0	0	0	0	0	4	0	12	0	0	0	0	236	0	0	0	0
Total Survey	2	1,494	37	0	252	1,351	20	1	15	2	1	0	20	0	235	0	0	0	0	3,429	0	0	0	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	604	483	1,087	0	576	650	1,226	0	7	6	13	0	58	106	164	0	1,245	0	0	0	0
%HV	4.3%				4.9%				0.0%				3.4%				4.5%				
PHF	0.76				0.88				0.44				0.91				0.82				

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	591	13	604	91	479	6	576	4	2	1	7	3	0	55	58	1,245
%HV	0.0%	4.4%	0.0%	4.3%	3.3%	5.2%	0.0%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	3.4%	4.5%
PHF	0.00	0.78	0.36	0.76	0.67	0.94	0.75	0.88	0.50	0.25	0.25	0.44	0.38	0.00	0.86	0.91	0.82

Rolling Hour Summary

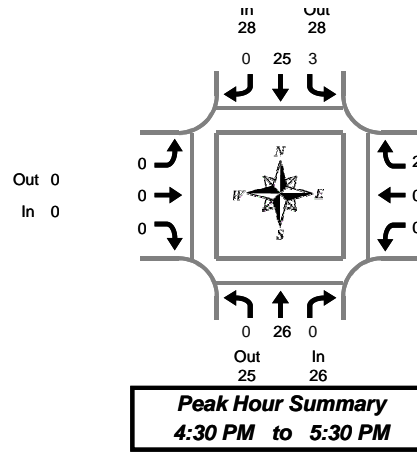
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Interval Total	Pedestrians Crosswalk						
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West			
3:00 PM	1	469	9	0	81	443	10	1	7	0	0	0	11	0	101	0	0	0	0	1,132	0	0	0	0
3:15 PM	1	458	10	0	86	451	9	1	6	0	0	0	8	0	93	0	0	0	0	1,122	0	0	0	0
3:30 PM	1	456	13	0	88	448	7	1	7	0	0	0	5	0	93	0	0	0	0	1,118	0	0	0	0
3:45 PM	0	456	14	0	84	461	3	1	6	0	0	0	4	0	85	0	0	0	0	1,113	0	0	0	0
4:00 PM	0	474	10	0	84	468	4	0	4	0	1	0	3	0	75	0	0	0	0	1,123	0	0	0	0
4:15 PM	0	525	8	0	82	465	4	0	5	2	1	0	5	0	63	0	0	0	0	1,160	0	0	0	0
4:30 PM	0	591	13	0	91	479	6	0	4	2	1	0	3	0	55	0	0	0	0	1,245	0	0	0	0
4:45 PM	1	597	14	0	97	460	6	0	4	2	1	0	3	0	57	0	0	0	0	1,242	0	0	0	0
5:00 PM	1	551	18	0	87	440	6	0	4	2	0	0	6	0	59	0	0	0	0	1,174	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Wonderly Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	15	0	15	1	8	1	10	0	0	0	0	0	0	5	5	30
3:15 PM	0	13	0	13	3	6	0	9	0	0	0	0	0	0	7	7	29
3:30 PM	0	12	0	12	2	8	1	11	0	0	0	0	0	0	2	2	25
3:45 PM	0	10	2	12	3	6	0	9	0	0	0	0	0	0	3	3	24
4:00 PM	0	8	3	11	3	7	0	10	0	0	0	0	0	0	1	1	22
4:15 PM	0	8	0	8	4	2	0	6	0	0	0	0	0	0	4	4	18
4:30 PM	0	6	0	6	1	8	0	9	0	0	0	0	0	0	0	0	15
4:45 PM	0	6	0	6	0	5	0	5	0	0	0	0	0	0	0	0	11
5:00 PM	0	6	0	6	0	6	0	6	0	0	0	0	0	0	2	2	14
5:15 PM	0	8	0	8	2	6	0	8	0	0	0	0	0	0	0	0	16
5:30 PM	0	5	0	5	0	3	0	3	0	0	0	0	0	0	0	0	8
5:45 PM	0	2	0	2	0	5	0	5	0	0	0	0	1	0	0	1	8
Total Survey	0	99	5	104	19	70	2	91	0	0	0	0	1	0	24	25	220

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Wonderly Rd			Westbound Wonderly Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	26	25	51	28	28	56	0	0	0	2	3	5	56
PHF	0.16			0.23			0.00			0.04			0.17

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	26	0	26	3	25	0	28	0	0	0	0	0	0	2	2	56
PHF	0.00	0.16	0.00	0.16	0.08	0.28	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.17

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Wonderly Rd				Westbound Wonderly Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	50	2	52	9	28	2	39	0	0	0	0	0	0	17	17	108
3:15 PM	0	43	5	48	11	27	1	39	0	0	0	0	0	0	13	13	100
3:30 PM	0	38	5	43	12	23	1	36	0	0	0	0	0	0	10	10	89
3:45 PM	0	32	5	37	11	23	0	34	0	0	0	0	0	0	8	8	79
4:00 PM	0	28	3	31	8	22	0	30	0	0	0	0	0	0	5	5	66
4:15 PM	0	26	0	26	5	21	0	26	0	0	0	0	0	0	6	6	58
4:30 PM	0	26	0	26	3	25	0	28	0	0	0	0	0	0	2	2	56
4:45 PM	0	25	0	25	2	20	0	22	0	0	0	0	0	0	2	2	49
5:00 PM	0	21	0	21	2	20	0	22	0	0	0	0	1	0	2	3	46

Peak Hour Summary

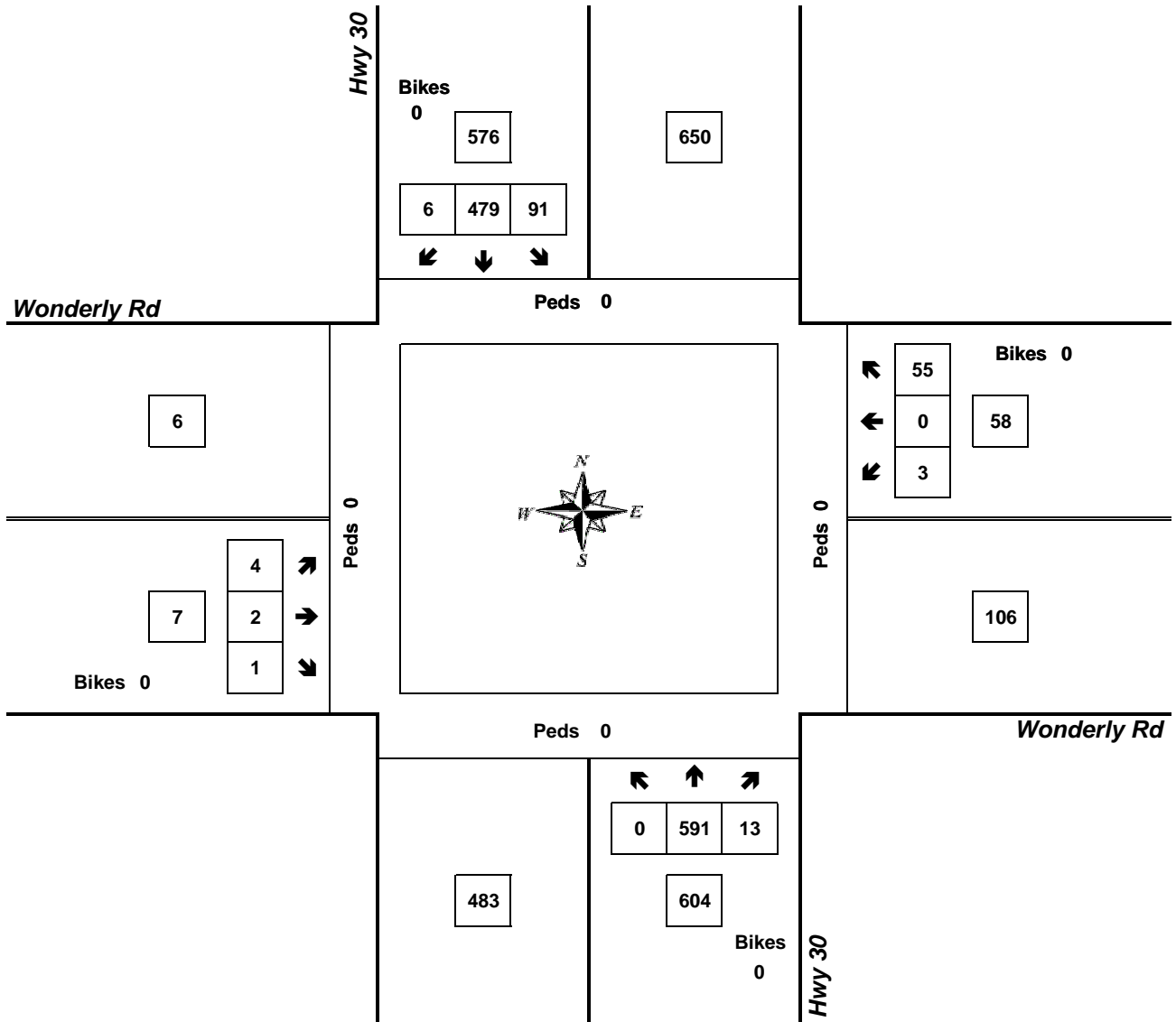


Clay Carney
(503) 833-2740

Hwy 30 & Wonderly Rd

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



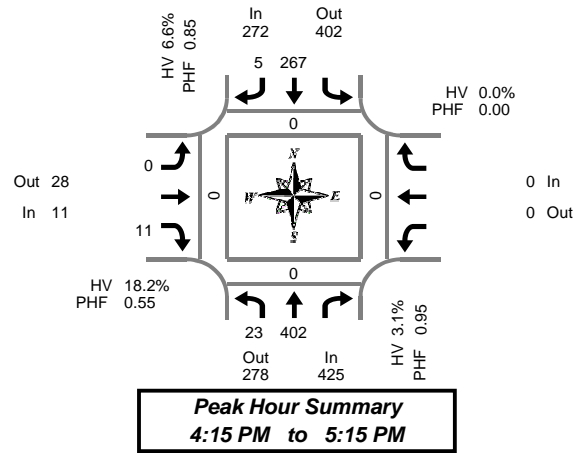
Approach	PHF	HV%	Volume
EB	0.44	0.0%	7
WB	0.91	3.4%	58
NB	0.76	4.3%	604
SB	0.88	4.9%	576
Intersection	0.82	4.5%	1,245

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Tide Creek Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes			Bikes		North	South	East	West
3:00 PM	3	73	1	62	0	0	0	5	0			0	143	0	0	0	0
3:15 PM	4	70	1	56	0	0	0	1	0			0	131	0	0	0	0
3:30 PM	5	78	0	63	0	0	0	3	0			0	149	0	0	0	0
3:45 PM	5	101	0	64	0	0	0	3	0			0	173	0	0	0	0
4:00 PM	5	91	0	59	1	0	0	2	0			0	158	0	0	0	0
4:15 PM	10	102	0	67	0	0	0	3	0			0	182	0	0	0	0
4:30 PM	5	101	0	63	2	0	0	2	0			0	173	0	0	0	0
4:45 PM	2	98	0	77	3	0	0	1	0			0	181	0	0	0	0
5:00 PM	6	101	0	60	0	0	0	5	0			0	172	0	0	0	0
5:15 PM	8	92	0	72	0	0	0	1	0			0	173	0	0	0	0
5:30 PM	12	98	0	60	0	0	0	3	0			0	173	0	0	0	0
5:45 PM	9	95	0	68	0	0	0	1	0			0	173	0	0	0	0
Total Survey	74	1,100	2	771	6	0	0	30	0			0	1,981	0	0	0	0

Peak Hour Summary

4:15 PM to 5:15 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Tide Creek Rd				Westbound Tide Creek Rd				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	425	278	703	0	272	402	674	0	11	28	39	0	0	0	0	0	708	0	0	0	0
%HV	3.1%				6.6%				18.2%				0.0%				4.7%				
PHF	0.95				0.85				0.55				0.00				0.97				

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Tide Creek Rd				Westbound Tide Creek Rd				Total
	L	T	Total	Bikes	T	R	Total	Bikes	L	R	Total	Bikes			Total	Bikes	
Volume	23	402	425	0	267	5	272	0	11	11	22	0			0	708	
%HV	0.0%	3.2%	NA	3.1%	NA	6.7%	0.0%	6.6%	0.0%	NA	18.2%	18.2%	NA	NA	NA	0.0%	4.7%
PHF	0.58	0.99	0.95		0.87	0.42	0.85		0.00	0.55	0.55				0.00	0.97	

Rolling Hour Summary

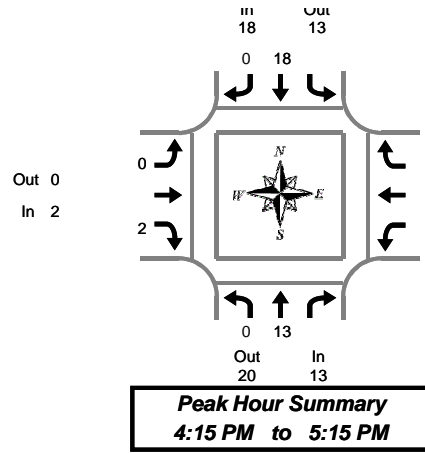
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes			Bikes		North	South	East	West
3:00 PM	17	322	2	245	0	0	0	12	0			0	596	0	0	0	0
3:15 PM	19	340	1	242	1	0	0	9	0			0	611	0	0	0	0
3:30 PM	25	372	0	253	1	0	0	11	0			0	662	0	0	0	0
3:45 PM	25	395	0	253	3	0	0	10	0			0	686	0	0	0	0
4:00 PM	22	392	0	266	6	0	0	8	0			0	694	0	0	0	0
4:15 PM	23	402	0	267	5	0	0	11	0			0	708	0	0	0	0
4:30 PM	21	392	0	272	5	0	0	9	0			0	699	0	0	0	0
4:45 PM	28	389	0	269	3	0	0	10	0			0	699	0	0	0	0
5:00 PM	35	386	0	260	0	0	0	10	0			0	691	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Tide Creek Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	0	5	5	10	0	10	0	1	1			0	16
3:15 PM	0	8	8	6	0	6	0	0	0			0	14
3:30 PM	0	10	10	8	0	8	0	0	0			0	18
3:45 PM	2	10	12	8	0	8	0	0	0			0	20
4:00 PM	0	9	9	3	0	3	0	0	0			0	12
4:15 PM	0	3	3	6	0	6	0	2	2			0	11
4:30 PM	0	3	3	4	0	4	0	0	0			0	7
4:45 PM	0	4	4	7	0	7	0	0	0			0	11
5:00 PM	0	3	3	1	0	1	0	0	0			0	4
5:15 PM	1	1	2	5	0	5	0	0	0			0	7
5:30 PM	0	4	4	0	0	0	0	0	0			0	4
5:45 PM	0	4	4	7	0	7	0	0	0			0	11
Total Survey	3	64	67	65	0	65	0	3	3			0	135

Heavy Vehicle Peak Hour Summary 4:15 PM to 5:15 PM

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	13	20	33	18	13	31	2	0	2	0	0	0	33
PHF	0.10			0.19			0.25			0.00			0.16

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	0	13	13	18	0	18	0	2	2			0	33
PHF	0.00	0.11	0.10	0.19	0.00	0.19	0.00	0.25	0.25			0.00	0.16

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Tide Creek Rd			Westbound Tide Creek Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	2	33	35	32	0	32	0	1	1			0	68
3:15 PM	2	37	39	25	0	25	0	0	0			0	64
3:30 PM	2	32	34	25	0	25	0	2	2			0	61
3:45 PM	2	25	27	21	0	21	0	2	2			0	50
4:00 PM	0	19	19	20	0	20	0	2	2			0	41
4:15 PM	0	13	13	18	0	18	0	2	2			0	33
4:30 PM	1	11	12	17	0	17	0	0	0			0	29
4:45 PM	1	12	13	13	0	13	0	0	0			0	26
5:00 PM	1	12	13	13	0	13	0	0	0			0	26

Peak Hour Summary

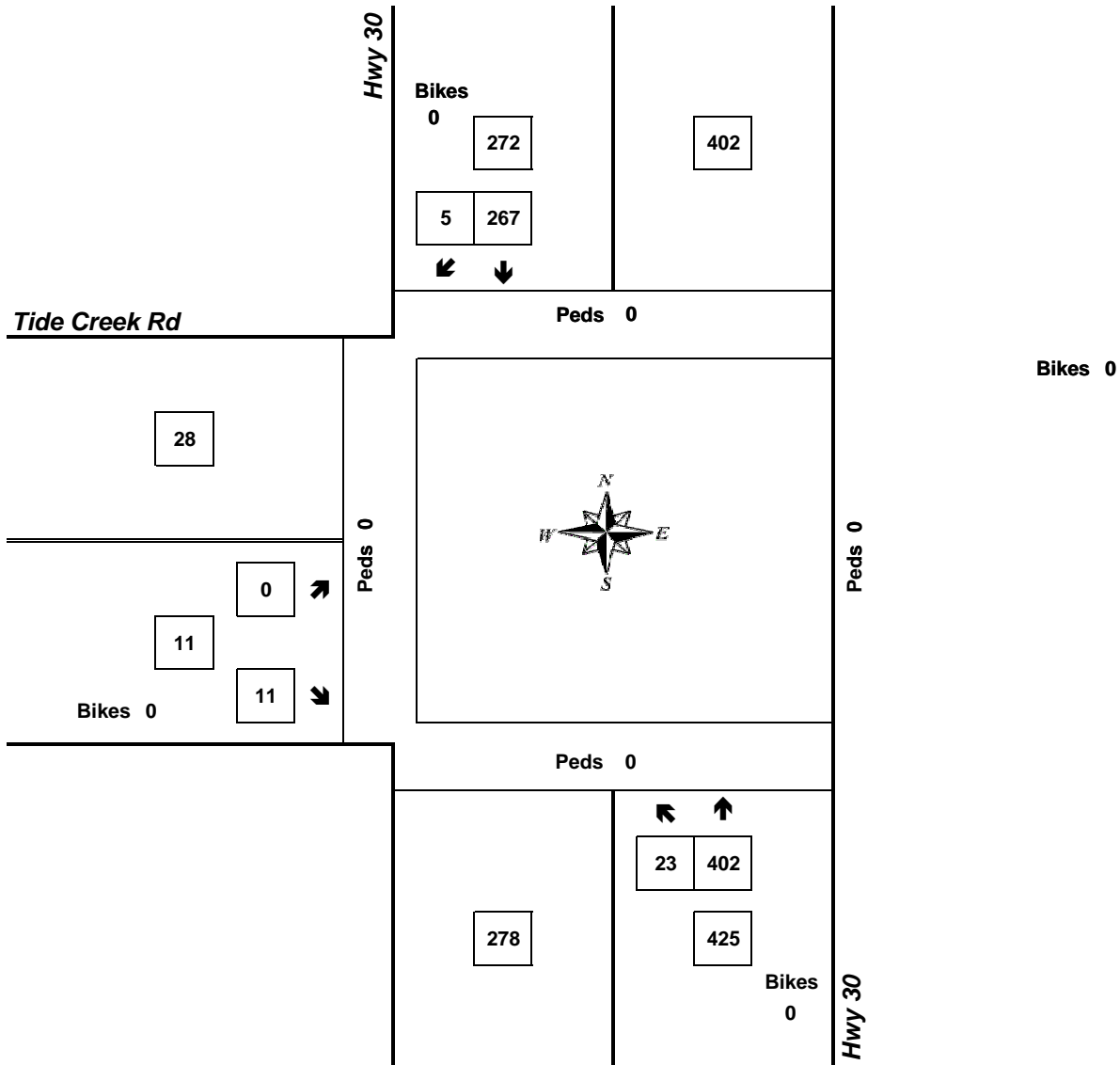


Clay Carney
(503) 833-2740

Hwy 30 & Tide Creek Rd

4:15 PM to 5:15 PM

Tuesday, June 03, 2014



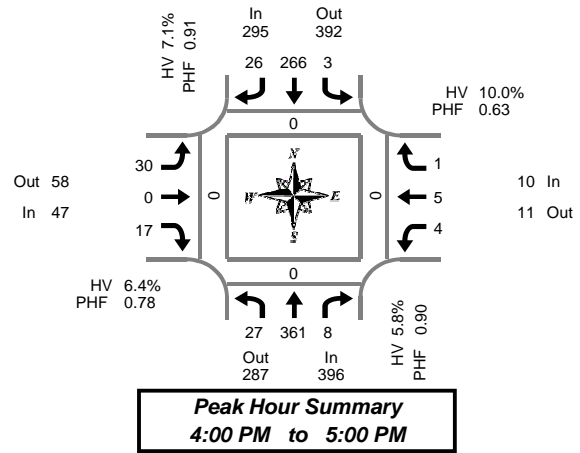
Approach	PHF	HV%	Volume
EB	0.55	18.2%	11
WB	0.00	0.0%	0
NB	0.95	3.1%	425
SB	0.85	6.6%	272
Intersection	0.97	4.7%	708

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Nicolai Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	12	67	0	0	0	57	9	0	3	1	3	0	1	0	1	0	154	0	0	0	0
3:15 PM	6	55	3	0	1	61	10	0	4	2	5	0	0	1	0	0	148	0	0	0	0
3:30 PM	7	73	0	0	1	66	3	0	4	0	1	0	1	2	1	0	159	0	0	0	0
3:45 PM	5	88	0	0	2	47	9	0	2	0	1	0	0	0	1	0	155	0	0	0	0
4:00 PM	9	89	2	0	1	67	7	0	5	0	3	0	1	3	0	0	187	0	0	0	0
4:15 PM	9	86	1	0	1	70	6	0	11	0	2	0	2	0	0	0	188	0	0	0	0
4:30 PM	4	103	3	0	0	57	5	0	9	0	6	0	1	2	0	0	190	0	0	0	0
4:45 PM	5	83	2	0	1	72	8	0	5	0	6	0	0	0	1	0	183	0	0	0	0
5:00 PM	8	98	1	0	1	56	4	0	4	1	3	0	0	0	0	0	176	0	0	0	0
5:15 PM	7	78	5	0	0	64	11	0	2	1	3	0	0	2	0	0	173	0	0	0	0
5:30 PM	8	90	1	0	0	70	10	0	3	0	3	0	0	0	0	0	185	0	0	0	0
5:45 PM	13	80	2	0	1	49	8	0	5	1	3	0	0	0	0	0	162	0	0	0	0
Total Survey	93	990	20	0	9	736	90	0	57	6	39	0	6	10	4	0	2,060	0	0	0	0

Peak Hour Summary

4:00 PM to 5:00 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	396	287	683	0	295	392	687	0	47	58	105	0	10	11	21	0	748	0	0	0	0
%HV	5.8%				7.1%				6.4%				10.0%				6.4%				
PHF	0.90				0.91				0.78				0.63				0.98				

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	27	361	8	396	3	266	26	295	30	0	17	47	4	5	1	10	748
%HV	0.0%	6.1%	12.5%	5.8%	0.0%	7.5%	3.8%	7.1%	10.0%	0.0%	0.0%	6.4%	0.0%	0.0%	#####	10.0%	6.4%
PHF	0.75	0.88	0.67	0.90	0.75	0.92	0.81	0.91	0.68	0.00	0.71	0.78	0.50	0.42	0.25	0.63	0.98

Rolling Hour Summary

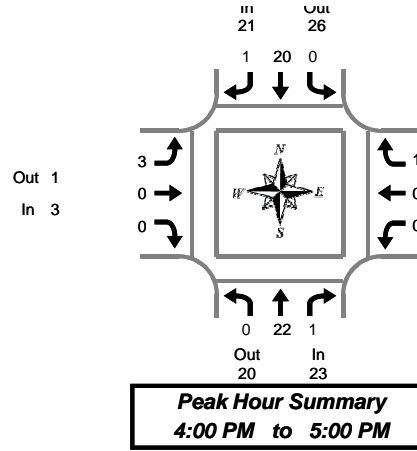
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	30	283	3	0	4	231	31	0	13	3	10	0	2	3	3	0	616	0	0	0	0
3:15 PM	27	305	5	0	5	241	29	0	15	2	10	0	2	6	2	0	649	0	0	0	0
3:30 PM	30	336	3	0	5	250	25	0	22	0	7	0	4	5	2	0	689	0	0	0	0
3:45 PM	27	366	6	0	4	241	27	0	27	0	12	0	4	5	1	0	720	0	0	0	0
4:00 PM	27	361	8	0	3	266	26	0	30	0	17	0	4	5	1	0	748	0	0	0	0
4:15 PM	26	370	7	0	3	255	23	0	29	1	17	0	3	2	1	0	737	0	0	0	0
4:30 PM	24	362	11	0	2	249	28	0	20	2	18	0	1	4	1	0	722	0	0	0	0
4:45 PM	28	349	9	0	2	262	33	0	14	2	15	0	0	2	1	0	717	0	0	0	0
5:00 PM	36	346	9	0	2	239	33	0	14	3	12	0	0	2	0	0	696	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Nicolai Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	5	0	5	0	12	1	13	0	0	0	0	0	0	0	0	18
3:15 PM	0	6	0	6	0	10	1	11	0	0	1	1	0	0	0	0	18
3:30 PM	0	5	0	5	1	4	0	5	2	0	0	2	0	1	0	1	13
3:45 PM	0	7	0	7	0	5	0	5	0	0	0	0	0	0	0	0	12
4:00 PM	0	10	0	10	0	6	0	6	1	0	0	1	0	0	0	0	17
4:15 PM	0	3	0	3	0	6	0	6	1	0	0	1	0	0	0	0	10
4:30 PM	0	4	0	4	0	7	0	7	0	0	0	0	0	0	0	0	11
4:45 PM	0	5	1	6	0	1	1	2	1	0	0	1	0	0	1	1	10
5:00 PM	0	4	0	4	0	4	0	4	1	0	0	1	0	0	0	0	9
5:15 PM	0	0	1	1	0	5	1	6	0	0	0	0	0	0	0	0	7
5:30 PM	0	6	0	6	0	4	1	5	0	0	0	0	0	0	0	0	11
5:45 PM	0	3	0	3	0	3	0	3	0	0	0	0	0	0	0	0	6
Total Survey	0	58	2	60	1	67	5	73	6	0	1	7	0	1	1	2	142

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

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Nicolai Rd			Westbound Nicolai Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	23	20	43	21	26	47	3	1	4	1	1	2	48
PHF	0.26			0.18			0.25			0.25			0.24

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	22	1	23	0	20	1	21	3	0	0	3	0	0	1	1	48
PHF	0.00	0.25	0.13	0.26	0.00	0.19	0.13	0.18	0.25	0.00	0.00	0.25	0.00	0.00	0.25	0.25	0.24

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Nicolai Rd				Westbound Nicolai Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	23	0	23	1	31	2	34	2	0	1	3	0	1	0	1	61
3:15 PM	0	28	0	28	1	25	1	27	3	0	1	4	0	1	0	1	60
3:30 PM	0	25	0	25	1	21	0	22	4	0	0	4	0	1	0	1	52
3:45 PM	0	24	0	24	0	24	0	24	2	0	0	2	0	0	0	0	50
4:00 PM	0	22	1	23	0	20	1	21	3	0	0	3	0	0	1	1	48
4:15 PM	0	16	1	17	0	18	1	19	3	0	0	3	0	0	1	1	40
4:30 PM	0	13	2	15	0	17	2	19	2	0	0	2	0	0	1	1	37
4:45 PM	0	15	2	17	0	14	3	17	2	0	0	2	0	0	1	1	37
5:00 PM	0	13	1	14	0	16	2	18	1	0	0	1	0	0	0	0	33

Peak Hour Summary

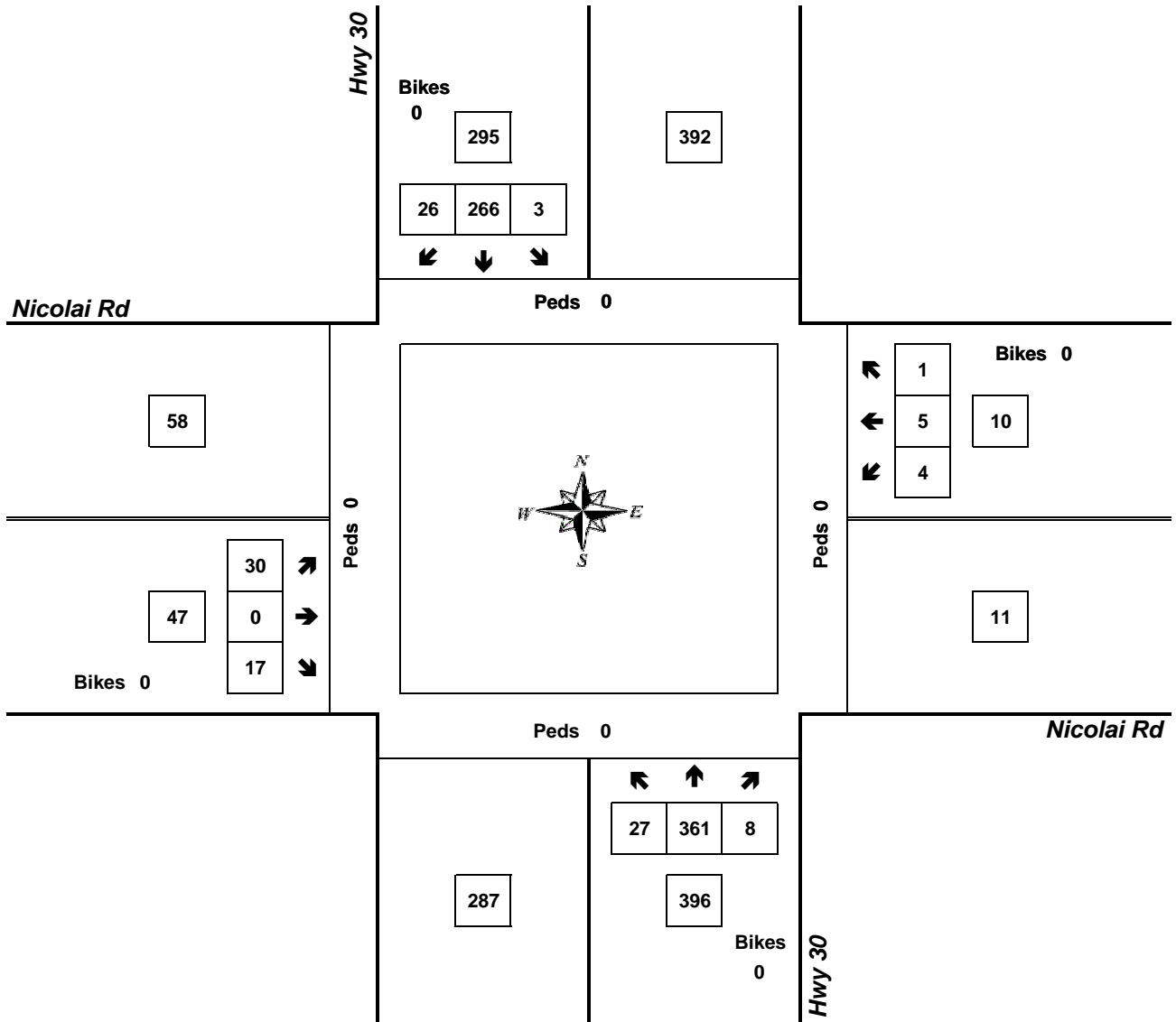


Clay Carney
(503) 833-2740

Hwy 30 & Nicolai Rd

4:00 PM to 5:00 PM

Tuesday, June 03, 2014



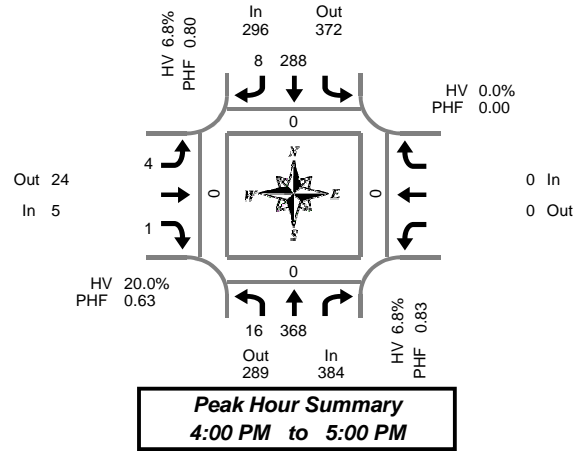
Approach	PHF	HV%	Volume
EB	0.78	6.4%	47
WB	0.63	10.0%	10
NB	0.90	5.8%	396
SB	0.91	7.1%	295
Intersection	0.98	6.4%	748

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Neer City Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Neer City Rd			Westbound Neer City Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes		T	R	Bikes		L	R	Bikes			Bikes			North	South	East
3:00 PM	2	65	0		64	2	0		1	2	0			0	136	0	0	0	0
3:15 PM	2	64	0		71	0	0		0	0	0			0	137	0	0	0	0
3:30 PM	0	64	0		70	2	0		0	1	0			0	137	0	0	0	0
3:45 PM	3	92	0		61	0	0		2	1	0			0	159	0	0	0	0
4:00 PM	5	96	0		75	2	0		1	0	0			0	179	0	0	0	0
4:15 PM	4	85	0		71	0	0		1	0	0			0	161	0	0	0	0
4:30 PM	5	110	0		53	2	0		2	0	0			0	172	0	0	0	0
4:45 PM	2	77	0		89	4	0		0	1	0			0	173	0	0	0	0
5:00 PM	1	104	0		55	0	0		1	1	0			0	162	0	0	0	0
5:15 PM	1	82	0		86	1	0		1	0	0			0	171	0	0	0	0
5:30 PM	4	92	0		72	1	0		1	5	0			0	175	0	0	0	0
5:45 PM	2	84	0		59	3	0		0	1	0			0	149	0	0	0	0
Total Survey	31	1,015	0		826	17	0		10	12	0			0	1,911	0	0	0	0

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

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Neer City Rd				Westbound Neer City Rd				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	384	289	673	0	296	372	668	0	5	24	29	0	0	0	0	0	0	0	0	0	
%HV	6.8%				6.8%				20.0%				0.0%				6.9%				
PHF	0.83				0.80				0.63				0.00				0.96				

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Neer City Rd				Westbound Neer City Rd				Total
	L	T	Total	Bikes	T	R	Total	Bikes	L	R	Total	Bikes	Total	Bikes			
Volume	16	368	384	0	288	8	296	0	4	1	5	0	0	685			
%HV	6.3%	6.8%	6.8%	NA	6.6%	12.5%	6.8%	0.0%	NA	#####	20.0%	NA	NA	6.9%			
PHF	0.80	0.84	0.83		0.81	0.50	0.80		0.50	0.25	0.63		0.00	0.96			

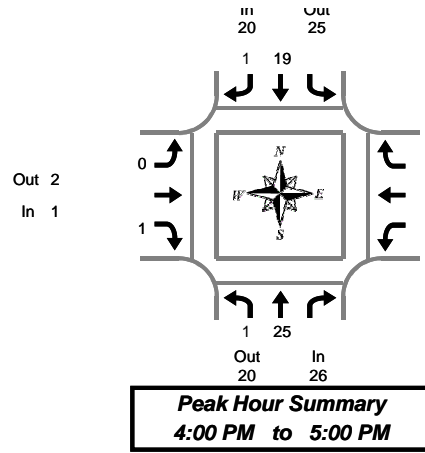
Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Neer City Rd			Westbound Neer City Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes		T	R	Bikes		L	R	Bikes			Bikes			North	South	East
3:00 PM	7	285	0		266	4	0		3	4	0			0	569	0	0	0	0
3:15 PM	10	316	0		277	4	0		3	2	0			0	612	0	0	0	0
3:30 PM	12	337	0		277	4	0		4	2	0			0	636	0	0	0	0
3:45 PM	17	383	0		260	4	0		6	1	0			0	671	0	0	0	0
4:00 PM	16	368	0		288	8	0		4	1	0			0	685	0	0	0	0
4:15 PM	12	376	0		268	6	0		4	2	0			0	668	0	0	0	0
4:30 PM	9	373	0		283	7	0		4	2	0			0	678	0	0	0	0
4:45 PM	8	355	0		302	6	0		3	7	0			0	681	0	0	0	0
5:00 PM	8	362	0		272	5	0		3	7	0			0	657	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Neer City Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Neer City Rd			Westbound Neer City Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	1	4	5	10	0	10	0	0	0			0	15
3:15 PM	0	7	7	12	0	12	0	0	0			0	19
3:30 PM	0	5	5	5	1	6	0	0	0			0	11
3:45 PM	0	9	9	7	0	7	1	1	2			0	18
4:00 PM	1	9	10	6	0	6	0	0	0			0	16
4:15 PM	0	6	6	6	0	6	0	0	0			0	12
4:30 PM	0	4	4	2	0	2	0	0	0			0	6
4:45 PM	0	6	6	5	1	6	0	1	1			0	13
5:00 PM	0	5	5	2	0	2	0	0	0			0	7
5:15 PM	0	2	2	7	0	7	0	0	0			0	9
5:30 PM	0	6	6	3	0	3	0	0	0			0	9
5:45 PM	0	3	3	5	0	5	0	0	0			0	8
Total Survey	2	66	68	70	2	72	1	2	3			0	143

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

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Neer City Rd			Westbound Neer City Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	26	20	46	20	25	45	1	2	3	0	0	0	47
PHF	0.26			0.18			0.13			0.00			0.24

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound Neer City Rd			Westbound Neer City Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	1	25	26	19	1	20	0	1	1			0	47
PHF	0.25	0.26	0.26	0.18	0.25	0.18	0.00	0.25	0.13			0.00	0.24

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Neer City Rd			Westbound Neer City Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	1	25	26	34	1	35	1	1	2			0	63
3:15 PM	1	30	31	30	1	31	1	1	2			0	64
3:30 PM	1	29	30	24	1	25	1	1	2			0	57
3:45 PM	1	28	29	21	0	21	1	1	2			0	52
4:00 PM	1	25	26	19	1	20	0	1	1			0	47
4:15 PM	0	21	21	15	1	16	0	1	1			0	38
4:30 PM	0	17	17	16	1	17	0	1	1			0	35
4:45 PM	0	19	19	17	1	18	0	1	1			0	38
5:00 PM	0	16	16	17	0	17	0	0	0			0	33

Peak Hour Summary

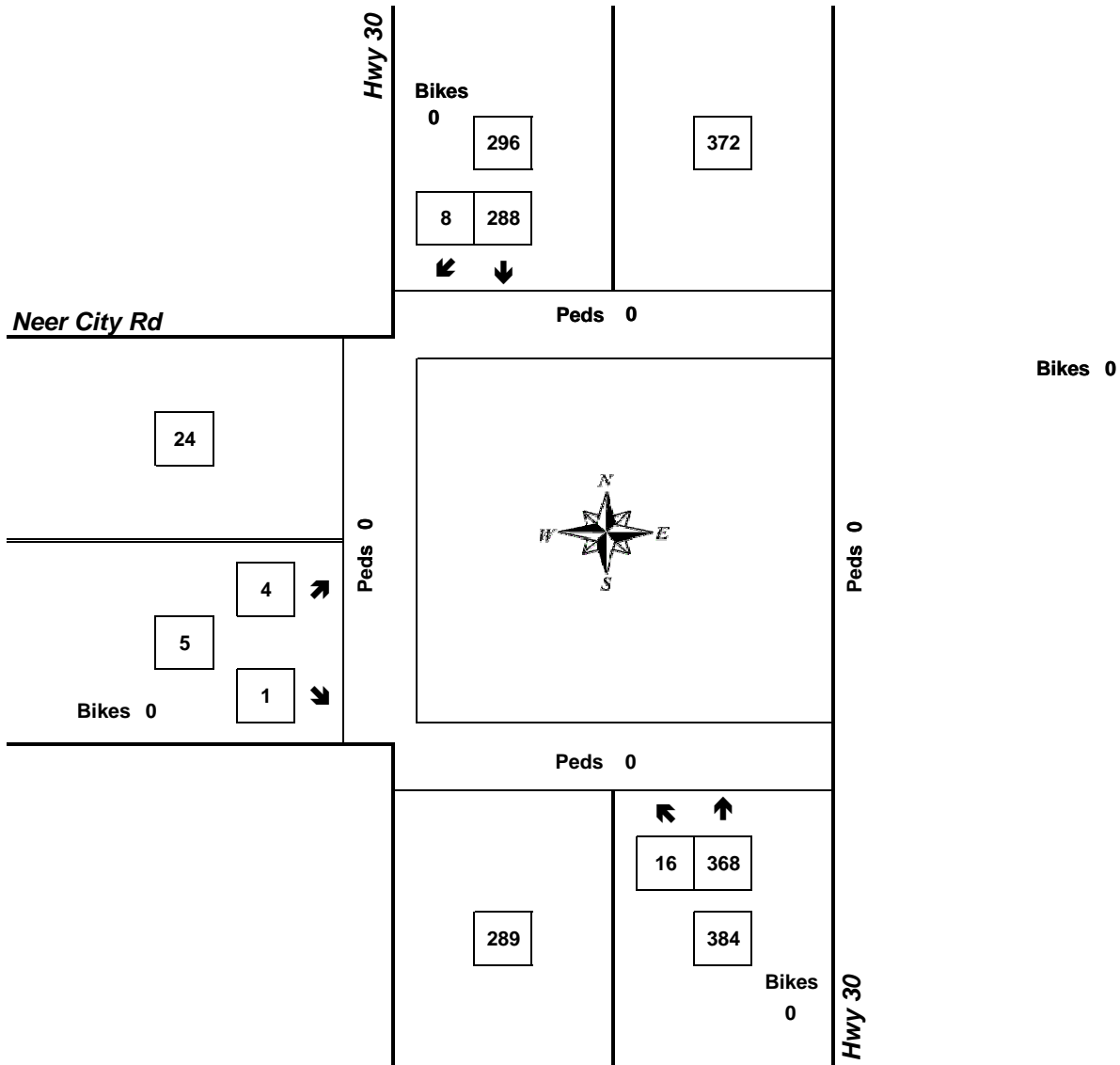


Clay Carney
(503) 833-2740

Hwy 30 & Neer City Rd

4:00 PM to 5:00 PM

Tuesday, June 03, 2014



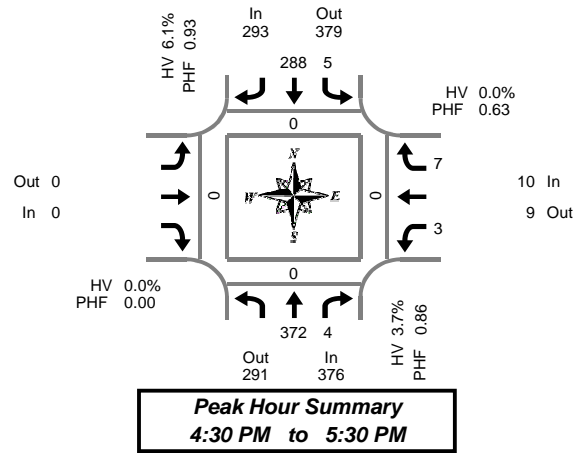
Approach	PHF	HV%	Volume
EB	0.63	20.0%	5
WB	0.00	0.0%	0
NB	0.83	6.8%	384
SB	0.80	6.8%	296
Intersection	0.96	6.9%	685

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Graham Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound				Westbound Graham Rd			Interval Total	Pedestrians Crosswalk				
	T	R	Bikes	L	T	Bikes				Bikes	L	R	Bikes		North	South	East	West	
3:00 PM	64	1	0	2	66	0				0	2		3	0	138	0	0	0	0
3:15 PM	60	2	0	0	73	0				0	1		1	0	137	0	0	0	0
3:30 PM	64	1	0	1	62	0				0	2		1	0	131	0	0	0	0
3:45 PM	94	1	0	1	64	0				0	1		1	0	162	0	0	0	0
4:00 PM	95	0	0	4	70	0				0	1		3	0	173	0	0	0	0
4:15 PM	88	1	0	1	69	0				0	1		0	0	160	0	0	0	0
4:30 PM	106	3	0	2	70	0				0	1		0	0	182	0	0	0	0
4:45 PM	76	0	0	2	77	0				0	1		3	0	159	0	0	0	0
5:00 PM	103	0	0	0	69	0				0	0		1	0	173	0	0	0	0
5:15 PM	87	1	0	1	72	0				0	1		3	0	165	0	0	0	0
5:30 PM	94	1	0	2	64	0				0	1		1	0	163	0	0	0	0
5:45 PM	82	0	0	0	58	0				0	3		0	0	143	0	0	0	0
Total Survey		1,013	11	0	16	814	0			0	15		17	0	1,886	0	0	0	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound				Westbound Graham Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	376	291	667	0	293	379	672	0	0	0	0	0	10	9	19	0	679	0	0	0	0
%HV	3.7%				6.1%				0.0%				0.0%				4.7%				
PHF	0.86				0.93				0.00				0.63				0.93				

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound			Westbound Graham Rd			Total		
	T	R	Total	L	T	Total				Total	L	R		Total	
Volume	372	4	376	5	288	293				0	3	7	10	679	
%HV	NA	3.8%	0.0%	3.7%	0.0%	6.3%	NA	6.1%	NA	NA	0.0%	0.0%	NA	0.0%	4.7%
PHF	0.88	0.33	0.86	0.63	0.94	0.93				0.00	0.75	0.58	0.63	0.93	

Rolling Hour Summary

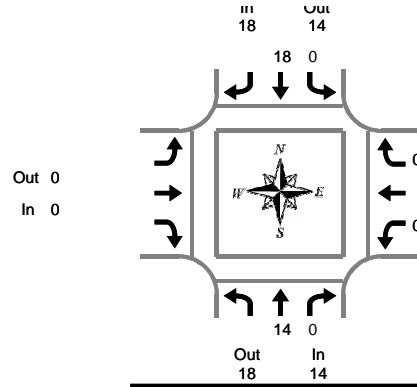
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound				Westbound Graham Rd			Interval Total	Pedestrians Crosswalk				
	T	R	Bikes	L	T	Bikes				Bikes	L	R	Bikes		North	South	East	West	
3:00 PM	282	5	0	4	265	0				0	6		6	0	568	0	0	0	0
3:15 PM	313	4	0	6	269	0				0	5		6	0	603	0	0	0	0
3:30 PM	341	3	0	7	265	0				0	5		5	0	626	0	0	0	0
3:45 PM	383	5	0	8	273	0				0	4		4	0	677	0	0	0	0
4:00 PM	365	4	0	9	286	0				0	4		6	0	674	0	0	0	0
4:15 PM	373	4	0	5	285	0				0	3		4	0	674	0	0	0	0
4:30 PM	372	4	0	5	288	0				0	3		7	0	679	0	0	0	0
4:45 PM	360	2	0	5	282	0				0	3		8	0	660	0	0	0	0
5:00 PM	366	2	0	3	263	0				0	5		5	0	644	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Peak Hour Summary
4:30 PM to 5:30 PM

Hwy 30 & Graham Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound			Westbound Graham Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	4	0	4	1	12	13			0	1		1	18
3:15 PM	7	0	7	0	11	11			0	0		0	18
3:30 PM	6	0	6	1	4	5			0	1		1	12
3:45 PM	7	0	7	1	5	6			0	0		0	13
4:00 PM	10	0	10	0	6	6			0	0		1	17
4:15 PM	6	0	6	0	6	6			0	0		0	12
4:30 PM	4	0	4	0	5	5			0	0		0	9
4:45 PM	4	0	4	0	4	4			0	0		0	8
5:00 PM	4	0	4	0	3	3			0	0		0	7
5:15 PM	2	0	2	0	6	6			0	0		0	8
5:30 PM	6	0	6	0	5	5			0	0		0	11
5:45 PM	3	0	3	0	2	2			0	0		0	5
Total Survey	63	0	63	3	69	72			0	2		3	138

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound			Westbound Graham Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	14	18	32	18	14	32	0	0	0	0	0	0	32
PHF	0.15			0.16			0.00			0.00			0.17

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound			Westbound Graham Rd			Total
	T	R	Total	L	T	Total			Total	L	R	Total	
Volume	14	0	14	0	18	18			0	0		0	32
PHF	0.15	0.00	0.15	0.00	0.17	0.16			0.00	0.00		0.00	0.17

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound			Westbound Graham Rd			Interval Total
	T	R	Total	L	T	Total			Total	L	R	Total	
3:00 PM	24	0	24	3	32	35			0	2		2	61
3:15 PM	30	0	30	2	26	28			0	1		1	60
3:30 PM	29	0	29	2	21	23			0	1		1	54
3:45 PM	27	0	27	1	22	23			0	0		1	51
4:00 PM	24	0	24	0	21	21			0	0		1	46
4:15 PM	18	0	18	0	18	18			0	0		0	36
4:30 PM	14	0	14	0	18	18			0	0		0	32
4:45 PM	16	0	16	0	18	18			0	0		0	34
5:00 PM	15	0	15	0	16	16			0	0		0	31

Peak Hour Summary

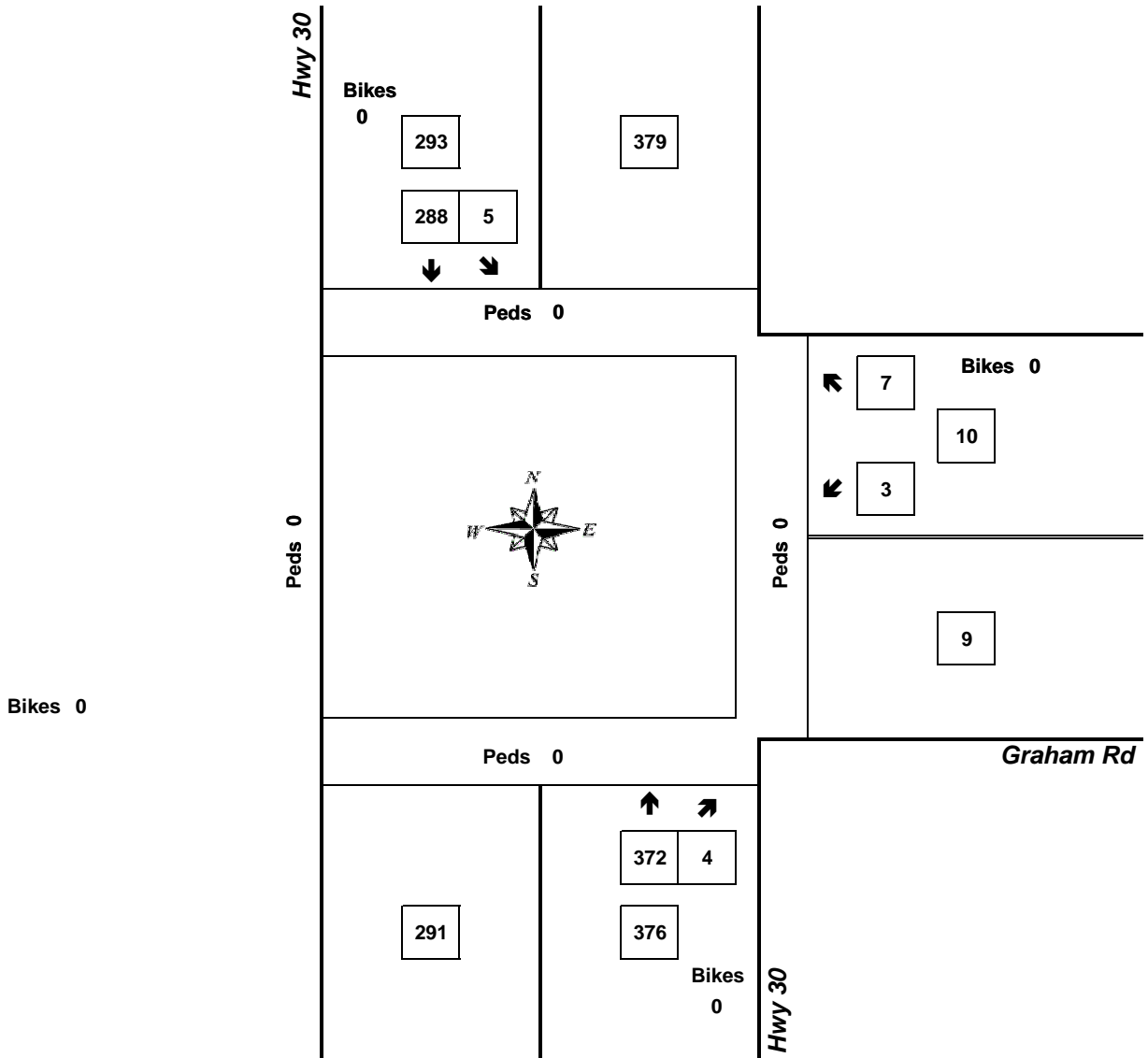


Clay Carney
(503) 833-2740

Hwy 30 & Graham Rd

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



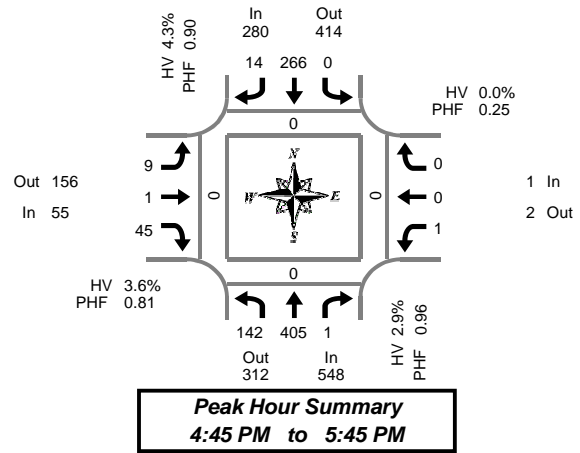
Approach	PHF	HV%	Volume
EB	0.00	0.0%	0
WB	0.63	0.0%	10
NB	0.86	3.7%	376
SB	0.93	6.1%	293
Intersection	0.93	4.7%	679

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Canaan Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	32	75	1	0	0	64	1	0	4	0	8	0	0	0	0	0	185	0	0	0	0
3:15 PM	21	63	0	0	0	56	2	0	1	0	6	0	0	0	0	0	149	0	0	0	0
3:30 PM	23	98	0	0	0	63	2	0	1	0	15	0	0	0	0	0	202	0	0	0	0
3:45 PM	28	88	0	0	0	70	1	2	2	0	15	0	0	0	0	0	204	0	0	0	0
4:00 PM	29	109	0	0	0	56	3	0	4	0	8	0	0	0	0	0	209	0	0	0	0
4:15 PM	29	110	0	0	0	68	3	0	4	0	14	0	0	0	0	0	228	0	0	0	2
4:30 PM	28	75	0	1	0	71	1	0	6	0	7	0	0	0	0	0	188	0	0	0	0
4:45 PM	31	101	0	0	0	77	1	1	1	0	11	0	1	0	0	0	223	0	0	0	0
5:00 PM	33	103	0	0	0	61	3	0	4	0	13	0	0	0	0	0	217	0	0	0	0
5:15 PM	38	103	1	0	0	70	4	0	3	0	8	0	0	0	0	0	227	0	0	0	0
5:30 PM	40	98	0	0	0	58	6	0	1	1	13	0	0	0	0	0	217	0	0	0	0
5:45 PM	21	83	0	0	0	70	4	0	1	0	6	0	0	0	0	0	185	0	0	0	0
Total Survey	353	1,106	2	1	0	784	31	3	32	1	124	0	1	0	0	0	2,434	0	0	0	2

Peak Hour Summary

4:45 PM to 5:45 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	548	312	860	0	280	414	694	1	55	156	211	0	1	2	3	0	884	0	0	0	0
%HV	2.9%				4.3%				3.6%				0.0%				3.4%				
PHF	0.96				0.90				0.81				0.25				0.97				

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	142	405	1	548	0	266	14	280	9	1	45	55	1	0	0	1	884
%HV	0.7%	3.7%	0.0%	2.9%	0.0%	4.1%	7.1%	4.3%	0.0%	0.0%	4.4%	3.6%	0.0%	0.0%	0.0%	0.0%	3.4%
PHF	0.89	0.98	0.25	0.96	0.00	0.86	0.58	0.90	0.56	0.25	0.87	0.81	0.25	0.00	0.00	0.25	0.97

Rolling Hour Summary

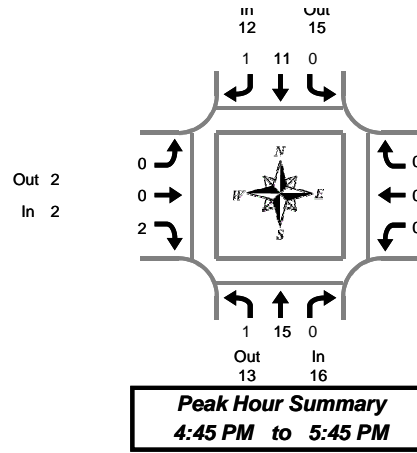
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	104	324	1	0	0	253	6	2	8	0	44	0	0	0	0	0	740	0	0	0	0
3:15 PM	101	358	0	0	0	245	8	2	8	0	44	0	0	0	0	0	764	0	0	0	0
3:30 PM	109	405	0	0	0	257	9	2	11	0	52	0	0	0	0	0	843	0	0	0	2
3:45 PM	114	382	0	1	0	265	8	2	16	0	44	0	0	0	0	0	829	0	0	0	2
4:00 PM	117	395	0	1	0	272	8	1	15	0	40	0	1	0	0	0	848	0	0	0	2
4:15 PM	121	389	0	1	0	277	8	1	15	0	45	0	1	0	0	0	856	0	0	0	2
4:30 PM	130	382	1	1	0	279	9	1	14	0	39	0	1	0	0	0	855	0	0	0	0
4:45 PM	142	405	1	0	0	266	14	1	9	1	45	0	1	0	0	0	884	0	0	0	0
5:00 PM	132	387	1	0	0	259	17	0	9	1	40	0	0	0	0	0	846	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Canaan Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	1	5	0	6	0	11	0	11	0	0	1	1	0	0	0	0	18
3:15 PM	0	6	0	6	0	8	0	8	0	0	0	0	0	0	0	0	14
3:30 PM	2	7	0	9	0	7	0	7	0	0	0	0	0	0	0	0	16
3:45 PM	2	6	0	8	0	8	0	8	1	0	2	3	0	0	0	0	19
4:00 PM	1	13	0	14	0	2	0	2	0	0	0	0	0	0	0	0	16
4:15 PM	0	2	0	2	0	9	0	9	0	0	1	1	0	0	0	0	12
4:30 PM	2	6	0	8	0	6	0	6	0	0	0	0	0	0	0	0	14
4:45 PM	0	4	0	4	0	5	1	6	0	0	1	1	0	0	0	0	11
5:00 PM	0	4	0	4	0	1	0	1	0	0	0	0	0	0	0	0	5
5:15 PM	0	6	0	6	0	5	0	5	0	0	1	1	0	0	0	0	12
5:30 PM	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	4	0	4	0	7	0	7	0	0	1	1	0	0	0	0	12
Total Survey	9	64	0	73	0	69	1	70	1	0	7	8	0	0	0	0	151

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

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Canaan Rd			Westbound Canaan Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	16	13	29	12	15	27	2	2	4	0	0	0	30
PHF	0.13			0.12			0.13			0.00			0.15

By Movement	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	1	15	0	16	0	11	1	12	0	0	2	2	0	0	0	0	30
PHF	0.05	0.14	0.00	0.13	0.00	0.11	0.25	0.12	0.00	0.00	0.17	0.13	0.00	0.00	0.00	0.00	0.15

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30				Southbound Hwy 30				Eastbound Canaan Rd				Westbound Canaan Rd				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	5	24	0	29	0	34	0	34	1	0	3	4	0	0	0	0	67
3:15 PM	5	32	0	37	0	25	0	25	1	0	2	3	0	0	0	0	65
3:30 PM	5	28	0	33	0	26	0	26	1	0	3	4	0	0	0	0	63
3:45 PM	5	27	0	32	0	25	0	25	1	0	3	4	0	0	0	0	61
4:00 PM	3	25	0	28	0	22	1	23	0	0	2	2	0	0	0	0	53
4:15 PM	2	16	0	18	0	21	1	22	0	0	2	2	0	0	0	0	42
4:30 PM	2	20	0	22	0	17	1	18	0	0	2	2	0	0	0	0	42
4:45 PM	1	15	0	16	0	11	1	12	0	0	2	2	0	0	0	0	30
5:00 PM	1	15	0	16	0	13	0	13	0	0	2	2	0	0	0	0	31

Peak Hour Summary

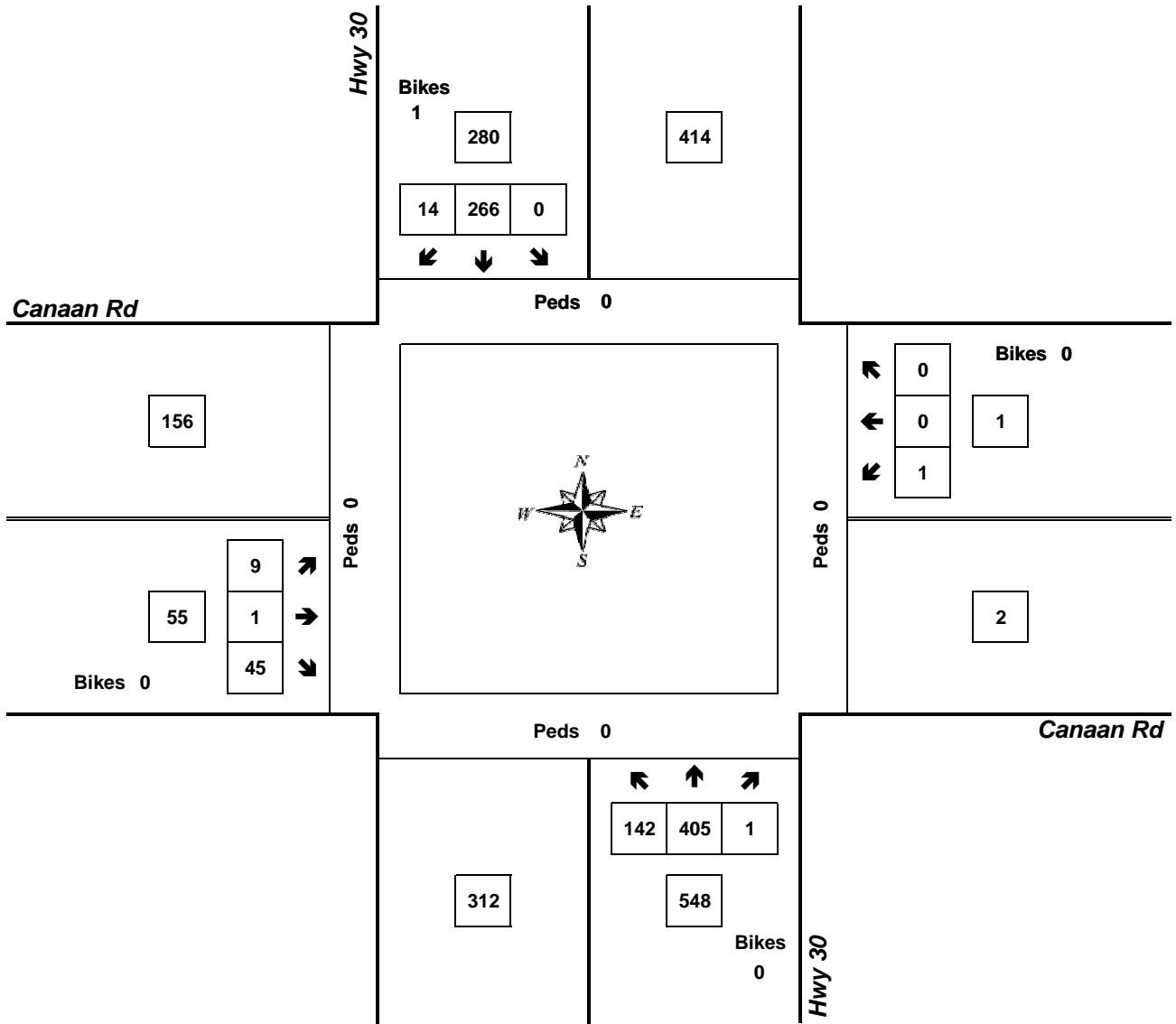


Clay Carney
(503) 833-2740

Hwy 30 & Canaan Rd

4:45 PM to 5:45 PM

Tuesday, June 03, 2014



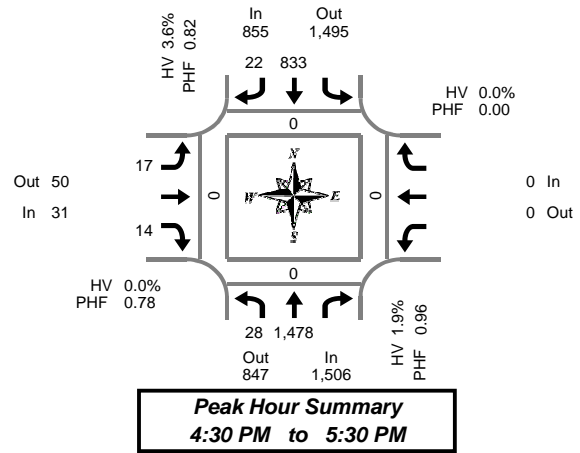
Approach	PHF	HV%	Volume
EB	0.81	3.6%	55
WB	0.25	0.0%	1
NB	0.96	2.9%	548
SB	0.90	4.3%	280
Intersection	0.97	3.4%	884

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Berg Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes			Bikes		North	South	East	West
3:00 PM	5	261	0	207	7	0	6	13	0			0	499	0	0	0	0
3:15 PM	5	280	0	194	4	0	2	3	0			0	488	0	0	0	1
3:30 PM	9	310	0	204	8	1	6	3	0			0	540	0	0	0	0
3:45 PM	5	309	0	178	3	2	4	6	0			0	505	0	0	0	0
4:00 PM	7	323	0	217	3	0	2	3	0			0	555	0	0	0	0
4:15 PM	7	370	0	183	9	1	8	6	0			0	583	0	0	0	0
4:30 PM	9	354	0	196	5	0	5	2	0			0	571	0	0	0	0
4:45 PM	7	378	0	180	6	0	3	2	0			0	576	0	0	0	0
5:00 PM	6	359	0	257	5	1	6	3	0			0	636	0	0	0	0
5:15 PM	6	387	1	200	6	0	3	7	0			0	609	0	0	0	0
5:30 PM	10	342	0	181	8	2	2	4	0			0	547	0	0	0	0
5:45 PM	7	373	0	184	5	0	4	5	0			0	578	0	0	0	0
Total Survey	83	4,046	1	2,381	69	7	51	57	0			0	6,687	0	0	0	1

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30				Southbound Hwy 30				Eastbound Berg Rd				Westbound Berg Rd				Total	Pedestrians Crosswalks			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	1,506	847	2,353	1	855	1,495	2,350	1	31	50	81	0	0	0	0	0	2,392	0	0	0	0
%HV	1.9%				3.6%				0.0%				0.0%				2.5%				
PHF	0.96				0.82				0.78				0.00				0.94				

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Total				
	L	T	Total	T	R	Total	L	R	Total			Total					
Volume	28	1,478	1,506	833	22	855	17	14	31			0	2,392				
%HV	0.0%	1.9%	NA	1.9%	NA	3.6%	4.5%	3.6%	0.0%	NA	0.0%	0.0%	NA	NA	NA	0.0%	2.5%
PHF	0.78	0.95	0.96	0.81	0.92	0.82	0.71	0.50	0.78			0.00	0.94				

Rolling Hour Summary

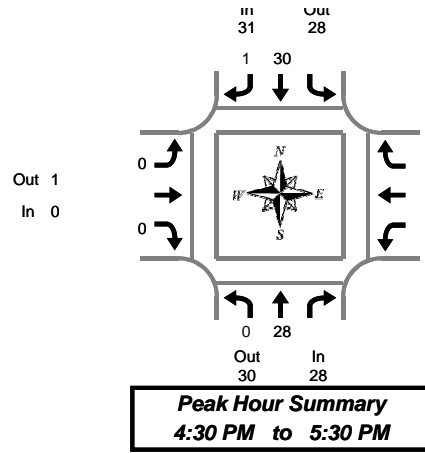
3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Interval Total	Pedestrians Crosswalk			
	L	T	Bikes	T	R	Bikes	L	R	Bikes			Bikes		North	South	East	West
3:00 PM	24	1,160	0	783	22	3	18	25	0			0	2,032	0	0	0	1
3:15 PM	26	1,222	0	793	18	3	14	15	0			0	2,088	0	0	0	1
3:30 PM	28	1,312	0	782	23	4	20	18	0			0	2,183	0	0	0	0
3:45 PM	28	1,356	0	774	20	3	19	17	0			0	2,214	0	0	0	0
4:00 PM	30	1,425	0	776	23	1	18	13	0			0	2,285	0	0	0	0
4:15 PM	29	1,461	0	816	25	2	22	13	0			0	2,366	0	0	0	0
4:30 PM	28	1,478	1	833	22	1	17	14	0			0	2,392	0	0	0	0
4:45 PM	29	1,466	1	818	25	3	14	16	0			0	2,368	0	0	0	0
5:00 PM	29	1,461	1	822	24	3	15	19	0			0	2,370	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Hwy 30 & Berg Rd

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	0	10	10	12	0	12	2		2			0	24
3:15 PM	0	10	10	11	1	12	0		0			0	22
3:30 PM	0	18	18	14	1	15	0		0			0	33
3:45 PM	1	14	15	9	0	9	1		1			0	26
4:00 PM	1	9	10	13	0	13	0		0			0	23
4:15 PM	0	8	8	3	0	3	0		0			0	11
4:30 PM	0	9	9	13	1	14	0		0			0	23
4:45 PM	0	8	8	10	0	10	0		0			0	18
5:00 PM	0	4	4	4	0	4	0		0			0	8
5:15 PM	0	7	7	3	0	3	0		0			0	10
5:30 PM	0	7	7	7	0	7	0		0			0	14
5:45 PM	0	8	8	3	0	3	0		0			0	11
Total Survey	2	112	114	102	3	105	3		1			0	223

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	28	30	58	31	28	59	0	1	1	0	0	0	59
PHF	0.16			0.20			0.00			0.00			0.18

By Movement	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Total
	L	T	Total	T	R	Total	L	R	Total			Total	
Volume	0	28	28	30	1	31	0		0			0	59
PHF	0.00	0.17	0.16	0.20	0.13	0.20	0.00		0.00	0.00		0.00	0.18

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Hwy 30			Southbound Hwy 30			Eastbound Berg Rd			Westbound Berg Rd			Interval Total
	L	T	Total	T	R	Total	L	R	Total			Total	
3:00 PM	1	52	53	46	2	48	3		1			0	105
3:15 PM	2	51	53	47	2	49	1		1			0	104
3:30 PM	2	49	51	39	1	40	1		1			0	93
3:45 PM	2	40	42	38	1	39	1		1			0	83
4:00 PM	1	34	35	39	1	40	0		0			0	75
4:15 PM	0	29	29	30	1	31	0		0			0	60
4:30 PM	0	28	28	30	1	31	0		0			0	59
4:45 PM	0	26	26	24	0	24	0		0			0	50
5:00 PM	0	26	26	17	0	17	0		0			0	43

Peak Hour Summary

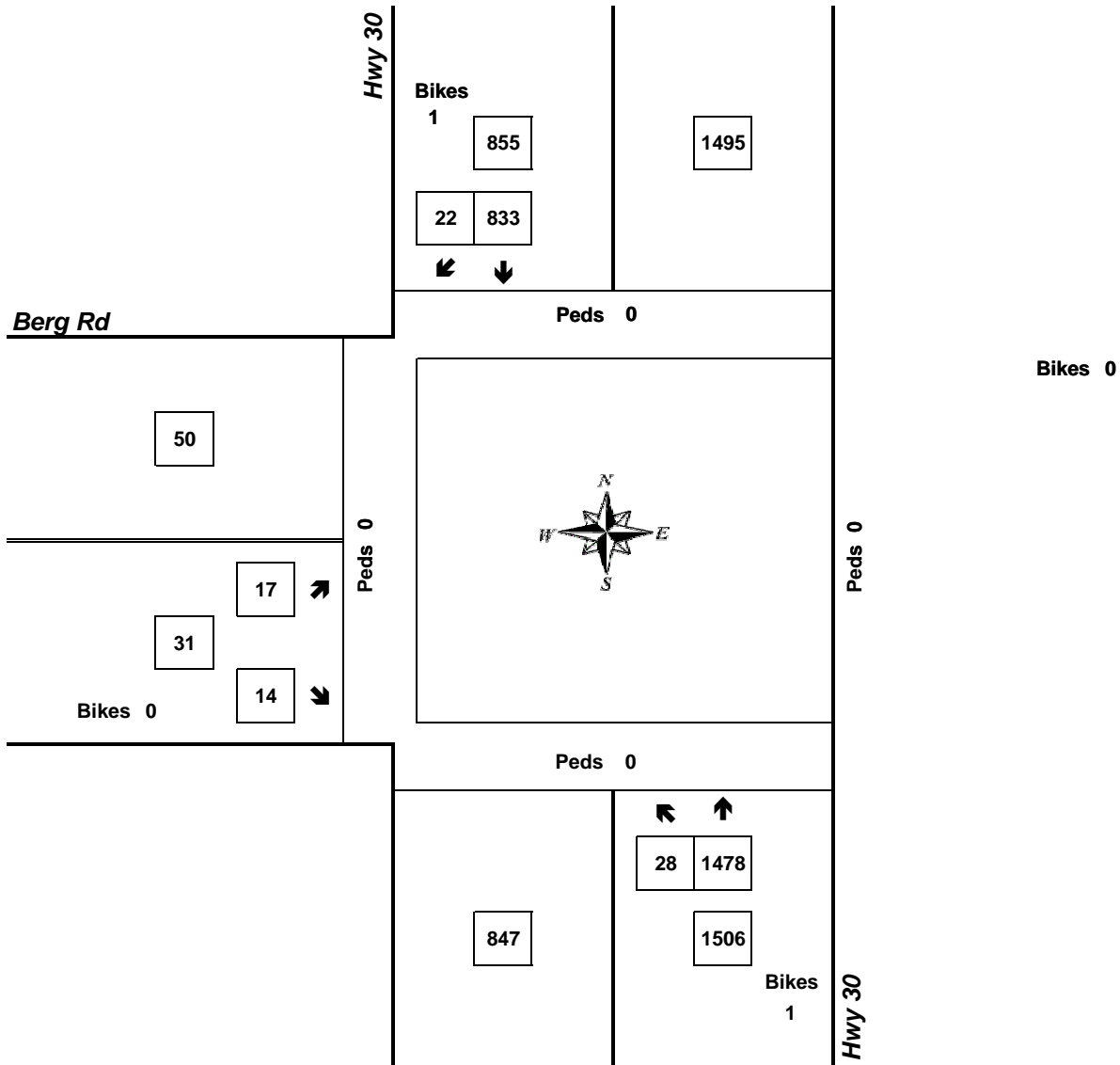


Clay Carney
(503) 833-2740

Hwy 30 & Berg Rd

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



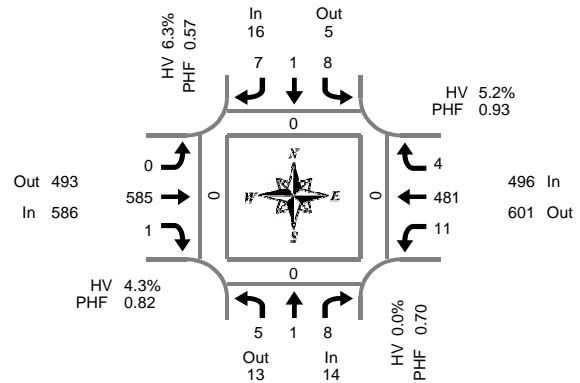
Approach	PHF	HV%	Volume
EB	0.78	0.0%	31
WB	0.00	0.0%	0
NB	0.96	1.9%	1,506
SB	0.82	3.6%	855
Intersection	0.94	2.5%	2,392

Count Period: 3:00 PM to 6:00 PM

Total Vehicle Summary



Clay Carney
(503) 833-2740



Heath Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Peak Hour Summary
4:30 PM to 5:30 PM

15-Minute Interval Summary

3:00 PM to 6:00 PM

Interval Start Time	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	5	5	5	0	3	0	0	0	0	104	2	0	3	98	2	0	227	0	0	0	0
3:15 PM	6	0	8	0	1	0	1	0	1	110	4	0	1	117	1	0	250	0	0	0	0
3:30 PM	1	1	1	0	2	0	0	0	0	98	1	0	3	101	1	0	209	0	0	0	0
3:45 PM	3	1	2	0	0	1	0	0	0	129	0	0	6	115	0	1	257	0	0	0	0
4:00 PM	1	0	3	0	1	1	0	0	1	116	2	0	3	107	4	0	239	0	0	0	0
4:15 PM	0	1	5	0	0	1	1	0	1	118	1	0	9	95	2	0	234	0	0	0	0
4:30 PM	0	0	4	0	2	0	0	0	0	98	0	0	2	120	3	0	229	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	147	0	0	2	125	0	0	276	0	0	0	0
5:00 PM	1	1	3	0	3	1	2	0	0	162	0	0	4	107	0	0	284	0	0	0	0
5:15 PM	3	0	1	0	2	0	5	0	0	178	1	0	3	129	1	0	323	0	0	0	0
5:30 PM	1	0	0	0	0	1	1	0	0	107	2	0	1	87	1	0	201	0	0	0	0
5:45 PM	1	0	2	0	1	0	0	0	0	98	1	1	1	109	0	0	213	0	0	0	0
Total Survey	23	9	34	0	16	5	10	0	3	1,465	14	1	38	1,310	15	1	2,942	0	0	0	0

Peak Hour Summary

4:30 PM to 5:30 PM

By Approach	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Total	Pedestrians Crosswalk			
	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes	In	Out	Total	Bikes		North	South	East	West
Volume	14	13	27	0	16	5	21	0	586	493	1,079	0	496	601	1,097	0	1,112	0	0	0	0
%HV	0.0%				6.3%				4.3%				5.2%				4.7%				
PHF	0.70				0.57				0.82				0.93				0.86				

By Movement	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	5	1	8	14	8	1	7	16	0	585	1	586	11	481	4	496	1,112
%HV	0.0%	0.0%	0.0%	0.0%	12.5%	0.0%	0.0%	6.3%	0.0%	4.3%	0.0%	4.3%	9.1%	5.2%	0.0%	5.2%	4.7%
PHF	0.42	0.25	0.50	0.70	0.67	0.25	0.35	0.57	0.00	0.82	0.25	0.82	0.69	0.93	0.33	0.93	0.86

Rolling Hour Summary

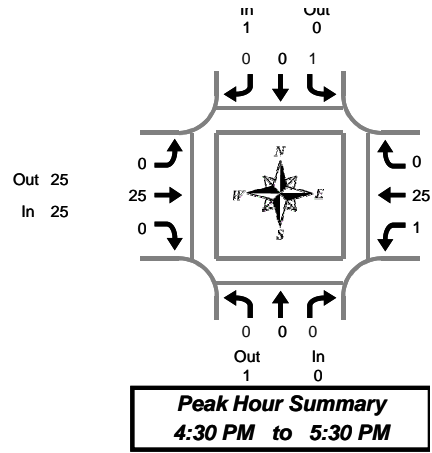
3:00 PM to 6:00 PM

Interval Start Time	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total	Pedestrians Crosswalk			
	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes	L	T	R	Bikes		North	South	East	West
3:00 PM	15	7	16	0	6	1	1	0	1	441	7	0	13	431	4	1	943	0	0	0	0
3:15 PM	11	2	14	0	4	2	1	0	2	453	7	0	13	440	6	1	955	0	0	0	0
3:30 PM	5	3	11	0	3	3	1	0	2	461	4	0	21	418	7	1	939	0	0	0	0
3:45 PM	4	2	14	0	3	3	1	0	2	461	3	0	20	437	9	1	959	0	0	0	0
4:00 PM	2	1	12	0	4	2	1	0	2	479	3	0	16	447	9	0	978	0	0	0	0
4:15 PM	2	2	12	0	6	2	3	0	1	525	1	0	17	447	5	0	1,023	0	0	0	0
4:30 PM	5	1	8	0	8	1	7	0	0	585	1	0	11	481	4	0	1,112	0	0	0	0
4:45 PM	6	1	4	0	6	2	8	0	0	594	3	0	10	448	2	0	1,084	0	0	0	0
5:00 PM	6	1	6	0	6	2	8	0	0	545	4	1	9	432	2	0	1,021	0	0	0	0

Heavy Vehicle Summary



Clay Carney
(503) 833-2740



Heath Rd & Hwy 30

Tuesday, June 03, 2014
3:00 PM to 6:00 PM

Heavy Vehicle 15-Minute Interval Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	7	1	8	19
3:15 PM	2	0	0	2	0	0	0	0	0	13	0	13	0	7	0	7	22
3:30 PM	0	0	0	0	0	0	0	0	0	12	0	12	0	7	0	7	19
3:45 PM	0	0	0	0	0	1	0	1	0	12	0	12	0	7	0	7	20
4:00 PM	0	0	0	0	0	0	0	0	0	11	0	11	0	7	0	7	18
4:15 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	3	0	3	11
4:30 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	8	0	8	13
4:45 PM	0	0	0	0	0	0	0	0	0	8	0	8	0	4	0	4	12
5:00 PM	0	0	0	0	0	0	0	0	0	6	0	6	1	7	0	8	14
5:15 PM	0	0	0	0	1	0	0	1	0	6	0	6	0	6	0	6	13
5:30 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7
5:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	1	4	0	5	8
Total Survey	2	0	0	2	1	1	0	2	0	100	0	100	2	69	1	72	176

Heavy Vehicle Peak Hour Summary 4:30 PM to 5:30 PM

By Approach	Northbound Heath Rd			Southbound Heath Rd			Eastbound Hwy 30			Westbound Hwy 30			Total
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Volume	0	1	1	1	0	1	25	25	50	26	26	52	52
PHF	0.00			0.25			0.17			0.30			0.21

By Movement	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
Volume	0	0	0	0	1	0	0	1	0	25	0	25	1	25	0	26	52
PHF	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.17	0.00	0.17	0.25	0.30	0.00	0.30	0.21

Heavy Vehicle Rolling Hour Summary 3:00 PM to 6:00 PM

Interval Start Time	Northbound Heath Rd				Southbound Heath Rd				Eastbound Hwy 30				Westbound Hwy 30				Interval Total
	L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	
3:00 PM	2	0	0	2	0	1	0	1	0	48	0	48	0	28	1	29	80
3:15 PM	2	0	0	2	0	1	0	1	0	48	0	48	0	28	0	28	79
3:30 PM	0	0	0	0	0	1	0	1	0	43	0	43	0	24	0	24	68
3:45 PM	0	0	0	0	0	1	0	1	0	36	0	36	0	25	0	25	62
4:00 PM	0	0	0	0	0	0	0	0	0	32	0	32	0	22	0	22	54
4:15 PM	0	0	0	0	0	0	0	0	0	27	0	27	1	22	0	23	50
4:30 PM	0	0	0	0	1	0	0	1	0	25	0	25	1	25	0	26	52
4:45 PM	0	0	0	0	1	0	0	1	0	25	0	25	1	19	0	20	46
5:00 PM	0	0	0	0	1	0	0	1	0	20	0	20	2	19	0	21	42

Peak Hour Summary

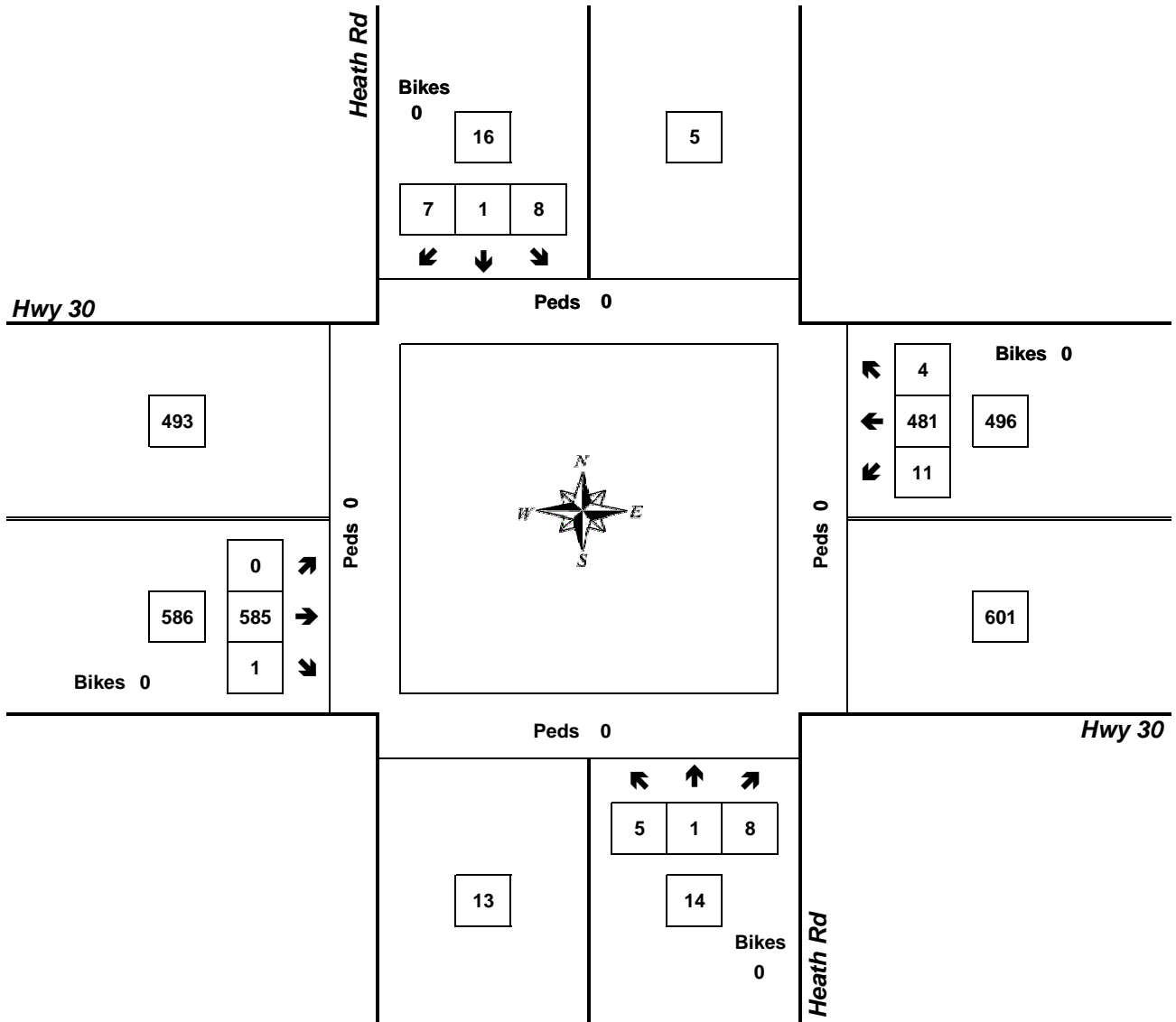


Clay Carney
(503) 833-2740

Heath Rd & Hwy 30

4:30 PM to 5:30 PM

Tuesday, June 03, 2014



Approach	PHF	HV%	Volume
EB	0.82	4.3%	586
WB	0.93	5.2%	496
NB	0.70	0.0%	14
SB	0.57	6.3%	16
Intersection	0.86	4.7%	1,112

Count Period: 3:00 PM to 6:00 PM

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 22
Apiary Rd E-O Hwy 47

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	1	1	1	0	0	0	1	1	0	0	0	0	6
05:00	0	2	2	5	2	0	0	0	4	11	0	0	3	0	29
06:00	0	5	2	2	1	3	0	0	7	6	0	0	1	1	28
07:00	0	5	0	0	2	1	0	2	7	3	0	0	2	2	24
08:00	1	2	1	2	0	1	0	0	3	5	0	0	3	0	18
09:00	0	5	6	4	2	1	0	0	7	9	0	0	1	1	36
10:00	0	1	3	1	0	1	0	0	6	8	0	0	4	0	24
11:00	0	3	0	2	1	1	0	0	3	6	0	0	1	3	20
12 PM	0	2	2	3	2	1	0	0	8	3	0	0	1	4	26
13:00	0	3	6	4	0	0	0	0	7	7	0	0	2	1	30
14:00	0	5	4	1	3	0	0	0	2	7	0	0	3	0	25
15:00	0	7	3	0	4	0	0	0	0	1	0	0	1	1	17
16:00	2	7	2	0	2	0	0	1	0	1	0	0	1	0	16
17:00	0	5	1	0	3	0	0	0	0	0	0	0	0	0	9
18:00	1	3	1	0	1	0	0	0	0	0	0	0	0	0	6
19:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
20:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
21:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3
Total	4	69	35	25	29	9	0	3	55	68	0	0	23	13	333
Percent	1.2%	20.7%	10.5%	7.5%	8.7%	2.7%	0.0%	0.9%	16.5%	20.4%	0.0%	0.0%	6.9%	3.9%	
AM Peak	08:00	06:00	09:00	05:00	05:00	06:00		07:00	06:00	05:00			10:00	11:00	
Vol.	1	5	6	5	2	3		2	7	11			4	3	
PM Peak	16:00	15:00	13:00	13:00	15:00	12:00		16:00	12:00	13:00			14:00	12:00	
Vol.	2	7	6	4	4	1		1	8	7			3	4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 22
Apiary Rd E-O Hwy 47

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	2	2	0	0	1	0	0	0	1	0	0	0	0	6
01:00	0	1	0	0	1	1	0	0	0	1	0	0	0	0	4
02:00	0	1	2	0	0	0	0	0	1	0	0	0	0	0	4
03:00	0	0	1	0	0	1	0	0	1	2	0	0	0	0	5
04:00	0	0	1	0	0	1	0	0	0	2	0	0	1	2	7
05:00	0	5	1	4	0	1	0	0	5	7	0	0	3	0	26
06:00	0	4	2	3	1	1	0	0	8	12	0	0	1	2	34
07:00	0	4	3	1	0	2	0	0	7	6	0	0	1	0	24
08:00	0	3	1	1	0	2	0	0	5	4	0	0	2	2	20
09:00	0	1	1	2	0	1	0	0	4	6	0	0	1	2	18
10:00	0	2	2	0	0	1	0	0	6	7	0	0	1	1	20
11:00	0	3	3	1	1	2	0	0	6	10	0	0	2	1	29
12 PM	0	3	1	3	1	0	0	1	5	5	0	0	2	2	23
13:00	0	3	4	3	1	0	1	0	7	4	0	0	2	1	26
14:00	1	1	6	0	4	0	0	0	2	6	0	0	5	2	27
15:00	0	8	5	1	1	0	0	1	1	0	0	0	0	0	17
16:00	0	9	3	0	3	1	0	0	0	2	0	0	0	0	18
17:00	0	6	8	0	0	0	0	0	0	0	0	0	0	0	14
18:00	2	2	2	0	1	0	0	1	0	0	0	0	0	0	8
19:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	64	50	19	15	15	1	3	58	75	0	0	21	15	339
Percent	0.9%	18.9%	14.7%	5.6%	4.4%	4.4%	0.3%	0.9%	17.1%	22.1%	0.0%	0.0%	6.2%	4.4%	
AM Peak Vol.		05:00 5	07:00 3	05:00 4	01:00 1	07:00 2			06:00 8	06:00 12			05:00 3	04:00 2	
PM Peak Vol.	18:00 2	16:00 9	17:00 8	12:00 3	14:00 4	16:00 1	13:00 1	12:00 1	13:00 7	14:00 6			14:00 5	12:00 2	
Grand Total	7	133	85	44	44	24	1	6	113	143	0	0	44	28	672
Percent	1.0%	19.8%	12.6%	6.5%	6.5%	3.6%	0.1%	0.9%	16.8%	21.3%	0.0%	0.0%	6.5%	4.2%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 22
Apiary Rd E-O Hwy 47

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	2	0	0	1	0	0	0	0	0	0	1	0	4
04:00	0	1	0	0	1	1	0	0	0	1	0	0	1	2	7
05:00	0	1	2	1	2	1	0	0	0	0	0	0	0	0	7
06:00	0	0	3	4	0	2	0	0	0	2	0	0	1	1	13
07:00	0	3	2	13	3	8	0	0	0	0	0	0	0	5	34
08:00	0	1	0	5	2	7	0	0	1	1	0	0	0	3	20
09:00	0	1	1	11	2	5	0	0	0	0	0	0	0	1	21
10:00	0	3	1	9	4	4	0	1	0	0	0	0	1	0	23
11:00	1	2	2	9	5	7	0	1	0	2	0	0	0	3	32
12 PM	0	2	1	7	4	5	0	0	1	0	0	0	0	3	23
13:00	0	2	3	4	3	2	0	1	0	0	0	0	1	0	16
14:00	0	4	2	3	0	1	0	0	0	0	0	0	0	1	11
15:00	0	11	4	2	1	1	0	0	0	0	0	0	0	2	21
16:00	1	7	2	0	2	4	0	4	0	0	0	0	0	2	22
17:00	1	5	1	0	2	0	0	0	0	0	0	0	0	0	9
18:00	0	2	3	0	1	0	0	1	0	0	0	0	0	0	7
19:00	0	4	1	0	0	0	0	0	0	1	0	0	0	1	7
20:00	0	3	3	0	0	0	0	0	0	0	0	0	0	0	6
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	2	1	3	0	0	0	0	0	0	0	0	0	6
Total	3	55	36	69	35	49	0	8	2	7	0	0	5	24	293
Percent	1.0%	18.8%	12.3%	23.5%	11.9%	16.7%	0.0%	2.7%	0.7%	2.4%	0.0%	0.0%	1.7%	8.2%	
AM Peak	11:00	07:00	06:00	07:00	11:00	07:00		10:00	08:00	06:00			03:00	07:00	
Vol.	1	3	3	13	5	8		1	1	2			1	5	
PM Peak	16:00	15:00	15:00	12:00	12:00	12:00		16:00	12:00	19:00			13:00	12:00	
Vol.	1	11	4	7	4	5		4	1	1			1	3	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 22
Apiary Rd E-O Hwy 47

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	1	0	1	1	0	0	0	0	0	0	0	0	0	3
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	0	0	1	0	0	0	0	0	0	0	0	1	3
05:00	0	1	1	0	2	1	0	0	0	0	0	0	0	0	5
06:00	0	3	2	3	3	1	0	0	0	2	0	1	0	1	16
07:00	0	2	2	12	0	10	0	0	0	2	0	0	0	1	29
08:00	0	1	2	10	4	9	0	1	0	0	0	0	0	3	30
09:00	0	1	0	5	1	5	0	0	0	0	0	0	0	1	13
10:00	0	4	2	8	2	1	0	2	0	1	0	0	0	2	22
11:00	0	3	3	10	2	7	0	0	0	0	0	0	0	5	30
12 PM	1	0	2	8	0	4	0	0	0	0	0	0	0	0	15
13:00	0	1	2	2	2	1	0	0	0	0	0	0	0	0	8
14:00	1	2	0	4	0	0	0	1	0	1	0	0	0	2	11
15:00	0	2	3	2	1	6	0	0	0	0	0	0	0	0	14
16:00	1	7	3	2	2	0	0	0	0	0	0	0	0	0	15
17:00	0	4	1	1	1	1	0	0	0	0	0	0	0	0	8
18:00	0	2	2	0	2	0	0	0	0	0	0	0	0	0	6
19:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
Total	3	43	32	68	25	46	0	4	0	6	0	1	0	17	245
Percent	1.2%	17.6%	13.1%	27.8%	10.2%	18.8%	0.0%	1.6%	0.0%	2.4%	0.0%	0.4%	0.0%	6.9%	
AM Peak		10:00	11:00	07:00	08:00	07:00		10:00		06:00		06:00		11:00	
Vol.		4	3	12	4	10		2		2		1		5	
PM Peak	12:00	16:00	15:00	12:00	13:00	15:00		14:00		14:00				14:00	
Vol.	1	7	3	8	2	6		1		1				2	
Grand Total	6	98	68	137	60	95	0	12	2	13	0	1	5	41	538
Percent	1.1%	18.2%	12.6%	25.5%	11.2%	17.7%	0.0%	2.2%	0.4%	2.4%	0.0%	0.2%	0.9%	7.6%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 30
Wonderly Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
09:00	0	0	1	0	2	0	0	0	0	0	0	0	0	0	3
10:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
11:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
12 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	4	9
13:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
14:00	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
15:00	0	5	3	1	0	1	0	0	0	0	0	0	0	0	10
16:00	0	2	1	0	2	0	0	0	0	0	0	0	0	0	5
17:00	0	3	1	0	2	0	0	0	0	0	0	0	0	0	6
18:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
19:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
20:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	46	16	1	11	1	0	0	0	0	0	0	0	4	79
Percent	0.0%	58.2%	20.3%	1.3%	13.9%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	
AM Peak Vol.		03:00 3	11:00 2		09:00 2										
PM Peak Vol.		14:00 7	15:00 3	15:00 1	16:00 2	15:00 1								12:00 4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 38
Timber Rd W-O Hwy 47

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	3	0	4	0	0	0	1	0	0	0	0	0	10
05:00	0	4	2	4	5	0	0	0	1	7	0	0	0	2	25
06:00	0	7	2	1	3	1	0	0	3	3	0	0	0	0	20
07:00	0	7	3	3	2	0	0	1	2	3	0	0	0	0	21
08:00	1	7	1	1	1	0	0	1	2	3	0	0	0	1	18
09:00	2	11	5	3	6	0	0	2	2	5	0	0	0	3	39
10:00	0	9	3	0	2	0	0	1	1	1	0	0	1	0	18
11:00	0	12	8	1	5	3	0	0	0	4	0	0	0	1	34
12 PM	0	8	6	6	7	0	0	0	2	2	0	0	0	2	33
13:00	1	12	5	1	5	0	0	1	1	4	0	0	0	1	31
14:00	0	5	8	0	7	0	0	1	0	1	0	0	0	1	23
15:00	2	8	6	1	9	0	0	1	0	0	0	0	0	0	27
16:00	1	9	13	0	6	0	0	1	0	0	0	0	0	0	30
17:00	0	15	8	0	5	1	0	0	0	0	0	0	0	1	30
18:00	0	8	4	0	3	0	0	0	0	0	0	0	0	0	15
19:00	0	3	5	0	1	0	0	0	0	0	0	0	0	0	9
20:00	0	2	2	0	3	0	0	0	0	0	0	0	0	0	7
21:00	0	2	7	0	1	0	0	0	0	0	0	0	0	0	10
22:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
23:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	7	135	92	21	77	5	0	9	15	33	0	0	1	12	407
Percent	1.7%	33.2%	22.6%	5.2%	18.9%	1.2%	0.0%	2.2%	3.7%	8.1%	0.0%	0.0%	0.2%	2.9%	
AM Peak	09:00	11:00	11:00	05:00	09:00	11:00		09:00	06:00	05:00			10:00	09:00	
Vol.	2	12	8	4	6	3		2	3	7			1	3	
PM Peak	15:00	17:00	16:00	12:00	15:00	17:00		13:00	12:00	13:00				12:00	
Vol.	2	15	13	6	9	1		1	2	4				2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 38
Timber Rd W-O Hwy 47

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
04:00	0	1	1	0	5	0	0	0	0	0	0	0	0	0	7
05:00	0	6	4	3	1	0	0	0	2	4	0	0	0	1	21
06:00	0	7	1	5	2	0	0	0	2	3	0	0	0	2	22
07:00	0	10	4	0	1	1	0	0	1	5	0	0	0	0	22
08:00	0	8	7	0	4	1	0	0	0	3	0	0	0	1	24
09:00	0	9	5	2	1	0	0	1	1	4	0	0	0	0	23
10:00	0	7	9	3	5	0	0	1	2	3	0	0	0	1	31
11:00	0	10	9	2	6	0	0	0	1	2	0	0	0	1	31
12 PM	0	5	8	0	6	0	0	3	3	3	0	0	0	0	28
13:00	1	7	7	1	10	0	0	2	3	1	0	0	0	1	33
14:00	1	10	9	1	5	0	0	1	1	2	0	0	1	2	33
15:00	0	12	11	1	7	3	0	1	0	0	0	0	0	0	35
16:00	1	7	12	0	13	0	0	2	0	0	0	0	0	1	36
17:00	0	10	7	0	6	0	0	1	0	0	0	0	0	1	25
18:00	0	10	5	0	4	0	0	2	0	0	0	0	0	0	21
19:00	1	4	6	0	2	0	0	1	0	0	0	0	0	0	14
20:00	0	2	3	0	1	0	0	0	0	0	0	0	0	0	6
21:00	0	5	1	0	2	0	0	0	0	0	0	0	0	0	8
22:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
Total	4	135	112	18	81	6	0	15	16	30	0	0	1	11	429
Percent	0.9%	31.5%	26.1%	4.2%	18.9%	1.4%	0.0%	3.5%	3.7%	7.0%	0.0%	0.0%	0.2%	2.6%	
AM Peak		07:00	10:00	06:00	11:00	03:00		09:00	05:00	07:00				06:00	
Vol.		10	9	5	6	1		1	2	5				2	
PM Peak	13:00	15:00	16:00	13:00	16:00	15:00		12:00	12:00	12:00			14:00	14:00	
Vol.	1	12	12	1	13	3		3	3	3			1	2	
Grand Total	11	270	204	39	158	11	0	24	31	63	0	0	2	23	836
Percent	1.3%	32.3%	24.4%	4.7%	18.9%	1.3%	0.0%	2.9%	3.7%	7.5%	0.0%	0.0%	0.2%	2.8%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 38
Timber Rd W-O Hwy 47

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	1	0	1	1	0	0	0	0	0	0	0	0	3
03:00	0	2	2	3	3	1	0	0	0	0	0	0	0	0	11
04:00	0	0	2	1	4	6	0	0	0	0	0	0	1	0	14
05:00	0	3	1	1	2	5	0	0	0	0	0	0	0	0	12
06:00	0	7	2	0	1	0	0	0	0	0	0	0	0	0	10
07:00	0	3	2	1	2	9	0	2	0	0	0	0	0	1	20
08:00	0	5	2	3	3	2	0	0	0	0	0	0	0	1	16
09:00	0	7	7	1	6	5	0	1	0	0	0	0	0	0	27
10:00	0	8	4	2	2	4	0	0	0	0	0	0	0	0	20
11:00	0	12	11	2	2	5	0	2	0	0	0	0	0	1	35
12 PM	0	12	5	1	6	3	0	1	1	0	0	0	0	1	30
13:00	0	9	2	1	1	0	0	0	0	0	0	0	0	1	14
14:00	0	12	4	2	4	1	0	1	0	0	0	0	0	0	24
15:00	0	13	7	0	5	0	0	1	0	0	0	0	0	1	27
16:00	2	21	6	0	4	0	0	3	0	0	0	0	0	0	36
17:00	2	9	4	0	1	1	0	0	0	0	0	0	0	0	17
18:00	0	8	6	0	2	0	0	0	0	0	0	0	0	0	16
19:00	0	11	3	0	2	0	0	1	0	0	0	0	0	0	17
20:00	0	7	2	0	1	0	0	0	0	0	0	0	0	0	10
21:00	0	7	6	0	2	0	0	0	0	0	0	0	0	0	15
22:00	1	6	1	0	2	0	0	0	0	0	0	0	0	0	10
23:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
Total	5	164	83	18	56	43	0	12	1	0	0	0	1	6	389
Percent	1.3%	42.2%	21.3%	4.6%	14.4%	11.1%	0.0%	3.1%	0.3%	0.0%	0.0%	0.0%	0.3%	1.5%	
AM Peak		11:00	11:00	03:00	09:00	07:00		07:00					04:00	07:00	
Vol.		12	11	3	6	9		2					1	1	
PM Peak	16:00	16:00	15:00	14:00	12:00	12:00		16:00	12:00					12:00	
Vol.	2	21	7	2	6	3		3	1					1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 38
Timber Rd W-O Hwy 47

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	2	2	2	2	0	0	0	0	0	0	0	0	0	8
04:00	0	1	3	2	4	5	0	0	0	0	0	0	2	0	17
05:00	0	2	1	1	3	0	0	0	0	0	0	0	0	0	7
06:00	0	5	2	0	1	3	0	0	0	0	0	0	0	0	11
07:00	0	5	3	4	1	7	0	0	0	0	0	0	0	1	21
08:00	0	6	13	4	1	7	0	0	0	0	0	0	0	0	31
09:00	0	8	6	2	2	3	0	0	1	0	0	0	0	0	22
10:00	0	9	4	0	2	1	0	1	0	0	0	0	0	1	18
11:00	0	6	6	4	4	3	0	1	0	0	0	0	0	1	25
12 PM	0	3	6	1	4	0	0	2	3	3	0	0	0	0	22
13:00	1	11	8	0	11	0	0	2	1	2	0	0	0	1	37
14:00	1	8	9	1	4	0	0	1	1	1	0	0	1	2	29
15:00	1	11	11	1	13	3	0	2	0	0	0	0	0	0	42
16:00	0	6	15	0	6	0	0	1	0	0	0	0	0	1	29
17:00	0	10	4	0	8	0	0	1	0	0	0	0	0	1	24
18:00	1	11	7	0	2	0	0	2	0	0	0	0	0	0	23
19:00	0	3	2	0	2	0	0	1	0	0	0	0	0	0	8
20:00	0	3	4	0	1	0	0	0	0	0	0	0	0	0	8
21:00	0	3	1	0	2	0	0	0	0	0	0	0	0	0	6
22:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	5	117	109	22	74	32	0	14	6	6	0	0	3	8	396
Percent	1.3%	29.5%	27.5%	5.6%	18.7%	8.1%	0.0%	3.5%	1.5%	1.5%	0.0%	0.0%	0.8%	2.0%	
AM Peak	01:00	10:00	08:00	07:00	04:00	07:00		10:00	09:00				04:00	07:00	
Vol.	1	9	13	4	4	7		1	1				2	1	
PM Peak	13:00	13:00	16:00	12:00	15:00	15:00		12:00	12:00	12:00			14:00	14:00	
Vol.	1	11	15	1	13	3		2	3	3			1	2	
Grand Total	10	281	192	40	130	75	0	26	7	6	0	0	4	14	785
Percent	1.3%	35.8%	24.5%	5.1%	16.6%	9.6%	0.0%	3.3%	0.9%	0.8%	0.0%	0.0%	0.5%	1.8%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 26
Tide Creek Rd W-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
06:00	0	0	0	1	1	0	0	0	0	0	0	0	0	1	3
07:00	0	1	0	0	2	0	0	0	0	0	0	0	0	1	4
08:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
09:00	0	1	1	0	1	0	0	0	0	0	0	0	0	1	4
10:00	0	2	2	0	2	0	0	0	0	0	0	0	0	0	6
11:00	0	10	2	0	3	0	0	0	0	0	0	0	0	6	21
12 PM	0	7	4	0	2	0	0	0	0	0	0	0	0	0	13
13:00	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
14:00	0	10	5	1	1	0	0	1	0	0	0	0	0	0	18
15:00	0	10	2	0	2	0	0	1	0	0	0	0	0	0	15
16:00	0	13	8	1	6	0	0	0	0	0	0	0	0	0	28
17:00	0	13	9	0	6	0	0	1	0	0	0	0	0	0	29
18:00	2	19	4	0	5	0	0	0	0	0	0	0	0	0	30
19:00	0	7	4	0	2	0	0	0	0	0	0	0	0	0	13
20:00	0	10	3	2	3	0	0	0	0	0	0	0	0	0	18
21:00	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
22:00	0	3	2	0	1	0	0	0	0	0	0	0	0	0	6
23:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
Total	2	129	51	5	41	0	0	3	0	0	0	0	0	9	240
Percent	0.8%	53.8%	21.3%	2.1%	17.1%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	
AM Peak		11:00	10:00	06:00	11:00									11:00	
Vol.		10	2	1	3									6	
PM Peak	18:00	18:00	17:00	20:00	16:00			14:00							
Vol.	2	19	9	2	6			1							

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 26
Tide Creek Rd W-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	6	1	1	3	0	0	0	0	0	0	0	0	0	11
05:00	0	8	2	0	5	0	0	0	0	0	0	0	0	0	15
06:00	0	7	9	3	8	0	0	0	0	0	0	0	0	0	27
07:00	0	10	11	0	3	0	0	1	0	0	0	0	0	0	25
08:00	0	5	12	0	3	0	0	0	0	0	0	0	0	0	20
09:00	0	9	8	0	5	0	0	0	0	0	0	0	0	0	22
10:00	0	9	6	0	4	0	0	0	0	0	0	0	0	0	19
11:00	1	6	4	0	2	0	0	0	0	0	0	0	0	3	16
12 PM	0	6	4	0	3	0	0	0	0	0	0	0	0	0	13
13:00	0	4	1	0	2	0	0	0	0	0	0	0	0	0	7
14:00	0	6	5	0	2	0	0	0	0	0	0	0	0	0	13
15:00	0	5	3	1	2	0	0	0	0	0	0	0	0	0	11
16:00	0	4	2	1	1	0	0	1	0	0	0	0	0	0	9
17:00	0	6	2	0	2	0	0	0	0	0	0	0	0	0	10
18:00	0	3	4	0	3	0	0	0	0	0	0	0	0	0	10
19:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
20:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
21:00	0	4	2	0	2	0	0	0	0	0	0	0	0	0	8
22:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	104	81	6	51	0	0	2	0	0	0	0	0	3	248
Percent	0.4%	41.9%	32.7%	2.4%	20.6%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak	11:00	07:00	08:00	06:00	06:00			07:00						11:00	
Vol.	1	10	12	3	8			1						3	
PM Peak		12:00	14:00	15:00	12:00			16:00							
Vol.		6	5	1	3			1							

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 26
Tide Creek Rd W-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
04:00	0	5	2	1	2	0	0	0	0	0	0	0	0	0	10
05:00	0	11	1	2	7	0	0	0	0	0	0	0	0	1	22
06:00	0	6	8	0	4	0	0	0	0	0	0	0	0	0	18
07:00	0	11	10	1	4	0	0	0	0	0	0	0	0	0	26
08:00	0	10	8	0	4	0	0	0	1	0	0	0	0	1	24
09:00	0	6	9	0	5	0	0	0	0	0	0	0	0	0	20
10:00	0	4	6	0	4	0	0	0	0	0	0	0	0	0	14
11:00	0	6	6	0	3	0	0	0	0	0	0	0	0	1	16
12 PM	0	4	3	0	0	0	0	0	1	0	0	0	0	0	8
13:00	0	5	0	0	4	0	0	0	0	0	0	0	0	0	9
14:00	0	7	4	0	3	0	0	0	0	0	0	0	0	0	14
15:00	0	5	3	1	3	0	0	0	0	0	0	0	0	0	12
16:00	0	3	3	1	2	0	0	0	0	0	0	0	0	0	9
17:00	0	4	4	0	1	0	0	0	0	0	0	0	0	0	9
18:00	0	8	5	0	5	0	0	0	0	0	0	0	0	0	18
19:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
20:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
21:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
22:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	105	80	6	52	0	0	0	2	0	0	0	0	3	248
Percent	0.0%	42.3%	32.3%	2.4%	21.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak		05:00	07:00	05:00	05:00				08:00					05:00	
Vol.		11	10	2	7				1					1	
PM Peak		18:00	18:00	15:00	18:00				12:00						
Vol.		8	5	1	5				1						
Grand Total	1	209	161	12	103	0	0	2	2	0	0	0	0	6	496
Percent	0.2%	42.1%	32.5%	2.4%	20.8%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	1.2%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 50
Swedetown Rd E-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	1	0	2	2	1	0	0	0	0	0	0	0	0	6
05:00	0	1	1	0	0	1	0	0	0	0	0	0	0	0	3
06:00	3	3	3	2	1	0	0	0	0	0	0	0	0	0	12
07:00	0	7	9	0	4	2	0	0	0	0	0	0	0	0	22
08:00	0	10	10	1	2	1	0	0	0	0	0	0	0	0	24
09:00	0	16	6	0	2	1	0	1	0	0	0	0	0	4	30
10:00	1	19	6	1	4	2	0	0	0	0	0	0	0	1	34
11:00	0	28	9	0	2	1	0	0	0	0	0	0	0	0	40
12 PM	0	20	10	1	4	0	0	0	0	0	0	0	0	0	35
13:00	1	20	12	0	4	1	0	1	0	0	0	0	0	6	45
14:00	0	36	23	3	5	1	0	1	0	0	0	0	0	1	70
15:00	3	39	20	2	11	1	0	0	0	0	0	0	0	1	77
16:00	0	41	21	0	15	0	0	1	0	0	0	0	0	0	78
17:00	1	39	18	0	11	0	0	1	0	0	0	0	0	1	71
18:00	0	40	17	0	5	0	0	0	0	0	0	0	0	1	63
19:00	0	33	9	0	4	0	0	0	0	0	0	0	0	0	46
20:00	0	25	11	0	6	0	0	0	0	0	0	0	0	1	43
21:00	0	24	7	0	4	0	0	0	0	0	0	0	0	0	35
22:00	0	17	2	0	0	0	0	0	0	0	0	0	0	1	20
23:00	0	5	2	0	1	0	0	0	0	0	0	0	0	0	8
Total	9	431	198	12	88	12	0	5	0	0	0	0	0	17	772
Percent	1.2%	55.8%	25.6%	1.6%	11.4%	1.6%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	
AM Peak	06:00	11:00	08:00	04:00	07:00	07:00		09:00						09:00	
Vol.	3	28	10	2	4	2		1						4	
PM Peak	15:00	16:00	14:00	14:00	16:00	13:00		13:00						13:00	
Vol.	3	41	23	3	15	1		1						6	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 50
Swedetown Rd E-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	3	2	0	3	1	0	0	0	0	0	0	0	0	9
04:00	0	7	6	1	1	0	0	0	0	0	0	0	0	0	15
05:00	1	9	11	0	3	0	0	1	0	2	0	0	0	0	27
06:00	1	17	6	0	6	1	0	0	0	1	0	0	0	0	32
07:00	0	40	14	1	7	0	0	0	0	1	0	0	0	0	63
08:00	0	30	17	0	5	2	0	0	0	1	0	0	0	0	55
09:00	0	23	11	0	1	0	0	0	0	1	0	0	0	1	37
10:00	0	28	9	0	3	2	0	0	0	0	0	0	0	0	42
11:00	0	24	7	0	6	0	0	1	0	2	0	0	0	0	40
12 PM	0	26	13	0	2	1	0	0	0	0	0	0	0	0	42
13:00	1	36	14	0	3	2	0	0	0	2	0	0	0	1	59
14:00	1	31	15	0	6	0	0	0	0	0	0	0	0	0	53
15:00	1	27	11	1	10	0	0	1	0	0	0	0	0	1	52
16:00	2	31	16	1	4	0	0	0	0	0	0	0	0	1	55
17:00	2	18	17	0	12	0	0	1	0	0	0	0	0	1	51
18:00	0	23	9	0	4	0	0	0	0	0	0	0	0	0	36
19:00	0	23	6	0	4	0	0	0	0	0	0	0	0	0	33
20:00	0	16	3	0	2	0	0	0	0	0	0	0	0	0	21
21:00	0	10	4	0	0	0	0	0	0	0	0	0	0	0	14
22:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
23:00	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	9	436	192	4	84	9	0	4	0	10	0	0	0	5	753
Percent	1.2%	57.9%	25.5%	0.5%	11.2%	1.2%	0.0%	0.5%	0.0%	1.3%	0.0%	0.0%	0.0%	0.7%	
AM Peak	05:00	07:00	08:00	04:00	07:00	08:00		05:00		05:00				09:00	
Vol.	1	40	17	1	7	2		1		2				1	
PM Peak	16:00	13:00	17:00	15:00	17:00	13:00		15:00		13:00				13:00	
Vol.	2	36	17	1	12	2		1		2				1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 50
Swedetown Rd E-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:00	0	3	1	0	1	1	0	0	0	0	0	0	0	0	6
04:00	0	10	5	0	2	0	0	0	0	0	0	0	0	0	17
05:00	2	6	15	1	5	1	0	0	0	1	0	0	0	0	31
06:00	0	18	11	0	2	0	0	0	1	2	0	0	0	0	34
07:00	0	30	18	1	8	0	0	0	0	0	0	0	0	0	57
08:00	0	38	18	0	6	0	0	2	1	2	0	0	0	1	68
09:00	0	25	9	0	1	1	0	0	0	0	0	0	0	0	36
10:00	1	33	12	0	9	0	0	0	1	2	0	0	0	0	58
11:00	0	25	8	0	2	0	0	0	0	0	0	0	0	2	37
12 PM	1	22	14	0	6	0	0	1	1	2	0	0	0	1	48
13:00	0	29	14	0	5	0	0	0	0	0	0	0	0	0	48
14:00	2	26	10	0	6	1	0	0	0	1	0	0	0	1	47
15:00	0	23	15	1	7	1	0	0	0	1	0	0	0	1	49
16:00	2	29	27	1	7	0	0	1	0	0	0	0	0	0	67
17:00	0	23	13	0	13	0	0	0	0	0	0	0	0	2	51
18:00	0	38	13	0	1	0	0	0	0	0	0	0	0	0	52
19:00	1	22	4	0	4	0	0	0	0	0	0	0	0	2	33
20:00	0	19	5	0	3	0	0	0	0	0	0	0	0	0	27
21:00	0	7	3	0	0	0	0	1	0	0	0	0	0	0	11
22:00	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	9	433	217	4	90	5	0	5	4	11	0	0	0	10	788
Percent	1.1%	54.9%	27.5%	0.5%	11.4%	0.6%	0.0%	0.6%	0.5%	1.4%	0.0%	0.0%	0.0%	1.3%	
AM Peak	05:00	08:00	07:00	05:00	10:00	03:00		08:00	06:00	06:00				11:00	
Vol.	2	38	18	1	9	1		2	1	2				2	
PM Peak	14:00	18:00	16:00	15:00	17:00	14:00		12:00	12:00	12:00				17:00	
Vol.	2	38	27	1	13	1		1	1	2				2	
Grand Total	18	869	409	8	174	14	0	9	4	21	0	0	0	15	1541
Percent	1.2%	56.4%	26.5%	0.5%	11.3%	0.9%	0.0%	0.6%	0.3%	1.4%	0.0%	0.0%	0.0%	1.0%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 20
Scappoose Vernonia W-O Cater Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
03:00	0	3	0	1	0	0	0	0	0	0	0	0	0	0	4
04:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
05:00	1	5	0	0	1	0	0	0	0	0	0	0	0	1	8
06:00	1	13	5	0	5	0	0	0	0	0	0	0	0	0	24
07:00	0	16	3	1	2	0	0	0	0	1	0	0	1	0	24
08:00	2	9	7	0	0	0	0	0	0	0	0	0	0	1	19
09:00	1	10	2	0	0	0	0	0	0	0	0	0	0	2	15
10:00	0	11	3	0	5	0	0	0	0	0	0	0	0	1	20
11:00	2	3	5	1	3	0	0	0	0	0	0	0	0	1	15
12 PM	0	4	4	1	2	0	0	0	0	1	0	0	1	1	14
13:00	0	13	8	1	4	0	0	0	0	0	0	0	0	1	27
14:00	1	6	3	1	7	0	0	0	0	0	0	0	0	0	18
15:00	0	5	4	0	4	1	0	0	0	0	0	0	0	1	15
16:00	3	4	1	2	0	2	0	0	0	0	0	0	0	0	12
17:00	2	11	4	0	1	0	0	0	0	0	0	0	0	1	19
18:00	0	5	5	0	2	0	0	0	0	0	0	0	0	0	12
19:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
20:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
21:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	13	136	58	8	38	3	0	0	1	2	0	0	2	10	271
Percent	4.8%	50.2%	21.4%	3.0%	14.0%	1.1%	0.0%	0.0%	0.4%	0.7%	0.0%	0.0%	0.7%	3.7%	
AM Peak	08:00	07:00	08:00	03:00	06:00				02:00	07:00			07:00	09:00	
Vol.	2	16	7	1	5				1	1			1	2	
PM Peak	16:00	13:00	13:00	16:00	14:00	16:00				12:00			12:00	12:00	
Vol.	3	13	8	2	7	2				1			1	1	
Grand Total	19	279	110	15	86	9	1	1	1	3	0	0	3	16	543
Percent	3.5%	51.4%	20.3%	2.8%	15.8%	1.7%	0.2%	0.2%	0.2%	0.6%	0.0%	0.0%	0.6%	2.9%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 20
Scappoose Vernonia W-O Cater Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
04:00	0	1	1	4	2	0	0	0	0	0	0	0	0	0	8
05:00	0	0	0	0	1	3	0	0	2	0	0	0	0	0	6
06:00	0	2	2	0	1	1	0	0	0	0	0	0	0	0	6
07:00	0	3	2	1	2	0	0	0	0	0	0	0	0	0	8
08:00	0	7	4	1	3	0	0	0	0	0	0	0	0	1	16
09:00	0	1	2	0	7	0	0	0	0	0	0	0	1	0	11
10:00	0	5	2	0	1	0	0	1	0	0	0	0	0	0	9
11:00	0	3	4	2	2	0	0	1	0	0	0	0	0	1	13
12 PM	0	2	6	1	2	0	1	0	0	0	0	0	0	1	13
13:00	0	13	1	1	0	0	0	0	0	0	0	0	1	0	16
14:00	0	15	7	0	5	0	0	0	0	0	0	0	0	0	27
15:00	3	13	3	1	5	0	0	0	0	0	0	0	0	0	25
16:00	0	20	4	2	4	0	0	0	0	0	0	0	0	0	30
17:00	1	26	6	0	1	0	0	0	0	0	0	0	0	0	34
18:00	2	10	3	0	1	0	0	0	0	0	0	0	0	0	16
19:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
20:00	2	2	2	0	0	0	0	0	0	0	0	0	0	0	6
21:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
Total	8	136	55	15	38	4	1	2	2	0	0	0	2	3	266
Percent	3.0%	51.1%	20.7%	5.6%	14.3%	1.5%	0.4%	0.8%	0.8%	0.0%	0.0%	0.0%	0.8%	1.1%	
AM Peak		08:00	08:00	04:00	09:00	05:00		10:00	05:00				09:00	08:00	
Vol.		7	4	4	7	3		1	2				1	1	
PM Peak	15:00	17:00	14:00	16:00	14:00		12:00						13:00	12:00	
Vol.	3	26	7	2	5		1					1	1		

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 20
Scappoose Vernonia W-O Cater Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/11/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	1	2	3	0	0	0	0	0	0	0	0	0	8
05:00	0	0	2	1	2	0	0	0	2	0	0	0	0	0	7
06:00	0	2	2	0	1	1	0	0	0	0	0	0	0	1	7
07:00	0	3	2	1	1	0	0	0	0	0	0	0	0	0	7
08:00	0	3	3	1	1	0	0	1	0	0	0	0	1	0	10
09:00	2	5	4	0	1	0	0	0	0	0	0	0	1	0	13
10:00	0	9	2	1	3	0	0	0	0	1	0	0	1	0	17
11:00	0	7	4	1	3	0	0	0	0	0	0	0	1	1	17
12 PM	1	5	2	0	5	0	1	0	0	0	0	0	0	0	14
13:00	1	9	3	0	1	0	0	0	0	0	0	0	0	1	15
14:00	1	9	4	0	5	0	0	0	0	0	0	0	0	0	19
15:00	0	15	2	0	5	0	0	0	0	0	0	0	0	0	22
16:00	1	11	7	1	4	0	0	1	0	0	0	0	0	0	25
17:00	1	22	4	0	2	0	0	0	0	0	0	0	0	0	29
18:00	1	14	4	0	2	0	0	0	0	0	0	0	0	0	21
19:00	0	12	2	0	1	0	0	0	0	0	0	0	0	0	15
20:00	0	4	2	0	1	0	0	0	0	0	0	0	0	0	7
21:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
22:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	8	139	56	10	42	1	1	2	2	1	0	0	4	3	269
Percent	3.0%	51.7%	20.8%	3.7%	15.6%	0.4%	0.4%	0.7%	0.7%	0.4%	0.0%	0.0%	1.5%	1.1%	
AM Peak	09:00	10:00	09:00	04:00	04:00	06:00		08:00	05:00	10:00			08:00	06:00	
Vol.	2	9	4	2	3	1		1	2	1			1	1	
PM Peak	12:00	17:00	16:00	16:00	12:00		12:00	16:00						13:00	
Vol.	1	22	7	1	5		1	1						1	
Grand Total	16	275	111	25	80	5	2	4	4	1	0	0	6	6	535
Percent	3.0%	51.4%	20.7%	4.7%	15.0%	0.9%	0.4%	0.7%	0.7%	0.2%	0.0%	0.0%	1.1%	1.1%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 21
Scappoose Vernonia N-O Scappoose UGB

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	1	10	3	0	0	0	0	0	0	0	0	0	0	0	14
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	2	1	0	0	0	0	0	0	0	0	0	0	1	4
06:00	0	4	3	0	1	1	0	0	0	0	0	0	0	0	9
07:00	0	8	5	3	2	0	0	1	0	0	0	0	0	0	19
08:00	0	18	9	1	3	0	0	0	1	0	0	0	0	1	33
09:00	0	26	8	0	3	0	0	1	0	0	0	0	0	0	38
10:00	0	27	6	0	5	1	0	2	0	0	0	0	0	2	43
11:00	0	36	11	1	5	0	0	0	1	0	0	0	0	3	57
12 PM	1	45	20	0	3	0	0	0	0	0	0	0	0	1	70
13:00	2	43	11	0	2	1	0	0	0	0	0	0	1	1	61
14:00	3	61	22	0	5	0	0	0	0	0	0	0	0	0	91
15:00	1	70	23	1	7	0	0	0	0	0	0	0	0	1	103
16:00	3	99	23	0	8	0	1	0	0	0	0	0	0	3	137
17:00	6	112	37	0	8	0	0	3	0	0	0	0	0	1	167
18:00	1	95	24	0	10	0	0	1	0	0	0	0	0	8	139
19:00	0	47	13	1	4	0	0	1	0	0	0	0	0	2	68
20:00	1	51	10	0	1	0	0	0	0	0	0	0	0	0	63
21:00	0	31	9	0	4	0	0	1	0	0	0	0	0	0	45
22:00	0	11	3	0	0	0	0	0	0	0	0	0	0	0	14
23:00	0	19	9	0	0	0	0	1	0	0	0	0	0	0	29
Total	19	826	252	7	71	3	1	11	2	0	0	0	1	24	1217
Percent	1.6%	67.9%	20.7%	0.6%	5.8%	0.2%	0.1%	0.9%	0.2%	0.0%	0.0%	0.0%	0.1%	2.0%	
AM Peak	00:00	11:00	11:00	07:00	10:00	06:00		10:00	08:00					11:00	
Vol.	1	36	11	3	5	1		2	1					3	
PM Peak	17:00	17:00	17:00	15:00	18:00	13:00	16:00	17:00					13:00	18:00	
Vol.	6	112	37	1	10	1	1	3				1	8		

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 21
Scappoose Vernonia N-O Scappoose UGB

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
01:00	0	8	1	0	0	0	0	0	0	0	0	0	0	0	9
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	11	4	0	3	0	0	0	0	0	0	0	0	0	18
07:00	0	5	5	3	6	0	0	0	0	0	0	0	0	1	20
08:00	1	19	8	0	2	0	0	0	0	0	0	0	0	0	30
09:00	0	23	10	0	4	0	0	0	0	0	0	0	0	2	39
10:00	0	33	10	0	6	0	0	0	0	0	0	0	0	1	50
11:00	0	22	8	1	4	1	0	1	0	0	0	0	1	0	38
12 PM	0	37	15	0	4	0	0	1	0	0	0	0	0	0	57
13:00	3	41	12	0	9	0	0	0	1	0	0	0	1	2	69
14:00	1	44	22	0	1	0	0	2	0	0	0	0	1	0	71
15:00	1	65	26	1	13	0	0	0	0	0	0	0	0	1	107
16:00	2	76	31	1	8	1	0	0	0	0	0	0	0	3	122
17:00	3	128	28	0	8	1	0	2	0	1	0	0	0	0	171
18:00	5	87	25	0	7	0	0	1	0	0	0	0	0	2	127
19:00	1	63	18	0	4	0	0	0	0	0	0	0	0	0	86
20:00	1	61	15	0	2	0	0	1	0	0	0	0	0	0	80
21:00	0	24	6	0	0	0	0	0	0	0	0	0	0	0	30
22:00	0	13	8	0	1	0	0	0	0	0	0	0	0	0	22
23:00	1	11	4	0	0	0	0	1	0	0	0	0	0	0	17
Total	19	785	260	6	83	3	0	9	1	1	0	0	3	12	1182
Percent	1.6%	66.4%	22.0%	0.5%	7.0%	0.3%	0.0%	0.8%	0.1%	0.1%	0.0%	0.0%	0.3%	1.0%	
AM Peak	08:00	10:00	09:00	07:00	07:00	11:00		11:00					11:00	09:00	
Vol.	1	33	10	3	6	1		1				1	2		
PM Peak	18:00	17:00	16:00	15:00	15:00	16:00		14:00	13:00	17:00			13:00	16:00	
Vol.	5	128	31	1	13	1		2	1	1			1	3	
Grand Total	38	1611	512	13	154	6	1	20	3	1	0	0	4	36	2399
Percent	1.6%	67.2%	21.3%	0.5%	6.4%	0.3%	0.0%	0.8%	0.1%	0.0%	0.0%	0.0%	0.2%	1.5%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 21
Scappoose Vernonia N-O Scappoose UGB

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	2	0	0	2	0	0	0	0	0	0	0	0	2	6
02:00	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	4	2	1	2	0	0	0	0	0	0	0	0	0	9
04:00	0	8	6	0	5	0	0	0	0	0	0	0	0	0	19
05:00	1	29	29	0	15	0	0	0	0	0	0	0	0	0	74
06:00	0	42	31	0	12	0	0	1	0	0	0	0	0	0	86
07:00	0	64	46	4	20	0	0	0	0	0	0	0	0	1	135
08:00	2	41	44	0	18	0	0	1	0	0	0	0	0	0	106
09:00	0	31	29	1	13	0	0	1	0	0	0	0	0	1	76
10:00	1	37	30	1	6	0	0	1	0	0	0	0	0	6	82
11:00	0	30	26	1	12	0	0	3	0	0	0	0	1	3	76
12 PM	0	28	25	0	5	0	0	1	1	0	0	0	0	0	60
13:00	2	28	21	0	9	0	0	0	0	0	0	0	1	0	61
14:00	1	26	29	0	9	1	0	0	0	0	0	0	0	1	67
15:00	0	26	23	1	6	0	1	1	0	0	0	0	0	2	60
16:00	1	26	24	0	9	2	0	3	0	0	0	0	0	3	68
17:00	2	31	25	0	15	0	0	0	0	0	0	0	0	0	73
18:00	1	25	14	0	11	0	0	0	0	0	0	0	0	4	55
19:00	0	15	6	0	4	0	0	0	0	0	0	0	0	0	25
20:00	0	11	9	0	2	0	0	1	0	0	0	0	0	0	23
21:00	0	9	7	0	0	0	0	0	0	0	0	0	0	0	16
22:00	0	6	5	0	1	0	0	0	0	0	0	0	0	0	12
23:00	0	3	3	0	1	0	0	0	0	0	0	0	0	0	7
Total	11	523	438	10	177	3	1	13	1	0	0	0	2	23	1202
Percent	0.9%	43.5%	36.4%	0.8%	14.7%	0.2%	0.1%	1.1%	0.1%	0.0%	0.0%	0.0%	0.2%	1.9%	
AM Peak	08:00	07:00	07:00	07:00	07:00			11:00					11:00	10:00	
Vol.	2	64	46	4	20			3				1	6		
PM Peak	13:00	17:00	14:00	15:00	17:00	16:00	15:00	16:00	12:00				13:00	18:00	
Vol.	2	31	29	1	15	2	1	3	1			1	4		

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 21
Scappoose Vernonia N-O Scappoose UGB

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
01:00	0	1	3	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	2	5
03:00	0	6	4	1	2	0	0	0	0	0	0	0	0	0	13
04:00	0	11	7	0	4	0	0	0	0	0	0	0	0	0	22
05:00	2	25	24	0	11	0	0	0	0	0	0	0	0	0	62
06:00	0	42	46	0	19	1	0	0	1	0	0	0	0	0	109
07:00	1	55	48	4	19	0	0	3	0	0	0	0	0	0	130
08:00	1	48	41	1	14	0	0	3	0	0	0	0	0	0	108
09:00	1	27	22	0	6	0	0	0	0	0	0	0	0	0	56
10:00	1	36	31	0	11	0	0	2	0	0	0	0	1	0	82
11:00	1	23	24	2	11	1	0	0	0	1	0	0	0	1	64
12 PM	0	18	23	0	9	0	0	0	0	0	0	0	0	0	50
13:00	2	29	18	1	16	0	0	1	0	1	0	0	1	2	71
14:00	1	32	20	0	13	0	0	0	0	0	0	0	0	0	66
15:00	2	26	19	0	16	0	0	2	0	0	0	0	0	2	67
16:00	2	31	19	1	14	2	0	1	1	0	0	0	0	1	72
17:00	0	39	28	0	16	0	0	1	0	0	0	0	0	1	85
18:00	1	18	21	0	11	0	0	0	0	0	0	0	0	0	51
19:00	0	17	15	0	7	0	0	1	0	0	0	0	0	0	40
20:00	0	17	10	0	2	0	0	1	0	0	0	0	0	0	30
21:00	1	10	4	0	2	0	0	0	0	0	0	0	0	0	17
22:00	0	6	5	0	1	0	0	0	0	0	0	0	0	0	12
23:00	0	6	4	0	0	0	0	0	0	0	0	0	0	0	10
Total	16	527	438	10	205	4	0	15	2	2	0	0	2	9	1230
Percent	1.3%	42.8%	35.6%	0.8%	16.7%	0.3%	0.0%	1.2%	0.2%	0.2%	0.0%	0.0%	0.2%	0.7%	
AM Peak	05:00	07:00	07:00	07:00	06:00	06:00		07:00	06:00	11:00			10:00	02:00	
Vol.	2	55	48	4	19	1		3	1	1			1	2	
PM Peak	13:00	17:00	17:00	13:00	13:00	16:00		15:00	16:00	13:00			13:00	13:00	
Vol.	2	39	28	1	16	2		2	1	1			1	2	
Grand Total	27	1050	876	20	382	7	1	28	3	2	0	0	4	32	2432
Percent	1.1%	43.2%	36.0%	0.8%	15.7%	0.3%	0.0%	1.2%	0.1%	0.1%	0.0%	0.0%	0.2%	1.3%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 48
Pittsburgh Rd E-O Hankey Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	5
03:00	0	3	0	0	0	0	0	1	0	0	0	0	0	0	4
04:00	1	16	3	0	3	0	0	0	0	0	0	0	0	0	23
05:00	0	29	12	1	6	0	0	0	1	3	0	0	0	0	52
06:00	1	45	22	0	10	1	0	2	0	0	0	0	0	0	81
07:00	1	79	30	5	13	0	1	2	0	0	0	0	0	1	132
08:00	2	84	45	1	13	1	1	4	0	1	0	0	0	8	160
09:00	2	39	27	0	12	0	1	2	0	1	0	0	0	9	93
10:00	0	40	22	1	10	0	2	1	0	0	0	0	0	1	77
11:00	2	42	28	2	13	0	2	2	0	4	0	0	0	14	109
12 PM	1	51	27	2	9	0	1	2	0	1	0	0	0	6	100
13:00	2	58	28	0	18	0	2	2	1	1	0	0	0	7	119
14:00	0	51	25	2	17	4	1	1	0	2	0	0	0	11	114
15:00	2	70	41	3	18	0	0	1	0	1	0	0	0	3	139
16:00	2	54	26	1	12	0	0	0	0	0	0	0	0	1	96
17:00	4	65	25	0	14	0	0	2	0	0	0	0	0	1	111
18:00	0	38	16	0	7	0	0	1	0	0	0	0	0	2	64
19:00	0	49	22	0	9	0	0	2	0	0	0	0	0	1	83
20:00	0	36	11	0	2	0	0	1	0	0	0	0	0	2	52
21:00	1	22	11	0	2	0	0	0	0	0	0	0	0	0	36
22:00	0	21	6	0	1	0	0	0	0	0	0	0	0	1	29
23:00	0	6	2	0	0	0	0	0	0	0	0	0	0	0	8
Total	21	910	434	18	190	6	11	26	2	14	0	0	0	68	1700
Percent	1.2%	53.5%	25.5%	1.1%	11.2%	0.4%	0.6%	1.5%	0.1%	0.8%	0.0%	0.0%	0.0%	4.0%	
AM Peak	08:00	08:00	08:00	07:00	07:00	06:00	10:00	08:00	05:00	11:00				11:00	
Vol.	2	84	45	5	13	1	2	4	1	4				14	
PM Peak	17:00	15:00	15:00	15:00	13:00	14:00	13:00	12:00	13:00	14:00				14:00	
Vol.	4	70	41	3	18	4	2	2	1	2				11	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 48
Pittsburgh Rd E-O Hankey Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	3	3	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
04:00	1	12	4	0	7	0	0	0	0	0	0	0	0	0	24
05:00	0	32	11	1	7	0	0	0	1	2	0	0	0	0	54
06:00	2	47	19	0	8	0	0	3	0	0	0	0	0	0	79
07:00	1	73	24	5	16	3	2	2	0	0	0	0	0	2	128
08:00	0	70	48	2	18	2	1	3	0	2	0	0	1	9	156
09:00	0	62	24	0	12	7	1	0	0	1	0	0	0	4	111
10:00	3	41	19	0	14	6	2	0	1	0	0	0	0	3	89
11:00	2	43	18	1	10	7	1	1	0	2	0	0	0	10	95
12 PM	3	57	29	1	8	7	1	3	0	1	0	0	0	1	111
13:00	0	48	29	1	11	0	2	3	0	1	0	0	0	5	100
14:00	0	56	35	2	22	2	1	0	0	1	0	0	0	6	125
15:00	1	75	26	2	11	0	0	3	0	0	0	0	0	4	122
16:00	0	60	39	0	18	1	0	3	0	0	0	0	0	2	123
17:00	2	53	28	1	19	0	0	0	0	1	0	0	0	4	108
18:00	1	53	38	0	8	1	0	1	0	0	0	0	0	2	104
19:00	0	44	15	0	4	0	0	0	0	0	0	0	0	1	64
20:00	1	37	15	0	6	0	0	0	0	0	0	0	0	4	63
21:00	0	26	9	0	3	0	0	0	0	0	0	0	0	0	38
22:00	0	16	5	0	1	0	0	0	0	0	0	0	0	0	22
23:00	0	9	2	0	1	0	0	0	0	0	0	0	0	1	13
Total	17	927	443	16	204	36	11	22	2	11	0	0	1	58	1748
Percent	1.0%	53.0%	25.3%	0.9%	11.7%	2.1%	0.6%	1.3%	0.1%	0.6%	0.0%	0.0%	0.1%	3.3%	
AM Peak	10:00	07:00	08:00	07:00	08:00	09:00	07:00	06:00	05:00	05:00			08:00	11:00	
Vol.	3	73	48	5	18	7	2	3	1	2			1	10	
PM Peak	12:00	15:00	16:00	14:00	14:00	12:00	13:00	12:00		12:00				14:00	
Vol.	3	75	39	2	22	7	2	3		1				6	
Grand Total	38	1837	877	34	394	42	22	48	4	25	0	0	1	126	3448
Percent	1.1%	53.3%	25.4%	1.0%	11.4%	1.2%	0.6%	1.4%	0.1%	0.7%	0.0%	0.0%	0.0%	3.7%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 48
Pittsburgh Rd E-O Hankey Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	4	3	0	1	0	0	0	0	0	0	0	0	0	8
01:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	3	1	1	0	0	0	0	0	0	0	0	0	0	5
04:00	0	5	0	2	0	0	0	0	0	0	0	0	0	0	7
05:00	0	4	3	0	2	0	0	0	0	0	0	0	0	0	9
06:00	1	18	3	5	7	1	0	0	0	0	0	0	1	1	37
07:00	0	28	15	7	6	0	0	0	0	0	0	0	0	2	58
08:00	0	55	21	0	14	1	0	2	0	0	0	0	11	7	111
09:00	0	29	20	1	4	1	0	3	0	1	0	0	1	2	62
10:00	0	28	22	6	11	2	0	2	0	0	0	0	2	3	76
11:00	2	68	18	2	12	3	0	0	0	0	0	0	7	8	120
12 PM	0	59	30	1	13	2	0	1	1	1	0	0	3	1	112
13:00	1	77	24	3	11	4	1	2	0	0	0	0	5	9	137
14:00	2	66	36	3	12	4	0	2	0	0	0	0	4	7	136
15:00	2	92	38	4	13	1	0	1	0	0	0	0	0	4	155
16:00	4	98	33	0	12	0	0	1	1	0	0	0	0	4	153
17:00	3	142	40	0	17	0	0	0	0	0	0	0	0	3	205
18:00	1	114	28	0	4	1	0	0	0	0	0	0	0	2	150
19:00	0	73	29	0	10	0	0	2	0	0	0	0	0	1	115
20:00	1	67	16	0	6	1	0	1	0	0	0	0	0	0	92
21:00	0	42	13	0	9	0	0	0	0	0	0	0	0	0	64
22:00	0	14	4	0	0	0	0	0	0	0	0	0	0	0	18
23:00	1	10	3	0	1	0	0	0	0	0	0	0	0	0	15
Total	18	1102	403	35	165	21	1	17	2	2	0	0	34	54	1854
Percent	1.0%	59.4%	21.7%	1.9%	8.9%	1.1%	0.1%	0.9%	0.1%	0.1%	0.0%	0.0%	1.8%	2.9%	
AM Peak	11:00	11:00	10:00	07:00	08:00	11:00		09:00		09:00			08:00	11:00	
Vol.	2	68	22	7	14	3		3		1			11	8	
PM Peak	16:00	17:00	17:00	15:00	17:00	13:00	13:00	13:00	12:00	12:00			13:00	13:00	
Vol.	4	142	40	4	17	4	1	2	1	1			5	9	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 48
Pittsburgh Rd E-O Hankey Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	7	3	0	0	0	0	0	0	0	0	0	0	0	10
01:00	1	4	1	0	0	0	0	0	0	0	0	0	0	0	6
02:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	0	2	0	0	0	0	0	0	0	0	0	0	7
05:00	0	7	3	0	2	0	0	0	0	0	0	0	0	0	12
06:00	0	23	9	4	4	0	0	0	0	0	0	0	1	0	41
07:00	0	42	18	6	7	4	0	0	0	1	0	0	0	4	82
08:00	1	53	26	0	7	5	0	0	0	1	0	0	6	4	103
09:00	0	38	25	0	10	9	0	2	0	0	0	0	0	0	84
10:00	1	50	27	3	3	9	0	0	1	0	0	0	1	1	96
11:00	2	62	22	2	7	8	0	2	0	1	0	0	2	3	111
12 PM	0	62	26	0	13	6	1	1	0	0	0	0	1	3	113
13:00	1	67	26	1	7	3	0	2	0	0	0	0	2	3	112
14:00	2	72	29	3	15	3	0	2	0	0	0	0	2	2	130
15:00	3	106	37	4	11	2	0	4	1	0	0	0	0	5	173
16:00	1	102	42	0	15	1	1	1	0	0	0	0	0	2	165
17:00	4	138	47	0	14	3	1	1	0	0	0	0	0	3	211
18:00	2	118	34	0	12	0	0	2	0	0	0	0	0	3	171
19:00	1	79	26	0	9	1	0	1	0	0	0	0	0	1	118
20:00	2	73	24	0	8	0	0	1	0	0	0	0	0	1	109
21:00	1	38	16	0	7	0	0	0	0	0	0	0	0	1	63
22:00	0	21	4	0	2	0	0	0	0	0	0	0	0	0	27
23:00	0	12	5	0	1	0	0	0	0	0	0	0	0	0	18
Total	22	1183	451	25	155	54	3	19	2	3	0	0	15	36	1968
Percent	1.1%	60.1%	22.9%	1.3%	7.9%	2.7%	0.2%	1.0%	0.1%	0.2%	0.0%	0.0%	0.8%	1.8%	
AM Peak	11:00	11:00	10:00	07:00	09:00	09:00		09:00	10:00	07:00			08:00	07:00	
Vol.	2	62	27	6	10	9		2	1	1			6	4	
PM Peak	17:00	17:00	17:00	15:00	14:00	12:00	12:00	15:00	15:00				13:00	15:00	
Vol.	4	138	47	4	15	6	1	4	1				2	5	
Grand Total	40	2285	854	60	320	75	4	36	4	5	0	0	49	90	3822
Percent	1.0%	59.8%	22.3%	1.6%	8.4%	2.0%	0.1%	0.9%	0.1%	0.1%	0.0%	0.0%	1.3%	2.4%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 32
Old Rainier Rd S-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3
06:00	0	4	5	2	1	0	0	0	0	0	0	0	0	0	12
07:00	0	12	1	0	1	0	0	0	0	0	0	0	0	0	14
08:00	0	10	5	0	3	0	0	1	0	0	0	0	0	0	19
09:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
10:00	0	8	3	0	1	0	0	0	0	0	0	0	0	0	12
11:00	0	1	5	1	3	0	0	0	0	0	0	0	0	0	10
12 PM	0	7	5	0	1	1	0	0	0	0	0	0	0	0	14
13:00	0	10	2	0	1	0	0	0	0	0	0	0	0	4	17
14:00	0	10	5	0	5	0	0	0	0	0	0	0	0	0	20
15:00	0	17	5	1	3	0	0	0	0	0	0	0	0	0	26
16:00	1	11	7	0	3	0	0	0	0	0	0	0	0	0	22
17:00	0	17	2	0	7	0	0	0	0	0	0	0	0	0	26
18:00	0	4	2	0	0	1	0	0	0	0	0	0	0	0	7
19:00	0	22	6	0	4	0	0	0	0	0	0	0	0	0	32
20:00	0	11	1	0	1	0	0	1	0	0	0	0	0	0	14
21:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	1	161	61	4	36	2	0	2	0	0	0	0	0	4	271
Percent	0.4%	59.4%	22.5%	1.5%	13.3%	0.7%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	
AM Peak		07:00	06:00	06:00	08:00			08:00							
Vol.		12	5	2	3			1							
PM Peak	16:00	19:00	16:00	15:00	17:00	12:00		20:00						13:00	
Vol.	1	22	7	1	7	1		1						4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 32
Old Rainier Rd S-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	4	3	2	0	0	0	0	0	0	0	0	0	0	9
07:00	0	8	0	0	1	0	0	0	0	0	0	0	0	0	9
08:00	0	10	7	0	2	0	0	0	0	0	0	0	0	0	19
09:00	0	10	5	0	2	0	0	0	0	0	0	0	0	0	17
10:00	0	6	4	0	1	0	0	0	0	0	0	0	0	0	11
11:00	0	8	4	1	2	0	0	1	0	0	0	0	0	0	16
12 PM	0	6	6	0	4	0	0	0	0	0	0	0	0	0	16
13:00	0	4	6	0	1	0	0	0	0	0	0	0	0	0	11
14:00	0	11	3	0	3	0	0	1	0	0	0	0	0	0	18
15:00	0	19	3	1	2	0	0	0	0	0	0	0	0	1	26
16:00	0	15	2	0	2	0	0	1	1	0	0	0	0	0	21
17:00	0	13	5	0	2	0	0	0	0	0	0	0	0	1	21
18:00	1	10	4	0	2	0	0	0	0	0	0	0	0	0	17
19:00	0	15	5	0	7	0	0	0	0	0	0	0	0	0	27
20:00	0	13	8	0	0	0	0	0	0	0	0	0	0	0	21
21:00	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
22:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
23:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	164	69	4	33	0	0	3	1	0	0	0	0	2	277
Percent	0.4%	59.2%	24.9%	1.4%	11.9%	0.0%	0.0%	1.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.7%	
AM Peak Vol.		08:00 10	08:00 7	06:00 2	08:00 2			11:00 1							
PM Peak Vol.	18:00 1	15:00 19	20:00 8	15:00 1	19:00 7			14:00 1	16:00 1					15:00 1	
Grand Total	2	325	130	8	69	2	0	5	1	0	0	0	0	6	548
Percent	0.4%	59.3%	23.7%	1.5%	12.6%	0.4%	0.0%	0.9%	0.2%	0.0%	0.0%	0.0%	0.0%	1.1%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 32
Old Rainier Rd S-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
06:00	0	3	3	0	1	0	0	0	0	0	0	0	0	0	7
07:00	0	16	4	1	4	0	0	0	0	0	0	0	0	0	25
08:00	0	10	3	0	1	0	0	0	0	0	0	0	0	0	14
09:00	0	6	4	0	0	0	0	0	0	0	0	0	0	0	10
10:00	0	3	4	0	3	0	0	0	0	0	0	0	0	0	10
11:00	0	6	3	0	1	0	0	0	0	0	0	0	0	0	10
12 PM	0	9	4	0	3	1	0	1	0	0	0	0	0	0	18
13:00	0	8	2	0	2	0	0	0	0	0	0	0	0	2	14
14:00	0	9	3	0	2	0	0	0	0	0	0	0	0	0	14
15:00	0	18	2	0	0	0	0	0	0	0	0	0	0	0	20
16:00	0	24	3	0	3	0	0	0	0	0	0	0	0	0	30
17:00	0	20	7	0	3	0	0	0	0	0	0	0	0	0	30
18:00	0	16	2	0	4	0	0	0	0	0	0	0	0	0	22
19:00	0	6	0	0	1	0	0	1	0	0	0	0	0	0	8
20:00	0	5	5	0	1	0	0	0	0	0	0	0	0	0	11
21:00	0	7	4	0	0	0	0	0	0	0	0	0	0	0	11
22:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
23:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	172	56	1	30	1	0	2	0	0	0	0	0	2	264
Percent	0.0%	65.2%	21.2%	0.4%	11.4%	0.4%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	
AM Peak		07:00	07:00	07:00	07:00										
Vol.		16	4	1	4										
PM Peak		16:00	17:00		18:00	12:00		12:00						13:00	
Vol.		24	7		4	1		1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 32
Old Rainier Rd S-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
05:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
06:00	0	4	4	0	0	0	0	0	0	0	0	0	0	0	8
07:00	0	10	6	1	4	0	0	0	0	0	0	0	0	0	21
08:00	0	11	1	0	1	0	0	0	0	0	0	0	0	0	13
09:00	0	3	4	0	2	0	0	0	0	0	0	0	0	0	9
10:00	0	5	4	0	3	0	0	0	0	0	0	0	0	0	12
11:00	0	5	5	0	1	0	0	1	0	0	0	0	0	0	12
12 PM	0	8	1	0	2	0	0	0	0	0	0	0	0	0	11
13:00	0	7	2	0	0	0	0	0	0	0	0	0	0	0	9
14:00	0	16	5	0	1	0	0	0	0	0	0	0	0	0	22
15:00	1	13	7	0	2	0	0	0	0	0	0	0	0	1	24
16:00	0	15	4	0	3	0	0	1	0	0	0	0	0	0	23
17:00	0	15	4	0	4	0	0	1	1	0	0	0	0	0	25
18:00	0	11	6	0	3	0	0	0	0	0	0	0	0	0	20
19:00	0	6	1	0	2	0	0	0	0	0	0	0	0	0	9
20:00	0	10	4	0	2	0	0	0	0	0	0	0	0	0	16
21:00	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	1	151	60	1	33	0	0	3	1	0	0	0	0	1	251
Percent	0.4%	60.2%	23.9%	0.4%	13.1%	0.0%	0.0%	1.2%	0.4%	0.0%	0.0%	0.0%	0.0%	0.4%	
AM Peak		08:00	07:00	07:00	07:00			11:00							
Vol.		11	6	1	4			1							
PM Peak	15:00	14:00	15:00		17:00			16:00	17:00					15:00	
Vol.	1	16	7		4			1	1					1	
Grand Total	1	323	116	2	63	1	0	5	1	0	0	0	0	3	515
Percent	0.2%	62.7%	22.5%	0.4%	12.2%	0.2%	0.0%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.6%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 43
Old Portland Rd W-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	4
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	3	3	0	0	0	0	0	0	0	0	0	0	1	7
06:00	0	3	4	0	1	0	0	0	0	0	0	0	0	1	9
07:00	0	22	13	0	7	0	0	0	0	0	0	0	0	1	43
08:00	0	21	12	0	4	0	0	1	0	0	0	0	0	1	39
09:00	0	11	9	0	6	0	0	0	0	0	0	0	0	1	27
10:00	1	14	11	0	4	0	0	1	0	0	0	0	0	4	35
11:00	0	18	12	0	6	0	0	0	0	0	0	0	0	0	36
12 PM	1	15	14	1	6	0	0	0	0	0	0	0	0	4	41
13:00	0	22	13	2	6	0	0	1	0	0	0	0	0	4	48
14:00	4	38	11	0	6	0	0	1	0	0	0	0	0	3	63
15:00	4	48	34	0	11	0	0	3	0	0	0	0	0	1	101
16:00	1	66	40	0	23	0	0	0	0	0	0	0	0	2	132
17:00	4	86	52	0	14	0	0	0	0	0	0	0	0	1	157
18:00	0	58	28	0	16	0	0	0	0	0	0	0	0	2	104
19:00	1	44	20	0	6	0	0	0	0	0	0	0	0	0	71
20:00	2	22	13	0	4	0	0	0	0	0	0	0	0	2	43
21:00	1	25	4	0	2	0	0	0	0	0	0	0	0	0	32
22:00	0	15	7	0	2	0	0	0	0	0	0	0	0	0	24
23:00	0	6	5	0	1	0	0	0	0	0	0	0	0	0	12
Total	19	542	309	3	127	0	0	7	0	0	0	0	0	28	1035
Percent	1.8%	52.4%	29.9%	0.3%	12.3%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	
AM Peak	10:00	07:00	07:00		07:00			08:00						10:00	
Vol.	1	22	13		7			1						4	
PM Peak	14:00	17:00	17:00	13:00	16:00			15:00						12:00	
Vol.	4	86	52	2	23			3						4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 43
Old Portland Rd W-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	9	2	0	2	0	0	0	0	0	0	0	0	0	13
05:00	1	28	9	0	4	0	0	0	0	0	0	0	0	1	43
06:00	0	43	17	0	10	0	0	0	0	0	0	0	0	0	70
07:00	1	62	16	0	8	0	0	0	0	0	0	0	0	1	88
08:00	0	44	5	0	4	0	0	1	0	0	0	0	0	1	55
09:00	0	27	9	1	7	0	0	0	0	0	0	0	0	0	44
10:00	0	25	7	0	7	0	0	2	0	0	0	0	0	5	46
11:00	1	27	10	0	6	0	0	0	0	0	0	0	0	2	46
12 PM	0	27	7	1	5	0	0	1	0	0	0	0	0	0	41
13:00	0	23	10	2	4	0	0	0	0	0	0	0	0	1	40
14:00	0	14	6	0	2	0	0	0	0	0	0	0	0	2	24
15:00	1	22	18	1	3	0	0	0	0	0	0	0	0	1	46
16:00	1	20	15	1	3	0	0	1	0	0	0	0	0	1	42
17:00	1	24	11	0	6	0	0	0	0	0	0	0	0	1	43
18:00	1	24	7	0	5	0	0	0	0	0	0	0	0	0	37
19:00	1	8	4	0	0	0	0	0	0	0	0	0	0	0	13
20:00	0	14	5	0	0	0	0	0	0	0	0	0	0	0	19
21:00	0	11	3	0	0	0	0	0	0	0	0	0	0	0	14
22:00	0	6	5	0	0	0	0	0	0	0	0	0	0	0	11
23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
Total	8	467	169	6	77	0	0	5	0	0	0	0	0	16	748
Percent	1.1%	62.4%	22.6%	0.8%	10.3%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	
AM Peak	05:00	07:00	06:00	09:00	06:00			10:00						10:00	
Vol.	1	62	17	1	10			2						5	
PM Peak	15:00	12:00	15:00	13:00	17:00			12:00						14:00	
Vol.	1	27	18	2	6			1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 45
Old Portland Rd E-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:00	0	1	1	1	1	0	0	0	0	0	0	0	0	0	4
08:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	5
09:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
10:00	0	2	3	0	1	0	0	0	0	0	0	0	0	0	6
11:00	0	3	1	0	0	0	0	0	0	0	0	0	0	1	5
12 PM	0	4	2	0	1	0	0	0	0	0	0	0	0	1	8
13:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
14:00	1	4	2	1	2	0	0	1	0	0	0	0	0	0	11
15:00	1	3	0	1	1	0	0	0	0	0	0	0	0	1	7
16:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
17:00	0	1	3	0	0	0	0	0	0	0	0	0	0	0	4
18:00	1	4	0	0	0	0	0	0	0	0	0	0	0	1	6
19:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
20:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
21:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
23:00	0	1	1	0	0	0	0	0	0	0	0	0	0	1	3
Total	3	45	22	3	7	0	0	1	0	0	0	0	0	5	86
Percent	3.5%	52.3%	25.6%	3.5%	8.1%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	5.8%	
AM Peak		11:00	08:00	07:00	07:00									11:00	
Vol.		3	3	1	1									1	
PM Peak	14:00	20:00	17:00	14:00	14:00			14:00						12:00	
Vol.	1	5	3	1	2			1						1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 45
Old Portland Rd E-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
07:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
09:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
10:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
11:00	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
12 PM	0	2	2	0	1	0	0	0	0	0	0	0	0	0	5
13:00	1	5	3	0	0	0	0	1	0	0	0	0	0	0	10
14:00	0	1	4	0	0	0	0	0	0	0	0	0	0	0	5
15:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
16:00	0	11	1	0	0	0	0	0	0	0	0	0	0	0	12
17:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
18:00	0	2	1	0	0	0	0	1	0	0	0	0	0	0	4
19:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
21:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	57	19	1	2	0	0	2	0	0	0	0	0	1	83
Percent	1.2%	68.7%	22.9%	1.2%	2.4%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak Vol.		10:00 5	11:00 2	03:00 1	09:00 1										
PM Peak Vol.	13:00 1	16:00 11	14:00 4		12:00 1			13:00 1						20:00 1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 27
Nicolai Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
02:00	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
04:00	1	6	12	0	2	0	0	0	0	0	0	0	0	0	21
05:00	0	26	9	0	2	0	0	1	0	0	0	0	0	0	38
06:00	1	19	13	1	11	0	0	0	0	0	0	0	0	0	45
07:00	0	28	16	2	9	0	0	2	0	0	0	0	0	0	57
08:00	0	21	12	0	7	0	0	0	0	0	0	0	0	0	40
09:00	0	17	6	0	3	0	0	1	0	0	0	0	0	1	28
10:00	0	11	7	0	5	0	0	2	0	0	0	0	0	0	25
11:00	2	10	10	0	4	0	0	0	0	0	0	0	0	1	27
12 PM	0	4	5	0	6	0	0	0	0	0	0	0	0	5	20
13:00	0	9	13	0	6	0	0	1	0	0	0	0	0	0	29
14:00	0	7	5	0	3	0	0	0	0	0	0	0	0	0	15
15:00	0	8	11	0	9	0	0	0	0	0	0	0	0	0	28
16:00	0	21	13	2	5	0	0	1	0	0	0	0	0	0	42
17:00	2	13	6	1	5	0	0	0	0	0	0	0	0	1	28
18:00	0	3	8	1	6	0	0	1	0	0	0	0	0	0	19
19:00	1	4	4	0	4	0	0	0	0	0	0	0	0	0	13
20:00	0	4	4	0	2	0	0	0	0	0	0	0	0	1	11
21:00	0	2	5	0	3	0	0	0	0	0	0	0	0	0	10
22:00	0	1	3	0	2	0	0	0	0	0	0	0	0	0	6
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	7	218	165	7	97	1	0	9	0	0	0	0	0	9	513
Percent	1.4%	42.5%	32.2%	1.4%	18.9%	0.2%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	
AM Peak	11:00	07:00	07:00	07:00	06:00	01:00		07:00						09:00	
Vol.	2	28	16	2	11	1		2						1	
PM Peak	17:00	16:00	13:00	16:00	15:00			13:00						12:00	
Vol.	2	21	13	2	9			1						5	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 27
Nicolai Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
04:00	1	8	8	0	4	0	0	1	0	0	0	0	0	0	22
05:00	0	19	8	0	7	0	0	1	0	0	0	0	0	0	35
06:00	1	12	16	0	9	0	0	0	0	0	0	0	0	0	38
07:00	0	23	18	2	9	0	0	0	0	0	0	0	0	0	52
08:00	0	25	11	0	7	0	0	0	0	1	0	0	0	0	44
09:00	1	13	6	0	2	0	0	1	0	0	0	0	0	0	23
10:00	3	9	9	0	7	0	0	2	0	0	0	0	0	0	30
11:00	0	12	12	0	3	0	0	2	0	0	0	0	0	0	29
12 PM	0	7	6	0	8	0	0	1	0	0	0	0	0	0	22
13:00	0	9	13	0	3	0	0	1	1	0	0	0	0	0	27
14:00	0	2	7	0	9	0	0	1	0	0	0	0	0	0	19
15:00	0	7	9	0	4	0	0	1	0	0	0	0	0	0	21
16:00	0	17	10	2	9	0	0	1	0	0	0	0	0	0	39
17:00	0	15	11	0	3	0	0	1	0	0	0	0	0	0	30
18:00	0	8	7	0	2	1	0	0	0	0	0	0	0	0	18
19:00	0	1	7	0	2	0	0	0	0	0	0	0	0	0	10
20:00	0	6	7	0	0	0	0	0	0	0	0	0	0	0	13
21:00	0	5	2	0	2	0	0	0	0	0	0	0	0	0	9
22:00	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	6	203	169	4	93	2	0	13	1	1	0	0	0	0	492
Percent	1.2%	41.3%	34.3%	0.8%	18.9%	0.4%	0.0%	2.6%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	07:00	07:00	06:00	01:00		10:00		08:00					
Vol.	3	25	18	2	9	1		2		1					
PM Peak		16:00	13:00	16:00	14:00	18:00		12:00	13:00						
Vol.		17	13	2	9	1		1	1						
Grand Total	13	421	334	11	190	3	0	22	1	1	0	0	0	9	1005
Percent	1.3%	41.9%	33.2%	1.1%	18.9%	0.3%	0.0%	2.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.9%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 27
Nicolai Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	2	2	0	1	0	0	0	0	0	0	0	0	0	5
01:00	0	2	1	0	2	0	0	0	0	0	0	0	0	0	5
02:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4
06:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
07:00	0	7	2	0	0	0	0	0	0	0	0	0	0	0	9
08:00	0	3	3	0	2	0	0	1	0	0	0	0	0	0	9
09:00	0	9	4	0	1	0	0	0	0	0	0	0	0	1	15
10:00	0	8	6	0	2	0	0	0	0	0	0	0	0	0	16
11:00	0	9	6	1	2	1	0	0	0	0	0	0	0	0	19
12 PM	1	16	4	0	2	0	0	2	0	0	0	0	0	5	30
13:00	0	12	6	0	5	1	0	0	0	0	0	0	0	0	24
14:00	2	16	10	0	2	2	0	0	0	0	0	0	0	0	32
15:00	0	25	21	0	8	0	0	1	0	0	0	0	0	0	55
16:00	0	35	13	2	7	0	0	0	0	0	0	0	0	0	57
17:00	2	37	11	1	6	0	0	3	0	0	0	0	0	0	60
18:00	0	30	13	0	9	0	0	0	0	0	0	0	0	0	52
19:00	2	24	6	0	4	0	0	0	0	0	0	0	0	0	36
20:00	1	17	5	0	5	0	0	1	0	0	0	0	0	1	30
21:00	0	14	2	0	2	0	0	0	0	0	0	0	0	0	18
22:00	0	9	5	0	2	0	0	0	0	0	0	0	0	0	16
23:00	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6
Total	10	290	120	4	65	4	0	8	0	0	0	0	0	7	508
Percent	2.0%	57.1%	23.6%	0.8%	12.8%	0.8%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	
AM Peak	05:00	09:00	10:00	11:00	01:00	11:00		08:00						09:00	
Vol.	2	9	6	1	2	1		1						1	
PM Peak	14:00	17:00	15:00	16:00	18:00	14:00		17:00						12:00	
Vol.	2	37	21	2	9	2		3						5	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 27
Nicolai Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
02:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
06:00	1	4	0	0	2	0	0	0	0	0	0	0	0	0	7
07:00	0	7	1	0	4	0	0	0	0	1	0	0	0	0	13
08:00	0	11	2	0	1	0	0	0	0	0	0	0	0	0	14
09:00	0	2	7	0	3	0	0	0	0	0	0	0	0	0	12
10:00	0	8	5	1	6	0	0	0	0	0	0	0	0	0	20
11:00	0	17	8	1	2	0	0	0	0	0	0	0	0	0	28
12 PM	0	13	4	0	3	0	0	1	0	0	0	0	0	0	21
13:00	1	17	4	0	1	0	0	1	0	0	0	0	0	1	25
14:00	2	17	6	0	4	1	0	3	0	0	0	0	0	0	33
15:00	0	31	16	1	4	0	0	1	0	0	0	0	0	0	53
16:00	2	26	9	0	3	0	0	2	0	0	0	0	0	0	42
17:00	1	44	10	0	9	0	0	0	0	0	0	0	0	0	64
18:00	0	42	12	0	8	0	1	0	0	0	0	0	0	0	63
19:00	0	29	5	0	3	0	0	2	0	0	0	0	0	0	39
20:00	0	13	5	0	1	0	0	0	0	0	0	0	0	0	19
21:00	0	22	2	0	5	0	0	1	0	0	0	0	0	0	30
22:00	1	7	2	0	1	0	0	0	0	0	0	0	0	0	11
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	8	321	102	3	62	1	1	11	0	1	0	0	0	1	511
Percent	1.6%	62.8%	20.0%	0.6%	12.1%	0.2%	0.2%	2.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	
AM Peak	06:00	11:00	11:00	10:00	10:00					07:00					
Vol.	1	17	8	1	6					1					
PM Peak	14:00	17:00	15:00	15:00	17:00	14:00	18:00	14:00						13:00	
Vol.	2	44	16	1	9	1	1	3						1	
Grand Total	18	611	222	7	127	5	1	19	0	1	0	0	0	8	1019
Percent	1.8%	60.0%	21.8%	0.7%	12.5%	0.5%	0.1%	1.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.8%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 28
Neer City Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
06:00	1	12	3	0	0	0	0	0	0	0	0	0	0	0	16
07:00	0	7	4	0	2	0	0	0	0	0	0	0	0	0	13
08:00	0	4	1	0	4	1	0	0	0	0	0	0	0	0	10
09:00	0	3	3	0	1	1	0	0	0	0	0	0	0	0	8
10:00	0	5	5	0	1	1	0	0	0	0	0	0	0	0	12
11:00	0	4	0	0	0	2	0	0	0	0	0	0	0	0	6
12 PM	0	3	2	0	1	1	0	0	0	0	0	0	0	2	9
13:00	0	3	2	0	0	1	0	0	0	0	0	0	0	0	6
14:00	0	3	2	0	2	2	0	0	0	0	0	0	0	0	9
15:00	0	3	1	0	1	1	0	0	0	0	0	0	0	1	7
16:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
17:00	0	5	5	0	1	0	0	0	0	0	0	0	0	0	11
18:00	0	3	1	0	3	0	0	1	0	0	0	0	0	0	8
19:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
20:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
21:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	76	35	0	21	10	0	1	0	0	0	0	0	3	147
Percent	0.7%	51.7%	23.8%	0.0%	14.3%	6.8%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	
AM Peak	06:00	06:00	10:00		08:00	11:00									
Vol.	1	12	5		4	2									
PM Peak		17:00	17:00		18:00	14:00		18:00						12:00	
Vol.		5	5		3	2		1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 28
Neer City Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	6	3	0	2	0	0	0	0	0	0	0	0	0	11
06:00	0	9	2	0	2	0	0	0	0	0	0	0	0	0	13
07:00	0	7	3	0	0	0	0	0	0	0	0	0	0	0	10
08:00	1	4	1	0	2	1	0	0	1	0	0	0	0	0	10
09:00	0	1	4	0	1	1	1	0	0	0	0	0	0	1	9
10:00	0	4	1	0	2	1	0	0	0	0	0	0	0	0	8
11:00	0	2	1	0	1	1	1	0	0	0	0	0	0	0	6
12 PM	0	4	3	0	1	1	1	0	1	0	0	0	0	0	11
13:00	0	3	1	0	0	1	0	0	0	0	0	0	0	0	5
14:00	0	3	3	0	2	1	1	0	0	0	0	0	0	0	10
15:00	0	4	2	1	3	1	0	0	0	0	0	0	0	0	11
16:00	0	3	2	0	2	0	1	1	0	0	0	0	0	0	9
17:00	0	9	5	0	5	0	0	0	0	0	0	0	0	0	19
18:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
19:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	1	71	35	1	24	8	5	1	2	0	0	0	0	1	149
Percent	0.7%	47.7%	23.5%	0.7%	16.1%	5.4%	3.4%	0.7%	1.3%	0.0%	0.0%	0.0%	0.0%	0.7%	
AM Peak	08:00	06:00	09:00		05:00	08:00	09:00		08:00					09:00	
Vol.	1	9	4		2	1	1		1					1	
PM Peak		17:00	17:00	15:00	17:00	12:00	12:00	16:00	12:00						
Vol.		9	5	1	5	1	1	1	1						
Grand Total	2	147	70	1	45	18	5	2	2	0	0	0	0	4	296
Percent	0.7%	49.7%	23.6%	0.3%	15.2%	6.1%	1.7%	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%	1.4%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 28
Neer City Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	4	1	1	1	0	0	0	0	0	0	0	0	0	7
07:00	0	4	0	1	1	0	0	0	0	0	0	0	0	0	6
08:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
09:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
10:00	0	1	1	0	2	1	2	0	0	0	0	0	0	0	7
11:00	0	2	1	0	1	1	1	0	0	0	0	0	0	0	6
12 PM	0	4	1	0	0	0	2	0	0	0	0	0	0	0	7
13:00	0	5	0	0	3	1	1	0	0	0	0	0	0	0	10
14:00	0	6	0	0	2	1	1	0	0	0	0	0	0	0	10
15:00	0	6	3	1	1	0	0	0	0	0	0	0	0	0	11
16:00	0	7	4	0	2	0	0	0	0	0	0	0	0	0	13
17:00	0	11	4	0	1	1	0	1	0	0	0	0	0	0	18
18:00	1	5	0	0	3	0	0	0	0	0	0	0	0	0	9
19:00	0	7	3	0	2	0	0	0	0	0	0	0	0	0	12
20:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
21:00	0	4	5	0	1	0	0	0	0	0	0	0	0	0	10
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	73	23	3	22	5	9	1	0	0	0	0	0	0	137
Percent	0.7%	53.3%	16.8%	2.2%	16.1%	3.6%	6.6%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		06:00	06:00	06:00	10:00	10:00	10:00								
Vol.		4	1	1	2	1	2								
PM Peak	18:00	17:00	21:00	15:00	13:00	13:00	12:00	17:00							
Vol.	1	11	5	1	3	1	2	1							
Grand Total	1	157	55	6	46	6	18	1	1	0	0	0	0	5	296
Percent	0.3%	53.0%	18.6%	2.0%	15.5%	2.0%	6.1%	0.3%	0.3%	0.0%	0.0%	0.0%	0.0%	1.7%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 37
McDonald Rd E-O Hwy 47

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	2	0	0	0	0	1	0	0	0	0	0	0	3
09:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
10:00	0	1	2	0	1	0	0	0	0	0	0	0	0	0	4
11:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
12 PM	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
13:00	0	2	3	0	2	0	0	0	0	0	0	0	0	0	7
14:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
15:00	0	3	0	0	0	0	0	1	0	0	0	0	0	0	4
16:00	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
17:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
18:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
19:00	0	3	3	0	0	0	0	0	0	0	0	0	0	0	6
20:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	36	15	0	7	0	0	2	0	0	0	0	0	0	60
Percent	0.0%	60.0%	25.0%	0.0%	11.7%	0.0%	0.0%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		11:00	08:00		09:00			08:00							
Vol.		3	2		2			1							
PM Peak		16:00	13:00		13:00			15:00							
Vol.		7	3		2			1							

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 31
Heath Rd N-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
08:00	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
09:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
10:00	0	2	4	0	0	0	0	0	0	0	0	0	0	0	6
11:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
12 PM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
13:00	1	2	3	0	1	0	0	0	0	0	0	0	0	3	10
14:00	0	5	1	0	3	0	0	1	0	0	0	0	0	0	10
15:00	0	5	2	1	3	0	0	0	0	0	0	0	0	0	11
16:00	3	7	0	0	1	0	0	0	0	0	0	0	0	0	11
17:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
18:00	0	3	0	0	2	0	0	0	0	0	0	0	0	0	5
19:00	0	5	1	0	2	0	0	1	0	0	0	0	0	0	9
20:00	0	10	2	0	0	0	0	0	0	0	0	0	0	0	12
21:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
22:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	4	62	23	2	16	0	0	2	0	0	0	0	0	3	112
Percent	3.6%	55.4%	20.5%	1.8%	14.3%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%	
AM Peak		09:00	10:00	07:00	02:00										
Vol.		4	4	1	1										
PM Peak	16:00	20:00	13:00	15:00	14:00			14:00						13:00	
Vol.	3	10	3	1	3			1						3	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 29
Graham Rd E-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
06:00	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3
07:00	0	5	2	0	1	0	0	0	0	0	0	0	0	0	8
08:00	0	1	2	0	2	0	0	0	0	0	0	0	0	0	5
09:00	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
10:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
11:00	0	7	1	0	4	0	0	0	0	0	0	0	0	0	12
12 PM	0	9	2	0	0	0	0	0	0	0	0	0	0	4	15
13:00	0	7	4	0	3	0	0	0	0	0	0	0	0	0	14
14:00	0	1	3	0	2	0	0	0	0	0	0	0	0	0	6
15:00	0	10	2	0	0	0	0	0	0	0	0	0	0	0	12
16:00	0	5	2	0	4	0	0	0	0	0	0	0	0	0	11
17:00	0	7	2	0	1	0	0	1	0	0	0	0	0	0	11
18:00	0	6	2	0	1	0	0	0	0	0	0	0	0	0	9
19:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
20:00	0	5	1	0	2	0	0	0	0	0	0	0	0	0	8
21:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	85	26	0	25	0	0	1	0	0	0	0	0	6	143
Percent	0.0%	59.4%	18.2%	0.0%	17.5%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	
AM Peak		11:00	07:00		11:00										01:00
Vol.		7	2		4										1
PM Peak		15:00	13:00		16:00			17:00							12:00
Vol.		10	4		4			1							4

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 41
Fishhawk Rd W-O Hwy 202

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
05:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
06:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
07:00	0	11	2	1	0	0	0	0	0	0	0	0	0	0	14
08:00	0	3	3	0	0	1	0	0	0	0	0	0	0	0	7
09:00	0	3	2	0	2	0	0	0	0	0	0	0	0	0	7
10:00	0	5	2	0	2	0	0	0	0	0	0	0	0	0	9
11:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
12 PM	0	2	5	1	0	0	0	0	0	0	0	0	0	0	8
13:00	0	3	2	0	3	1	0	0	0	0	0	0	0	0	9
14:00	0	2	2	0	1	1	0	1	0	0	0	0	0	0	7
15:00	0	2	1	0	2	0	0	0	0	0	0	0	0	0	5
16:00	0	0	3	0	1	0	0	0	0	0	0	0	0	0	4
17:00	0	3	1	0	3	2	0	0	0	0	0	0	0	0	9
18:00	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	47	30	2	18	5	0	1	0	0	0	0	0	0	103
Percent	0.0%	45.6%	29.1%	1.9%	17.5%	4.9%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		07:00	08:00	07:00	09:00	08:00									
Vol.		11	3	1	2	1									
PM Peak		13:00	12:00	12:00	13:00	17:00		14:00							
Vol.		3	5	1	3	2		1							

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 49
Fern Hill Rd N-O Townsend Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
03:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
04:00	0	14	4	0	0	0	0	0	0	0	0	0	0	0	18
05:00	0	24	11	0	5	0	0	0	0	0	0	0	0	0	40
06:00	0	33	15	0	5	1	0	0	0	0	0	0	0	1	55
07:00	1	49	17	1	5	1	0	3	0	1	0	0	0	2	80
08:00	0	46	16	0	9	1	0	0	0	0	0	0	0	2	74
09:00	2	58	6	0	8	0	0	0	0	0	0	0	0	0	74
10:00	0	40	22	0	3	0	0	0	1	1	0	0	0	3	70
11:00	0	52	15	1	3	0	0	0	0	0	0	0	0	1	72
12 PM	1	41	20	0	2	0	0	0	0	1	0	0	0	4	69
13:00	0	33	11	0	5	1	0	0	0	0	0	0	0	1	51
14:00	0	35	17	0	7	0	0	0	0	1	0	0	0	1	61
15:00	0	56	18	2	4	0	0	1	0	1	0	0	0	2	84
16:00	2	39	15	1	4	0	0	0	0	0	0	0	0	4	65
17:00	0	37	13	0	4	0	0	0	0	0	0	0	0	0	54
18:00	1	39	8	0	3	0	0	1	0	0	0	0	0	2	54
19:00	0	28	14	0	1	0	0	0	0	0	0	0	0	0	43
20:00	0	16	8	0	0	0	0	1	0	0	0	0	0	1	26
21:00	0	13	2	0	0	0	0	0	0	0	0	0	0	0	15
22:00	0	9	3	0	1	0	0	0	0	0	0	0	0	0	13
23:00	0	8	0	0	0	0	0	0	0	0	0	0	0	0	8
Total	7	679	236	5	70	4	0	6	1	5	0	0	0	24	1037
Percent	0.7%	65.5%	22.8%	0.5%	6.8%	0.4%	0.0%	0.6%	0.1%	0.5%	0.0%	0.0%	0.0%	2.3%	
AM Peak	09:00	09:00	10:00	07:00	08:00	06:00		07:00	10:00	07:00				10:00	
Vol.	2	58	22	1	9	1		3	1	1				3	
PM Peak	16:00	15:00	12:00	15:00	14:00	13:00		15:00		12:00				12:00	
Vol.	2	56	20	2	7	1		1		1				4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 49
Fern Hill Rd N-O Townsend Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
04:00	0	14	6	0	0	0	0	0	0	0	0	0	0	0	20
05:00	0	26	8	0	5	0	0	0	0	0	0	0	0	2	41
06:00	0	36	14	0	5	0	0	0	0	0	0	0	0	2	57
07:00	0	63	18	1	6	0	0	0	0	0	0	0	0	2	90
08:00	0	52	12	0	6	1	0	0	0	1	0	0	0	1	73
09:00	2	44	13	0	3	1	0	0	0	1	0	0	0	3	67
10:00	1	40	11	0	5	0	0	1	0	0	0	0	0	0	58
11:00	0	40	23	2	6	1	0	1	0	2	0	0	0	1	76
12 PM	0	33	18	0	5	0	0	0	0	1	0	0	0	1	58
13:00	2	37	8	0	3	0	0	0	0	0	0	0	0	2	52
14:00	0	39	10	0	4	0	1	0	0	1	0	0	0	3	58
15:00	2	37	23	1	4	0	0	0	0	0	0	0	0	1	68
16:00	0	57	19	0	7	1	0	0	0	1	0	0	0	0	85
17:00	0	49	15	0	3	0	0	1	0	0	0	0	0	0	68
18:00	0	33	11	0	3	0	0	0	0	0	0	0	0	0	47
19:00	0	34	7	0	2	0	0	1	0	0	0	0	0	0	44
20:00	0	19	10	0	5	0	0	1	0	0	0	0	0	0	35
21:00	0	14	5	0	3	0	0	0	0	0	0	0	0	0	22
22:00	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6
23:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
Total	7	678	235	4	78	4	1	5	0	7	0	0	0	18	1037
Percent	0.7%	65.4%	22.7%	0.4%	7.5%	0.4%	0.1%	0.5%	0.0%	0.7%	0.0%	0.0%	0.0%	1.7%	
AM Peak	09:00	07:00	11:00	11:00	07:00	08:00		10:00		11:00				09:00	
Vol.	2	63	23	2	6	1		1		2				3	
PM Peak	13:00	16:00	15:00	15:00	16:00	16:00	14:00	17:00		12:00				14:00	
Vol.	2	57	23	1	7	1	1	1		1				3	
Grand Total	14	1357	471	9	148	8	1	11	1	12	0	0	0	42	2074
Percent	0.7%	65.4%	22.7%	0.4%	7.1%	0.4%	0.0%	0.5%	0.0%	0.6%	0.0%	0.0%	0.0%	2.0%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 49
Fern Hill Rd N-O Townsend Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	3	4	0	2	0	0	0	0	0	0	0	0	0	9
01:00	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
04:00	1	2	1	0	1	0	0	0	0	0	0	0	0	0	5
05:00	0	2	2	1	0	0	0	0	0	0	0	0	0	0	5
06:00	0	5	5	0	3	0	0	0	1	0	0	0	0	0	14
07:00	1	34	15	2	5	1	0	1	0	0	0	0	0	0	59
08:00	0	14	10	0	3	0	0	1	1	0	0	0	0	0	29
09:00	0	12	10	0	5	1	0	0	1	0	0	0	0	1	30
10:00	0	15	11	0	7	0	0	0	1	0	0	0	0	0	34
11:00	0	32	16	1	7	0	0	0	0	0	0	0	0	0	56
12 PM	1	34	15	0	12	1	0	1	0	0	0	0	0	6	70
13:00	0	32	19	1	10	0	0	0	1	0	0	0	0	2	65
14:00	0	43	19	1	7	0	0	2	0	0	0	0	0	0	72
15:00	0	48	40	1	7	0	0	1	0	0	0	0	0	1	98
16:00	1	38	30	0	13	1	0	0	0	0	0	0	0	2	85
17:00	0	61	25	1	22	0	0	1	0	0	0	0	0	0	110
18:00	2	45	29	0	13	0	0	0	0	0	0	0	0	2	91
19:00	0	31	20	0	8	0	0	2	0	0	0	0	0	0	61
20:00	1	37	22	0	6	0	0	0	0	0	0	0	0	1	67
21:00	0	21	7	0	4	0	0	2	0	0	0	0	0	0	34
22:00	1	18	7	0	3	0	0	0	0	0	0	0	0	1	30
23:00	0	11	1	0	1	0	0	0	0	0	0	0	0	0	13
Total	8	544	312	8	139	4	0	11	5	0	0	0	0	16	1047
Percent	0.8%	52.0%	29.8%	0.8%	13.3%	0.4%	0.0%	1.1%	0.5%	0.0%	0.0%	0.0%	0.0%	1.5%	
AM Peak	04:00	07:00	11:00	07:00	10:00	07:00		07:00	06:00					09:00	
Vol.	1	34	16	2	7	1		1	1					1	
PM Peak	18:00	17:00	15:00	13:00	17:00	12:00		14:00	13:00					12:00	
Vol.	2	61	40	1	22	1		2	1					6	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 49
Fern Hill Rd N-O Townsend Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	4	5	0	1	0	0	0	0	0	0	0	0	0	10
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
02:00	1	2	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
04:00	0	4	1	0	1	0	0	0	0	0	0	0	0	0	6
05:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:00	0	4	4	0	1	0	0	0	1	0	0	0	0	0	10
07:00	0	35	15	2	7	0	0	1	0	0	0	0	0	2	62
08:00	0	13	7	0	3	1	0	1	0	0	0	0	0	1	26
09:00	0	16	10	0	2	2	0	1	0	0	0	0	0	2	33
10:00	1	20	12	1	8	1	0	0	1	0	0	0	0	2	46
11:00	1	30	19	3	8	0	0	0	0	0	0	0	0	3	64
12 PM	0	33	21	0	7	0	0	2	1	0	0	0	0	2	66
13:00	0	27	19	2	7	1	0	1	0	0	0	0	0	0	57
14:00	0	43	28	0	3	0	0	1	0	0	0	0	0	0	75
15:00	0	41	30	2	11	1	0	0	0	0	0	0	0	0	85
16:00	1	51	44	0	15	0	0	2	0	0	0	0	0	1	114
17:00	0	72	31	1	14	0	0	1	0	0	0	0	0	0	119
18:00	1	48	23	0	14	0	0	0	0	0	0	0	0	0	86
19:00	0	49	28	0	13	0	0	0	0	0	0	0	0	0	90
20:00	0	30	15	0	11	0	0	2	0	0	0	0	0	0	58
21:00	0	23	9	0	5	0	0	0	0	0	0	0	0	0	37
22:00	0	17	9	0	4	0	0	0	0	0	0	0	0	0	30
23:00	1	5	1	0	1	0	0	0	0	0	0	0	0	0	8
Total	6	571	333	11	137	6	0	12	3	0	0	0	0	13	1092
Percent	0.5%	52.3%	30.5%	1.0%	12.5%	0.5%	0.0%	1.1%	0.3%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak	02:00	07:00	11:00	11:00	10:00	09:00		07:00	06:00					11:00	
Vol.	1	35	19	3	8	2		1	1					3	
PM Peak	16:00	17:00	16:00	13:00	16:00	13:00		12:00	12:00					12:00	
Vol.	1	72	44	2	15	1		2	1					2	
Grand Total	14	1115	645	19	276	10	0	23	8	0	0	0	0	29	2139
Percent	0.7%	52.1%	30.2%	0.9%	12.9%	0.5%	0.0%	1.1%	0.4%	0.0%	0.0%	0.0%	0.0%	1.4%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 34
Delena Rd N-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
06:00	0	2	4	1	1	0	0	0	0	0	0	0	0	0	8
07:00	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2
08:00	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3
09:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
10:00	0	5	2	0	2	0	0	0	0	0	0	0	0	0	9
11:00	0	2	3	0	0	0	0	0	0	0	0	0	0	0	5
12 PM	0	8	3	1	0	0	0	0	0	0	0	0	0	0	12
13:00	0	6	4	0	1	0	0	0	0	0	0	0	0	2	13
14:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
15:00	0	7	2	0	2	0	0	1	0	0	0	0	0	0	12
16:00	0	7	4	0	2	0	0	0	0	0	0	0	0	0	13
17:00	0	9	1	0	2	0	0	0	0	0	0	0	0	0	12
18:00	0	4	4	0	1	0	0	0	0	0	0	0	0	0	9
19:00	0	5	2	0	4	0	0	0	0	0	0	0	0	1	12
20:00	0	6	1	0	1	0	0	0	0	0	0	0	0	0	8
21:00	0	5	2	0	1	0	0	0	0	0	0	0	0	0	8
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	77	35	2	21	0	0	2	0	0	0	0	0	3	140
Percent	0.0%	55.0%	25.0%	1.4%	15.0%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	
AM Peak		10:00	06:00	06:00	08:00			07:00							
Vol.		5	4	1	2			1							
PM Peak		17:00	13:00	12:00	19:00			15:00						13:00	
Vol.		9	4	1	4			1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 34
Delena Rd N-O Hwy 30

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
06:00	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
07:00	0	6	2	1	2	0	0	0	0	0	0	0	0	0	11
08:00	0	2	1	0	1	0	0	1	0	0	0	0	0	0	5
09:00	0	4	4	0	0	0	0	0	0	0	0	0	0	0	8
10:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
11:00	0	6	5	0	3	0	0	0	0	0	0	0	0	0	14
12 PM	0	6	4	0	1	0	0	0	0	0	0	0	0	0	11
13:00	0	6	2	0	0	0	0	0	0	0	0	0	0	1	9
14:00	0	5	3	0	1	0	0	0	0	0	0	0	0	0	9
15:00	0	6	4	0	1	0	0	0	0	0	0	0	0	0	11
16:00	0	3	1	0	2	0	0	0	0	0	0	0	0	0	6
17:00	0	9	4	0	1	0	0	1	0	0	0	0	0	0	15
18:00	0	5	1	0	2	0	0	0	0	0	0	0	0	0	8
19:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
20:00	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
21:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	87	39	1	18	0	0	2	0	0	0	0	0	1	148
Percent	0.0%	58.8%	26.4%	0.7%	12.2%	0.0%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	
AM Peak		06:00	11:00	07:00	11:00			08:00							
Vol.		7	5	1	3			1							
PM Peak		17:00	12:00		16:00			17:00						13:00	
Vol.		9	4		2			1						1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 35
Colvin Rd N-O Hwy 30

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
07:00	0	3	1	1	0	0	0	0	0	0	0	0	0	0	5
08:00	0	3	4	0	0	0	0	0	0	0	0	0	0	0	7
09:00	0	1	0	0	3	0	0	0	0	0	0	0	0	0	4
10:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
11:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
12 PM	0	4	3	0	1	0	0	0	0	0	0	0	0	0	8
13:00	0	5	4	0	1	0	0	1	0	0	0	0	0	2	13
14:00	0	5	1	1	2	0	0	0	0	0	0	0	0	0	9
15:00	0	6	3	1	2	0	0	0	0	0	0	0	0	0	12
16:00	0	5	0	0	1	0	0	0	0	0	0	0	0	0	6
17:00	0	8	3	0	4	0	0	0	0	0	0	0	0	0	15
18:00	0	5	3	0	3	0	0	1	0	0	0	0	0	0	12
19:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	1	3	0	1	0	0	0	0	0	0	0	0	0	5
21:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
22:00	0	2	2	0	1	0	0	0	0	0	0	0	0	0	5
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	58	32	3	21	0	0	2	0	0	0	0	0	2	118
Percent	0.0%	49.2%	27.1%	2.5%	17.8%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	
AM Peak		07:00	08:00	07:00	09:00										
Vol.		3	4	1	3										
PM Peak		17:00	13:00	14:00	17:00			13:00						13:00	
Vol.		8	4	1	4			1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 44
Church Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	1	1	0	0	0	0	0	0	0	0	0	0	3
03:00	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
04:00	0	10	3	0	2	0	0	0	0	0	0	0	0	1	16
05:00	1	15	9	0	9	0	0	0	0	0	0	0	0	0	34
06:00	0	53	14	0	5	0	0	2	0	0	0	0	0	0	74
07:00	1	42	23	1	11	0	0	0	0	0	0	0	0	1	79
08:00	1	44	20	0	10	0	0	0	0	0	0	0	0	1	76
09:00	1	22	6	0	3	0	0	0	0	0	0	0	0	3	35
10:00	0	23	17	0	6	0	0	1	0	0	0	0	0	0	47
11:00	1	17	10	0	9	0	0	1	0	0	0	0	0	5	43
12 PM	0	24	5	0	3	0	0	0	0	0	0	0	0	0	32
13:00	1	21	9	0	4	1	0	3	0	0	0	0	0	0	39
14:00	0	29	10	0	8	0	0	0	0	0	0	0	0	0	47
15:00	1	21	13	1	6	0	0	0	0	0	0	0	0	0	42
16:00	1	20	16	2	5	2	0	1	0	0	0	0	0	0	47
17:00	0	30	8	0	7	0	0	0	0	0	0	0	0	1	46
18:00	2	26	14	0	4	0	0	0	0	0	0	0	0	1	47
19:00	0	18	5	0	3	0	0	0	0	0	0	0	0	0	26
20:00	0	13	7	0	4	0	0	0	0	0	0	0	0	0	24
21:00	0	5	2	0	2	0	0	0	0	0	0	0	0	0	9
22:00	0	8	1	0	0	0	0	0	0	0	0	0	0	0	9
23:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
Total	10	447	194	6	103	3	0	8	0	0	0	0	0	13	784
Percent	1.3%	57.0%	24.7%	0.8%	13.1%	0.4%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	
AM Peak	05:00	06:00	07:00	02:00	07:00			06:00						11:00	
Vol.	1	53	23	1	11			2						5	
PM Peak	18:00	17:00	16:00	16:00	14:00	16:00		13:00						17:00	
Vol.	2	30	16	2	8	2		3						1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 44
Church Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	1	2	2	0	0	0	0	0	0	0	0	0	5
04:00	0	12	3	0	1	0	0	0	0	0	0	0	0	0	16
05:00	0	16	7	0	9	0	0	0	0	0	0	0	0	0	32
06:00	1	50	12	0	4	0	0	1	1	0	0	0	0	0	69
07:00	1	49	19	1	5	1	0	1	0	0	0	0	0	2	79
08:00	2	43	8	0	6	0	1	0	0	0	0	0	0	5	65
09:00	0	31	21	0	9	1	1	2	0	0	0	0	0	2	67
10:00	1	24	10	0	7	0	1	3	0	0	0	0	0	1	47
11:00	0	26	7	0	10	0	1	2	0	0	0	0	0	1	47
12 PM	0	24	17	0	9	0	0	0	0	0	0	0	0	0	50
13:00	0	22	10	0	10	0	0	1	0	0	0	0	0	2	45
14:00	1	24	12	0	5	0	0	1	0	0	0	0	0	1	44
15:00	0	28	8	0	4	0	1	0	0	0	0	0	0	0	41
16:00	0	23	11	2	6	0	1	2	0	0	0	0	0	1	46
17:00	3	21	6	0	5	0	0	0	0	0	0	0	0	2	37
18:00	0	30	12	0	2	0	0	0	0	0	0	0	0	0	44
19:00	0	18	2	0	4	0	0	0	0	0	0	0	0	0	24
20:00	0	16	3	0	6	0	0	0	0	0	0	0	0	0	25
21:00	0	13	5	0	0	0	0	0	0	0	0	0	0	0	18
22:00	0	7	4	0	1	0	0	0	0	0	0	0	0	0	12
23:00	0	9	1	0	1	0	0	0	0	0	0	0	0	0	11
Total	9	489	179	5	106	2	6	13	1	0	0	0	0	17	827
Percent	1.1%	59.1%	21.6%	0.6%	12.8%	0.2%	0.7%	1.6%	0.1%	0.0%	0.0%	0.0%	0.0%	2.1%	
AM Peak	08:00	06:00	09:00	03:00	11:00	07:00	08:00	10:00	06:00					08:00	
Vol.	2	50	21	2	10	1	1	3	1					5	
PM Peak	17:00	18:00	12:00	16:00	13:00		15:00	16:00						13:00	
Vol.	3	30	17	2	10		1	2						2	
Grand Total	19	936	373	11	209	5	6	21	1	0	0	0	0	30	1611
Percent	1.2%	58.1%	23.2%	0.7%	13.0%	0.3%	0.4%	1.3%	0.1%	0.0%	0.0%	0.0%	0.0%	1.9%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 44
Church Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	3	4	0	1	0	0	0	0	0	0	0	0	0	8
06:00	0	2	1	0	2	0	0	0	0	0	0	0	0	0	5
07:00	0	17	19	2	6	0	0	0	0	0	0	0	0	1	45
08:00	0	23	14	0	10	0	0	0	0	0	0	0	0	0	47
09:00	0	11	3	0	5	0	0	1	0	0	0	0	0	1	21
10:00	0	15	11	0	5	0	0	0	0	0	0	0	0	0	31
11:00	2	21	13	1	9	0	0	1	1	0	0	0	0	0	48
12 PM	0	32	13	0	4	0	0	0	0	0	0	0	0	1	50
13:00	0	22	13	0	5	0	0	3	0	0	0	0	0	1	44
14:00	0	38	20	3	7	0	0	0	0	0	0	0	0	0	68
15:00	0	45	28	1	10	0	0	1	1	0	0	0	0	0	86
16:00	2	48	30	0	10	1	0	1	0	0	0	0	0	1	93
17:00	0	62	26	0	21	0	0	0	0	0	0	0	0	0	109
18:00	2	45	16	0	13	0	0	0	0	0	0	0	0	1	77
19:00	1	34	3	0	10	0	0	0	0	0	0	0	0	0	48
20:00	0	36	15	0	2	0	0	0	0	0	0	0	0	0	53
21:00	0	13	3	0	2	0	0	0	0	0	0	0	0	0	18
22:00	0	12	4	0	1	0	0	0	0	0	0	0	0	0	17
23:00	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
Total	7	490	239	7	125	1	0	7	2	0	0	0	0	6	884
Percent	0.8%	55.4%	27.0%	0.8%	14.1%	0.1%	0.0%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.7%	
AM Peak	11:00	08:00	07:00	07:00	08:00			09:00	11:00					07:00	
Vol.	2	23	19	2	10			1	1					1	
PM Peak	16:00	17:00	16:00	14:00	17:00	16:00		13:00	15:00					12:00	
Vol.	2	62	30	3	21	1		3	1					1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 44
Church Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	3	4	0	4	0	0	0	0	1	0	0	0	0	12
07:00	0	21	20	2	5	1	0	0	1	0	0	0	0	0	50
08:00	1	18	7	0	6	1	0	0	0	0	0	0	0	1	34
09:00	0	15	11	0	6	1	0	0	0	0	0	0	0	0	33
10:00	0	15	12	0	7	2	0	2	0	0	0	0	0	0	38
11:00	0	21	6	1	7	1	0	2	0	0	0	0	0	0	38
12 PM	1	25	17	0	10	0	0	2	0	0	0	0	0	0	55
13:00	0	33	9	0	8	0	0	1	1	0	0	0	0	0	52
14:00	0	38	14	2	15	1	0	0	0	0	0	0	0	0	70
15:00	1	55	22	1	11	1	0	3	0	0	0	0	0	1	95
16:00	2	56	22	0	11	1	0	1	0	0	0	0	0	1	94
17:00	0	53	25	1	10	1	0	0	0	0	0	0	0	0	90
18:00	1	54	28	0	7	0	0	0	0	0	0	0	0	0	90
19:00	1	26	13	0	6	0	0	0	0	0	0	0	0	0	46
20:00	0	42	6	0	4	0	0	0	0	0	0	0	0	0	52
21:00	0	21	5	0	1	0	0	0	0	0	0	0	0	0	27
22:00	0	17	6	0	2	0	0	1	0	0	0	0	0	0	26
23:00	0	8	3	0	0	0	0	0	0	0	0	0	0	0	11
Total	7	529	232	7	120	10	0	12	2	1	0	0	0	3	923
Percent	0.8%	57.3%	25.1%	0.8%	13.0%	1.1%	0.0%	1.3%	0.2%	0.1%	0.0%	0.0%	0.0%	0.3%	
AM Peak	08:00	07:00	07:00	07:00	10:00	10:00		10:00	07:00	06:00				08:00	
Vol.	1	21	20	2	7	2		2	1	1				1	
PM Peak	16:00	16:00	18:00	14:00	14:00	14:00		15:00	13:00					15:00	
Vol.	2	56	28	2	15	1		3	1					1	
Grand Total	14	1019	471	14	245	11	0	19	4	1	0	0	0	9	1807
Percent	0.8%	56.4%	26.1%	0.8%	13.6%	0.6%	0.0%	1.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.5%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 42
Cater Rd N-O Scappoose Vernonia Hwy

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/10/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:00	0	3	0	0	3	0	0	0	0	0	0	0	0	0	6
05:00	0	4	4	0	1	2	0	0	0	0	0	0	0	0	11
06:00	1	4	6	0	1	0	0	0	0	0	0	0	0	0	12
07:00	0	15	5	1	6	0	0	0	0	0	0	0	0	0	27
08:00	0	5	5	0	2	0	0	0	0	0	0	0	0	0	12
09:00	0	10	8	0	2	0	0	0	0	0	0	0	0	0	20
10:00	0	10	3	0	2	1	0	2	0	0	0	0	0	0	18
11:00	0	4	4	1	1	0	0	0	0	0	0	0	0	0	10
12 PM	0	4	6	0	2	0	0	0	0	0	0	0	0	0	12
13:00	0	13	2	0	1	0	0	0	0	0	0	0	0	0	16
14:00	0	11	8	0	3	0	0	0	0	0	0	0	0	0	22
15:00	0	11	4	0	3	0	0	0	0	0	0	0	0	0	18
16:00	1	15	5	1	4	0	0	1	0	0	0	0	0	0	27
17:00	0	21	0	0	0	0	0	0	0	0	0	0	0	0	21
18:00	0	19	10	0	4	0	0	0	0	0	0	0	0	0	33
19:00	0	15	2	0	0	0	0	0	0	0	0	0	0	0	17
20:00	0	13	0	0	3	0	0	0	0	0	0	0	0	0	16
21:00	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
22:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	2	189	74	4	39	3	0	3	0	0	0	0	0	0	314
Percent	0.6%	60.2%	23.6%	1.3%	12.4%	1.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	09:00	02:00	07:00	05:00		10:00							
Vol.	1	15	8	1	6	2		2							
PM Peak	16:00	17:00	18:00	16:00	16:00			16:00							
Vol.	1	21	10	1	4			1							

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
03:00	1	8	2	0	3	0	0	0	0	0	0	0	0	1	15
04:00	1	18	2	0	2	0	0	0	0	0	0	0	0	1	24
05:00	2	40	10	0	9	0	0	0	0	1	0	0	0	2	64
06:00	1	32	15	0	6	0	0	1	0	0	0	0	0	1	56
07:00	2	53	19	2	17	1	0	1	0	0	0	0	0	2	97
08:00	1	35	10	0	6	0	1	3	0	0	0	0	0	3	59
09:00	0	28	6	0	4	0	0	0	0	0	0	0	0	1	39
10:00	1	31	8	0	5	0	0	0	0	0	0	0	0	0	45
11:00	0	37	8	1	6	0	0	0	0	0	0	0	0	0	52
12 PM	0	34	9	0	6	0	0	0	0	0	0	0	0	6	55
13:00	1	30	11	0	6	0	0	0	0	0	0	0	0	1	49
14:00	2	18	10	0	6	0	0	2	0	0	0	0	0	3	41
15:00	0	22	6	1	9	0	0	0	1	0	0	0	0	1	40
16:00	1	25	17	1	4	0	0	2	0	0	0	0	0	0	50
17:00	1	26	12	0	1	0	0	2	0	0	0	0	0	1	43
18:00	0	32	10	0	2	0	0	0	0	0	0	0	0	0	44
19:00	2	13	4	0	3	0	0	0	0	0	0	0	0	0	22
20:00	0	18	1	0	4	0	0	0	0	0	0	0	0	0	23
21:00	0	10	4	0	0	0	0	0	0	0	0	0	0	0	14
22:00	0	3	3	0	0	0	0	0	0	0	0	0	0	0	6
23:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	16	523	168	5	101	1	1	11	1	1	0	0	0	23	851
Percent	1.9%	61.5%	19.7%	0.6%	11.9%	0.1%	0.1%	1.3%	0.1%	0.1%	0.0%	0.0%	0.0%	2.7%	
AM Peak	05:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00		05:00				08:00	
Vol.	2	53	19	2	17	1	1	3		1				3	
PM Peak	14:00	12:00	16:00	15:00	15:00			14:00	15:00					12:00	
Vol.	2	34	17	1	9			2	1					6	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	6	2	0	0	0	0	0	0	0	0	0	0	0	8
04:00	1	18	5	0	2	0	0	0	0	0	0	0	0	0	26
05:00	2	35	7	0	8	1	0	1	0	0	0	0	0	2	56
06:00	0	47	13	0	10	0	0	0	1	1	0	0	0	0	72
07:00	2	53	20	2	16	0	0	1	1	0	0	0	0	6	101
08:00	0	42	12	0	3	0	0	2	0	0	0	0	0	3	62
09:00	0	23	15	0	10	0	0	1	0	0	0	0	0	2	51
10:00	0	37	14	0	8	0	0	0	0	0	0	0	0	0	59
11:00	1	25	10	1	6	0	0	1	0	0	0	0	0	1	45
12 PM	0	21	4	0	11	0	0	0	0	0	0	0	0	0	36
13:00	1	26	11	0	2	0	0	1	0	0	0	0	0	0	41
14:00	0	34	14	0	6	0	0	0	0	0	0	0	0	1	55
15:00	2	25	8	1	5	0	0	0	0	0	0	0	0	1	42
16:00	1	25	11	0	6	0	0	0	0	0	0	0	0	2	45
17:00	1	33	16	1	9	0	0	0	0	0	0	0	0	1	61
18:00	1	24	11	0	3	0	0	0	0	0	0	0	0	0	39
19:00	1	16	8	0	2	0	0	0	0	0	0	0	0	1	28
20:00	0	17	6	0	4	0	0	0	0	0	0	0	0	0	27
21:00	1	6	7	0	2	0	0	0	0	0	0	0	0	0	16
22:00	0	8	4	0	1	0	0	0	0	0	0	0	0	0	13
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	14	529	198	5	114	2	0	7	2	1	0	0	0	20	892
Percent	1.6%	59.3%	22.2%	0.6%	12.8%	0.2%	0.0%	0.8%	0.2%	0.1%	0.0%	0.0%	0.0%	2.2%	
AM Peak	05:00	07:00	07:00	07:00	07:00	00:00		08:00	06:00	06:00				07:00	
Vol.	2	53	20	2	16	1		2	1	1				6	
PM Peak	15:00	14:00	17:00	15:00	12:00			13:00						16:00	
Vol.	2	34	16	1	11			1						2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/05/14	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
03:00	1	8	2	0	3	0	0	0	0	0	0	0	0	1	15
04:00	1	18	2	0	2	0	0	0	0	0	0	0	0	1	24
05:00	2	40	10	0	9	0	0	0	0	1	0	0	0	2	64
06:00	1	32	15	0	6	0	0	1	0	0	0	0	0	1	56
07:00	2	53	19	2	17	1	0	1	0	0	0	0	0	2	97
08:00	1	35	10	0	6	0	1	3	0	0	0	0	0	3	59
09:00	0	19	6	0	3	0	0	0	0	0	0	0	0	1	29
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	8	209	65	2	48	1	1	5	0	1	0	0	0	11	351
Percent	2.3%	59.5%	18.5%	0.6%	13.7%	0.3%	0.3%	1.4%	0.0%	0.3%	0.0%	0.0%	0.0%	3.1%	
AM Peak	05:00	07:00	07:00	07:00	07:00	07:00	08:00	08:00		05:00				08:00	
Vol.	2	53	19	2	17	1	1	3		1				3	
PM Peak															
Vol.															
Grand Total	38	1261	431	12	263	4	2	23	3	3	0	0	0	54	2094
Percent	1.8%	60.2%	20.6%	0.6%	12.6%	0.2%	0.1%	1.1%	0.1%	0.1%	0.0%	0.0%	0.0%	2.6%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	1	5	2	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	7	0	0	1	0	0	0	0	0	0	0	0	0	8
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
06:00	0	4	2	2	2	0	0	0	0	0	0	0	0	0	10
07:00	1	10	5	1	1	0	0	0	0	0	0	0	0	0	18
08:00	0	11	3	0	5	0	0	0	0	0	0	0	0	0	19
09:00	0	24	5	2	3	0	0	0	0	0	0	0	0	4	38
10:00	1	28	5	0	4	0	0	1	0	0	0	0	0	0	39
11:00	0	23	6	0	11	0	0	0	0	0	0	0	0	0	40
12 PM	0	26	10	0	6	1	0	1	0	0	0	0	0	0	44
13:00	1	25	11	0	10	0	0	1	0	0	0	0	0	0	48
14:00	0	39	10	1	11	0	0	2	0	0	0	0	0	0	63
15:00	0	54	17	1	10	1	0	0	0	0	0	0	0	1	84
16:00	0	54	23	0	16	0	1	1	1	0	0	0	0	0	96
17:00	1	73	21	0	14	0	0	0	0	1	0	0	0	0	110
18:00	3	48	19	0	4	0	0	2	0	0	0	0	0	1	77
19:00	2	36	9	0	4	0	0	1	0	0	0	0	0	1	53
20:00	2	37	12	0	7	0	0	1	0	0	0	0	0	0	59
21:00	0	27	4	0	0	0	0	0	0	0	0	0	0	1	32
22:00	0	16	5	0	1	0	0	0	0	0	0	0	0	0	22
23:00	0	6	3	0	0	0	0	0	0	0	0	0	0	0	9
Total	12	561	172	7	111	2	1	10	1	1	0	0	0	8	886
Percent	1.4%	63.3%	19.4%	0.8%	12.5%	0.2%	0.1%	1.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.9%	
AM Peak	00:00	10:00	11:00	06:00	11:00			10:00						09:00	
Vol.	1	28	6	2	11			1						4	
PM Peak	18:00	17:00	16:00	14:00	16:00	12:00	16:00	14:00	16:00	17:00				15:00	
Vol.	3	73	23	1	16	1	1	2	1	1				1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	8	4	2	1	0	0	0	0	0	0	0	0	0	15
07:00	0	11	4	1	1	0	0	0	0	0	0	0	0	1	18
08:00	0	8	5	0	2	0	0	0	0	0	0	0	0	0	15
09:00	0	15	9	0	8	0	0	2	1	0	0	0	0	0	35
10:00	0	26	5	1	6	0	0	0	0	0	0	0	0	0	38
11:00	0	27	14	0	6	0	0	1	0	0	0	0	0	0	48
12 PM	2	11	14	0	5	0	0	2	0	0	0	0	0	0	34
13:00	0	33	16	0	12	0	0	1	0	0	0	0	0	0	62
14:00	0	28	10	1	8	0	0	1	0	0	0	0	0	0	48
15:00	1	40	20	1	10	0	0	0	0	0	0	0	0	0	72
16:00	1	71	24	0	14	0	0	0	1	0	0	0	0	1	112
17:00	4	73	22	0	10	0	0	0	0	1	0	0	0	0	110
18:00	1	46	17	0	9	0	0	1	0	0	0	0	0	0	74
19:00	1	40	11	0	7	0	0	0	0	0	0	0	0	0	59
20:00	1	36	14	0	9	0	0	0	0	0	0	0	0	0	60
21:00	1	22	11	0	2	0	0	0	0	0	0	0	0	0	36
22:00	0	16	4	0	4	0	0	0	0	0	0	0	0	0	24
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	0	11
Total	12	536	208	6	114	0	0	8	2	1	0	0	0	2	889
Percent	1.3%	60.3%	23.4%	0.7%	12.8%	0.0%	0.0%	0.9%	0.2%	0.1%	0.0%	0.0%	0.0%	0.2%	
AM Peak		11:00	11:00	06:00	09:00			09:00	09:00					07:00	
Vol.		27	14	2	8			2	1					1	
PM Peak	17:00	17:00	16:00	14:00	16:00			12:00	16:00	17:00				16:00	
Vol.	4	73	24	1	14			2	1	1				1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 25
Canaan Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/05/14	1	5	2	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	7	0	0	1	0	0	0	0	0	0	0	0	0	8
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
06:00	0	4	2	2	2	0	0	0	0	0	0	0	0	0	10
07:00	1	10	5	1	1	0	0	0	0	0	0	0	0	0	18
08:00	0	11	3	0	5	0	0	0	0	0	0	0	0	0	19
09:00	0	12	4	1	3	0	0	0	0	0	0	0	0	4	24
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	2	57	16	4	13	0	0	0	0	0	0	0	0	4	96
Percent	2.1%	59.4%	16.7%	4.2%	13.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	
AM Peak	00:00	09:00	07:00	06:00	08:00									09:00	
Vol.	1	12	5	2	5									4	
PM Peak															
Vol.															
Grand Total	26	1154	396	17	238	2	1	18	3	2	0	0	0	14	1871
Percent	1.4%	61.7%	21.2%	0.9%	12.7%	0.1%	0.1%	1.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.7%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 24
Berg Rd W-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
04:00	0	3	1	0	4	0	0	0	0	0	0	0	0	0	8
05:00	0	9	3	0	2	0	0	0	0	0	0	0	0	0	14
06:00	0	13	5	0	2	0	0	0	0	0	0	0	0	0	20
07:00	0	22	7	1	3	0	0	0	0	0	0	0	0	0	33
08:00	1	27	21	0	5	0	0	0	0	0	0	0	0	0	54
09:00	0	10	7	0	7	0	0	0	0	0	0	0	0	0	24
10:00	0	9	4	0	3	0	0	0	0	0	0	0	0	2	18
11:00	0	14	8	0	2	0	0	0	0	0	0	0	0	1	25
12 PM	0	7	5	0	1	0	0	0	0	0	0	0	0	0	13
13:00	0	12	5	0	1	0	0	0	0	0	0	0	0	0	18
14:00	0	11	9	0	1	0	0	0	0	0	0	0	0	1	22
15:00	0	10	5	0	5	0	0	1	0	0	0	0	0	0	21
16:00	0	11	5	0	5	0	0	0	0	0	0	0	0	1	22
17:00	0	14	9	0	2	0	0	1	0	0	0	0	0	0	26
18:00	1	11	4	0	2	0	0	0	0	0	0	0	0	2	20
19:00	1	14	3	0	0	0	0	0	0	0	0	0	0	1	19
20:00	0	8	1	0	2	0	0	0	0	0	0	0	0	0	11
21:00	0	6	1	0	0	0	0	0	0	0	0	0	0	3	10
22:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	3	220	104	1	48	0	0	2	0	0	0	0	0	11	389
Percent	0.8%	56.6%	26.7%	0.3%	12.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	
AM Peak	08:00	08:00	08:00	07:00	09:00									10:00	
Vol.	1	27	21	1	7									2	
PM Peak	18:00	17:00	14:00		15:00			15:00						21:00	
Vol.	1	14	9		5			1						3	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 24
Berg Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
06:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
07:00	0	2	4	0	5	0	0	1	0	0	0	0	0	0	12
08:00	0	10	20	0	2	0	0	0	0	0	0	0	0	0	32
09:00	0	5	4	0	5	0	0	1	0	0	0	0	0	0	15
10:00	0	7	3	0	3	0	0	0	0	0	0	0	0	2	15
11:00	0	12	9	0	6	0	0	0	0	0	0	0	0	0	27
12 PM	1	7	4	0	7	0	0	0	0	0	0	0	0	0	19
13:00	0	11	6	0	0	0	0	0	0	0	0	0	0	0	17
14:00	0	18	11	1	3	0	0	0	0	0	0	0	0	1	34
15:00	0	27	12	1	1	0	0	0	0	0	0	0	0	1	42
16:00	0	22	10	0	5	0	0	0	0	0	0	0	0	0	37
17:00	0	20	10	0	4	0	0	1	0	0	0	0	0	0	35
18:00	0	24	5	0	5	1	0	0	0	0	0	0	0	0	35
19:00	0	20	5	0	2	0	0	0	0	0	0	0	0	0	27
20:00	0	18	5	0	1	0	0	0	0	0	0	0	0	1	25
21:00	0	15	0	0	0	0	0	1	0	0	0	0	0	1	17
22:00	0	6	4	0	1	0	0	0	0	0	0	0	0	0	11
23:00	0	5	2	0	1	0	0	0	0	0	0	0	0	0	8
Total	1	232	115	2	52	1	0	4	0	0	0	0	0	6	413
Percent	0.2%	56.2%	27.8%	0.5%	12.6%	0.2%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	
AM Peak		11:00	08:00		11:00			07:00						10:00	
Vol.		12	20		6			1						2	
PM Peak	12:00	15:00	15:00	14:00	12:00	18:00		17:00						14:00	
Vol.	1	27	12	1	7	1		1						1	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 46
Bennett Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	1	1	2	1	0	0	0	0	0	0	0	0	0	5
07:00	0	2	3	1	0	0	0	0	0	0	0	0	0	0	6
08:00	0	11	9	0	3	0	0	0	0	0	0	0	0	2	25
09:00	0	11	4	0	3	0	0	0	0	0	0	0	0	0	18
10:00	0	13	4	0	1	0	0	0	0	0	0	0	0	0	18
11:00	0	6	4	0	2	0	0	0	0	0	0	0	0	4	16
12 PM	1	10	8	0	0	0	0	0	0	0	0	0	0	0	19
13:00	0	12	17	0	3	0	0	0	1	0	0	0	0	0	33
14:00	0	9	7	0	3	0	0	0	0	0	0	0	0	0	19
15:00	0	24	5	1	6	0	0	1	0	0	0	0	0	0	37
16:00	0	30	17	1	3	0	0	0	0	0	0	0	0	0	51
17:00	0	32	13	0	6	0	0	0	0	0	0	0	0	0	51
18:00	0	26	17	0	4	0	0	0	0	0	0	0	0	0	47
19:00	1	18	5	0	3	0	0	0	0	0	0	0	0	0	27
20:00	0	15	7	0	4	0	0	0	0	0	0	0	0	0	26
21:00	0	8	5	0	1	0	0	0	0	0	0	0	0	0	14
22:00	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
23:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	2	236	130	5	45	0	0	1	1	0	0	0	0	6	426
Percent	0.5%	55.4%	30.5%	1.2%	10.6%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	1.4%	
AM Peak		10:00	08:00	06:00	08:00									11:00	
Vol.		13	9	2	3									4	
PM Peak	12:00	17:00	13:00	15:00	15:00			15:00	13:00						
Vol.	1	32	17	1	6			1	1						

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 46
Bennett Rd W-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
07:00	0	1	1	1	1	0	0	0	0	0	0	0	0	0	4
08:00	0	9	7	0	2	0	0	0	0	0	0	0	0	0	18
09:00	0	4	4	1	2	0	0	0	0	0	0	0	0	0	11
10:00	0	6	5	0	1	0	0	0	0	0	0	0	0	0	12
11:00	0	11	4	0	4	0	0	0	0	0	0	0	0	0	19
12 PM	1	13	11	1	6	0	0	1	0	0	0	0	0	1	34
13:00	0	6	7	0	3	0	0	0	0	0	0	0	0	0	16
14:00	0	17	3	0	5	0	0	0	0	0	0	0	0	0	25
15:00	0	20	12	1	5	0	0	0	0	0	0	0	0	0	38
16:00	0	20	14	0	8	0	0	0	0	0	0	0	0	0	42
17:00	2	32	14	1	8	0	0	0	0	0	0	0	0	0	57
18:00	0	29	14	0	2	0	0	0	0	0	0	0	0	1	46
19:00	0	16	7	0	3	0	0	1	0	0	0	0	0	0	27
20:00	0	9	5	0	5	0	0	0	0	0	0	0	0	0	19
21:00	1	12	3	0	2	0	0	0	0	0	0	0	0	0	18
22:00	1	10	4	0	2	0	0	0	0	0	0	0	0	0	17
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	5	219	118	6	59	0	0	2	0	0	0	0	0	2	411
Percent	1.2%	53.3%	28.7%	1.5%	14.4%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	
AM Peak Vol.		11:00	08:00	06:00	11:00										
PM Peak Vol.	17:00	17:00	16:00	12:00	16:00			12:00						12:00	
	2	32	14	1	8			1						1	
Grand Total	7	455	248	11	104	0	0	3	1	0	0	0	0	8	837
Percent	0.8%	54.4%	29.6%	1.3%	12.4%	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	1.0%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 39
Beaver Falls Rd S-O Depot Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	3	2	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	2	1	0	1	0	0	0	0	0	0	0	0	0	4
05:00	4	78	43	0	35	0	0	0	0	0	0	0	0	1	161
06:00	3	78	29	0	32	0	0	0	0	0	0	0	0	2	144
07:00	0	16	13	0	9	1	0	0	1	0	0	0	0	0	40
08:00	1	23	18	0	9	2	0	2	0	0	0	0	0	2	57
09:00	0	15	13	0	9	1	0	0	0	0	0	0	0	3	41
10:00	0	24	23	0	18	2	0	1	0	1	0	0	2	4	75
11:00	1	35	14	1	10	0	0	2	0	0	0	0	0	2	65
12 PM	0	38	17	0	13	1	0	1	0	0	0	0	0	4	74
13:00	0	43	18	0	9	1	0	1	1	0	0	0	0	3	76
14:00	1	40	17	2	9	0	0	1	0	0	0	0	0	0	70
15:00	0	54	27	1	10	1	0	2	0	0	0	0	0	2	97
16:00	0	59	27	1	15	2	0	2	0	0	0	0	0	2	108
17:00	3	58	24	0	7	0	0	1	0	0	0	0	0	5	98
18:00	1	43	19	0	17	0	0	0	0	0	0	0	0	3	83
19:00	0	35	16	0	8	0	0	0	0	0	0	0	0	0	59
20:00	0	41	10	0	5	1	0	0	0	1	0	0	0	1	59
21:00	1	13	6	0	2	0	0	0	0	0	0	0	0	1	23
22:00	0	15	4	0	2	0	0	0	0	0	0	0	0	0	21
23:00	0	9	4	0	1	0	0	1	0	0	0	0	0	0	15
Total	15	731	348	5	221	12	0	14	2	2	0	0	2	35	1387
Percent	1.1%	52.7%	25.1%	0.4%	15.9%	0.9%	0.0%	1.0%	0.1%	0.1%	0.0%	0.0%	0.1%	2.5%	
AM Peak	05:00	05:00	05:00	11:00	05:00	08:00		08:00	07:00	10:00			10:00	10:00	
Vol.	4	78	43	1	35	2		2	1	1			2	4	
PM Peak	17:00	16:00	15:00	14:00	18:00	16:00		15:00	13:00	20:00				17:00	
Vol.	3	59	27	2	17	2		2	1	1				5	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 39
Beaver Falls Rd S-O Depot Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
02:00	0	5	1	0	1	0	0	0	0	0	0	0	0	0	7
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	2	78	48	0	34	0	0	0	0	0	0	0	0	1	163
06:00	3	68	24	0	33	0	0	1	0	0	0	0	0	2	131
07:00	0	16	11	0	13	0	0	0	0	0	0	0	0	0	40
08:00	1	28	21	0	9	2	0	0	0	0	0	0	0	0	61
09:00	0	19	8	1	10	1	0	1	0	0	0	0	0	0	40
10:00	0	32	15	0	5	1	0	1	0	0	0	0	0	1	55
11:00	0	34	17	1	11	0	1	0	1	0	0	0	0	2	67
12 PM	2	39	21	0	9	1	2	4	1	0	0	0	0	2	81
13:00	1	38	25	0	13	0	2	1	0	0	0	0	0	3	83
14:00	0	40	17	3	13	0	1	1	1	0	0	0	0	2	78
15:00	1	52	22	2	21	1	0	1	0	0	0	0	0	1	101
16:00	2	48	30	1	12	1	0	0	0	0	0	0	0	2	96
17:00	1	48	23	0	10	0	0	3	0	0	0	0	0	5	90
18:00	1	53	22	0	14	0	0	0	0	0	0	0	0	2	92
19:00	3	35	9	0	9	0	0	1	0	0	0	0	0	0	57
20:00	2	24	8	0	11	0	0	0	0	0	0	0	0	0	45
21:00	1	24	7	0	3	0	0	0	0	0	0	0	0	0	35
22:00	0	18	4	0	3	0	0	0	0	0	0	0	0	1	26
23:00	0	9	2	0	1	0	0	0	0	0	0	0	0	0	12
Total	20	721	339	8	235	7	6	14	3	0	0	0	0	24	1377
Percent	1.5%	52.4%	24.6%	0.6%	17.1%	0.5%	0.4%	1.0%	0.2%	0.0%	0.0%	0.0%	0.0%	1.7%	
AM Peak	06:00	05:00	05:00	09:00	05:00	08:00	11:00	06:00	11:00					06:00	
Vol.	3	78	48	1	34	2	1	1	1					2	
PM Peak	19:00	18:00	16:00	14:00	15:00	12:00	12:00	12:00	12:00					17:00	
Vol.	3	53	30	3	21	1	2	4	1					5	
Grand Total	35	1452	687	13	456	19	6	28	5	2	0	0	2	59	2764
Percent	1.3%	52.5%	24.9%	0.5%	16.5%	0.7%	0.2%	1.0%	0.2%	0.1%	0.0%	0.0%	0.1%	2.1%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 39
Beaver Falls Rd S-O Depot Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	1	0	0	1	0	0	0	0	0	0	0	0	3
02:00	0	5	2	0	1	1	0	0	0	0	0	0	0	0	9
03:00	0	1	0	1	1	0	0	0	0	0	0	0	0	0	3
04:00	1	8	4	1	2	0	0	0	0	0	0	0	0	0	16
05:00	0	20	4	0	3	0	0	0	0	0	0	0	0	1	28
06:00	1	28	20	0	15	1	0	0	0	0	0	0	0	1	66
07:00	1	46	16	1	9	0	0	0	0	0	0	0	0	1	74
08:00	1	38	18	0	12	1	0	0	0	0	0	0	0	2	72
09:00	0	27	17	0	12	3	0	2	0	0	0	0	0	3	64
10:00	1	43	13	0	15	1	0	1	2	0	0	0	0	2	78
11:00	0	29	21	1	7	1	0	1	0	0	0	0	0	2	62
12 PM	0	35	20	0	16	1	0	1	0	0	0	0	0	7	80
13:00	1	46	24	0	5	0	0	4	0	0	0	0	0	3	83
14:00	1	43	16	1	13	1	0	4	1	0	0	0	0	2	82
15:00	1	54	22	0	15	1	0	0	0	0	0	0	0	2	95
16:00	0	77	37	0	30	1	0	1	0	0	0	0	0	2	148
17:00	5	113	60	0	42	0	0	0	0	0	0	0	0	8	228
18:00	2	49	16	0	13	0	0	2	0	0	0	0	0	3	85
19:00	1	31	18	0	3	0	0	0	0	0	0	0	0	0	53
20:00	3	19	12	0	3	0	0	0	0	0	0	0	0	2	39
21:00	0	28	3	0	4	0	0	0	0	1	0	0	0	0	36
22:00	0	13	1	0	2	0	0	0	0	0	0	0	0	0	16
23:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
Total	19	764	349	5	223	13	0	16	3	1	0	0	0	41	1434
Percent	1.3%	53.3%	24.3%	0.3%	15.6%	0.9%	0.0%	1.1%	0.2%	0.1%	0.0%	0.0%	0.0%	2.9%	
AM Peak	04:00	07:00	11:00	03:00	06:00	09:00		09:00	10:00					09:00	
Vol.	1	46	21	1	15	3		2	2					3	
PM Peak	17:00	17:00	17:00	14:00	17:00	12:00		13:00	14:00	21:00				17:00	
Vol.	5	113	60	1	42	1		4	1	1				8	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 39
Beaver Falls Rd S-O Depot Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	6	3	0	2	1	0	0	0	0	0	0	0	1	13
03:00	0	3	0	1	2	0	0	0	0	0	0	0	0	0	6
04:00	1	7	5	1	0	1	0	0	0	0	0	0	0	1	16
05:00	1	18	8	0	4	0	0	0	0	0	0	0	0	2	33
06:00	1	33	15	0	10	0	0	1	0	0	0	0	0	1	61
07:00	1	42	18	1	9	0	0	3	0	0	0	0	0	2	76
08:00	0	38	17	0	7	2	0	0	1	0	0	0	0	1	66
09:00	1	28	11	0	9	0	0	0	0	0	0	0	0	2	51
10:00	0	34	22	1	12	1	0	3	0	0	0	0	0	4	77
11:00	0	30	24	1	12	1	0	1	0	0	0	0	0	3	72
12 PM	0	38	16	0	13	2	0	1	0	1	0	0	0	2	73
13:00	1	46	27	0	14	1	0	3	0	0	0	0	0	0	92
14:00	2	37	17	0	12	3	0	2	0	0	0	0	0	2	75
15:00	1	49	20	0	22	0	0	1	2	0	0	0	0	4	99
16:00	1	78	33	0	29	0	0	1	0	0	0	0	0	2	144
17:00	2	99	48	0	38	1	0	2	0	1	0	0	0	6	197
18:00	3	50	13	0	15	0	0	0	0	0	0	0	0	4	85
19:00	1	16	11	0	9	0	0	0	0	0	0	0	0	1	38
20:00	1	15	12	0	5	0	0	0	0	0	0	0	0	2	35
21:00	0	13	5	0	2	0	0	0	0	0	0	0	0	0	20
22:00	0	13	6	0	3	0	0	0	0	0	0	0	0	0	22
23:00	0	2	2	0	1	0	0	0	0	0	0	0	0	2	7
Total	17	699	334	5	230	13	0	18	3	2	0	0	0	42	1363
Percent	1.2%	51.3%	24.5%	0.4%	16.9%	1.0%	0.0%	1.3%	0.2%	0.1%	0.0%	0.0%	0.0%	3.1%	
AM Peak	04:00	07:00	11:00	03:00	10:00	08:00		07:00	08:00					10:00	
Vol.	1	42	24	1	12	2		3	1					4	
PM Peak	18:00	17:00	17:00		17:00	14:00		13:00	15:00	12:00				17:00	
Vol.	3	99	48		38	3		3	2	1				6	
Grand Total	36	1463	683	10	453	26	0	34	6	3	0	0	0	83	2797
Percent	1.3%	52.3%	24.4%	0.4%	16.2%	0.9%	0.0%	1.2%	0.2%	0.1%	0.0%	0.0%	0.0%	3.0%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 33
Beaver Falls Rd N-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	6	2	0	2	0	0	0	0	0	0	0	0	0	10
05:00	0	7	0	0	1	0	0	0	0	0	0	0	0	0	8
06:00	1	8	2	0	3	0	0	0	0	0	0	0	0	0	14
07:00	1	21	3	0	2	0	0	1	0	0	0	0	0	0	28
08:00	0	9	3	0	0	0	0	0	0	0	0	0	0	0	12
09:00	0	5	3	0	5	0	0	0	0	0	0	0	0	2	15
10:00	0	6	6	0	1	0	0	0	0	0	0	0	0	0	13
11:00	0	5	6	0	3	0	0	0	0	0	0	0	0	0	14
12 PM	0	13	5	0	3	0	0	0	0	0	0	0	0	0	21
13:00	0	10	6	0	1	0	0	0	1	0	0	0	0	4	22
14:00	0	7	4	0	1	0	0	2	0	0	0	0	0	1	15
15:00	0	20	1	0	1	0	0	0	0	0	0	0	0	0	22
16:00	0	11	8	0	0	0	0	0	0	0	0	0	0	0	19
17:00	0	7	10	0	4	0	0	1	0	0	0	0	0	0	22
18:00	0	4	1	0	2	0	0	0	0	0	0	0	0	0	7
19:00	0	9	3	0	6	0	0	0	0	0	0	0	0	0	18
20:00	0	3	1	0	1	0	0	0	0	0	0	0	0	0	5
21:00	0	4	2	0	1	0	0	0	0	0	0	0	0	0	7
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	157	66	0	38	0	0	4	1	0	0	0	0	7	275
Percent	0.7%	57.1%	24.0%	0.0%	13.8%	0.0%	0.0%	1.5%	0.4%	0.0%	0.0%	0.0%	0.0%	2.5%	
AM Peak	06:00	07:00	10:00		09:00			07:00						09:00	
Vol.	1	21	6		5			1						2	
PM Peak		15:00	17:00		19:00			14:00	13:00					13:00	
Vol.		20	10		6			2	1					4	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 33
Beaver Falls Rd N-O Hwy 30

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	3	3	0	1	0	0	0	0	0	0	0	0	0	7
05:00	0	7	0	0	2	0	0	0	0	0	0	0	0	0	9
06:00	1	11	6	0	6	0	0	0	0	0	0	0	0	0	24
07:00	0	20	5	0	2	0	0	0	0	0	0	0	0	0	27
08:00	0	3	7	0	4	0	0	0	0	0	0	0	0	1	15
09:00	0	10	5	0	6	0	0	0	0	0	0	0	0	1	22
10:00	0	8	3	0	2	0	0	0	0	0	0	0	0	0	13
11:00	0	16	2	0	4	0	0	0	0	0	0	0	0	0	22
12 PM	1	8	2	0	3	0	0	0	0	0	0	0	0	0	14
13:00	0	10	4	0	0	0	0	0	0	0	0	0	0	0	14
14:00	0	16	4	0	0	1	0	0	0	0	0	0	0	0	21
15:00	0	10	6	0	3	0	0	0	0	0	0	0	0	2	21
16:00	0	17	5	0	1	0	0	0	0	0	0	0	0	0	23
17:00	0	21	3	0	3	0	0	0	0	0	0	0	0	0	27
18:00	0	5	5	0	2	0	0	0	0	0	0	0	0	0	12
19:00	0	6	2	0	1	0	0	0	0	0	0	0	0	0	9
20:00	0	8	4	0	0	0	0	0	0	0	0	0	0	0	12
21:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
22:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	190	70	0	40	1	0	0	0	0	0	0	0	4	307
Percent	0.7%	61.9%	22.8%	0.0%	13.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	
AM Peak	06:00	07:00	08:00		06:00									08:00	
Vol.	1	20	7		6									1	
PM Peak	12:00	17:00	15:00		12:00	14:00								15:00	
Vol.	1	21	6		3	1								2	
Grand Total	4	347	136	0	78	1	0	4	1	0	0	0	0	11	582
Percent	0.7%	59.6%	23.4%	0.0%	13.4%	0.2%	0.0%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	1.9%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 33
Beaver Falls Rd N-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
01:00	1	1	1	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	1	2	0	1	0	0	0	0	0	0	0	0	0	4
05:00	0	11	0	0	1	0	0	0	0	0	0	0	0	0	12
06:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
07:00	0	5	0	0	0	0	0	0	0	0	0	0	0	0	5
08:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:00	0	5	2	0	1	0	0	0	0	0	0	0	0	0	8
10:00	0	6	3	0	2	0	0	0	0	0	0	0	0	0	11
11:00	0	5	4	0	5	0	0	0	0	0	0	0	0	0	14
12 PM	1	9	6	0	1	0	0	0	0	0	0	0	0	0	17
13:00	0	9	8	0	2	0	0	0	1	0	0	0	0	3	23
14:00	0	12	7	0	3	0	0	0	0	0	0	0	0	2	24
15:00	0	25	5	1	1	0	0	0	0	0	0	0	0	0	32
16:00	1	21	5	0	0	0	0	0	0	0	0	0	0	0	27
17:00	0	14	7	0	3	0	0	1	0	0	0	0	0	0	25
18:00	0	12	3	0	3	0	0	0	0	0	0	0	0	1	19
19:00	0	16	7	0	3	0	0	0	0	0	0	0	0	0	26
20:00	0	14	2	0	2	0	0	1	0	0	0	0	0	0	19
21:00	0	8	1	0	1	0	0	1	0	0	0	0	0	0	11
22:00	0	7	1	0	0	0	0	0	0	0	0	0	0	0	8
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	192	67	1	29	0	0	3	1	0	0	0	0	6	302
Percent	1.0%	63.6%	22.2%	0.3%	9.6%	0.0%	0.0%	1.0%	0.3%	0.0%	0.0%	0.0%	0.0%	2.0%	
AM Peak	01:00	05:00	11:00		11:00										
Vol.	1	11	4		5										
PM Peak	12:00	15:00	13:00	15:00	14:00			17:00	13:00					13:00	
Vol.	1	25	8	1	3			1	1					3	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 33
Beaver Falls Rd N-O Hwy 30

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	1	0	2	0	0	0	0	0	0	0	0	0	6
05:00	0	13	2	0	1	0	0	0	0	0	0	0	0	0	16
06:00	0	5	4	0	1	0	0	0	0	0	0	0	0	0	10
07:00	0	6	4	0	0	0	0	0	0	0	0	0	0	0	10
08:00	0	3	2	0	4	0	0	0	0	0	0	0	0	0	9
09:00	0	4	8	0	3	0	0	0	0	0	0	0	0	0	15
10:00	0	7	4	0	4	0	0	0	0	0	0	0	0	0	15
11:00	0	16	4	0	3	0	0	0	0	0	0	0	0	0	23
12 PM	0	7	1	0	0	0	0	1	0	0	0	0	0	0	9
13:00	0	3	8	0	3	0	0	1	0	0	0	0	0	0	15
14:00	1	13	3	0	4	1	0	0	0	0	0	0	0	0	22
15:00	0	20	6	0	2	0	0	0	0	0	0	0	0	0	28
16:00	0	14	2	0	3	0	0	0	0	0	0	0	0	0	19
17:00	0	15	11	0	5	0	0	0	0	0	0	0	0	0	31
18:00	1	8	14	0	3	0	0	0	0	0	0	0	0	0	26
19:00	0	14	6	0	4	0	0	0	0	0	0	0	0	0	24
20:00	0	6	1	0	0	0	0	0	0	0	0	0	0	0	7
21:00	0	12	2	0	1	0	0	0	0	0	0	0	0	0	15
22:00	0	9	1	0	1	0	0	0	0	0	0	0	0	0	11
23:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
Total	2	184	85	0	45	1	0	2	0	0	0	0	0	0	319
Percent	0.6%	57.7%	26.6%	0.0%	14.1%	0.3%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.		11:00 16	09:00 8		08:00 4										
PM Peak Vol.	14:00 1	15:00 20	18:00 14		17:00 5	14:00 1		12:00 1							
Grand Total	5	376	152	1	74	1	0	5	1	0	0	0	0	6	621
Percent	0.8%	60.5%	24.5%	0.2%	11.9%	0.2%	0.0%	0.8%	0.2%	0.0%	0.0%	0.0%	0.0%	1.0%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 47
Bachelor Flat Rd W-O Gable Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	3	0	1	0	0	0	0	0	0	0	0	0	5
04:00	0	7	2	0	4	0	0	0	0	0	0	0	0	0	13
05:00	0	18	9	0	4	0	0	0	0	0	0	0	0	0	31
06:00	0	28	5	0	3	0	0	0	0	0	0	0	0	0	36
07:00	2	73	23	3	9	0	0	1	0	0	0	0	0	1	112
08:00	2	69	31	1	16	1	0	0	0	0	0	0	0	1	121
09:00	1	45	19	0	8	0	0	0	0	0	0	0	0	0	73
10:00	0	51	13	0	14	0	0	0	0	0	0	0	0	0	78
11:00	1	49	27	1	4	0	0	0	0	0	0	0	0	5	87
12 PM	0	69	26	1	9	1	0	1	0	0	0	0	0	2	109
13:00	0	53	22	1	14	0	0	0	0	0	0	0	0	0	90
14:00	1	59	25	2	6	2	0	0	0	0	0	0	0	5	100
15:00	1	75	33	2	12	1	0	0	1	0	0	0	0	3	128
16:00	2	68	38	2	5	0	0	1	0	0	0	0	0	1	117
17:00	2	87	28	0	13	1	0	0	0	0	0	0	0	5	136
18:00	0	74	21	0	13	0	0	0	0	0	0	0	0	1	109
19:00	0	58	22	0	4	0	0	0	0	0	0	0	0	2	86
20:00	0	38	13	0	3	1	0	0	0	0	0	0	0	1	56
21:00	1	26	4	0	2	0	0	0	0	0	0	0	0	1	34
22:00	1	10	1	0	1	0	0	0	0	0	0	0	0	1	14
23:00	0	4	2	0	2	0	0	0	0	0	0	0	0	0	8
Total	14	966	367	13	147	7	0	3	1	0	0	0	0	29	1547
Percent	0.9%	62.4%	23.7%	0.8%	9.5%	0.5%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	1.9%	
AM Peak	07:00	07:00	08:00	07:00	08:00	08:00		07:00						11:00	
Vol.	2	73	31	3	16	1		1						5	
PM Peak	16:00	17:00	16:00	14:00	13:00	14:00		12:00	15:00					14:00	
Vol.	2	87	38	2	14	2		1	1					5	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 47
Bachelor Flat Rd W-O Gable Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	3
04:00	0	6	3	0	2	0	0	0	0	0	0	0	0	0	11
05:00	0	22	8	0	3	0	0	0	0	0	0	0	0	0	33
06:00	0	40	12	0	5	0	0	0	0	0	0	0	0	0	57
07:00	1	79	32	3	9	0	0	0	1	0	0	0	0	0	125
08:00	0	61	25	1	12	0	0	1	1	0	0	0	0	2	103
09:00	0	38	20	0	4	0	0	0	0	0	0	0	0	0	62
10:00	0	47	22	1	9	0	0	0	0	0	0	0	0	0	79
11:00	3	50	21	1	7	2	0	1	0	0	0	0	0	1	86
12 PM	0	45	23	0	9	0	0	0	0	0	0	0	0	2	79
13:00	0	57	29	0	8	0	0	2	0	0	0	0	0	0	96
14:00	0	56	20	2	12	2	0	2	0	0	0	0	0	1	95
15:00	3	69	31	1	9	3	0	0	0	0	0	0	0	0	116
16:00	0	68	27	3	12	3	0	0	0	0	0	0	0	1	114
17:00	1	92	27	0	9	2	0	0	0	0	0	0	0	2	133
18:00	2	78	22	0	3	0	0	0	0	0	0	0	0	3	108
19:00	0	67	27	0	6	0	0	0	0	0	0	0	0	0	100
20:00	1	26	10	0	5	0	0	1	0	0	0	0	0	1	44
21:00	0	28	6	0	2	0	0	0	0	0	0	0	0	0	36
22:00	0	17	2	0	1	0	0	0	0	0	0	0	0	0	20
23:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
Total	11	958	369	12	128	12	0	7	2	0	0	0	0	13	1512
Percent	0.7%	63.4%	24.4%	0.8%	8.5%	0.8%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.9%	
AM Peak	11:00	07:00	07:00	07:00	08:00	11:00		08:00	07:00					08:00	
Vol.	3	79	32	3	12	2		1	1					2	
PM Peak	15:00	17:00	15:00	16:00	14:00	15:00		13:00						18:00	
Vol.	3	92	31	3	12	3		2						3	
Grand Total	25	1924	736	25	275	19	0	10	3	0	0	0	0	42	3059
Percent	0.8%	62.9%	24.1%	0.8%	9.0%	0.6%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	1.4%	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 47
Bachelor Flat Rd W-O Gable Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	5	1	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	5
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
05:00	0	7	5	0	0	0	0	0	0	0	0	0	0	0	12
06:00	0	11	8	0	2	0	0	0	0	0	0	0	0	0	21
07:00	0	20	15	1	7	1	0	0	0	0	0	0	0	0	44
08:00	1	31	28	1	13	1	0	0	0	0	0	0	0	1	76
09:00	0	20	19	0	10	0	0	2	0	0	0	0	0	0	51
10:00	0	26	19	0	9	0	0	1	0	0	0	0	0	1	56
11:00	0	34	32	1	12	1	0	0	0	0	0	0	0	4	84
12 PM	0	56	32	0	7	1	0	2	0	0	0	0	0	1	99
13:00	1	48	28	0	11	2	0	0	0	0	0	0	0	2	92
14:00	2	35	31	1	11	0	0	5	0	0	0	0	0	6	91
15:00	3	81	31	2	20	1	0	1	0	0	0	0	0	4	143
16:00	2	93	28	0	16	0	0	0	0	0	0	0	0	2	141
17:00	2	92	48	0	12	0	0	0	0	0	0	0	0	3	157
18:00	0	56	43	0	14	0	0	0	0	0	0	0	0	0	113
19:00	1	44	17	0	12	0	0	0	0	0	0	0	0	2	76
20:00	3	53	26	0	6	0	0	1	0	0	0	0	0	1	90
21:00	2	27	11	0	4	0	0	1	0	0	0	0	0	0	45
22:00	1	22	6	0	2	0	0	0	0	0	0	0	0	0	31
23:00	0	8	3	0	1	0	0	0	0	0	0	0	0	0	12
Total	18	775	431	6	172	7	0	13	0	0	0	0	0	27	1449
Percent	1.2%	53.5%	29.7%	0.4%	11.9%	0.5%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	
AM Peak	08:00	11:00	11:00	07:00	08:00	07:00		09:00						11:00	
Vol.	1	34	32	1	13	1		2						4	
PM Peak	15:00	16:00	17:00	15:00	15:00	13:00		14:00						14:00	
Vol.	3	93	48	2	20	2		5						6	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 23
Apiary Rd S-O Old Rainier Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	5	1	2	1	0	0	0	0	1	0	0	0	0	10
05:00	0	9	5	2	1	0	0	0	2	2	0	0	2	0	23
06:00	1	12	5	4	4	0	1	0	7	10	0	0	0	5	49
07:00	0	30	10	2	6	0	0	0	7	8	0	0	4	2	69
08:00	0	15	7	0	3	0	0	1	3	7	0	0	4	1	41
09:00	0	12	7	2	0	0	0	1	6	8	0	0	3	1	40
10:00	0	18	7	2	2	0	0	0	7	10	0	0	2	0	48
11:00	0	23	8	2	4	0	0	1	6	3	0	0	2	3	52
12 PM	0	9	8	3	4	0	0	0	8	5	0	0	3	3	43
13:00	1	16	4	3	2	0	0	0	4	13	0	0	1	5	49
14:00	0	21	11	2	3	0	0	0	6	9	0	0	0	2	54
15:00	0	14	10	2	12	0	0	0	2	3	0	0	2	3	48
16:00	0	13	11	2	5	0	0	0	2	2	0	0	1	2	38
17:00	0	19	7	0	7	0	0	1	0	1	0	0	0	0	35
18:00	0	16	6	0	3	1	0	0	0	0	0	0	1	1	28
19:00	0	10	4	0	1	0	0	0	0	0	0	0	0	0	15
20:00	0	7	3	0	0	0	0	0	0	0	0	0	0	0	10
21:00	0	4	2	0	2	0	0	0	0	0	0	0	0	0	8
22:00	0	3	0	0	1	0	0	0	0	0	0	0	0	0	4
23:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
Total	2	261	118	28	61	2	1	4	60	82	0	0	25	28	672
Percent	0.3%	38.8%	17.6%	4.2%	9.1%	0.3%	0.1%	0.6%	8.9%	12.2%	0.0%	0.0%	3.7%	4.2%	
AM Peak	06:00	07:00	07:00	06:00	07:00	02:00	06:00	08:00	06:00	06:00			07:00	06:00	
Vol.	1	30	10	4	6	1	1	1	7	10			4	5	
PM Peak	13:00	14:00	14:00	12:00	15:00	18:00		17:00	12:00	13:00			12:00	13:00	
Vol.	1	21	11	3	12	1		1	8	13			3	5	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 23
Apiary Rd S-O Old Rainier Rd

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	3	1	0	0	1	0	0	0	0	0	0	0	0	5
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	4	2	0	2	0	0	0	1	0	0	0	0	0	9
05:00	0	5	4	2	1	0	0	0	2	0	0	0	1	0	15
06:00	2	15	10	3	6	1	0	1	7	10	0	0	1	3	59
07:00	0	31	10	4	5	0	0	1	6	6	0	0	3	1	67
08:00	0	17	8	1	2	0	0	0	4	5	0	0	2	0	39
09:00	0	12	10	6	3	1	0	2	9	2	0	0	2	3	50
10:00	0	12	8	0	1	0	0	0	3	10	0	0	1	2	37
11:00	1	9	4	2	0	1	0	0	7	3	0	0	2	1	30
12 PM	0	17	14	6	6	1	0	0	2	5	0	0	1	1	53
13:00	1	12	9	4	6	0	0	2	7	8	0	0	2	2	53
14:00	1	8	8	2	13	0	0	1	4	9	0	0	2	3	51
15:00	0	11	8	3	11	0	0	1	0	3	0	0	2	3	42
16:00	0	16	11	0	11	2	0	0	1	1	0	0	0	4	46
17:00	0	12	7	0	6	0	1	0	0	1	0	0	0	0	27
18:00	1	11	2	1	1	0	0	0	0	0	0	0	0	0	16
19:00	0	9	2	0	2	0	0	0	0	0	0	0	0	0	13
20:00	0	4	2	0	1	0	0	0	0	0	0	0	0	0	7
21:00	0	4	3	0	1	0	0	0	0	0	0	0	0	0	8
22:00	0	2	2	0	1	0	0	0	0	0	0	0	0	0	5
23:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	6	219	125	34	79	7	1	8	53	63	0	0	19	23	637
Percent	0.9%	34.4%	19.6%	5.3%	12.4%	1.1%	0.2%	1.3%	8.3%	9.9%	0.0%	0.0%	3.0%	3.6%	
AM Peak	06:00	07:00	06:00	09:00	06:00	02:00		09:00	09:00	06:00			07:00	06:00	
Vol.	2	31	10	6	6	1		2	9	10			3	3	
PM Peak	13:00	12:00	12:00	12:00	14:00	16:00	17:00	13:00	13:00	14:00			13:00	16:00	
Vol.	1	17	14	6	13	2	1	2	7	9			2	4	
Grand Total	8	480	243	62	140	9	2	12	113	145	0	0	44	51	1309
Percent	0.6%	36.7%	18.6%	4.7%	10.7%	0.7%	0.2%	0.9%	8.6%	11.1%	0.0%	0.0%	3.4%	3.9%	

**All Traffic Data
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Vancouver, WA. 98683
503-833-2740**

Site Code: 23
Apiary Rd S-O Old Rainier Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/03/14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	1	6	2	0	0	0	0	0	0	0	0	0	10
04:00	0	0	2	2	6	2	0	0	0	1	0	0	1	0	14
05:00	0	2	2	1	4	0	0	0	2	1	0	0	0	0	12
06:00	0	2	4	7	6	2	0	0	0	1	0	0	0	2	24
07:00	0	1	7	14	4	5	0	0	0	0	0	0	1	3	35
08:00	0	3	4	12	3	1	0	0	4	0	0	0	0	0	27
09:00	0	4	7	11	3	0	0	0	0	1	0	0	0	0	26
10:00	0	3	5	14	5	3	0	0	1	0	0	0	1	0	32
11:00	0	9	5	9	5	3	0	1	0	0	0	0	0	0	32
12 PM	0	7	24	5	8	2	0	0	2	0	0	0	1	2	51
13:00	0	6	13	2	1	1	0	0	0	0	0	0	0	0	23
14:00	0	9	16	3	3	2	0	0	0	0	0	0	1	1	35
15:00	0	17	13	5	7	2	0	0	0	0	0	0	0	1	45
16:00	0	24	16	2	10	1	0	0	0	0	0	0	0	0	53
17:00	1	19	19	1	7	0	0	1	0	0	0	0	0	0	48
18:00	0	15	9	2	2	0	0	1	0	0	0	0	0	0	29
19:00	0	6	11	0	7	2	0	0	0	0	0	0	0	1	27
20:00	0	7	11	0	4	0	0	2	0	0	0	0	0	1	25
21:00	0	3	8	0	2	0	0	0	0	0	0	0	0	0	13
22:00	0	6	5	0	0	0	0	0	0	0	0	0	0	0	11
23:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	1	146	186	96	89	26	0	5	9	4	0	0	5	11	578
Percent	0.2%	25.3%	32.2%	16.6%	15.4%	4.5%	0.0%	0.9%	1.6%	0.7%	0.0%	0.0%	0.9%	1.9%	
AM Peak Vol.		9	7	14	6	5		1	4	1			1	3	
PM Peak Vol.	17:00	16:00	12:00	12:00	16:00	12:00		20:00	12:00				12:00	12:00	
	1	24	24	5	10	2		2	2				1	2	

**All Traffic Data
15105 SE 17th St.
Vancouver, WA. 98683
503-833-2740**

Site Code: 23
Apiary Rd S-O Old Rainier Rd

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
06/04/14	0	3	4	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2
03:00	0	1	1	3	4	1	0	0	0	0	0	0	0	0	10
04:00	0	1	4	2	5	2	0	0	1	1	0	0	1	0	17
05:00	0	1	0	0	4	0	0	0	0	1	0	0	0	0	6
06:00	1	1	5	6	4	1	0	0	1	0	0	0	0	0	19
07:00	0	2	4	15	3	5	0	0	0	0	0	1	4	2	36
08:00	0	3	7	4	7	3	0	0	1	0	0	0	1	1	27
09:00	0	4	5	7	1	2	0	0	0	0	0	0	0	1	20
10:00	0	8	10	7	6	7	0	1	2	0	0	0	2	1	44
11:00	0	5	10	9	3	2	0	0	0	1	0	0	0	0	30
12 PM	2	5	15	4	6	0	0	2	1	0	0	0	0	2	37
13:00	1	8	13	5	7	0	0	1	0	1	0	0	0	3	39
14:00	4	8	8	5	5	0	0	0	0	0	0	0	0	3	33
15:00	0	13	11	1	7	3	0	0	0	0	0	0	0	0	35
16:00	0	12	17	3	6	2	0	0	0	0	0	0	0	2	42
17:00	0	14	11	0	11	0	0	0	0	0	0	0	0	0	36
18:00	1	18	18	2	6	0	0	2	0	0	0	0	0	0	47
19:00	0	12	11	1	1	0	0	0	0	0	0	0	0	0	25
20:00	0	4	7	0	1	0	0	1	0	0	0	0	0	0	13
21:00	0	4	8	0	4	0	0	0	0	0	0	0	0	0	16
22:00	0	2	4	0	0	0	0	0	0	0	0	0	0	0	6
23:00	0	2	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	9	132	176	74	92	28	0	7	6	4	0	1	8	15	552
Percent	1.6%	23.9%	31.9%	13.4%	16.7%	5.1%	0.0%	1.3%	1.1%	0.7%	0.0%	0.2%	1.4%	2.7%	
AM Peak	06:00	10:00	10:00	07:00	08:00	10:00		10:00	10:00	04:00		07:00	07:00	07:00	
Vol.	1	8	10	15	7	7		1	2	1		1	4	2	
PM Peak	14:00	18:00	18:00	13:00	17:00	15:00		12:00	12:00	13:00				13:00	
Vol.	4	18	18	5	11	3		2	1	1				3	
Grand Total	10	278	362	170	181	54	0	12	15	8	0	1	13	26	1130
Percent	0.9%	24.6%	32.0%	15.0%	16.0%	4.8%	0.0%	1.1%	1.3%	0.7%	0.0%	0.1%	1.2%	2.3%	

HCM Reports



HCM 2010 TWSC
1: US 30 & Berg Road

12/17/2014

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	25	15	30	1560	870	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	353	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	4	4
Mvmt Flow	27	16	32	1677	935	27

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1838	468	935
Stage 1	935	-	-
Stage 2	903	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	69	547	741
Stage 1	347	-	-
Stage 2	361	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	66	547	741
Mov Cap-2 Maneuver	188	-	-
Stage 1	347	-	-
Stage 2	345	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	741	-	249	-
HCM Lane V/C Ratio	0.044	-	0.173	-
HCM Control Delay (s)	10.1	-	22.5	-
HCM Lane LOS	B	-	C	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	15	50	135	440	315	10
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	150	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	4	2	4	8	13
Mvmt Flow	16	53	144	468	335	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1090	337	335
Stage 1	335	-	-
Stage 2	755	-	-
Critical Hdwy	6.4	6.24	4.12
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.336	2.218
Pot Cap-1 Maneuver	240	701	1224
Stage 1	729	-	-
Stage 2	468	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	212	700	1222
Mov Cap-2 Maneuver	212	-	-
Stage 1	729	-	-
Stage 2	413	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1222	-	457	-
HCM Lane V/C Ratio	0.118	-	0.151	-
HCM Control Delay (s)	8.3	-	14.3	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-

HCM 2010 TWSC
3: US 30 & Tide Creek Road

12/17/2014

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	25	455	300	5
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	97	97	97	97	97	97
Heavy Vehicles, %	0	18	0	3	7	0
Mvmt Flow	0	10	26	469	309	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	833	312	314
Stage 1	312	-	-
Stage 2	521	-	-
Critical Hdwy	6.4	6.38	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.462	2.2
Pot Cap-1 Maneuver	341	692	1258
Stage 1	747	-	-
Stage 2	600	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	331	692	1258
Mov Cap-2 Maneuver	331	-	-
Stage 1	747	-	-
Stage 2	583	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1258	-	692	-	-
HCM Lane V/C Ratio	0.02	-	0.015	-	-
HCM Control Delay (s)	7.9	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

HCM 2010 TWSC
4: US 30 & Nicolai Road/Driveway

12/17/2014

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	5	20	5	5	5	30	420	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	10	0	0	0	0	100	0	4	14
Mvmt Flow	36	5	21	5	5	5	31	433	10

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	827	827	312	835	835	438	325	0	0
Stage 1	322	322	-	500	500	-	-	-	-
Stage 2	505	505	-	335	335	-	-	-	-
Critical Hdwy	7.2	6.5	6.2	7.1	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.2	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.2	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.5	4	4.2	2.2	-	-
Pot Cap-1 Maneuver	282	309	733	289	306	456	1246	-	-
Stage 1	673	655	-	557	546	-	-	-	-
Stage 2	535	544	-	683	646	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	267	297	733	269	294	456	1246	-	-
Mov Cap-2 Maneuver	267	297	-	269	294	-	-	-	-
Stage 1	651	652	-	539	528	-	-	-	-
Stage 2	507	526	-	655	643	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	17.8	16.7	0.5
HCM LOS	C	C	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	342	322	1128	-	-
HCM Lane V/C Ratio	0.025	-	-	0.181	0.048	0.005	-	-
HCM Control Delay (s)	8	0	-	17.8	16.7	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.2	0	-	-

HCM 2010 TWSC
5: US 30 & Neer City Road

12/17/2014

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	5	15	425	305	5
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	97	97	97	97	97	97
Heavy Vehicles, %	0	50	0	6	6	17
Mvmt Flow	5	5	15	438	314	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	786	317	320
Stage 1	317	-	-
Stage 2	469	-	-
Critical Hdwy	6.4	6.7	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.75	2.2
Pot Cap-1 Maneuver	364	625	1251
Stage 1	743	-	-
Stage 2	634	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	358	625	1251
Mov Cap-2 Maneuver	358	-	-
Stage 1	743	-	-
Stage 2	624	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1251	-	455	-	-
HCM Lane V/C Ratio	0.012	-	0.023	-	-
HCM Control Delay (s)	7.9	0	13.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC
6: US 30 & Graham Road

12/17/2014

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	5	420	5	5	320
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	-	-	-	127	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	5	5	452	5	5	344

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	809	454	0
Stage 1	454	-	-
Stage 2	355	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	353	610	1114
Stage 1	644	-	-
Stage 2	714	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	351	610	1114
Mov Cap-2 Maneuver	351	-	-
Stage 1	644	-	-
Stage 2	711	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	446	1114	-
HCM Lane V/C Ratio	-	-	0.024	0.005	-
HCM Control Delay (s)	-	-	13.3	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	70	605	15	95	540
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yeild	-	Yeild
Storage Length	0	-	-	-	123	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	5	0	6	5
Mvmt Flow	5	76	658	16	103	587

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1158	658	0
Stage 1	658	-	-
Stage 2	500	-	-
Critical Hdwy	6.6	6.35	4.16
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.395	2.254
Pot Cap-1 Maneuver	205	446	911
Stage 1	519	-	-
Stage 2	580	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	182	446	911
Mov Cap-2 Maneuver	182	-	-
Stage 1	519	-	-
Stage 2	514	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	911	-
HCM Lane V/C Ratio	-	-	0.2	0.113	-
HCM Control Delay (s)	-	-	16	9.5	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.4	-

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	5	0	610	540	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	450	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	5	5	0
Mvmt Flow	11	5	0	663	587	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1250	293	587
Stage 1	587	-	-
Stage 2	663	-	-
Critical Hdwy	6.6	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	180	709	998
Stage 1	524	-	-
Stage 2	516	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	180	709	998
Mov Cap-2 Maneuver	180	-	-
Stage 1	524	-	-
Stage 2	516	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	998	-	240	-	-
HCM Lane V/C Ratio	-	-	0.068	-	-
HCM Control Delay (s)	0	-	21.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 TWSC
8: Heath Road & US 30

12/17/2014

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	600	5	20	510	5	5	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	167	-	-	161	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	6	5	0	0	0	0
Mvmt Flow	6	667	6	22	567	6	6	6	17

Major/Minor

	Major1	Major2	Minor1
Conflicting Flow All	572	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1011	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1011	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	EB	WB	NB
HCM Control Delay, s	0.1	0.3	21.6
HCM LOS			C

Minor Lane/Major Mvmt

	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	245	1011	-	-	900	-	-	186
HCM Lane V/C Ratio	0.113	0.005	-	-	0.025	-	-	0.09
HCM Control Delay (s)	21.6	8.6	-	-	9.1	-	-	26.3
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.3

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	585	35	5	535	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	None
Storage Length	-	100	162	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	665	40	6	608	34	6

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	665	1284
Stage 1	-	-	665
Stage 2	-	-	619
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	934	184
Stage 1	-	-	515
Stage 2	-	-	541
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	934	183
Mov Cap-2 Maneuver	-	-	183
Stage 1	-	-	515
Stage 2	-	-	538

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	27.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	200	-	934	-
HCM Lane V/C Ratio	0.199	-	0.006	-
HCM Control Delay (s)	27.4	-	8.9	-
HCM Lane LOS	D	-	A	-
HCM 95th %tile Q(veh)	0.7	-	0	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	20	570	470	95	50	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	200	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	6	5	4	0	0
Mvmt Flow	23	648	534	108	57	6

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	534	0	1227
Stage 1	-	-	534
Stage 2	-	-	693
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1044	0	199
Stage 1	-	0	592
Stage 2	-	0	500
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1044	-	195
Mov Cap-2 Maneuver	-	-	195
Stage 1	-	-	592
Stage 2	-	-	489

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	29.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1044	-	-	207
HCM Lane V/C Ratio	0.022	-	-	0.302
HCM Control Delay (s)	8.5	-	-	29.7
HCM Lane LOS	A	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	1.2

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	520	410	30	25	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	6	578	456	33	28	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	489	0	1061
Stage 1	-	-	472
Stage 2	-	-	589
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1085	-	250
Stage 1	-	-	632
Stage 2	-	-	558
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1085	-	248
Mov Cap-2 Maneuver	-	-	248
Stage 1	-	-	632
Stage 2	-	-	554

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1085	-	-	-	248
HCM Lane V/C Ratio	0.005	-	-	-	0.112
HCM Control Delay (s)	8.3	0	-	-	21.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	500	10	40	370	5	5	5	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	183	-	150	167	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	6	0	3	5	0	0	0	0
Mvmt Flow	12	602	12	48	446	6	6	6	24

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	446	0	0	602	0	0	1172	1169	602
Stage 1	-	-	-	-	-	-	627	627	-
Stage 2	-	-	-	-	-	-	545	542	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1125	-	-	971	-	-	171	195	503
Stage 1	-	-	-	-	-	-	475	479	-
Stage 2	-	-	-	-	-	-	526	523	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1125	-	-	971	-	-	162	183	503
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	183	-
Stage 1	-	-	-	-	-	-	470	474	-
Stage 2	-	-	-	-	-	-	495	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.9	18.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	306	1125	-	-	971	-	-	240
HCM Lane V/C Ratio	0.118	0.011	-	-	0.05	-	-	0.05
HCM Control Delay (s)	18.3	8.2	-	-	8.9	-	-	20.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.2

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	285	0	5	245	10	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	90	-	-	90	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	9	0	20	8	0	0	0	0
Mvmt Flow	0	343	0	6	295	12	0	0	6

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	295	0	0	343	0	0	653	650	343
Stage 1	-	-	-	-	-	-	343	343	-
Stage 2	-	-	-	-	-	-	310	307	-
Critical Hdwy	4.1	-	-	4.3	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.38	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1278	-	-	1122	-	-	383	391	704
Stage 1	-	-	-	-	-	-	676	641	-
Stage 2	-	-	-	-	-	-	705	665	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1278	-	-	1122	-	-	378	389	704
Mov Cap-2 Maneuver	-	-	-	-	-	-	378	389	-
Stage 1	-	-	-	-	-	-	676	641	-
Stage 2	-	-	-	-	-	-	695	661	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	704	1278	-	-	1122	-	-	453
HCM Lane V/C Ratio	0.009	-	-	-	0.005	-	-	0.04
HCM Control Delay (s)	10.2	0	-	-	8.2	0	-	13.3
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	265	5	5	230	5	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	9	0	0	8	0	0	0	0
Mvmt Flow	6	319	6	6	277	6	6	0	6

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	283	0	0	325	0	0	629	629	322
Stage 1	-	-	-	-	-	-	334	334	-
Stage 2	-	-	-	-	-	-	295	295	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1291	-	-	1246	-	-	398	402	724
Stage 1	-	-	-	-	-	-	684	647	-
Stage 2	-	-	-	-	-	-	718	673	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1291	-	-	1246	-	-	391	397	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	391	397	-
Stage 1	-	-	-	-	-	-	680	643	-
Stage 2	-	-	-	-	-	-	708	669	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.2	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	508	1291	-	-	1246	-	-	517
HCM Lane V/C Ratio	0.024	0.005	-	-	0.005	-	-	0.023
HCM Control Delay (s)	12.3	7.8	0	-	7.9	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	5	160	5	0	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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	6	6	193	6	0	78

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	274	196	0
Stage 1	196	-	-
Stage 2	78	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	720	850	1385
Stage 1	842	-	-
Stage 2	950	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	720	850	1385
Mov Cap-2 Maneuver	720	-	-
Stage 1	842	-	-
Stage 2	950	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	780	1385	-
HCM Lane V/C Ratio	-	-	0.015	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	145	70	25	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	7	8	4	0
Mvmt Flow	5	159	77	27	33	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	77	0	247
Stage 1	-	-	77
Stage 2	-	-	170
Critical Hdwy	4.1	-	6.44
Critical Hdwy Stg 1	-	-	5.44
Critical Hdwy Stg 2	-	-	5.44
Follow-up Hdwy	2.2	-	3.536
Pot Cap-1 Maneuver	1535	-	737
Stage 1	-	-	941
Stage 2	-	-	855
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1535	-	734
Mov Cap-2 Maneuver	-	-	734
Stage 1	-	-	941
Stage 2	-	-	852

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1535	-	-	734	990
HCM Lane V/C Ratio	0.004	-	-	0.045	0.006
HCM Control Delay (s)	7.4	0	-	10.1	8.7
HCM Lane LOS	A	A	-	B	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	50	15	5	35	20	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	50	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	0	0	27	6	9
Mvmt Flow	56	17	6	39	22	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	56	107
Stage 1	-	-	56
Stage 2	-	-	51
Critical Hdwy	-	4.1	6.46
Critical Hdwy Stg 1	-	-	5.46
Critical Hdwy Stg 2	-	-	5.46
Follow-up Hdwy	-	2.2	3.554
Pot Cap-1 Maneuver	-	1562	881
Stage 1	-	-	956
Stage 2	-	-	961
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1562	877
Mov Cap-2 Maneuver	-	-	877
Stage 1	-	-	956
Stage 2	-	-	957

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	912	-	1562	-
HCM Lane V/C Ratio	0.037	-	0.004	-
HCM Control Delay (s)	9.1	-	7.3	0
HCM Lane LOS	A	-	A	A
HCM 95th %tile Q(veh)	0.1	-	0	-

Intersection

Int Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	0	45	15	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	24	0	54	18	0	24

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	78	54	0
Stage 1	54	-	-
Stage 2	24	-	-
Critical Hdwy	6.58	6.2	4.1
Critical Hdwy Stg 1	5.58	-	-
Critical Hdwy Stg 2	5.58	-	-
Follow-up Hdwy	3.662	3.3	2.2
Pot Cap-1 Maneuver	887	1019	1564
Stage 1	929	-	-
Stage 2	959	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	887	1019	1564
Mov Cap-2 Maneuver	887	-	-
Stage 1	929	-	-
Stage 2	959	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	887	1564	-
HCM Lane V/C Ratio	-	0.027	-	-
HCM Control Delay (s)	-	9.2	0	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0.1	0	-

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	5	45	0	5	20
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	83	83	83	83	83	83
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	0	6	54	0	6	24

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	90	54	0
Stage 1	54	-	-
Stage 2	36	-	-
Critical Hdwy	6.58	6.2	4.1
Critical Hdwy Stg 1	5.58	-	-
Critical Hdwy Stg 2	5.58	-	-
Follow-up Hdwy	3.662	3.3	2.2
Pot Cap-1 Maneuver	873	1019	1564
Stage 1	929	-	-
Stage 2	947	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	870	1019	1564
Mov Cap-2 Maneuver	870	-	-
Stage 1	929	-	-
Stage 2	943	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	1.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1019	1564	-
HCM Lane V/C Ratio	-	-	0.006	0.004	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	15	20	5	5	0
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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	18	24	6	6	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	30	0	45
Stage 1	-	-	27
Stage 2	-	-	18
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1596	-	970
Stage 1	-	-	1001
Stage 2	-	-	1010
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1596	-	970
Mov Cap-2 Maneuver	-	-	970
Stage 1	-	-	1001
Stage 2	-	-	1010

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1596	-	-	-	970
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	0	20	10	0	10
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	78	78	78	78	78	78
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	13	0	26	13	0	13

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	45	32	0 0 38 0
Stage 1	32	-	- - - -
Stage 2	13	-	- - - -
Critical Hdwy	6.4	6.31	- - 4.17 -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.4	-	- - - -
Follow-up Hdwy	3.5	3.399	- - 2.263 -
Pot Cap-1 Maneuver	970	1017	- - 1541 -
Stage 1	996	-	- - - -
Stage 2	1015	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	970	1017	- - 1541 -
Mov Cap-2 Maneuver	970	-	- - - -
Stage 1	996	-	- - - -
Stage 2	1015	-	- - - -

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	970	1541	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	10	20	0	15	10
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	78	78	78	78	78	78
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	0	13	26	0	19	13

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	77	26	0
Stage 1	26	-	-
Stage 2	51	-	-
Critical Hdwy	6.4	6.31	4.17
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.399	2.263
Pot Cap-1 Maneuver	931	1024	1556
Stage 1	1002	-	-
Stage 2	977	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	920	1024	1556
Mov Cap-2 Maneuver	920	-	-
Stage 1	1002	-	-
Stage 2	965	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	4.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1024	1556	-
HCM Lane V/C Ratio	-	-	0.013	0.012	-
HCM Control Delay (s)	-	-	8.6	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	10	10	10	15	0
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	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	11	7	0
Mvmt Flow	0	13	13	13	19	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	26	0	32
Stage 1	-	-	19
Stage 2	-	-	13
Critical Hdwy	4.1	-	6.47
Critical Hdwy Stg 1	-	-	5.47
Critical Hdwy Stg 2	-	-	5.47
Follow-up Hdwy	2.2	-	3.563
Pot Cap-1 Maneuver	1601	-	969
Stage 1	-	-	991
Stage 2	-	-	997
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1601	-	969
Mov Cap-2 Maneuver	-	-	969
Stage 1	-	-	991
Stage 2	-	-	997

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1601	-	-	-	969
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	5	40	25	10	0
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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	0	9	69	43	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	112	0	100
Stage 1	-	-	91
Stage 2	-	-	9
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1490	-	904
Stage 1	-	-	938
Stage 2	-	-	1019
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1490	-	904
Mov Cap-2 Maneuver	-	-	904
Stage 1	-	-	938
Stage 2	-	-	1019

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1490	-	-	-	904
HCM Lane V/C Ratio	-	-	-	-	0.019
HCM Control Delay (s)	0	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	5	40	0	0	5
Conflicting Peds, #/hr	0	0	0	0	1	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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	9	9	69	0	0	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	70	0	96
Stage 1	-	-	70
Stage 2	-	-	26
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1544	-	908
Stage 1	-	-	958
Stage 2	-	-	1002
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1544	-	901
Mov Cap-2 Maneuver	-	-	901
Stage 1	-	-	957
Stage 2	-	-	995

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1544	-	-	-	997
HCM Lane V/C Ratio	0.006	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	0	0	25	10	5
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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	0	0	43	17	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	65	22	0
Stage 1	22	-	-
Stage 2	43	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	946	1061	1601
Stage 1	1006	-	-
Stage 2	985	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	946	1061	1601
Mov Cap-2 Maneuver	946	-	-
Stage 1	1006	-	-
Stage 2	985	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1601	-	946	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC
1: US 30 & Berg Road

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Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	10	25	1370	765	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	353	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	2	4	4
Mvmt Flow	22	11	27	1473	823	27

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1613	411	823
Stage 1	823	-	-
Stage 2	790	-	-
Critical Hdwy	6.8	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	97	596	816
Stage 1	397	-	-
Stage 2	413	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	94	596	816
Mov Cap-2 Maneuver	225	-	-
Stage 1	397	-	-
Stage 2	399	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	816	-	284	-
HCM Lane V/C Ratio	0.033	-	0.114	-
HCM Control Delay (s)	9.6	-	19.3	-
HCM Lane LOS	A	-	C	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-

Intersection

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	15	40	110	355	255	5
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	150	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	4	2	4	8	13
Mvmt Flow	16	43	117	378	271	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	883	273	271
Stage 1	271	-	-
Stage 2	612	-	-
Critical Hdwy	6.4	6.24	4.12
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.336	2.218
Pot Cap-1 Maneuver	319	761	1292
Stage 1	779	-	-
Stage 2	545	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	290	760	1290
Mov Cap-2 Maneuver	290	-	-
Stage 1	779	-	-
Stage 2	496	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1290	-	527	-
HCM Lane V/C Ratio	0.091	-	0.111	-
HCM Control Delay (s)	8.1	-	12.7	-
HCM Lane LOS	A	-	B	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-

HCM 2010 TWSC
3: US 30 & Tide Creek Road

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Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	20	370	245	5
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	97	97	97	97	97	97
Heavy Vehicles, %	0	18	0	3	7	0
Mvmt Flow	0	10	21	381	253	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	678	255	258
Stage 1	255	-	-
Stage 2	423	-	-
Critical Hdwy	6.4	6.38	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.462	2.2
Pot Cap-1 Maneuver	421	746	1318
Stage 1	792	-	-
Stage 2	665	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	413	746	1318
Mov Cap-2 Maneuver	413	-	-
Stage 1	792	-	-
Stage 2	652	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1318	-	746	-	-
HCM Lane V/C Ratio	0.016	-	0.014	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 2010 TWSC
 4: US 30 & Nicolai Road/Driveway

12/17/2014

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	25	5	15	5	5	5	25	340	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	10	0	0	0	0	100	0	4	14
Mvmt Flow	26	5	15	5	5	5	26	351	5

Major/Minor	Minor2			Minor1			Major1		
Conflicting Flow All	673	670	253	678	678	353	263	0	0
Stage 1	263	263	-	405	405	-	-	-	-
Stage 2	410	407	-	273	273	-	-	-	-
Critical Hdwy	7.2	6.5	6.2	7.1	6.5	7.2	4.1	-	-
Critical Hdwy Stg 1	6.2	5.5	-	6.1	5.5	-	-	-	-
Critical Hdwy Stg 2	6.2	5.5	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.5	4	4.2	2.2	-	-
Pot Cap-1 Maneuver	358	381	791	369	377	516	1313	-	-
Stage 1	725	694	-	626	602	-	-	-	-
Stage 2	603	601	-	737	688	-	-	-	-
Platoon blocked, %									
Mov Cap-1 Maneuver	343	370	791	350	366	516	1313	-	-
Mov Cap-2 Maneuver	343	370	-	350	366	-	-	-	-
Stage 1	707	691	-	610	587	-	-	-	-
Stage 2	577	586	-	714	685	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	14.5	14.4	0.5
HCM LOS	B	B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	427	399	1214	-	-
HCM Lane V/C Ratio	0.02	-	-	0.109	0.039	0.004	-	-
HCM Control Delay (s)	7.8	0	-	14.5	14.4	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-

HCM 2010 TWSC
5: US 30 & Neer City Road

12/17/2014

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	5	10	345	245	5
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	97	97	97	97	97	97
Heavy Vehicles, %	0	50	0	6	6	17
Mvmt Flow	5	5	10	356	253	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	631	255	258
Stage 1	255	-	-
Stage 2	376	-	-
Critical Hdwy	6.4	6.7	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.75	2.2
Pot Cap-1 Maneuver	448	680	1318
Stage 1	792	-	-
Stage 2	699	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	444	680	1318
Mov Cap-2 Maneuver	444	-	-
Stage 1	792	-	-
Stage 2	693	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1318	-	537	-	-
HCM Lane V/C Ratio	0.008	-	0.019	-	-
HCM Control Delay (s)	7.8	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	5	340	5	5	260
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	-	-	-	127	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	5	5	366	5	5	280

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	658	368	0
Stage 1	368	-	-
Stage 2	290	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	432	682	1199
Stage 1	704	-	-
Stage 2	764	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	430	682	1199
Mov Cap-2 Maneuver	430	-	-
Stage 1	704	-	-
Stage 2	761	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1199	-
HCM Lane V/C Ratio	-	-	0.02	0.004	-
HCM Control Delay (s)	-	-	12	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection

Int Delay, s/veh 1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	60	510	15	80	450
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yeild	-	Yeild
Storage Length	0	-	-	-	123	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	10	5	0	6	5
Mvmt Flow	5	65	554	16	87	489

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	972	554	0 0 554 0
Stage 1	554	-	- - - -
Stage 2	418	-	- - - -
Critical Hdwy	6.6	6.35	- - 4.16 -
Critical Hdwy Stg 1	5.4	-	- - - -
Critical Hdwy Stg 2	5.8	-	- - - -
Follow-up Hdwy	3.5	3.395	- - 2.254 -
Pot Cap-1 Maneuver	268	512	- - 996 -
Stage 1	580	-	- - - -
Stage 2	638	-	- - - -
Platoon blocked, %			- - - -
Mov Cap-1 Maneuver	245	512	- - 996 -
Mov Cap-2 Maneuver	245	-	- - - -
Stage 1	580	-	- - - -
Stage 2	582	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	14	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	996	-
HCM Lane V/C Ratio	-	-	0.15	0.087	-
HCM Control Delay (s)	-	-	14	9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	5	0	515	450	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	450	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	5	5	0
Mvmt Flow	11	5	0	560	489	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1049	245	489
Stage 1	489	-	-
Stage 2	560	-	-
Critical Hdwy	6.6	6.9	4.1
Critical Hdwy Stg 1	5.8	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	240	762	1085
Stage 1	588	-	-
Stage 2	576	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	240	762	1085
Mov Cap-2 Maneuver	240	-	-
Stage 1	588	-	-
Stage 2	576	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1085	-	311	-	-
HCM Lane V/C Ratio	-	-	0.052	-	-
HCM Control Delay (s)	0	-	17.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 2010 TWSC
8: Heath Road & US 30

12/17/2014

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	505	5	15	430	5	5	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	167	-	-	161	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	5	0	6	5	0	0	0	0
Mvmt Flow	6	561	6	17	478	6	6	6	11

Major/Minor

	Major1		Major2		Minor1				
Conflicting Flow All	483	0	0	567	0	0	1094	1092	564
Stage 1	-	-	-	-	-	-	575	575	-
Stage 2	-	-	-	-	-	-	519	517	-
Critical Hdwy	4.1	-	-	4.16	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.254	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1090	-	-	985	-	-	193	216	529
Stage 1	-	-	-	-	-	-	507	506	-
Stage 2	-	-	-	-	-	-	544	537	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1090	-	-	985	-	-	184	211	529
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	211	-
Stage 1	-	-	-	-	-	-	504	503	-
Stage 2	-	-	-	-	-	-	524	528	-

Approach

	EB		WB		NB
HCM Control Delay, s	0.1		0.3		18.6
HCM LOS					C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	287	1090	-	-	985	-	-	251
HCM Lane V/C Ratio	0.077	0.005	-	-	0.017	-	-	0.066
HCM Control Delay (s)	18.6	8.3	-	-	8.7	-	-	20.4
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	490	25	5	445	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	None
Storage Length	-	100	162	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	557	28	6	506	23	6

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	557	1074
Stage 1	-	-	557
Stage 2	-	-	517
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1024	246
Stage 1	-	-	578
Stage 2	-	-	603
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1024	245
Mov Cap-2 Maneuver	-	-	245
Stage 1	-	-	578
Stage 2	-	-	599

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	275	-	1024	-
HCM Lane V/C Ratio	0.103	-	0.006	-
HCM Control Delay (s)	19.6	-	8.5	-
HCM Lane LOS	C	-	A	-
HCM 95th %tile Q(veh)	0.3	-	0	-

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	15	475	390	75	40	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	200	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	6	5	4	0	0
Mvmt Flow	17	540	443	85	45	6

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	443	0	1017
Stage 1	-	-	443
Stage 2	-	-	574
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1128	-	266
Stage 1	-	-	651
Stage 2	-	-	567
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1128	-	262
Mov Cap-2 Maneuver	-	-	262
Stage 1	-	-	651
Stage 2	-	-	558

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1128	-	-	280
HCM Lane V/C Ratio	0.015	-	-	0.183
HCM Control Delay (s)	8.2	-	-	20.7
HCM Lane LOS	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	0.7

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	435	345	25	20	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	6	483	383	28	22	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	411	0	891
Stage 1	-	-	397
Stage 2	-	-	494
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1159	-	315
Stage 1	-	-	683
Stage 2	-	-	617
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1159	-	313
Mov Cap-2 Maneuver	-	-	313
Stage 1	-	-	683
Stage 2	-	-	613

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1159	-	-	-	313
HCM Lane V/C Ratio	0.005	-	-	-	0.071
HCM Control Delay (s)	8.1	0	-	-	17.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	420	10	30	310	5	5	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None
Storage Length	183	-	150	167	-	150	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	6	0	3	5	0	0	0	0
Mvmt Flow	6	506	12	36	373	6	6	6	18

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	373	0	0	506	0	0	967	964	506
Stage 1	-	-	-	-	-	-	518	518	-
Stage 2	-	-	-	-	-	-	449	446	-
Critical Hdwy	4.1	-	-	4.13	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.227	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1197	-	-	1054	-	-	236	257	570
Stage 1	-	-	-	-	-	-	544	536	-
Stage 2	-	-	-	-	-	-	593	577	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1197	-	-	1054	-	-	227	247	570
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	247	-
Stage 1	-	-	-	-	-	-	541	533	-
Stage 2	-	-	-	-	-	-	568	557	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.7	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	365	1197	-	-	1054	-	-	325
HCM Lane V/C Ratio	0.083	0.005	-	-	0.034	-	-	0.037
HCM Control Delay (s)	15.7	8	-	-	8.5	-	-	16.5
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.1

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	230	0	5	195	5	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	90	-	-	90	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	9	0	20	8	0	0	0	0
Mvmt Flow	0	277	0	6	235	6	0	0	6

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	235	0	0	277	0	0	527	524	277
Stage 1	-	-	-	-	-	-	277	277	-
Stage 2	-	-	-	-	-	-	250	247	-
Critical Hdwy	4.1	-	-	4.3	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.38	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1344	-	-	1189	-	-	465	461	767
Stage 1	-	-	-	-	-	-	734	685	-
Stage 2	-	-	-	-	-	-	759	706	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1344	-	-	1189	-	-	459	458	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	459	458	-
Stage 1	-	-	-	-	-	-	734	685	-
Stage 2	-	-	-	-	-	-	749	702	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	767	1344	-	-	1189	-	-	586
HCM Lane V/C Ratio	0.008	-	-	-	0.005	-	-	0.021
HCM Control Delay (s)	9.7	0	-	-	8	0	-	11.3
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	5	215	5	5	185	5	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	9	0	0	8	0	0	0	0
Mvmt Flow	6	259	6	6	223	6	6	0	6

Major/Minor	Major1	Major2	Minor1						
Conflicting Flow All	229	0	0	265	0	0	515	515	262
Stage 1	-	-	-	-	-	-	274	274	-
Stage 2	-	-	-	-	-	-	241	241	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1351	-	-	1311	-	-	474	466	782
Stage 1	-	-	-	-	-	-	736	687	-
Stage 2	-	-	-	-	-	-	767	710	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1351	-	-	1311	-	-	467	461	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	461	-
Stage 1	-	-	-	-	-	-	732	684	-
Stage 2	-	-	-	-	-	-	758	706	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.2	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	585	1351	-	-	1311	-	-	595
HCM Lane V/C Ratio	0.021	0.004	-	-	0.005	-	-	0.02
HCM Control Delay (s)	11.3	7.7	0	-	7.8	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	5	130	5	0	50
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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	6	6	157	6	0	60

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	220	160	0
Stage 1	160	-	-
Stage 2	60	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	773	890	1428
Stage 1	874	-	-
Stage 2	968	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	773	890	1428
Mov Cap-2 Maneuver	773	-	-
Stage 1	874	-	-
Stage 2	968	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	827	1428	-
HCM Lane V/C Ratio	-	-	0.015	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	120	55	20	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	3	7	8	4	0
Mvmt Flow	5	132	60	22	27	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	60	0	203
Stage 1	-	-	60
Stage 2	-	-	143
Critical Hdwy	4.1	-	6.44
Critical Hdwy Stg 1	-	-	5.44
Critical Hdwy Stg 2	-	-	5.44
Follow-up Hdwy	2.2	-	3.536
Pot Cap-1 Maneuver	1556	-	781
Stage 1	-	-	958
Stage 2	-	-	879
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1556	-	779
Mov Cap-2 Maneuver	-	-	779
Stage 1	-	-	958
Stage 2	-	-	876

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	1556	-	-	779	1011
HCM Lane V/C Ratio	0.004	-	-	0.035	0.005
HCM Control Delay (s)	7.3	0	-	9.8	8.6
HCM Lane LOS	A	A	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	0

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Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	40	15	5	30	15	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	50	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	0	0	27	6	9
Mvmt Flow	45	17	6	34	17	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	-	45	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	4.1	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	2.2	-
Pot Cap-1 Maneuver	-	0	1576	-
Stage 1	-	0	-	-
Stage 2	-	0	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	1576	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBL	WBT
Capacity (veh/h)	937	-	1576	-
HCM Lane V/C Ratio	0.03	-	0.004	-
HCM Control Delay (s)	9	-	7.3	0
HCM Lane LOS	A	-	A	A
HCM 95th %tile Q(veh)	0.1	-	0	-

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	0	35	10	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	18	0	42	12	0	18

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	60	42	0
Stage 1	42	-	-
Stage 2	18	-	-
Critical Hdwy	6.58	6.2	4.1
Critical Hdwy Stg 1	5.58	-	-
Critical Hdwy Stg 2	5.58	-	-
Follow-up Hdwy	3.662	3.3	2.2
Pot Cap-1 Maneuver	908	1034	1580
Stage 1	941	-	-
Stage 2	965	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	908	1034	1580
Mov Cap-2 Maneuver	908	-	-
Stage 1	941	-	-
Stage 2	965	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBL	SBT
Capacity (veh/h)	-	908	1580	-
HCM Lane V/C Ratio	-	0.02	-	-
HCM Control Delay (s)	-	9	0	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0.1	0	-

Intersection

Int Delay, s/veh 1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	5	35	0	5	15
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	83	83	83	83	83	83
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	0	6	42	0	6	18

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	72	42	0
Stage 1	42	-	-
Stage 2	30	-	-
Critical Hdwy	6.58	6.2	4.1
Critical Hdwy Stg 1	5.58	-	-
Critical Hdwy Stg 2	5.58	-	-
Follow-up Hdwy	3.662	3.3	2.2
Pot Cap-1 Maneuver	894	1034	1580
Stage 1	941	-	-
Stage 2	953	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	890	1034	1580
Mov Cap-2 Maneuver	890	-	-
Stage 1	941	-	-
Stage 2	949	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1034	1580	-
HCM Lane V/C Ratio	-	-	0.006	0.004	-
HCM Control Delay (s)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	10	15	5	5	0
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	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	12	18	6	6	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	24	0	33
Stage 1	-	-	21
Stage 2	-	-	12
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1604	-	986
Stage 1	-	-	1007
Stage 2	-	-	1016
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1604	-	986
Mov Cap-2 Maneuver	-	-	986
Stage 1	-	-	1007
Stage 2	-	-	1016

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1604	-	-	-	986
HCM Lane V/C Ratio	-	-	-	-	0.006
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	0	15	10	0	10
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	78	78	78	78	78	78
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	13	0	19	13	0	13

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	39	26	0
Stage 1	26	-	-
Stage 2	13	-	-
Critical Hdwy	6.4	6.31	4.17
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.399	2.263
Pot Cap-1 Maneuver	978	1024	1548
Stage 1	1002	-	-
Stage 2	1015	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	978	1024	1548
Mov Cap-2 Maneuver	978	-	-
Stage 1	1002	-	-
Stage 2	1015	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	978	1548	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	8.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	10	15	0	10	10
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	78	78	78	78	78	78
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	0	13	19	0	13	13

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	57	19	0
Stage 1	19	-	-
Stage 2	38	-	-
Critical Hdwy	6.4	6.31	4.17
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.399	2.263
Pot Cap-1 Maneuver	955	1034	1565
Stage 1	1009	-	-
Stage 2	990	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	947	1034	1565
Mov Cap-2 Maneuver	947	-	-
Stage 1	1009	-	-
Stage 2	982	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1034	1565	-
HCM Lane V/C Ratio	-	-	0.012	0.008	-
HCM Control Delay (s)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	10	10	10	10	0
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	78	78	78	78	78	78
Heavy Vehicles, %	0	0	0	11	7	0
Mvmt Flow	0	13	13	13	13	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	26	0	32
Stage 1	-	-	19
Stage 2	-	-	13
Critical Hdwy	4.1	-	6.47
Critical Hdwy Stg 1	-	-	5.47
Critical Hdwy Stg 2	-	-	5.47
Follow-up Hdwy	2.2	-	3.563
Pot Cap-1 Maneuver	1601	-	969
Stage 1	-	-	991
Stage 2	-	-	997
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1601	-	969
Mov Cap-2 Maneuver	-	-	969
Stage 1	-	-	991
Stage 2	-	-	997

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1601	-	-	-	969
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	5	30	20	10	0
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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	0	9	52	34	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	86	0	78
Stage 1	-	-	69
Stage 2	-	-	9
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1523	-	930
Stage 1	-	-	959
Stage 2	-	-	1019
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1523	-	930
Mov Cap-2 Maneuver	-	-	930
Stage 1	-	-	959
Stage 2	-	-	1019

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1523	-	-	-	930
HCM Lane V/C Ratio	-	-	-	-	0.019
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	5	30	0	0	5
Conflicting Peds, #/hr	0	0	0	0	1	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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	9	9	52	0	0	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	53	0	79
Stage 1	-	-	53
Stage 2	-	-	26
Critical Hdwy	4.1	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1566	-	929
Stage 1	-	-	975
Stage 2	-	-	1002
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1566	-	922
Mov Cap-2 Maneuver	-	-	922
Stage 1	-	-	974
Stage 2	-	-	995

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1566	-	-	-	1019
HCM Lane V/C Ratio	0.006	-	-	-	0.008
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection

Int Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	0	0	20	10	5
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	58	58	58	58	58	58
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	0	0	34	17	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	56	22	0
Stage 1	22	-	-
Stage 2	34	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	957	1061	1601
Stage 1	1006	-	-
Stage 2	994	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	957	1061	1601
Mov Cap-2 Maneuver	957	-	-
Stage 1	1006	-	-
Stage 2	994	-	-

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1601	-	957	-	-
HCM Lane V/C Ratio	-	-	0.009	-	-
HCM Control Delay (s)	0	-	8.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Section G

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Section H

Memo 7: Future Traffic Forecast

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #7

DATE: December 16, 2014

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates
Edith Lopez Victoria, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
Future Traffic Forecast

P11086-022

Traffic forecasting is an important step in the transportation planning process because it provides estimates of future motor vehicle travel demand. The horizon year for Columbia County's Transportation System Plan (TSP) is 2035. This memorandum describes the forecasting assumptions and methodologies that were used to estimate growth in traffic volumes at study intersection and along key travel corridors in 2035.

Methodology Overview

The travel forecasting methodology varies based on the location, characteristic, and jurisdiction of the roadway. The following provides a summary of the forecasting tools that were used for the Columbia County TSP:

- **For State highways:** Growth rates derived from the ODOT Future Volume Tables¹ were utilized.
- **For urban County facilities:** Growth rates derived from adjacent state highways in the ODOT Future Volume Tables were utilized.
- **For rural County facilities:** Growth rates derived from state facilities in the county that are adjacent to or have similar characteristics in the ODOT Future Volume Tables were utilized.

¹ 2032 ODOT Future Volume Tables, <http://www.oregon.gov/ODOT/TD/TP/Pages/Data.aspx>, accessed September 10, 2014.

Due to significant differences between summer volumes (e.g., a typical Friday in August) and average weekday volumes (e.g., a typical Tuesday in May) along many roads in Columbia County, the forecast includes projections for both scenarios for the 2035 horizon year. The following sections detail the above forecasting methodologies and describe their applicability.

ODOT Future Volume Tables

Future traffic growth was estimated based on ODOT's 2032 Future Volume Tables. These tables are based on long-term 20-year trends of traffic counting sites on Oregon highways. The trends are based on linear regression best-fit trends and are extrapolated out 20 years. Average daily traffic (ADT) volumes are provided for various mile points along State highways for the base year (2010, 2011, or 2012 depending on the location) and future year (2032). These volumes were utilized to determine an expected growth trend, suggesting an annual growth rate to be applied to applicable roads and intersections in Columbia County. The annual growth rate was applied to the seasonally factored base year volumes from 2014 to develop traffic volumes for 2035. The 2035 traffic volumes can be seen in Figures 1a and 1b.

For State highways, annual growth rates derived from the ODOT Future Volume Tables were utilized. As shown in Table 1, the annual growth rates range from 2.2 to 0.5 percent. For urban County facilities, growth rates derived from the ODOT Future Volume Tables were utilized based on the adjacent state highway. Using this methodology, a 2.2 percent annual growth rate was applied to County facilities adjacent to US 30 within the Scappoose, St. Helens, and Columbia City Urban Growth Boundaries and a 1.7 percent annual growth rate to County facilities adjacent to US 30 within the Rainier and Clatskanie Urban Growth Boundaries (as shown in Table 1).

For rural County facilities (i.e., outside the UGB), growth rates derived from State facilities in the county that are adjacent to or have similar characteristics from the ODOT Future Volume Tables were utilized. For rural County arterials (including Apiary Road and Scappoose-Vernonia Highway), this was based on the annual growth rate calculated for OR 202, and for all other rural County facilities, based on the annual growth rate calculated for OR 47.

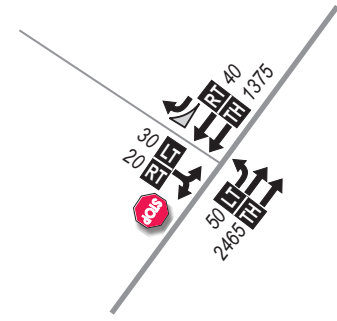
Table 1: Annual Growth Rate Calculations

Count Location(s)**	Annual Growth Rate*	Where the rate will be applied
US 30 , 0.05 mile north of Scappoose-Vernonia Road (MP 21.32), 0.05 mile north of Fullerton Road (MP 23.40), 0.05 mile north of Church Road (MP 25.53), 0.05 mile north of Millard Road (MP 27.01), 0.05 mile south of Gable Road (MP 27.64), and 0.05 mile north of Deer Island Road (MP 29.47)	2.2%	US 30, from the Columbia-Multnomah County Line to the north Urban Growth Boundary of Columbia City; County facilities within the Scappoose, St. Helens and Columbia City Urban Growth Boundaries.
US 30 , 0.39 mile north of Pacific Street (MP 32.00), 0.09 mile north of Nicolai Road (MP 40.56), 0.04 mile west of Rockcrest Street (MP 48.42), 1.03 miles west of Rainier Road (MP 53.33)	1.7%	US 30, north Urban Growth Boundary of Columbia City to the Columbia-Clatsop County Line; County facilities within the Rainier and Clatskanie Urban Growth Boundaries.
OR 202 , Clatsop-Columbia County Line (MP 39.13), and 0.10 mile southwest of Adams Road (MP 64.51)	1.5%	OR 202, between the Columbia-Clatsop County Line and the Columbia-Washington County Line; Rural County arterials including Apiary Road and Scappoose-Vernonia Highway.
OR 47 , 0.10 mile north of OR 202 (MP 11.79)	0.5%	OR 47, between OR 202 and US 30; rural non-arterial County facilities.

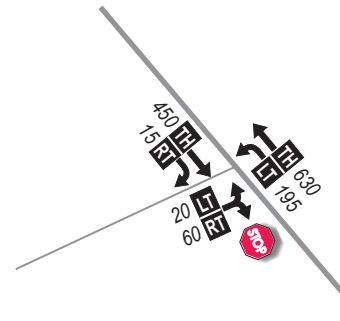
* Source: 2032 Future Volumes Table, ODOT

** Only statistically significant locations with R-squared values above 0.50 were utilized.

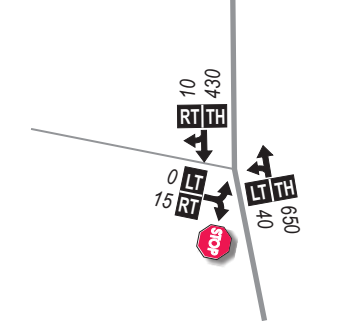
1 US 30 @ Berg Rd.



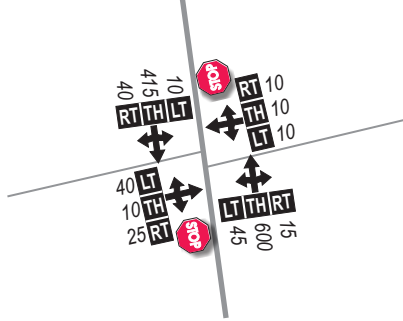
2 US 30 @ Canaan Rd.



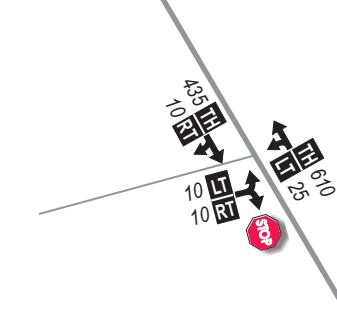
3 US 30 @ Tide Creek Rd.



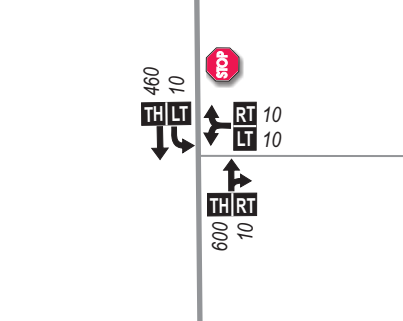
4 US 30 @ Nicolai Rd.



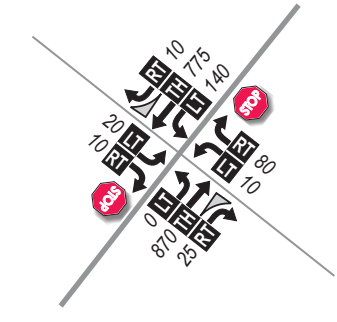
5 US 30 @ Neer City Rd.



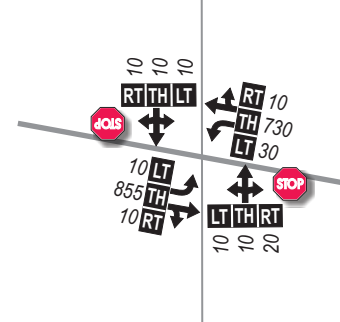
6 US 30 @ Graham Rd.



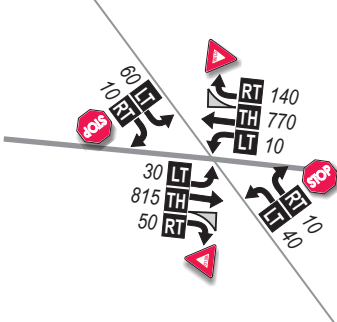
7 US 30 @ Larson Rd.



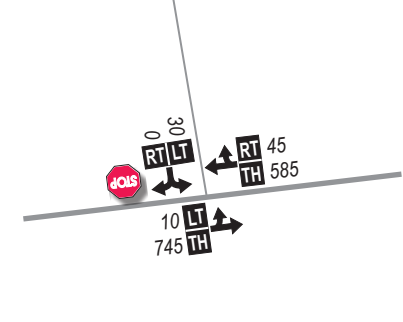
8 US 30 @ Heath Rd.



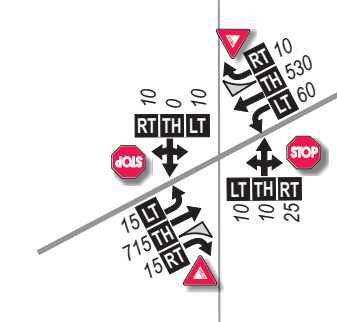
9 US 30 @ Old Rainier Rd.



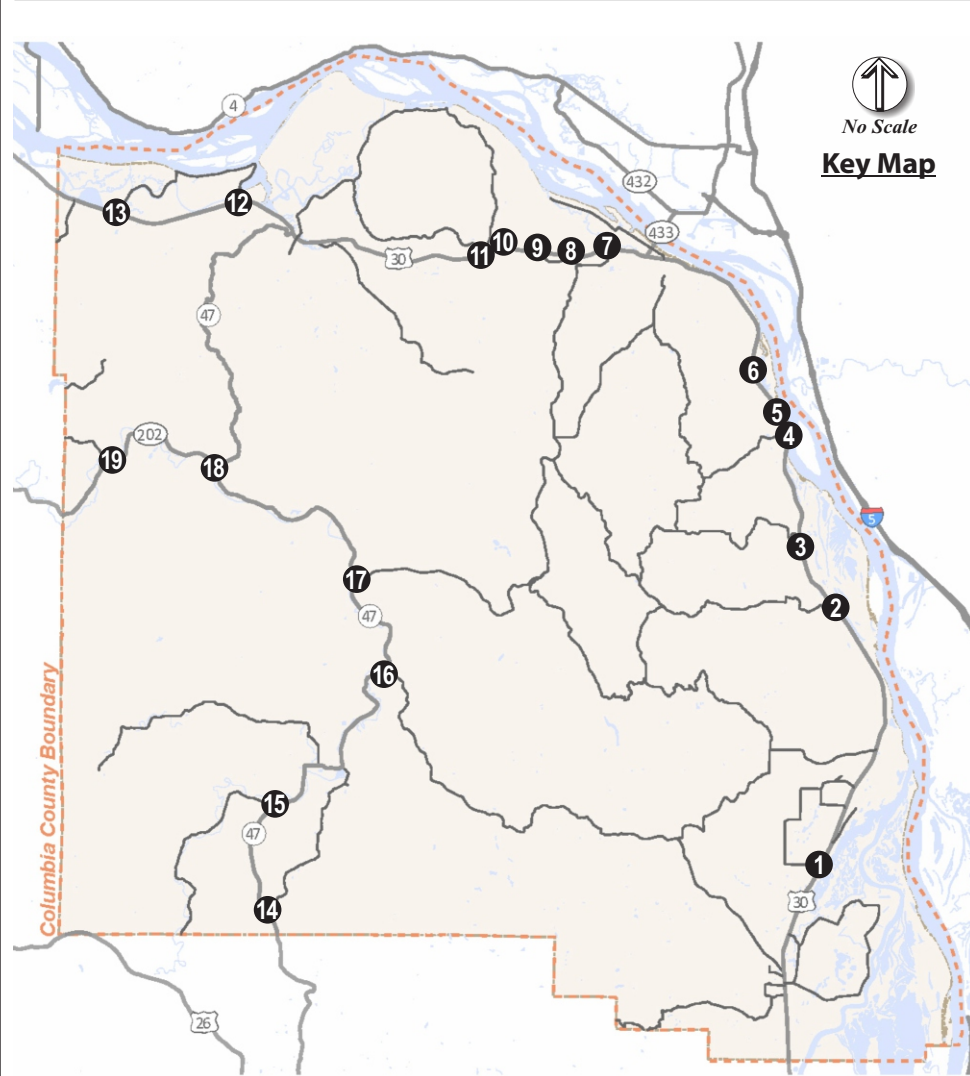
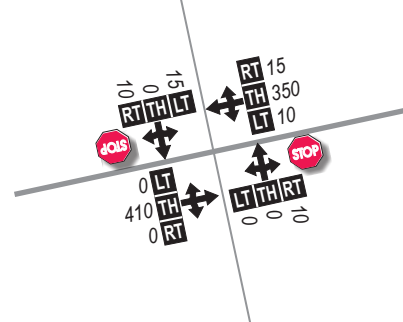
10 US 30 @ Beaver Falls Rd.



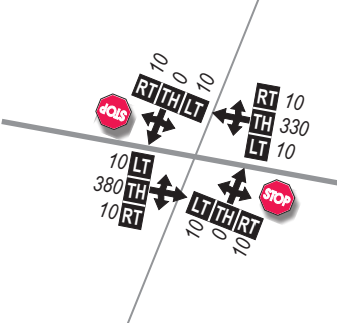
11 US 30 @ Delena Rd.



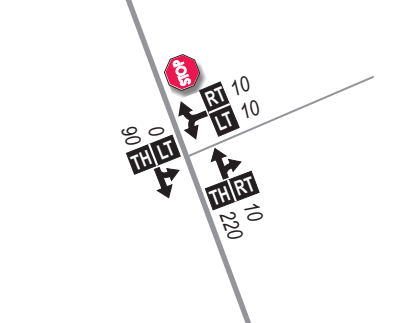
12 US 30 @ Colvin Rd.



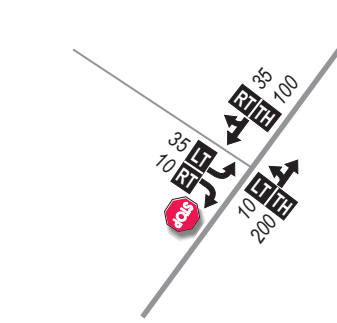
13 US 30 @ Woodson Rd.



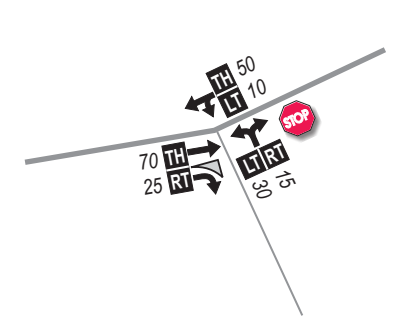
14 OR 47 @ McDonald Rd.



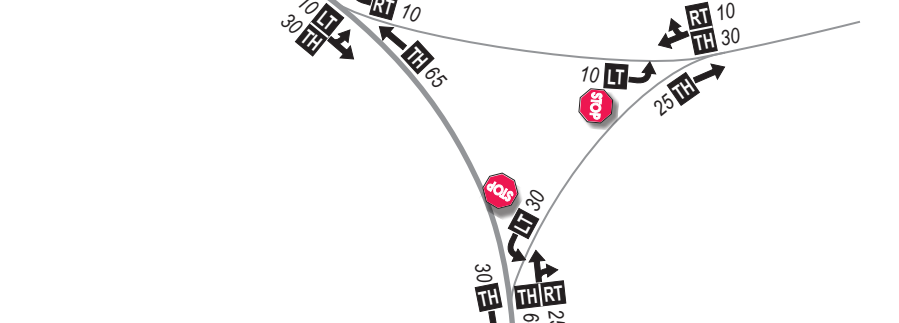
15 OR 47 @ Timber Rd.



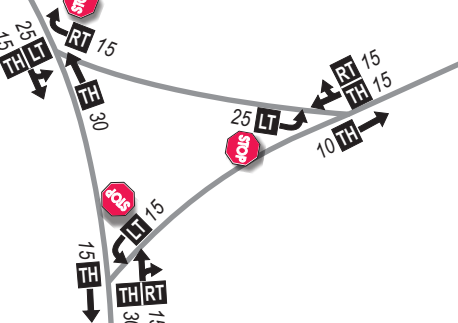
16 OR 47 @ Scappoose-Vernonia Hwy



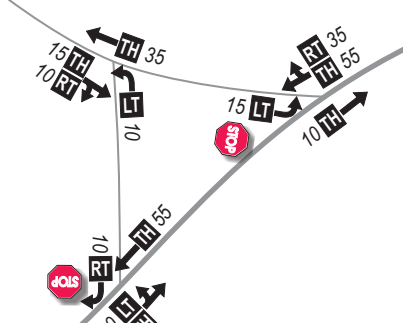
17 OR 47 @ Apiary Rd.



18 OR 47 @ OR 202



19 OR 202 @ Fishhawk Rd.



LEGEND

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

DKS

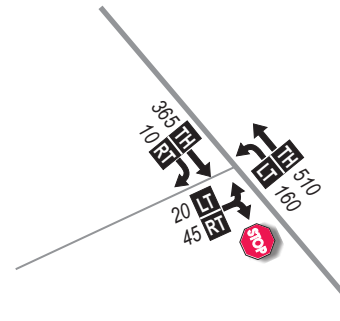
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Figure 1a
2035 Baseline Design Hour
Motor Vehicle Volumes
(PM Peak Hour)

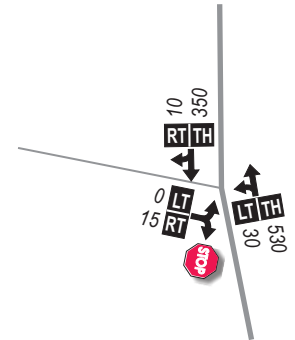
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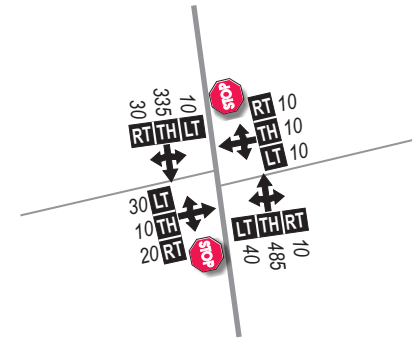
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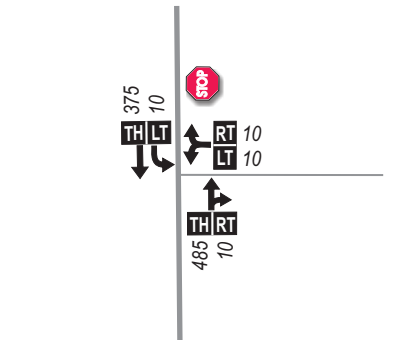
4 US 30 @ Nicolai Rd.



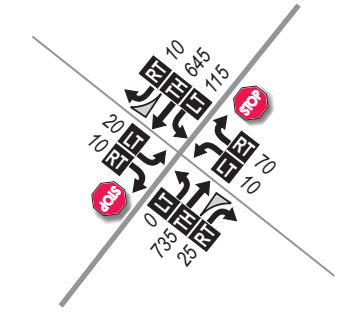
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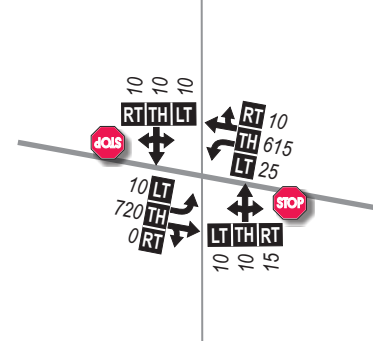
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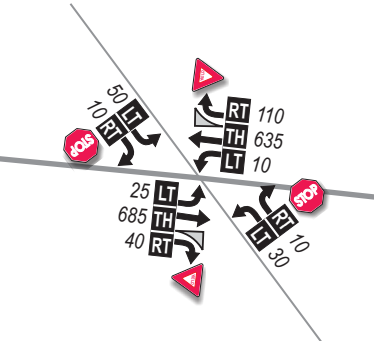
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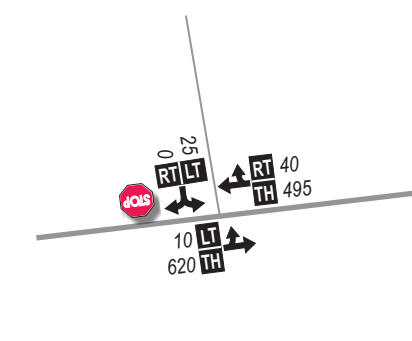
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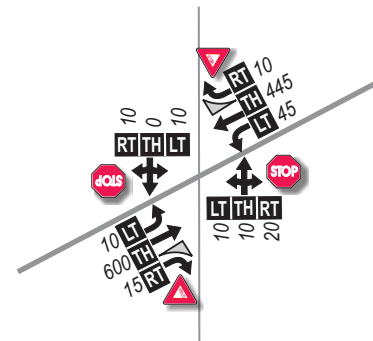
9 US 30 @ Old Rainier Rd.



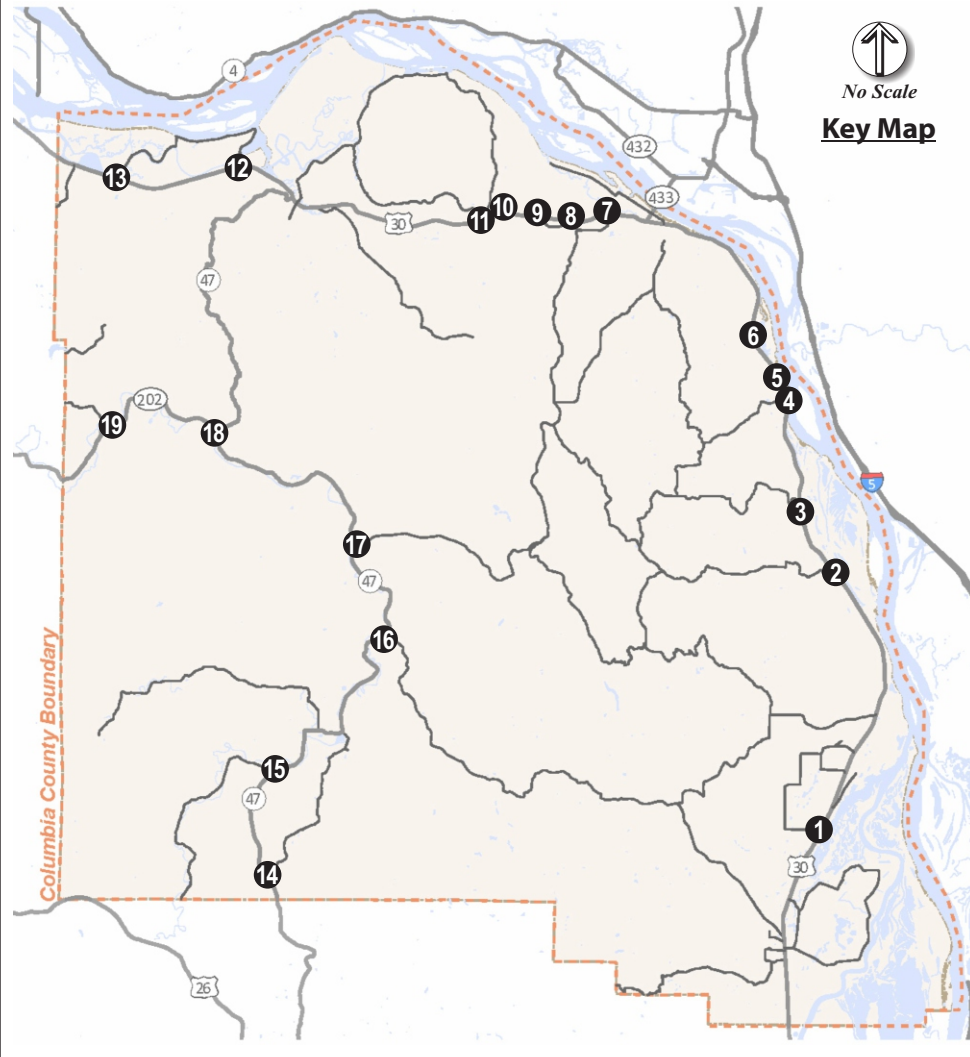
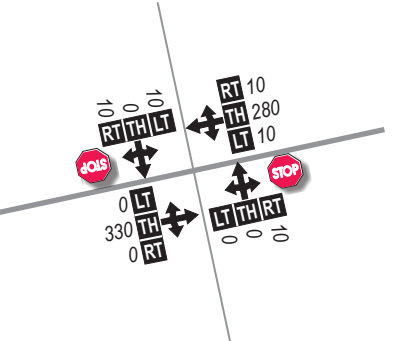
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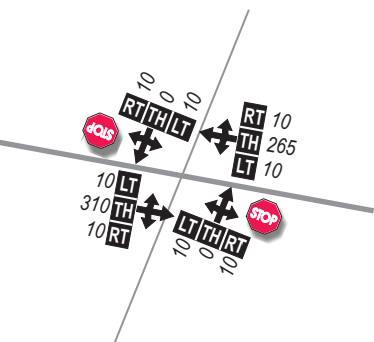
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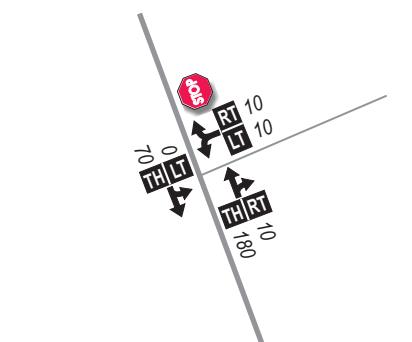
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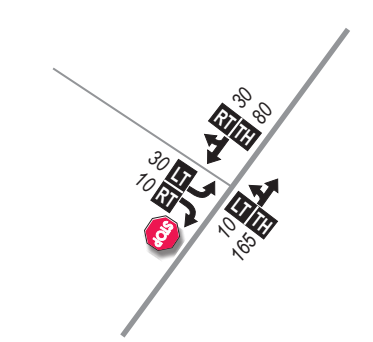
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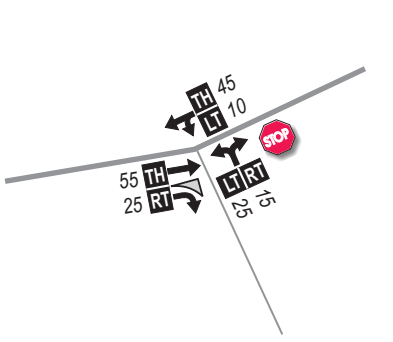
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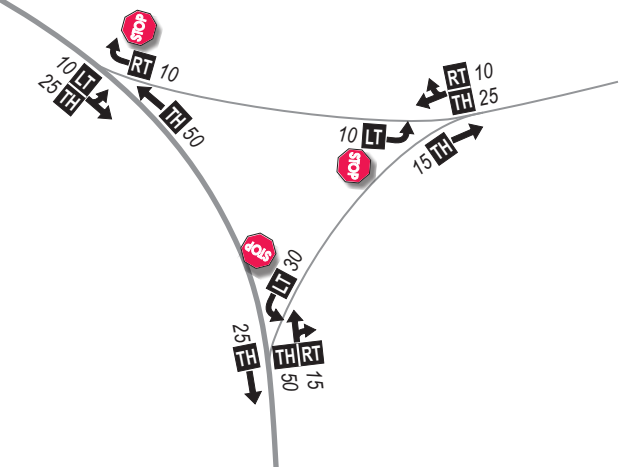
15 OR 47 @ Timber Rd.



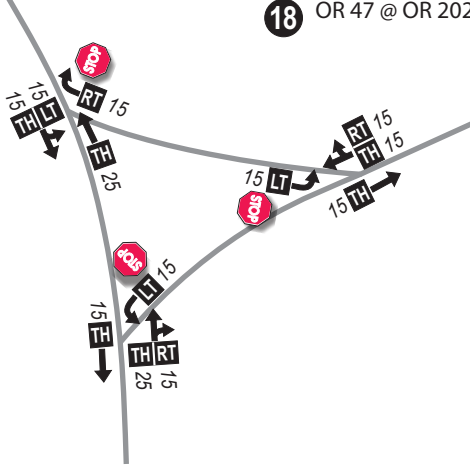
16 OR 47 @ Scappoose-Vernonia Hwy



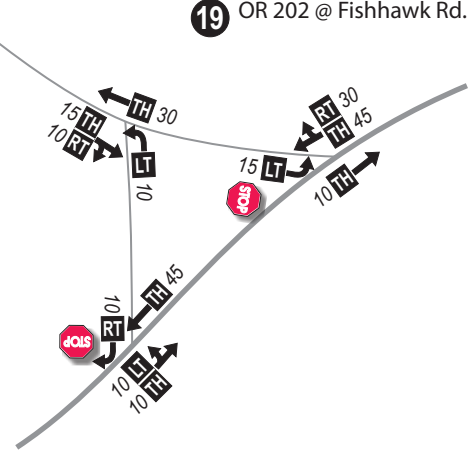
17 OR 47 @ Apiary Rd.



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19 OR 202 @ Fishhawk Rd.



LEGEND

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- LT/TH/RT - Volume Turn Movement (Left-Thru-Right)

DKS

No Scale

Figure 1b
2035 Baseline Average Weekday
Motor Vehicle Volumes
 (PM Peak Hour)

Section H

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Section I

Memo 8: Future Transportation Conditions and Needs

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #8

DATE: January 28, 2015

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates
Edith Lopez Victoria, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
Technical Memorandum #8: Future Transportation Conditions and Needs

P11086-022

The condition of Columbia County's future transportation system depends on the growth in population and employment, future travel patterns (e.g., choice of modes, routes, and frequency of trips), and community investment decisions. Growth in population and the number of jobs forecasted is based on trends and knowledge of the county and region. Future travel patterns are more difficult to predict as the community's investment decisions and the economy can have a significant effect on choice of modes and routes. The objective of the transportation planning process is to generate information necessary for making decisions that will result in safe and efficient travel options through 2035.

Methodology for Estimating Future Travel

Transportation conditions in Columbia County for the year 2035 were forecasted based on trips that new growth will generate, assuming:

- No new investments in infrastructure beyond what is already funded for construction,
- Continuation of the same modal distribution (i.e., private motor vehicle, transit, walking, biking) of trips, and
- Continuation of current travel behaviors, based on decisions and preferences of existing residents, employers, tourists, and institutions around the region.

This assessment depicts areas of the transportation system that will perform satisfactorily and areas of the roadway network that will likely to be congested and in need of investments to function adequately in the future. Subsequent memos will explore solutions for addressing future transportation system needs. For more detail on the travel forecasting process, refer to Technical Memorandum #7.

Future Estimates of Walking, Biking, and Transit Use

The methodology for determining future needs for walking, biking, and transit use in Columbia County begins with an assessment of who is walking, biking, and taking transit now and where they are traveling. This information was summarized in Technical Memorandum #6 (Existing Transportation System Conditions).

The existing facilities were then compared to existing urban or expected growth areas of the county, and in proximity to key destinations, such as schools, parks, transit stops, shopping and employment. Rural corridors were also reviewed to ensure facilities are provided, offering connections to urban areas and other key destinations in the county.

A review of the county shows that the presence of adequate pedestrian and bicycle facilities is limited to major roads (arterial and collectors) within urban areas. Here, existing sidewalks and bike lanes are sparse and discontinuous. In rural areas of the county, continuous paved roadway shoulders of adequate width (5 feet or greater) do not exist along most roadways. Most of the primary rural corridors, including Vernonia-Scappoose Highway, OR 47 and OR 202, have paved shoulder widths of less than 5 feet or lack paved shoulders altogether.

Baseline Road Network Improvements

The baseline condition reflects the road network performance, assuming that only transportation projects that already have secured funding will be built. For Columbia County, no new investments were assumed to be made to transportation infrastructure through 2035.

Snapshot of Columbia County in 2035

Aging Population

Age will likely play a key role in determining the use of modes of transportation for Columbia County residents. The youngest and oldest residents often account for more trips via walking, biking, and public transportation. Today, school-age children and residents over 65 make up about 40 percent of the population in the county (as shown in Figure 1). By 2035, this number is expected to increase nearly seven percent, accounting for nearly half of all county residents.¹ The most notable change is expected to be the amount of residents over the age of 65, which is expected to increase from 14 percent to 23 percent by 2035. This could indicate that more residents in the county may become

¹ Forecasts of Oregon's County Populations and Components of Change, 2010-2050. Office of Economic Analysis, Department of Administrative Services, State of Oregon. Released March 28, 2013.

dependent on public transportation and the associated walking infrastructure on either end of the trip (e.g., sidewalk connecting a bus stop to their neighborhood or nearest activity generator).

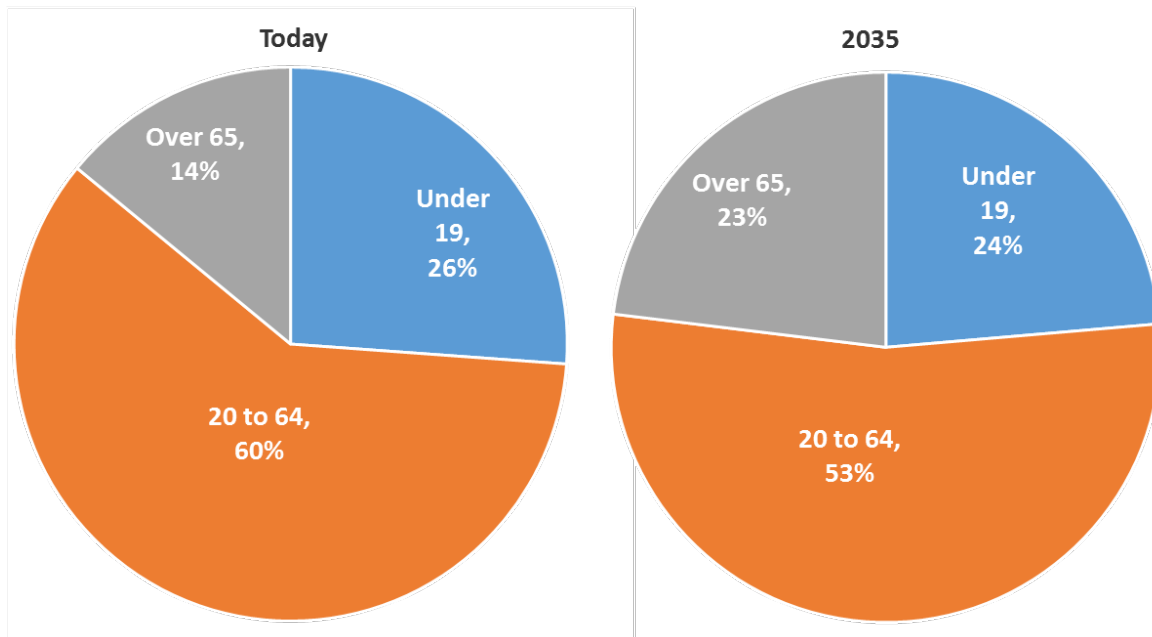


Figure 1: Aging Population

Rising Population and Employment

Today, Columbia County is home to 50,000 residents² and accounts for about 10,000 jobs.³ Between now and 2035, projected population and employment growth will increase about one percent per year. Columbia County will have about 64,000 residents⁴ and about 13,000 jobs⁵ by 2035, an increase of approximately 30 percent from 2013. With more people and more jobs in Columbia County, the transportation network will face increasing demand through 2035.

More Travel

With more jobs, residents, and through travel, highways in Columbia County must accommodate hundreds of additional motor vehicle trips during the summer evening peak hour. Today, the Columbia County road network is generally able to handle the summer evening peak hour trips; however, the summer evening peak hour motor vehicle trips are likely to increase over 40 percent at

² 2013 Certified Population Estimates, Population Research Center, Portland State University

³ Oregon Employment Department, 2013 Employment Statistics

⁴ Office of Economic Analysis, Department of Administrative Services, State of Oregon

⁵ Based on annual growth rate derived from the Oregon Employment Department's 2012-2022 employment forecast for the Columbia, Columbia and Tillamook County region. The regional employment share for Columbia, Columbia and Tillamook Counties in 2035 is based on 2013 employment statistics.

intersections along US 30, OR 47 and OR 202, adding over 300 trips to intersections along US 30 and up to 100 trips at intersections along OR 47 and OR 202 through 2035.

2035 motor vehicle volumes for both summer and average weekday conditions were utilized to determine areas on the baseline roadway network that will be congested and may require future investments to accommodate forecasted growth. The 2035 baseline motor vehicle volumes for study intersections in Figures A1 and A2 in the appendix show volumes are anticipated to be highest along US 30, which connects the surrounding region to the employment areas and other destinations in Columbia County, Longview, and the Portland metropolitan area.

Increasing Congestion

An increase in motor vehicle travel leads to an increase in congestion. Travel activity, as reflected by evening peak hour motor vehicle trips beginning or ending in Columbia County, is expected to increase significantly through 2035, mainly along US 30. Through trips (i.e., trips that neither begin nor end in Columbia County) are also expected to increase through 2035 and are generally representative of increased tourism activity at the coast and growth in Oregon. Because traffic volumes are higher during the summer, future intersection and road operating conditions were only evaluated during this period. Future operating conditions during an average weekday would be expected to be better than the results forecasted and summarized in this memorandum for the summer p.m. peak hour condition.

As shown in Figure 2 and Table A1 in the appendix, all highway intersections are expected to operate well within the Oregon Highway Plan mobility targets for the summer p.m. peak hour condition. It is important to note that while the US 30 intersections with Berg Road, Heath Road, and Old Rainier Road are expected to meet their mobility target, the side roads are forecasted to experience significant delays during the p.m. peak hour (approximately 60 seconds per vehicle in the summer).

Highway capacity analysis was also performed for 20 rural roads segments in the county, including portions of US 30, OR 47, OR 202, Scappoose-Vernonia Highway, and Apiary Road. As shown in Table A2 in the appendix, most segments are expected to operate well under capacity, with v/c ratios less than 0.65. The segment of US 30 between the Multnomah County border and the south Scappoose UGB is forecasted to operate within two percent of the mobility target for the segment, at a v/c ratio of 0.78.

For two-lane highway segments, v/c ratios do not provide a good performance measure since they do not reflect driver behavior. Therefore, the highway operations analysis was evaluated again with LOS as the performance measure. As shown in Figure 2, this evaluation indicated that the eastbound direction of US 30 from the east Clatskanie UGB to the west Rainier UGB, and the westbound direction of US 30 between the Multnomah County border and the south Scappoose UGB, the north Columbia City UGB and the east Rainier UGB, and the west Rainier UGB and the Beaver Falls Road intersection experience moderate congestion, operating with a LOS D. All other segments operate with a LOS C or better.

Figure 2 - Future 2035 Vehicle Operation Conditions (Summer PM Peak)



Legend	Roadway Level of Service (LOS)	Intersection Operations (V/C Ratio)	
	Free-Flowing Conditions (LOS A)	Good	Park
	Reasonably Unimpeded Conditions (LOS B)	Approaching Target	City Limits
	Slowing Conditions (LOS C)	Does Not Meet Target	Urban Growth Boundary
	Unstable Conditions (LOS D)		Columbia County
	Congested Conditions (LOS E/F)		

Where Transportation Improvements may be Needed

Review of the existing urban and expected growth areas of the county with existing gaps and deficiencies of the transportation system identified the following locations as possible candidates for improvements.

Walking Needs

Pedestrian network deficiencies are present throughout the county and will become more evident as the county's population and employment continues to increase through 2035. Placing more walking demand on an underbuilt existing walking network could potentially put more users in vulnerable situations, and discourage non-motorized travel in urban areas of the county and along rural corridors offering connections to urban areas and other key destinations. For an inventory of walking facilities, refer to Technical Memorandum #6. Key transportation system needs for pedestrians in Columbia County include:

- **Sidewalks and enhanced pedestrian crossings along portions of US 30, in urban and rural communities:** With as many as five lanes and high traffic volumes and travel speeds, US 30 is a major barrier to pedestrians. With housing, shopping and employment growth expected to occur along the highway, providing safe walking accommodations will be crucial for the safety of those walking along and across the highway. Key sidewalks gaps along US 30 occur in Scappoose, Warren, McNulty, St Helens, Columbia City, Deer Island, Goble, Rainier and Clatskanie.

Those walking along the highway will also face increased motor vehicle traffic, creating more potential conflicts in areas with inadequate facilities or highway crossings. Placing additional demand on some of the existing highway crossings may necessitate enhanced elements such as pedestrian refuge islands, curb extensions, high visibility markings, increased signage or lighting, or pedestrian activated signals.

- **Sidewalks/crossings along roadways in urban areas:** The increased housing and shopping opportunities through 2035 means more people will be within walking distance of their destination in urban areas of the county. Much of the growth will require those walking to travel down roads with existing sidewalk gaps and inconvenient roadway crossing opportunities. These roads, including portions of Columbia Avenue, West Lane Road, and Em Watts Road in Scappoose, Pittsburg Road, Gable Road, and Millard Road in St Helens, Fern Hill Road in Rainier, OR 47 and Swedetown Road in Clatskanie, and OR 47 in Vernonia will need sidewalk infill and enhanced roadway crossings (such as high visibility markings or increased roadway lighting) to encourage walking to these destinations.
- **Pedestrian facilities/crossings along rural corridors:** Many high speed or limited visibility roadways throughout rural areas of the county lack shoulders with adequate width for safe pedestrian travel. These roadways, including portions of OR 47 and OR 202, will need widened shoulders to allow for safe walking and provide connections to regional pedestrian facilities or public transportation.

Biking Needs

The existing bicycle network is limited in the county, as shown in Figure 3. With increased motor vehicle volumes along major biking routes in the county through 2035, designating separate spaces for bicycle and motor vehicle travel will become more critical to ensuring the safety of cyclists and encouraging travel by bicycle. For an inventory of bicycle facilities, refer to Technical Memorandum #6. Key transportation system needs for bicyclists in Columbia County include:

- **Bike accommodations along roadways in urban areas:** Bicycle facilities are limited along major roads through urban areas of the county, including portions of Columbia Avenue, West Lane Road, and Em Watts Road in Scappoose, Pittsburg Road, Gable Road, and Millard Road in St Helens, Fern Hill Road in Rainier, and OR 47 in Clatskanie. These county roads are key for the biking network in these local cities. Accommodations should be provided via on-road bike lanes, wide shoulders, off-road shared-use paths, or with facilities on adjacent roadways.
- **Bike accommodations along rural corridors connecting to urban areas:** Bicycle facilities are limited along major roadways through rural areas of the county, including portions of OR 47, OR 202, Apiary Road, Cater Road, and Fern Hill Road. These roadways would be key for the biking network in the county if they had facilities, linking rural and urban areas. With increased motor vehicle traffic expected along these roadways through 2035, it will become increasingly important to provide ample space for bicycle travel (e.g., a shoulder area) to separate those biking from motor vehicles along these higher volume and speed facilities.

Figure 3 - Pedestrian and Bicycle Facilities



Legend Pedestrian and Bicycle Facilities

- Road with shoulder >4 feet
- Road with shoulder <4 feet
- Bicycle Lane
- Shared Use Path
- Park
- City Limits
- Urban Growth Boundary
- Columbia County

Transit Needs

The existing transit system generally serves the ridership needs of the county given their limited resources, serving the communities along US 30, which make up most of the county's population. With the exception of Vernonia residents, those who live more than a mile from US 30 do not have convenient access to transit options. However, fixed route service for those currently unserved by transit may not be a cost-effective measure if ridership demand is insufficient to cover the expected increase in maintenance and operating costs of the expanded transit service.

Increasing motor vehicle traffic will likely increase bus cycle times, thus increasing travel times on transit and increasing headways (which are already more than an hour) between buses. This is typical for transit service in rural counties, with service generally being adequate for the demand. Transit service is currently not provided over the weekend on any of the routes, and only three days per week on the route serving Vernonia. While transit service is provided every weekday along US 30 and serves the typical business hour employee, the existing hours of service are not convenient for those making trips outside of typical business hours. To maintain the same quality of service, the transit system will likely have to increase service levels or purchase additional buses, potentially increasing the cost of the system. Other transit needs include:

- **Sidewalk connections to transit stops:** With an aging population and increased motor vehicle congestion throughout the region, more residents will likely turn to the transit system as a means of traveling in the county. Transit access should be a comfortable experience for passengers and those considering riding transit. Several roadways adjacent to existing transit stops lack sidewalk coverage and safe crossing opportunities. This creates uncomfortable conditions for transit passengers seeking to access their bus stop or final destination. It is also a deterrent for some potential transit users, including elderly users and persons with disabilities. Sidewalk infill or other pedestrian facilities along these routes is needed to encourage more ridership.
- **Pedestrian crossings near bus stops:** Many bus stops in the county lack convenient and safe roadway crossings nearby. Pedestrians will generally not walk significantly out of direction to cross a roadway. They will likely either avoid the area, or cross illegally at mid-block locations. With an expected increase in transit ridership, more roadway crossing demand will likely occur near bus stops. New or enhanced roadway crossings will be needed, especially near bus stops along US 30. Enhancements may include pedestrian refuge islands, high visibility markings, increased signage or lighting, or pedestrian activated signals. Development of additional pedestrian crossings near bus stops should be done in consultation with Columbia County Rider.
- **Bus stops with shelters and other amenities:** Many bus stops in Columbia County consist of a pole indicating the bus route serving the stop. Provision of passenger amenities at bus stops creates a more pleasant and attractive environment for bus riders and may encourage people to use the transit system. Common amenities include: shelters, benches, trash cans, and bus route information. Shelters should be placed at least 2 feet from the curb when facing away from the roadway and at least 4 feet away when facing toward it. The adjacent sidewalk must still have a 5-foot clear passage. Orientation of the shelter should consider prevailing winter winds.

Intersection and Corridor Needs

With the previously stated assumptions (i.e., the projected population and employment growth in Columbia County, baseline roadway improvements, and the same split of travel modes), all study intersections and roadway segments will meet existing OHP Mobility Targets by 2035 during the summer evening peak travel period, see Table A1 and A2 in the appendix. The exception is the northbound segment of US 30, between the Multnomah County border and the South Scappoose Urban Growth Boundary, which is expected to operate slightly over the mobility target for the segment. In addition, while forecasts indicate the Berg Road, Heath Road and Old Rainier Road intersections with US 30 are expected to meet existing OHP mobility target for overall intersection performance, the side roadways at these intersections will experience a high level of delay (equal to a level of service of 'F').

A signal warrant analysis was performed for the unsignalized study intersections with side roads that are forecasted to experience a high level of delay (equal to a level of service of 'F'), including the Berg Road, Heath Road and Old Rainier Road intersections with US 30, to determine if side road traffic volumes will be high enough to justify (i.e., warrant) the construction of traffic signals by 2035. In addition, a signal warrant was assessed at the US 30/Church Road intersection, which is not a study intersection but was reviewed since traffic volumes collected were higher than those at the nearby Berg Road intersection, which experiences a high level of delay for drivers at the US 30 approach.

For this analysis, TPAU's preliminary traffic signal warrants form⁶ was utilized. TPAU uses the MUTCD Signal Warrants 1, Case A and Case B, which deal primarily with high volumes on the intersecting minor roadway and high volumes on the major roadway. Meeting preliminary signal warrants does not guarantee that a signal will be installed. Before a signal can be installed, a field warrant analysis is conducted by the Region. If warrants are met, the State Traffic Engineer will make the final decision on the installation of a signal.

The result of the analysis found that a traffic signal would not be warranted at any of the intersections by 2035 (see the appendix for more information).

Left-turn lane warrants were also assessed at the study intersections without left-turn lanes on the mainline (see the appendix for more information). It was determined that the left-turn lanes would provide little capacity benefit to the intersections. However, they would meet warrants at the Tide Creek Road, Nicolai Road, Neer City Road, and Woodson Road intersections with US 30 and would provide safety benefits by providing a place for decelerating left turning vehicles to move out of the path of through traffic. Keeping those vehicles out of the mainline could prevent rear-end collisions. Two of these intersections (Tide Creek Road and Neer City Road) were identified as high collision locations in Technical Memorandum #6.

⁶ Analysis Procedures Manual, TPAU

Safety Needs

Several locations were identified in Technical Memorandum #6 as high collision locations. With growing traffic volumes, these problematic areas likely will persist, and may even become progressively worse. Identified high collision locations include the two intersections and five roadway segments below:

Intersection Locations:

- US 30/Tide Creek Road (Unsignalized)
- US 30/Neer City Road (Unsignalized)

Roadway Segments Locations:

- OR 47 between Timber Road and Macdonald Road
- OR 47 between Scappoose-Vernonia Highway and North Vernonia UGB
- OR 47 between Apiary Road and Scappoose-Vernonia Highway
- OR 202 between Fishhawk Road and OR 47
- Scappoose Vernonia Highway between OR 47 and Cater Road

Freight Needs

US 30 through Columbia County is a federally designated truck route, and is designated by ODOT as a statewide freight route and a reduction review route. The reduction review route designation requires the review of any proposed changes to US 30 to determine if there will be a reduction of vehicle-carrying capacity. Freight activity, currently about twelve percent of traffic along US 30, could increase by 2035, as much of the employment growth areas are adjacent to the highway.

As detailed in Technical Memorandum #6, US 30 through Columbia County is part of a corridor including Cornelius Pass Road, the Lewis and Clark Bridge over the Columbia River, SR 432, and SR 433 that is used by trucks traveling between Washington County and I-5 to the north. Increased congestion in the Portland metropolitan area may make this corridor a more reliable and attractive route for trucks in the future.

Bridge Needs

Three state bridges and two county bridges were identified in Technical Memorandum #6 as being structurally deficient. Furthermore, Columbia County has imposed weight restrictions on five bridges along major roadways (arterial and collectors), which can restrict the movement of freight. With growing traffic volumes, these problematic areas likely will persist, and may even become progressively worse. Of particular concern is the lack of alternate routes for motor vehicles, pedestrians and bicyclists should these structures fail in a seismic or other event.

Structurally deficient state bridges include:

- Along US 30 (Hwy 2W), over the Clatskanie River east of SE True Haak Road in Clatskanie.
- Along OR 47 (Hwy 102 MP 61.28), over the Nehalem River just west of Mist Drive in Vernonia.
- Along OR 47 (Hwy 102 MP 64.21), crossing Beaver Creek just north of Timber Road.

Structurally deficient county bridges include:

- Along Pebble Creek Road (classified as a minor collector), over Coon Creek south of Vernonia. This bridge is scheduled to be replaced in 2015.
- Along Pebble Creek Road (classified as a minor collector), over Pebble Creek south of Vernonia. This bridge is scheduled to be replaced in 2016.

Weight restricted county bridges include:

- Along Beaver Falls Road (classified as a major collector), over Beaver Creek (MP 9.28), west of Delena Mayger Road.
- Along Beaver Falls Road (classified as a major collector), over Beaver Creek (MP 9.48), east of Delena Mayger Road.
- Along Ross Road (classified as a major collector), over McNulty Creek, north of Millard Road in St Helens.
- Along Pebble Creek Road (classified as a minor collector), over Coon Creek south of Vernonia. This bridge is scheduled to be replaced in 2015.
- Along Pebble Creek Road (classified as a minor collector), over Pebble Creek south of Vernonia. This bridge is scheduled to be replaced in 2016.

Rail Needs

Increased rail use along the US 30 corridor could create a barrier through urban areas of Columbia County, including Columbia City, St. Helens, and Scappoose, at unpredictable and potentially extended periods of time. Required sounding of train horns can be a significant problem for those living close to the tracks. Motor vehicle delay, pedestrian and bicycle travel, and transit routes can all be impacted by longer, more frequent trains along the corridor, including at the Columbia Avenue, West Lane Road, Bennett Road, Millard Road, and Woodson Road crossings. Of particular concern is the potential for motor vehicle queuing for turns off US 30 when those turns are blocked by a train, as well as turns onto the highway from side roads. With growing traffic volumes and increased rail use, these issues likely will persist, and may even become progressively worse. Other rail needs include:

- **Emergency vehicle response:** Emergency response to situations on the other side of the tracks could become progressively worse with response vehicles blocked by potentially more and longer trains.
- **Safety of at-grade rail crossings:** Portland & Western Railroad applied for and was awarded funding for track improvements through Columbia County as part of the Connect Oregon II funding package. The project would have allowed track speeds to increase from 10 to 25 mph through portions of the county, however, the funds were returned as a result of the economic

recession. With the possibility of track improvements allowing for increased train speeds in the future, the need for safety improvements at rail crossings is enhanced.

Air, Pipeline, and Water Needs

No system investment needs have been identified for Columbia County's air, pipeline, or waterway, system through 2035. The county anticipates no investment for these systems in the foreseeable future.

Developing Transportation Solutions

Investments to address the needs of the transportation system through 2035 will be proposed in Technical Memorandum #12. The transportation solutions will be of two types. Those likely to be funded by 2035 will be in the Financially Constrained Transportation System. Projects not likely to be funded by 2035 will be in the Planned Transportation System. Columbia County must make investment decisions to develop a set of transportation improvements that will likely be funded to best meet identified needs through 2035.





Technical Memo #8:

Future Transportation Conditions and Needs

Appendix

Table A1: Intersection Operations (2035 Summer p.m. peak)

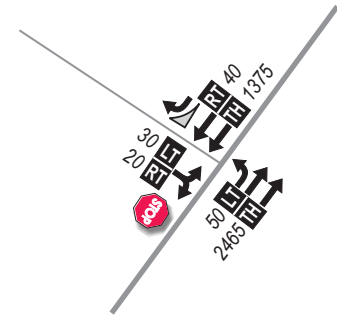
Study Intersection	Mobility Target (Major/Minor Approach)	Major Approach			Minor Approach		
		V/C	Delay	LOS	V/C	Delay	LOS
US 30 @ Berg Road	0.70/0.80	0.11	13.5	B	0.54	64.1	F
US 30 @ Canaan Road	0.70/0.80	0.18	9.1	A	0.31	24.4	C
US 30 @ Tide Creek Road	0.70/0.75	0.03	8.4	A	0.05	15.1	B
US 30 @ Nicolai Road	0.70/0.80	0.43	8.4	A	0.43	38.8	E
US 30 @ Neer City Road	0.70/0.75	0.02	8.3	A	0.07	18.0	C
US 30 @ Graham Road	0.70/0.80	0.01	8.8	A	0.07	17.8	C
US 30 @ Larson Road	0.70/0.75	0.02	11.6	B	0.39	29.0	D
US 30 @ Heath Road	0.70/0.75	0.04	10.1	B	0.39	58.2	F
US 30 @ Old Rainier Road	0.70/0.75	0.01	9.6	A	0.44	58.0	F
US 30 @ Beaver Falls Road	0.70/0.75	0.01	8.9	A	0.23	34.1	D
US 30 @ Delena Road	0.70/0.75	0.01	9.6	A	0.26	32.4	D
US 30 @ Colvin Road	0.70/0.75	0.01	8.5	A	0.09	16.3	C
US 30 @ Woodson Road	0.75/0.75	0.01	8.1	A	0.07	15.3	C
OR 47 @ McDonald Road	0.75/0.75	0.01	7.7	A	0.03	10.2	B
OR 47 @ Timber Road	0.75/0.75	0.01	7.4	A	0.06	11.0	B
OR 47 @ Scappoose-Vernonia Hwy	0.75/0.75	0.01	7.4	A	0.06	9.4	A
OR 47 @ Apiary Road	0.75/0.75	0.01	7.4	A	0.04	9.4	A
OR 47 @ OR 202	0.75/0.75	0.02	7.4	A	0.03	8.9	A
OR 202 @ Fishhawk Road	0.75/0.75	0.01	7.3	A	0.01	9.0	A

Table A2: Highway Capacity Software Results (2035 Summer p.m. peak)

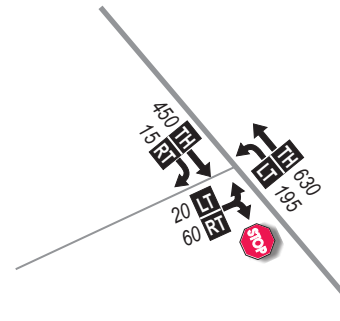
Facility	Location	Begin Milepoint	End Milepoint	Mobility Target	NB/WB V/C	NB/WB LOS	SB/EB V/C	SB/EB LOS
US 30	South Columbia County Border - South Scappose UGB	18.37	19.35	0.70	0.78	D	0.29	A
US 30	North of Scappose UGB - South St Helens UGB	21.37	25.96	0.70	0.59	C	0.34	B
US 30	North St. Helens UGB - South Columbia City UGB	29.66	30.46	0.70	0.43	C	0.24	C
US 30	North Columbia City UGB - Canaan Rd	32.01	34.18	0.70	0.48	D	0.48	C
US 30	Canaan Rd - Tide Creek Rd	34.18	36.52	0.70	0.38	D	0.38	C
US 30	Tide Creek - Nicolai Rd	36.52	40.47	0.70	0.36	D	0.36	C
US 30	Nicolai Rd - Graham Rd	40.47	43.13	0.70	0.34	D	0.34	C
US 30	Graham Rd - East Rainier UGB	43.13	45.87	0.70	0.34	D	0.34	C
US 30	West Rainier UGB - Larson Rd	49.85	50.24	0.70	0.54	D	0.54	D
US 30	Larson Rd - Heath Rd	50.24	52.08	0.70	0.61	D	0.61	D
US 30	Heath Rd - Old Rainier Rd	52.08	53.09	0.70	0.52	D	0.52	D
US 30	Old Rainier Rd - Beaver Falls Rd	53.09	54.28	0.70	0.52	D	0.52	D
US 30	Beaver Falls Rd - East Clatskanie UGB	54.28	60.53	0.70	0.45	C	0.45	D
US 30	West Clatskanie UGB - Colvin Rd	62.41	63.70	0.70	0.29	B	0.29	C
US 30	Colvin Rd - Woodson Rd	63.70	67.94	0.70	0.29	B	0.29	C
US 30	Woodson Rd - West Columbia County Border	67.94	69.96	0.70	0.28	B	0.28	C
OR 47	Timber Rd - McDonald Rd	64.36	68.22	0.75	0.10	A	0.10	A
OR 47	McDonald Rd - South Columbia County Border	68.22	69.13	0.75	0.10	A	0.10	A
OR 47	South Vernonia UGB - Timber Rd	62.79	64.36	0.75	0.11	B	0.11	A
OR 47	Scappose Vernonia Hwy - North Vernonia UGB	57.11	60.39	0.75	0.05	A	0.05	A
OR 47	Apiary Rd - Scappose Vernonia Hwy	53.22	57.11	0.75	0.06	A	0.06	A
OR 47	OR 202 - Apiary Rd	46.14	53.22	0.75	0.03	A	0.03	A
OR 47	West Clatskanie UGB - OR 202	0	11.84	0.75	0.03	A	0.03	A
OR 202	West Columbia County - Fishhawk Rd	39.18	41.77	0.75	0.05	A	0.03	A
OR 202	Fishhawk Rd - OR 47	41.77	46.14	0.75	0.03	A	0.03	A
Scappoose-Vernonia Hwy	OR 47 - Cater Rd	0	14.33	0.75	0.04	A	0.04	A
Scappoose-Vernonia Hwy	Cater Rd - North Scappose UGB	14.33	19.81	0.75	0.03	A	0.03	A
Apiary Rd	Meissner Rd - OR 47	7.44	19.09	0.75	0.02	A	0.02	A
Apiary Rd	Old Rainier Rd - Fernhill Rd	1.00	6.57	0.75	0.02	A	0.02	A
Apiary Rd	Fern Hill Rd - Meissner Rd	6.57	7.44	0.75	0.02	A	0.02	A

Bold Red indicates the roadway segment exceeds mobility target

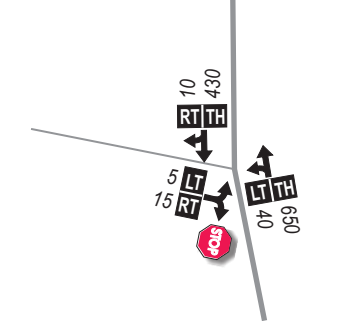
1 US 30 @ Berg Rd.



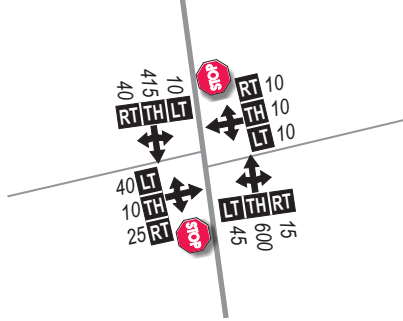
2 US 30 @ Canaan Rd.



3 US 30 @ Tide Creek Rd.



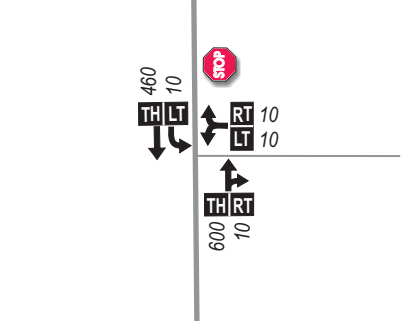
4 US 30 @ Nicolai Rd.



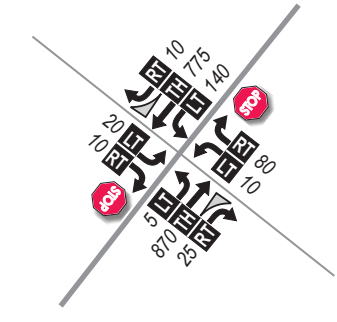
5 US 30 @ Neer City Rd.



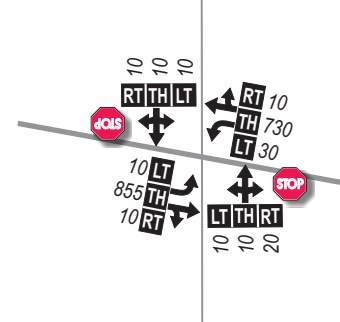
6 US 30 @ Graham Rd.



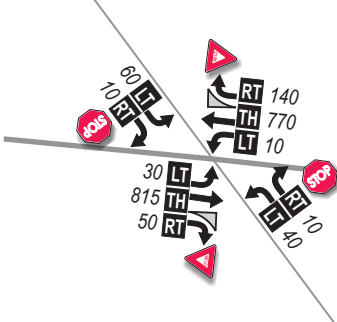
7 US 30 @ Larson Rd.



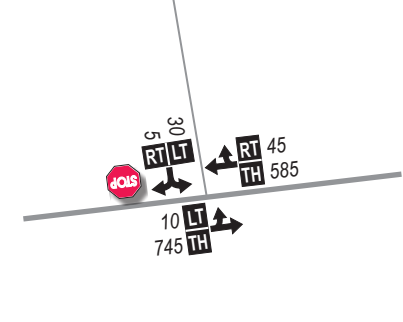
8 US 30 @ Heath Rd.



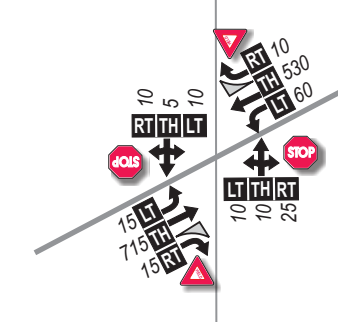
9 US 30 @ Old Rainier Rd.



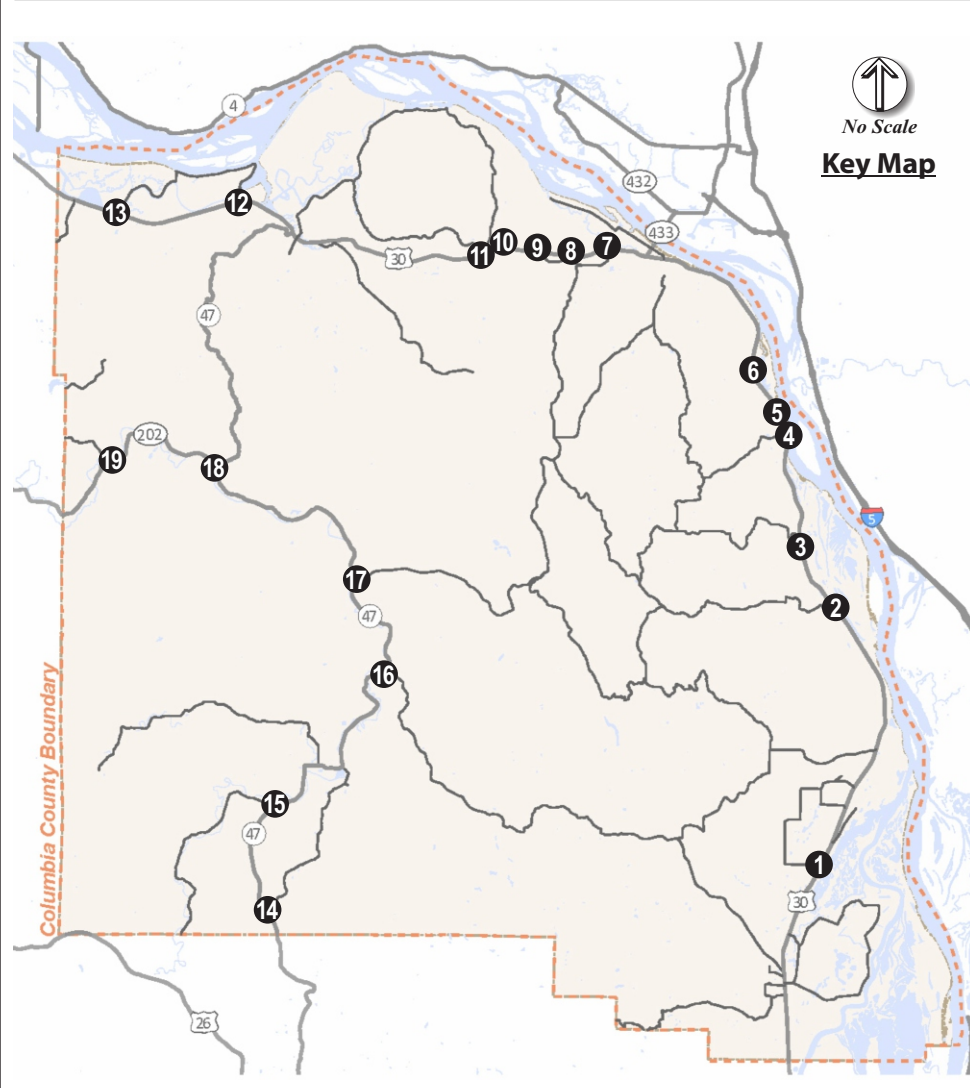
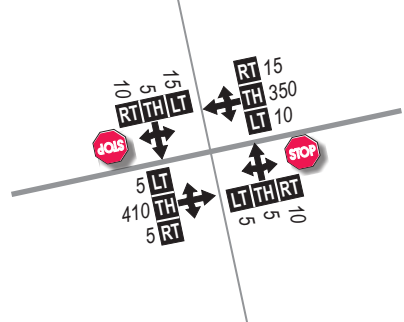
10 US 30 @ Beaver Falls Rd.



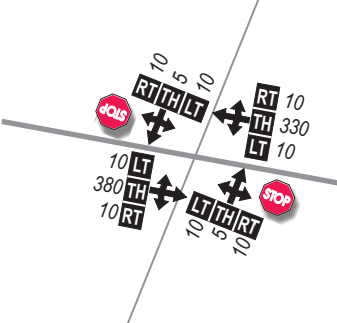
11 US 30 @ Delena Rd.



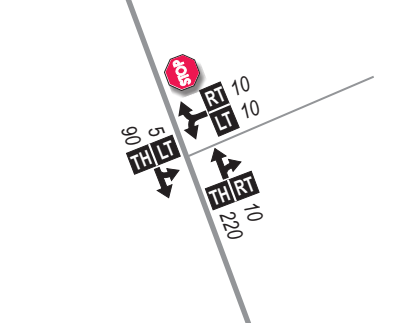
12 US 30 @ Colvin Rd.



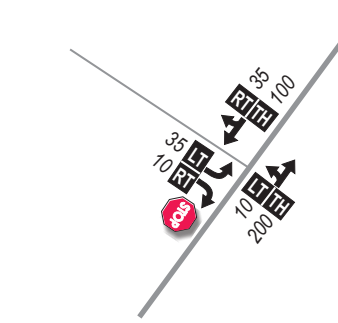
13 US 30 @ Woodson Rd.



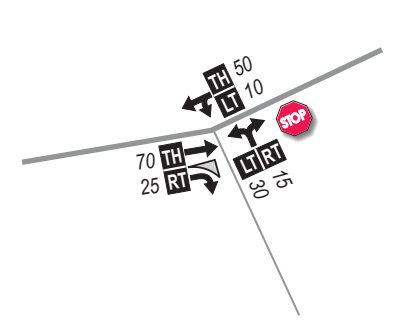
14 OR 47 @ McDonald Rd.



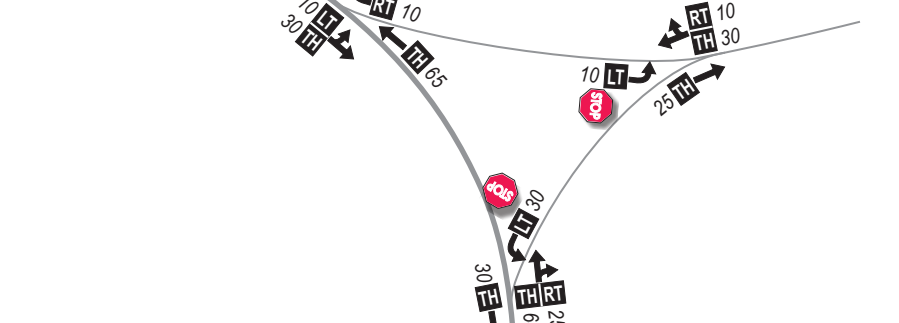
15 OR 47 @ Timber Rd.



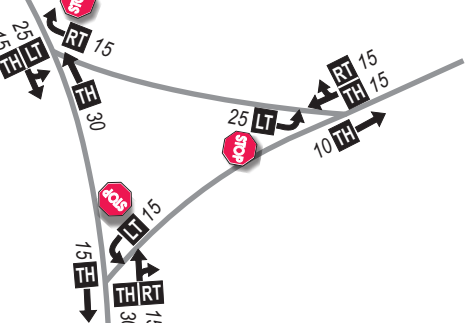
16 OR 47 @ Scappoose-Vernonia Hwy



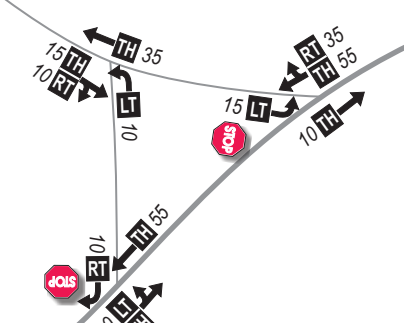
17 OR 47 @ Apiary Rd.



18 OR 47 @ OR 202



19 OR 202 @ Fishhawk Rd.



LEGEND

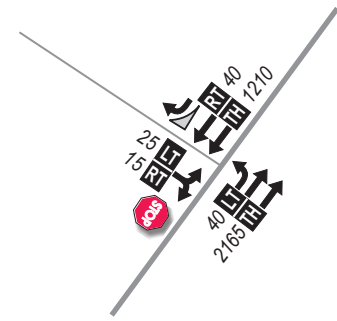
- # - Study Intersection
- STOP - Stop Sign
- Traffic Signal - Traffic Signal
- Yield Sign - Yield Sign
- Lane Configuration - Lane Configuration
- 000 - PM Peak Hour Traffic Volumes
- LT/TH/RT - Volume Turn Movement (Left-Thru-Right)

DKS

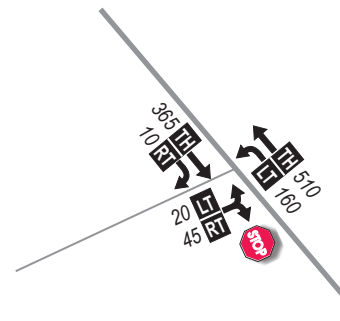
No Scale

Figure A1
2035 Baseline Design Hour
Motor Vehicle Volumes
(PM Peak Hour)

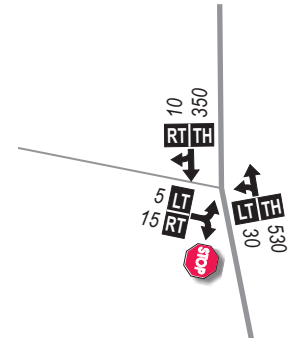
1 US 30 @ Berg Rd.



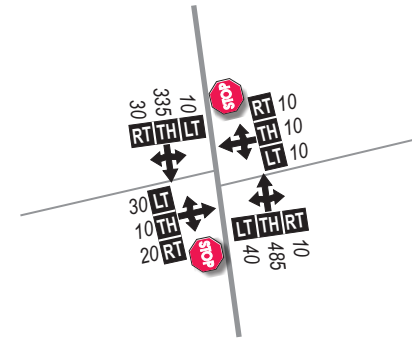
2 US 30 @ Canaan Rd.



3 US 30 @ Tide Creek Rd.



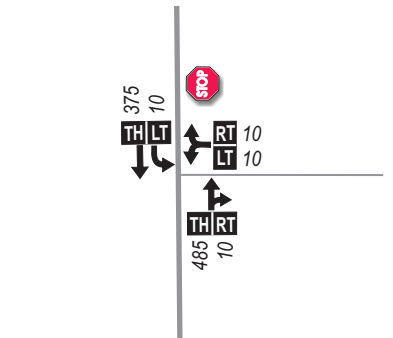
4 US 30 @ Nicolai Rd.



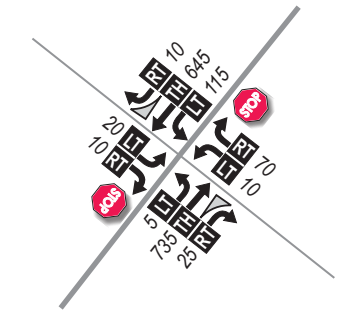
5 US 30 @ Neer City Rd.



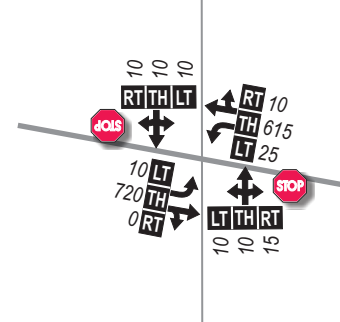
6 US 30 @ Graham Rd.



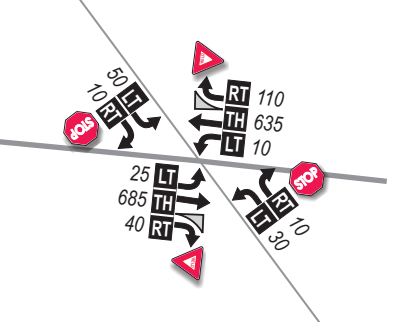
7 US 30 @ Larson Rd.



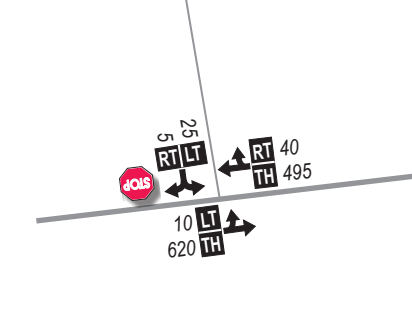
8 US 30 @ Heath Rd.



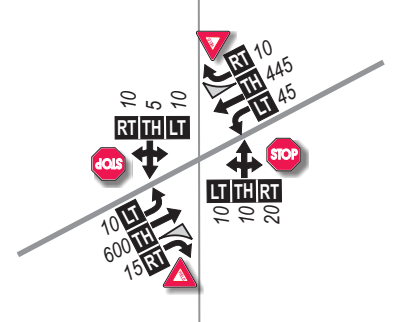
9 US 30 @ Old Rainier Rd.



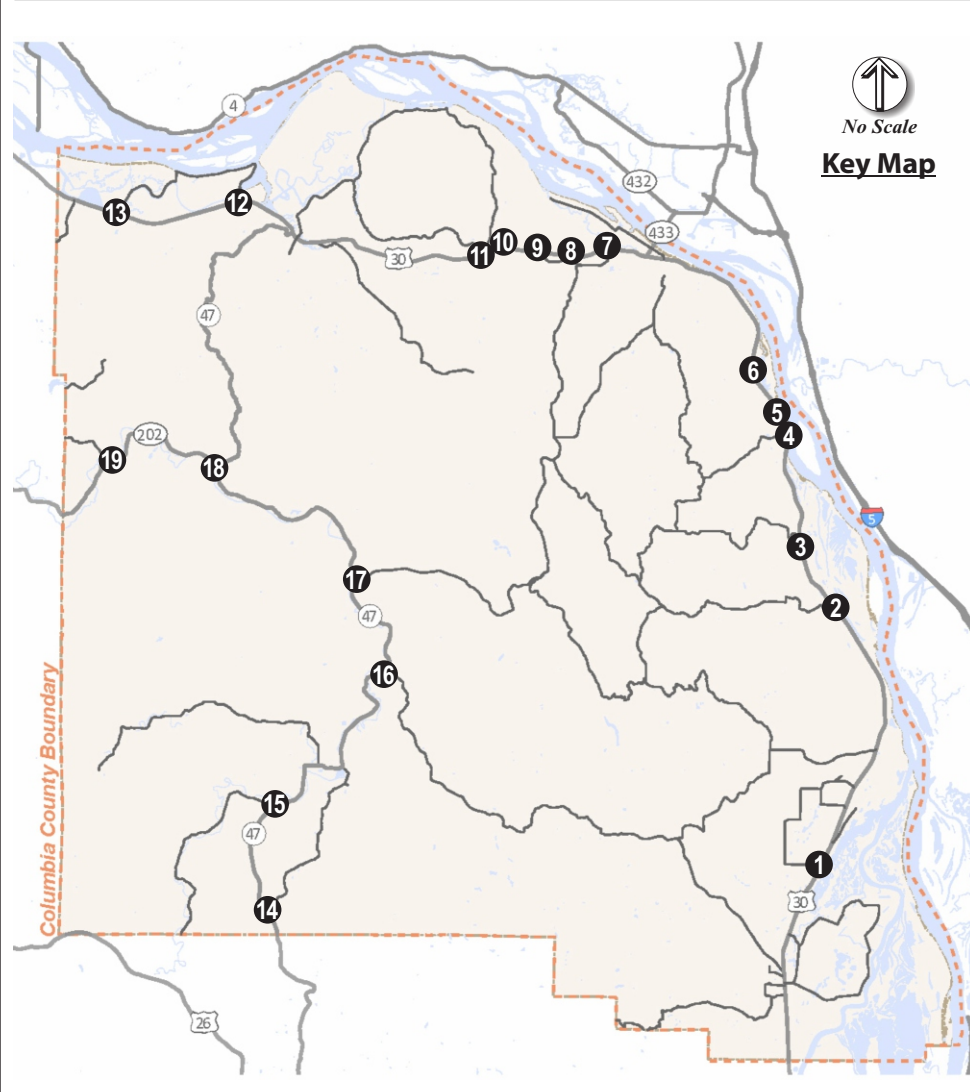
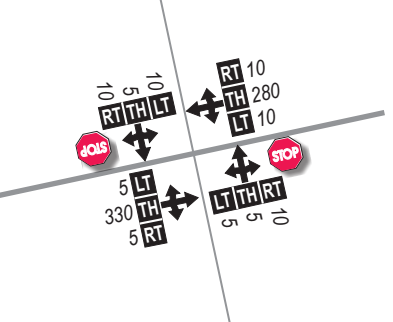
10 US 30 @ Beaver Falls Rd.



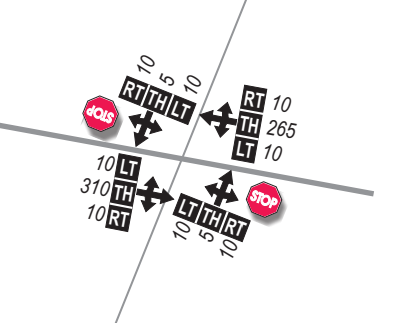
11 US 30 @ Delena Rd.



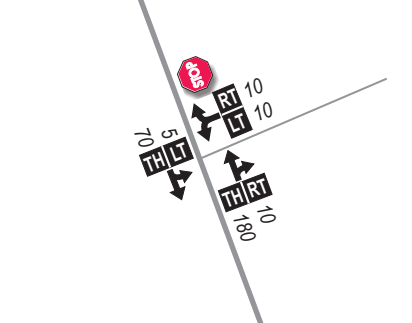
12 US 30 @ Colvin Rd.



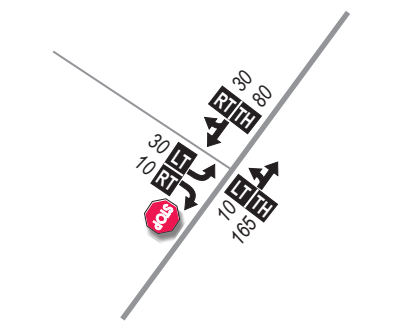
13 US 30 @ Woodson Rd.



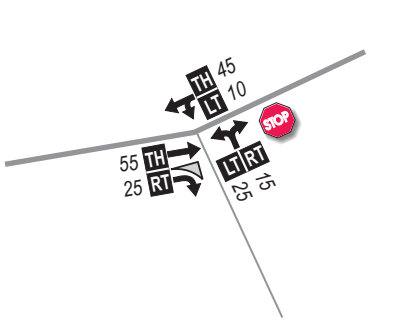
14 OR 47 @ McDonald Rd.



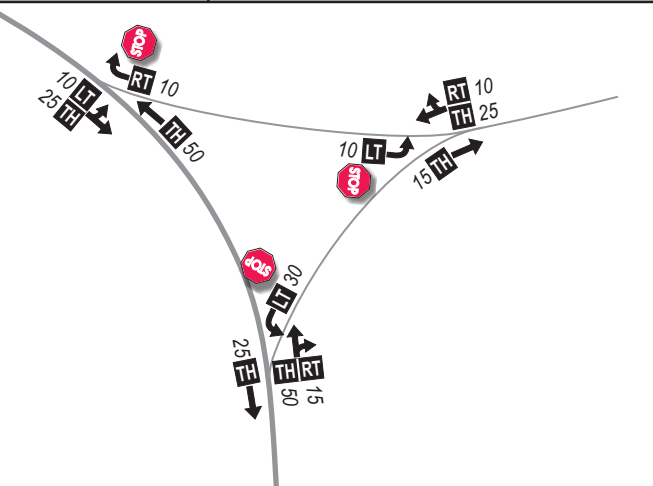
15 OR 47 @ Timber Rd.



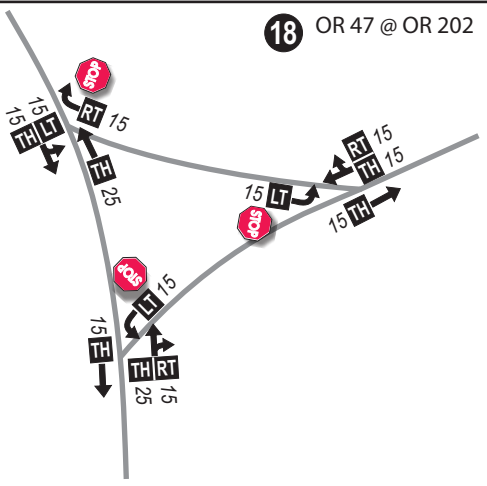
16 OR 47 @ Scappoose-Vernonia Hwy



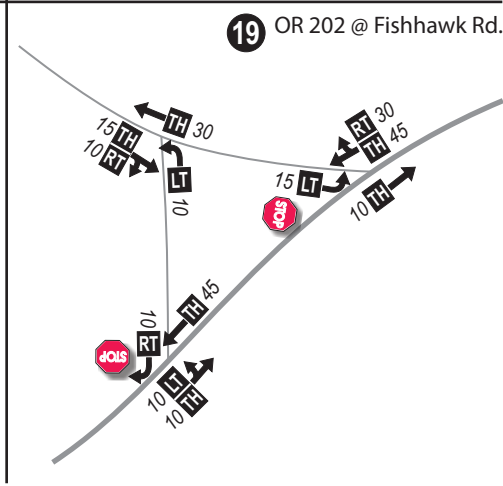
17 OR 47 @ Apiary Rd.



18 OR 47 @ OR 202



19 OR 202 @ Fishhawk Rd.



LEGEND

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

DKS

No Scale

Figure 1b

2035 Baseline Average Weekday Motor Vehicle Volumes (PM Peak Hour)

Intersection Operations Reports – Summer



HCM 2010 TWSC
1: US 30 & Berg Road

12/2/2014

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	40	25	50	2465	1375	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	353	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	4	4
Mvmt Flow	42	26	53	2595	1447	42

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	2850	724	1447	0	-	0
Stage 1	1447	-	-	-	-	-
Stage 2	1403	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	# 14	373	474	-	-	-
Stage 1	186	-	-	-	-	-
Stage 2	197	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	# 12	373	474	-	-	-
Mov Capacity-2 Maneuver	88	-	-	-	-	-
Stage 1	186	-	-	-	-	-
Stage 2	175	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	64	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	474	-	125	-	-
HCM Lane V/C Ratio	0.111	-	0.547	-	-
HCM Control Delay (s)	13.541	-	64.1	-	-
HCM Lane LOS	B		F		
HCM 95th %tile Q(veh)	0.372	-	2.641	-	-

Notes

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

Intersection

Intersection Delay, s/veh 2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	60	195	630	450	15
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	150	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	2	4	8	13
Mvmt Flow	21	63	205	663	474	16

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1548	476	474	0	-	0
Stage 1	474	-	-	-	-	-
Stage 2	1074	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	127	585	1088	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	103	584	1086	-	-	-
Mov Capacity-2 Maneuver	103	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	269	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24	2	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1086	-	269	-	-
HCM Lane V/C Ratio	0.189	-	0.313	-	-
HCM Control Delay (s)	9.086	-	24.4	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0.695	-	1.295	-	-

Notes

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

Intersection

Intersection Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	15	40	650	430	10
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, %	0	18	0	3	7	0
Mvmt Flow	5	16	42	684	453	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1226	458	463	0	-	0
Stage 1	458	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	199	571	1109	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	187	571	1109	-	-	-
Mov Capacity-2 Maneuver	187	-	-	-	-	-
Stage 1	641	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1109	-	377	-	-
HCM Lane V/C Ratio	0.038	-	0.056	-	-
HCM Control Delay (s)	8.374	0	15.1	-	-
HCM Lane LOS	A	A	C		
HCM 95th %tile Q(veh)	0.118	-	0.177	-	-

Notes

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

HCM 2010 TWSC
4: US 30 & Nicolai Road/Driveway

12/2/2014

Intersection

Intersection Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	10	25	10	10	10	45	600	15	10	415	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	10	0	0	0	0	100	0	4	14	0	7	4
Mvmt Flow	42	11	26	11	11	11	47	632	16	11	437	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1224	1221	458	1231	1234	639	479	0	0	647	0	0
Stage 1	479	479	-	734	734	-	-	-	-	-	-	-
Stage 2	745	742	-	497	500	-	-	-	-	-	-	-
Follow-up Headway	4	4	3	4	4	4	2	-	-	2	-	-
Pot Capacity-1 Maneuver	150	181	607	156	178	339	1094	-	-	948	-	-
Stage 1	553	558	-	415	429	-	-	-	-	-	-	-
Stage 2	394	425	-	559	546	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-	-	-	-
Mov Capacity-1 Maneuver	130	166	607	133	163	339	1094	-	-	948	-	-
Mov Capacity-2 Maneuver	130	166	-	133	163	-	-	-	-	-	-	-
Stage 1	516	549	-	387	400	-	-	-	-	-	-	-
Stage 2	347	397	-	516	537	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	39			29			1			0		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	183	181	948	-	-
HCM Lane V/C Ratio	0.043	-	-	0.431	0.174	0.011	-	-
HCM Control Delay (s)	8.44	0	-	38.8	29	8.84	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0.136	-	-	1.976	0.614	0.034	-	-

Notes

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

HCM 2010 TWSC
5: US 30 & Neer City Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	10	25	610	435	10
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, %	0	50	0	6	6	17
Mvmt Flow	11	11	26	642	458	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1158	463	468	0	-	0
Stage 1	463	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Follow-up Headway	4	4	2	-	-	-
Pot Capacity-1 Maneuver	219	511	1104	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	211	511	1104	-	-	-
Mov Capacity-2 Maneuver	211	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1104	-	299	-	-
HCM Lane V/C Ratio	0.024	-	0.07	-	-
HCM Control Delay (s)	8.34	0	18	-	-
HCM Lane LOS	A	A	C		
HCM 95th %tile Q(veh)	0.073	-	0.226	-	-

Notes

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

Intersection

Intersection Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	10	600	10	10	460
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	-	-	-	127	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	11	11	632	11	11	484

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1142	637	0
Stage 1	637	-	-
Stage 2	505	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	224	481	-
Stage 1	531	-	-
Stage 2	610	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	221	481	-
Mov Capacity-2 Maneuver	221	-	-
Stage 1	531	-	-
Stage 2	603	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	952	-
HCM Lane V/C Ratio	-	-	0.069	0.011	-
HCM Control Delay (s)	-	-	17.8	8.824	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.223	0.034	-

Notes

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

Intersection

Intersection Delay, s/veh 2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	80	865	25	140	775
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yeild	-	Yeild
Storage Length	0	-	-	-	123	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	10	5	0	6	5
Mvmt Flow	11	84	911	26	147	816

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1614	911	0
Stage 1	911	-	-
Stage 2	703	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	106	317	-
Stage 1	395	-	-
Stage 2	457	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	85	317	-
Mov Capacity-2 Maneuver	85	-	-
Stage 1	395	-	-
Stage 2	365	-	-

Approach	WB	NB	SB
HCM Control Delay, s	29	0	2

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	243	731	-
HCM Lane V/C Ratio	-	-	0.39	0.202	-
HCM Control Delay (s)	-	-	29	11.164	-
HCM Lane LOS			D	B	
HCM 95th %tile Q(veh)	-	-	1.751	0.75	-

Notes

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

HCM 2010 TWSC
8: Heath Road & US 30

12/2/2014

Intersection												
Intersection Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	855	10	30	730	10	10	10	20	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	167	-	-	161	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	6	5	0	0	0	0	0	0	0
Mvmt Flow	11	900	11	32	768	11	11	11	21	11	11	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	779	0	0	911	0	0	1773	1768	905	1779	1769	774
Stage 1	-	-	-	-	-	-	926	926	-	837	837	-
Stage 2	-	-	-	-	-	-	847	842	-	942	932	-
Follow-up Headway	2	-	-	2	-	-	4	4	3	4	4	3
Pot Capacity-1 Maneuver	847	-	-	731	-	-	65	84	338	65	84	402
Stage 1	-	-	-	-	-	-	325	350	-	364	385	-
Stage 2	-	-	-	-	-	-	359	383	-	318	348	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	847	-	-	731	-	-	54	79	338	52	79	402
Mov Capacity-2 Maneuver	-	-	-	-	-	-	54	79	-	52	79	-
Stage 1	-	-	-	-	-	-	321	345	-	359	368	-
Stage 2	-	-	-	-	-	-	325	366	-	285	343	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			58			68		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	108	847	-	-	731	-	-	87				
HCM Lane V/C Ratio	0.39	0.012	-	-	0.043	-	-	0.363				
HCM Control Delay (s)	58.2	9.304	-	-	10.147	-	-	68.3				
HCM Lane LOS	F	A	B				F					
HCM 95th %tile Q(veh)	1.604	0.038	-	-	0.135	-	-	1.419				
Notes												
~ : Volume Exceeds Capacity; \$: Delay Exceeds 300 Seconds; Error : Computation Not Defined												

Intersection

Intersection Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	825	50	10	770	40	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	None
Storage Length	-	100	162	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	868	53	11	811	42	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	868
Stage 1	-	-	-
Stage 2	-	-	-
Follow-up Headway	-	-	2
Pot Capacity-1 Maneuver	-	-	785
Stage 1	-	-	-
Stage 2	-	-	-
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	-	-	785
Mov Capacity-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	58

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	118	-	-	785	-
HCM Lane V/C Ratio	0.446	-	-	0.013	-
HCM Control Delay (s)	58	-	-	9.648	-
HCM Lane LOS	F	-	-	A	-
HCM 95th %tile Q(veh)	1.95	-	-	0.041	-

Notes

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

HCM 2010 TWSC
 10: US 30 & Beaver Falls Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	745	585	45	30	5
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	5	0	0	0
Mvmt Flow	11	784	616	47	32	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	663	0	1444
Stage 1	-	-	639
Stage 2	-	-	805
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	935	-	480
Stage 1	-	-	530
Stage 2	-	-	443
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	935	-	480
Mov Capacity-2 Maneuver	-	-	144
Stage 1	-	-	530
Stage 2	-	-	434

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	935	-	-	-	160
HCM Lane V/C Ratio	0.011	-	-	-	0.23
HCM Control Delay (s)	8.894	0	-	-	34.1
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.034	-	-	-	0.85

Notes

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

HCM 2010 TWSC
 11: Delena Road/Delena Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	715	15	60	530	10	10	10	25	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None	-	-	None
Storage Length	183	-	150	167	-	150	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	0	3	5	0	0	0	0	0	0	0
Mvmt Flow	16	753	16	63	558	11	11	11	26	11	5	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	558	0	0	753
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Follow-up Headway	2	-	-	2
Pot Capacity-1 Maneuver	1023	-	-	852
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	1023	-	-	852
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	32	37

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	1023	-	-	852	-	-	140
HCM Lane V/C Ratio	0.266	0.015	-	-	0.074	-	-	0.188
HCM Control Delay (s)	32.4	8.574	-	-	9.563	-	-	36.6
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.024	0.047	-	-	0.24	-	-	0.663

Notes

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

HCM 2010 TWSC
12: Colvin Road & US 30

12/2/2014

Intersection												
Intersection Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	410	5	10	350	15	5	5	10	15	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	90	-	-	90	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	9	0	20	8	0	0	0	0	0	0	0
Mvmt Flow	5	432	5	11	368	16	5	5	11	16	5	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	368	0	0	432	0	0	839	831	432	839	831	368
Stage 1	-	-	-	-	-	-	442	442	-	389	389	-
Stage 2	-	-	-	-	-	-	397	389	-	450	442	-
Follow-up Headway	2	-	-	2	-	-	4	4	3	4	4	3
Pot Capacity-1 Maneuver	1202	-	-	1038	-	-	288	307	628	288	307	682
Stage 1	-	-	-	-	-	-	598	580	-	639	612	-
Stage 2	-	-	-	-	-	-	633	612	-	592	580	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1202	-	-	1038	-	-	276	301	628	275	301	682
Mov Capacity-2 Maneuver	-	-	-	-	-	-	276	301	-	275	301	-
Stage 1	-	-	-	-	-	-	595	577	-	636	603	-
Stage 2	-	-	-	-	-	-	609	603	-	574	577	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			15			16		
Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	395	1202	-	-	1038	-	-	350				
HCM Lane V/C Ratio	0.053	0.004	-	-	0.01	-	-	0.09				
HCM Control Delay (s)	14.6	8.008	0	-	8.504	0	-	16.3				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.168	0.013	-	-	0.031	-	-	0.295				

Notes

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

HCM 2010 TWSC
13: Woodson Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	380	10	10	330	10	10	5	10	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	9	0	0	8	0	0	0	0	0	0	0
Mvmt Flow	11	400	11	11	347	11	11	5	11	11	5	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	358	0	0	411	0	0	808	805	405	808	806	353
Stage 1	-	-	-	-	-	-	426	426	-	374	374	-
Stage 2	-	-	-	-	-	-	382	379	-	434	432	-
Follow-up Headway	2	-	-	2	-	-	4	4	3	4	4	3
Pot Capacity-1 Maneuver	1212	-	-	1159	-	-	302	318	650	302	318	695
Stage 1	-	-	-	-	-	-	610	589	-	651	621	-
Stage 2	-	-	-	-	-	-	645	618	-	604	586	-
Time blocked-Platoon, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Capacity-1 Maneuver	1212	-	-	1159	-	-	288	310	650	288	310	695
Mov Capacity-2 Maneuver	-	-	-	-	-	-	288	310	-	288	310	-
Stage 1	-	-	-	-	-	-	603	582	-	643	614	-
Stage 2	-	-	-	-	-	-	622	611	-	582	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	15	15

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	1212	-	-	1159	-	-	383
HCM Lane V/C Ratio	0.07	0.009	-	-	0.009	-	-	0.069
HCM Control Delay (s)	15.3	7.996	0	-	8.135	0	-	15.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.224	0.026	-	-	0.027	-	-	0.22

Notes

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

Intersection

Intersection Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	10	220	10	5	90
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	11	11	244	11	6	100

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	361	250	0
Stage 1	250	-	-
Stage 2	111	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	642	794	-
Stage 1	796	-	-
Stage 2	919	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	639	794	-
Mov Capacity-2 Maneuver	639	-	-
Stage 1	796	-	-
Stage 2	914	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	708	1321	-
HCM Lane V/C Ratio	-	-	0.031	0.004	-
HCM Control Delay (s)	-	-	10.2	7.737	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.097	0.013	-

Notes

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

Intersection

Intersection Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	200	100	35	35	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	7	8	4	0
Mvmt Flow	11	222	111	39	39	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	111	0	111
Stage 1	-	-	111
Stage 2	-	-	244
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1492	-	948
Stage 1	-	-	909
Stage 2	-	-	792
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1492	-	948
Mov Capacity-2 Maneuver	-	-	634
Stage 1	-	-	909
Stage 2	-	-	786

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1492	-	-	-	634	948
HCM Lane V/C Ratio	0.007	-	-	-	0.061	0.012
HCM Control Delay (s)	7.431	0	-	-	11	8.8
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.023	-	-	-	0.196	0.036

Notes

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

HCM 2010 TWSC
 16: Scappoose- Vernonia Hwy & OR 47

12/2/2014

Intersection

Intersection Delay, s/veh 2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	70	25	10	50	30	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	50	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	27	6	9
Mvmt Flow	78	28	11	56	33	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	78
Stage 1	-	-	-
Stage 2	-	-	-
Follow-up Headway	-	-	2
Pot Capacity-1 Maneuver	-	-	1533
Stage 1	-	-	-
Stage 2	-	-	-
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	-	-	1533
Mov Capacity-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	863	-	-	1533	-
HCM Lane V/C Ratio	0.058	-	-	0.007	-
HCM Control Delay (s)	9.4	-	-	7.365	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.184	-	-	0.022	-

Notes

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

Intersection

Intersection Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	0	65	25	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	33	0	72	28	0	33

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	105	72	0
Stage 1	72	-	-
Stage 2	33	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	856	996	-
Stage 1	912	-	-
Stage 2	950	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	856	996	-
Mov Capacity-2 Maneuver	856	-	-
Stage 1	912	-	-
Stage 2	950	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	856	1541	-
HCM Lane V/C Ratio	-	-	0.039	-	-
HCM Control Delay (s)	-	-	9.4	0	-
HCM Lane LOS			A	A	
HCM 95th %tile Q(veh)	-	-	0.121	0	-

Notes

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

Intersection

Intersection Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	0	30	15	0	15
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	90	90	90	90	90	90
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	17	0	33	17	0	17

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	59	42	0
Stage 1	42	-	-
Stage 2	17	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	953	1004	-
Stage 1	986	-	-
Stage 2	1011	-	-
Time blocked-Platoon, %			-
Mov Capacity-1 Maneuver	953	1004	-
Mov Capacity-2 Maneuver	953	-	-
Stage 1	986	-	-
Stage 2	1011	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	953	1525	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS			A	A	
HCM 95th %tile Q(veh)	-	-	0.053	0	-

Notes

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

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	10	55	35	15	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	0	11	61	39	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	100	0	92
Stage 1	-	-	81
Stage 2	-	-	11
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1505	-	913
Stage 1	-	-	947
Stage 2	-	-	1017
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1505	-	913
Mov Capacity-2 Maneuver	-	-	913
Stage 1	-	-	947
Stage 2	-	-	1017

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	-	913
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Control Delay (s)	0	-	-	-	9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.056

Notes

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

Intersection

Intersection Delay, s/veh 0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	10	5	870	775	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	450	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	5	0
Mvmt Flow	21	11	5	916	816	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1742	408	816	0	-	0
Stage 1	816	-	-	-	-	-
Stage 2	926	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	88	598	820	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	87	598	820	-	-	-
Mov Capacity-2 Maneuver	87	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	820	-	122	-	-
HCM Lane V/C Ratio	0.006	-	0.259	-	-
HCM Control Delay (s)	9.419	-	44.5	-	-
HCM Lane LOS	A		E		
HCM 95th %tile Q(veh)	0.019	-	0.965	-	-

Notes

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

Intersection

Intersection Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	30	815	670	140	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	200	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	6	5	4	0	0
Mvmt Flow	32	858	705	147	63	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	705	0	1626
Stage 1	-	-	705
Stage 2	-	-	921
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	902	-	114
Stage 1	-	-	494
Stage 2	-	-	391
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	902	-	110
Mov Capacity-2 Maneuver	-	-	110
Stage 1	-	-	494
Stage 2	-	-	377

Approach	EB	WB	SB
HCM Control Delay, s	0	0	71

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	902	-	-	-	123
HCM Lane V/C Ratio	0.035	-	-	-	0.599
HCM Control Delay (s)	9.136	-	-	-	70.7
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.109	-	-	-	3.011

Notes

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

Intersection

Intersection Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	10	65	0	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	0	11	72	0	11	33

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	128	72	0
Stage 1	72	-	-
Stage 2	56	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	830	996	-
Stage 1	912	-	-
Stage 2	927	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	824	996	-
Mov Capacity-2 Maneuver	824	-	-
Stage 1	912	-	-
Stage 2	921	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	2

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	996	1541	-
HCM Lane V/C Ratio	-	-	0.011	0.007	-
HCM Control Delay (s)	-	-	8.7	7.353	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	0.034	0.022	-

Notes

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

Intersection

Intersection Delay, s/veh 3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	15	30	0	25	15
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	90	90	90	90	90	90
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	0	17	33	0	28	17

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	105	33	0
Stage 1	33	-	-
Stage 2	72	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	898	1015	-
Stage 1	995	-	-
Stage 2	956	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	882	1015	-
Mov Capacity-2 Maneuver	882	-	-
Stage 1	995	-	-
Stage 2	939	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	5

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1015	1547	-
HCM Lane V/C Ratio	-	-	0.016	0.018	-
HCM Control Delay (s)	-	-	8.6	7.37	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	0.05	0.055	-

Notes

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

Intersection

Intersection Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	10	55	0	0	10
Conflicting Peds, #/hr	0	0	0	0	1	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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	11	11	61	0	0	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	62	0	95
Stage 1	-	-	62
Stage 2	-	-	33
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1554	-	909
Stage 1	-	-	966
Stage 2	-	-	995
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1554	-	901
Mov Capacity-2 Maneuver	-	-	901
Stage 1	-	-	965
Stage 2	-	-	987

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1554	-	-	-	1008
HCM Lane V/C Ratio	0.007	-	-	-	0.011
HCM Control Delay (s)	7.333	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.022	-	-	-	0.033

Notes

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

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	25	30	10	10	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	28	33	11	11	0

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	44	0	67
Stage 1	-	-	39
Stage 2	-	-	28
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1577	-	943
Stage 1	-	-	989
Stage 2	-	-	1000
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1577	-	943
Mov Capacity-2 Maneuver	-	-	943
Stage 1	-	-	989
Stage 2	-	-	1000

Approach

HCM Control Delay, s EB 0 WB 0 SB 9

Minor Lane / Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1577	-	-	-	943
HCM Lane V/C Ratio	-	-	-	-	0.012
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.036

Notes

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

Intersection

Intersection Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	15	15	15	25	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	11	7	0
Mvmt Flow	0	17	17	17	28	0

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	33	0	42	25
Stage 1	-	-	25	-
Stage 2	-	-	17	-
Follow-up Headway	2	-	4	3
Pot Capacity-1 Maneuver	1592	-	957	1057
Stage 1	-	-	985	-
Stage 2	-	-	993	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	1592	-	957	1057
Mov Capacity-2 Maneuver	-	-	957	-
Stage 1	-	-	985	-
Stage 2	-	-	993	-

Approach	EB	WB	SB
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HCM Control Delay, s 0 0 9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
-------------------------	-----	-----	-----	-----	-------

Capacity (veh/h)	1592	-	-	-	957
HCM Lane V/C Ratio	-	-	-	-	0.029
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.09

Notes

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

Intersection

Intersection Delay, s/veh 1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	0	0	35	15	10
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	0	0	39	17	11

Major/Minor

	Minor2	Major1			Major2	
Conflicting Flow All	61	22	28	0	-	0
Stage 1	22	-	-	-	-	-
Stage 2	39	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	950	1061	1599	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	950	1061	1599	-	-	-
Mov Capacity-2 Maneuver	950	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	989	-	-	-	-	-

Approach

HCM Control Delay, s EB NB SB
 9 0 0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1599	-	950	-	-
HCM Lane V/C Ratio	-	-	0.012	-	-
HCM Control Delay (s)	0	-	8.8	-	-
HCM Lane LOS	A		A		
HCM 95th %tile Q(veh)	0	-	0.035	-	-

Notes

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

Intersection Operations Reports – Average Weekday

HCM 2010 TWSC
1: US 30 & Berg Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	25	15	40	2165	1210	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	353	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	2	4	4
Mvmt Flow	26	16	42	2279	1274	42

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	2498	637	1274	0	-	0
Stage 1	1274	-	-	-	-	-
Stage 2	1224	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	# 24	425	552	-	-	-
Stage 1	230	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	# 22	425	552	-	-	-
Mov Capacity-2 Maneuver	114	-	-	-	-	-
Stage 1	230	-	-	-	-	-
Stage 2	226	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	552	-	157	-	-
HCM Lane V/C Ratio	0.076	-	0.268	-	-
HCM Control Delay (s)	12.06	-	36.1	-	-
HCM Lane LOS	B		E		
HCM 95th %tile Q(veh)	0.247	-	1.026	-	-

Notes

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

Intersection

Intersection Delay, s/veh 2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	45	160	510	365	10
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Free
Storage Length	0	-	150	-	-	130
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	2	4	8	13
Mvmt Flow	21	47	168	537	384	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1258	386	384	0	-	0
Stage 1	384	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	190	657	1174	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	163	656	1172	-	-	-
Mov Capacity-2 Maneuver	163	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18	2	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1172	-	340	-	-
HCM Lane V/C Ratio	0.144	-	0.201	-	-
HCM Control Delay (s)	8.586	-	18.2	-	-
HCM Lane LOS	A		C		
HCM 95th %tile Q(veh)	0.501	-	0.74	-	-

Notes

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

HCM 2010 TWSC
 3: US 30 & Tide Creek Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	15	30	530	350	10
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, %	0	18	0	3	7	0
Mvmt Flow	5	16	32	558	368	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	995	374	379	0	-	0
Stage 1	374	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	274	638	1191	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	263	638	1191	-	-	-
Mov Capacity-2 Maneuver	263	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	519	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1191	-	470	-	-
HCM Lane V/C Ratio	0.027	-	0.045	-	-
HCM Control Delay (s)	8.105	0	13	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.082	-	0.14	-	-

Notes

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

HCM 2010 TWSC
4: US 30 & Nicolai Road/Driveway

12/2/2014

Intersection

Intersection Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	10	20	10	10	10	40	485	10	10	335	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	10	0	0	0	0	100	0	4	14	0	7	4
Mvmt Flow	32	11	21	11	11	11	42	511	11	11	353	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1000	994	368	1005	1005	516	384	0	0	521	0	0
Stage 1	389	389	-	600	600	-	-	-	-	-	-	-
Stage 2	611	605	-	405	405	-	-	-	-	-	-	-
Follow-up Headway	4	4	3	4	4	4	2	-	-	2	-	-
Pot Capacity-1 Maneuver	214	247	682	222	243	406	1186	-	-	1056	-	-
Stage 1	619	612	-	491	493	-	-	-	-	-	-	-
Stage 2	468	491	-	626	602	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-	-	-	-
Mov Capacity-1 Maneuver	192	232	682	198	228	406	1186	-	-	1056	-	-
Mov Capacity-2 Maneuver	192	232	-	198	228	-	-	-	-	-	-	-
Stage 1	588	604	-	466	468	-	-	-	-	-	-	-
Stage 2	423	466	-	588	594	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	23			21			1			0		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1186	-	-	262	252	1056	-	-
HCM Lane V/C Ratio	0.036	-	-	0.241	0.125	0.01	-	-
HCM Control Delay (s)	8.147	0	-	23.1	21.3	8.443	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.11	-	-	0.919	0.423	0.03	-	-

Notes

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

HCM 2010 TWSC
5: US 30 & Neer City Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	10	15	495	350	10
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, %	0	50	0	6	6	17
Mvmt Flow	11	11	16	521	368	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	927	374	379	0	-	0
Stage 1	374	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Follow-up Headway	4	4	2	-	-	-
Pot Capacity-1 Maneuver	300	578	1191	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	294	578	1191	-	-	-
Mov Capacity-2 Maneuver	294	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	569	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1191	-	390	-	-
HCM Lane V/C Ratio	0.013	-	0.054	-	-
HCM Control Delay (s)	8.063	0	14.8	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.04	-	0.171	-	-

Notes

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

Intersection

Intersection Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	10	485	10	10	375
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	-	-	-	127	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	5	0	0	6
Mvmt Flow	11	11	511	11	11	395

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	932	516	0
Stage 1	516	-	-
Stage 2	416	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	298	563	-
Stage 1	603	-	-
Stage 2	670	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	295	563	-
Mov Capacity-2 Maneuver	295	-	-
Stage 1	603	-	-
Stage 2	663	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	387	1056	-
HCM Lane V/C Ratio	-	-	0.054	0.01	-
HCM Control Delay (s)	-	-	14.8	8.443	-
HCM Lane LOS			B	A	
HCM 95th %tile Q(veh)	-	-	0.172	0.03	-

Notes

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

Intersection

Intersection Delay, s/veh 1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	70	730	25	115	645
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yeild	-	Yeild
Storage Length	0	-	-	-	123	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	10	5	0	6	5
Mvmt Flow	11	74	768	26	121	679

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1350	768	0
Stage 1	768	-	-
Stage 2	582	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	155	385	-
Stage 1	461	-	-
Stage 2	527	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	132	385	-
Mov Capacity-2 Maneuver	132	-	-
Stage 1	461	-	-
Stage 2	450	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	2

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	828	-
HCM Lane V/C Ratio	-	-	0.271	0.146	-
HCM Control Delay (s)	-	-	20.8	10.091	-
HCM Lane LOS			C	B	
HCM 95th %tile Q(veh)	-	-	1.073	0.511	-

Notes

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

HCM 2010 TWSC
8: Heath Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	720	10	25	615	10	10	10	15	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	167	-	-	161	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	5	0	6	5	0	0	0	0	0	0	0
Mvmt Flow	11	758	11	26	647	11	11	11	16	11	11	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	658	0	0	768
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Follow-up Headway	2	-	-	2
Pot Capacity-1 Maneuver	939	-	-	828
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	939	-	-	828
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	37	39

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	150	939	-	-	828	-	-	137
HCM Lane V/C Ratio	0.246	0.011	-	-	0.032	-	-	0.231
HCM Control Delay (s)	36.6	8.877	-	-	9.49	-	-	39
HCM Lane LOS	E	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.917	0.034	-	-	0.098	-	-	0.845

Notes

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

Intersection

Intersection Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	695	40	10	635	30	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	Free	-	None
Storage Length	-	100	162	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	6	0	0	5	0	0
Mvmt Flow	732	42	11	668	32	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	732
Stage 1	-	-	-
Stage 2	-	-	-
Follow-up Headway	-	-	2
Pot Capacity-1 Maneuver	-	-	882
Stage 1	-	-	-
Stage 2	-	-	-
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	-	-	882
Mov Capacity-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	-	-	882	-
HCM Lane V/C Ratio	0.235	-	-	0.012	-
HCM Control Delay (s)	31.2	-	-	9.131	-
HCM Lane LOS	D			A	
HCM 95th %tile Q(veh)	0.878	-	-	0.036	-

Notes

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

HCM 2010 TWSC
 10: US 30 & Beaver Falls Road

12/2/2014

Intersection

Intersection Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	620	495	40	25	5
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	5	0	0	0
Mvmt Flow	11	653	521	42	26	5

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	563	0	1216
Stage 1	-	-	542
Stage 2	-	-	674
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1019	-	202
Stage 1	-	-	587
Stage 2	-	-	510
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1019	-	199
Mov Capacity-2 Maneuver	-	-	199
Stage 1	-	-	587
Stage 2	-	-	501

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1019	-	-	-	223
HCM Lane V/C Ratio	0.01	-	-	-	0.142
HCM Control Delay (s)	8.57	0	-	-	23.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.031	-	-	-	0.485

Notes

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

HCM 2010 TWSC
 11: Delena Road/Delena Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	600	15	45	445	10	10	10	20	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yeild	-	-	Yeild	-	-	None	-	-	None
Storage Length	183	-	150	167	-	150	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	6	0	3	5	0	0	0	0	0	0	0
Mvmt Flow	11	632	16	47	468	11	11	11	21	11	5	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	468	0	0	632
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Follow-up Headway	2	-	-	2
Pot Capacity-1 Maneuver	1104	-	-	946
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	1104	-	-	946
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	23	25

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	237	1104	-	-	946	-	-	210
HCM Lane V/C Ratio	0.178	0.01	-	-	0.05	-	-	0.125
HCM Control Delay (s)	23.4	8.292	-	-	9.006	-	-	24.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.632	0.029	-	-	0.158	-	-	0.422

Notes

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

HCM 2010 TWSC
12: Colvin Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	330	5	10	280	10	5	5	10	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	90	-	-	90	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	9	0	20	8	0	0	0	0	0	0	0
Mvmt Flow	5	347	5	11	295	11	5	5	11	11	5	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	295	0	0	347
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Follow-up Headway	2	-	-	2
Pot Capacity-1 Maneuver	1278	-	-	1118
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	1278	-	-	1118
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13	13

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	478	1278	-	-	1118	-	-	454
HCM Lane V/C Ratio	0.044	0.004	-	-	0.009	-	-	0.058
HCM Control Delay (s)	12.9	7.829	0	-	8.251	0	-	13.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.138	0.012	-	-	0.029	-	-	0.184

Notes

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

HCM 2010 TWSC
13: Woodson Road & US 30

12/2/2014

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	310	10	10	265	10	10	5	10	10	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	9	0	0	8	0	0	0	0	0	0	0
Mvmt Flow	11	326	11	11	279	11	11	5	11	11	5	11

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	289	0	0	337
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Follow-up Headway	2	-	-	2
Pot Capacity-1 Maneuver	1284	-	-	1234
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Time blocked-Platoon, %	-	-	-	-
Mov Capacity-1 Maneuver	1284	-	-	1234
Mov Capacity-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	13	13

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	455	1284	-	-	1234	-	-	461
HCM Lane V/C Ratio	0.058	0.008	-	-	0.009	-	-	0.057
HCM Control Delay (s)	13.4	7.827	0	-	7.942	0	-	13.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.184	0.025	-	-	0.026	-	-	0.181

Notes

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

Intersection

Intersection Delay, s/veh 0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	10	180	10	5	70
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	7
Mvmt Flow	11	11	200	11	6	78

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	295	206	0
Stage 1	206	-	-
Stage 2	89	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	700	840	-
Stage 1	833	-	-
Stage 2	940	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	697	840	-
Mov Capacity-2 Maneuver	697	-	-
Stage 1	833	-	-
Stage 2	935	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	762	1372	-
HCM Lane V/C Ratio	-	-	0.029	0.004	-
HCM Control Delay (s)	-	-	9.9	7.635	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	0.09	0.012	-

Notes

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

Intersection

Intersection Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	165	80	30	30	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	7	8	4	0
Mvmt Flow	11	183	89	33	33	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	89	0	295
Stage 1	-	-	89
Stage 2	-	-	206
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1519	-	692
Stage 1	-	-	929
Stage 2	-	-	824
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1519	-	686
Mov Capacity-2 Maneuver	-	-	686
Stage 1	-	-	929
Stage 2	-	-	817

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1519	-	-	-	686	975
HCM Lane V/C Ratio	0.007	-	-	-	0.049	0.011
HCM Control Delay (s)	7.387	0	-	-	10.5	8.7
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.022	-	-	-	0.153	0.035

Notes

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

HCM 2010 TWSC
 16: Scappoose- Vernonia Hwy & OR 47

12/2/2014

Intersection

Intersection Delay, s/veh 2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	55	25	10	45	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Free	-	None	-	None
Storage Length	-	50	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	27	6	9
Mvmt Flow	61	28	11	50	28	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	61
Stage 1	-	-	-
Stage 2	-	-	-
Follow-up Headway	-	-	2
Pot Capacity-1 Maneuver	-	-	1555
Stage 1	-	-	-
Stage 2	-	-	-
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	-	-	1555
Mov Capacity-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1555	-
HCM Lane V/C Ratio	0.05	-	-	0.007	-
HCM Control Delay (s)	9.2	-	-	7.332	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.157	-	-	0.022	-

Notes

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

Intersection

Intersection Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	25	0	50	15	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Free	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	28	0	56	17	0	28

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	84	56	0
Stage 1	56	-	-
Stage 2	28	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	880	1016	-
Stage 1	927	-	-
Stage 2	955	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	880	1016	-
Mov Capacity-2 Maneuver	880	-	-
Stage 1	927	-	-
Stage 2	955	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	880	1562	-
HCM Lane V/C Ratio	-	-	0.032	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS			A	A	
HCM 95th %tile Q(veh)	-	-	0.098	0	-

Notes

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

Intersection

Intersection Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	15	0	25	15	0	15
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	90	90	90	90	90	90
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	17	0	28	17	0	17

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	53	36	0
Stage 1	36	-	-
Stage 2	17	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	960	1011	-
Stage 1	992	-	-
Stage 2	1011	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	960	1011	-
Mov Capacity-2 Maneuver	960	-	-
Stage 1	992	-	-
Stage 2	1011	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	960	1533	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS			A	A	
HCM 95th %tile Q(veh)	-	-	0.053	0	-

Notes

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

Intersection

Intersection Delay, s/veh 1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	10	45	30	15	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	0	11	50	33	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	83	0	78
Stage 1	-	-	67
Stage 2	-	-	11
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1527	-	930
Stage 1	-	-	961
Stage 2	-	-	1017
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1527	-	930
Mov Capacity-2 Maneuver	-	-	930
Stage 1	-	-	961
Stage 2	-	-	1017

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	-	-	930
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.055

Notes

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

Intersection

Intersection Delay, s/veh 0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	20	10	0	735	645	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Yield
Storage Length	0	-	450	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	5	0
Mvmt Flow	21	11	0	774	679	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	1453	339	679	0	-	0
Stage 1	679	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	134	663	923	-	-	-
Stage 1	471	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	134	663	923	-	-	-
Mov Capacity-2 Maneuver	134	-	-	-	-	-
Stage 1	471	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29	0	0

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	923	-	183	-	-
HCM Lane V/C Ratio	-	-	0.173	-	-
HCM Control Delay (s)	0	-	28.7	-	-
HCM Lane LOS	A		D		
HCM 95th %tile Q(veh)	0	-	0.606	-	-

Notes

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

Intersection

Intersection Delay, s/veh 1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	25	685	555	110	50	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	200	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	6	5	4	0	0
Mvmt Flow	26	721	584	116	53	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	584	0	584
Stage 1	-	-	584
Stage 2	-	-	774
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1001	-	515
Stage 1	-	-	561
Stage 2	-	-	458
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1001	-	515
Mov Capacity-2 Maneuver	-	-	162
Stage 1	-	-	561
Stage 2	-	-	446

Approach	EB	WB	SB
HCM Control Delay, s	0	0	35

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1001	-	-	-	183
HCM Lane V/C Ratio	0.026	-	-	-	0.345
HCM Control Delay (s)	8.693	-	-	-	34.7
HCM Lane LOS	A				D
HCM 95th %tile Q(veh)	0.081	-	-	-	1.442

Notes

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

Intersection

Intersection Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	10	50	0	10	25
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	90	90	90	90	90	90
Heavy Vehicles, %	18	0	0	15	0	18
Mvmt Flow	0	11	56	0	11	28

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	106	56	0
Stage 1	56	-	-
Stage 2	50	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	854	1016	-
Stage 1	927	-	-
Stage 2	933	-	-
Time blocked-Platoon, %			-
Mov Capacity-1 Maneuver	848	1016	-
Mov Capacity-2 Maneuver	848	-	-
Stage 1	927	-	-
Stage 2	926	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	2

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1016	1562	-
HCM Lane V/C Ratio	-	-	0.011	0.007	-
HCM Control Delay (s)	-	-	8.6	7.321	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	0.033	0.021	-

Notes

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

Intersection

Intersection Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	15	25	0	15	15
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	90	90	90	90	90	90
Heavy Vehicles, %	0	11	0	0	7	10
Mvmt Flow	0	17	28	0	17	17

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	78	28	0
Stage 1	28	-	-
Stage 2	50	-	-
Follow-up Headway	4	3	-
Pot Capacity-1 Maneuver	930	1022	-
Stage 1	1000	-	-
Stage 2	978	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	920	1022	-
Mov Capacity-2 Maneuver	920	-	-
Stage 1	1000	-	-
Stage 2	967	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9	0	4

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1022	1554	-
HCM Lane V/C Ratio	-	-	0.016	0.011	-
HCM Control Delay (s)	-	-	8.6	7.342	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	0.05	0.033	-

Notes

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

Intersection

Intersection Delay, s/veh 2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	10	45	0	0	10
Conflicting Peds, #/hr	0	0	0	0	1	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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	2	0	0	0
Mvmt Flow	11	11	50	0	0	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	51	0	84
Stage 1	-	-	51
Stage 2	-	-	33
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1568	-	923
Stage 1	-	-	977
Stage 2	-	-	995
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1568	-	915
Mov Capacity-2 Maneuver	-	-	915
Stage 1	-	-	976
Stage 2	-	-	987

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1568	-	-	-	1022
HCM Lane V/C Ratio	0.007	-	-	-	0.011
HCM Control Delay (s)	7.312	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.021	-	-	-	0.033

Notes

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

Intersection

Intersection Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	15	25	10	10	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	17	28	11	11	0

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	39	0	50
Stage 1	-	-	33
Stage 2	-	-	17
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1584	-	964
Stage 1	-	-	995
Stage 2	-	-	1011
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1584	-	964
Mov Capacity-2 Maneuver	-	-	964
Stage 1	-	-	995
Stage 2	-	-	1011

Approach

HCM Control Delay, s EB 0 WB 9 SB

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	964
HCM Lane V/C Ratio	-	-	-	-	0.012
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.035

Notes

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

Intersection

Intersection Delay, s/veh 2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	15	15	15	15	0
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	11	7	0
Mvmt Flow	0	17	17	17	17	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	33	0	42
Stage 1	-	-	25
Stage 2	-	-	17
Follow-up Headway	2	-	4
Pot Capacity-1 Maneuver	1592	-	957
Stage 1	-	-	985
Stage 2	-	-	993
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1592	-	957
Mov Capacity-2 Maneuver	-	-	957
Stage 1	-	-	985
Stage 2	-	-	993

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1592	-	-	-	957
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.053

Notes

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

Intersection

Intersection Delay, s/veh 1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	10	0	0	30	15	10
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	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	0	0	33	17	11

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	55	22	28	0	-	0
Stage 1	22	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Follow-up Headway	4	3	2	-	-	-
Pot Capacity-1 Maneuver	958	1061	1599	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	958	1061	1599	-	-	-
Mov Capacity-2 Maneuver	958	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	995	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0	0

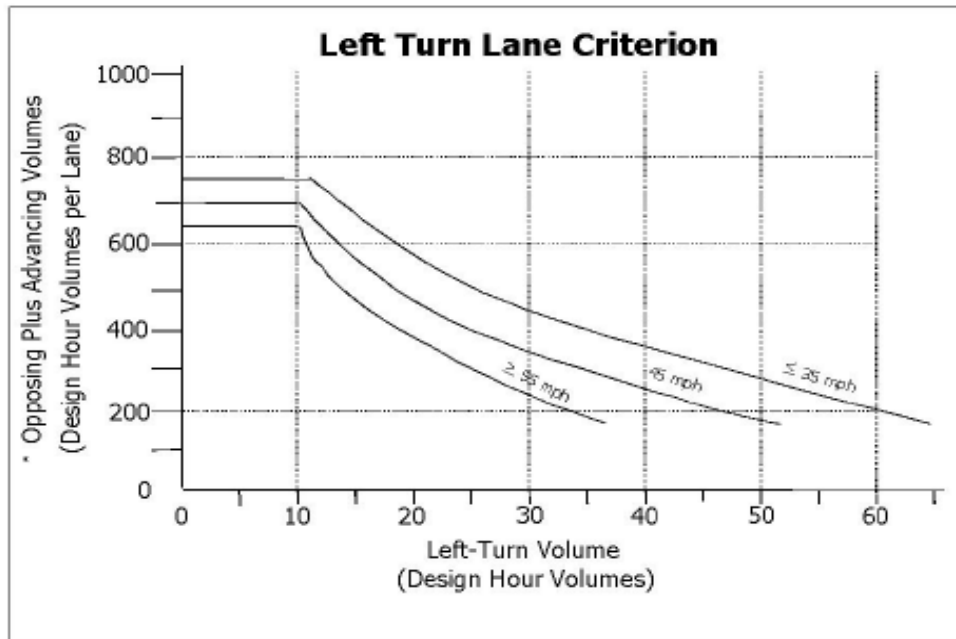
Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1599	-	958	-	-
HCM Lane V/C Ratio	-	-	0.012	-	-
HCM Control Delay (s)	0	-	8.8	-	-
HCM Lane LOS	A		A		
HCM 95th %tile Q(veh)	0	-	0.035	-	-

Notes

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

Warrants





*(Advancing Volume/Number of Advancing Through Lanes) + (Opposing Volume/Number of Opposing Through Lanes))

Left Turn Lane Criterion

Intersection	Movement	Estimated 2035 PM Peak Hour Volume (DHV)	Opposing Plus Advancing Volumes	Turn Lane Warrant Threshold	Is Warrant Met?
US 30 / Tide Creek Road	US 30- Northbound Left	40	1,130	10	Yes
US 30 / Nicolai Road	US 30- Northbound Left	45	1,115	10	Yes
US 30 / Neer City Road	US 30- Northbound Left	25	1,080	10	Yes
US 30 / Colvin Road	US 30- Eastbound Left	5	785	10	No
	US 30- Westbound Left	5	785	10	No
US 30 / Woodson Road	US 30- Eastbound Left	10	740	10	Yes
	US 30- Westbound Left	10	740	10	Yes
OR 47 / McDonald Road	OR 47- Southbound Left	5	325	22	No
OR 47 / Timber Road	OR 47- Northbound Left	10	310	25	No
OR 47 / Scappoose-Vernonia Hwy	OR 47- Southbound Left	10	155	N/A	No
OR 47 / Apiary Road	OR 47- Southbound Left	10	105	N/A	No
OR 47 / OR 202	OR 202- Eastbound Left	25	70	N/A	No
OR 202 / Fishhawk Road	OR 202- Eastbound Left	10	75	N/A	No

Oregon Department of Transportation
Transportation Development Branch
Transportation Planning Analysis Unit

Preliminary Traffic Signal Warrant Analysis¹

Major Street:	US 30	Minor Street:	Berg Road
Project:	Columbia County TSP Update	City/County:	Columbia County
Year:	2035	Alternative:	Baseline (PM Peak DHV)

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		percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

Case B: Interruption of Continuous Traffic

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)

	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+	7,400	39,300	No
	Minor	1	1,850	300	
Case B	Major	2+	11,100	39,300	No
	Minor	1	950	300	

Analyst and Date: 11/10/14	Reviewer and Date:
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¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. 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 Analysis¹

Major Street:	US 30	Minor Street:	Church Road
Project:	Columbia County TSP Update	City/County:	Columbia County
Year:	2035	Alternative:	Baseline (PM Peak DHV)

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		percent of standard warrants	
		100	70	100	70

Case A: Minimum Vehicular Traffic

1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500

Case B: Interruption of Continuous Traffic

1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)

	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+	7,400	39,300	No
	Minor	1	1,850	400	
Case B	Major	2+	11,100	39,300	No
	Minor	1	950	400	

Analyst and Date: 11/10/14 Reviewer and Date:

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. 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 I

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Section J

Memo 9: Transportation Solutions Identification Process

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #9

DATE: May 5, 2015

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates
Edith Lopez Victoria, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
Technical Memorandum #9: Transportation Solutions Identification Process

P11086-022

This memorandum describes the recommended process for creating a prioritized list of transportation improvements that best achieves Columbia County's objectives with the funding that is expected to be available. The outcome of this process will result in "Aspirational" and "Financially Constrained" lists of projects. The Aspirational list includes all projects that the county would implement if funding was not a constraint. The Financially Constrained list is a subset of the Aspirational list including high-priority projects that fit within the level of anticipated funding.

Developing the Financially Constrained Plan

The following process will be utilized to develop the Financially Constrained Transportation System Plan:

- Step 1. Identify Expected Funding:** The first step is to identify the expected amount of funding the county will have available through 2035 to build transportation system improvements. The estimates will be broken out by expected primary funding responsibility (county, state, or developer) and will be based on historic revenue and expenditure data and an assumption that past trends will continue into the future. State funding estimates will be determined in coordination with ODOT Region 2 staff.
- Step 2. Develop Set of Aspirational Projects:** This step involves developing an Aspirational list of projects to address the needs of the future transportation system for all modes, as identified in Technical Memorandum #8. At this point, the list of projects will not be constrained by funding.

The recommended approach for identifying solutions considers four tiers of priorities that put an emphasis on improving system efficiency and management over adding capacity, which often requires greater property impacts and expense. The four priority tiers include:

1. Highest Priority – preserve the function of the system through management practices such as improved traffic signal operations, encouraging alternative modes of travel, and implementation of new policies and standards.
2. High Priority – improve existing facility efficiency through minor enhancement projects that upgrade roads to desired standards, fill important system connectivity gaps, or include safety improvements to intersections and corridors.
3. Moderate Priority – add capacity to the system by widening, constructing major improvements to existing roadways, or extending existing roadways to create parallel routes to congested corridors.
4. Lowest Priority – add capacity to the system by constructing new facilities.

The project team will recommend higher priority solution types to address identified needs unless a lower priority solution is clearly more cost-effective or better supports the goals and objectives of the community.

Step 3. Develop Cost Estimates: Cost estimates will be developed for each Aspirational project and compared to expected funding for projects through 2035 (from Step 1). Each project will be assigned a primary funding responsibility (county, state, or developer).

Step 4. Alternatives Evaluation: Each project from the Aspirational project list will be scored based on the evaluation criteria that was developed in Technical Memorandum #5. In situations where multiple project alternatives are available to address the same or conflicting transportation system needs, the evaluation criteria will be used to identify the project that will best meet the goals of the TSP. The project scoring highest will be retained on the Aspirational project list.

Step 5. Group Projects into Reasonably Fundable Packages: Projects will then be grouped into packages of solutions that could reasonably be expected to be funded and implemented through 2035. The packages will include a prioritized list of county responsible projects, and a prioritized list of state responsible projects that the county could use to make decisions for applying for grants or other funding mechanisms. Developer responsible projects will be built in coordination with land use actions and future development. Only projects associated with new development on vacant parcels will be assumed to occur within the planning horizon of the TSP. While projects related to property re-development may occur within the TSP planning horizon, no funding will be assumed.

Step 6. Develop Hybrid Package of Solutions: The packages will be compared and discussed, which may lead to further refinement of the evaluation criteria or the emergence of a hybrid package to be included as the “Financially Constrained Transportation System.” Projects that do not make the Financially Constrained list will be assigned a priority for implementation beyond the funded list of projects based on individual project scores.

Section J

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Section K

Memo 10: Funding Assumptions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #10

DATE: September 23, 2015

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates

SUBJECT: Columbia County Transportation System Plan Update
Technical Memorandum #10: Funding Assumptions

P11086-022

This memorandum details the transportation funding that can reasonably be expected to be available through 2035. The funding assumptions will help prioritize the investments the county can make in the transportation system, and will be utilized to develop reasonable budgeting assumptions when selecting a set of transportation improvements to meet identified needs over the next 20 years.

Current Funding Sources

The county uses four general funding sources for transportation, including funds from:

- **The Surface Transportation Program (STP)**

The STP includes Federal Highway Trust Funds that are received from federal motor vehicle fuel tax and truck-related weight-mile charges. The six-year Federal Transportation Authorization Act allocates funds through various programs. Federal Highway Trust Funds from the STP flow to the states that use them primarily for safety, highway, and bridge projects. Columbia County receives a portion of these funds based upon actual population.

- **The 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 gradually has 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 30 cents per gallon, the first increase in the state gas tax since 1993.

- **A Natural Resource Depletion Fee**

Columbia County has collected a natural resource depletion fee since 1997. The fee is levied monthly at a rate of 15 cents per ton for depleting natural resources from the soils and waters of the county, or transporting natural resources into the county for commercial, construction or industrial uses.

- **A System Development Charge (SDC)**

The county also collects SDC's from new development, which are a funding source for all capacity adding projects for the transportation system. The funds collected can pay for constructing or improving portions of roadways impacted by applicable development. The SDC is a one-time fee. The transportation facilities SDC rate within the unincorporated areas of the county is currently \$2,272.50 for rural residential uses, and \$2,250 per peak hour trip for other uses.

Revenues and Expenditures

Revenues

Current annual revenues include \$420,000 from the Surface Transportation Program, \$3.6 million from the State gas tax and vehicle registration fees, \$370,000 from the natural resource depletion fee, and \$55,000 from SDC's (see Table 1). State law requires that the county 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 Columbia County, this represents approximately \$35,000 per year. The county also currently receives approximately \$35,000 in other revenues annually (e.g., miscellaneous permit fees).

Assuming, as a conservative estimate,¹ the same levels of funding occur in the future, Columbia County can expect to receive \$90.6 million in revenue through 2035.

ODOT has also indicated that between \$8 to \$12 million in discretionary state and/or federal funds may be available to invest in Columbia County over the next 20 years² for system modernization and enhancement.

¹ This assumes the population growth rate in Columbia County will be roughly the same as the cost inflation rate, therefore, maintaining existing revenues through 2035.

² The State has not committed any future funding for projects in Columbia County. This assumption is for long-range planning purposes only. This estimate is based on assuming that Columbia County will receive a reasonable

Expenditures

Expenditures include more than just patching roadways. It also includes personnel services, roadway striping, traffic control, vegetation trimming, storm preparation and damage clearing (e.g., snow plowing, landslide clearing), sign maintenance, and roadway engineering.

The county estimates that it needs approximately \$10 million per year (or \$200 million through 2035) to maintain and operate the 553 miles of roadways at status quo, more than double that of the current revenue (\$90.6 million through 2035). This means that over \$5 million per year in needed roadway maintenance and repair work will be deferred.

Deferring necessary repair and preservation means spending much more to fix the same roadways later, and repair costs rise exponentially as roadways are left unmaintained. Every \$1 spent to keep a roadway in good condition avoids \$6 to \$14 needed later to rebuild the same roadway once it has deteriorated significantly³.

Heavy truck traffic and wet weather comprise two of the most critical factors in pavement deterioration⁴. Heavy trucks (particularly those hauling gravel, logs, construction materials, overseas containers, agricultural products, garbage) flex the pavement and create spaces underneath. Wet weather, with cracked pavement or poor drainage, can lead to water undermining pavement.

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 state and federal sources may be higher or lower than the range of this estimate. This estimate does not include projects that might be funded through the federal Highway Safety Improvement Program (HSIP).

³ Smart Growth America, Repair Priorities 2014, American Association of State Highway Officials (AASHTO)

⁴ Long-Term Pavement Performance, U.S. Department of Transportation, Federal Highway Administration

Table I: Columbia County Revenue and Expenditures (2015 Dollars)

County Revenue Source*	Average Annual Amount	Estimated Amount Through 2035
Surface Transportation Program (STP)	\$420,000	\$8,400,000
State Gas Tax and License Fees	\$3,615,000	\$72,300,000
Bikeway/Walkway (1% of State Gas Tax and License Fees)	\$35,000	\$700,000
Natural Resource Depletion Fee	\$370,000	\$7,400,000
System Development Charges	\$55,000	\$1,100,000
Permits	\$35,000	\$700,000
Total Revenue	\$4,530,000	\$90,600,000

County Expenditures*	Average Annual Amount	Estimated Amount Through 2035
Personnel Services	\$2,360,000	\$47,200,000
Materials and Services	\$1,610,000	\$32,200,000
Capital Outlay	\$560,000	\$11,200,000
Deferred Maintenance and Repair	\$5,470,000	\$109,400,000
Total Expenditures	\$10,000,000	\$200,000,000

Funding Summary	Average Annual Amount	Estimated Amount Through 2035
Funding Summary for County Roadways (County Revenue – County Expenditures)	-\$5,470,000	-\$109,400,000

*Source: Memorandum from David Hill, Public Works Director, Columbia County Public Works Department, dated May 8, 2015

Funding Summary

Maintaining and operating the roadways requires more revenue than the county is able to generate for transportation uses. Due to funding constraints, the county is deferring over \$5 million per year in needed roadway maintenance and repair work (over \$100 million over the next 20 years). These costs will continue to increase over time, leaving no funding for county street improvement needs (e.g., construction of new facilities) over the next 20 years. The county will only have up to \$12 million from state and/or federal funding sources to cover investments along state highways over the next 20 years.

The county may wish to consider expanding its funding options in order to fund more of the needed roadway maintenance and repair work, or desired transportation 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 county programs; and the availability of state and federal funds. The county should consider all opportunities for providing or enhancing funding for the transportation improvements included in the TSP.

Counties and cities have used the following sources to fund the capital and maintenance aspects of their transportation programs. As described below and summarized in Table 2, they may help to address existing or new needs identified in Columbia County’s TSP.

Table 2: Columbia County Potential Funding Options

Funding Option	Allowed Use of Funds	Existing or New Funding Source	Action Required to Implement	Example Charge	Potential Additional Annual Revenue
County Natural Resource Depletion Fee	Capital improvements or maintenance	Existing	Board of County Commissioners (BCC) action	+10 cents per ton for natural resource depletion	\$250,000
County System Development Charges	Capital improvements	Existing	BCC action	+\$1,000 per peak hour trip for new development	\$25,000
County Transportation Utility Fee	Capital improvements or maintenance	New	BCC action	\$5 per month for residential and commercial users	\$975,000
County Fuel Tax	Capital improvements or maintenance	New	Voter Approval	One cent per gallon	\$192,000
County Vehicle Registration Fee	Capital improvements or maintenance	New	Voter Approval	\$20 for passenger cars, and \$11 for motorcycles per year	\$600,000
County Service District for Roads	Capital improvements or maintenance	New	Voter Approval	\$0.50 per \$1,000 in assessed value	\$1,280,000
County Property Tax Levy	Capital improvements or maintenance	New	Voter Approval	\$0.2456 per \$1,000 in assessed value (per year, for 5 years)	\$630,000 (per year, for 5 years)
Local Improvement Districts	Capital improvements	New	Affected Property Owners	n/a	n/a
Debt Financing	Capital improvements	New	Varies	n/a	n/a
County Truck Impact/ Utility Fee	Capital improvements or maintenance	New	Varies	\$1 for passenger car and trucks, \$370 for small trucks, and \$1,671 for large trucks per year	\$10,000,000

County Natural Resource Depletion Fee

Columbia County has collected a natural resource depletion fee since 1997. The fee is levied monthly at a rate of 15 cents per ton for depleting natural resources from the soils and waters of the county, or transporting natural resources into the county for commercial, construction or industrial uses. Revenue from the fee can be utilized for the construction, reconstruction, improvement, repair and maintenance of roadways in the county. The county currently receives approximately \$370,000 annually from the fee. A recent ballot measure to increase the depletion fee by 35 cents per ton was defeated by voters. A portion of the increase (10 cents per ton) could provide an additional \$250,000 annually for road improvements and maintenance.

County System Development Charges

System development charges (SDC) are fees collected from new development and used as a funding source for all capacity adding projects for the transportation system. The fee is based on the proposed land use and size, and is proportional to each land use's potential PM peak hour vehicle trip generation.

The county currently collects an SDC of \$2,250 per peak hour trip for transportation facilities. The county may wish to update the current SDC rate for transportation facilities and/or pursue a pedestrian and bicycle SDC based on the transportation needs established in the TSP. As an example, an SDC rate of \$3,250 per peak hour trip (and assuming similar growth as the previous years) would provide the county with an additional \$25,000 annually. If an SDC update is desired, a rate study would be required to determine appropriate fees based on capacity projects costs, growth potential, and local preferences.

County Transportation Utility Fee

A transportation utility fee is a recurring monthly charge that could be paid by all residences and businesses within the county. The county can base the fee on the estimated number of trips a particular land use generates or as a flat fee per residence or business. This fee is typically collected through regular utility billing, however, it could be collected as a separate stand-alone bill. Existing law places no express restrictions on the use of transportation utility fee funds, other than the restrictions that normally apply to the use of government funds.⁵ Some local agencies utilize the revenue for any transportation related project, including construction, improvements and repairs; however, many choose self-imposed restrictions or parameters on the use of the funds.

⁵ Implementing Transportation Utility Fees, League of Oregon Cities.

For every \$1.00 per month in charged rates for residential and commercial uses in unincorporated areas of the county, the county could expect to collect nearly \$200,000 annually⁶. Clatskanie, for example, charges a flat fee of \$5 per month for commercial uses, and \$2.50 per month for residential uses.

County Fuel Tax

Twenty-two cities and two counties (including Multnomah and Washington Counties) in Oregon have adopted local fuel taxes ranging from one to five cents per gallon. The fuel distributors pay collected taxes to the jurisdictions monthly. The process for presenting such a tax to voters will need to be consistent with Oregon State law as well as the laws of the county. Nearby locations with a fuel tax include Astoria (three cents per gallon), Warrenton (three cents per gallon), Multnomah County (three cents per gallon), and Washington County (one cent per gallon).

To estimate the potential revenue generated from a local fuel tax in Columbia County, the monthly gallons of fuel utilized per resident was assessed in Oregon, and each of the sixteen jurisdictions where ODOT administers the local fuel taxes⁷. Based on this analysis, Oregon residents utilized on average around 32.06 gallons, Washington County residents around 31.52 gallons, and Multnomah County residents around 25.45 gallons of fuel per month. Assuming the Washington County rate (31.52 gallons per resident, per month), Columbia County residents were estimated to utilize around 1.6 million gallons of fuel per month. A local fuel tax of one cent per gallon could bring an additional, \$16,000 monthly, \$192,000 annually or \$3.8 million through 2035.

County Vehicle Registration Fee

The State of Oregon currently requires vehicle owners to register their vehicles and then renew their registration on a biennial basis. The State's biennial registration fee is \$86 for passenger cars and light trucks and \$48 for motorcycles. In addition to the State fee, Multnomah County is the only county that also has a vehicle registration fee. It adopted a \$38 biennial vehicle registration fee to help fund the Sellwood Bridge replacement. Washington County also recently proposed an annual vehicle registration fee of \$30 for most vehicles and \$17 for motorcycles and mopeds. Vehicle registration fees for counties in Oregon can be enacted by ordinance, but if a county has a population less than 350,000 residents (like Columbia County), then the ordinance requires voter approval. Under State law, 40 percent of the collected fee must go to the cities within a county, unless they agree to a different percentage.

⁶ Based on total tax accounts in unincorporated areas of Columbia County for FY 2014-15 (16,241); Summary of Assessment and Tax Roll 2014-15, Columbia County.

⁷ Based on 2013 population reports compiled by the Population Research Center, Portland State University, and Taxable Fuel Distribution Reports published by ODOT, March 2015.

Columbia County has 50,237 registered passenger cars, and 2,304 registered motorcycles⁸. As an example, with a registration fee of \$20 for passenger cars, and \$11 for motorcycles, the county could expect to collect over \$1 million annually, with \$600,000 going to the county, and \$400,000 distributed to cities.

County Service District for Roads

Counties can also form service districts, which are areas within a county where it provides special services that can be financed by service or user charges, connection charges, district ad valorem taxes, bonds, local option tax levies, or any combination thereof. Voter approval would be required to form such a district, and the district would include a permanent tax rate. Incorporated cities must consent to be included within a service district, or the district boundary could be drawn to include unincorporated areas of the county only.

Clatsop County has six road districts, with separate districts for the incorporated areas (Astoria, Cannon Beach, Gerhart, Seaside, and Warrenton), and unincorporated county. Property owners in unincorporated areas of the county are charged \$1.0175 per \$1,000 in assessed value, which brings in approximately \$2 million per year. Washington County also has an Urban Road Maintenance District that charges property owners in unincorporated areas of the county \$0.2456 per \$1,000 in assessed value, which brings in approximately \$4.1 million per year. Other counties around Oregon charge up to \$4 per \$1,000 in assessed value. The funds are utilized to provide preventive maintenance and safety improvements along public roads within the maintenance district boundaries.

Assuming the Clatsop County rate for unincorporated areas of the county (\$1.0175 per \$1,000 in assessed value), the county could expect to collect around \$2.6 million annually⁹. Assuming the Washington County rate (\$0.2456 per \$1,000 in assessed value) for unincorporated areas of the county, the county could expect to collect around \$630,000 annually.

County Property Tax Levy

Countywide property tax levies are another funding option available to Oregon counties. Voter approval is required to enact a local option tax, and the tax may be imposed for up to five years at a time, at which time a county will need voter approval if it desires to renew the levy. The only exception is that a levy for a specific capital project may be imposed for the expected useful life of the capital project up to a maximum of 10 years. Cities have a legal right to 50 percent of any county road property tax levied within their boundaries, unless they agree to a different percentage. Cities also have the option to adopt charter amendments that exempt property within their boundaries from county road levies altogether. Assuming the Washington County rate (\$0.2456 per \$1,000 in assessed value) as

⁸ Oregon Motor Vehicle Registrations by County, as of December 31, 2014.

⁹ Based on total assessed value of property in unincorporated areas of Columbia County for FY 2014-15 (\$2,561,415,095); Summary of Assessment and Tax Roll 2014-15, Columbia County.

a five year levy for unincorporated areas of the county, the county could expect to collect around \$3.1 million over five years.

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.

Debt Financing

While not a direct funding source, debt financing is another funding method. Through debt financing, available funds can be leveraged and the cost can be spread over the projects useful life. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but it is also viewed as an equitable funding source for larger projects because it spreads the burden of repayment over existing and future customers who will benefit from the projects. One caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations. Three methods of debt financing are listed below:

- General Obligation (GO) Bonds – Subject to voter approval, a county can issue GO bonds to debt finance capital improvement projects. GO bonds are backed by the increased taxing authority of the county, and the annual principal and interest repayment is funded through a new, voter-approved assessment on property throughout the county (i.e., a property tax increase). Depending on the critical nature of projects identified in the Transportation Plan and the willingness of the electorate to accept increased taxation for transportation improvements, voter-approved GO bonds may be a feasible funding option for specific projects. Proceeds may not be used for ongoing maintenance.
- Limited Tax General Obligation (LTGO) Bonds – Limited Tax General Obligation (LTGO) Bonds are similar to General Obligation (GO) bonds; however, they do not have to be voted on by constituents. A county pledges its general revenues to bondholders along with the utility revenues. The advantages to this option are that it does not require reserves or coverage (such as Revenue bonds) and does not require a vote.
- Revenue Bonds – Revenue bonds are debt instruments secured by rate revenue. For a county to issue revenue bonds for transportation projects, it would need to identify a stable source of ongoing rate funding. Interest costs for revenue bonds are slightly higher than for general obligation bonds due to the perceived stability offered by the “full faith and credit” of a jurisdiction.

County Truck Impact/ Utility Fee

Studies have shown that truck traffic causes considerably more damage to roadways than passenger vehicles, and that truck traffic accounts for up to 60 percent of the damage to roadways¹⁰. One study found that the average annual roadway maintenance cost per truck amounts to \$7.60 per mile, while passenger cars cost approximately eight cents per mile¹¹.

This damage to roadways is not accounted for in the traditional system development charge methodology. A review of current practices at peer agencies revealed that only a few are currently assessing truck users for their impact to local roadways. Some agencies collect a fee from new development for generating truck trips (similar to SDC's), while some assess a user fee for the impact of trucks on the roadway network (similar to a transportation utility fee).

The city of Auburn, Washington has adopted truck impact fees that are collected from new development¹² and based on the truck trip generation rates in the ITE Trip Generation Handbook. These impact fees are assessed in addition to the regular transportation impact fees.

The city of Sumner, Washington applies a truck trip factor that increases the ITE trip generation rate associated with their transportation impact fees¹³ that are collected from new development. The factor is applied to account for a passenger car-to-truck equivalent factor and is based on truck percentages by land use obtained from the city's travel demand model.

Other agencies base their fees on a cost per unit of measure for the additional maintenance required due to the influence of the heavy truck traffic.

The town of Los Altos Hills, California charges impact fees for trucks associated with new construction and refuse collection. The impact fees were developed based on the annual cost of maintaining the collector and local streets in the town (arterial roadways were excluded), and the weighted impact of various vehicle types. The weighted impact by vehicle type was determined by multiplying the number of trips by an average equivalent single axle loads (ESAL)¹⁴ factor, which converts a single truck trip to car trips. The resulting percentages were then multiplied by the total cost to maintain the collector and local streets, resulting in annual maintenance costs attributed to various vehicle types. To determine the construction vehicle impact fee, the annual maintenance costs attributed to construction vehicles were divided by the total value of building permits issued during the year, resulting in the impact fee that would be assessed (as a percent of each building permit valuation).

¹⁰ UC Berkeley Institute of Transportation Studies, Pavement Research Center; The University of California Transportation Center; University of California, Davis; Institute of Transportation Studies, Pavement Research Center; Kansas Department of Transportation, K-TRANS Research Program; Urban Renaissance Institute, Toronto, Canada; Illinois Department of Transportation

¹¹ Evaluation of Truck Impacts on Pavement Maintenance Costs, University of California, Davis.

¹² Truck Impact Fees, City of Auburn, Washington, January 2007.

¹³ Transportation Impact Fees, City of Sumner, Washington, 2003.

¹⁴ Based on factors developed by AASHTO, State of Washington, and the State of Montana.

To determine the refuse vehicle impact fee, the annual maintenance costs attributed to refuse vehicles were divided by the total number of refuse accounts, resulting in the impact fee that would be assessed (as a monthly cost for each account).

Boulder County, Colorado charges an oil and gas road deterioration and roadway safety fee that is designed to recoup the incremental costs to the county transportation system resulting from significant heavy truck traffic generated by oil and gas development. The fee is based on the proportional expected road usage, and associated costs to the county, from oil and gas development. The road deterioration fee recoups the costs associated with roadways wearing out quicker, and requiring reconstruction sooner. The roadway safety fee accounts for the widening that is needed in locations with substandard shoulders, as a result of increased truck traffic.

If the county wishes to consider such a fee, a rate study would be required to determine an appropriate methodology, administrative structure, and fees based on maintenance needs and/or capacity project costs, and local preferences. An example methodology is summarized below.

1. Determine the minimum level of quality (i.e., pavement condition index rating) at which county roadways must be maintained.
 - For this example, assume the county would maintain roadways to a “good” pavement rating, based on pavement condition indexing.
2. Determine the annual roadway maintenance costs to maintain the minimum level of quality of county roadways.
 - For this example, assume the county would spend \$10 million annually to maintain roadways to a “good” pavement rating.
3. Determine the existing trips by vehicle type to be applied countywide.
 - For this example, the 59,645 registered vehicles¹⁵ in Columbia County were assumed to each make one trip (i.e., 52,710 passenger car and truck trips, 1,264 small truck trips, and 5,671 large truck trips).
4. Convert trips for all vehicle types to equivalent single axle loads (i.e., ESALs). This is accomplished by multiplying the number of trips per vehicle type (from step 3) by an ESAL factor for the vehicle type.
 - Using the Washington Department of Transportation ESAL factors (i.e., 0.0007 for passenger car and truck trips, 0.25 for small truck trips, and 1.13 for large truck trips), the county would have 6,761 ESALs (i.e., 37 passenger car and truck ESALs, 316 small truck ESALs, and 6,408 large truck ESALs).
5. Determine the annual cost per ESAL by dividing the annual roadway maintenance costs (from step 2) by the total ESAL for the county (via step 4).

¹⁵ Oregon Motor Vehicle Registrations by County, as of December 31, 2014.

- For this example, the annual cost per ESAL would be \$1,479.
6. Determine the annual maintenance fee per trip type. This is done by multiplying the ESAL factors (via step 4) by the annual cost per ESAL (from step 5).
 - For this example, the annual maintenance fee would be \$1 for passenger car and trucks, \$370 for small trucks, and \$1,671 for large trucks.

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 county 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 will increase the amount of funding available for safety projects on local roads. ODOT will distribute safety funding to each ODOT region, which will 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 expects to start its jurisdictionally blind safety approach in 2017 for the 2019-2021 STIP. Meanwhile, ODOT intends to implement a transition plan for 2013-2016 to bridge the gap by allocating funding for local roads primarily focused on a few systemic low cost fixes implemented in the shorter timeframe¹⁶.

¹⁶ ODOT Jurisdictionally Blind Safety Program

Section K

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Section L

Memo II: Transportation Standards

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #11

DATE: September 23, 2015

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates

SUBJECT: **Columbia County Transportation System Plan Update**
Technical Memorandum #11: Transportation Standards

P11086-022

This document provides an overview of the transportation system standards recommended for adoption as part of the TSP update for Columbia County. Included is a detail of the roadway functional classification system, typical designs for roadways and shared use paths, special route designations, access spacing and mobility standards, and guidance for Traffic Impact Analysis requirements. Together, these standards will help ensure future facilities are designed appropriately and that all facilities are managed to serve their intended purpose.

Functional Classification

Traditionally, roadways are classified based on the type of vehicular travel they are intended to serve (local versus through traffic). In Columbia County, the functional classification of a roadway (shown in Figure 1) determines the level of mobility for all travel modes, level of access, and use. The roadway functional classification system recognizes that individual roadways do not act independently, but instead form a network that serves travel needs on a local and regional level. From highest to lowest intended use, the classifications are principal arterial, minor arterial, major collector, minor collector, and local roadways. Roadways with higher intended usage generally limit access to adjacent property in favor of more efficient motor vehicle traffic movement (i.e., mobility). Local roadways with lower intended usage have more driveway access and intersections, and generally accommodate shorter trips to nearby destinations.

- **Principal Arterials** are state roadways. These roadways serve the highest volume of motor vehicle traffic and are primarily used for longer distance regional trips.
- **Minor Arterials** are intended to move traffic between principal arterials and major collector roadways. These roadways generally experience higher traffic volumes and often act as a corridor connecting many parts of the county.
- **Major Collectors** are intended to serve local traffic traveling to and from principal arterial or minor arterial roadways. These roadways provide greater accessibility to neighborhoods, often connecting to major activity generators and providing efficient through movement for local traffic.

- **Minor Collectors** often connect the neighborhoods to the major collector roadways. These roadways serve as major neighborhood routes and generally provide more direct access to properties or driveways than arterial or major collector roadways.
- **Local Roads** provide more direct access to residences. These roadways are often lined with homes and are designed to serve lower volumes of traffic.

The federal government also has a functional classification system that is used to determine federal aid funding eligibility. Roadways federally designated as a major collector, minor arterial, principal arterial, or interstate are eligible for federal aid. Columbia County’s functional classification system uses the same designations as the federal government (e.g., a county designated minor arterial is intended to be the same as a federally designated minor arterial). Future updates to the federal functional classification system should incorporate the designations reflected in the TSP along county roadways.

Functional Classification Changes

Table 1 shows the TSP recommended changes to the existing functional classifications of roadways in Columbia County to better reflect their intended use. Since state highways serve regional travel through the county, they are principal arterial roadways (i.e., US 30, OR 47 and OR 202). Roadways providing primary access to principal arterial roadways are minor arterials. Roadways providing primary access to neighborhoods and activity generators in Columbia County are major or minor collectors. All other roadways are classified as local roads. The updated functional classifications can be seen in Figure 1. The Columbia County functional classification map shows the designations of county and state owned roadways only; refer to the TSP of the respective agency within an Urban Growth Boundary (UGB) for designations of other roadways (e.g., Clatskanie, Columbia City, Rainier, Scappoose, St Helens, or Vernonia).

Table 1: Functional Classification Changes

Roadway	From	To	Change from Prior Functional Classification
Columbia Avenue	Highway 30	Dike Rd	Upgrade from Minor Collector to Major Collector
Church Rd	Highway 30	Hazen Rd	Upgrade from Local Road to Major Collector
Dike Rd (Scappoose)	Johnsons Landing Rd	East Columbia Avenue	Upgrade from Local Road to Minor Collector
Dutch Canyon Rd	Old Portland Rd	Otto Miller Rd	Upgrade from Local Road to Major Collector
Johnsons Landing Rd	Highway 30	Dike Rd	Upgrade from Local Road to Minor Collector
Old Portland Rd	Scappoose City Limits	Highway 30	Upgrade from Local Road to Major Collector
Sykes Rd	Highway 30	Cater Rd	Upgrade from Minor Collector to Major Collector
Wickstrom Rd	Highway 30	Scappoose Vernonia Rd	Upgrade from Local Road to Major Collector
Anliker Rd	Nicolai Rd	Meissener Rd	Downgrade from Major Collector to Minor Collector
Beaver Homes Rd	Nicolai Rd	Barker Rd	Upgrade from Local Road to Minor Collector
Dike Rd (Rainier)	Highway 30	Amundson Rd	Downgrade from Major Collector to Minor Collector
Dike Rd (Rainier)	Amundson Rd	West Terminus	Downgrade from Major Collector to Local Road
Fairview Rd	Nicolai Rd	Holbrook Rd	Downgrade from Major Collector to Local Road
Heath Road	Highway 30	Old Rainier Rd	Upgrade from Local Road to Major Collector
Holbrook Rd	Nicolai Rd	Beaver Homes Rd	Downgrade from Major Collector to Local Road
Neer City Rd	Highway 30	Rainier City Limits	Upgrade from Local Road to Minor Collector
Nicolai Rd	Highway 30	Anliker Rd	Upgrade from Local Road to Major Collector
Keasey Rd	State Street	Creek View Lane	Downgrade from Major Collector to Minor Collector
Keasey Rd	Creek View Lane	West Terminus	Downgrade from Minor Collector to Local Road
Cedar Grove Rd	Swedetown Rd	Lost Creek Rd	Upgrade from Local Road to Minor Collector
Alston Mayger Rd	Highway 30	Mayger Rd	Upgrade from Local Road to Major Collector
Mayger Rd	Alston Mayger Rd	Beaver Falls Rd	Upgrade from Local Road to Major Collector
Delena Mayger Rd	Beaver Falls Rd	Alston Mayger Rd	Downgrade from Major Collector to Local Road
Lost Creek Rd	Highway 30	Cedar Grove Rd	Upgrade from Local Road to Minor Collector
Point Adams Rd	Highway 30	River Front Rd	Downgrade from Minor Collector to Local Road
River Front Rd	Point Adams Rd	Webb District Rd (east end)	Downgrade from Minor Collector to Local Road
Webb District Rd	River Front Rd	River Front Rd	Downgrade from Minor Collector to Local Road
Woodson Rd	Highway 30	Webb District Rd	Downgrade from Minor Collector to Local Road

Figure I - Roadway Functional Classification



Legend Functional Classification

- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Road

- City Limits
- Urban Growth Boundary
- Columbia County

0 1 2 4 6 Miles

Freight and Resource Routes

Figure 2 shows roadways designated to help ensure trucks can efficiently travel through and access major destinations in Columbia County. These routes play a vital role in the economical movement of raw materials and finished products, while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system.

Freight Routes

ODOT has classified US 30 as a freight route and a reduction review route through Columbia County. It is also designated as a truck route by the federal government. Federal truck routes generally require 12-foot travel lanes. Reduction review routes are highways that require review with any proposed changes to determine if there will be a reduction of vehicle-carrying capacity. The TSP update has not changed the ODOT designations.

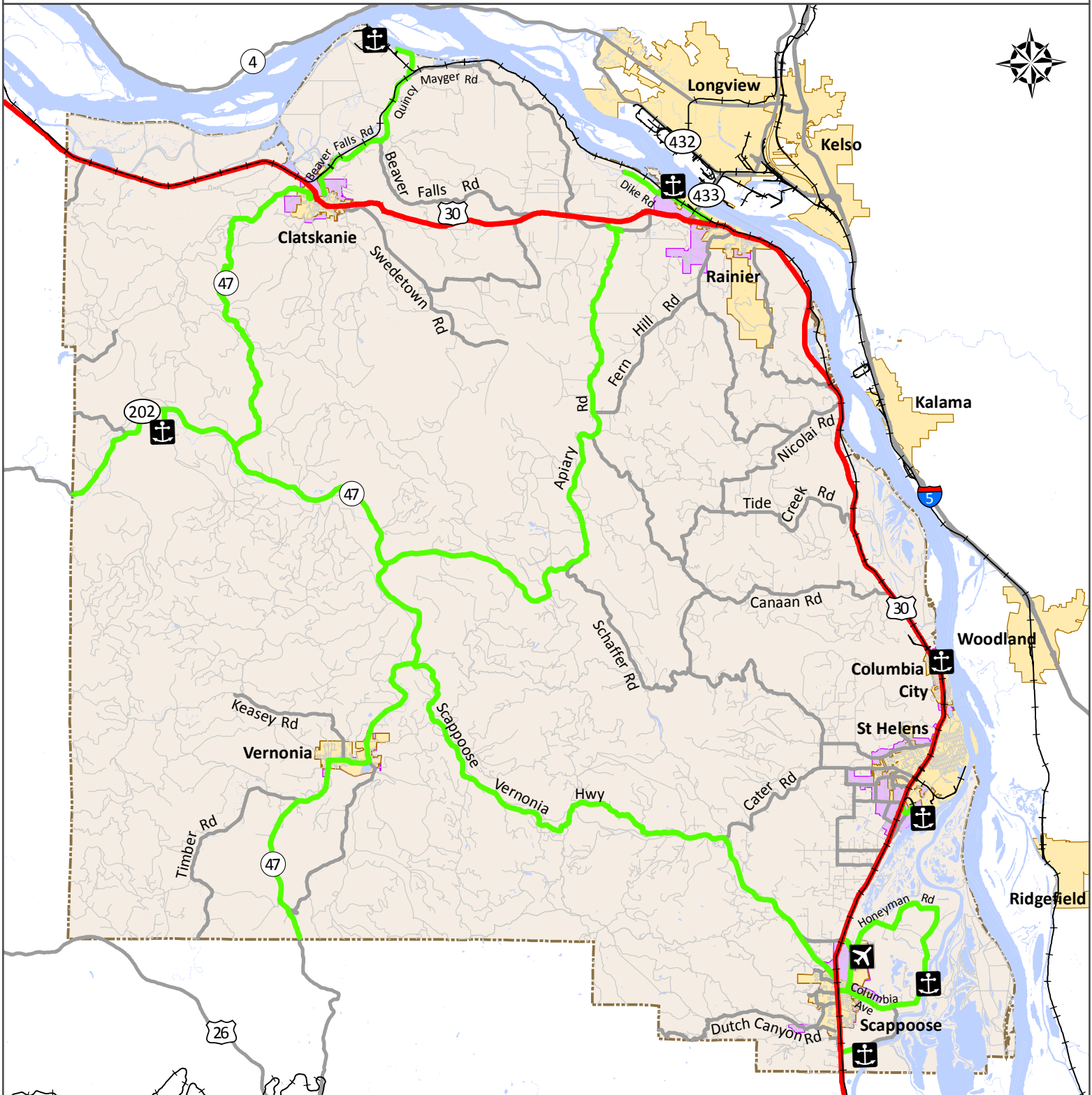
Resource Routes

As part of the TSP update, it is recommended that County “resource routes” be designated to facilitate the movement of truck freight between major destinations (e.g., ports and harbors) and US 30. These roadways serve an important role in the county roadway network and should be designed and managed to safely accommodate the movement of goods. These routes would require a minimum of 12-foot travel lanes with five-foot shoulders and could be considered priority routes maintenance.

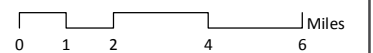
Designated resource routes would include portions of:

- NW 5th Street-Beaver Falls Road, Quincy Mayger Road, and Kallunki Road near Clatskanie;
- Dike Road and Rock Crest Street near Rainier;
- Millard Road and Old Portland Road near St Helens;
- E Columbia Avenue, Honeyman Road, W Lane Road, and Johnson Landing Road near Scappoose; and
- Banzer Road, Apiary Road, Scappoose Vernonia Highway, OR 202, and OR 47.

Figure 2 - Freight and Resource Routes



Legend	ODOT Freight Route and Federal Truck Route	Railroad	City Limits
	County Resource Route	Airport	Urban Growth Boundary
		Major Truck Origin/Destination	Columbia County



Emergency Response Routes

Figure 3 shows designated Emergency Transportation and Lifeline Routes in Columbia County, along with current bridge locations and conditions.

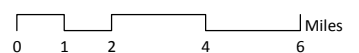
The County, in coordination with other agencies in the Portland/Vancouver metropolitan area, has identified major roadways as Emergency Transportation Routes (ETR). These routes are needed during a major regional emergency or disaster to move response resources such as personnel, supplies, and equipment to heavily damaged areas. Designated routes in Columbia County include US 30, OR 47, OR 202, Timber Road, Apiary Road, and Scappoose Vernonia Highway. The TSP update will formally adopt these route designations, and will prioritize investments along them to preserve the function for emergency response.

The Oregon Highway Plan (OHP) Goal 1, Policy 1E has designated 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. US 30 is the only lifeline route in Columbia County, designated as Tier 1. The TSP update has not changed the OHP designations.

Figure 3 - Emergency Response Routes



Legend	
Emergency Response Routes	Bridge Condition
— Tier 1 Lifeline Route	■ Not Structurally Deficient
— Tier 2 Lifeline Route	■ Structurally Deficient
— Emergency Transportation Route	⊙ Bridge with Load Limits
	■ City Limits
	■ Urban Growth Boundary
	■ Columbia County



Typical Roadway Cross-section Standards

Figures 4a to 4c include three typical standard cross-section types for county roadways outside of an UGB, with guidelines for constrained areas where design elements may need to be reduced shown in Table 2. These are consistent with the current roadway design standards, with the exception of major and minor collector roadways, which now require wider shoulders (5 feet versus 4 feet), and narrower through travel lanes (11 feet versus 12 feet). Local roadways also now require wider shoulders (4 feet versus 3 feet) where the average daily traffic (ADT) exceeds 3,000 vehicles. It is recommended that county roadways inside an UGB be subject to the roadway design standards from the respective city’s TSP (e.g., Clatskanie, Columbia City, Rainier, Scappoose, St Helens, or Vernonia).

The TSP update does not modify the design standards for US 30, OR 47 and OR 202, the county’s only principal arterials. These roadways are state highways and subject to the design criteria in the state’s Highway Design Manual.

Constrained roadway option: The construction of some roadways may be constrained by challenging topography or environmentally sensitive, historic, or developed areas. These roadways may require modified designs to allow for reasonable construction costs. Guidance for modifications to the standard designs is provided in Table 2. Any modification of a standard design requires approval of a variance prior to construction.

	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roadway
Minimum Through Lane Width	N/A	11 feet*	10 feet*	10 feet*	10 feet*
Minimum Shoulder Width		4 feet	4 feet	4 feet	3 feet, if less than 3,000 ADT

* The minimum through lane width along a resource route should be maintained at 12 feet where feasible.

Figure 4a: Minor Arterial Roadway, outside an UGB

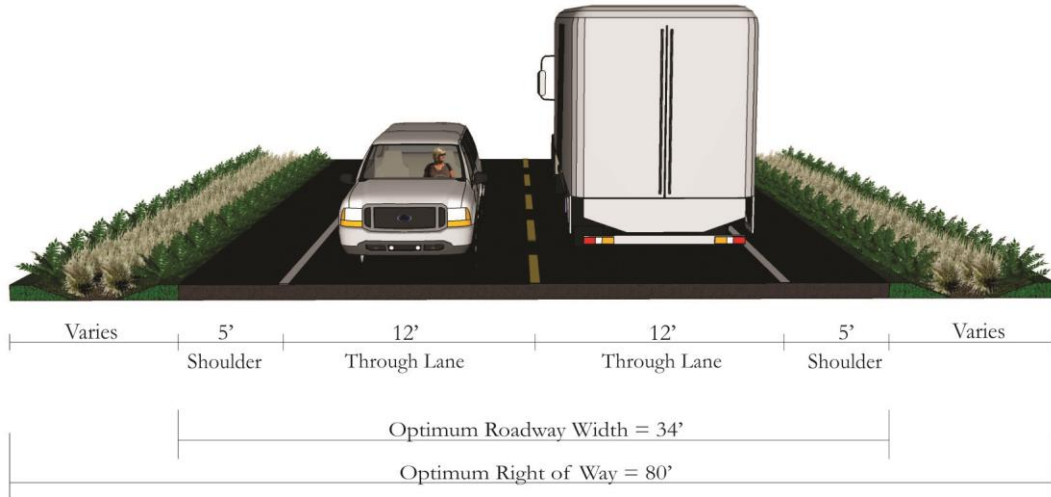


Figure 4b: Major and Minor Collector Roadway, outside an UGB

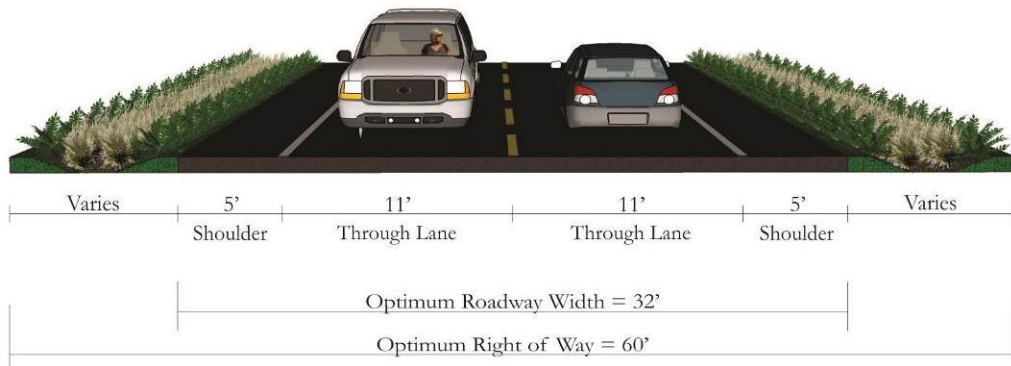
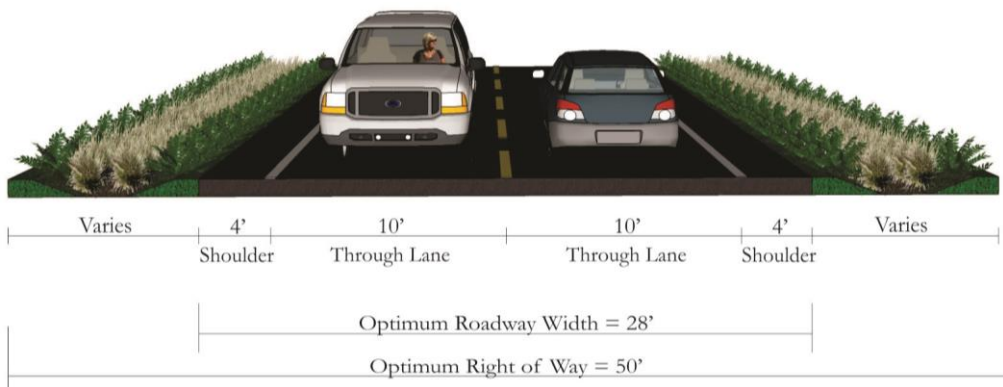


Figure 4c: Local Roadway, outside an UGB



Walking and Biking Design Standards

The following sections detail various walking and biking standards and treatment guidelines.

Walking and Biking Facilities

As shown in Figures 4a to 4c, the existing county roadway design standards will be modified to require wider shoulders along major and minor collector, and local roadways in unconstrained areas. Newly constructed roadways outside an UGB should provide accommodations to walking and biking users via a five-foot paved shoulder along minor arterial, major collector, and minor collector roadways, and a four-foot paved shoulder along local roadways.

The TSP update is recommending that county roadways within an UGB include walking and biking facilities consistent with the roadway design standards from the respective city's TSP. In general, the design should include a minimum five-foot clear throughway for walking along all roadways, and a minimum five-foot striped bike lane along minor arterial and major collector roadways.

Shared-Use Paths

Shared-use paths provide off-roadway facilities for walking and biking travel. Depending on their location, they can serve both recreational and transportation needs. Shared-use path designs vary in surface types and widths. Hard surfaces are generally better for bicycle travel. Widths need to provide ample space for both walking and biking and should be able to accommodate maintenance vehicles.

The TSP update recommends that a paved shared-use path should be 12 feet wide in areas with significant walking or biking demand; otherwise, it should be 10 feet wide (see Figure 5). The Roads Department Director may reduce the width of the typical paved shared-use path to a minimum of eight feet in constrained areas (e.g., steep, environmentally sensitive, historic, or previously developed areas).

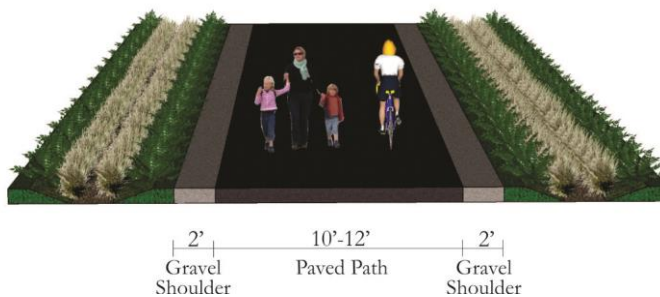


Figure 5: Design Standards for Shared-Use Paths

Roadway and Access Spacing Standards

Access management is a broad set of techniques that balance the need to provide for efficient, safe, and timely travel with the ability to allow access to individual destinations. Appropriate access management standards and techniques can reduce congestion and accident rates, and may lessen the need for construction of additional roadway capacity.

Table 3 identifies new recommended minimum public roadway intersection and minimum private access spacing standards for roadways in Columbia County. New roadways or redeveloping properties must comply with these standards to the extent practical, as determined by the Roads Department Director. As the opportunity arises through redevelopment, roadways not complying with these standards could improve with strategies such as shared access points, access restrictions (through the use of a median or channelization islands), or closure of unnecessary access points, as feasible.

It is recommended that local agencies apply their adopted roadway and access spacing standards to county owned roadways within an UGB, given that they are not less restrictive than the standards identified below. Like roadway design and mobility targets, access spacing standards for state highways are determined by ODOT. ODOT spacing standards are defined in the Oregon Highway Plan, OAR 731-051, and ODOT’s Highway Design Manual.

Table 3: Roadway and Access Spacing Standards

	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local Roadway
Minimum Block Size (Public Roadway to Public Roadway)	See Oregon Highway Plan	265 feet	265 feet	265 feet	265 feet
Minimum Driveway Spacing (Public Roadway to Driveway and Driveway to Driveway)		265 feet	130 feet	65 feet	30 feet

Note: all distances measured from center to center of adjacent approaches.

Mobility Targets

The adoption of mobility targets for roadways and intersections in Columbia County is recommended as part of the TSP update to provide a metric for assessing the impacts of new development on the existing transportation system and for identifying where capacity improvements may be needed. They are the basis for requiring improvements needed to sustain the transportation system as growth and development occur. Two methods to gauge intersection operations include volume-to-capacity (v/c) ratios and level of service (LOS).

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

All roadways and intersections owned by Columbia County must operate at or below the following recommended mobility targets. A local agency may choose to apply their adopted mobility targets to county owned roadways in an UGB, given that they do not allow for a lesser degree of mobility.

Signalized, All-way Stop, or Roundabout Controlled Intersections: The intersection as a whole must operate with a Level of Service (LOS) “E” or better and a volume to capacity (v/c) ratio not higher than 0.85 during the highest one-hour period on an average weekday (typically, but not always the evening peak period between 4 p.m. and 6 p.m. during the spring or fall).

Two-way Stop and Yield Controlled Intersections: All intersection approaches serving more than 20 vehicles during the highest one-hour period on an average weekday (typically, but not always the evening peak period between 4 p.m. and 6 p.m. during the spring or fall) shall operate with a LOS “E” or better and a v/c ratio not higher than 0.90. Mobility targets do not apply to approaches at intersections serving 20 vehicles or fewer during the peak hour.

- **State-owned roadways** must comply with the mobility targets included in the Oregon Highway Plan. The TSP update does not modify these mobility targets.
- **City-owned roadways** should comply with the mobility targets included in local TSP’s, as determined by the respective agencies.

Traffic Impact Analysis (TIA) Guidelines

The TSP update is recommending new Traffic Impact Analysis (TIA) requirements to implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR). These sections require the county to adopt mobility targets and a process to apply conditions to land use proposals in order to minimize impacts on and protect transportation facilities.

The county's development review process is designed to help the county achieve its goal of managing growth in a responsible and sustainable manner. The applicant for development is required to submit full and accurate information upon which the county staff and elected officials can base decisions. A developer-submitted transportation study prepared by a professional engineer qualified in the traffic engineering field is a critical tool used by the county to assess the expected transportation system impacts associated with a proposed development and the long-term viability of the transportation system.

A TIA may be required to be submitted to the county with a land use application at the request of the Roads Department Director or if the proposal is expected to involve one (1) or more of the following:

1. Changes in land use designation, or zoning designation.
2. Projected increase in trip generation of 25 or more trips during either the AM or PM peak hour, or more than 250 daily trips.
3. Potential impacts to residential areas or local roadways.
4. Potential impacts to pedestrian and bicycle routes, including, but not limited to school routes and multimodal roadway improvements identified in the TSP.
5. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
6. A change in internal traffic patterns may cause safety concerns.
7. A TIA is required by ODOT pursuant with OAR 734-051.
8. An increase in use of adjacent roadways by vehicles exceeding 20,000 pound gross vehicle weight.

It is the responsibility of the applicant to provide enough detailed information for the county to make a determination. The required scope of work, including study area, horizon years, requirements, and methodology will be determined in coordination with the Roads Department Director.

Transportation System Management (TSM)

Columbia County has several regional state-owned roadways, and major county-owned rural roadways (e.g., US 30, OR 47, OR 202, Apiary Road, and Scappoose Vernonia Highway) that could benefit from transportation system management (TSM) infrastructure. The TSP update recommends that before future investments are made along these roadways, designs should be reviewed with county and ODOT staff to determine if communications or other ITS infrastructure should be addressed as part of the roadway design/construction.

Section L

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Section M

Memo 12: Transportation Solutions

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #12

DATE: March 1, 2016

TO: Columbia County TSP Project Management Team

FROM: John Bosket, DKS Associates
Kevin Chewuk, DKS Associates

SUBJECT: **Columbia County Transportation System Plan Update**
Technical Memorandum #12: Transportation Solutions

P11086-022

This document details the transportation system investments recommended to accommodate future travel in Columbia County. Included is a summary of the process utilized to develop and analyze the solutions and a description of the projects identified to improve the transportation system in the County.

Transportation Vision Statement

Before developing projects, we must first talk about the ideal transportation system for the County. The following vision statement was developed with the County Transportation Road Advisory Committee to provide direction for the future of the transportation system.

The creation of efficient, safe, and diverse transportation system to serve the needs of Columbia County residents, where existing transportation infrastructure and assets are managed and maintained, and investments to the transportation system use available funding efficiently.

The vision statement and nine associated goals (see Technical Memorandum #5: Goals, Objectives, and Evaluation Criteria) describe the desires of the County with regard to its transportation system. The nine transportation goals also help set priorities for transportation solutions. It is not the expectation that the County must achieve this vision, but instead that it act as a guide for developing projects within the TSP.

Developing Aspirational Projects

Columbia County's approach to developing an Aspirational list of projects to address the needs of the future transportation system emphasized improved system efficiency and management over adding capacity. The approach considered four tiers of priorities that included:

1. Highest Priority – preserve the function of the system through management practices such as improved traffic signal operations, encouraging alternative modes of travel, and implementation of new policies and standards.
2. High Priority – improve existing facility efficiency through minor enhancement projects that upgrade roads to desired standards, fill important system connectivity gaps, or include safety improvements to intersections and corridors.
3. Moderate Priority – add capacity to the system by widening, constructing major improvements to existing roadways, or extending existing roadways to create parallel routes to congested corridors.
4. Lowest Priority – add capacity to the system by constructing new facilities.

The project team recommended higher priority solution types to address identified needs unless a lower priority solution was clearly more cost-effective or better supported the goals and objectives of the County. This process allowed the County to maximize use of available funds, minimize impacts to the natural and built environments, and balance investments across all modes of travel.

Measurable evaluation criteria was used (see Technical Memorandum #5: Goals, Objectives, and Evaluation Criteria) based on the goals and objectives (developed in coordination with the County Transportation Road Advisory Committee) to screen and prioritize transportation solutions (see Figure 1). Projects deemed to contribute more towards achieving the transportation goals of Columbia County ranked higher, and the plan assigned higher priority to their implementation. Solutions recommended in the Aspirational project list, consequently, are consistent with the goals and objectives.

Aspirational Projects

Aspirational projects (projects which the County supports and would like to implement) include all identified projects for improving Columbia County’s transportation system, regardless of their primary funding source, and priority. These projects are not reasonably likely to be funded during the 20-year planning horizon, but do address an identified problem and are supported by the County.

The preliminary list of aspirational projects attempt to address the gaps and deficiencies identified in Technical Memorandum #6 (Existing Transportation System Conditions) and in Technical Memorandum #8 (Future Transportation Conditions and Needs), and was developed by following the four-tiered identification process detailed earlier in this document. The set includes projects for all of the major modes of travel in the County (motor vehicle, pedestrian, bicycle, transit, and rail). The full

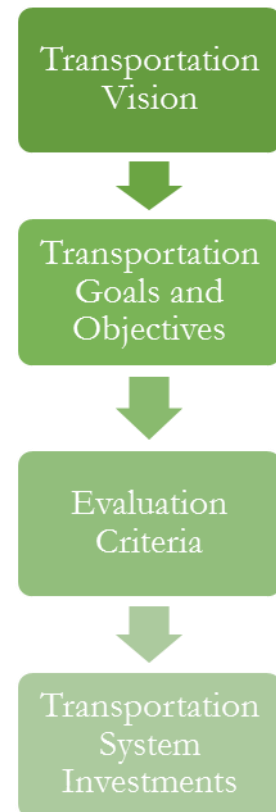


Figure 1: Reflecting the Vision in the Plan

list of aspirational projects, shown in Table 1 and Figures 2a through 2d, includes those proposed in previous plans and studies as well as those added through the TSP planning process. The TSP planning process eliminates any project that may not be feasible for reasons other than financial (such as environmental or existing development limitations).

The full list includes 67 projects, totaling an estimated \$446 million worth of investments. Each project was assigned a primary source of funding for planning purposes (County, State, or CC Rider), although such designations do not create any obligation for funding. A prioritized list of “County” projects (where the County is assumed to be the primary contributor of funding) that is constrained to a 20-year funding estimate will be provided in Technical Memorandum #13 (Transportation System Recommendations). Technical Memorandum #13 will also provide a prioritized list of “State” projects that the County could use to make decisions for applying for grants or other funding mechanisms. The County can, however, choose to provide funds to help support State projects—thus, expediting the timeline on those projects the County would like prioritized. While there may be “CC Rider” projects that the TSP would like to be prioritized in the next 20 years, these decisions are ultimately up to the County transit division (CC Rider).

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
1	Improve the US 30 / Woodson Road intersection and railroad crossing, which would include widening of US 30 to provide eastbound and westbound left-turn lanes, and a wider shoulder on the north side of the highway (65 feet in length) to allow southbound traffic to clear the railroad crossing when a train approaches, installing flashing railroad crossing lights and gates, and improving railroad crossing signage and markings.	Address safety at rural intersection. Address safety at railroad crossing.	Rail (Roadways / Bridges)	\$2,400,000	State	Medium	US 30: 7,359/ Woodson Road: 270	Lower Columbia River Rail Corridor
2	Improve the Woodson transit stop, to include shoulder widening, improved lighting, a sheltered stop with seating, and route information. Improvements should not impact the highway clear zone.	Enhance transit service and amenities.	Transit	\$50,000	CC Rider	High	N/A	Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan
3	Improve the Marshland transit stop, to include shoulder widening, improved lighting, a sheltered stop with seating, and route information. Improvements should not impact the highway clear zone.	Enhance transit service and amenities.	Transit	\$50,000	CC Rider	High	N/A	Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
4	Improve the US 30 / Marshland Road (east) railroad crossing, to include new railroad crossing signs on Marshland Road, and vegetation removal to enhance sight distance at the railroad crossing.	Address safety at railroad crossing.	Rail	\$5,000	County	Low	N/A	Lower Columbia River Rail Corridor
5	Improve the US 30 / Point Adams Road railroad crossing, to include replacement of the existing flashing railroad crossing lights, and new shelter grounding equipment and circuitry.	Address safety at railroad crossing.	Rail	\$350,000	State	Low	271	Lower Columbia River Rail Corridor
6	Improve Swedetown Road to Major Collector standard from the Clatskanie UGB to Cedar Grove Road, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$4,475,000	County	Medium	1,830	Columbia County TSP 1998
7	Improve US 30 from the east Clatskanie UGB to the west Rainier UGB, to include centerline rumble strips with delineation to address head-on crashes.	Address safety along rural roadway.	Roadways / Bridges	\$125,000	State	Low	11,476	US 30 Road Safety Audit

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
8	Improve Beaver Falls Road to Major Collector standard from the Clatskanie UGB to Delena Road, to include wider shoulders, upgraded bridges, and additional guardrail.	Address safety along rural roadway. Provide pedestrian and bicycle connection to urban fringe area.	Roadways / Bridges (Pedestrian / Bike)	\$24,450,000	County	Low	West end: 2821 / East end: 880	Columbia County TSP 1998
9	Improve and extend the existing segment of Hermo Road from Quincy Mayger Road to Port Westward. This roadway should be reconstructed / constructed as a Local roadway resource route.	Improve freight access to Port of St Helens.	Roadways / Bridges (Freight)	\$12,500,000	County	Medium	N/A	New Project
10	Improve the Hermo Road railroad crossing, to include installation of flashing railroad crossing lights and gates.	Address safety at railroad crossing.	Rail	\$350,000	State	Low	N/A	Lower Columbia River Rail Corridor
11	Improve the railroad crossing at the Kallunki Road / Quincy Mayger Road intersection, to include installation of flashing railroad crossing lights and gates.	Address safety at railroad crossing.	Rail	\$350,000	State	Low	N/A	Lower Columbia River Rail Corridor

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
12	Improve Alston Mayger Road / Quincy Mayger Road to Major Collector standard, as a resource route, from US 30 to Kallunki Road, to include wider shoulders, and upgraded bridges.	Improve freight access to US 30.	Roadways / Bridges (Freight)	\$6,000,000	County	Medium	1,660	Columbia County TSP 1998
13	Improve Delena Mayger Road to Local roadway standard from Alston Mayger Road to Cox Road, to include roadway surface enhancements, and wider shoulders.	Improve roadway to county standard.	Roadways / Bridges (Pedestrian / Bike)	\$3,200,000	County	Low	380	Columbia County TSP 1998
14	Replace the Beaver Falls Road Bridge (County Bridge 076).	Replace weight restricted bridge.	Bridges	\$1,630,000	County	High	880	New Project
15	Replace the Beaver Falls Road Bridge (County Bridge 075).	Replace weight restricted bridge.	Bridges	\$1,440,000	County	High	880	New Project
16	Improve the Alston Store transit stop, to include a sheltered stop with seating, and route information.	Enhance transit service and amenities.	Transit	\$10,000	CC Rider	High	N/A	Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan
17	Construct a new park-and-ride along Wonderly Road, to include a sheltered stop with seating, and route information.	Enhance transit service and amenities.	Transit	\$200,000	CC Rider	High	N/A	Columbia County TSP 1998

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
18	Improve Old Rainier Road to Minor Arterial roadway standard from US 30 to Apiary Road, Old Rainier Road to Major Collector roadway standard from Apiary Road to Larson Road, and Old Rainier Road to Local roadway standard from Larson Road to the Rainier UGB, to include wider shoulders.	Provide pedestrian and bicycle connection to rural activity generator.	Pedestrian / Bike	\$4,000,000	County	High	535	Portland Astoria Corridor Plan
19	Improve Larson Road to Major Collector roadway standard between US 30 and Old Rainier Road, and to Local roadway standard between Old Rainier Road and Parkdale Road, to include wider shoulders.	Provide pedestrian and bicycle connection to rural activity generator.	Pedestrian / Bike	\$1,700,000	County	High	N/A	Columbia County TSP 1998
20	Realign Old Rainier Road to the west of the existing Apiary Road intersection, to form a new "T" intersection. This roadway should be constructed as a Minor Arterial resource route.	Improve freight access to US 30.	Roadways / Bridges (Freight)	\$1,725,000	County	Medium	1,250	Columbia County TSP 1998
21	Improve Apiary Road to Minor Arterial standard (as a resource route) from OR 47 to Old Rainier Road, to include spot roadway surface and shoulder widening, and improved curve delineation.	Improve freight access to US 30.	Roadways / Bridges (Freight)	\$6,500,000	County	High	1,250	New Project

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
22	Improve the Apiary Road / Fern Hill Road intersection, to include vegetation removal to enhance sight distance.	Address safety at rural intersection.	Roadways / Bridges	\$25,000	County	Low	1,250	Columbia County TSP 1998
23	Replace the existing Longview to Rainier Bridge, or support an additional Columbia River crossing.	Improve freight access between Oregon and Washington.	Bridges	\$300,000,000	ODOT/WSDOT	High	18,000	Columbia County TSP 1998
24	Improve US 30 between the east Rainier UGB and the west Columbia City UGB, to include centerline rumble strips with delineation to address head-on crashes.	Address safety along rural roadway.	Roadways / Bridges	\$150,000	State	Medium	8,930	New Project
25	Improve Graham Road to Local roadway standard from US 30 to Blakely Street, to include wider shoulders.	Provide pedestrian and bicycle connection to rural activity generator.	Roadways / Bridges (Pedestrian / Bike)	\$1,000,000	County	Medium	313	New Project
26	Improve the Graham Road railroad crossing, to include installation of flashing railroad crossing lights and gates.	Address safety at railroad crossing.	Rail	\$350,000	State	Low	313	Lower Columbia River Rail Corridor
27	Create an off-street shared-use path connection between Trojan Park and Prescott Beach County Park.	Provide pedestrian and bicycle connection to rural activity generator.	Pedestrian / Bike	\$400,000	County	High	N/A	New Project

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
28	Widen US 30 at the Neer City Road intersection, to include a northbound left-turn lane.	Address safety at rural intersection.	Roadways / Bridges	\$1,800,000	State	Medium	US 30: 8,901/ Neer City Road: 306	US 30 Road Safety Audit
29	Widen US 30 at the Nicolai Road intersection, to include northbound and southbound left-turn lanes, a shoulder on the east side of the highway (75 feet in length) for westbound traffic to clear the railroad crossing when a train approaches, and improved alignment of the east and west approaches.	Address safety at rural intersection. Address safety at railroad crossing.	Roadways / Bridges (Rail)	\$3,500,000	State	Medium	US 30: 8,901/ Nicolai Road: 1,021	US 30 Road Safety Audit
30	Improve the US 30 / Nicolai Road railroad crossing, to include improved signage and pavement markings at the grade crossing, replacing old tracks, repairing/replacing crossing surface, and installing flashing railroad crossing lights and gates.	Address safety at railroad crossing.	Rail	\$400,000	State	Low	1,021	Lower Columbia River Rail Corridor
31	Replace the Beaver Falls Road Bridge (County Bridge 044).	Replace weight restricted bridge.	Bridges	\$600,000	County	High	N/A	New Project
32	Replace the Beaver Falls Road Bridge (County Bridge 046).	Replace weight restricted bridge.	Bridges	\$600,000	County	High	N/A	New Project

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
33	Widen US 30 at the Nicolai Cutoff Road intersection, to include a northbound left-turn lane.	Address safety at rural intersection.	Roadways / Bridges	\$1,800,000	State	Medium	US 30: 8,930	US 30 Road Safety Audit
34	Widen US 30 at the Tide Creek Road intersection, to include a northbound left-turn lane, and a new bridge with improved horizontal curve radii and width. The Tide Creek Bridge is an existing freight pinch point, and with improvements could accommodate wider loads.	Address safety at rural intersection.	Roadways / Bridges (Freight)	\$6,500,000	State	Low	US 30: 8,930/ Tide Creek Road: 489	US 30 Road Safety Audit; ODOT District 1 Freight Pinch Point Report
35	Improve Anliker Road to Minor Collector standard from Meissner Road to Nicolai Road, to include roadway surface enhancements, and wider shoulders.	Improve roadway to county standard.	Roadways / Bridges (Pedestrian / Bike)	\$4,600,000	County	Medium	N/A	Columbia County TSP 1998
36	Improve the Canaan Road transit stop, to include a new park-and-ride, sheltered stop with seating, and route information.	Enhance transit service and amenities.	Transit	\$50,000	CC Rider	High	N/A	Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
37	Upgrade the US 30 spur track crossing north of Columbia City by replacing the control circuitry, to include new activation equipment, shunt-enhancing equipment, track leads, batteries, and battery charging equipment.	Address safety at railroad crossing.	Rail	\$100,000	State	Low	10,598	Lower Columbia River Rail Corridor
38	Improve Pittsburg Road to Major Collector standard from the St Helens UGB to West Kappler Road, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$650,000	County	Medium	1,850	New Project
39	Realign the northbound West Kappler Road approach or southbound Pittsburg Road approach to form a single intersection at Brinn Road. This roadway should be constructed as a Major Collector.	Address safety at rural intersection.	Roadways / Bridges	\$600,000	County	Low	1,850	Columbia County TSP 1998
40	Replace Anderson Road Bridge (County Bridge 039).	Replace weight restricted bridge.	Bridges	\$500,000	County	High	N/A	New Project
41	Improve Sykes Road to Major Collector standard from the St Helens UGB (near Benjamin Lane) to West Kappler Road, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$600,000	County	Medium	N/A	Columbia County TSP 1998

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
42	Improve Bachelor Flat Road, Bennett Road, Hazen Road, and Berg Road to Major Collector roadway standard from the St Helens UGB to US 30, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$4,300,000	County	High	900	Columbia County TSP 1998
43	Improve US 30 between Old Portland Road and Millard Road. This project includes increasing the turning radius of the right-turn lane onto Bennett Road by widening and restriping the roadway near the intersection, restricting access to Bennett Road to right-in, right-out, left-in only, constructing a “J-turn” area for westbound Bennett Road traffic to access southbound US 30, adding a traffic signal at the Millard Road intersection with US 30, and closing the Old Portland Road railroad crossing.	Reduce traffic delay at intersections. Address safety along rural roadway.	Roadways / Bridges	\$5,550,000	State	Medium	27,058	ODOT Statewide Transportation Improvement Program (Project Key 17702)
44	Improve Old Portland Road to Major Collector roadway standard from the St Helens UGB to US 30, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$500,000	County	Medium	N/A	Columbia County TSP 1998

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
45	Widen the Berg Road approach to US 30 to include a left-turn and right-turn lane.	Reduce traffic delay at intersection.	Roadways / Bridges	\$425,000	State	Low	US 30: 27,058/ Berg Road: 874	Columbia County TSP 1998
46	Study for the feasibility of improved roadway connectivity along the west side of US 30, between Scappoose and St Helens.	Study for improved roadway connectivity.	Study	\$175,000	County	Medium	N/A	Columbia County TSP 1998
47	Improve Reeder Road to Local roadway standard from Multnomah County to the northern terminus, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$400,000	County	Medium	N/A	New Project
48	Widen US 30 at the West Lane Road intersection, to include a shoulder on the east side of the highway (75 feet in length) for westbound traffic to clear the railroad crossing when a train approaches.	Address safety at railroad crossing.	Rail	\$275,000	State	Low	1,180	Lower Columbia River Rail Corridor
49	Improve Wikstrom Road to Major Collector standard from Scappoose Vernonia Highway to US 30, to include wider shoulders.	Provide pedestrian and bicycle connection to urban fringe area.	Pedestrian / Bike	\$3,950,000	County	Medium	980	Columbia County TSP 1998

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
50	Upgrade the railroad crossing equipment at the US 30 / Johnsons Landing Road crossing, to include new constant warning time activation equipment, standby battery, and rectifier.	Address safety at railroad crossing.	Rail	\$100,000	State	Low	N/A	Lower Columbia River Rail Corridor
51	Ride Share parking- provide parking for 25 spaces next to truck scale near the county line. Project to be coordinated with ODOT, Multnomah and Columbia County.	Enhance transit service and amenities.	Transit	\$375,000	CC Rider	High	N/A	Westside Rural Multnomah County Transportation System Plan
52	Replace the Dutch Canyon Road Bridge (County Bridge 002).	Replace weight restricted bridge.	Bridges	\$600,000	County	High	N/A	New Project
53	Replace the Dutch Canyon Road Bridge (County Bridge 121).	Replace weight restricted bridge.	Bridges	\$600,000	County	High	N/A	New Project
54	Realign Wikstrom Road to the south of the existing Scappoose Vernonia Highway intersection, to form a new "T" intersection. This roadway should be constructed as a Major Collector.	Address safety at rural intersection.	Roadways / Bridges	\$600,000	County	Low	2,419	Columbia County TSP 1998
55	Replace the Reid Road Bridge (County Bridge 128).	Replace weight restricted bridge.	Bridges	\$480,000	County	High	N/A	New Project

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
56	Improve Cater Road to Major Collector standard from Scappoose Vernonia Highway to Sykes Road, to include wider shoulders, and improved curve delineation.	Address safety along rural roadway. Provide pedestrian and bicycle connection to rural activity generator.	Roadways / Bridges	\$4,250,000	County	Medium	N/A	New Project
57	Widen Scappoose Vernonia Highway at the Cater Road intersection, to include an eastbound left-turn lane.	Address safety at rural intersection.	Roadways / Bridges (Pedestrian / Bike)	\$400,000	County	Low	2,419	Columbia County TSP 1998
58	Improve Scappoose Vernonia Highway to Minor Arterial standard (as a resource route) from OR 47 to US 30, to include spot roadway surface and shoulder widening, better curve delineation, and additional guardrail.	Address safety along rural roadway.	Roadways / Bridges (Freight)	\$6,650,000	County	High	2,419	Columbia County TSP 1998
59	Improve the Crown-Zellerbach Trail from the Multnomah Slough to Vernonia, to include parking facilities, an improved trail surface, and enhanced amenities.	Improve existing shared-use path.	Pedestrian / Bike	\$500,000	County	High	N/A	New Project

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
60	Create an off-street shared-use path connection between the end of the Banks-Vernonia Trail near Vernonia Lake, and the Crown-Zellerbach Trail along Scappoose Vernonia Highway.	Complete shared-use path gap.	Pedestrian / Bike	\$1,900,000	County	High	N/A	Vernonia TSP
61	Replace the Scappoose Vernonia Highway Bridge (County Bridge 020).	Replace weight restricted bridge.	Bridges	\$2,250,000	County	High	540	New Project
62	Improve OR 47 between OR 202 and the north Vernonia UGB (14 mile segment), to include spot improvements, and general roadway widening to address lane departure crashes.	Address safety along rural roadway.	Roadways / Bridges	\$5,000,000	State	Medium	1,499	New Project
63	Replace the Freeman Road Bridge (County Bridge 119).	Replace weight restricted bridge.	Bridges	\$1,200,000	County	High	N/A	New Project
64	Replace the Flack Road Bridge (County Bridge 126).	Replace weight restricted bridge.	Bridges	\$1,080,000	County	High	N/A	New Project
65	Improve Timber Road to Major Collector standard from OR 47 to the Washington County line, to include wider shoulders, and improved curve delineation.	Address safety along rural roadway.	Roadways / Bridges	\$6,125,000	County	Medium	825	Columbia County TSP 1998

Table 1: Aspirational Project List

Project ID	Project Description	Project Purpose	Primary (Secondary) Mode	Estimated Cost (2015 Dollars)	Primary Funding Source	Evaluation Score	Average Daily Traffic	Project Source
66	Improve the vertical clearance at the Lewis and Clark Bridge overpass. This is an existing freight pinch point, with a vertical clearance one foot lower than the design standard. With improvements, this segment could accommodate taller loads.	Improve freight access along US 30.	Freight	\$2,500,000	State	Medium	11,476	ODOT District 1 Freight Pinch Point Report
67	Study for the feasibility of adding passing lanes along various segments of US 30, between Columbia City and Clatsop County.	Study to provide safe passing opportunities along rural roadway segments.	Study	\$200,000	State	Low	N/A	New Project

Figure 2a - Aspirational Projects in NW Columbia County

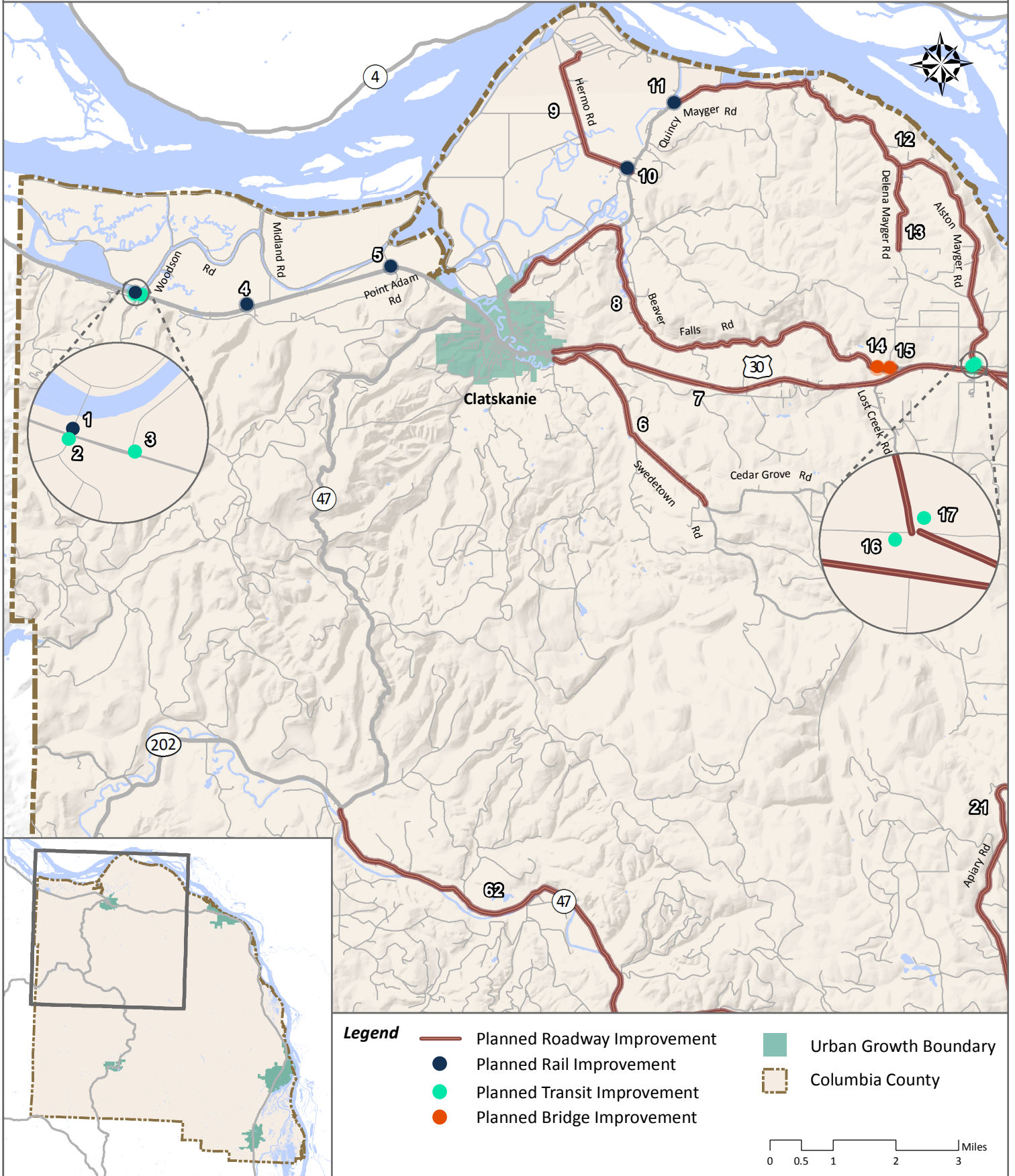


Figure 2b - Aspirational Projects in NE Columbia County

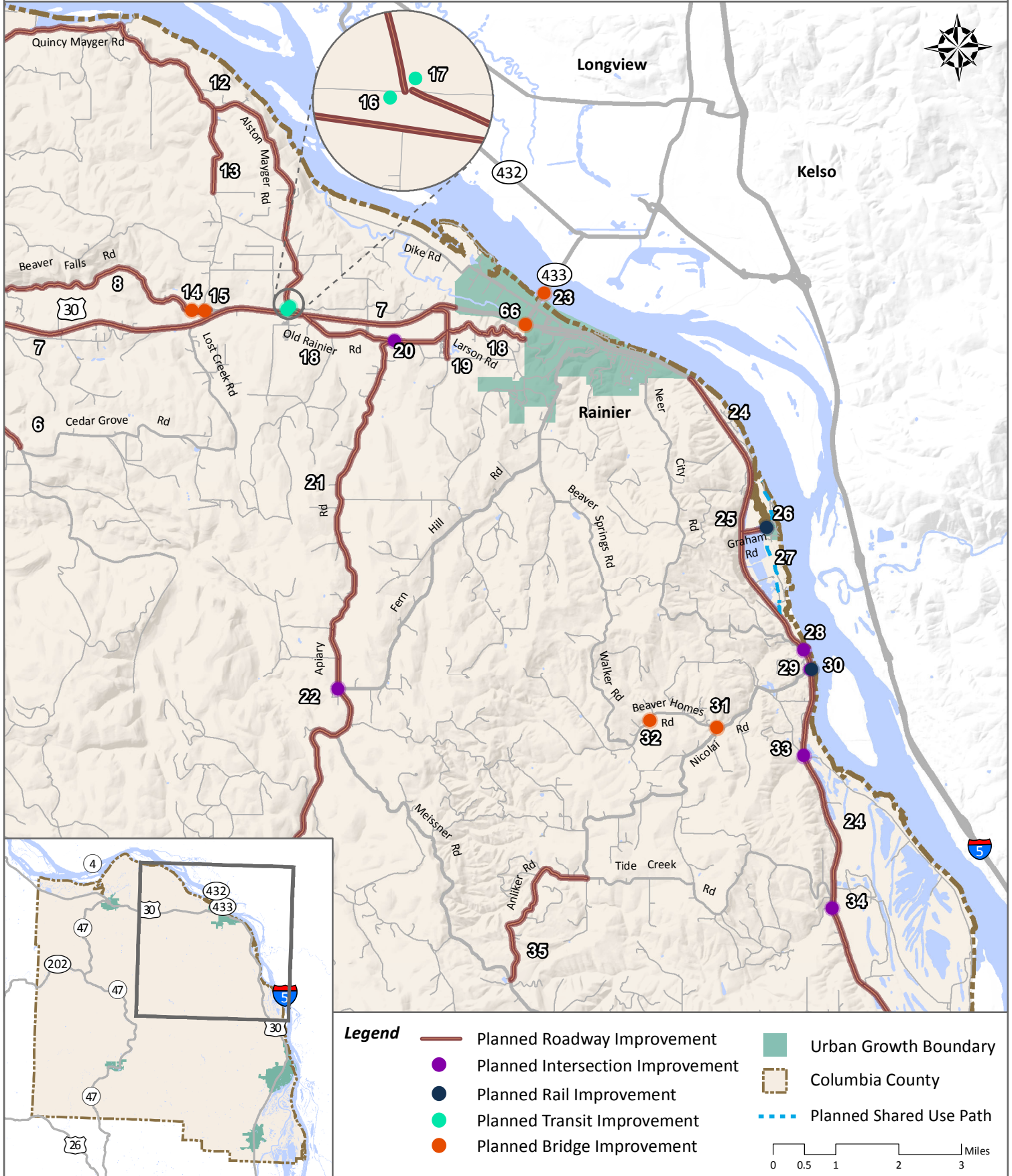


Figure 2c - Aspirational Projects in SE Columbia County

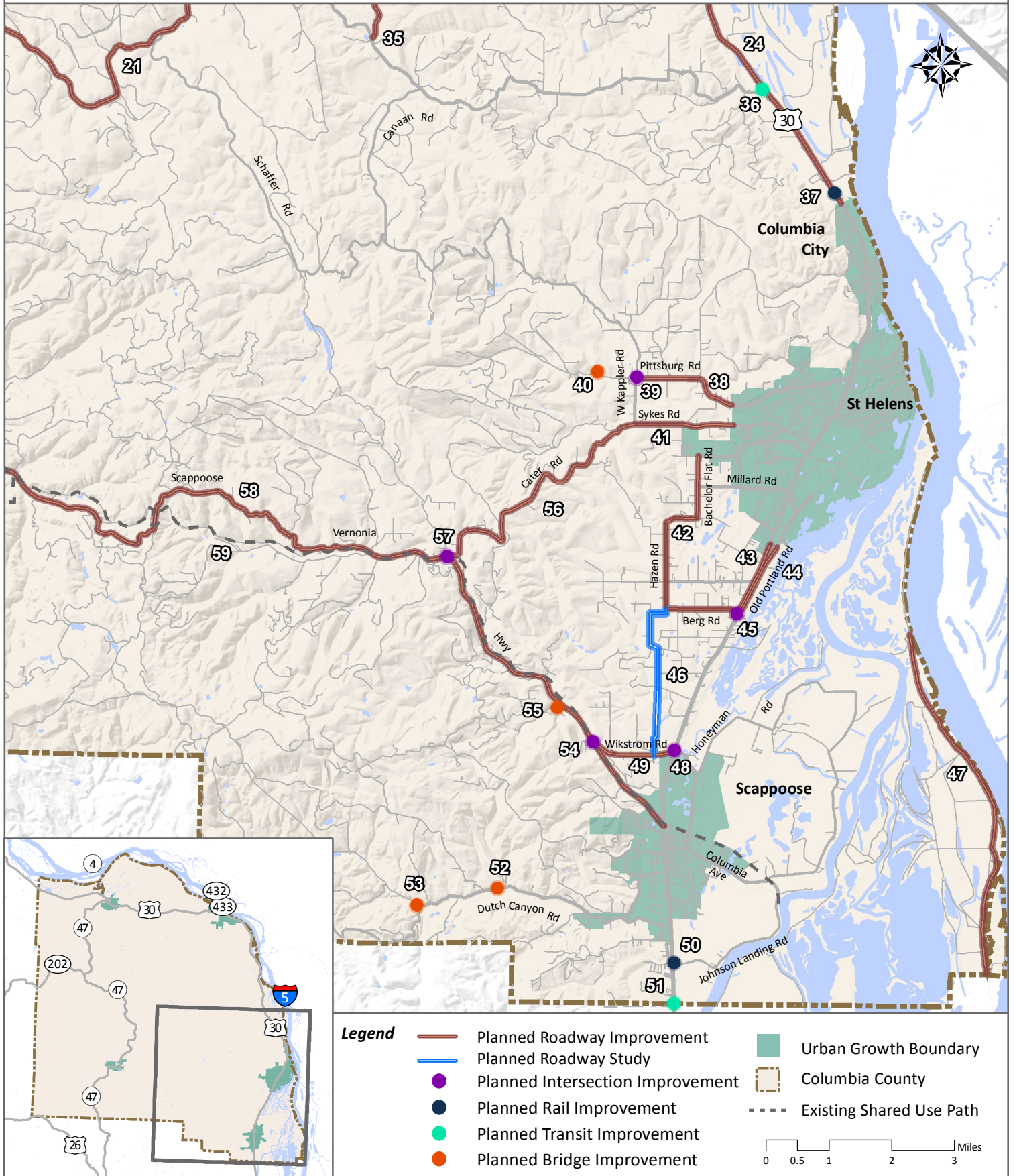
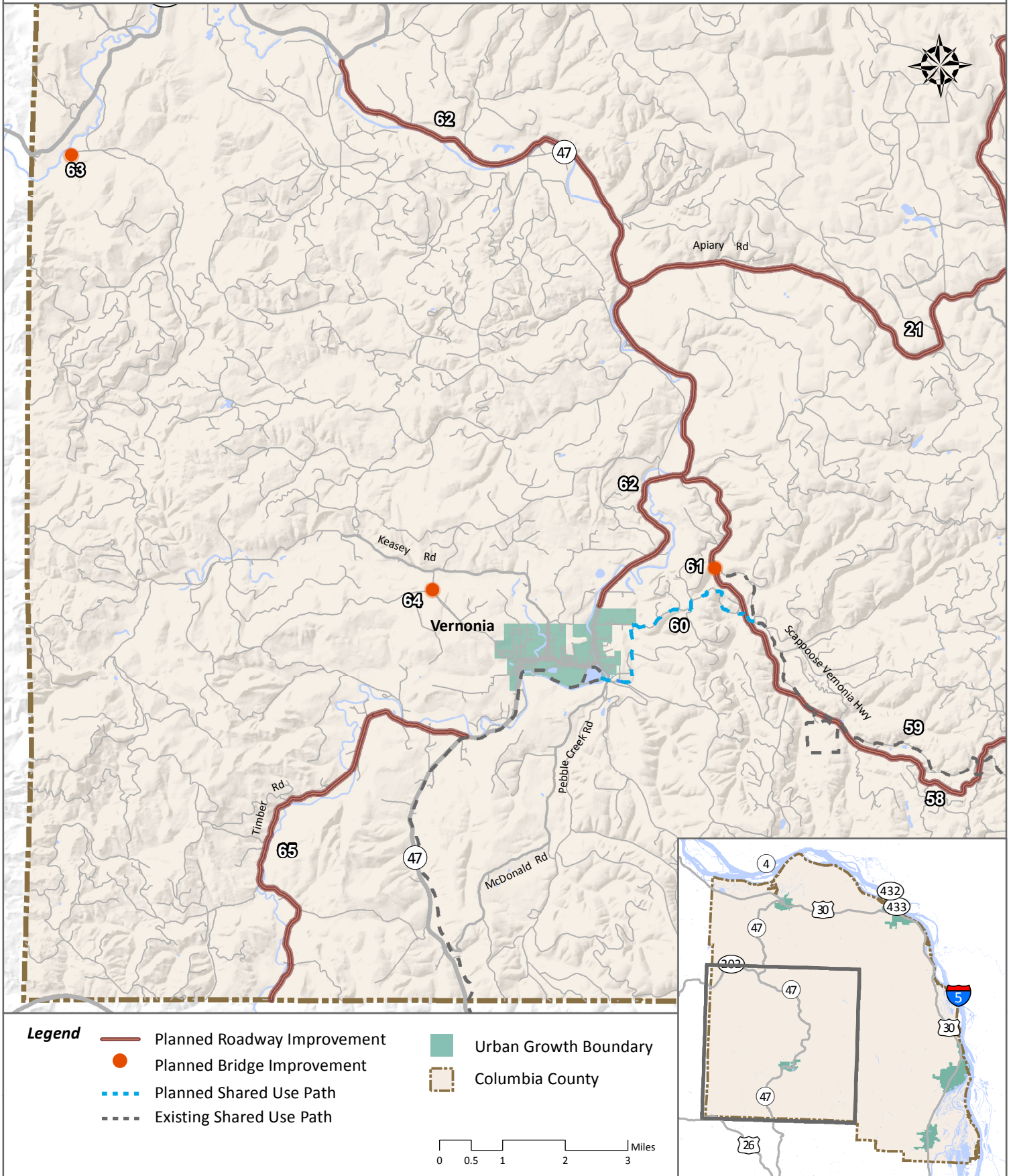


Figure 2d - Aspirational Projects in SW Columbia County



Section M

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Section N

Memo 13: Implementing Regulations and Policy Amendments

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.

TECHNICAL MEMORANDUM #13

DATE: September 15, 2016 (amended February 13, 2017)

TO: Columbia County TSP Project Management Team

FROM: Darci Rudzinski, Angelo Planning Group

SUBJECT: Columbia County Transportation System Plan Update

Technical Memorandum #13: Implementing Regulations and Policy Amendments

P11086-022

The purpose of this memorandum is to provide the County with some sample policy and development ordinance language to address the recommendations in Technical Memorandum #4 (7/11/14). These recommendations identified provisions and requirements in the Columbia County Comprehensive Plan, Zoning Ordinance (ZO), and Subdivision and Partitioning Ordinance (SPO) that should be updated in order to: (1) be consistent with and implement the updated Transportation System Plan (TSP); and (2) better comply with the Oregon Transportation Plan (OTP) and the Transportation Planning Rule (TPR).

Transportation Goals and Policies

Adopted County transportation policies are found in Part XIII, Transportation, of the Comprehensive Plan. These policies reflect amendments proposed as part of the 1998 Columbia County Rural Transportation System Plan¹. Adopted policies address multi-modal transportation, transit for the transportation disadvantaged, right-of-way dedication, off-site improvements, access management, port development, and airport protection. Consistent with the approach that was taken to ensure consistency between the 1998 TSP and the adopted Comprehensive Plan, it is recommended that the County make some revisions to the transportation element of the Comprehensive Plan to bring it up to date with the 2016 TSP. Background information in Part XIII will need to be updated or replaced with descriptions and analysis from the updated TSP². Policy language should also be updated to reflect the project objectives and outcomes.

Updated transportation policy language is included in the Table 1. The first column shows existing text from Part XIII of the Comprehensive Plan and suggested amendments in a legislative amendment format (underline/strikeout text).

¹ Chapter 6, Implementing Mechanisms, Section 6.6 Summary of Implementing Actions, p. 6-5.

² County staff will need to review background information in Part XIII and advise regarding what content should be retained and updated. The County may also elect to replace background information with a brief introduction to the 2016 TSP update process and refer users to that document, rather than duplicating information in the Comprehensive Plan.

Recommended amendments are based on goals and objectives developed for this TSP update process (Technical Memorandum #5), the transportation standards (Technical Memorandum #11), and on policy issues identified during the course of the TSP update process. The suggested changes to existing policies are discussed in the commentary column in Table 1.

Once these updated and proposed policies are reviewed by the Project Management Team (PMT), advisory committees, and general public they will be revised for consideration during the TSP adoption process. The final version of the policies will be considered for adoption into to the Comprehensive Plan.

Table 1: Comprehensive Plan Transportation Policy Recommendations

Part XIII. Transportation	Commentary
<p>Goal:</p> <p>The creation of an efficient, safe, and diverse <u>multi-modal</u> transportation system to serve the needs of Columbia County residents.</p>	<p>The term “multi-modal” is a more accurate description of the transportation system and is consistent with the local and state interest in planning for all modes.</p>
<p>Objectives:</p>	<p>These objectives are general and are not inconsistent with the more specific objectives of the TSP update.</p>
<p>1. To utilize the various modes of transportation that are available in the County to provide for the residents. <u>maximize efficient use of transportation infrastructure for all users and modes.</u></p>	<p>Modifications suggest that the County wishes to maximize the use of infrastructure, rather than to “utilize modes.”</p>
<p>2. <u>To encourage and promote an efficient, accessible, equitable, and economical transportation system to serve the commercial and industrial establishments of the County.</u></p>	<p>Suggested addition captures the project objective to enhance access to various modes – including transit and freight. The County could consider a “stand alone” objective addressing the equitable distribution of the benefits and impacts of transportation decision, consistent with project Objective 3b.</p>
<p>3. To improve the existing transportation system. <u>plan for an economically viable and cost-effective transportation system that makes the best use of limited transportation funds.</u></p>	<p>This language is from project Objective 7a and signifies a shift from enhancing to maintaining the system.</p>

Table I: Comprehensive Plan Transportation Policy Recommendations

Part XIII. Transportation

Commentary

Policies:

The County has developed a transportation plan consistent with Oregon Land Use Planning Goal 12 “Transportation” and implementing Rule OAR 660-012.

1. Columbia County’s transportation plan was adopted on ~~___, 1998~~ 2016, entitled “Columbia County ~~Rural~~ Transportation System Plan”. It is hereby incorporated into and made part of the Columbia County Comprehensive Plan by this reference. This transportation plan shall be reviewed periodically and updated as necessary.

Recommend updating to reflect the adoption date of the 2016 TSP.

2. The dedication of adequate rights-of-way to meet the standards set in the Transportation Plan shall be required of any person seeking a Zone Change, Conditional Use Permit, Subdivision, or Partition. The developer of a subdivision in an urban growth area will be required to make the appropriate improvements to any related street to meet the roadway, access spacing, and mobility standards set in a Transportation Plan.

The proposed amendment reflects newly established access spacing mobility standards.

3. All expanding or new development shall contribute a fair and proportionate share toward ~~Appropriate off-site improvements to county roads shall be required~~ whenever a development results in a major increase in traffic on an existing county road.

Modified language acknowledges that rough proportionality must be exercised in development exactions.

4. The County will manage access to roadways to reduce congestions and conflicting travel patterns. The County will work with the Oregon Department of Transportation (ODOT) to limit the number of access points onto Principal Arterials ~~arterial roads~~. Direct access to U.S. Highway 30 will be limited as much as is practical in order to reduce the potential for congestion and conflicting traffic patterns which would disrupt the flow of traffic.

Proposed additions are consistent with project Objective 1g and the Roadway Functional Classification (TSP Figure 11).

Table I: Comprehensive Plan Transportation Policy Recommendations

Part XIII. Transportation	Commentary
<p><u>The County shall work to enhance freight efficiency, access, capacity and reliability, including access to intermodal facilities such as ports and airports.</u></p> <p>5. Industrial uses shall be encouraged to locate in such a manner that they may take advantage of the water and rail transportation systems which are available to the County.</p>	<p>Added language reflects Project Objectives 6b and 6c.</p>
<p>6. The County will support reducing the number of rail crossings <u>and will support measures to enhance safety at rail crossings.</u></p>	<p>Proposed additional language is consistent with project Objective 2c.</p>
<p>7. The County will work with the Port of St. Helens to encourage the establishment and use of dock facilities.</p>	
<p>8. The two existing airports, in Scappoose and Vernonia, will be zoned with a landing field overlay zone that incorporates the height restrictions set by the Federal Aviation Administration. It will allow the development of airport related industrial uses.</p>	
<p>9. Restriction of the location of new pipelines and high voltage transmission lines to within existing rights-of-way will be encouraged whenever possible.</p>	
<p>10. The County will develop <u>and implement plans to address safe and convenient pedestrian and bicycle circulation, including providing access to key activity centers, such as transit facilities, commercial centers, and community facilities, and improving connections and the ability to transfer between transportation modes.</u></p>	<p>Updated language reflects project Objectives 4c and 4e.</p>

Table I: Comprehensive Plan Transportation Policy Recommendations

Part XIII. Transportation		Commentary
11.	<p>Columbia County will continue to support the efforts of COLCO Transportation to supply public transit to the citizens of the County <u>coordinate with transit providers and transit plans (e.g., the 2009 Columbia County Community-Wide Transit Plan and US 30 Transit Access Plan) to improve the coverage, reliability and frequency of services.</u></p>	<p>Updated language reflects the recommendations of adopted transit plans and project Objective 5a.</p> <p>Policy 11 is broadly inclusive of other transit-related TSP objectives; the County could consider adding additional policies that reflect other objectives under project Goal 5 (Work with transit service providers to provide transit service and amenities that encourage and increase ridership).</p>
12.	<p>The County shall promote transit accessibility to transportation-disadvantaged groups and special attention will be given to the needs of the handicapped citizens with special needs whenever the County considers a proposal for the provision of public transit.</p>	<p>Updated language is consistent with project Objective 5b.</p>
13.	<p>The County will promote walking, bicycling, and sharing the road through public information and organized events</p>	<p>Project Objective 4d.</p>
14.	<p>The County will improve bicycle access along all major corridors to provide intercity bicycle connectivity, including high quality bicycle access along Highway 30. Support the development of the CZ Trail and connection to the Banks-Vernonia Trail.</p>	<p>Project Objective 4f.</p>
15.	<p>The County shall maintain the existing system of roads and bridges to a level suitable to the function of the road, allowing for smooth and comfortable travel, and reducing vehicle maintenance costs, through the preservation of pavements, and prevention of damage by overweight vehicles.</p>	<p>Project Objective 1c.</p>
16.	<p>The County will provide and support needed investments along Emergency Response Routes to preserve emergency response access and mobility.</p>	<p>Proposed policy is consistent with project Objective 2d and supports the identified Emergency Response Routes (Figure 13 in the TSP).</p>

Table I: Comprehensive Plan Transportation Policy Recommendations

Part XIII. Transportation	Commentary
<p>17. <u>The County will employ new technologies, such as Intelligent Transportation System (ITS) elements, to enhance and make the most efficient use of the transportation system and extend the useful life of existing facilities.</u></p>	<p>Proposed policy is consistent with project Objective 1e.</p>
<p>18. <u>The County will work to provide all users with access to integrated transportation facilities and services, including addressing the needs of those with limited mobility, consistent with the federal Americans with Disabilities Act (ADA).</u></p>	<p>Proposed policy is consistent with project Objective 3c.</p>
<p>19. <u>The County shall identify, develop, and actively seek diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for road maintenance and transportation improvement projects.</u></p>	<p>Project Objectives 7b and 7c.</p>
<p>20. <u>The County will coordinate transportation and land use planning and decision-making with other transportation agencies and public service providers, such as ODOT, cities within the County, and the Port, when their facilities or services may be impacted by a County decision or there may be opportunities to increase the efficiency and benefits of a potential improvement.</u></p>	<p>Proposed policy reflects project Objectives under project Goal 9 (Coordinate with local and state agencies and transportation plans).</p>
<p>21. <u>For County roads within a UGB but not yet within city limits, the County will apply roadway and access spacing standards consistent with the subject city's adopted transportation system plan, provided that the urban standards are not less restrictive than County standards.</u></p>	<p>Proposed policy reflects project Objectives under project Goal 9 (Coordinate with local and state agencies and transportation plans).</p>

Ordinance Amendments

Columbia County’s ZO and SPO were audited to ensure that development requirements reflect the goals and objectives of the TSP update, as well as address transportation-related issues that have been raised over the course of the project to date. The intent of this exercise was to identify potential consistency issues between local code requirements and the TSP goals and objectives, as well as note any possible Oregon Transportation Planning Rule (TPR) compliance concerns, before drafting actual amendments to County land use requirements. The complete results of this audit are found in Technical Memorandum #4; Table 2 below includes a list of recommended ordinance amendments resulting from this audit, including the TPR reference and the page reference from Technical Memorandum #4. Sample or “model” code language for the County to consider is provided following the Table, and is shown in underlined text. Pursuant to Task 8.3 of the project work order contract, the County may consider the examples when developing the precise language to update and incorporate into existing regulations. ***County amendments and suggested refinements will be incorporated into the final text of Technical Memorandum #14.***

Table 2: Columbia County Zoning Ordinance (ZO) and Subdivision and Partitioning Ordinance (SPO) Recommendations

Recommendation	Ordinance Section	TSP Goal/TPR Citation
<p>Permit outright transportation improvements that are consistent with the adopted TSP. Specific transportation facilities, services, and improvements are commonly not subject to land use regulation due to the minimal impact on land use. These should be listed as permitted outright or made exempt from regulations through provisions added to the CCZO. The recommendation is to add a new code section to allow outright improvements that implement the transportation system plan and/or can be shown to be consistent with adopted policy.</p>	<p>ZO ARTICLE II – GENERAL PROVISIONS Section 200 GENERAL PROVISIONS</p>	<p>Goal 7: Provide transportation facilities and services that are fiscally responsible and economically feasible. OAR 660-012-0045(1)(a)</p>
<p>Amend access management standards in designated Highway Commercial Districts to be consistent with the TSP. Development standards should be made consistent with access management and spacing standards proposed in the updated TSP.</p>	<p>ZO ARTICLE V – SUBURBAN DISTRICTS Section 800 HIGHWAY COMMERCIAL</p>	

Table 2: Columbia County Zoning Ordinance (ZO) and Subdivision and Partitioning Ordinance (SPO) Recommendations

Recommendation	Ordinance Section	TSP Goal/TPR Citation
<p>Establish transportation impact analysis (TIA) requirement thresholds in the code; refer to the performance standards established in the TSP in the TIA requirements. Existing site design review submittal requirements (Section 1555) include an “impact assessment,” which could potentially include a traffic impact analysis (TIA) but do not establish the thresholds for such a requirement. Subdivision requirements (preliminary plat, Section 403) allow the Planning Commission to require additional information from an applicant, which could potentially include a TIA. Mobility standards for County roads are not clearly established in the 1998 TSP.</p> <p>3.</p>	<p>ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS</p> <p>[New] Section 1500 TRANSPORTATION IMPACT ANALYSIS</p>	<p>Goal 1: Provide for efficient and convenient motor vehicle travel.</p> <p>OAR 660-012-0045(2)(b)</p> <p>OAR 660-012-0045(2)(g)</p>
<p>A traffic impact analysis (TIA) requirement is suggested to be included in the ZO, with thresholds identified for the requirement that are proportionate to the potential impacts of development.</p>		
<p>Add provisions for bicycle parking in the ZO. Providing bicycle parking in association with particular uses can help encourage this mode of transportation, as well as generally help to reduce vehicular trips. Development in higher density residential and commercial areas, as well as institutional uses where the key users do not typically drive vehicles, such as elementary schools, are good candidates for including bicycle parking.</p> <p>4.</p>	<p>ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS</p> <p>Section 1400 OFF-STREET PARKING AND LOADING</p>	<p>Goal 4: Increase the quality and availability of pedestrian and bicycle facilities.</p> <p>OAR 660-012-0045(3)(a)</p>
<p>Enhance land use notice requirements to ensure transportation facility and service providers’ participation in the land use process. The County should codified requirements that notice be provided to transportation facility and service providers, as well as other public agencies, where a land use application is being considered that may affect a transportation facility or service. Transportation facility and service providers should also be invited to participate in site design review pre-application conferences, where proposed actions may impact service or facilities.</p> <p>5.</p>	<p>ZO ARTICLE VII – DISCRETIONARY PERMITS</p> <p>Section 1500 DISCRETIONARY PERMITS</p> <p>ZO ARTICLE VIII – ADMINISTRATION</p> <p>Section 1600 ADMINISTRATION</p>	<p>Goal 9: Coordinate with local and state agencies and transportation plans.</p> <p>OAR 660-012-0045(2)(f)</p>

Table 2: Columbia County Zoning Ordinance (ZO) and Subdivision and Partitioning Ordinance (SPO) Recommendations

Recommendation	Ordinance Section	TSP Goal/TPR Citation
<p>6. Add new Site Design Review and parking lot criteria addressing safe and convenient on-site pedestrian circulation. Proposed amendments ensure that all new development, redevelopment, expansion, or improvement of all community, governmental, institutional, commercial, industrial and multi-family residential (4 or more units) uses in the County accommodate internal (on-site) safe and convenient pedestrian circulation. New definitions associated with the proposed amendments include “Shared-use Path” and “Walkway.”</p>	<p>SPO ARTICLE I – INTRODUCTORY PROVISIONS</p> <p>SECTION 103. CONSTRUCTION AND DEFINITIONS.</p> <p>ZO ARTICLE I – GENERAL DEFINITIONS</p> <p>Section 100 GENERAL DEFINITIONS:</p> <p>ZO ARTICLE VII – DISCRETIONARY PERMITS</p> <p>Section 1500 DISCRETIONARY PERMITS</p>	<p>Goal 4: Increase the quality and availability of pedestrian and bicycle facilities.</p> <p>OAR 660-012-0045(3)(b)</p> <p>OAR 660-012-0045(3)(e)</p>
<p>7. Add new ZO permit requirements for transit improvements and permit transit signs in all zoning districts. Proposed ordinance language is consistent with recommendations from the 2009 Columbia County Community-wide Transit Plan/US 30 Transit Access Plan. The transit provisions, along with a new Pedestrian Access and Circulation site plan requirements (Section 1500 DISCRETIONARY PERMITS, Subsection 1561), will help further County transit goals and improve access to transit facilities by requiring that certain development proposals accommodate transit facilities and provide pedestrian connections to existing and planned transit stops.</p>	<p>ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS</p> <p>Section 1300 SIGNS</p> <p>[New] Section 1500 TRANSIT IMPROVEMENTS</p>	<p>Goal 5: Work with transit service providers to provide transit service and amenities that encourage and increase ridership.</p> <p>OAR 660-012-0045(4)(a)</p>

Table 2: Columbia County Zoning Ordinance (ZO) and Subdivision and Partitioning Ordinance (SPO) Recommendations

Recommendation	Ordinance Section	TSP Goal/TPR Citation
<p>8. Add requirements for preferential parking for carpools and vanpools in designated employee parking areas in new developments. Designating employee parking areas in new developments that are reserved for carpools and vanpools can incentivize and promote ride-sharing and can help reduce vehicle miles traveled.</p>	<p>ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS Section 1400 OFF-STREET PARKING AND LOADING</p>	<p>Goal 3: Provide an equitable, and connected multi-modal transportation system.</p> <p>Goal 8: Provide a transportation system that conserves energy, and protects and improves the environment.</p> <p>OAR 660-012-0045(4)(d)</p>
<p>9. Allow a portion of existing parking areas to redevelop for transit-oriented improvements consistent with the Columbia County Community-wide Transit Plan/US 30 Transit Access Plan. Allowing for a portion of existing parking areas to redevelop for transit uses, and allowing for parking minimums to be relaxed for these uses, will help accommodate transit usage in the county.</p>	<p>ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS Section 1400 OFF-STREET PARKING AND LOADING</p>	<p>Goal 5: Work with transit service providers to provide transit service and amenities that encourage and increase ridership.</p> <p>OAR 660-012-0045(4)(e)</p>
<p>10. To enhance connectivity, limit the use of cul-de-sacs. Where cul-de-sacs are included in development proposals, require that more direct, convenient and safer bicycle and pedestrian travel be accommodated within and between residential areas through the use of a shared-use path. Proposed SPO amendments refine existing cul-de-sac requirements and replaces the term “pedestrian ways” with “shared-use path,” as described in the updated TSP.</p>	<p>SPO ARTICLE X – SUBDIVISION AND PARTITION REQUIREMENTS SECTION 1005. STREETS.</p>	<p>Goal 3: Provide an equitable, and connected multi-modal transportation system.</p> <p>Goal 4: Increase the quality and availability of pedestrian and bicycle facilities.</p> <p>OAR 660-012-0045(6)</p>

Table 2: Columbia County Zoning Ordinance (ZO) and Subdivision and Partitioning Ordinance (SPO) Recommendations

	Recommendation	Ordinance Section	TSP Goal/TPR Citation
11.	<p>Modify road standards in the SPO to be consistent with the update TSP roadway standards. The existing County roadway standards in the SPO are consistent with the TPR’s direction to minimize pavement width and total ROW consistent with the operational needs of the facility. However, the updated TSP has modified the right-of-way width for collector streets and this dimension needs to be made consistent in the SPO. Proposed language also reflects the County’s current practice of applying city standards on County-owned facilities within urban growth boundaries. Note: the typical cross-sections in the County Road Standards should be replaced with the typical cross-sections in the updated TSP.</p>	<p>SPO ARTICLE X – SUBDIVISION AND PARTITION REQUIREMENTS SECTION 1005. STREETS.</p>	<p>Goal 1: Provide for efficient and convenient motor vehicle travel. OAR 660-012-0045(7)</p>
12.	<p>Add Legislative Amendment (including Major Map Amendment) approval criteria that require consistency with the Statewide Planning Goals. Proposed ZO amendments clarify that proposed legislative amendments to the acknowledged comprehensive plan and land use regulations must be found consistent with Statewide Planning Goals. Specific to the Transportation Planning Rule, proposed legislative amendments that affect an existing or planned transportation facility must ensure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility.</p>	<p>ZO ARTICLE VII – DISCRETIONARY PERMITS Section 1500 DISCRETIONARY PERMITS ZO ARTICLE VIII – ADMINISTRATION Section 1600 ADMINISTRATION</p>	<p>Goal 1: Provide for efficient and convenient motor vehicle travel. OAR 660-012-0060</p>
13.	<p>Allow for consolidated review of land use decisions in cases when project development requires land use decision-making. The TPR addresses project development and implementation - how a transportation facility or improvement authorized in a TSP is designed and constructed (Section -0050). Adding a provision to Article VIII (Administration) that specifies that projects authorized in an acknowledged TSP will not be subject to further justification with regard to their need, mode, function, or general location during project development, will ensure consistency with the TPR.</p>	<p>ZO ARTICLE VIII – ADMINISTRATION Section 1600 ADMINISTRATION</p>	<p>Goal 9: Coordinate with local and state agencies and transportation plans. OAR 660-012-0045(1)(c) OAR 660-012-0045(2)(d)</p>

Recommendation 1

ZO ARTICLE II – GENERAL PROVISIONS

Section 200 GENERAL PROVISIONS:

223 Transportation Improvements Permitted Outright: Except where otherwise specifically regulated by this ordinance, the following improvements are permitted outright:

- .1 Normal operation, maintenance, repair, and preservation activities of existing transportation facilities.
- .2 Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.
- .3 Projects that are consistent with projects identified and planned for in the Transportation System Plan.
- .4 Public transit facilities.
- .5 Landscaping as part of a transportation facility.
- .6 Emergency measure necessary for the safety and protection of property.
- .7 Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan except for those that are located in Primary Agriculture (PA) or Primary Forest (PF) zones.
- .8 Construction of a street or road as part of an approved subdivision or land partition consistent with the applicable land division ordinance.

Recommendation 2

ZO ARTICLE V – SUBURBAN DISTRICTS

Section 800 HIGHWAY COMMERCIAL

806 Portions of arterials or thoroughfares that have been designated as Highway Commercial Districts by the Commission shall be subject to the following requirements:

- .1 Approach roads and driveways giving access onto the designated arterial or thoroughfare shall not be less than 15 feet in width nor more than 25 feet in width and shall be so constructed as to conform to the specifications for road construction of the Columbia County Road Department.
- .2 Access shall not be permitted along the designated arterial or thoroughfare within a distance of ~~60~~265 feet from the right-of-way line of an intersecting street.

Recommendation 3

ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS

Section 1500 TRANSPORTATION IMPACT ANALYSIS

1501 Transportation Impact Analysis: A Transportation Impact Analysis (TIA) must be submitted with a land use application at the request of the Roads Department Director or if the proposal is expected to involve one or more of the conditions in (1) in order to minimize impacts on and protect transportation facilities, consistent with Section 660-012-0045(2)(b) and (e) of the State Transportation Planning Rule.

- .1 Applicability – A TIA shall be required to be submitted to the County with a land use application at the request of the Roads Department Director or if the proposal is expected to involve one (1) or more of the following:
 - A. Changes in land use designation, or zoning designation that will generate more vehicle trip ends.
 - B. Projected increase in trip generation of 25 or more trips during either the AM or PM peak hour, or more than 400 daily trips.
 - C. Potential impacts to intersection operations.
 - D. Potential impacts to residential areas or local roadways, including any non-residential development that will generate traffic through a residential zone.
 - E. Potential impacts to pedestrian and bicycle routes, including, but not limited to school routes and multimodal roadway improvements identified in the TSP.
 - F. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
 - G. A change in internal traffic patterns may cause safety concerns.
 - H. A TIA is required by ODOT pursuant with OAR 734-051.
 - I. Projected increase of five trips by vehicles exceeding 26,000-pound gross vehicle weight (13 tons) per day, or an increase in use of adjacent roadways by vehicles exceeding 26,000-pound gross vehicle weight (13 tons) by 10 percent.
- .2 Level of analysis – A Transportation Impact Analysis (TIA) is required for developments that are expected to have an impact on the transportation system, per the conditions in (1).
- .3 Consistent with the County’s Guidelines for Transportation Impact Analysis (TIA), a landowner or developer seeking to develop/redevelop property shall contact the County at the project’s outset. The County will review existing transportation data to establish whether a TIA is required. It is the responsibility of the applicant to provide enough detailed information for the County to make a determination. An applicant should have the following prepared, preferably in writing:
 - A. Type of uses within the development

- B. The size of the development
- C. The location of the development
- D. Proposed new accesses or roadways
- E. Estimated trip generation and source of data
- F. Proposed study area

If the County cannot properly evaluate a proposed development's impacts without a more detailed study, a TIA will be required. Within a reasonable time following the initial contact, the County will establish whether a TIA is required. The County will provide a scoping summary detailing the study area and any special parameters or requirements, beyond the requirements set forth in the County's Guidelines for Transportation Impact Analysis, when preparing the TIA.

.4 Approval Criteria. When a TIA is required, a proposal is subject to the following criteria:

- A. The TIA addresses the applicable elements identified by the County Roads Department Director and the County's Guidelines for Transportation Impact Analysis;
- B. The TIA demonstrates that adequate transportation facilities exist to serve the proposed development or, identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the County Roads Department Director and, when state highway facilities are affected, to ODOT;
- C. For affected non-highway facilities, the TIA establishes that mobility standards adopted by the County have been met; and
- D. Proposed public improvements are designed and will be constructed consistent with County Road Standards and access spacing standards in the Transportation System Plan.

.5 Conditions of Approval.

- A. The County may deny, approve, or approve a proposal with conditions necessary to meet operational and safety standards; provide the necessary right-of-way for improvements; and to 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 County standards.
- C. 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.

Recommendation 4

ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS

Section 1400 OFF-STREET PARKING AND LOADING

1419 Minimum Required Bicycle Parking Spaces:

21.05 Bicycle Parking

- .1 All Public and Semi-Public Buildings and Uses, Retail Uses, and Commercial Recreation uses where required new vehicle parking areas exceed 10 motorized spaces must include a designated area for bicycle parking within 50 feet of a public entrance.
- .2 The following are the required number of bicycle parking spaces.
 - A. Apartment Dwelling. Every residential use of four (4) or more dwelling units shall provide at least one (1) sheltered bicycle parking space for each unit. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the required bicycle parking spaces shall be sheltered under an eave, overhand, an independent structure, or similar cover.
 - B. Parking Lots. All public and commercial parking lots and parking structures shall provide a minimum of one (1) bicycle parking space for every 10 motor vehicle parking spaces.
 - C. Schools. Elementary and junior high schools, including private or parochial, shall provide one bicycle parking space for every 10 students and employees. High schools shall provide one bicycle parking space for every five (5) students and employees. All spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.
- .3 Single-family dwellings, mobile homes, warehouse, storage and wholesale businesses, and manufacturing establishments shall be exempted from the requirements of Section 21.05 Bicycle Parking.

Recommendation 5

ZO ARTICLE VII – DISCRETIONARY PERMITS

Section 1500 DISCRETIONARY PERMITS

1554 Pre-application Conference Committee: The committee shall be appointed by the Planning Director and shall consist of at least the following officials, or their designated staff members. Only affected officials need to be present at each pre-application conference.

- A. The County Planning Director
- B. The County Director of Public Works.

- C. The Fire Marshal of the appropriate Rural Fire District.
- D. The County Building Official.
- E. The County Sanitarian.
- F. A city representative, for projects inside Urban Growth Boundaries.
- G. A representative from the County transit agency.
- H. A representative from the Oregon Department of Transportation, for proposals that may impact state transportation facilities.
- G. I. Other appointees by the Planning Director, such as an Architect, Landscape Architect, real estate agent, appropriate officials, etc.

ZO ARTICLE VIII – ADMINISTRATION

1603 Quasijudicial Public Hearings: As provided elsewhere in this ordinance, the Hearings Officer, Planning Commission, or Board of Commissioners may approve certain actions which are in conformance with the provisions of this ordinance. Zone Changes, Conditional Use Permits, Major Variances, and Temporary Use Permits shall be reviewed by the appropriate body and may be approved using the following procedures:

- .1 The applicant shall submit an application and any necessary supplemental information as required by this ordinance to the Planning Department. The application shall be reviewed for completeness and the applicant notified in writing of any deficiencies. The application shall be deemed complete upon receipt of all pertinent information. If an application for a permit or zone change is incomplete, the Planning Department shall notify the applicant of exactly what information is missing within 5 days of receipt of the application and allow the applicant to submit the missing information. The application shall be deemed complete for the purpose of this section upon receipt by the Planning Department of the missing information. [effective 7-15-97]
- .2 Once an application is deemed complete, it shall be scheduled for the earliest possible hearing before the Planning Commission or Hearings Officer. The Director will publish a notice of the request in a paper of general circulation not less than 10 calendar days prior to the scheduled public hearing. Notices will also be mailed to adjacent individual property owners, in accordance with ORS 197.763[effective 7-15-97], and affected jurisdictions and agencies. Agency notification may include the Department of Environmental Quality, the Oregon Department of Transportation, and Columbia County Rider.
[Note: ORS 197.763 requires 20 days notice (or 10 days before the first hearing if there will be 2 or more hearings), and that notice be provided to property owners within 100' (inside UGBs), 250' (outside UGBs), or 500' (in farm or forest zones).]
- .3 At the public hearing, the staff, applicant, and interested parties may present information relevant to the criteria and standards pertinent to the proposal, giving reasons why the application should or should not be approved, or what modifications are necessary for approval. [effective 7-15-97] .4 Approval of any action by the Planning Commission at the public hearing shall be by procedure outlined in Ordinance 91-2. [effective 7-15-97]

1606 Legislative Hearing: Requests to amend the text of the Zoning Ordinance or to change a large area of the Zoning Map of Columbia County in order to bring it into compliance with the

Comprehensive Plan are legislative hearings. Legislative hearings shall be conducted in accordance with the following procedures.

- .1 A legislative amendment to the Zoning Ordinance Text or Map may be initiated at the request of the Board of Commissioners, a majority of the Commission, or the Director, or any citizen of the County may petition the Commission for such a change.
- .2 Notice of a Legislative Hearing shall be prepared in conformance with ORS 215.503. Notice shall be published at least twice, one week apart in newspapers of general circulation in Columbia County. The last of these notices shall be published no less than 10 calendar days prior to the Legislative Hearing. The mailing of notice to individual property owners is not required but shall be done if ordered by the Board of Commissioners. Notice shall be mailed to any affected governmental agency. Notice shall be provided to the Oregon Department of Transportation and Columbia County Rider for proposals that impact the transportation system.

1609 Notice of Review by the Director: The submittal of an application which may be approved by the Director requires that notice of the review of such an application be given to affected persons. ~~This means that notice of this review will be mailed to all property owners within 250 feet of the subject property and to the Citizen Planning Advisory Committee for the area.~~

- .1 Notice of this review will be mailed to the following:
 - A. All property owners within 250 feet of the subject property.
 - B. The Citizen Planning Advisory Committee for the area.
 - C. Any governmental agency that is entitled to notice under an intergovernmental agreement entered into with the County and any other affected agencies. At a minimum, the Director shall notify the road authority if different than the County.
- .2 These notices shall contain:
[...]

Recommendation 6

SPO ARTICLE I – INTRODUCTORY PROVISIONS

SECTION 103. CONSTRUCTION AND DEFINITIONS.

[...]

- C. Definitions. Consistent with the definitions of ORS 92.010, for the purpose of this ordinance, the following words and phrases shall mean:

(46) Sales or Sell. Includes every disposition or transfer of land in a subdivision or partition or an interest or estate therein.

(47) Shared-used Path. An off-street path that can be used and shared by several transportation modes, including bicycles, pedestrians, and other non-motorized modes. Shared-use paths accommodate two-way travel.

(47) (48) Sidewalk. A pedestrian walkway with an all weather surface.

[NOTE: All subsequent definitions will need to be renumbered.]

[...]

(53) Walkway. A sidewalk or path, including any access way, improved to County standards, or to other roadway authority standards, as applicable. See also, Access, Shared-use Path and Sidewalk.

ZO ARTICLE I – GENERAL DEFINITIONS

Section 100 GENERAL DEFINITIONS:

[...]

.111 Trailer Park: Land designed or used for the temporary parking of 4 or more trailers or vehicles used for human habitation.

.112 Walkway. A sidewalk or path, including any access way, improved to County standards, or to other roadway authority standards, as applicable. See also, Access and Shared-use Path.

.112 Yard: An open space on a lot or parcel with a building and bounded on 1 or more sides by such building, such space being unoccupied and unobstructed from 30 inches above the ground upward.

[NOTE: All subsequent definitions will need to be renumbered.]

ZO ARTICLE VII – DISCRETIONARY PERMITS

Section 1500 DISCRETIONARY PERMITS

1561 Proposed Site Plan: A complete application for design review shall be submitted, including the following plans, [...]

E. Pedestrian Access and Circulation

1. Site Layout and Design. To ensure safe, direct, and convenient pedestrian circulation, all developments, except single-family detached housing (i.e., on individual lots), shall provide a continuous pedestrian system.
2. Continuous Walkway System. The pedestrian walkway system shall extend throughout the development site and connect to all future phases of development, and to existing or planned off-site adjacent trails, public parks, and open space areas to the greatest extent practicable.
3. Safe, Direct, and Convenient. Pedestrian walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent streets, based on the following definitions:

- a. Reasonably direct. 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 likely users.
 - b. Safe and convenient. Routes that are reasonably free from hazards and provide a reasonably direct route of travel between destinations.
 - c. "Primary entrance" for commercial, industrial, public, and institutional buildings is the main public entrance to the building. In the case where no public entrance exists, street connections shall be provided to the main employee entrance.
 - d. "Primary entrance" for residential buildings is the front door (i.e., facing the street). For multifamily buildings in which each unit does not have its own exterior entrance, the "primary entrance" may be a lobby, courtyard, or breezeway which serves as a common entrance for more than one dwelling.
4. When proposed commercial, office, institutional or multi-family uses are located on a site that includes or is adjacent to an existing or planned transit stop, the proposed pedestrian circulation system must demonstrate a safe and convenient pedestrian route from building entrances to the transit stop or to a public right-of-way that provides access to the transit stop.

1563 Standards for Approval:

The Planning Commission or Director shall make a finding with respect to each of the following criteria when approving, approving with conditions, or denying an application:

[...]

- F. Walkway Design and Construction. Walkways, including those provided with pedestrian access ways, shall conform to all of the standards in subsections 1-4:
1. Vehicle/Walkway Separation. Except for crosswalks (subsection 2), where a walkway abuts a driveway or street, it shall be raised 6 inches and curbed along the edge of the driveway/street. Alternatively, the decision body may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is protected from all vehicle maneuvering areas. An example of such protection is a row of decorative metal or concrete bollards designed for withstand a vehicle's impact, with adequate minimum spacing between them to protect pedestrians.
 2. Crosswalks. Where walkways cross a parking area, driveway, or street ("crosswalk"), they shall be clearly marked with contrasting paving materials (e.g., light-color concrete inlay between asphalt), which may be part of a raised/hump crossing area. Painted or thermo-plastic striping and similar types of non-permanent applications may be approved for crosswalks not exceeding 24 feet in length.
 3. Walkway Width and Surface. Walkway and accessway surfaces shall be concrete, asphalt, brick/masonry pavers, or other durable surface, as approved by the City Engineer, at least

six (6) feet wide. Multi-use paths (i.e., for bicycles and pedestrians) shall be concrete or asphalt, at least 10 feet wide.

4. Accessible routes. Walkways shall comply with applicable Americans with Disabilities Act (ADA) requirements. The ends of all walkways, where the walkway intersects a driveway or street shall provide ramps that are ADA accessible, and walkways shall provide direct routes to primary building entrances.

ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS

Section 1400 OFF-STREET PARKING AND LOADING

1415 Parking Areas: All parking areas, excluding one and two-family dwellings, shall meet the following requirements:

- .1 All parking areas of less than 20 parking spaces shall have one handicapped parking space. Parking areas with more than 20 spaces shall provide one handicapped parking space for every 50 standard parking spaces.
- .2 All parking areas shall be divided into bays of not more than 20 parking spaces. Between, and at the end of each parking bay, there shall be planters which have a minimum width of 5 feet and be at least 17 feet in length. Each planter shall contain one major structural tree and ground cover which has been deemed appropriate by the Director. Truck loading areas need not comply with the preceding requirements.
- .3 Parking areas shall be separated from the exterior wall of a structure, exclusive of paved pedestrian entranceways, by a 5 foot strip of landscaping.
- .4 Industrial or commercial parking areas, which abut a residential or apartment district, shall meet the building setback of the most restrictive adjoining residential or apartment district.
- .5 When industrial or commercial parking areas adjoin a residential or apartment district, there shall be a sight obscuring planting, which is at least 80 percent opaque and when viewed horizontally from between 2 and 8 feet above ground level. This planting shall be composed of materials which are an adequate size so as to achieve the required degree of screening within 12 months after installation.
- .6 Parking areas shall be set back from a lot or parcel line adjoining a street. The setback area shall be landscaped.
- .7 All parking area setbacks shall be landscaped with major trees, shrubs, and ground cover as approved by the Director.
- .8 A minimum of 10 percent of the parking area shall be landscaped and maintenance of the landscaping shall be the owner's responsibility.
- .9 Internal pedestrian connections shall be provided in parking lots with greater than ten (10) parking spaces. 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.

Recommendation 7

ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS

Section 1300 SIGNS

1311 Signs for Essential Services and Public Facilities: The following signs shall be permitted in all districts:

- .1 City limits signs and public notice signs.
- .2 Police, fire, school, and hospital directional signs.
- .3 Park directional signs.
- .4 Traffic and safety signs.
- .5 Transit-related (bus) signs.

[New] Section 1500 TRANSIT IMPROVEMENTS

1500 Transit Improvements. Sites that include existing or planned transit facilities, as identified in the County Transit Plan, may be required to provide the following:

- .1 A reasonably direct pedestrian connection, as defined by Section 1561.E.3.a, between the transit facility and building entrances on the site.
- .2 A transit passenger landing pad accessible to disabled persons.
- .3 An easement or dedication for a passenger shelter or bench if such facility is identified in the County Transit Plan.
- .4 Lighting at the transit facility.

Recommendation 8

ZO ARTICLE VI – SPECIAL DISTRICTS, OVERLAY DISTRICTS AND SPECIAL PROVISIONS

Section 1400 OFF-STREET PARKING AND LOADING

1415 Parking Areas: All parking areas, excluding one and two-family dwellings, shall meet the following requirements:

[...]

- .10 In urban growth boundaries and urban unincorporated communities, parking lots for commercial, industrial, and public/quasi-public uses that have designated employee parking and more than 20 parking spaces shall provide at least 10% of the employee parking spaces (with a minimum of two spaces) as preferential long-term carpool and vanpool parking spaces.

Preferential carpool and vanpool parking spaces shall be closer to the entrances of the building than other parking spaces, with the exception of ADA accessible parking spaces.

Recommendation 9

.11 A portion of existing parking areas may be redeveloped for transit-oriented improvements, such as a bus stops and pullouts, bus shelters, park and ride stations, transit-oriented developments, and similar facilities, where identified in or consistent with an adopted County transit plan. Subject sites incorporating transit improvements as part of a development proposal are eligible for up to a 10% reduction in required vehicular parking spaces.

Recommendation 10

SPO ARTICLE X – SUBDIVISION AND PARTITION REQUIREMENTS

SECTION 1005. STREETS.

[...]

K. Cul-de-sacs. A cul-de-sac street shall only be used where the County Public Works Director determines that environmental or topographical constraints, existing development patterns, or compliance with other applicable County requirements preclude a street extension. A cul-de-sac turnaround shall be provided at the end of a permanent deadend street in accordance with the County construction standards and specifications. For greater convenience to traffic and more effective police and fire protection, permanent dead-end streets shall, in general, be limited in length to six times the minimum lot width, serving no more than 18 dwelling units, and not exceeding 400 feet in length in urban areas and 800 feet in rural areas, from entrance to center of turnaround, with a radius of 50 feet at the property line and not less than 40 feet at the outer curb line or traveled way. The cul-de-sac shall provide, or not preclude the opportunity to later install, a shared-use path between it and adjacent developable lands. Such access ways shall conform to Section 1011.

L. Street Surfacing and Improvements. Public streets, including alleys, within developments shall be improved in accordance with the requirements of the Columbia County Road Standards. Within urban growth boundaries streets shall be developed in accordance with any applicable city/county joint management agreements. [Amended 11-4- 92]

SECTION 1011. ~~PEDESTRIANWAYS~~. SHARED-USE PATHS *[Note: Term replaced to be consistent with the walking and biking standards in the 2016 TSP. If this modification is acceptable, all existing references to “pedestrianways” in the SPO and ZO will need to be changed to “shared-use path.” There are currently seven (7) references to “pedestrian ways” in the SPO and one (1) reference in the ZO.]*

When desirable for public convenience and when not prohibited by topography or by the provisions of an Overlay District, ~~pedestrianways~~ shared-use paths may be required to connect to cul-de-sacs or to pass through unusually long or oddly shaped blocks. The width of the paved shared-use path shall be a minimum of 10 feet in width. The Public Works Director may allow for a reduced minimum of eight (8) feet in constrained areas (e.g., steep, environmentally sensitive, historic, or previously developed areas). In areas with significant walking or biking demand, the Commission may require, in

order to facilitate pedestrian access from streets, perpetual, unobstructed easements at least 12 feet in width.

Recommendation 11

SPO ARTICLE X – SUBDIVISION AND PARTITION REQUIREMENTS

SECTION 1005. STREETS.

- C. Street Widths and Roadways. Unless otherwise indicated on the official map, or the roadway meets the criteria in 1005.C.(5), the width of rights-of-way and roadway improvements shall be in compliance with the following:
- (1) Minor Arterial. Right-of-way width 80 feet.
 - (2) Collector. Right-of-way width ~~50~~ 60 feet.
 - (3) Local. Right-of-way width 50 feet ~~— this width may be varied by the Commission to the width in urban areas to meet the requirement of individual cities.~~
 - (4) The Board may, upon a recommendation by the County Roadmaster, require additional right-of-way width to protect the public health, safety, and welfare.
 - (5) For roadways within a UGB but outside city limits, the County will apply the adopted roadway and access spacing standards of the applicable jurisdiction, where these standards are equal to, or more restrictive than, adopted County standards.

Recommendation 12

ZO ARTICLE VII – DISCRETIONARY PERMITS

1502 **ZONE CHANGES** (Map Amendments): There are two types of zone changes which will be considered by the Commission: Major Map Amendments and Minor Map Amendments.

- .1 Major map Amendments are defined as Zone Changes which require the Comprehensive Plan Map to be amended in order to allow the proposed Zone Change to conform with the Comprehensive Plan. The approval of this type of Zone Change is a 2 step process:
 - [...]
 - B. Final approval of a Major Map Amendment may be given by the Board of Commissioners. The Commissioners shall hold a hearing on the proposed Zone Change either concurrently or following a hearing on the proposed Comprehensive Plan Amendment which is necessary to allow the proposed zoning to conform with the Comprehensive Plan. The Board may approve a Major Map Amendment provided they find adequate evidence has been presented substantiating the following:
 1. The proposed Zone Change is consistent with the policies of the Comprehensive Plan;

2. The proposed Zone Change is consistent with the Statewide Planning Goals (ORS 197), including Goal 12 Transportation and the requirements of the Transportation Planning Rule (ORS 660-012) Section -0060; and
3. The property and affected area are presently provided with adequate facilities, services, and transportation networks to support the use, or such facilities, services, and transportation networks are planned to be provided concurrently with the development of the property.

ZO ARTICLE VIII – ADMINISTRATION

1606 Legislative Hearing: Requests to amend the text of the Zoning Ordinance or to change a large area of the Zoning Map of Columbia County in order to bring it into compliance with the Comprehensive Plan are legislative hearings. Legislative hearings shall be conducted in accordance with the following procedures.

- .1 A legislative amendment to the Zoning Ordinance Text or Map may be initiated at the request of the Board of Commissioners, a majority of the Commission, or the Director, or any citizen of the County may petition the Commission for such a change.
- .2 Notice of a Legislative Hearing shall be published at least twice, one week apart in newspapers of general circulation in Columbia County. The last of these notices shall be published no less than 10 calendar days prior to the Legislative Hearing. The mailing of notice to individual property owners is not required but shall be done if ordered by the Board of Commissioners.
- .3 The Commission shall hold a hearing to consider the proposed amendments and shall make a recommendation to the Board of Commissioners with regard to the proposed amendments. The Board of Commissioners shall hold at least one hearing to consider the proposed amendments. Both the Commission and the Board of Commissioners hearings will require notice in the manner outlined in Section 1611.

1607 Legislative Amendment Criteria

- .1 Consistency with Statewide Planning Goals: If the proposal involves an amendment to the Comprehensive Plan, the amendment must be consistent with the Statewide Planning Goals and relevant Oregon Administrative Rules.
- .2 Consistency with the Comprehensive Plan: All amendments to the Zoning Ordinance Text and Map shall be consistent with the Comprehensive Plan Text and Maps.
- ~~.1 The Commission shall hold a hearing to consider the proposed amendments and shall make a recommendation to the Board of Commissioners with regard to the proposed amendments. The Board of Commissioners shall hold at least one hearing to consider the proposed amendments. Both the Commission and the Board of Commissioners hearings will require notice in the manner outlined in Section 1611.~~

Recommendation 13

ZO ARTICLE VIII – ADMINISTRATION

Section 1600 ADMINISTRATION:

1620 Consolidated Review of Applications.

- .1 When an applicant applies for more than one type of land use or development permit for the same one or more contiguous parcels of land, the proceedings shall be consolidated for review and decision. When proceedings are consolidated, required notices may be consolidated, provided the notice shall identify each application to be decided. When more than one application is reviewed in a hearing, separate findings and decisions shall be made on each application.
- .2 Transportation improvement projects approved as part of a land use decision or authorized in the adopted Columbia County TSP will not be subject to separate or additional land use permitting with regard to justifying their need, mode, function, or general location during project development.

Section N

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Section O

Public Involvement Summary

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.



Columbia County Transportation System Plan Update

Transportation Road Advisory Committee (TRAC) Meeting #1

Summary

MEETING DATE:	July 24, 2014
MEETING TIME:	10:00 a.m. to 12:00 p.m.
MEETING LOCATION:	Columbia County Road Department, 1054 Oregon Street, St. Helens.
MEETING PURPOSE:	The purpose of this meeting is to provide an orientation to the TSP project and to obtain input on the Goals, Objectives, and Evaluation Criteria for transportation in Columbia County.

TOPICS

I. Sign-in, Agenda Overview, and Introductions

Project staff and TRAC members in attendance introduced themselves. The following were in attendance:

- Dave Hill- Columbia County
- Lonny Welter- Columbia County
- Cherie Moylan- Columbia County
- John Bosket- DKS
- Kevin Chewuk- DKS
- Nita Greene- TRAC Member
- Rosemary Lohrke- TRAC Member
- Janet Wright- TRAC Member

2. Project Orientation

Project staff presented the following to the TRAC through a PowerPoint presentation:

What is a TSP and why are they important? The TSP is a long-range plan that establishes a system of transportation facilities to meet current and future needs. It is the transportation element of the comprehensive plan. The TSP is important because it provides direction for developing the county's transportation system, provides a basis for making better decisions about how to invest in the transportation system, coordinates state, county, and local planning, and makes the county more competitive for state and federal transportation funding.

What should TSPs include? The TSP must provide direction for future decisions. This is done through documented vision, goals, and policies that describe the values and priorities of the community, as well as through amendments to the county’s municipal code to support action and enforcement.

The TSP must also include projects to expand and improve the existing transportation system for all modes of travel. In addition to projects that build new facilities, an array of tools should also be provided to help maximize the return on investments made in facilities you already have through better management practices (e.g., street connectivity requirements, street design standards, standards for mobility and driveway spacing that vary with the intended function of the street). Furthermore, the TSP should include a strategic approach to planning future investments that acknowledges fiscal constraints.

The Columbia County TSP development process: The TSP development process includes the following project stages:

- Establishing an initial set of TSP Goals and Policies
- Evaluation of Existing and Future Conditions
- Develop Evaluation Criteria
- Develop Transportation Solutions
- Draft Plan
- Adoption Hearings

During this process, there will be a series of TRAC meetings, public open houses, and County Commission work sessions. To stay informed of project progress and upcoming events, TRAC members and citizens are encouraged to regularly check our project website at www.columbiacountytsp.org.

TRAC roles and responsibilities: the TRAC will serve as community representatives and will help to develop the county’s Vision, Goals, and Objectives; identify system needs; develop solutions; and evaluate and prioritize solutions. Our goal is to have the TSP reflect Columbia County’s interests and have the TRAC willing to endorse the plan before the County Commission.

3. Transportation Goals, Objectives, and Evaluation Criteria

This part of the meeting focused on describing values, key areas of interest, and desired direction for transportation system development in the future. The project team will take the input gained from this discussion and use it to draft a vision and complimentary goals and objectives for the TSP. While the vision, goals, and objectives are subject to change throughout the project, they will be used to guide the development of the types of improvements the community would like to see and evaluate the plan to ensure it aligns with local interests.

The Vision: What should the transportation system look like in 20 years and what should it accomplish?

In this part of the meeting, TRAC members discussed what they thought was important to incorporate into Columbia County's vision of its future transportation system. Ideas brought forth included:

- Keep existing transportation infrastructure operational and in good repair.
- Make incremental investments to the transportation system where funding allows.
- Improve access and ease of access to transportation facilities.
- Improve access to Highway 30.
- Improve accessibility over and around rail tracks.

After discussing the vision for the transportation system, it was agreed that the existing transportation goal in the 1998 Columbia County TSP will be the new vision statement for the TSP Update. It will be modified slightly to include a statement about managing the existing transportation infrastructure.

Proposed Transportation Vision Statement:

The creation of efficient, safe, and diverse transportation system to serve the needs of Columbia County residents, where existing transportation infrastructure and assets are managed and maintained, and investments to the transportation system use available funding efficiently.

Goals & Objectives: What do we want to accomplish and what should our priorities be?

TRAC members discussed the Draft Goals and Objectives for the TSP update. The following input was provided:

- Objective 1a: The TRAC asked project staff to explain what a mobility standard is. Project staff explained that it is a threshold for how much congestion the community is willing to live with along streets and at intersections.
- Objective 1e: The TRAC asked project staff to explain what ITS means. Project staff explained that it is technology that can make the transportation system more efficient or effective.
- Goal 4: The TRAC noted that if you are within walking or biking distance of your destination, the transportation infrastructure should allow for that trip to occur safely.
- Objective 4c: Modify description to include large employment centers, such as industrial park/areas.
- Evaluation Criteria: The TRAC questioned what it was for. Project staff explained that it is used to filter project solutions to help identify those with the most importance to the community.

TRAC members agreed the Draft Goals and Objectives were consistent with their priorities of the TSP Update. The TRAC then prioritized the 9 Goals into tiers, as follows:

- Goals 1, 2, 7: Tier 1
- Goal 5: Tier 1.5 (between Tier 1 and 2)

- Goals 3, 4, 6: Tier 2
- Goals 8, and 9: Tier 3

Also, within Goal 2 in the evaluation criteria (Table 1 of Technical Memorandum #5), enhancing access and mobility for emergency response should be weighted lower than other measures.

The goal tiers will later be used to weight the importance of goals when applied to the evaluation criteria and used to score potential solutions.

4. Next Steps

- The TRAC has two weeks to provide comments on the draft Memo's. Comments should be returned to Lonny Welter by Thursday, August 7th.
- We will also be proceeding with the assessment of existing conditions and will begin forecasting conditions for the year 2035. Our next meetings will be in the winter, when we will discuss current and projected transportation issues and preferred methods for addressing them. In the meantime, please visit the project website www.columbiacountytsp.org and provide comments on issues you see in the county.
- The TRAC requested that someone from ODOT Rail attend the next meeting to discuss concerns over rail crossings.



Columbia County Transportation System Plan Update

Transportation Road Advisory Committee (TRAC) Meeting #2

Summary

MEETING DATE:	February 12, 2015
MEETING TIME:	10:00 a.m. to 12:00 p.m.
MEETING LOCATION:	Columbia County Road Department, 1054 Oregon Street, St. Helens.
MEETING PURPOSE:	The purpose of this meeting is to review the findings from Technical Memoranda #6 through #8 regarding existing and future baseline transportation conditions. These memos describe what current transportation conditions are like and what they will be like 20 years from now if no substantial improvements are made. An overview of key findings will be provided and the consultant will lead a discussion of potential transportation solution focus areas.

TOPICS

I. Sign-in, Introductions, and Agenda Overview

Project staff and TRAC members in attendance introduced themselves. The following were in attendance:

- Dave Hill- Columbia County
- Lonny Welter- Columbia County
- Tristan Wood- Columbia County
- Julia Wheeler- Columbia County
- John Bosket- DKS
- Kevin Chewuk- DKS
- Rick Shankle- ODOT Rail
- Nita Greene- TRAC Member
- Rosemary Lohrke- TRAC Member
- Pat LaPointe- TRAC Member
- Sabrina Moore- TRAC Member
- Scott Jensen- TRAC Member

John Bosket provided an overview of the transportation system plan process to date. Last time the TRAC met the project was just kicking off. We discussed what a TSP was, and why we're updating it. We also discussed goals and objectives and the things TRAC members wanted to accomplish with the TSP update, with members weighting different transportation priorities.

Since then, we've been doing an assessment of the state of the transportation system. The drafts of Technical Memorandum #6: Existing Conditions, Technical Memorandums #7: Future Traffic

Forecast and Technical Memorandum #7: Future Transportation Conditions and Needs have been completed and delivered to the TRAC. These memo's discussed what the transportation system looks like and how it functions today, and forecasted traffic volumes through 2035 to help identify what needs should be addressed.

2. Overview of Existing and Future Transportation Conditions

Project staff presented the following to the TRAC through a PowerPoint presentation:

Who is traveling in Columbia County?

- Columbia County's population is aging, with residents over the age of 65 expected to increase nearly 10 percent through 2035.
- Population and employment are expected to increase 30 percent through 2035, with over 70 percent of residents who reside in the county working in other counties.
- Most Columbia County residents commute to work via single occupant motor vehicles (about 79 percent). A notable number of residents carpooled (about 12 percent) to work. Approximately two percent walked, one percent biked, and one percent used public transit.

Driving Conditions

- Highway traffic volumes generally increase 20 percent during the summer.
- There is very little traffic congestion outside of the urban areas today, with only minor congestion on US 30 between Clatskanie and Rainier. By 2035, congestion is expected to worsen, but still generally good. Turning out of Berg Road, Heath Road, and Old Rainier Road onto US 30 will get harder during the evening peak period, resulting in long delays.
- There were 26 fatal, and 64 serious injury collisions in the county over the previous five years. Nearly half of these involved drivers colliding with fixed objects (e.g., trees, ditches, signs, etc.).

A TRAC member questioned what could be done about the fixed object collisions. The project team suggested a few potential solutions, including better signing or striping, tree removal, or weather responsive feedback information during fog or icy weather.

- High crash intersections included US 30/Tide Creek Road, US 30/Neer City Road, and US 30/Gable Road.
- High crash roadway segments included US 30 east of Clatskanie, US 30 east of Rainier, and OR 47 north of Vernonia.

A TRAC member questioned how the local high collision locations correlate to the ODOT SPIS sections. The project team explained that they somewhat align. Another TRAC member asked what a SPIS segment is. The project team explained that a SPIS (Safety Priority Index System) segment is one way ODOT identifies high collision locations and priority locations for improvements.

- 8 bridges in the county are in need of repair/replacement (5 are currently weight restricted).
- 38 percent of county roadways are in poor/very poor condition, and 31 percent are gravel.

A TRAC member asked what could be causing the congestion between Rainier and Clatskanie. The project team noted that it could be people traveling to the coast and this is the area that starts getting hilly with large recreational vehicles and trucks traveling at slower speeds.

Walking and Biking

- Pedestrian activity outside of cities is low.
- Not a lot of facilities outside of urban areas. US 30 is the only viable biking corridor.
- Trails are available, but the gap east of Vernonia needs to be connected.

A TRAC member questioned if we identified shared roadways. The project team mentioned that shared roadways are typically low-volume, low speed roadways. Speeds are often too high for most county roads to make this a safe and comfortable option. However, we have seen key bike routes identified along rural segments, with signage identifying it as such a route.

Public Transit

- 87,500 passengers annually, with 48,000 passengers on PDX route.
- Dial-a-Ride for riders with disabilities.
- TriMet provides regional services in the Portland Metropolitan Area, and connects to CC Rider in Portland and Beaverton.
- No weekend service.

Freight and Rail Facilities

- US 30 is a key route for freight movement and provides access to intermodal facilities (connections between truck, ship, and rail transport).
- Rail crossings can cause delay and limited access for emergency services.

A TRAC member noted that log truck traffic traveling from Clatsop and Tillamook Counties to Longview and Rainier impact the county roadway system.

A TRAC member questioned the rail delay, and noted that it typically takes less than 10 minutes for trains to cross in the county. It occasionally takes up to 20 minutes when the trains are switching.

A TRAC member asked if the crash potential would increase if the railroad tracks are improved to allow higher train speeds. Rick Shankle, from ODOT Rail, noted that the rail tracks have consistently been improved over the years by the Portland & Western Railroad (PNWR) and they have not indicated an intention to increase speeds beyond 25 mph. He noted that for trains traveling between 10 and 25 mph, there really is not much difference from a safety perspective. There are sections in Columbia County at 25 mph now. PNWR is required to have more

inspectors out on the tracks, more often, with higher speeds. Overall, Rick noted that the rail improvements have increased the efficiency of rail operations. ODOT has no control over how fast the trains go. The railroad chooses what class of track they operate at, where Class 1 has a maximum authorized speed of 10 mph, while Class 2 has a maximum speed of 25 mph. The federal government checks to make sure they are maintaining it to the chosen standard.

A TRAC member asked how much rail traffic is currently traveling through the county and has it generally been increasing? Rick indicated that on average, there are around 16 trains per month, however, it has been lower during the beginning of this year. He noted that the products shipped and length of the trains are generally based on the economy.

Rick noted that PNWR is working on improving A Street in Rainier. They are separating the railroad from the road with curbs, to improve safety. The concept is to remove the asphalt 8 feet from the center of the track, and put in curb. At crossings it will be set-up with typical flashing lights. Some diagonal parking will be replaced with parallel parking. An example of the concept is 6th Street in downtown Corvallis.

A TRAC member questioned who owns the rail and what type of trains come through. Rick noted that the railroad is owned, operated, maintained and inspected PNWR. However, ODOT owns the ROW that the rail is on. ODOT Rail has a partnership program with the Federal Rail Administration, with certified inspectors to make sure PNWR is meeting the federal rail requirements. ODOT Rail inspects for many aspects of the trains, and also authorizes the public rail crossings. Rick noted that there are short spur tracks, and industrial spurs in the county that are owned by the Ports. PNWR inspects these as well, and ODOT Rail inspects the crossings. ODOT Rail has authority to inspect all crossings.

The TRAC noted that the most recent rail study in the county doesn't address the current concern, which is increased oil trains. Rick noted that as a Common Carrier Railroad, PNWR can not refuse service to trains carrying oil. However, in the interest of safety, they do send out inspectors in advance of all oil trains.

Rick noted that train lengths are limited by the ability of the rear of the train to communicate with the front, and that the tunnels and mountainous topography in Oregon impacts the length of the train. In Columbia County, trains generally are no longer than 99-100 cars (about 1 mile in length).

The TRAC member questioned why sidewalk typically isn't located adjacent to rail. Rick noted a concern with inviting people to walk on the tracks. He noted that it is not impossible to put a trail within the rail ROW. The national standard for a shared-use path adjacent to rail includes a barrier between the path and the tracks to make it more difficult to walk out onto the railroad. A TRAC member asked if the rail likes to keep a clear zone around the tracks. Rick noted that the rail likes to keep the visibility with buildings or vegetation back to keep a clear line of sight to signals and signs. They also need to keep it clear for maintenance, since equipment can stick out from the track.

3. Discuss Potential Improvement Focus Areas

This part of the meeting focused on potential improvement focus areas. The TRAC noted that the focus on the TSP appears to be on the state system as opposed to the County system. The project team noted that it may appear that way because the usage of US 30 is so much higher than other routes and, therefore, many of the issues show up on that corridor. Needs and solutions for both the County and State systems will be included in the TSP.

The TRAC is interested in solutions that focus on the impacts of turning out of side streets onto US 30, especially with the expected increase in traffic through 2035. They noted that it is sometimes difficult to determine how quickly the cars are approaching with the high travel speeds on the highway. The project team noted that signal warrants were assessed at many of these approaches, and that there wasn't enough side street traffic to warrant a traffic signal. You have to make sure you have enough use on the side street to justify the additional delay on the main street. The side street traffic wasn't high enough to meet those warrants. TRAC members noted that if a signal were put in, traffic would divert away from many nearby unsignalized intersections to use it, creating the demand needed to justify installation.

The project team noted that a future signal is planned for US 30/Millard Road. A TRAC member thinks Bennett Road is a better option for a traffic signal. Another TRAC member thinks the project team should consider a median U-turn or J-Turn at the Bennett Road intersection. Bill, from ODOT, agreed to send an example of a J-Turn to TRAC members. A TRAC member noted that Bennett Road is difficult for drivers to turn onto US 30, and thinks left turns should be restricted. They noted that it has grade issues on the highway. Another TRAC member thinks a traffic signal at Johnson's Landing Road should be considered. The project team noted that we will be looking into solutions for the side streets.

The TRAC questioned if population growth would create enough demand to justify new signals on US 30. The project team noted that the problematic locations being considered for the TSP are outside of the urban areas where growth will not be high. Growth will happen in St Helens and Scappoose, so creating secondary road access to get to traffic signals on US 30 should be a priority.

The TRAC thinks that there is a need for left-turn lanes at several intersections along US 30. There is poor visibility with the hills and curves, and drivers don't expect people to be stopping to turn left from the through lane of US 30. The TRAC think the US 30/ Nicolai Road intersection would be the easiest to add a left-turn lane, since there may be some ROW between the highway and rail. There is also poor visibility at the Tide Creek Road and Neer City Road intersections, however the Tide Creek and Goble Creek bridges would have to be replaced to add left-turn lanes at these locations. The project team noted that there has been impact on the guardrail at these locations, and black rubber marks on the highway indicate close calls.

4. Questions/Comments from Public Attendees

There were no public attendees at the meeting.

5. Next Steps

- The TRAC has two weeks to provide comments on the draft Memo's. Comments should be returned to Lonny Welter by Thursday, February 26th.
- The project team will meet with the County BOC on Wednesday, February, 18th, and is planning on holding the first public open house meeting series in April. The open houses will be held at two locations, one in the north part and one in the south part of the county.



Columbia County Transportation System Plan Update

Transportation Road Advisory Committee (TRAC) Meeting #3

Summary

MEETING DATE: October 8, 2015

MEETING TIME: 10:00 a.m. to 12:00 p.m.

MEETING LOCATION: Columbia County Road Department, 1054 Oregon Street, St. Helens.

MEETING PURPOSE: The purpose of this meeting was to discuss the recommendations from Draft Technical Memoranda #10 and #11, involving transportation funding options and standards through which the County can manage the transportation system so that facilities serve their intended function. We also began the discussion about Transportation Solutions, which is the next task we will be undertaking.

TOPICS

I. Intro

Project staff and TRAC members in attendance introduced themselves. The following were in attendance:

- Dave Hill- Columbia County Road Dept.
- Lonny Welter- Columbia County Road Dept.
- Tristan Wood- Columbia County Road Dept.
- Julie Wheeler- Columbia County Road Dept.
- John Bosket- DKS Associates
- Kevin Chewuk- DKS Associates
- Nita Greene- TRAC Member/ Citizen
- Rosemary Lohrke- TRAC Member/ Citizen
- Troy Tindall- TRAC Member/ Blue Line
- Bernie Blunk- TRAC Member/ Mid-Columbia Bus Company/ Rainier School District

John Bosket provided an overview of the agenda and project schedule. Last time the TRAC met we discussed the drafts of Technical Memorandum #6: Existing Conditions, Technical Memorandum #7: Future Traffic Forecast and Technical Memorandum #8: Future Transportation Conditions and Needs.

Since then, we've been working on and provided the TRAC with the Draft versions of Technical Memoranda #10 and #11, involving transportation funding options and standards through which the County can manage the transportation system so that facilities serve their intended function.

The next TRAC meeting is expected to be during the winter. The next public open house meeting series is also expected to occur during the winter.

A TRAC member noted that it is important to get public input, in addition to the TRAC members. TRAC members shouldn't be providing input at public open houses. We need to distinguish between public and TRAC comments. The TRAC already provides their input at these meetings, so we do not want to duplicate it at the public open house events. A TRAC member noted that we should go to where the people are for future public events.

2. Overview of Transportation Standards (Tech Memo #11)

Project staff discussed the transportation standards that help manage and design the county roadway system. The standards discussed with the TRAC include:

Functional Classification

- The functional classification of a roadway determines the level of mobility for all travel modes, level of access, and intended use.
- Since state highways serve regional travel through the county, they are principal arterial roadways (i.e., US 30, OR 47 and OR 202). Roadways providing primary access to principal arterial roadways are minor arterials. Roadways providing primary access to neighborhoods and activity generators in Columbia County are major or minor collectors. All other roadways are classified as local roads.

Freight and Resource Routes

- Roadways were designated as freight or resource routes to help ensure trucks can efficiently travel through and access major destinations in the county.
- ODOT has classified US 30 as a freight route and a reduction review route through Columbia County. The TSP update has not changed the ODOT designations.
- As part of the TSP update, it is recommended that County "resource routes" be designated to facilitate the movement of truck freight between major destinations (e.g., ports and harbors) and US 30. These roadways serve an important role in the county roadway network and should be designed and managed to safely accommodate the movement of goods. These routes would require a minimum of 12-foot travel lanes with five-foot shoulders and could be considered priority routes for maintenance.
- Designated resource routes would include portions of NW 5th Street-Beaver Falls Road, Quincy Mayger Road, and Kallunki Road near Clatskanie; Dike Road and Rock Crest Street near Rainier; Millard Road and Old Portland Road near St Helens; E Columbia Avenue,

Honeyman Road, W Lane Road, and Johnson Landing Road near Scappoose; and Banzer Road, Apiary Road, Scappoose Vernonia Highway, OR 202, and OR 47.

Emergency Response Routes

- The County, in coordination with other agencies in the Portland/Vancouver metropolitan area, has identified major roadways as Emergency Transportation Routes (ETR). These routes are needed during a major regional emergency or disaster to move response resources such as personnel, supplies, and equipment to heavily damaged areas.
- Designated routes include US 30, OR 47, OR 202, Timber Road, Apiary Road, and Scappoose Vernonia Highway. The TSP update will formally adopt these route designations, and will prioritize investments along them to preserve the function for emergency response.
- The Oregon Highway Plan (OHP) has designated lifeline routes for emergency response in the event of an earthquake, categorized as Tier 1, 2 and 3. US 30 is the only lifeline route in Columbia County, designated as Tier 1. Tier 1 routes are considered to be the most significant and necessary to ensure a functioning statewide transportation network. The TSP update has not changed the OHP designations.

Typical Roadway Cross-section Standards

- The TSP includes three typical standard cross-section types for county roadways outside of an UGB. These are consistent with the current roadway design standards, with the exception of major and minor collector roadways, which now require wider shoulders (5 feet versus 4 feet), and narrower through travel lanes (11 feet versus 12 feet). Local roadways also now require wider shoulders (4 feet versus 3 feet) where the average daily traffic (ADT) exceeds 3,000 vehicles. It is recommended that county roadways inside an UGB be subject to the roadway design standards from the respective city's TSP (e.g., Clatskanie, Columbia City, Rainier, Scappoose, St Helens, or Vernonia).
- The TSP update does not modify the design standards for US 30, OR 47 and OR 202, the county's only principal arterials. These roadways are state highways and subject to the design criteria in the state's Highway Design Manual.

Walking and Biking Design Standards

- The TSP update is recommending that county roadways within an UGB include walking and biking facilities consistent with the roadway design standards from the respective city's TSP
- The TSP update recommends that a paved shared-use path should be 12 feet wide in areas with significant walking or biking demand; otherwise, it should be 10 feet wide.

Roadway and Access Spacing Standards

- The TSP update identifies new recommended minimum public roadway intersection and minimum private access spacing standards for roadways in Columbia County.

- New roadways or redeveloping properties should comply with these standards to the extent practical. The County Road Department can allow deviation from these standards as appropriate.

Mobility Targets

- The adoption of mobility targets for roadways and intersections in Columbia County is recommended as part of the TSP update to provide a metric for assessing the impacts of new development on the existing transportation system and for identifying where capacity improvements may be needed.
- All roadways and intersections owned by Columbia County must operate at or below the following recommended mobility targets. Signalized, All-way Stop, or Roundabout Controlled Intersections: The intersection as a whole must operate with a Level of Service (LOS) “E” or better and a volume to capacity (v/c) ratio not higher than 0.85 during the highest one-hour period on an average weekday. Two-way Stop and Yield Controlled Intersections: All intersection approaches serving more than 20 vehicles during the highest one-hour period on an average weekday shall operate with a LOS “E” or better and a v/c ratio not higher than 0.90. Mobility targets do not apply to approaches at intersections serving 20 vehicles or fewer during the peak hour.
- State-owned roadways are expected to comply with the mobility targets included in the Oregon Highway Plan. The TSP update does not modify these mobility targets.

3. Discuss Potential Funding Sources (Tech Memo #10)

Project staff discussed the transportation funding that can reasonably be expected to be available through 2035. The funding assumptions will help prioritize the investments the county can make in the transportation system, and will be utilized to develop reasonable budgeting assumptions when selecting a set of transportation improvements to meet identified needs over the next 20 years. The following was discussed with the TRAC:

Funding Sources

The county uses four general funding sources for transportation, including funds from:

- The Surface Transportation Program (STP), which includes Federal Highway Trust Funds that are received from federal motor vehicle fuel tax and truck-related weight-mile charges.
- The State Highway Trust Fund which includes distributions from the state motor vehicle fuel tax, vehicle registration fees, and truck weight-mile fees on a per capita basis.
- The Natural Resource Depletion Fee
- A System Development Charge (SDC) from new development.

Current annual revenue from these sources is around \$4.5 million.

Expenditures

- The county estimates that it needs approximately \$10 million per year to maintain and operate its roadways at status quo, more than double that of the current revenue.
- This means that over \$5 million per year in needed roadway maintenance and repair work will be deferred.
- Deferring necessary repair and preservation means spending much more to fix the same roadways later, as repair costs rise exponentially as roadways are left unmaintained.
- This transportation funding forecast is highlighting that the county needs new revenue just to maintain current facilities. If the county wants new projects, applying for grants will be very important. The TSP provides an important tool for applying for these grants.

Potential Additional Funding Sources

If the county does explore new revenue sources, what might those look like? The project team looked at a range of funding sources other agencies have used for transportation funding.

- **County Service District for Roads:** The road district could be used to fund roadway maintenance and repair. It would require voter approval, and would be a permanent tax rate. Cities must agree to be included in the road district, or the district could be drawn to include only unincorporated areas of the county. Clatsop County has a road district tax for unincorporated areas of the county of \$1.0175 per \$1,000 in assessed value, which brings in approximately \$2 million per year.
- **Property tax levy or issuing bonds:** Both methods require voter approval and would result in temporary increase in property tax. The difference between the two is the property tax levy will result in increased revenue over time but won't have to be repaid, while bonds will result in immediate funding but will result in interest payments. Tillamook County voters approved a \$15 million bond to fund transportation. The 10-year bond resulted in a tax around \$0.46 per \$1,000 in assessed value.
- **Vehicle impact fee:** The project team researched agencies around the Country to see how they addressed the impacts of heavy vehicles on their roadways. The research resulted in a methodology that based impact fees on the annual cost of maintaining roadways, and the weighted impact of various vehicle types. The studies found that heavy vehicles cause considerably more damage to roadways than passenger vehicles. The weighted impact by vehicle type was determined by converting single truck trips into car trips. This allowed an annual maintenance fee per vehicle type to be developed.

A TRAC member questioned whether heavy vehicles cause more damage. They noted that passenger cars cause more damage via studded tires, and suggested charging for studded tires. Another TRAC member suggested that a vehicle fee should be based on a weight per axel basis.

The TRAC also suggested requiring trucks to get a permit to operate on county roadways, and installing sensors along truck routes to identify trucks. They noted that truckers would likely help with compliance since they paid for a permit, by reporting trucks operating without a permit.

The TRAC stressed that any fee program should be structured to have all funds routed to the county road department, and not to the general fund. They noted that the county has a better chance of having the public approve a new fee if they identify where the additional revenue would go, instead of leaving it up to the commission and having it be shifted to the general fund. Any new tax has to be extremely well defined to pass a public vote. Identify what the tax payer is getting.

4. Intro to Transportation Solutions

The project team went over potential TSP projects from prior studies. The list did not include new projects that are currently being developed to address new issues. The list included potential bridge, freight, roadway capacity, roadway upgrade, roadway safety, pedestrian and bicycle, rail, and transit projects. The TRAC has two weeks to provide input on the potential transportation solutions, with comments being sent to Lonny Welter.

5. Questions/Comments from Public Attendees

There were no public attendees at the meeting.

6. Next Steps

- The TRAC has two weeks to provide comments on the potential TSP projects from prior studies. Comments should be returned to Lonny Welter by Friday, October 23rd.
- The project team is working on Technical Memorandum #12: Transportation Solutions.
- TRAC Meeting #4 is expected to be during the winter.
- The project team is also planning on meeting with the Board of Commissioners and holding the second public open house during the winter.



Columbia County Transportation System Plan Update

Transportation Road Advisory Committee (TRAC) Meeting #4

Summary

MEETING DATE:	February 18, 2016
MEETING TIME:	10:00 a.m. to 12:00 p.m.
MEETING LOCATION:	Columbia County Road Department, 1054 Oregon Street, St. Helens.
MEETING PURPOSE:	The purpose of this meeting is to discuss the recommendations from Draft Technical Memorandum #12, involving transportation projects to address system deficiencies. We will also discuss upcoming public outreach efforts to gain further input on these recommendations.

TOPICS

I. Intro

Project staff and TRAC members in attendance introduced themselves. The following were in attendance:

- Dave Hill- Columbia County Road Dept.
- Lonny Welter- Columbia County Road Dept.
- Julie Wheeler- Columbia County Road Dept.
- John Bosket- DKS Associates
- Kevin Chewuk- DKS Associates
- Bill Johnston- ODOT
- Pat LaPointe- TRAC Member
- Rosemary Lohrke- TRAC Member
- Scott Jensen- TRAC Member
- Rodney Moore- TRAC Member
- Troy Tindall- TRAC Member
- Karl Webster- TRAC Member

The project team provided an overview of the agenda and project schedule. Last time the TRAC met we discussed the recommendations from Draft Technical Memoranda #10 and #11, involving transportation funding options and standards through which the County can manage the transportation system so that facilities serve their intended function. We also began the discussion about Transportation Solutions.

Since then, we've been working on and provided the TRAC with the Draft version of Technical Memorandum #12, involving transportation projects to address system deficiencies.

The next TRAC meeting is expected to be during the spring. The next public open house is expected to occur during the next few months.

2. Overview of Transportation Solutions (Tech Memo #12)

The project team gave a brief overview of the process for developing the Aspirational projects (projects which the County supports and would like to implement), and noted that the projects are not all new ideas; some of them came from a variety of prior planning studies. The project team then highlighted the format and information included in Table 1 (Aspirational Project List) of Technical Memoranda #12. Project staff then walked TRAC members through each project in the Aspirational Project List. Key projects and feedback included the following:

- A TRAC member questioned if the project list was locked in. The project team noted that it is not, and can be amended later to add new projects should something arise.
- The County noted that several of the projects were along less traveled roadways, with low traffic volumes, and were lower priority. The project team agreed to add average daily traffic information to Table 1 to help illustrate that point.
- The TRAC noted that they would like to see the evaluation scoring. The project team agreed to send the evaluation rankings to the TRAC members.
- The project team expressed a desire to be involved with the design process for project 43, which involves improvements to US 30 between Old Portland Road and Millard Road. They noted the heavy vehicles need to be able to access this location, especially the Bennett Road intersection.
- The TRAC questioned why Scappoose was proposing a traffic signal at the Wikstrom Road intersection with US 30. They wondered why the County was not able to have one at Bennett Road. The project team stressed that it was only proposed, and that the area surrounding the Scappoose airport is expected to have a lot of employment growth.
- The TRAC questioned if Project 50, at the Johnsons Landing Road intersection with US 30, should be more than just a rail improvement. The project team noted that this location was being looked at in the Scappoose TSP, but it has low traffic volumes and likely will not have a recommended intersection improvement project.
- A TRAC member noted that heavy trucks have a difficult time turning onto US 30 from Larson Road. The project team noted that Project 20 would help alleviate this issue, by improving the Old Rainer Road intersection with Apiary Road. This would allow trucks to utilize Health Road to access US 30.
- The County noted that the shoulder improvement projects are rural bike projects for the County. The project team noted that these projects also benefit other modes.

3. Upcoming Public Outreach Efforts

The project team noted that the second open house meeting series for the TSP is upcoming. The project team will be meeting with the Board of County Commissioners before determining when and where the public open house events will take place.

4. Questions/Comments from Public Attendees

There were no public attendees at the meeting.

5. Next Steps

- The TRAC has one week to provide comments on Draft Technical Memorandum #12. Comments should be returned to Lonny Welter by Friday, February 26th.
- The project team is meeting with the Board of Commissioners on March 16th.
- The second public open house event will occur over the coming months.



Columbia County Transportation System Plan Update

Transportation Road Advisory Committee (TRAC) Meeting #5

Summary

MEETING DATE:	September 22, 2016
MEETING TIME:	10:00 a.m. to 12:00 p.m.
MEETING LOCATION:	Columbia County Road Department, 1054 Oregon Street, St. Helens.
MEETING PURPOSE:	The purpose of this meeting is to review and discuss the Draft Transportation System Plan and any changes to projects or policy recommendations since the last TRAC meeting. We will also discuss input received through the public open houses held this summer, as well as our anticipated schedule moving forward.

TOPICS

I. Intro

Project staff and TRAC members in attendance introduced themselves. The following were in attendance:

- Dave Hill- Columbia County Road Dept.
- Lonny Welter- Columbia County Road Dept.
- Julie Wheeler- Columbia County Road Dept.
- Kevin Chewuk- DKS Associates
- Ken Shonkwiler- ODOT
- Michael Greisen - TRAC Member
- Pat LaPointe- TRAC Member
- Rosemary Lohrke- TRAC Member
- Scott Jensen- TRAC Member
- Troy Tindall- TRAC Member
- Karl Webster- TRAC Member

The project team provided an overview of the agenda and project schedule. Last time the TRAC met we discussed the recommendations from Technical Memorandum #12, involving transportation projects to address system deficiencies. We also discussed upcoming public outreach efforts to gain further input on the recommendations.

Since then, we've hosted our second public open house meeting series and have been working on and provided the TRAC with the Draft Transportation System Plan.

This is our final TRAC meeting. The project team will incorporate feedback from TRAC members into the Adoption Draft TSP. The project team will attend public hearings with the Planning

Commission and Board of County Commissioners on the Adoption Draft TSP during the next few months.

2. Input from Public Open Houses

The project team noted that the second open house meeting series for the TSP was held in May. The meetings were held in Clatskanie and Scappoose and about 15 people attended. Key feedback included the following:

- Install a new traffic signal on Highway 30 at Johnson’s Landing Road – citing a growing number of employees and trucks using the intersection and safety concerns. This comment was accompanied by a petition with 217 signatures.
- Construct a bike/pedestrian trail between St. Helens and Scappoose (likely along the Highway 30 corridor). The current route along the Highway 30 shoulders is too dangerous. A new trail would support public health and economic vitality, and would complement the waterfront redevelopment in St. Helens. Such a trail would be supported by the following plans: St. Helens Parks and Trails Master Plan (2015); St. Helens TSP (2011); Tourism Plan (2007); Scappoose TSP (2016); and Statewide Trails Plan (2016-2025). Three separate comment forms requested this project.
- Project #46 (Study for the feasibility of improved roadway connectivity along the west side of US 30, between Scappoose and St. Helens) should also include funding for increased bicycle and pedestrian safety.

The project team noted that the US 30 / Johnson’s Landing Road intersection was reviewed during the recent Scappoose TSP update and a traffic signal was not warranted at this time. However, with development expected to occur around the Scappoose Airport and with Project #67 evaluating the need for an alternate route in this area, improvements may be needed at this intersection in the future. Any improvements will need to be determined through future studies.

The project team noted that a path along US 30 would be difficult to implement, but that Project #46 will be modified to say that it could include a path along the US 30 corridor.

3. Overview of the Draft TSP

The project team gave an overview of the TSP. They noted that the TSP is broken into two volumes. Volume 1 is intended to be user-friendly by providing a high level summary of the TSP process and including recommended transportation projects and standards. The content was primarily taken from prior Technical Memorandums. Volume 2 includes all background Technical Memorandums and technical data from the TSP process and includes no new content.

The project team then walked TRAC members through each section of the TSP Volume 1. The TRAC had the following feedback:

- The cost estimate for Project #67 should be increased to \$10 million.
- Wayfinding should be one word (page 10).

- Modify Project #46 to say that the project could consider the opportunity to provide a shared-use path along the US 30 corridor.
- A TRAC member asked if we need Project #23 and where the crossing could be located. The project team noted that we should acknowledge the need for the bridge project and the it could occur anywhere in the corridor, even in Portland. The TRAC noted that US 30 will be used more due to increased congestion along the I-5 corridor. Drivers (and trucks) will attempt to avoid bottlenecks in Portland and instead travel via the Lewis and Clark Bridge and US 30. Therefore, a new bridge in Portland could help with congestion in Columbia County.
- Add an asterisk to Project #23 to note that the project is a large portion of the \$460 million worth of transportation investments.

4. Questions/Comments from Public Attendees

There were no public attendees at the meeting.

5. Next Steps

- The TRAC has one week to provide comments on the Draft TSP. Comments should be returned to Lonny Welter by Thursday, September 29th.
- The project team will incorporate feedback from TRAC members into the Adoption Draft TSP.
- The project team will attend public hearings with the Planning Commission and Board of County Commissioners on the Adoption Draft TSP during the next few months.



Columbia County Transportation System Plan Update

Open House Meeting Series #1 Summary

MEETING LOCATIONS:

Monday, March 30, 2015. Rainier Senior Center, 48 West 7th Street, Rainier, 1:00 P.M.-3:00 P.M.

Thursday, April 9, 2015. Columbia County Roads Department, 1054 Oregon Street, St. Helens, 6:00 P.M.-8:00 P.M.

Columbia County is in the process of updating its Transportation System Plan (TSP). The TSP provides a long term (20-year) plan for how to best meet transportation needs of community residents, workers and businesses. The plan evaluates the current transportation system and determines how it could be improved to make travel in Columbia County better.

As part of this planning process, the TSP team (staff and consultants) facilitated two open houses to review work completed to date on the project and talk to participants about how to solve current and future transportation issues in the county. The open houses were held at the Rainier Senior Center (in the north end of the county) and at the Columbia County Roads Department (in the south end of the county). Approximately 15 people attended the open houses, which had open, “drop in” formats, consisting of a welcome table and seven stations. The Participants included staff from Columbia County, the Oregon Department of Transportation, as well as residents, property owners, business owners, and members of the consulting team. At the Rainier Senior Center, the project team gave a short presentation on the TSP update before the open house to approximately 50 seniors.

The county informed people about and encouraged them to participate in the open houses through a variety of means, including:

- Announcements on the project and county websites.
- Advertising flyers posted in a variety of locations (e.g., senior centers, library, post office, and county courthouse).
- Advertising flyers placed at the CC Rider terminal in St. Helens.
- Project informational letters and advertising flyers were mailed to Native American tribes with interests in Columbia County (e.g., Confederated Tribes of the Grande Ronde, Confederated Tribes of Siletz, Confederated Tribes of Warm Springs).
- E-mail announcements to county commissioners, TRAC members, and other stakeholders that were interviewed for the TSP.

The open houses featured a series of activities that included:

- A welcome table that included a poster with information regarding the transportation system plan, how to get involved, and the purpose of the open house. A handout was provided at this station for attendees to provide written comments.
- A station that gave an overview of the cost of transportation in Columbia County. It summarized current transportation revenue sources and maintenance needs, highlighting an expected \$6.1 million transportation funding gap per year to maintain the roadways at status quo.
- Five stations featuring information about topics related to travel – Driving, Roadway Safety, Public Transit, Walking and Biking, Freight and Rail and Other Modes. These included large maps of the county for commenting, drawing, and posting notes. Project team members were present to explain work done for the project thus far, answer questions, and generally discuss the station topic with participants.
- A station was provided with an interactive exercise to gather public input on the highest investment priorities for the transportation system. This included eight statements summarizing potential investment priorities. Attendees could also write-in a priority that was not captured. Attendees were given sticky dots and asked to rank the four statements that would be their highest priorities to focus investments.

For those who were unable to attend the open houses, all materials were available via the project website and were offered upon request in Spanish. The interactive exercise was made available via an online poll. Each venue was accessible by transit, however, the hours of the open house at the County Roads Department extended beyond the availability of transit service.

The following public feedback was provided at each station:

Transportation Funding

- The county should consider additional revenue sources to support improvements to the transportation system.

Driving

- OR 202 has many sharp curves. Consider smoothing them.
- The Cater Road intersection with Scappoose-Vernonia Highway is unsafe.

Roadway Safety

- Adding warning signs in trouble areas might help to keep drivers aware of the roadway conditions.

Public Transit

- An after-hours route is needed. TriMet provides service to Sauvie Island until 10 p.m. Consider extending CC Rider service between St. Helens and Sauvie Island until 10 p.m. This could help people that work late, suffer from transit delays, or deal with other problems that causes them to miss the existing 6 p.m. CC Rider bus from downtown Portland.
- To save on costs, consider connecting the downtown Portland route to the existing TriMet service to Sauvie Island.

Walking and Biking

- County roadways do not have adequate shoulders to support bicycles.
- Improved walking and biking connections to transit stops are needed along US 30.

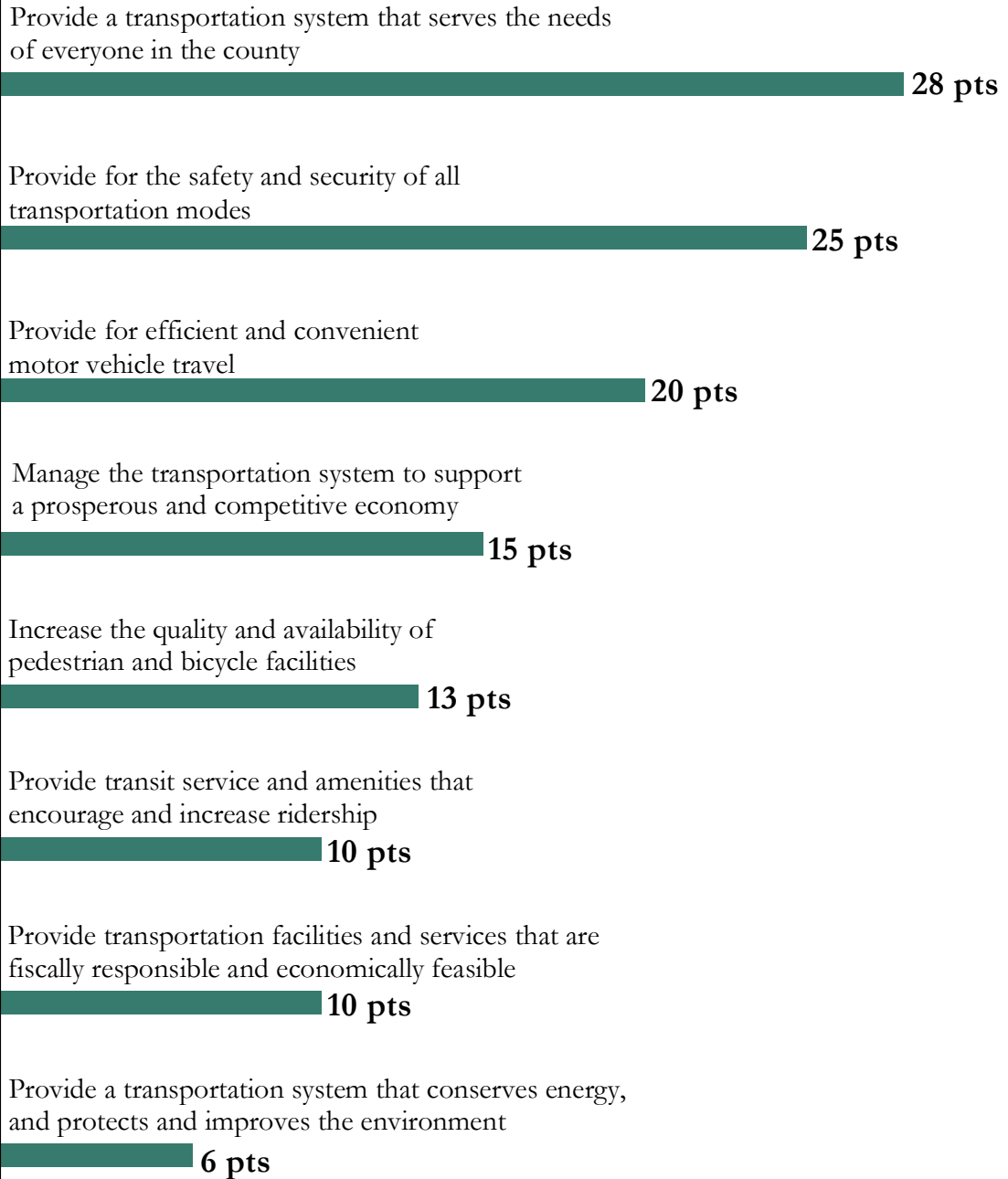
Freight and Rail and Other Modes

- Emergency vehicles and freight have difficulties accessing A Street in Rainier.
- Emergency vehicles could be blocked by trains crossing when attempting to respond to events on the other side of the tracks. Consider grade-separation.

Transportation Priorities

The eight statements summarizing potential investment priorities were scored and ranked as follows. No write-in priorities were suggested. One participant submitted votes via the project website.

Open house participants' highest priorities for transportation system investments.





Columbia County Transportation System Plan Update

Open House Meeting Series #2 Summary

MEETING LOCATIONS:

Monday, May 23rd, 2016. I.O.O.F. Hall, 75 South Nehalem Street, Clatskanie, 5:00 P.M.-7:00 P.M.

Tuesday, May 24th, 2016. Scappoose Public Library, 52469 2nd Street, Scappoose, 5:00 P.M.-7:00 P.M.

Columbia County is in the process of updating its Transportation System Plan (TSP). The TSP provides a long term (20-year) plan for how to best meet transportation needs of community residents, workers and businesses. The plan evaluates the current transportation system and determines how it could be improved to make travel in Columbia County better.

As part of this planning process, the TSP team (staff and consultants) facilitated two open houses for Open House Meeting Series #2, to review work completed to date on the project, discuss transportation system investments recommended to accommodate future travel in Columbia County, and solicit public feedback on what projects are the most important. This second series of Open House meetings included information about recommended transportation investments in Columbia County through 2035, maps showing projects in each quadrant of the County, and interactive stations for drawing, writing, and talking.

The open houses were held at the Clatskanie I.O.O.F. Hall (in the north end of the County) and at the Scappoose Public Library (in the south end of the County). Approximately 15 people attended the open houses, which had open, “drop in” formats, consisting of four stations. The participants included staff from Columbia County and the Cities of Clatskanie, Scappoose and St. Helens, residents, property owners, and members of the consulting team.

The TSP team informed people about and encouraged them to participate in the open houses through a variety of means, including:

- Announcements on the project and County websites.
- Press release via local news papers
- Advertising flyers placed in public areas
- E-mail announcements to County Commissioners, Transportation Road Advisory Committee members, and other stakeholders.

The open houses featured a series of activities that included:

- A sign-in sheet was used to keep record of who attended the open house events.
- A handout packet, including information on the TSP update background and process, as well as a list of transportation projects and maps, was provided for attendees to offer written comments.
- Four stations that each presented a poster map of transportation projects in each quadrant of the County. Staff from Columbia County and the consultant team were at each station to engage the public attendees and answer questions.

For those who were unable to attend the open houses, all materials were available via the project website and were offered upon request in Spanish. Each venue was accessible by transit, however, the limited service hours of the transit system may have made attendance challenging if dependent on this mode of travel.

The following is a summary of public feedback received from the meetings.

- Install a new traffic signal on Highway 30 at Johnson’s Landing Road – citing a growing number of employees and trucks using the intersection and safety concerns. This comment was accompanied by a petition with 217 signatures.
- Construct a bike/pedestrian trail between St. Helens and Scappoose (likely along the Highway 30 corridor). The current route along the Highway 30 shoulders is too dangerous. A new trail would support public health and economic vitality, and would complement that waterfront redevelopment in St. Helens. Such a trail would be supported by the following plans: St. Helens Parks and Trails Master Plan (2015); St. Helens TSP (2011); Tourism Plan (2007); and Statewide Trails Plan (2016-2025). Three separate comment forms requested this project.
- Project #46 (Study for the feasibility of improved roadway connectivity along the west side of US 30, between Scappoose and St. Helens) should also include funding for increased bicycle and pedestrian safety.

Section O

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Section P

Traffic Impact Analysis Guidelines

The contents of Volume 2 represent an iterative process in the development of the TSP. Refinements to various plan elements occurred throughout the process as new information was obtained. In all cases, the contents of Volume 1 supersede those in Volume 2.



Columbia County

Guidelines for Transportation Impact Analysis

September 2016



This document describes the County’s required content for a Transportation Impact Analysis (TIA). In general terms, TIA applies to developments that are presumed to have a transportation impact.

A professional engineer must prepare the TIA and must use appropriate data, methods, and standards as documented in the Columbia County Guidelines for Transportation Impact Analysis.

Purpose

The purpose of this section is to implement Sections 660-012-0045(2)(b) and -0045(2)(e) of the State Transportation Planning Rule (TPR), which require the County to adopt performance standards and a process to apply conditions to land use proposals in order to minimize impacts on and protect transportation facilities.

The preparation of the TIA report is the responsibility of the land owner or applicant. Columbia County assumes no liability for any costs or time delays (either direct or inconsequential) associated with the TIA report preparation and review. The applicant can choose any qualified professional engineer. All TIA reports shall be reviewed by the County Roads Department (referred to as “County” in this document). Studies that do not address these guidelines adequately shall be returned to the applicant for modification. It is the responsibility of the applicant to coordinate with local agencies and/or the Oregon Department of Transportation (ODOT) for any potential impacts to city roadways or state highways.



When is this Analysis Required?

A TIA may be required to be submitted to the County with a land use application at the request of the Roads Department Director or if the proposal is expected to involve one (1) or more of the following:

1. Changes in land use designation, or zoning designation that will generate more vehicle trip ends.
2. Projected increase in trip generation of 25 or more trips during either the AM or PM peak hour, or more than 400 daily trips.
3. Potential impacts to intersection operations.
4. Potential impacts to residential areas or local roadways, including any non-residential development that will generate traffic through a residential zone.
5. Potential impacts to pedestrian and bicycle routes, including, but not limited to school routes and multimodal roadway improvements identified in the TSP.
6. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
7. A change in internal traffic patterns may cause safety concerns.
8. A TIA is required by ODOT pursuant with OAR 734-051.
9. Projected increase of five trips by vehicles exceeding 26,000-pound gross vehicle weight (13 tons) per day, or an increase in use of adjacent roadways by vehicles exceeding 26,000-pound gross vehicle weight (13 tons) by 10 percent.



Process

A landowner or developer seeking to develop/redevelop property shall contact the County at the project's outset. The County will review existing transportation data to establish whether a TIA is required. It is the responsibility of the applicant to provide enough detailed information for the County to make a determination. An applicant should have the following prepared, preferably in writing:

- Type of uses within the development
- The size of the development
- The location of the development
- Proposed new accesses or roadways
- Estimated trip generation and source of data
- Proposed study area

If the County cannot properly evaluate a proposed development's impacts without a more detailed study, a TIA will be required. Within a reasonable time following the initial contact, the County will establish whether a TIA is required. The County will provide a scoping summary detailing the study area and any special parameters or requirements beyond the requirements set forth in this document when preparing the TIA.



Requirements

The following sections detail the TIA requirements.

TIA Requirements

The following requirements shall be included in each TIA submitted to the County. Additional information specified by the County in the scoping summary or through other project meetings shall also be included.

1. The TIA shall be prepared by or prepared under the direct supervision of a Registered Professional Engineer who shall sign and stamp the TIA.
2. Study Area: The TIA should include all roadways adjacent to and through the site (e.g., all roadways used to access the site), and any roadway with a functional classification of minor collector and above within one-mile of the site. Study intersections will generally include site-access points, and intersections of two roadways with a functional classification of minor collector and above within one-mile of the site with an expected increase of 20 peak hour trips generated from the proposed project. The intersection with a State Highway closest to the site should also be included (if not already required), regardless of the distance or generated trip thresholds identified above.
3. The TIA should include the following horizon years:
 - Existing Year
 - Background Conditions in Project Completion Year. The conditions in the year in which the proposed project will be completed and occupied, but without the expected traffic from the proposed project.
 - Full Build-out Conditions in Project Completion Year. The background condition plus traffic from the proposed project assuming full build-out and occupancy.
 - Phased Years of Completion. If the project involves construction or occupancy in phases, the applicant shall assess the expected roadway and intersection conditions resulting from major development phases.
4. Analysis Periods: The TIA should analyze the weekday (Tuesday through Thursday) AM and/or PM peak periods in which the proposed project is expected



to generate 50 or more trips. Additional periods may be required depending upon the proposed project and/or surrounding land uses. Turning movement counts during the weekday AM peak period should typically be between 7:00 AM and 9:00 AM, and 4:00 PM and 6:00 pm during the weekday PM peak period. Historical turning movement counts may be used if the data is not more than 12 months old. Historical counts shall be factored accordingly to meet the existing traffic conditions.

5. Trip Generation: The proposed trip generation should be based on similar land uses reported in the latest version of the ITE Trip Generation Manual.
6. Trip Distribution and Assignment: Estimated site generated traffic for the proposed project should be distributed and assigned to the existing or proposed arterial and collector roadway network. Trip distribution methods should be based on a reasonable assumption of local travel patterns and the locations of off-site origin/destination points within the site vicinity. An analysis of local traffic patterns and intersection turning movement counts can be used as long as the data has been gathered within the previous 12 months.
7. Background Traffic Growth Rate: A 1.5 percent annual traffic growth rate shall be applied to all movements at study intersections along arterial roadways, and 0.5 percent to all movements at study intersections along non-arterial roadways to develop background traffic growth for the horizon years. An applicant may propose an alternative background growth rate with appropriate documentation and references.
8. In-Process Developments: The TIA should include the trips generated at study intersections from approved, but un-occupied developments at the time traffic count data was collected. The County will provide the applicant with approved developments in the scoping summary. Should the completed TIA not be submitted to the County within 12 months of the scoping summary, additional approved developments could be required.



TIA Content

The following content should typically be included in each TIA submitted to the County. Additional information specified by the County in the scoping summary or through other project meetings shall also be included.

Section 1: Introduction

- Proposed project summary, including site location, zoning, project size, and project scope. This should include a figure showing the project site and vicinity map, including any roadway with a functional classification of minor collector and above within one-mile of the site and all study intersections.

Section 2: Existing Conditions

- Study area description, including a figure showing the project site, key roadways, and study intersections.
- Existing site conditions, current zoning, and adjacent land uses.
- Roadway characteristics of important transportation facilities and modal opportunities located within the study area, including roadway functional classifications, roadway cross-section (e.g., lane width, shoulder width, surface type, drainage), roadway condition, posted speeds, bicycle and pedestrian facilities, and transit facilities.
- Existing lane configurations and traffic control devices at the study area intersections.
- Existing traffic volumes and operational analysis of the study area roadways and intersections. This should include a figure of existing peak hour turn movement volumes.
- Roadway and intersection crash history analysis (most recent five years).

Section 3: Assumptions and Methodologies

- Project description, including site location, zoning, project size, and project scope, and map showing the proposed site, building footprint, access driveways, and parking facilities.
- Transportation standards (e.g., roadway and access spacing standards, mobility targets). These can be found in the Columbia County Transportation System



Plan, Volume 1.

- Site access, including access spacing and site distance review at site driveways, and summary of roadway grades and other vertical or horizontal obstructions.
- Site frontage improvements, including provisions for pedestrians and bicyclists.
- Trip generation summary. This section should also include a summary of the expected vehicles exceeding 26,000-pound gross vehicle weight (13 tons) that the proposed project will generate.
- Trip distribution assumptions, including a figure showing the trip distribution percentages.
- Background traffic growth.
- In-process developments, if applicable.
- Funded transportation improvements in the study area, if applicable.
- Future analysis years and scenarios (Background Conditions in Project Completion Year, Full Build-out Conditions in Project Completion Year, and Phased Years of Completion, if necessary).
- Future traffic volumes. This should include a figure showing the future traffic volumes broken down by existing traffic volumes, background traffic growth, in-process trip growth (if applicable), project traffic growth, and total traffic volumes.

Section 4: Future Conditions

- Background traffic volumes and operational analysis.
- Full buildout traffic volumes and intersection operational analysis. This should also include a summary of roadway segment conditions with full buildout traffic volumes (e.g., roadway volumes, roadway condition and width).
- Signal and turn lane warrant analysis at site access points, if applicable.
- Intersection and site-access driveway queuing analysis.
- Impacts of non-residential traffic through a residential zone.
- Impacts from vehicles exceeding 26,000-pound gross vehicle weight (13 tons), including turning movements.
- Site circulation and parking.



Section 5: Recommendations

- Recommended roadway and intersection improvements (if necessary).
- Pedestrian, bicycle, and transit improvements.

Appendix

- Traffic count data.
- Crash analysis data.
- Traffic operational analysis worksheets, with detail to review capacity calculations.
- Signal, left-turn, and right-turn lane warrant evaluation calculations.
- Other analysis summary sheets, such as queuing.

Section P

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