

# APPENDIX A. PROJECT MISSION, GOALS AND GUIDING PRINCIPLES



# Vision, Goals and Guiding Principles

## **St. Helens US 30 & Columbia Blvd./St. Helens St. Corridor Master Plan**

One of the first steps in the Corridor Planning process was to identify a Vision for the area and a set of related goals and guiding principles for the project and the different corridor segments being addressed by it. This document includes a vision, goals and guiding principles which were reviewed and refined based on discussion with project advisory committee members, local business and property owners, the St. Helens City Council and other community members.

### **Corridor Vision**

#### US 30 Corridor Segment

Highway 30 will provide safe, convenient access to local businesses along the highway, while balancing that with state goals for traffic mobility. The appearance of the highway will be improved over time to enhance landscaping and other elements that will make it a more attractive place for people to travel by car, bicycle, walking or transit. Key intersections such as at Gable Road, Columbia Blvd. and St. Helens Street will be improved to enhance safety for all types of travel and to create attractive, clearly recognizable gateways to other parts of St. Helens, helping meet the community's goals for economic revitalization in those areas.

#### Columbia Blvd./St. Helens Street Segment

Columbia Blvd. and St. Helens Street will provide safe, convenient travel to access the Houlton business area, Olde Towne and adjacent neighborhoods by drivers, bicyclists and pedestrians. These streets will provide good access to local businesses and be attractively designed to help draw people to the area and enhance their shopping and travel experiences. Street designs will incorporate opportunities for landscaping, public art and signage that directs people to the Houlton area and Olde Towne. Designs will recognize physical conditions and constraints, be cost-effective and build on natural and cultural features and other opportunities in the area.

### **Overall Project Goals**

- Create “streetscape” plans for the US 30 & Columbia Blvd/St. Helens Street corridors that reflect the community's vision for appearance and function.
- Improve the aesthetics and function of the corridors to attract business and investment, provide better access, direction and signage to the Houlton and Olde Towne areas, and improve desirability.

# Project and Corridor Guiding Principles

## Planning Process and Community Involvement

- Establish a community vision, goals and guiding principles for the study area.
- Engage business and property owners, residents, stakeholders, and elected and appointed officials.
- Ensure consistency with local and state plans and policies.

## Economy and Business Support

- Develop planning design and implementation standards to revitalize businesses and business districts in the planning area.
- Ensure that customers, employees and others have good access to local businesses, including through on-street parking.
- Ensure that proposed solutions and projects are cost-effective and make efficient use of limited resources.

## Transportation Safety and Mobility

- Improve street connectivity, design, and ability to access and locate business areas.
- Improve pedestrian and bicycle safety and accessibility, thereby encouraging walking and bicycling.
- Balance the need for local access and traffic calming with the need to provide for through-traffic movement and mobility (particularly in the US 30 corridor) as well as emergency vehicle accommodations
- Develop and implement solutions that are consistent with local and regional transportation needs.

## Connectivity & Streetscape Aesthetics

- Improve the appearance of the US 30 and Columbia Blvd./St. Helens St. corridors (Houlton area).
- Improve pedestrian and bicycle connectivity between the corridor areas and adjacent open spaces & parks, trail/bicycle/transit networks, and neighborhoods.
- Develop and apply street designs that serve the unique needs of each corridor segment (US 30, Houlton and Olde Towne).
- Consider opportunities for integrating sustainable design strategies into the streetscape design and implement them where appropriate.



# APPENDIX B. EXISTING CONDITIONS, OPPORTUNITIES AND CONSTRAINTS REPORT



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## MEMORANDUM

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Date: January 31, 2014

Project #: 13172.3

To: Jacob Graichen, City of St. Helens and Naomi Zwerdling, Oregon Department of Transportation

From: Ribeka Toda, Matthew Bell, and Chris Brehmer, P.E.

Project: US 30 & Columbia Boulevard/St. Helens Street Corridor Master Plan

Subject: Final Technical Memorandum #3 – Existing and Future Transportation Conditions

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This memorandum summarizes existing and projected future transportation conditions along the segments of US 30, Columbia Boulevard, and St. Helens Street located within the US 30 & Columbia Boulevard/St. Helens Street Corridor Master Plan study area (herein referred to as the “study area”). The information presented in this memorandum provides the project team with an overview of the planned and potential future transportation improvements within the study area.

Much of the information presented in this memorandum was obtained from the *City of St. Helen's 2011 Transportation System Plan* (TSP) update prepared by Kittelson & Associates, Inc. (KAI) and Angelo Planning Group (APG) in conjunction with the city, Columbia County, and Oregon Department of Transportation (ODOT). Supplemental data and further analysis of the corridors was prepared to provide the following:

- An evaluation of the existing physical and operational characteristics of the study area corridors.
- An evaluation of existing motor vehicle volumes at select locations within the study area to understand daily traffic patterns and variations throughout a typical mid-week day,
- An assessment of existing pedestrian and bicycle volumes at select locations within the study area to identify areas that experience high levels of pedestrian and bicycle activity,
- A block-by-block assessment of existing bicycle infrastructure using a new methodology adopted by ODOT.

The remainder of the memorandum is organized as follows:

- Existing conditions
  - Roadway facilities
  - Pedestrian facilities

- Bicycle facilities
  - Traffic volumes
  - Intersection safety analysis
  - Bicycle infrastructure assessment
  - Long-term Future Travel Demand
  - Planned Transportation Improvements from the TSP
    - Roadway facilities
    - Pedestrian facilities
    - Bicycle facilities

*Appendix “A” contains the TSP figures referenced throughout this memorandum.*

## EXISTING TRAFFIC CONDITIONS

This section documents the existing physical and operational characteristics of the multimodal transportation system within the study area and reflects all transportation related improvements that have occurred since adoption of the TSP. This section also includes a review of traffic volume patterns, traffic safety, and a qualitative evaluation of bicycle infrastructure.

## ROADWAY FACILITIES

US 30 travels north-south through St. Helens connecting the City to communities such as Astoria, Clatskanie, Rainer, Prescott, and Columbia City to the north and Scappoose and the greater Portland metropolitan area to the south. US 30 is classified as a major arterial by the City of St. Helens and as a principal arterial by ODOT. Both US 30 and the Portland & Western Railroad rail line are barriers to providing connectivity for motorists, pedestrians, and cyclists within the community. The City and ODOT have been working together to identify and implement solutions to increase the frequency and improve the quality of the pedestrian and bicycle crossings on US 30. The City’s current TSP includes several projects to enhance crossing conditions along US 30. The Corridor Plan will build upon this work and identify additional projects to improve multimodal connectivity within the community.

Columbia Boulevard and St. Helens Street form a couplet east of US 30. Both streets are classified as minor arterials by the City of St. Helens and ODOT. Both streets provide local access to a variety of land uses in the eastern part of the city, including the Houlton and St. Helens Olde Towne areas. Both streets are also relatively wide in many areas with the extra pavement width presenting both challenges and opportunities for connectivity and safety.

Historically, Columbia Boulevard and St. Helens Street served as major trucking routes to industries located along the Columbia River and were constructed to accommodate freight vehicles between US

30 and the river industrial area. Over time the amount of right-of-way needed to accommodate these wide roadways has become unnecessary due to the evolution of local industry and diminished large truck travel needs through the corridor. The wide roadways present challenges for the community in that they create a travel environment that contributes to speeding, requires lengthy pedestrian crossings, and is costly to maintain. While there are challenges, the wide roadways also present opportunities for the community in that there may be ways that the public right-of-way could be better used to create an environment where the focus can be on travel to instead of through the area. The City's current TSP includes several projects to address the challenges presented by the wide roadways. The Corridor Plan will build upon this work and identify additional projects to improve travel conditions.

## PEDESTRIAN FACILITIES

The TSP provides an inventory of existing pedestrian facilities within the study area and identifies locations where there are gaps in the sidewalk network as well pedestrian crossings needing improvement. Figure 3-5 from the TSP illustrates the existing pedestrian facilities and known deficiencies. As shown, sidewalks are provided along both sides of US 30 between Wyeth Street and St. Helens Street and along the west side of US 30 south of St. Helens Street. There are no sidewalks provided along US 30 north of Wyeth Street. Sidewalks are also provided along both sides of Columbia Boulevard and St. Helens Street through the couplet and on both sides of Columbia Boulevard east of the couplet to 9<sup>th</sup> Street. Sidewalks are provided on the north side of Columbia Boulevard between 9<sup>th</sup> Street and 7<sup>th</sup> street and on both sides east of 7<sup>th</sup> Street.

Each of the signalized crossings along US 30 provides striped pedestrian crosswalks and pedestrian signals that can be activated by pedestrians at the intersection. Unsignalized intersections along US 30 do not have striped crosswalks. The lack of a sidewalk along the east side of US 30 between Gable Road and St. Helens Street, coupled with the presence of the Portland & Western Railroad to the east of the highway, limits but does not eliminate the number of pedestrian crossings across US 30 at unsignalized locations. Anecdotal information obtained from the public through the current corridor study process indicates that a number of pedestrian crossings occur along US 30 at unsignalized intersections and other mid-block locations, often to destinations without an adjacent sidewalk along the east side of the roadway.

The city has several marked and unmarked pedestrian crossings along Columbia Boulevard and St. Helens Street that rely on drivers to yield the right-of-way to pedestrians. These and other locations throughout the Houlton area tend to have wide (approximately 60 feet) roadway cross sections that require pedestrians to cross not only the travel lanes, but also on-street parking lanes provided on one or both sides of a given roadway. Figure 3-5 from the TSP identifies several intersections within the study area with unmarked or unimproved pedestrian crossings. The City's current TSP identifies several projects to address the gaps in the sidewalk network as well as improve crossing conditions along US 30, Columbia Boulevard, and St. Helens Street. The Corridor Plan will build upon this work and identify additional projects to pedestrian and bicycle access and circulation along the corridors.

## BICYCLE FACILITIES

The TSP provides an inventory of existing bicycle facilities within the study area and identifies locations where there are missing bike lanes (on one or both sides of the roadway) and where crossing improvements are desirable. Figure 3-6 from the TSP illustrates the existing bicycle facilities and known deficiencies. As shown, US 30, Columbia Boulevard, and St. Helens Street currently have striped bike lanes. Field measurements completed in the fall of 2013 indicate that the width of the striped bike lanes do not meet the City's roadway design standards in some areas. The TSP indicates that bike lanes along Columbia Boulevard and St. Helens Street should be six feet wide, yet in some areas the bike lanes are less than six feet wide and/or overlap with the on-street parking. Figure 3-6 also illustrates two locations with identified bicycle crossing improvement needs. Although the City's current TSP does not include any projects to restripe Columbia Boulevard and/or St. Helens Street, it does include projects to enhance crossing conditions. The corridor master plan will contemplate solutions that can enhance bicycle travel within the study area.

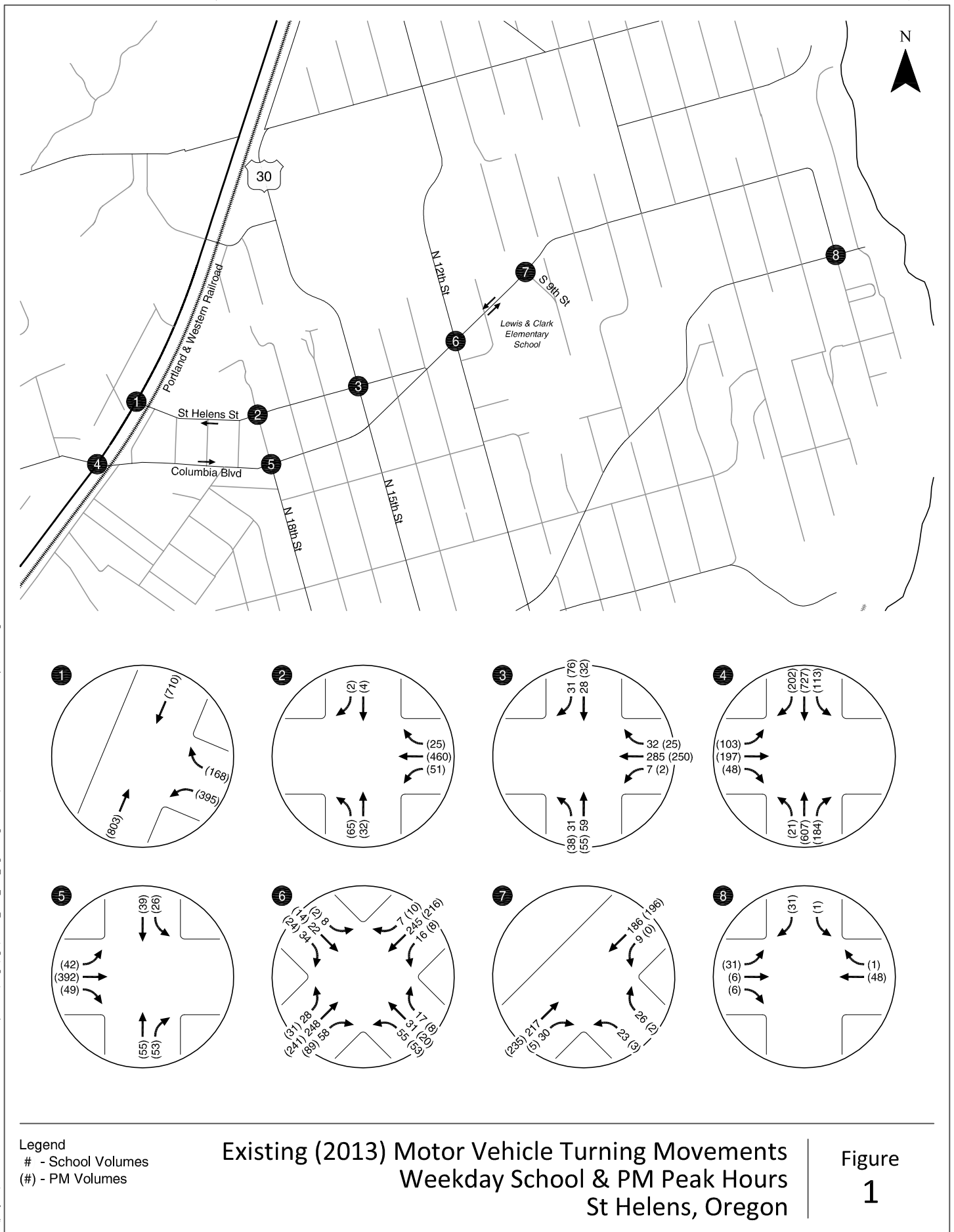
## TRAFFIC VOLUMES

Manual turning movement counts were conducted by ODOT at eight intersections in October 2013. Five of the counts were conducted during the weekday evening (4:00 to 6:00 p.m.) peak time period consistent with the TSP and three were conducted over a 16-hour period (6:00 a.m. to 10:00 p.m.). The counts include the total number of pedestrian, bicycles, and motor vehicles at the following locations:

- US 30/St. Helens Street (2-hour count)
- US 30/Columbia Boulevard (2-hour count)
- 18<sup>th</sup> Street/St. Helens Street (2-hour count)
- 18<sup>th</sup> Street/Columbia Boulevard (2-hour count)
- 15<sup>th</sup> Street/St. Helens Street (16-hour count)
- S River Road/St. Helens Street (2-hour count)
- 12<sup>th</sup> Street/Columbia Boulevard (16-hour count)
- 9<sup>th</sup> Street/Columbia Boulevard (16-hour count)

The traffic volumes along US 30 were seasonally adjusted to reflect the 30<sup>th</sup> highest hour in a manner consistent with the TSP. Given the number of intersecting roadways and driveways along the study corridors, there was no basis to balance volumes between study intersections.

Based on a review of the turning movement counts, the weekday evening peak hour was found to occur from 4:30 to 5:30 p.m. Figure 1 summarizes the motor vehicle turning movement volumes at the study intersections during the weekday evening peak hour. Given the relatively high level of pedestrian and bicycle activity adjacent to local schools, additional turning movement volumes representing the school peak hour (2:00 to 3:00 p.m.) are included where applicable.



H:\proj\13172 - US 30 & Columbia Blvd Streetscape Plan\dwgs\Figs\13172\_Bike\_Ped\_Fig02.dwg Jan 24, 2014 - 11:22am - mbeil Layout Tab: Fig01

Review of the traffic volumes shown in Figure 1 indicates that the roadway capacity along Columbia Boulevard and St. Helens Street exceeds the current traffic demand. Traffic volumes eastbound and westbound on the 2-lane segment of Columbia Boulevard east of 12<sup>th</sup> Street were measured to be *higher* than those eastbound and westbound on the couplet west of 18<sup>th</sup> Street where there are more travel lanes. These results indicate there may be opportunities to reconfigure the roadway cross sections while still preserving adequate capacity. For example, the eastbound right-turn lane on Columbia Boulevard at 18<sup>th</sup> Street could be eliminated (at least from an intersection capacity perspective) as was suggested during the corridor study walking tour (Business and Property Owners Meeting #1/CAC Meeting #1). Other opportunities to reconfigure the cross sections are presented later in this report.

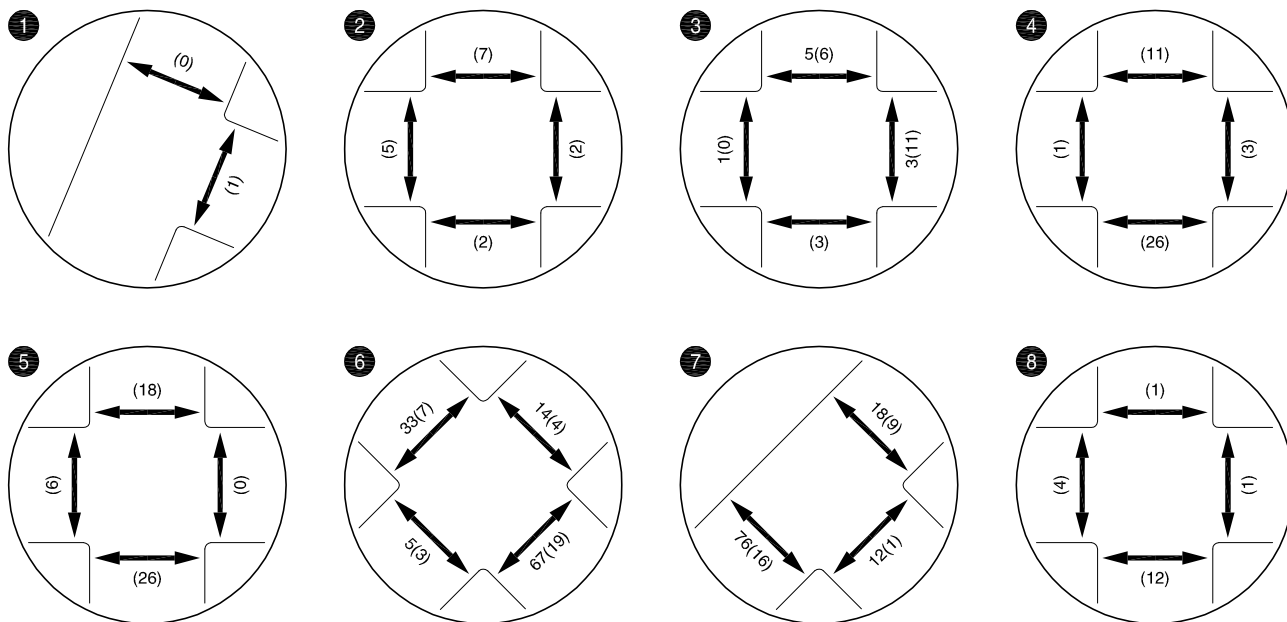
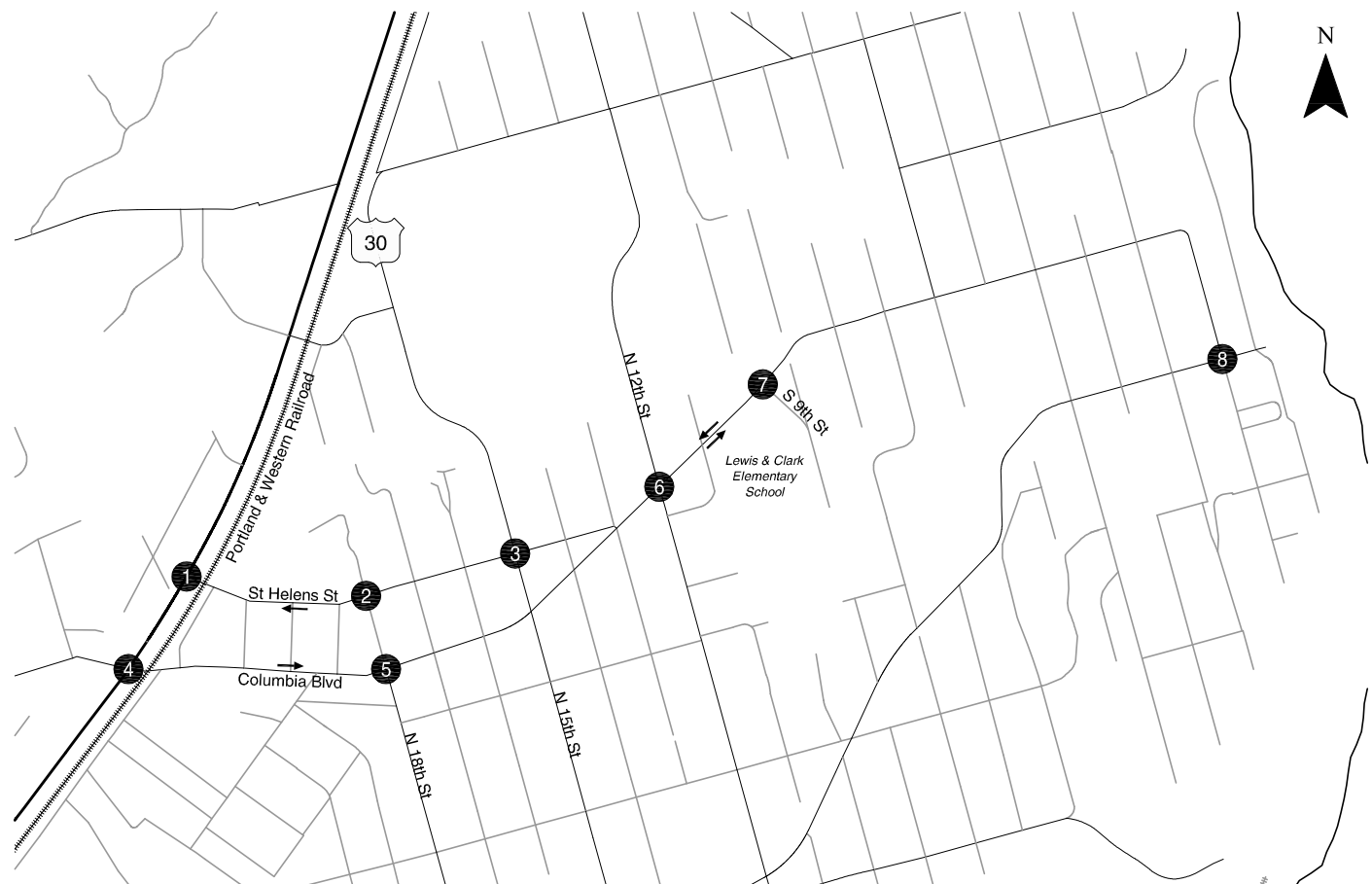
Figure 2 illustrates the pedestrian crossing volumes measured by ODOT at the study intersections in October 2013 during the weekday evening peak hour (4:30 to 5:30 p.m.) and during the school peak hour (2:00 to 3:00 p.m.) where applicable. Our review indicates that the level of pedestrian crossing volumes at the 9<sup>th</sup> Street/Columbia Boulevard intersection and the 12<sup>th</sup> Street/Columbia Boulevard intersection may warrant additional treatments to facilitate comfortable and convenient crossings at these locations. Improvements may include curb extensions, raised median islands, flashing beacons, or other facilities. Opportunities to improve crossing conditions at these locations, as well as a number of others identified in the TSP are identified later in this report.

Figure 3 illustrates the bicycle volumes at the study intersections during the evening peak hour (4:30 to 5:30 p.m.) and during the school peak hour (2:00 to 3:00 p.m.) where applicable.

Automated through traffic counts were conducted by ODOT at three locations in October 2013. The counts include the total number of vehicles at the following locations over a 36-hour period:

- Columbia Boulevard, west of 18<sup>th</sup> Street
- St. Helens Boulevard, west of 18<sup>th</sup> Street
- Columbia Boulevard, east of 12<sup>th</sup> Street

Figure 4 illustrates the location of the through traffic counts and the highest 24-hour profile at each location. As shown, Columbia Boulevard and St. Helens Street west of 12<sup>th</sup> Street were found to experience higher traffic volumes during the mid-day and evening peak hours compared to the morning peak hour, but there does not appear to be a difference in the directional split of traffic. Columbia Boulevard east of 12<sup>th</sup> Street, however, was found to experience a morning peak hour similar to the mid-day and evening peak hours. This is, in part, reflective of its proximity to the Lewis and Clark Elementary School. The measured traffic volumes on these streets are consistent with the TSP facility designations. Further, the traffic volumes confirm that the evening peak time period evaluated as part of the TSP is an appropriate representation of the peak period of the day. *Appendix "B" contains the traffic count data provided by ODOT.*

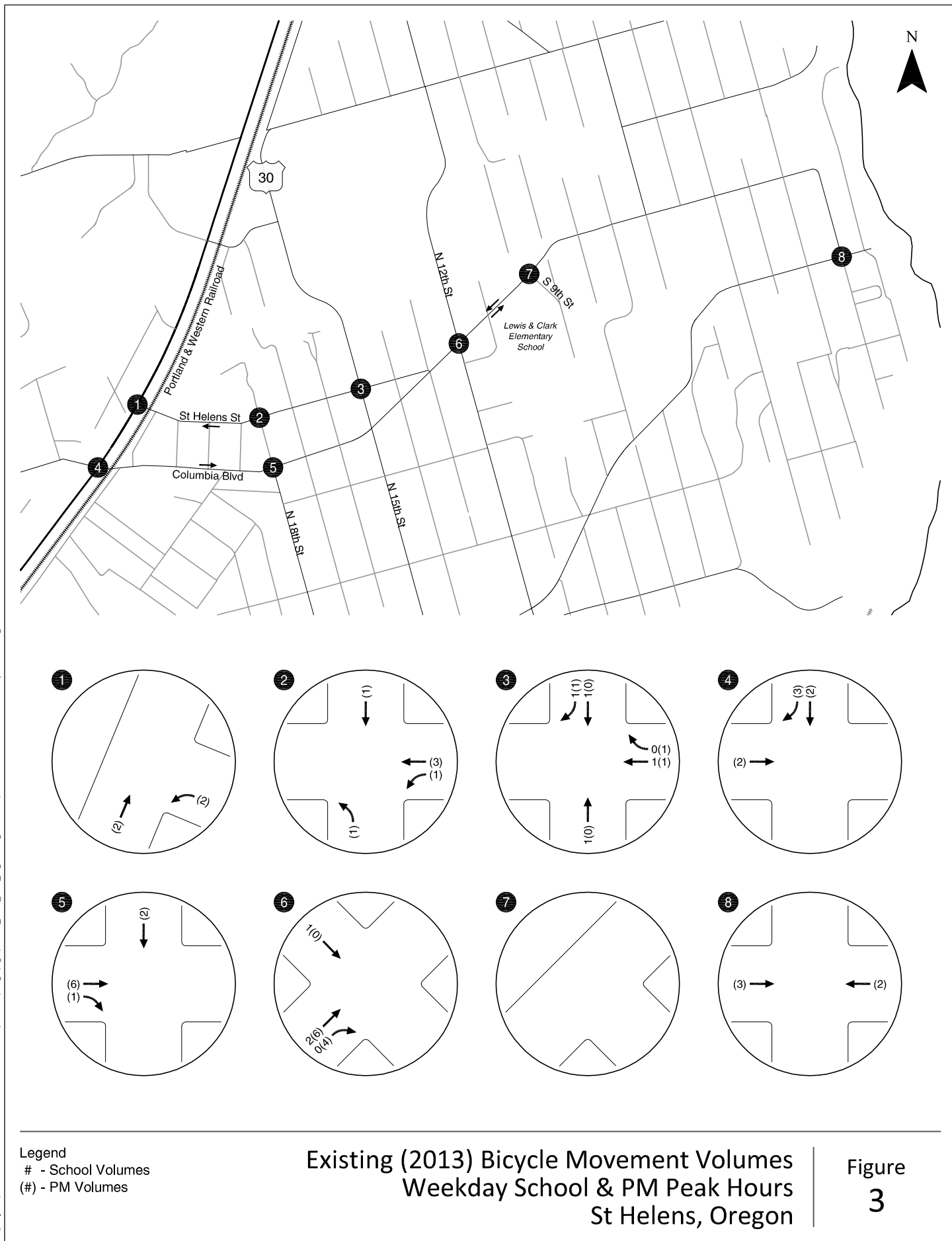


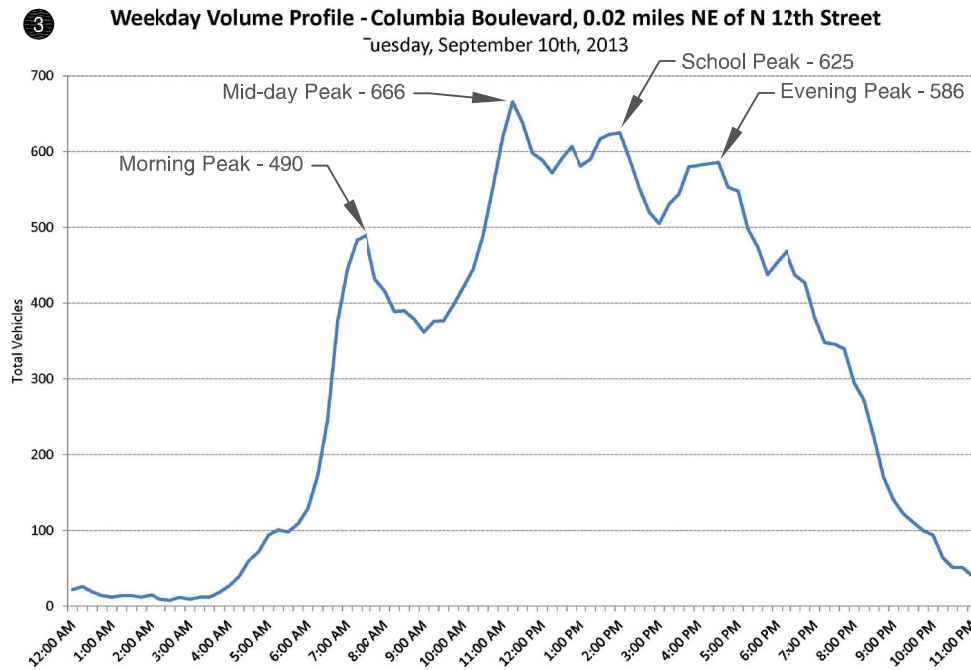
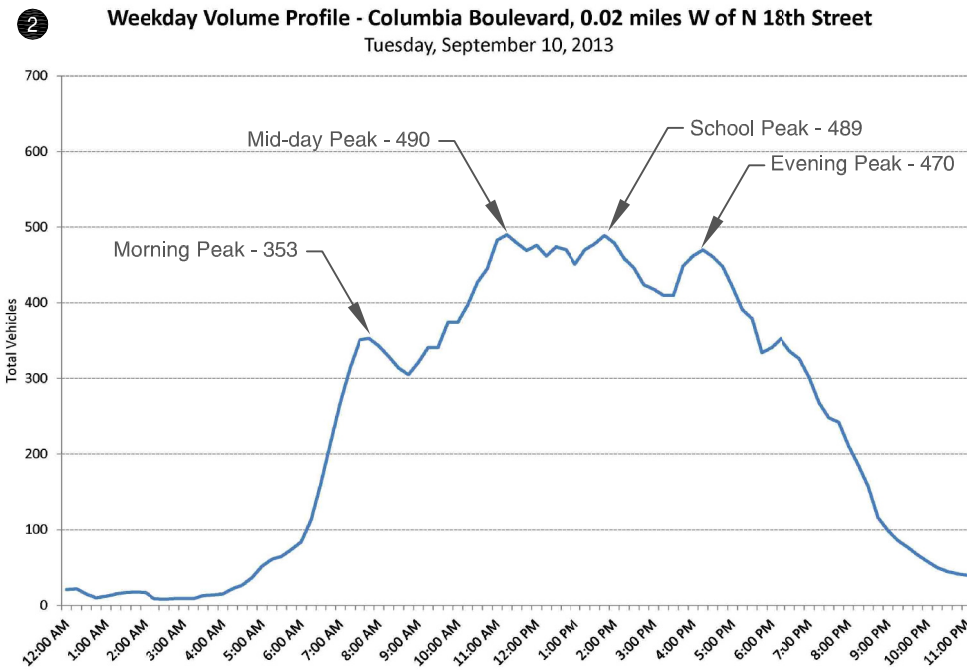
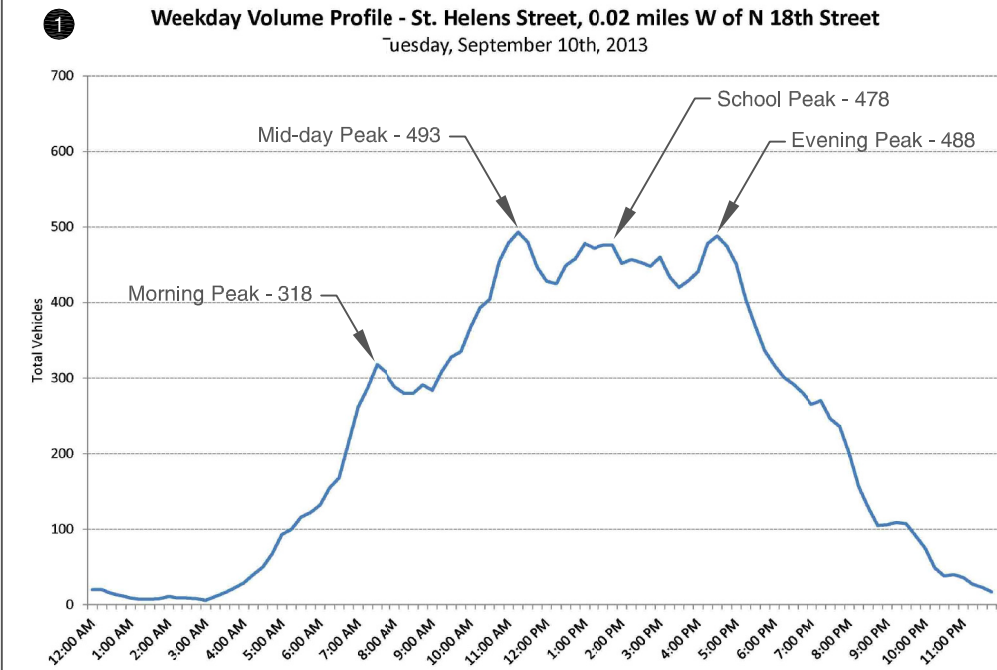
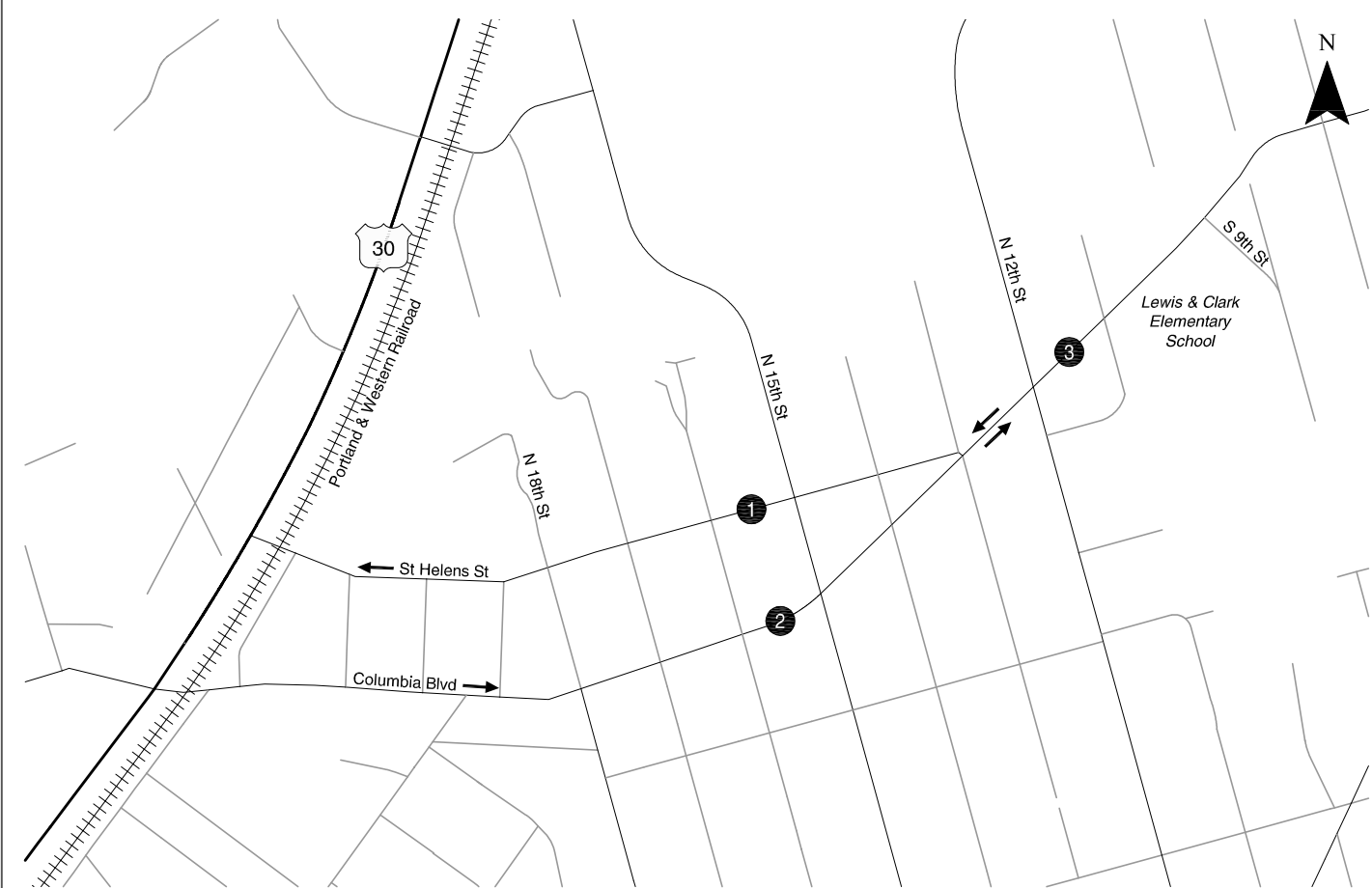
Legend  
 # - School Volumes  
 (#) - PM Volumes

Existing (2013) Pedestrian Volumes at Crosswalk  
 Weekday School & PM Peak Hours  
 St Helens, Oregon

Figure  
 2







24-Hour Weekday Volume Profile  
St Helens, Oregon

Figure  
4

## SAFETY ANALYSIS

Traffic safety along US 30, Columbia Boulevard, and St. Helens Street was evaluated as part of the TSP. ODOT provided information from the Statewide Priority Index System as well as crash data for the segment of US 30 located within the City limits and for each of the study intersections included in the TSP. The following provides a summary of the safety analysis included in the TSP.

### Statewide Priority Index System

The Statewide Priority Index System (SPIS) is a method developed by ODOT for identifying hazardous locations on state highways through consideration of crash frequency, crash rate, and crash severity. An intersection or roadway segment can be designated as a SPIS site if it experiences three or more crashes or one or more fatal crashes over a three-year period. Under this method, all state highways are analyzed in 0.10 mile segments to identify SPIS sites. At the time of the TSP, there were approximately 6,000 SPIS sites statewide, including two in St. Helens:

- US30/Sykes Road
- US 30/Gable Road

Given the frequency and severity of crashes at the intersections, the SPIS program identified potential safety improvements for the intersections that involve installation of a traffic separator, median islands, and access management at the US 30/Sykes Road intersection and provision of a dual left-turn lane from US 30 onto Gable Road in conjunction with installation of raised median and lane realignment treatments at the US 30/Gable Road intersection. No safety improvements are currently funded at either intersection.

### Crash Data Analysis

The TSP also reviewed segment crash data within the study area, particularly along US 30. The TSP noted that the segment of US 30 between Gable Road and St. Helens Street exceeds the statewide average for similar facilities. Inspection of the crash data revealed that a majority of the crashes occurred at intersections, which is to be expected given the frequent and relatively closely spaced access points and street intersections along US 30.

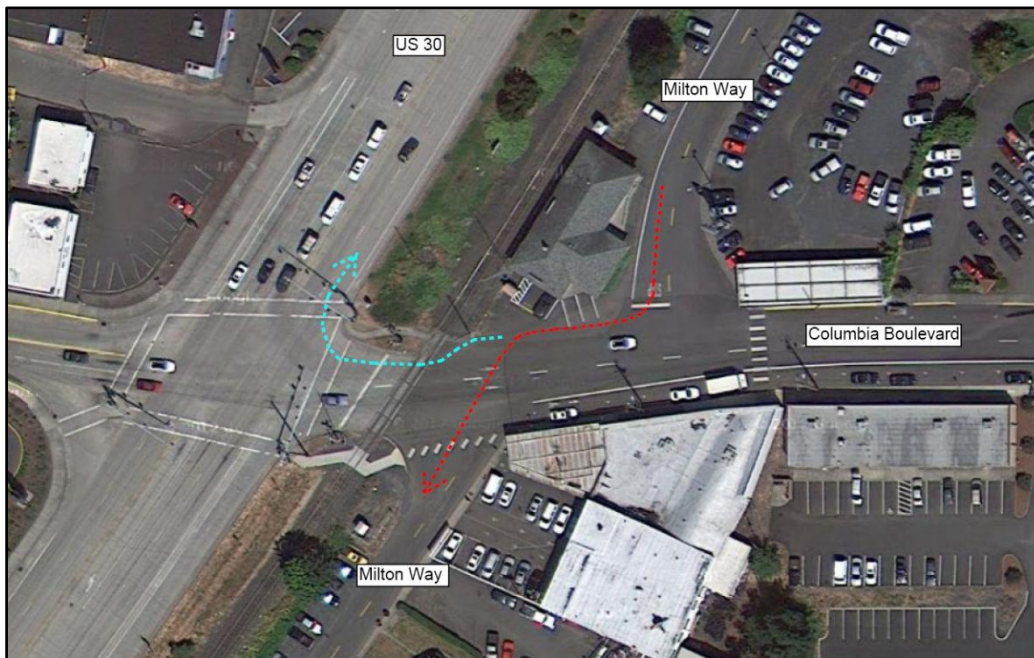
### *Intersection Crash Data Analysis*

The TSP also documented individual intersection crash data at key locations. Review of the reported crashes confirmed that the US 30/Gable Road intersection was experiencing a high number of crashes and found that turn lane and access management improvements identified by ODOT should improve intersection safety. To date, no major improvements have been made at the intersection.

## Other Observations

Citizen comments and observations made during the field walking tour of the Columbia Boulevard and St. Helens Street corridors (Business and Property Owners Meeting #1/CAC Meeting #1) identified wrong-way traffic movements occurring on Columbia Boulevard at Milton Way. Specifically, vehicles traveling southbound on Milton Way were observed to make a southbound right-turn onto Columbia Boulevard and travel westbound (within eastbound travel lanes) on Columbia Boulevard to reach the south continuation of Milton Way as shown in Exhibit 1. Meeting participants further noted that some drivers on Milton Way make a southbound right-turn onto Columbia Boulevard and travel westbound (within eastbound travel lanes) across the railroad tracks to then turn right on US 30.

### Exhibit 1: Wrong-Way Turn Movement Patterns at Milton Way/Columbia Boulevard



Both of the turn movement patterns depicted in Exhibit 1 are illegal; however, no crashes have been reported at the Milton Way/Columbia Boulevard intersection over the last five-year period based on crash data provided by the City of St. Helens Police Department and ODOT.

Feedback obtained at the December 2013 Technical Advisory Committee and Citizens Advisory Committee meetings indicated that there is a strong desire to maintain the ability of drivers southbound on Milton Way to cross Columbia Boulevard and continue south on Milton Way. City staff noted that efforts previously undertaken by the City to restrict turns at Milton Way to left-turns only (eliminating the ability to cross Columbia Boulevard to continue south on Milton Way) were removed due to citizen complaint. Meeting participants noted that no other convenient alternatives are currently available for traffic westbound on St. Helens Street to reach Milton Way south of Columbia Boulevard and also that the automobile dealership located at the Milton Way/Columbia Boulevard intersection would be impacted by turn movement restrictions at Milton Way. The alternatives analysis

conducted as part of this corridor study should consider options to address the turn movement and connectivity needs at this location.

## BICYCLE INFRASTRUCTURE ASSESSMENT

Since the time the TSP was prepared, ODOT has adopted an analysis procedure to evaluate bicycle infrastructure. This process, known as the Bicycle Level of Traffic Stress (LTS) methodology, can be used to evaluate the existing bicycle infrastructure and environment. As applied by ODOT, this method classifies four levels of traffic stress that a cyclist can experience on the roadway, ranging from LTS 1 (which represents little traffic stress) to LTS 4 (which represents high stress). A road segment with LTS 1 generally has low traffic speeds and low volumes and is suitable for all cyclists, including children. A road segment with LTS 4 generally has high speeds, high volumes and is perceived as unsafe by most adults. It is desirable to achieve an LTS 2 on most roadways to appeal to a majority of the bike-riding population. The LTS methodology originated with a document titled, "Low Stress Bicycling and Network Connectivity," published by the Mineta Transportation Institute.

The calculated LTS for the streets within the study area is shown in Figure 5. As shown, the calculated LTS for US 30 and the couplet exceed LTS 2. The Corridor Plan should contemplate solutions that lower the LTS at these locations. Key observations from the LTS review include:

- Generally, the LTS is lower on the eastern side of the study area (which primarily has residential land use) and increases toward US 30.
- The entire length of US 30 is currently at LTS 3 due to the higher roadway speed, multiple travel lanes, and the right turn configuration at intersections along the roadway.
- Most of the one-way segments of St. Helens Street and Columbia Boulevard are also at LTS 3 due to the number of vehicle lanes in each direction and the width of the bike lanes.
- The segment of Columbia Boulevard rated LTS 2 has a lower posted speed limit and only one vehicle lane per direction.
- The LTS ratings can be lowered in most areas by increasing the width of the bike lane and by changing the right turn configurations at intersections so that the right turn lane length is less than 150 feet long (shortening right-turn lanes along US 30 may not be possible due to competing vehicular storage needs and ODOT design requirements).
- The addition of a marked or physical buffer between the bike lane and the vehicular lane would also improve the LTS rating, especially in the one-way segments of St. Helens Street and Columbia Boulevard.

Several of the projects included in the City's current TSP will improve the LTS score. The corridor plan should build upon this work and identify additional projects to further enhance bicycle travel along the corridors. *Appendix "C" contains additional information related to the LTS estimate included in this analysis.*



- Legend
- LTS 1
  - LTS 2
  - LTS 3
  - LTS 4

Level of Traffic Stress (LTS)  
St Helens, Oregon



## YEAR 2031 TRAFFIC CONDITIONS

This section summarizes the planned improvements identified in the TSP for the roadway system as well as the pedestrian and bicycle systems. This section also presents opportunities to further enhance the transportation system in coordination with and beyond the improvements identified in the TSP.

The primary focus of the year 2031 traffic conditions analysis presented in the 2011 TSP was to address the long-term capacity needs at identified study intersections. Based on a review of the TSP, there are four intersections located within the study area that are expected to operate over capacity in the 2031, including US 30/Pittsburg Road, US 30 Wyeth Street, US 30/Gable Road, and 12<sup>th</sup> Street/Columbia Boulevard. The TSP includes projects to address the long term needs at each intersection. As indicated previously, the vehicle traffic counts confirm the weekday p.m. peak hour analysis provided in the TSP is an appropriate representation of peak vehicular travel demand along the corridors. Consequently there was no need to project future traffic volumes for other times of day or to reevaluate year 2031 traffic conditions.

## PLANNED IMPROVEMENTS

The recommended TSP projects within the study are summarized below to provide context for the Corridor Master Plan.

### Roadway Improvements

Figure 7-7 of the TSP illustrates the location of the planned roadway improvements within St. Helens. Within the study area, these improvements are not projected to be needed until the end of the planning horizon and are included in the long-term (2022 to 2031) transportation improvement program. The relevant projects in the study area and their respective timing are shown in Table 1 (which was obtained directly from the TSP).

**Table 1: Long-Term (2022 to 2031) Transportation Improvement Program**

Project No.	Project Location	Project Description	Estimated Cost
L01 <sup>1</sup>	US 30/Gable Road	Install westbound right-turn lane	\$485,000
L02 <sup>2</sup>	US 30/Pittsburg Road	Install traffic signal	\$400,000
L03 <sup>2</sup>	US 30/Vernonia Road	Install traffic signal	\$400,000
L04	12 <sup>th</sup> Street/Columbia Blvd.	Install traffic signal or roundabout	\$250,000

<sup>1</sup>Project will require coordination/approval by ODOT and ODOT Rail Division. Engineering studies, traffic analysis, and conformance with ODOT standards will be evaluated as projects are developed.

<sup>2</sup>Project must meet traffic signal warrants and receive approval from State Traffic Engineer. Engineering studies, signal warrant and traffic analysis, and conformance with ODOT standards will be evaluated as projects are developed.

### Pedestrian Improvements

Figure 7-5 of the TSP illustrates the location of the planned pedestrian improvements within St. Helens. As shown, there are several projects to improve pedestrian crossings along US 30, Columbia Boulevard,

and St. Helens Street. The pedestrian crossing improvements may include traffic signal modifications such as leading pedestrian interval and pedestrian countdown signals along US 30 as well as curb extensions, raised median islands, rectangular rapid flashing beacons, or pedestrian hybrid signal treatments along Columbia Boulevard and St. Helens Street.

The corridor master plan effort should evaluate opportunities to incorporate the TSP-identified improvements into the final plan. In addition, project stakeholder feedback identified the need to further assess improvement opportunities at key crossing locations specifically including:

- Safety/sight-distance at 15<sup>th</sup> Street/Columbia Boulevard;
- Safety/sight-distance at 1<sup>st</sup> Street/Columbia Boulevard;
- Safety/sight-distance at 1<sup>st</sup> Street/St Helens Street;
- Signal timing/crossing conditions at US 30/Columbia Boulevard;
- Crossing conditions at Milton Way/Columbia Boulevard; and
- Crossing conditions at the Wyeth Street/US 30 intersection<sup>1</sup>.

Also shown in Figure 7-5, there are several additional planned improvements along roadways adjacent to the study area, including new sidewalks and multi-use paths. While not directly in the study area, these projects are expected to increase pedestrian activity within the study area and could be developed in support of the current corridor study recommendations. Table 2 summarizes the near-term pedestrian improvement projects within and adjacent to the study area (Table 2 was obtained from the TSP).

**Table 2: Near-Term (2011 to 2016) Transportation Improvement Program**

Project No.	Project Location	Project Description	Estimated Cost
N19	12 <sup>th</sup> Street (Columbia Blvd. to Old Portland Road)	Add curbs and sidewalks	\$580,000
N22	Columbia Boulevard (Sykes Road to US 30)	Add curbs and sidewalks	\$1,353,000
N24	Sykes Road (Columbia Blvd. to US 30)	Add curbs and sidewalks	\$190,000
N27	Gable Road (Bachelor Flat to US 30)	Add curbs and sidewalks	\$995,000
N32	Columbia Blvd./St. Helens Couplet	Install curb extensions (4 locations)	\$106,000
N33	Columbia Blvd. Couplet to 2 <sup>nd</sup> Street	Install curb extensions and island refuges (8 locations)	\$200,000
N34	Columbia Blvd./1 <sup>st</sup> Street	Install 1 striped crosswalk and 3 new ADA ramps	\$10,000
N35	St. Helens Street	Install curb extensions (4 locations)	\$106,000
N36	US 30 Corridor	Install Pedestrian Countdown Heads (5 Locations)	\$15,000

<sup>1</sup> Based on stakeholder feedback, ODOT will be conducting traffic counts at this intersection within the next month. The pedestrian, bicycle, and vehicular count information will then be used by the project team to assess improvement needs and potential options. This additional information will be provided to project stakeholders as it becomes available.



These improvements will enhance pedestrian connectivity in the area, establishing a more walkable neighborhood in St. Helens. Curb extensions and sidewalks will add pedestrian access to locations that are currently challenging to pedestrians, and striped crosswalks and island refuges can help facilitate the crossing of key roadways within the study area.

## Bicycle Improvements

Figure 7-6 of the TSP illustrates the location of the planned bicycle improvements within St. Helens. As shown, two projects were previously identified to improve bicycle crossings along US 30 (one at Gable Road and one at St. Helens Street). The US 30 bicycle crossing improvements may include additional signing and striping to help facilitate bicycle crossings and/or the addition of bicycle detection at the two respective traffic signals. Bicycle detection improvements could include pavement markers to indicate where cyclists can actuate a signal as well as modifying the sensitivity of loop detectors to improve bicycle activation. The corridor study should evaluate opportunities to incorporate these improvements into the final plan.

In addition to the TSP-recommended improvements, potential improvement opportunities identified through the current corridor master planning effort include:

- Widening the existing bicycle lanes along Columbia Boulevard and St. Helens Street (potentially in conjunction with widening of select on-street parking areas);
- Adding buffers to the bicycle lanes along US 30 (a re-striping activity that would provide an additional striped pavement area between the bicycle lane and the closest vehicular travel lane);
- Improving bicycle paths through the Columbia Boulevard/US 30 intersection;
- Improving left and right-turn lane striping/geometric configurations at key intersections; and/or
- Incorporating bicycle parking in the commercial areas along US 30, Columbia Boulevard, and St. Helens Street as well as in the Olde Towne, Downtown, and Riverfront areas.

Also shown in Figure 7-6, there are several additional identified bicycle improvements along roadways adjacent to the study area, including new on-street bike lanes, shared roadways, and multi-use paths. While not directly in the study area, construction of these projects will improve connectivity of the bicycle network and create a more extensive environment for cyclists in St. Helens. Adding bike lanes should draw more cyclists to the area and reconfiguring striping and signage will also create a more bike-friendly environment. Table 3 summarizes the near-term bicycle improvement projects within and adjacent to the study area (obtained from the TSP).

**Table 3: Near-Term (2011 to 2016) Transportation Improvement Program**

Project No.	Project Location	Project Description	Estimated Cost
N05	12 <sup>th</sup> Street (Columbia Blvd. to Old Portland Road)	Widen roadway and add bike lanes	\$364,000
N09	Columbia Boulevard (Sykes Road to US 30)	Add bike lanes	\$30,000
N13	Gable Road (Bachelor Flat to US 30)	Widen roadway and add bike lanes	\$502,000
N16	US 30/St. Helens Street	Reconfigure bike lane striping across right turn lane	\$5,000
N17	US 30/Gable Road	Enhance existing bicycle facilities with pavement markings and signage	\$5,000

## SUMMARY

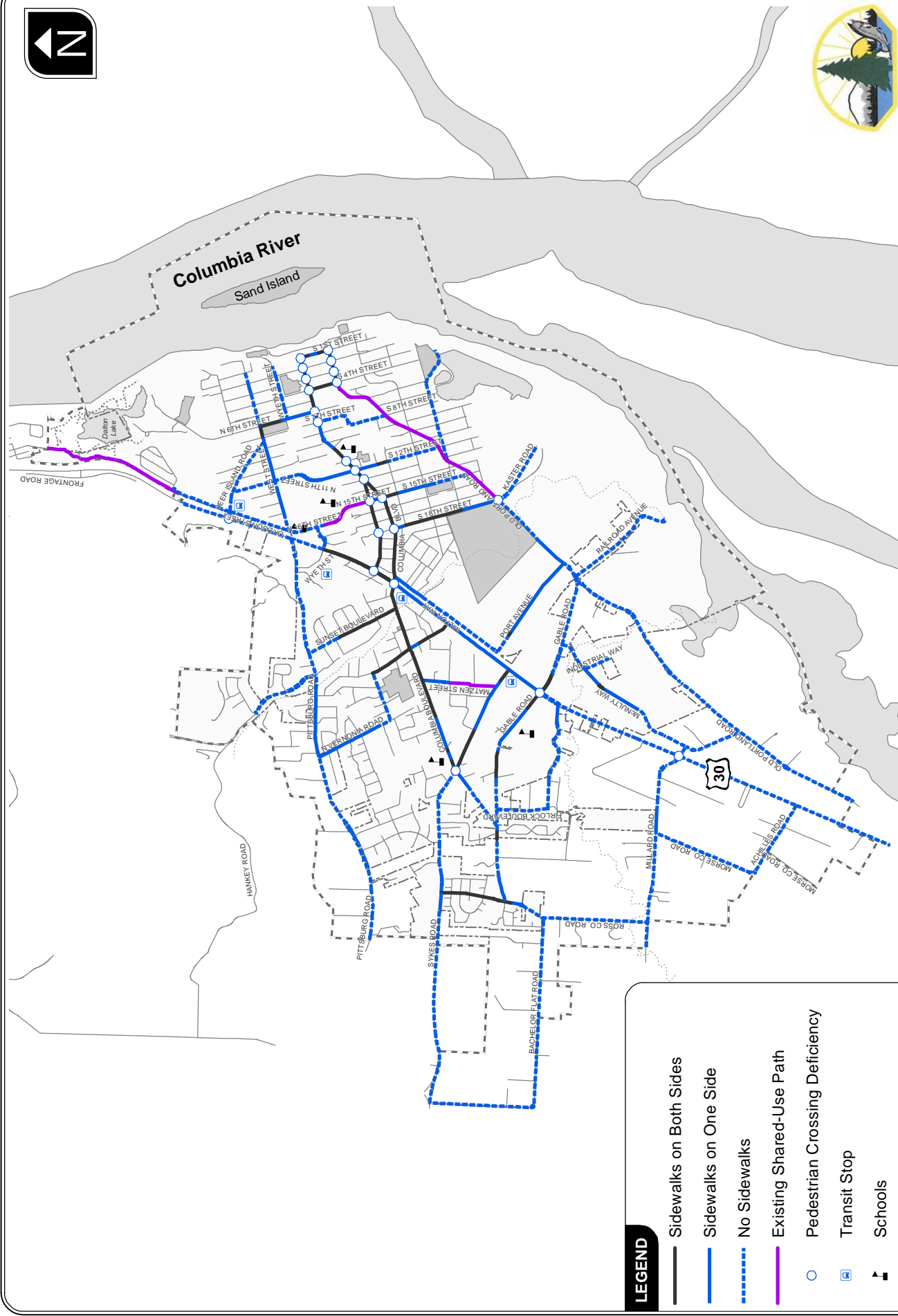
Key findings to date include:

- Traffic demand along the Columbia Boulevard and St. Helens one-way couplet facilities is below the capacity of the two roadways east of US 30. As such, there may be opportunities to reconfigure the roadway cross sections while still preserving adequate capacity. In particular, it appears that the eastbound right-turn lane on Columbia Boulevard at 18<sup>th</sup> Street could be eliminated (at least from an intersection capacity perspective).
- The pedestrian and bicycle volume data offers insights as to prominent travel routes today, as well as those locations that are potentially less friendly to non-auto trips. This information could be used to help assess where near-term pedestrian and bicycle improvements could be focused.
- The vehicle traffic counts confirm the weekday p.m. peak hour analysis provided in the TSP is an appropriate representation of peak vehicular travel demand along the corridors.
- The upcoming alternatives analysis should consider options to eliminate wrong-way traffic movements occurring on Columbia Boulevard at Milton Way while ensuring sufficient connectivity and circulation to homes and businesses located along Milton Way.
- The bicycle level of stress evaluation provides insights as to areas where there are improvement needs and offers basic insights as to what improvements might be made.
- The crash data points to the need for thoughtful consideration of improvement opportunities on US 30 at Gable Road and Sykes Road.
- The list of planned improvements identified in the TSP offers insight as to previously identified infrastructure needs in the community, forming a context for the current planning effort and also leaving room for additional improvement projects to be identified during the Corridor planning process.

- In addition to the TSP-recommended bicycle improvement needs, potential improvement opportunities identified through the current corridor master planning effort include:
  - Widening the existing bicycle lanes along Columbia Boulevard and St. Helens Street (potentially in conjunction with widening of select on-street parking areas);
  - Adding buffers to the bicycle lanes along US 30 (a re-striping activity that would provide an additional striped pavement area between the bicycle lane and the closest vehicular travel lane);
  - Improving bicycle paths through the Columbia Boulevard/US 30 intersection;
  - Improving left and right-turn lane striping/geometric configurations at key intersections; and/or
  - Incorporating bicycle parking in the commercial areas along US 30, Columbia Boulevard, and St. Helens Street as well as in the Olde Towne, Downtown, and Riverfront areas.
- Other areas requiring further review during upcoming stages of the project include, but are not limited to:
  - Safety/sight-distance at 15<sup>th</sup> Street/Columbia Boulevard;
  - Safety/sight-distance at 1<sup>st</sup> Street/Columbia Boulevard;
  - Safety/sight-distance at 1<sup>st</sup> Street/St Helens Street;
  - Crossing conditions at US 30/Columbia Boulevard (signal timing/crosswalk length);
  - Crossing conditions at Milton Way/Columbia Boulevard;
  - Crossing conditions at the Wyeth Street/US 30 intersection;
  - Lane configurations at the St Helens Street/Columbia Boulevard couplet terminus;
  - Lane Configurations at the Columbia Boulevard/18<sup>th</sup> Street intersection;
  - Cross sections along Columbia Boulevard between 7<sup>th</sup> Street and 1<sup>st</sup> Street; and
  - Cross sections along St Helens Street between 4<sup>th</sup> Street and 1<sup>st</sup> Street.

The maintenance and life cycle costs associated with each of the potential improvements identified above will be considered during the upcoming design phase of the corridor study.

## Appendix A TSP Figures



EXISTING PEDESTRIAN FACILITIES AND KNOWN DEFICIENCIES  
ST. HELENS, OREGON

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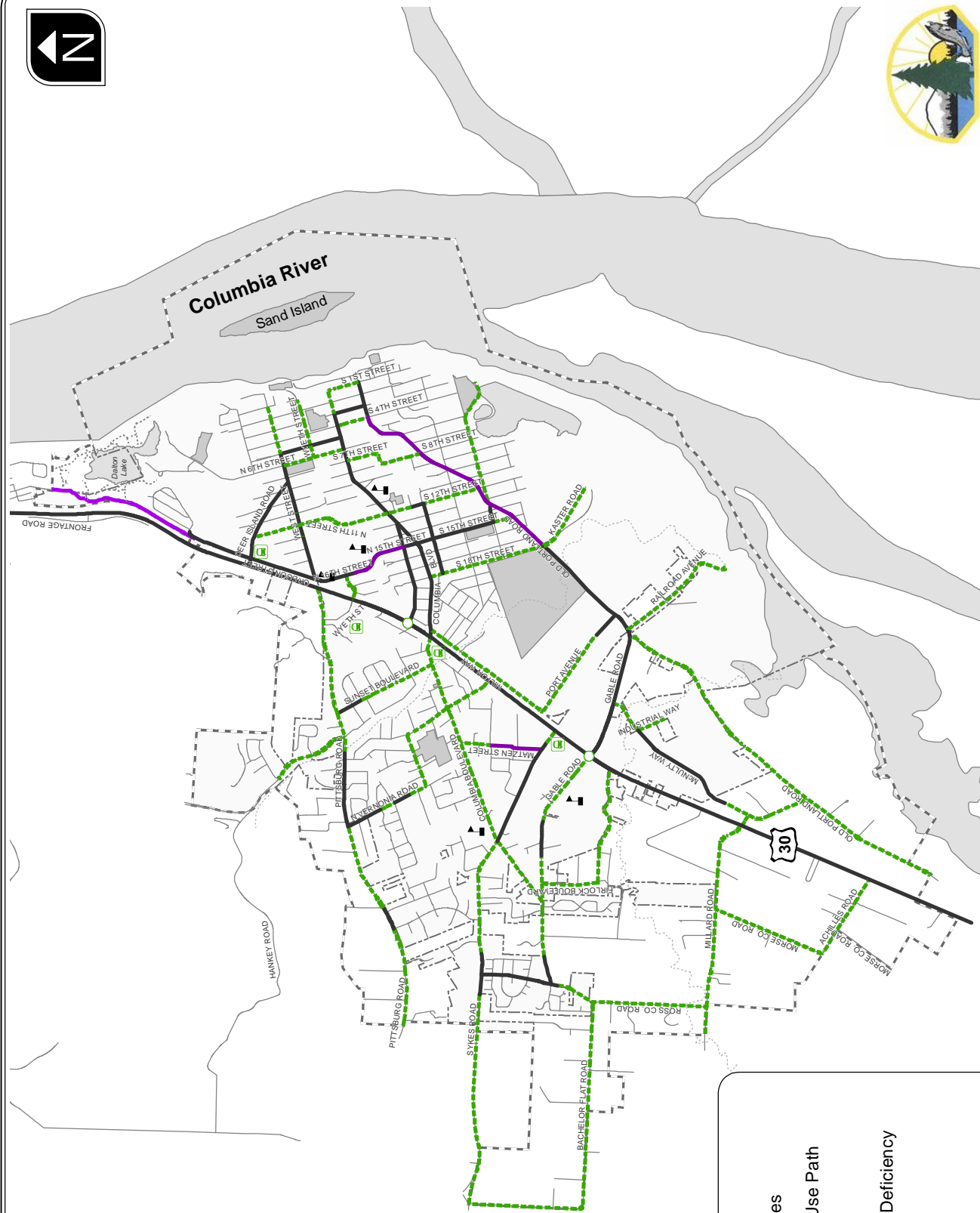
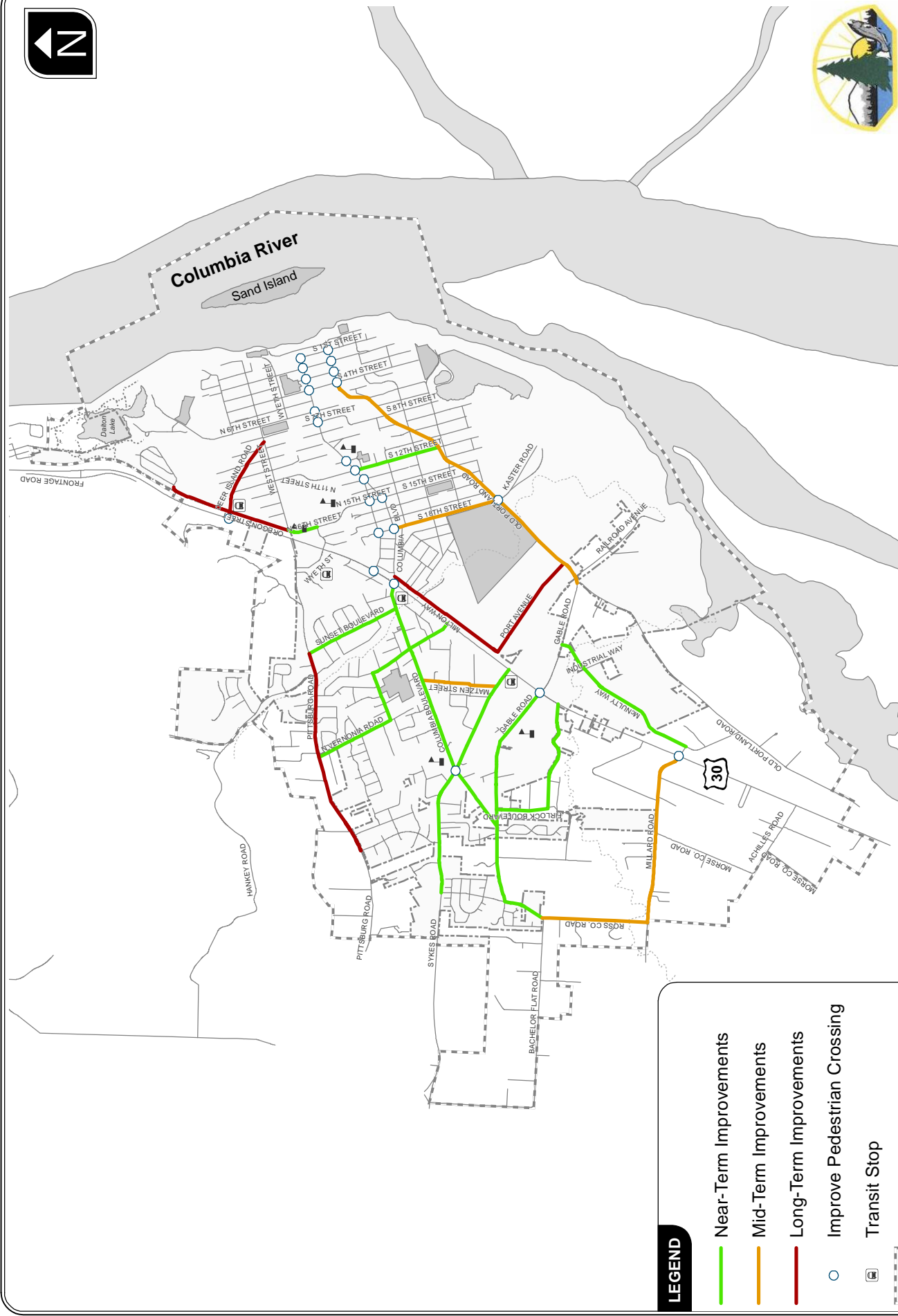


FIGURE  
**3-6**

**EXISTING BICYCLE FACILITIES AND KNOWN DEFICIENCIES  
ST. HELENS, OREGON**

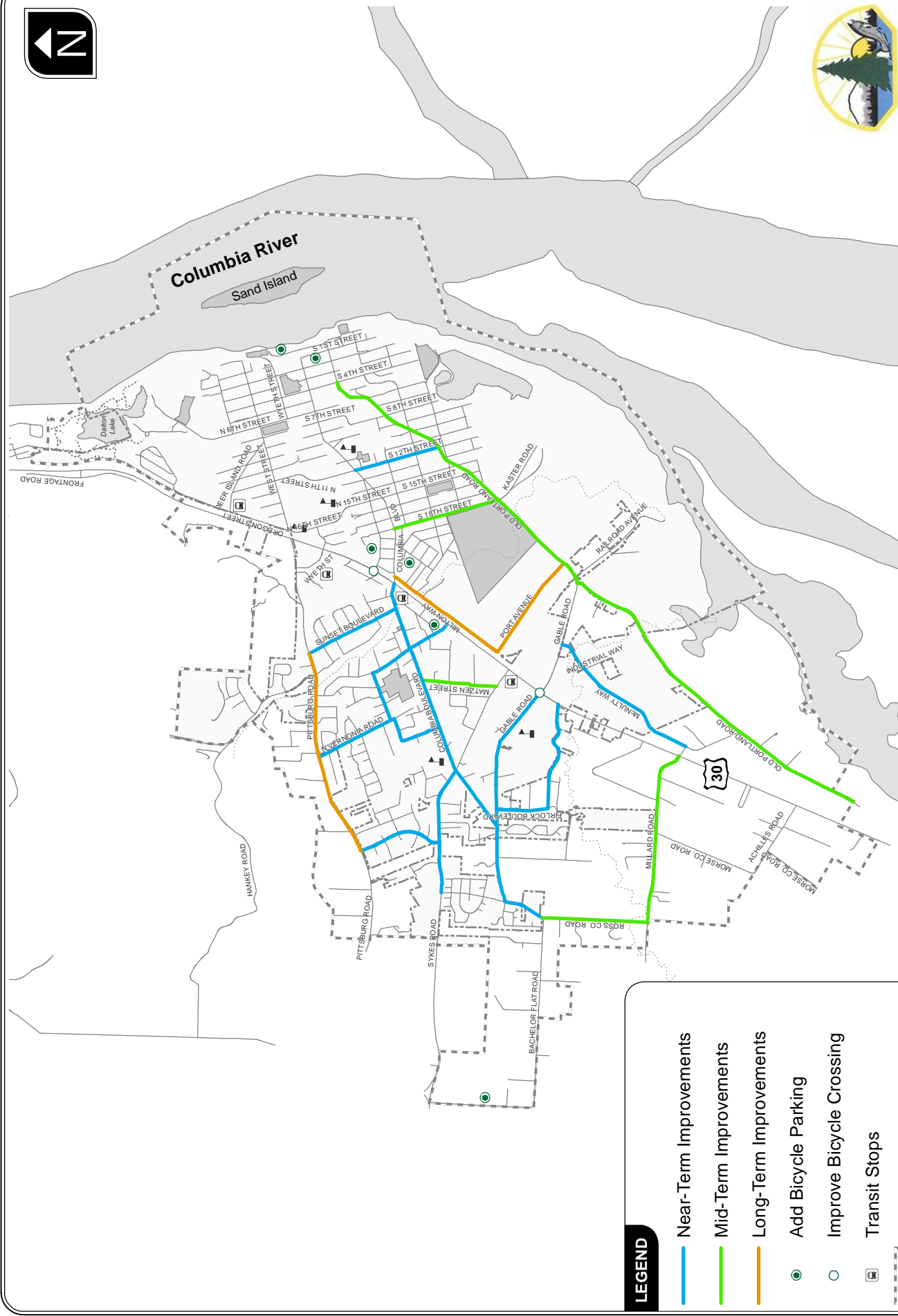


LEGEND

- Near-Term Improvements
- Mid-Term Improvements
- Long-Term Improvements
- Improve Pedestrian Crossing
- Transit Stop
- City UGB
- City Limits

FIGURE 7-5  
PEDESTRIAN SYSTEM PLAN  
ST. HELENS, OREGON





**LEGEND**

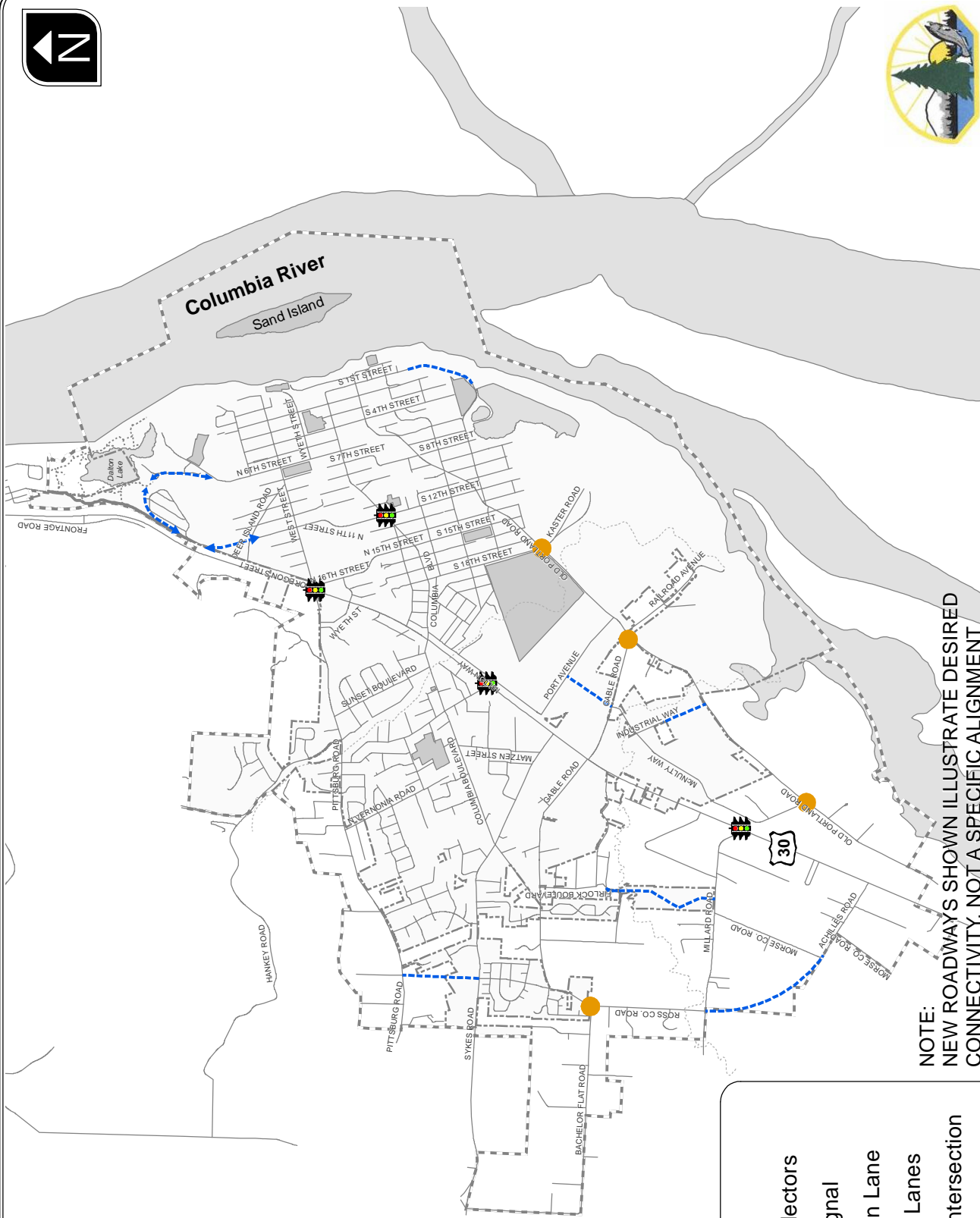
- Near-Term Improvements
- Mid-Term Improvements
- Long-Term Improvements
- Add Bicycle Parking
- Improve Bicycle Crossing
- Transit Stops
- City UGB
- City Limits



**FIGURE 7-6**  
**BICYCLE SYSTEM PLAN**  
**ST. HELENS, OREGON**

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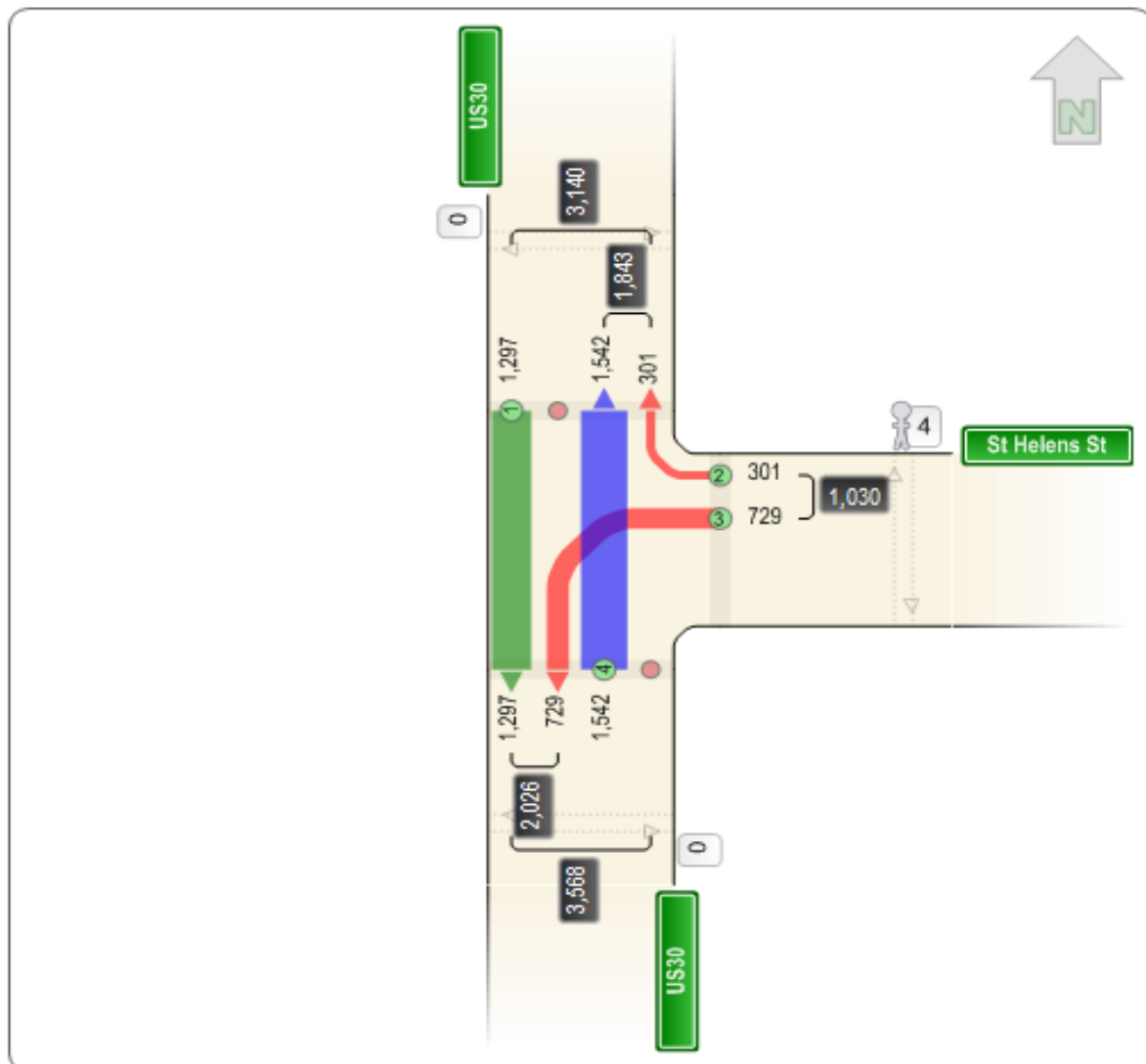




LEGEND

- Proposed Collectors
- Add Traffic Signal
- Add Right-Turn Lane
- Add Left-Turn Lanes
- Reconfigure Intersection
- City Limits
- City UGB

## Appendix B Traffic Count Data



## Summary of Traffic Count Transportation Development Division

Site: 38449

Date: 9/11/2013

County: Columbia

Hours: 4:00 PM-6:00 PM

City: St. Helens

Highway #: 092

Milepoint: 28.67

Location: US30 and St Helens St

Count Number: 1.00

Weather: Clear

Time of Day	Summary By Movements						Entering Volumes		
	N-S	E-N	E-S	S-N		TOTAL	North	East	South
16:00	148	36	82	201		467	148	118	201
16:15	147	34	80	184		445	147	114	184
16:30	161	37	91	209		498	161	128	209
16:45	157	50	94	187		488	157	144	187
17:00	204	43	104	190		541	204	147	190
17:15	168	38	106	194		506	168	144	194
17:30	160	33	80	199		472	160	113	199
17:45	152	30	92	178		452	152	122	178
Total Count	1297	301	729	1542		3869	1297	1030	1542
24hr Factor	1	1	1	1		1	1	1	1
24hr Volume	1297	301	729	1542		3869	1297	1030	1542

## Summary Of Bicycle Count Transportation Development Division

Site: 38449

Date: 9/11/2013

County: Columbia

Hours: 4:00 PM-6:00 PM

City: St. Helens

Highway #: 092

Milepoint: 28.67

Location: US30 and St Helens St

Count Number: 1.00

Weather: Clear

Time of Day	Summary By Movements						Entering Volumes		
	N-S	E-N	E-S	S-N		TOTAL	North	East	South
16:00	0	0	0	0		0	0	0	0
16:15	0	0	0	0		0	0	0	0
16:30	0	0	0	0		0	0	0	0
16:45	0	0	0	0		0	0	0	0
17:00	0	0	2	0		2	0	2	0
17:15	0	0	0	2		2	0	0	2
17:30	0	0	0	0		0	0	0	0
17:45	0	0	0	0		0	0	0	0
Total Count	0	0	2	2		4	0	2	2
24hr Factor	1	1	1	1		1	1	1	1
24hr Volume	0	0	2	2		4	0	2	2

## Summary Of Pedestrian Count Transportation Development Division

Site: 38449  
County: Columbia  
City: St. Helens

Date: 9/11/2013  
Hours: 4:00 PM-6:00 PM  
Highway #: 092

Milepoint: 28.67  
Count Number: 1.00

Location: US30 and St Helens St  
Weather: Clear

Time of Day	Pedestrian		
	North	East	South
16:00		2	
16:15			
16:30		1	
16:45			
17:00			
17:15			
17:30			
17:45		1	
Total	0	4	0

# Transportation Development Division Transportation System Monitoring Unit Vehicular Volume

## Time settings

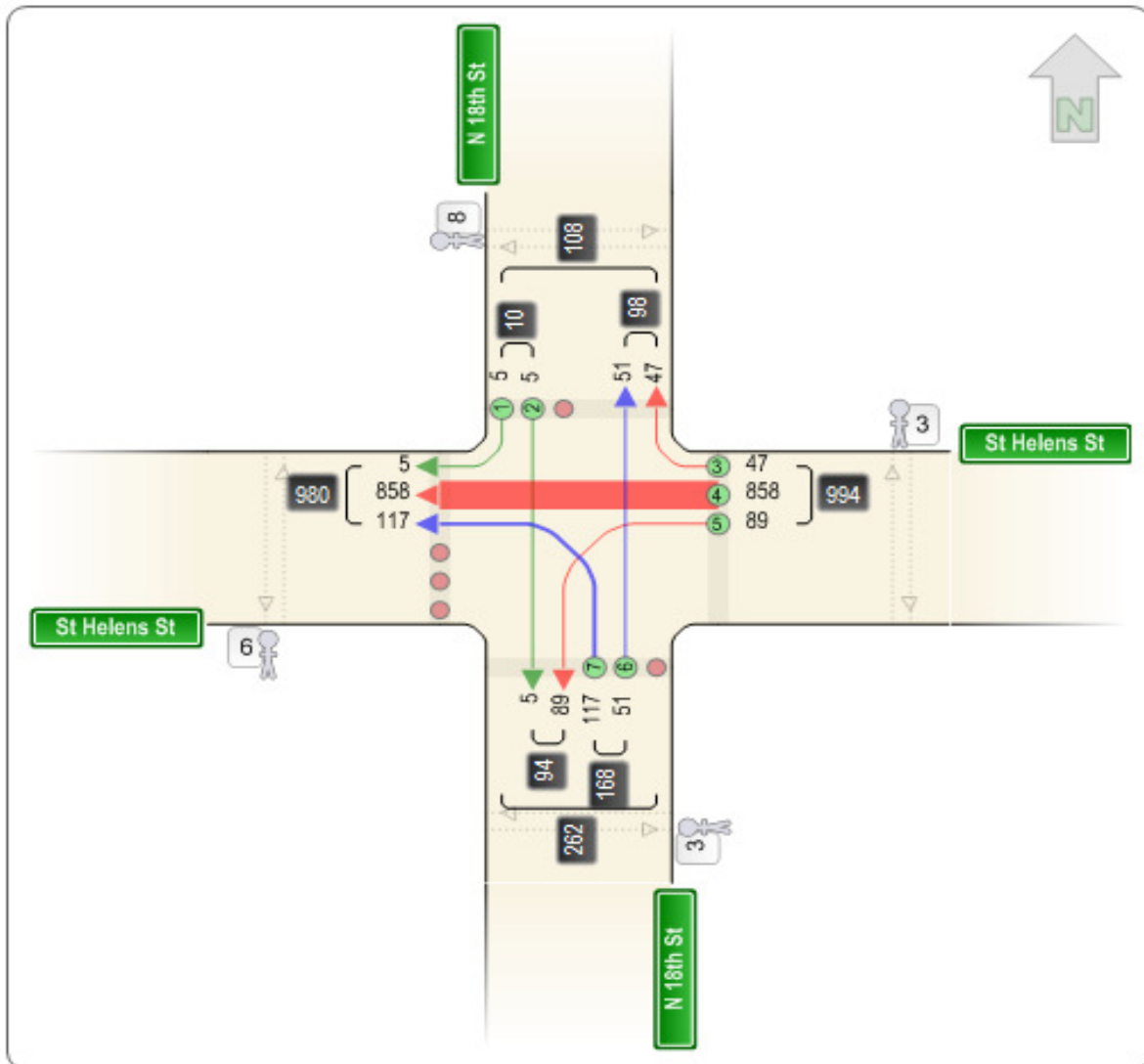
Date: 9/9/2013  
Hours: 4:00 PM-6:00 PM  
Weather: Clear

## Source

Site Number: 38450  
Mile Point: 0.26  
Street Number: 2744  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

## Source Description

Location Description: St Helens St and N 18th St  
County: Columbia  
City: St. Helens



# Summary of Traffic Count Transportation Development Division

<div> <div> Site: 38450 County: Columbia City: St. Helens </div> <div> Date: 9/9/2013 Hours: 4:00 PM-6:00 PM Highway #: 2744 St Helens St and N 18th Location: St Weather: Clear </div> </div>												
<div> <div> Milepoint: 0.26 Count Number: 1.00 </div> </div>												
Time of Day	Summary By Movements								Entering Volumes			
	N-S	N-W	E-N	E-S	E-W	S-N	S-W	TOTAL	North	East	South	
16:00	1	2	7	13	121	8	17	169	3	141	25	
16:15	0	0	6	14	105	6	9	140	0	125	15	
16:30	3	0	5	16	116	5	16	161	3	137	21	
16:45	0	0	7	9	102	5	17	140	0	118	22	
17:00	1	2	8	8	154	15	18	206	3	170	33	
17:15	0	0	5	18	88	7	14	132	0	111	21	
17:30	0	1	3	8	87	5	16	120	1	98	21	
17:45	0	0	6	3	85	0	10	104	0	94	10	
Total Count	5	5	47	89	858	51	117	1172	10	994	168	
24hr Factor	1	1	1	1	1	1	1	1	1	1	1	
24hr Volume	5	5	47	89	858	51	117	1172	10	994	168	



# Summary Of Bicycle Count Transportation Development Division

<div> <div> Site: 38450 County: Columbia City: St. Helens </div> <div> Date: 9/9/2013 Hours: 4:00 PM-6:00 PM Highway #: 2744 </div> <div> Milepoint: 0.26 Count Number: 1.00 </div> <div> St Helens St and N 18th Location: St Weather: Clear </div> </div>											
Time of Day	Summary By Movements								Entering Volumes		
	N-S	N-W	E-N	E-S	E-W	S-N	S-W	TOTAL	North	East	South
16:00	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	1	0	0	1	0	1	0
16:30	0	0	0	0	1	0	0	1	0	1	0
16:45	0	0	0	0	1	0	0	1	0	1	0
17:00	1	0	0	1	1	0	1	4	1	2	1
17:15	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	5	0	0	5	0	5	0
17:45	0	0	0	0	0	0	0	0	0	0	0
Total Count	1	0	0	1	9	0	1	12	1	10	1
24hr Factor	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	1	0	0	1	9	0	1	12	1	10	1

Summary Of Pedestrian Count

Transportation Development Division

Site: 38450  
County: Columbia  
City: St. Helens

Date: 9/9/2013  
Hours: 4:00 PM-6:00 PM  
Highway #: 2744

Milepoint: 0.26  
Count Number: 1.00

St Helens St and N 18th  
Location: St  
Weather: Clear

Time of Day	Pedestrian			
	North	East	South	West
16:00		1		
16:15				1
16:30				
16:45	1	1		
17:00	2	1	2	
17:15	4			4
17:30	1			1
17:45			1	
Total	8	3	3	6

**Transportation Development Division  
Transportation System Monitoring Unit  
Vehicular Volume**

**Time settings**

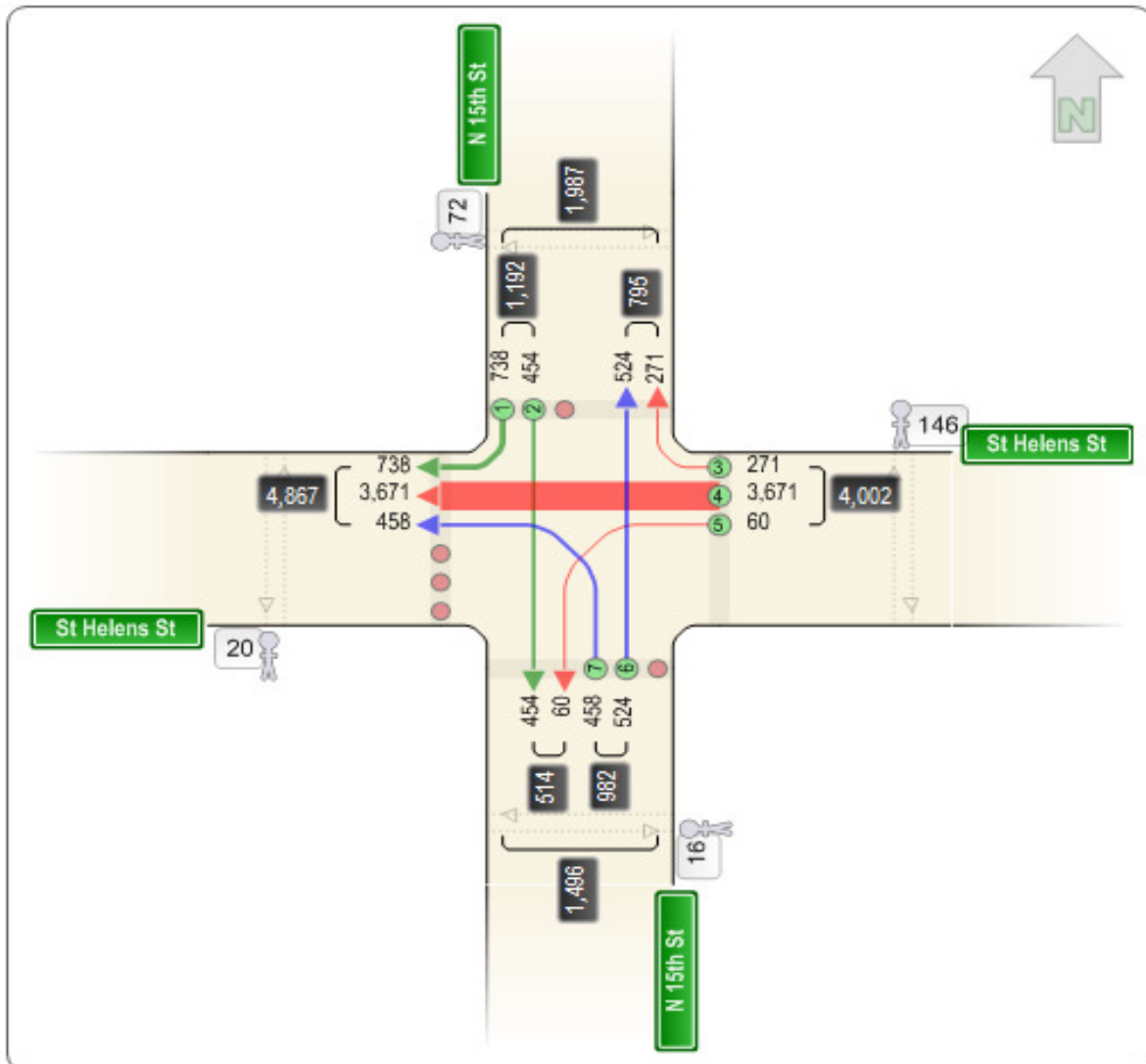
Date: 9/10/2013  
Hours: 6:00 AM-10:00 PM  
Weather: Clear

**Source**

Site Number: 38451  
Mile Point: 0.11  
Street Number: 2744  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

**Source Description**

Location Description: St Helens St and N 15th St  
County: Columbia  
City: St. Helens



## Summary of Traffic Count Transportation Development Division

Site: 38451  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 6:00 AM-10:00 PM  
Highway #: 2744

Milepoint: 0.11  
Count Number: 1.00

Location: St Helens St and N 15th St  
Weather: Clear

Time of Day	Summary By Movements									Entering Volumes		
	N-S	N-W	E-N	E-S	E-W	S-N	S-W		TOTAL	North	East	South
6:00	11	9	6	2	92	5	10		135	20	100	15
6:15	0	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0	0		0	0	0	0
7:00	56	45	25	2	180	30	13		351	101	207	43
7:15	0	0	0	0	0	0	0		0	0	0	0
7:30	0	0	0	0	0	0	0		0	0	0	0
7:45	0	0	0	0	0	0	0		0	0	0	0
8:00	48	76	25	4	196	56	16		421	124	225	72
8:15	0	0	0	0	0	0	0		0	0	0	0
8:30	0	0	0	0	0	0	0		0	0	0	0
8:45	0	0	0	0	0	0	0		0	0	0	0
9:00	25	17	13	0	189	10	29		283	42	202	39
9:15	0	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0	0		0	0	0	0
10:00	21	52	12	5	202	21	28		341	73	219	49
10:15	0	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0	0		0	0	0	0
10:45	0	0	0	0	0	0	0		0	0	0	0
11:00	19	49	21	2	311	21	46		469	68	334	67
11:15	0	0	0	0	0	0	0		0	0	0	0
11:30	0	0	0	0	0	0	0		0	0	0	0
11:45	0	0	0	0	0	0	0		0	0	0	0
12:00	16	43	8	5	273	22	41		408	59	286	63
12:15	0	0	0	0	0	0	0		0	0	0	0
12:30	0	0	0	0	0	0	0		0	0	0	0
12:45	0	0	0	0	0	0	0		0	0	0	0
13:00	25	43	12	6	298	44	39		467	68	316	83
13:15	0	0	0	0	0	0	0		0	0	0	0
13:30	0	0	0	0	0	0	0		0	0	0	0
13:45	0	0	0	0	0	0	0		0	0	0	0
14:00	28	31	32	7	285	59	31		473	59	324	90
14:15	0	0	0	0	0	0	0		0	0	0	0
14:30	0	0	0	0	0	0	0		0	0	0	0
14:45	0	0	0	0	0	0	0		0	0	0	0
15:00	38	102	30	3	243	42	37		495	140	276	79
15:15	0	0	0	0	0	0	0		0	0	0	0
15:30	0	0	0	0	0	0	0		0	0	0	0
15:45	0	0	0	0	0	0	0		0	0	0	0
16:00	9	13	4	0	69	7	5		107	22	73	12
16:15	6	12	6	1	57	8	8		98	18	64	16
16:30	9	15	3	2	69	14	9		121	24	74	23

16:45	6	14	2	0	56	10	8		96	20	58	18
17:00	8	26	9	0	63	18	9		133	34	72	27
17:15	9	21	11	0	62	13	12		128	30	73	25
17:30	5	8	2	1	61	8	3		88	13	64	11
17:45	7	8	4	1	58	13	9		100	15	63	22
18:00	24	32	8	6	212	29	20		331	56	226	49
18:15	0	0	0	0	0	0	0		0	0	0	0
18:30	0	0	0	0	0	0	0		0	0	0	0
18:45	0	0	0	0	0	0	0		0	0	0	0
19:00	25	32	8	0	157	33	23		278	57	165	56
19:15	0	0	0	0	0	0	0		0	0	0	0
19:30	0	0	0	0	0	0	0		0	0	0	0
19:45	0	0	0	0	0	0	0		0	0	0	0
20:00	15	13	3	4	142	9	12		198	28	149	21
20:15	0	0	0	0	0	0	0		0	0	0	0
20:30	0	0	0	0	0	0	0		0	0	0	0
20:45	0	0	0	0	0	0	0		0	0	0	0
21:00	2	9	2	3	62	4	8		90	11	67	12
21:15	0	0	0	0	0	0	0		0	0	0	0
21:30	0	0	0	0	0	0	0		0	0	0	0
21:45	0	0	0	0	0	0	0		0	0	0	0
Total Count	412	670	246	54	3337	476	416		5611	1082	3637	892
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	454	737	271	60	3671	524	458		6173	1191	4001	982

## Summary Of Bicycle Count Transportation Development Division

Site: 38451  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 6:00 AM-10:00 PM  
Highway #: 2744

Milepoint: 0.11  
Count Number: 1.00

Location: St Helens St and N 15th St  
Weather: Clear

Time of Day	Summary By Movements									Entering Volumes		
	N-S	N-W	E-N	E-S	E-W	S-N	S-W		TOTAL	North	East	South
6:00	0	0	0	0	0	1	0		1	0	0	1
6:15	0	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0	0		0	0	0	0
7:00	1	1	3	0	1	2	0		8	2	4	2
7:15	0	0	0	0	0	0	0		0	0	0	0
7:30	0	0	0	0	0	0	0		0	0	0	0
7:45	0	0	0	0	0	0	0		0	0	0	0
8:00	0	0	2	0	1	0	0		3	0	3	0
8:15	0	0	0	0	0	0	0		0	0	0	0
8:30	0	0	0	0	0	0	0		0	0	0	0
8:45	0	0	0	0	0	0	0		0	0	0	0
9:00	0	0	0	0	1	0	0		1	0	1	0
9:15	0	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0	0		0	0	0	0
10:00	1	1	0	0	1	1	1		5	2	1	2
10:15	0	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0	0		0	0	0	0
10:45	0	0	0	0	0	0	0		0	0	0	0
11:00	0	0	1	0	4	1	0		6	0	5	1
11:15	0	0	0	0	0	0	0		0	0	0	0
11:30	0	0	0	0	0	0	0		0	0	0	0
11:45	0	0	0	0	0	0	0		0	0	0	0
12:00	0	2	0	0	2	0	0		4	2	2	0
12:15	0	0	0	0	0	0	0		0	0	0	0
12:30	0	0	0	0	0	0	0		0	0	0	0
12:45	0	0	0	0	0	0	0		0	0	0	0
13:00	0	0	0	0	2	0	0		2	0	2	0
13:15	0	0	0	0	0	0	0		0	0	0	0
13:30	0	0	0	0	0	0	0		0	0	0	0
13:45	0	0	0	0	0	0	0		0	0	0	0
14:00	1	1	0	0	1	1	0		4	2	1	1
14:15	0	0	0	0	0	0	0		0	0	0	0
14:30	0	0	0	0	0	0	0		0	0	0	0
14:45	0	0	0	0	0	0	0		0	0	0	0
15:00	0	2	0	0	3	0	0		5	2	3	0
15:15	0	0	0	0	0	0	0		0	0	0	0
15:30	0	0	0	0	0	0	0		0	0	0	0
15:45	0	0	0	0	0	0	0		0	0	0	0
16:00	0	0	0	0	1	0	0		1	0	1	0
16:15	0	0	3	0	0	0	0		3	0	3	0
16:30	0	0	0	0	1	0	0		1	0	1	0

16:45	0	0	0	0	0	0	0		0	0	0	0
17:00	0	1	1	0	0	0	0		2	1	1	0
17:15	0	0	0	0	0	0	0		0	0	0	0
17:30	0	0	1	0	0	0	0		1	0	1	0
17:45	0	2	0	0	0	0	0		2	2	0	0
18:00	0	0	0	0	0	2	0		2	0	0	2
18:15	0	0	0	0	0	0	0		0	0	0	0
18:30	0	0	0	0	0	0	0		0	0	0	0
18:45	0	0	0	0	0	0	0		0	0	0	0
19:00	0	1	1	0	2	1	0		5	1	3	1
19:15	0	0	0	0	0	0	0		0	0	0	0
19:30	0	0	0	0	0	0	0		0	0	0	0
19:45	0	0	0	0	0	0	0		0	0	0	0
20:00	1	0	1	0	1	1	0		4	1	2	1
20:15	0	0	0	0	0	0	0		0	0	0	0
20:30	0	0	0	0	0	0	0		0	0	0	0
20:45	0	0	0	0	0	0	0		0	0	0	0
21:00	0	0	0	0	0	1	0		1	0	0	1
21:15	0	0	0	0	0	0	0		0	0	0	0
21:30	0	0	0	0	0	0	0		0	0	0	0
21:45	0	0	0	0	0	0	0		0	0	0	0
Total Count	4	11	13	0	21	11	1		61	15	34	12
24hr Factor	1.1	1.1	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1
24hr Volume	5	13	15	0	24	13	2		68	17	38	14

## Summary Of Pedestrian Count Transportation Development Division

Site: 38451  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 6:00 AM-10:00 PM  
Highway #: 2744  
St Helens St and N 15th  
Location: St  
Weather: Clear

Milepoint: 0.11  
Count Number: 1.00

Time of Day	Pedestrian			
	North	East	South	West
6:00				
6:15				
6:30				
6:45				
7:00	7	23	1	5
7:15				
7:30				
7:45				
8:00	5	17	1	3
8:15				
8:30				
8:45				
9:00	9	3	1	
9:15				
9:30				
9:45				
10:00	4	15	1	2
10:15				
10:30				
10:45				
11:00	4	1	2	
11:15				
11:30				
11:45				
12:00	4	4		1
12:15				
12:30				
12:45				
13:00	1	4	1	2
13:15				
13:30				
13:45				
14:00	5	3		1
14:15				
14:30				
14:45				
15:00	18	53		6
15:15				
15:30				
15:45				
16:00				
16:15				
16:30	6	2	1	



16:45		6		
17:00				
17:15		3	2	
17:30		3		
17:45				
18:00	3		1	
18:15				
18:30				
18:45				
19:00	3	4	2	
19:15				
19:30				
19:45				
20:00		4	2	
20:15				
20:30				
20:45				
21:00	3	1	1	
21:15				
21:30				
21:45				
Total	72	146	16	20

# Transportation Development Division Transportation System Monitoring Unit Vehicular Volume

## Time settings

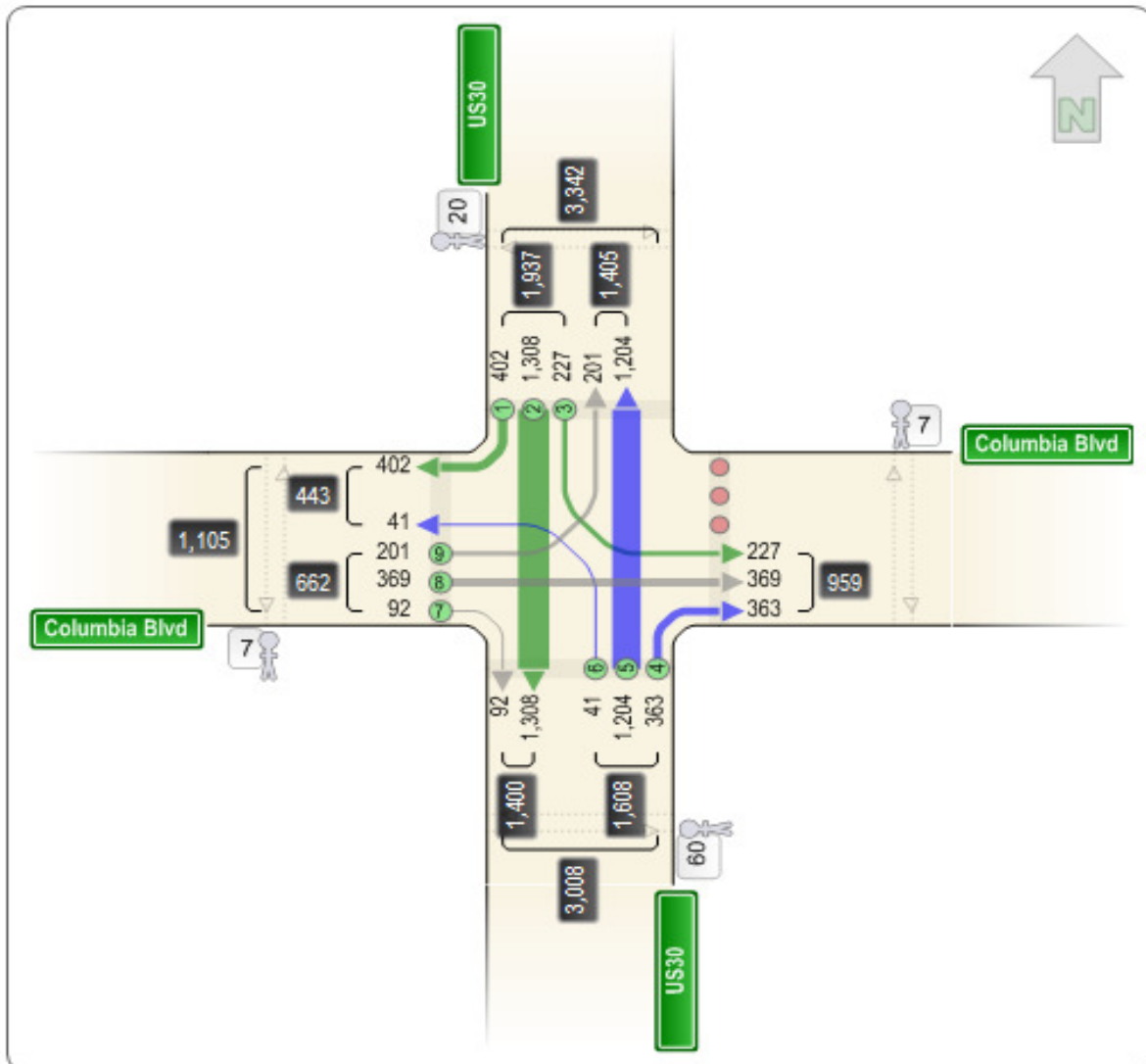
Date: 9/10/2013  
Hours: 4:00 PM-6:00 PM  
Weather: Clear

## Source

Site Number: 38452  
Mile Point: 28.56  
Street Number: 092  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

## Source Description

Location Description: US30 and Columbia Blvd  
County: Columbia  
City: St. Helens



# Summary of Traffic Count Transportation Development Division

Site: 38452  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 4:00 PM-6:00 PM  
Highway #: 092

Milepoint: 28.56  
Count Number: 1.00

Location: US30 and Columbia Blvd  
Weather: Clear

Time of Day	Summary By Movements										Entering Volumes		
	N-E	N-S	N-W	S-N	S-E	S-W	W-N	W-E	W-S	TOTAL	North	South	West
16:00	30	157	42	143	48	3	23	49	19	514	229	194	91
16:15	25	172	51	123	46	7	26	40	6	496	248	176	72
16:30	35	160	57	151	51	5	31	62	11	563	252	207	104
16:45	30	148	43	139	41	6	24	43	11	485	221	186	78
17:00	23	224	55	154	46	5	30	44	16	597	302	205	90
17:15	25	174	47	146	46	5	18	48	10	519	246	197	76
17:30	34	145	42	175	39	7	21	45	9	517	221	221	75
17:45	25	128	65	173	46	3	28	38	10	516	218	222	76
Total Count	227	1308	402	1204	363	41	201	369	92	4207	1937	1608	662
24hr Factor	1	1	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	227	1308	402	1204	363	41	201	369	92	4207	1937	1608	662

# Summary Of Bicycle Count Transportation Development Division

Site: 38452  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 4:00 PM-6:00 PM  
Highway #: 092

Milepoint: 28.56  
Count Number: 1.00  
Location: US30 and Columbia Blvd  
Weather: Clear

Time of Day	Summary By Movements										Entering Volumes		
	N-E	N-S	N-W	S-N	S-E	S-W	W-N	W-E	W-S	TOTAL	North	South	West
16:00	0	0	0	0	0	0	0	1	0	1	0	0	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	1	1	0	0	0	0	0	0	2	2	0	0
16:45	0	1	1	0	0	0	0	1	0	3	2	0	1
17:00	0	0	1	0	0	0	0	0	0	1	1	0	0
17:15	0	0	0	0	0	0	0	1	0	1	0	0	1
17:30	0	1	0	0	0	0	0	1	0	2	1	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	0	3	3	0	0	0	0	4	0	10	6	0	4
24hr Factor	1	1	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	0	3	3	0	0	0	0	4	0	10	6	0	4

Summary Of Pedestrian Count

Transportation Development Division

Site: 38452	Date: 9/10/2013
County: Columbia	Hours: 4:00 PM-6:00 PM
City: St. Helens	Highway #: 092
Milepoint: 28.56	Location: US30 and Columbia Blvd
Count Number: 1.00	Weather: Clear

Time of Day	Pedestrian			
	North	East	South	West
16:00	4		8	3
16:15	3	1	13	
16:30	6		3	1
16:45	1	2	9	
17:00	2	1	5	
17:15	2		9	
17:30	2	3	11	3
17:45			2	
Total	20	7	60	7

# Transportation Development Division Transportation System Monitoring Unit Vehicular Volume

## Time settings

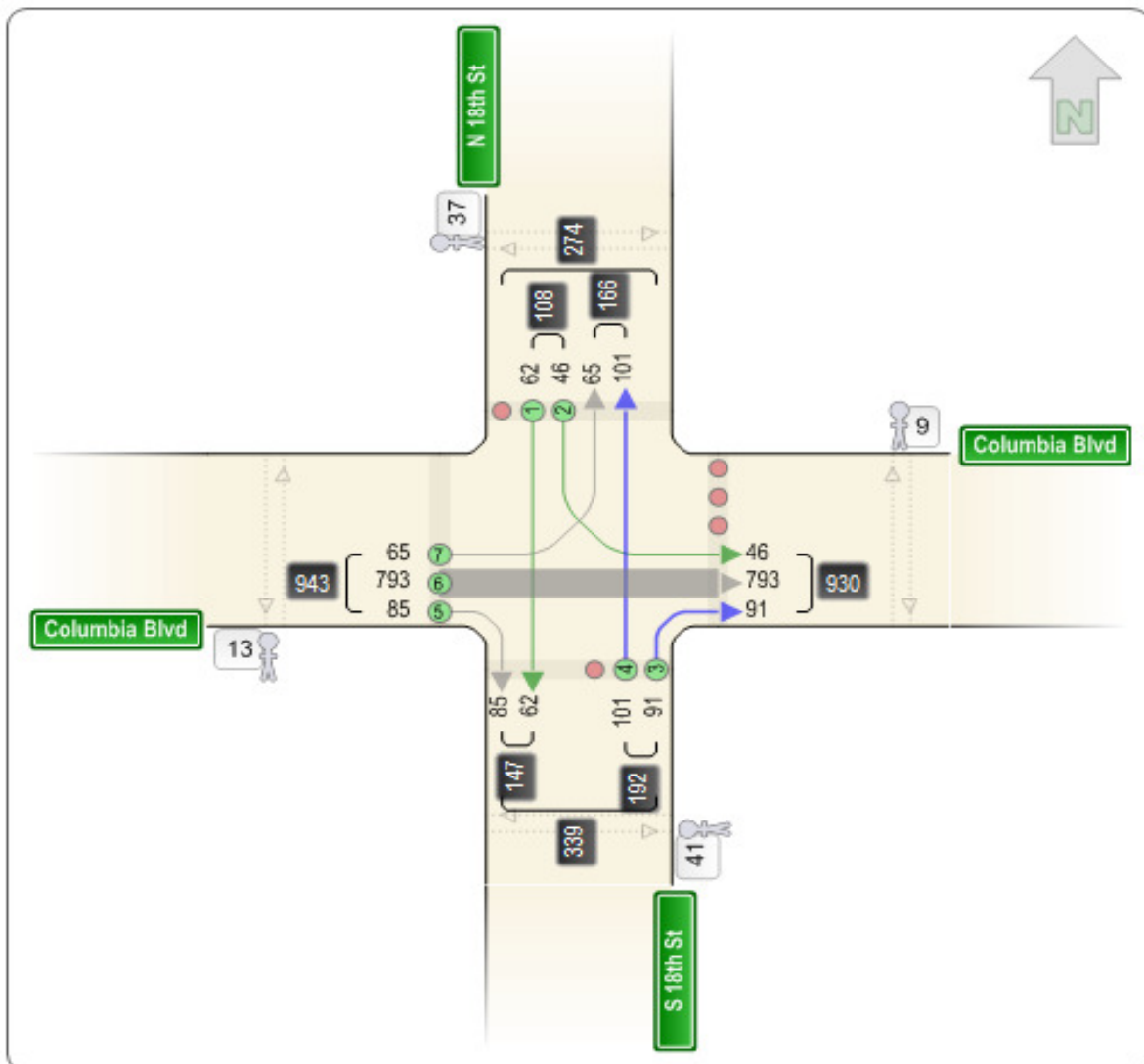
Date: 9/9/2013  
Hours: 4:00 PM-6:00 PM  
Weather: Clear

## Source

Site Number: 38453  
Mile Point: 1.53  
Street Number: 2718  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

## Source Description

Location Description: Columbia Blvd and 18th St  
County: Columbia  
City: St. Helens



# Summary of Traffic Count Transportation Development Division

<div> <div> Site: 38453  County: Columbia  City: St. Helens </div> <div> Date: 9/9/2013  Hours: 4:00 PM-6:00 PM  Highway #: 2718 </div> <div> Milepoint: 1.53  Count Number: 1.00 </div> <div> Location: Columbia Blvd and 18th St  Weather: Clear </div> </div>											
Time of Day	Summary By Movements								Entering Volumes		
	N-E	N-S	S-N	S-E	W-N	W-E	W-S	TOTAL	North	South	West
16:00	9	8	15	11	8	103	10	164	17	26	121
16:15	8	6	8	10	10	113	9	164	14	18	132
16:30	11	14	11	16	9	96	12	169	25	27	117
16:45	6	3	12	14	16	103	13	167	9	26	132
17:00	7	8	17	10	13	92	16	163	15	27	121
17:15	2	14	15	13	4	101	8	157	16	28	113
17:30	3	6	14	9	5	109	11	157	9	23	125
17:45	0	3	9	8	0	76	6	102	3	17	82
Total Count	46	62	101	91	65	793	85	1243	108	192	943
24hr Factor	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	46	62	101	91	65	793	85	1243	108	192	943

# Summary Of Bicycle Count Transportation Development Division

<div> <div> Site: 38453 County: Columbia City: St. Helens </div> <div> Date: 9/9/2013 Hours: 4:00 PM-6:00 PM Highway #: 2718 </div> <div> Location: Columbia Blvd and 18th St Weather: Clear </div> </div>											
<div> Milepoint: 1.53 Count Number: 1.00 </div>											
Time of Day	Summary By Movements								Entering Volumes		
	N-E	N-S	S-N	S-E	W-N	W-E	W-S	TOTAL	North	South	West
16:00	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	1	0	1	0	0	1
16:30	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	1	0	1	0	0	1
17:00	0	2	0	0	0	2	1	5	2	0	3
17:15	0	0	0	0	0	3	0	3	0	0	3
17:30	0	0	0	0	0	1	0	1	0	0	1
17:45	0	0	0	0	0	3	0	3	0	0	3
Total Count	0	2	0	0	0	11	1	14	2	0	12
24hr Factor	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	0	2	0	0	0	11	1	14	2	0	12



**Summary Of Pedestrian Count  
Transportation Development Division**

Site: 38453  
County: Columbia  
City: St. Helens  
Date: 9/9/2013  
Hours: 4:00 PM-6:00 PM  
Highway #: 2718  
Milepoint: 1.53  
Count Number: 1.00  
Location: Columbia Blvd and 18th St  
Weather: Clear

Time of Day	Pedestrian			
	North	East	South	West
16:00	3	3	7	4
16:15	11	4	7	2
16:30	10		11	2
16:45	6		6	1
17:00			1	
17:15	2		3	3
17:30	3	1	5	
17:45	2	1	1	1
Total	37	9	41	13

**Transportation Development Division  
Transportation System Monitoring Unit  
Vehicular Volume**

**Time settings**

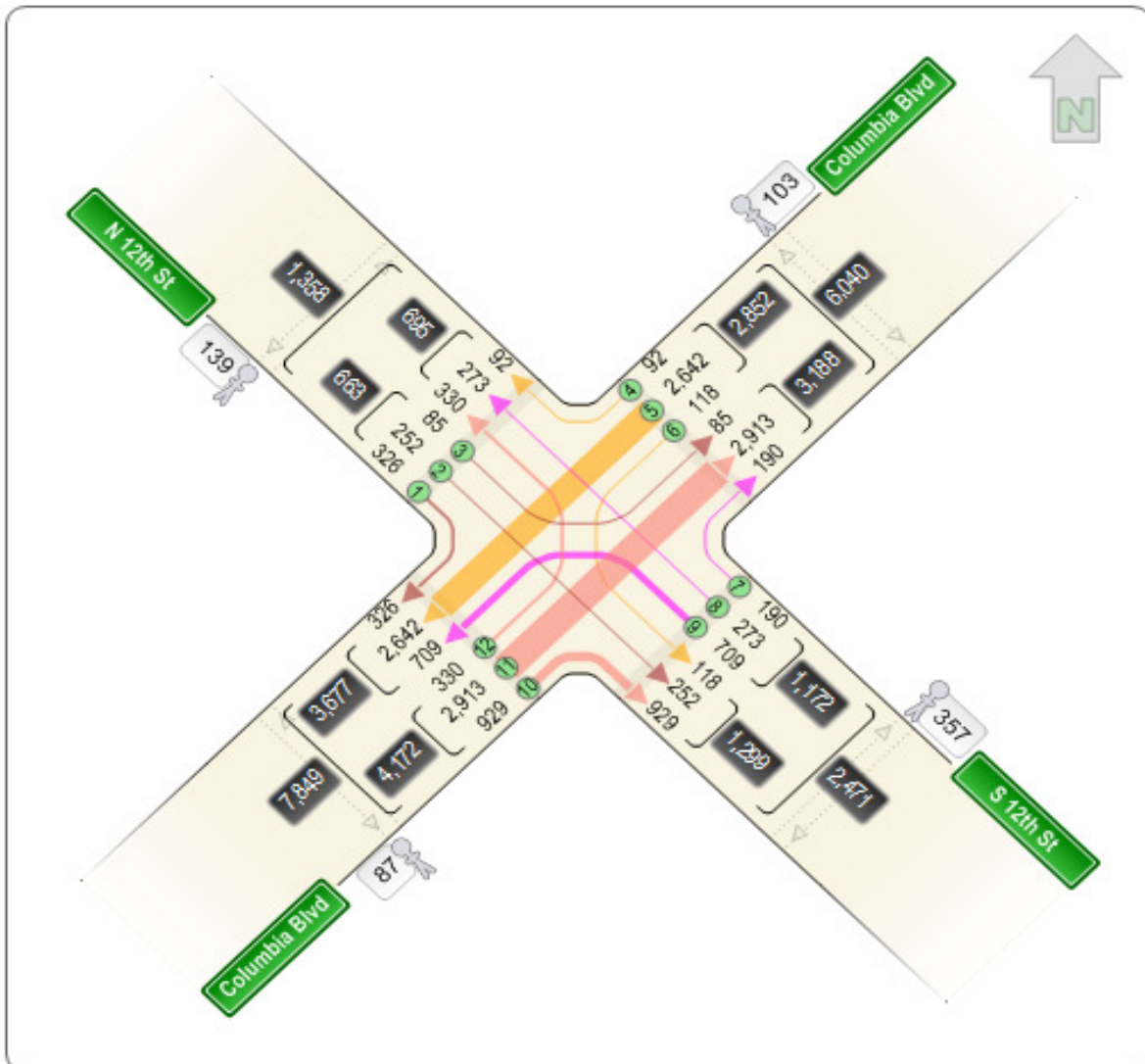
Date: 9/9/2013  
Hours: 6:00 AM-10:00 PM  
Weather: Clear

**Source**

Site Number: 38454  
Mile Point: 1.88  
Street Number: 2718  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

**Source Description**

Location Description: Columbia Blvd and 12th St  
County: Columbia  
City: St. Helens



## Summary of Traffic Count

Site: 38454  
County: Columbia  
City: St. Helens

Date: 9/9/2013  
Hours: 6:00 AM-10:00 PM  
Highway #: 2718

Location: Columbia Blvd and 12th St  
Weather: Clear

Milepoint: 1.88  
Count Number: 1.00

[illegible]

[illegible]

## Summary Of Bicycle Count

Site: 38454  
County: Columbia  
City: St. Helens

Date: 9/9/2013  
Hours: 6:00 AM-10:00 PM  
Highway #: 2718

Milepoint: 1.88  
Count Number: 1.00

Location: Columbia Blvd and 12th St  
Weather: Clear

[illegible]



Summary Of Pedestrian Count Transportation Development Division								
Site: 38454 County: Columbia City: St. Helens				Date: 9/9/2013 Hours: 6:00 AM-10:00 PM Highway #: 2718				
Milepoint: 1.88 Count Number: 1.00				Location: Columbia Blvd and 12th St Weather: Clear				
Time of Day	Pedestrian				North- East	South- East	South- West	North- West
	North- East	South- East	South- West	North- West				
6:00		7	4	2				
6:15								
6:30								
6:45								
7:00	8	21	6	32				
7:15								
7:30								
7:45								
8:00	3	8	3	12				
8:15								
8:30								
8:45								
9:00		14	4					
9:15								
9:30								
9:45								
10:00	8	9	10					
10:15								
10:30								
10:45								
11:00	2	22	11	6				
11:15								
11:30								
11:45								
12:00	4	21	7	4				
12:15								
12:30								
12:45								

13:00	5	36	5	13
13:15				
13:30				
13:45				
14:00	14	67	5	33
14:15				
14:30				
14:45				
15:00	10	34	11	12
15:15				
15:30				
15:45				
16:00	1	8	2	
16:15	3	9		2
16:30	8	7	1	4
16:45		7	2	
17:00	3			1
17:15	3	5		2
17:30	2	3	1	2
17:45		5		
18:00	12	22	7	9
18:15				
18:30				
18:45				
19:00	4	22	2	3
19:15				
19:30				
19:45				
20:00	10	9		1
20:15				
20:30				
20:45				
21:00	3	21	6	1
21:15				
21:30				
21:45				
Total	103	357	87	139



# Transportation Development Division Transportation System Monitoring Unit Vehicular Volume

## Time settings

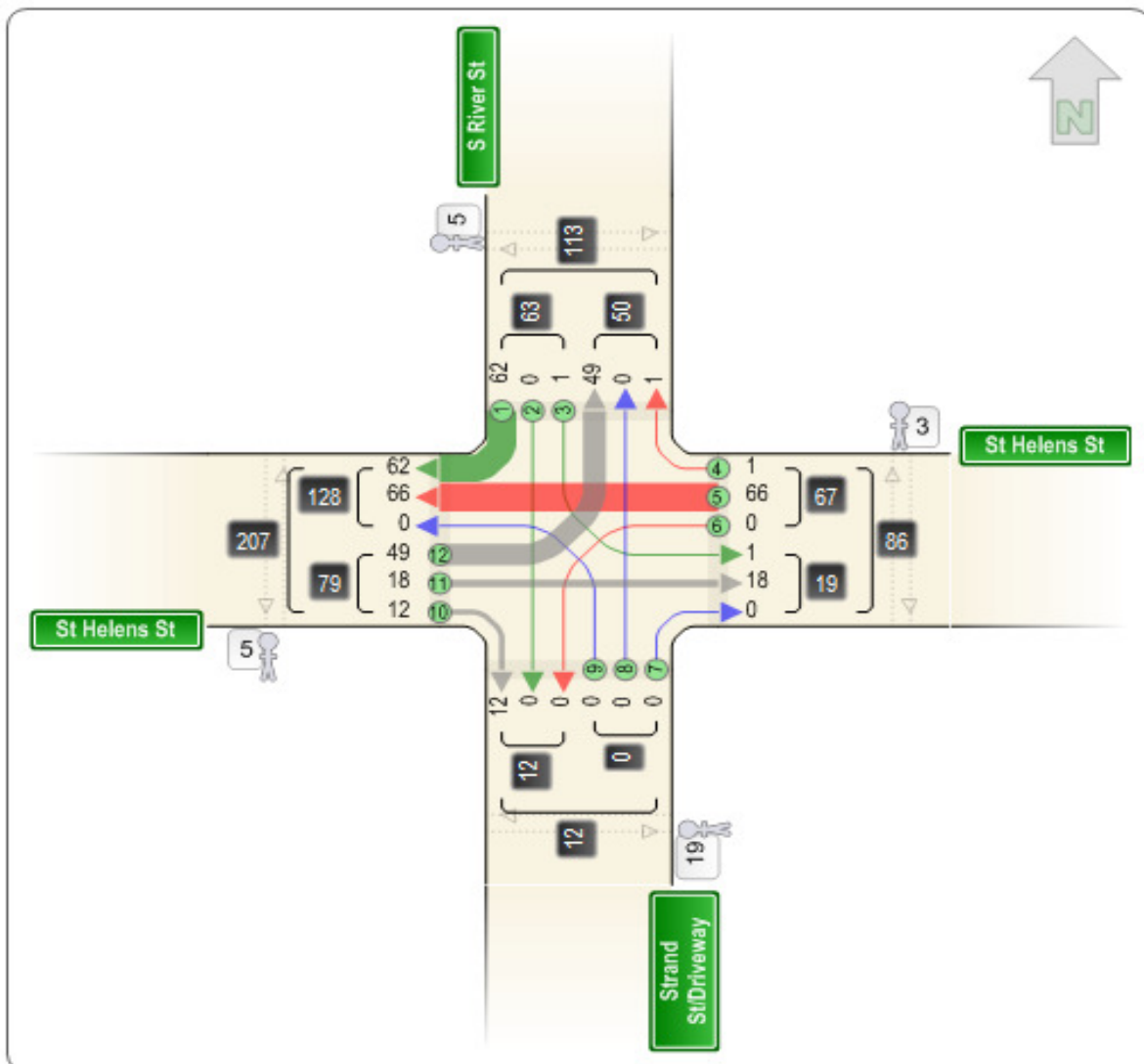
Date: 9/10/2013  
Hours: 4:00 AM-6:00 AM  
Weather: Clear

## Source

Site Number: 38455  
Street Number: 000  
Vehicle Type: Vehicles  
Crossing Flow: Pedestrians

## Source Description

Location Description: St Helens St and S River St  
County: Columbia  
City: St. Helens



Summary of Traffic Count Transportation Development Division																	
Site: 38455				Date: 9/10/2013				County: Columbia				Hours: 4:00 AM-6:00 AM				Location: St Helens St and S River St Weather: Clear	
City: St. Helens				Highway #: 000				Milepoint:				Count Number: 1.00					
Time of Day	Summary By Movements												Entering Volumes				
	N-E	N-S	N-W	E-N	E-S	E-W	S-N	S-E	S-W	W-N	W-E	W-S	TOTAL	North	East	South	West
4:00	0	0	8	0	0	8	0	0	0	4	6	3	29	8	8	0	13
4:15	0	0	5	0	0	4	0	0	0	2	3	1	15	5	4	0	6
4:30	0	0	7	1	0	5	0	0	0	10	2	5	30	7	6	0	17
4:45	0	0	4	0	0	10	0	0	0	9	2	1	26	4	10	0	12
5:00	0	0	7	0	0	18	0	0	0	6	1	0	32	7	18	0	7
5:15	1	0	13	0	0	15	0	0	0	6	1	0	36	14	15	0	7
5:30	0	0	10	0	0	3	0	0	0	5	1	1	20	10	3	0	7
5:45	0	0	8	0	0	3	0	0	0	7	2	1	21	8	3	0	10
Total Count	1	0	62	1	0	66	0	0	0	49	18	12	209	63	67	0	79
24hr Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	1	0	62	1	0	66	0	0	0	49	18	12	209	63	67	0	79

# Summary Of Bicycle Count Transportation Development Division

Site: 38455  
County: Columbia  
City: St. Helens

Date: 9/10/2013  
Hours: 4:00 AM-6:00 AM  
Highway #: 000

Milepoint:  
Count Number: 1.00  
Location: St Helens St and S River St  
Weather: Clear

Time of Day	Summary By Movements												Entering Volumes				
	N-E	N-S	N-W	E-N	E-S	E-W	S-N	S-E	S-W	W-N	W-E	W-S	TOTAL	North	East	South	West
4:00	0	0	0	0	0	2	0	0	0	0	3	1	6	0	2	0	4
4:15	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2
4:30	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0
4:45	0	0	0	0	0	1	0	0	0	0	2	0	3	0	1	0	2
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	0	0	0	0	0	4	0	0	0	0	8	1	13	0	4	0	9
24hr Factor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24hr Volume	0	0	0	0	0	4	0	0	0	0	8	1	13	0	4	0	9

Summary Of Pedestrian Count Transportation Development Division				
Site: 38455		Date: 9/10/2013		
County: Columbia		Hours: 4:00 AM-6:00 AM		
City: St. Helens		Highway #: 000		
Milepoint:		St Helens St and S River		
Count Number: 1.00		Location: St		
		Weather: Clear		
Time of Day	Pedestrian			
	North	East	South	West
4:00	1	2	2	
4:15	2		3	1
4:30				2
4:45	1	1	5	
5:00			6	
5:15			1	1
5:30	1		2	1
5:45				
Total	5	3	19	5

**Transportation Development Division  
Transportation System Monitoring Unit  
Vehicular Volume**

**Time settings**

Date: 9/10/2013-9/11/2013

Hours: 9/10/2013 6:00 AM-9/11/2013 6:00 AM

Weather: Clear

**Source**

Site Number: 38456

Mile Point: 2.03

Street Number: 2718

Vehicle Type: Vehicles

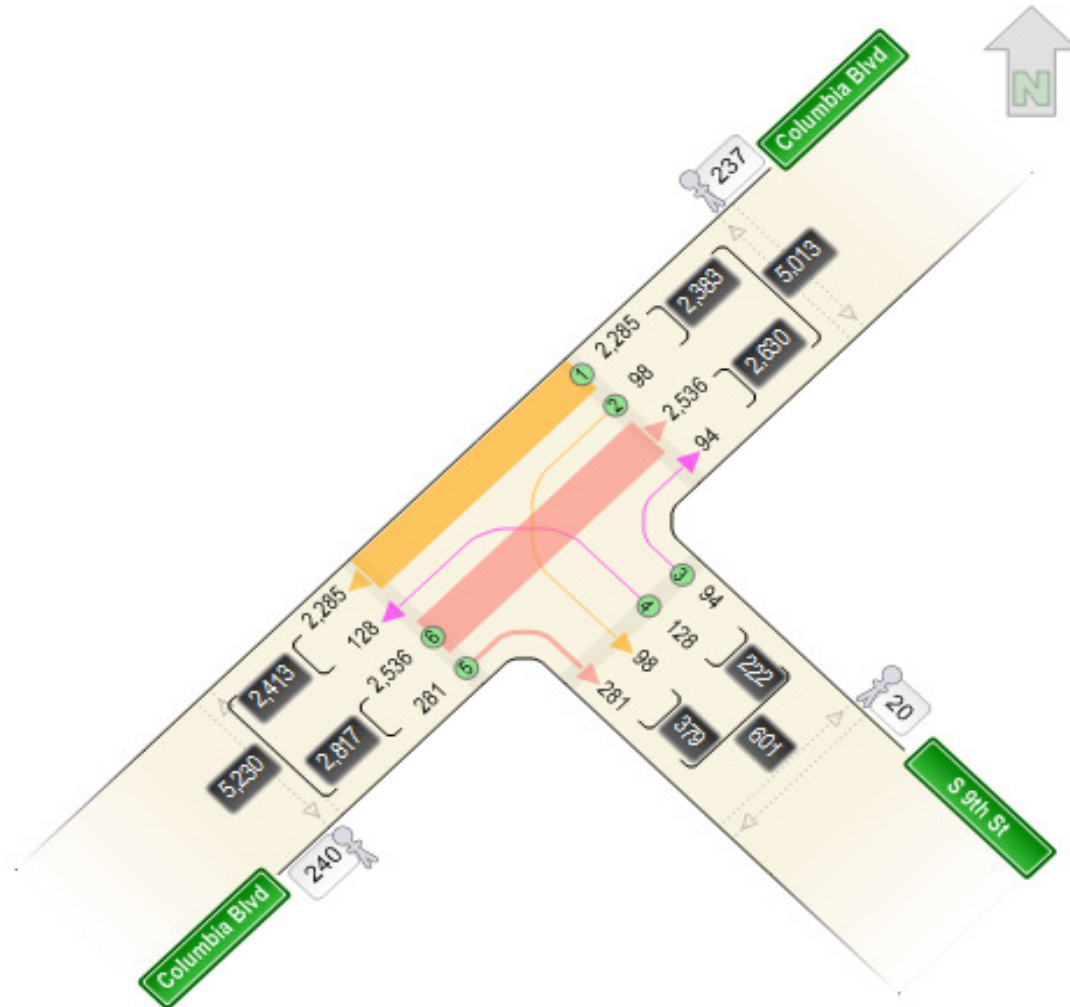
Crossing Flow: Pedestrians

**Source Description**

Location Description: Columbia Blvd and 9th St

County: Columbia

City: St. Helens



## Summary of Traffic Count Transportation Development Division

Site: 38456  
County: Columbia  
City: St. Helens

Date: 9/10/2013-9/11/2013  
Hours: 9/11/2013 6:00 AM  
Highway #: 2718

Milepoint: 2.03  
Count Number: 1.00

Location: Columbia Blvd and 9th St  
Weather: Clear

Time of Day	Summary By Movements							TOTAL	Entering Volumes		
	NE-SE	NE-SW	SE-NE	SE-SW	SW-NE	SW-SE			North-East	South-East	South-West
0:00	0	0	0	0	0	0		0	0	0	0
0:15	0	0	0	0	0	0		0	0	0	0
0:30	0	0	0	0	0	0		0	0	0	0
0:45	0	0	0	0	0	0		0	0	0	0
1:00	0	0	0	0	0	0		0	0	0	0
1:15	0	0	0	0	0	0		0	0	0	0
1:30	0	0	0	0	0	0		0	0	0	0
1:45	0	0	0	0	0	0		0	0	0	0
2:00	0	0	0	0	0	0		0	0	0	0
2:15	0	0	0	0	0	0		0	0	0	0
2:30	0	0	0	0	0	0		0	0	0	0
2:45	0	0	0	0	0	0		0	0	0	0
3:00	0	0	0	0	0	0		0	0	0	0
3:15	0	0	0	0	0	0		0	0	0	0
3:30	0	0	0	0	0	0		0	0	0	0
3:45	0	0	0	0	0	0		0	0	0	0
4:00	0	0	0	0	0	0		0	0	0	0
4:15	0	0	0	0	0	0		0	0	0	0
4:30	0	0	0	0	0	0		0	0	0	0
4:45	0	0	0	0	0	0		0	0	0	0
5:00	0	0	0	0	0	0		0	0	0	0
5:15	0	0	0	0	0	0		0	0	0	0
5:30	0	0	0	0	0	0		0	0	0	0
5:45	0	0	0	0	0	0		0	0	0	0
6:00	1	59	2	2	19	5		88	60	4	24
6:15	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0		0	0	0	0
7:00	52	92	45	40	102	124		455	144	85	226
7:15	0	0	0	0	0	0		0	0	0	0
7:30	0	0	0	0	0	0		0	0	0	0
7:45	0	0	0	0	0	0		0	0	0	0
8:00	2	134	0	8	168	8		320	136	8	176
8:15	0	0	0	0	0	0		0	0	0	0
8:30	0	0	0	0	0	0		0	0	0	0
8:45	0	0	0	0	0	0		0	0	0	0
9:00	2	130	4	6	127	4		273	132	10	131
9:15	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0		0	0	0	0
10:00	4	140	1	9	151	24		329	144	10	175
10:15	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0		0	0	0	0

10:45	0	0	0	0	0	0	0	0	0	0	0
11:00	4	201	3	5	238	25	476	205	8	263	
11:15	0	0	0	0	0	0	0	0	0	0	
11:30	0	0	0	0	0	0	0	0	0	0	
11:45	0	0	0	0	0	0	0	0	0	0	
12:00	5	190	4	8	230	9	446	195	12	239	
12:15	0	0	0	0	0	0	0	0	0	0	
12:30	0	0	0	0	0	0	0	0	0	0	
12:45	0	0	0	0	0	0	0	0	0	0	
13:00	12	216	0	7	203	18	456	228	7	221	
13:15	0	0	0	0	0	0	0	0	0	0	
13:30	0	0	0	0	0	0	0	0	0	0	
13:45	0	0	0	0	0	0	0	0	0	0	
14:00	9	186	26	23	217	30	491	195	49	247	
14:15	0	0	0	0	0	0	0	0	0	0	
14:30	0	0	0	0	0	0	0	0	0	0	
14:45	0	0	0	0	0	0	0	0	0	0	
15:00	2	166	4	6	194	7	379	168	10	201	
15:15	0	0	0	0	0	0	0	0	0	0	
15:30	0	0	0	0	0	0	0	0	0	0	
15:45	0	0	0	0	0	0	0	0	0	0	
16:00	2	44	1	1	49	0	97	46	2	49	
16:15	1	43	0	1	51	2	98	44	1	53	
16:30	0	53	0	0	73	1	127	53	0	74	
16:45	0	34	0	3	56	3	96	34	3	59	
17:00	0	54	2	0	46	1	103	54	2	47	
17:15	0	55	0	0	60	0	115	55	0	60	
17:30	0	36	0	1	41	2	80	36	1	43	
17:45	0	36	0	1	48	3	88	36	1	51	
18:00	0	47	0	1	29	1	78	47	1	30	
18:15	0	40	1	0	36	2	79	40	1	38	
18:30	0	37	0	1	43	1	82	37	1	44	
18:45	0	40	0	1	53	1	95	40	1	54	
19:00	1	110	0	2	132	4	249	111	2	136	
19:15	0	0	0	0	0	3	3	0	0	3	
19:30	0	0	0	0	0	0	0	0	0	0	
19:45	0	0	0	0	0	0	0	0	0	0	
20:00	0	98	0	1	106	3	208	98	1	109	
20:15	0	0	0	0	0	0	0	0	0	0	
20:30	0	0	0	0	0	0	0	0	0	0	
20:45	0	0	0	0	0	0	0	0	0	0	
21:00	1	44	1	1	64	0	111	45	2	64	
21:15	0	0	0	0	0	0	0	0	0	0	
21:30	0	0	0	0	0	0	0	0	0	0	
21:45	0	0	0	0	0	0	0	0	0	0	
22:00	0	0	0	0	0	0	0	0	0	0	
22:15	0	0	0	0	0	0	0	0	0	0	
22:30	0	0	0	0	0	0	0	0	0	0	
22:45	0	0	0	0	0	0	0	0	0	0	
23:00	0	0	0	0	0	0	0	0	0	0	
23:15	0	0	0	0	0	0	0	0	0	0	
23:30	0	0	0	0	0	0	0	0	0	0	
23:45	0	0	0	0	0	0	0	0	0	0	
Total Count	98	2285	94	128	2536	281	5422	2383	222	2817	

24hr Factor	1	1	1	1	1	1		1	1	1	1
24hr Volume	98	2285	94	128	2536	281		5422	2383	222	2817



## Summary Of Bicycle Count Transportation Development Division

Site: 38456  
County: Columbia  
City: St. Helens

Date: 9/10/2013-9/11/2013  
Hours: 9/10/2013 6:00 AM-9/11/2013  
Highway #: 2718

Milepoint: 2.03  
Count Number: 1.00

Location: Columbia Blvd and 9th St  
Weather: Clear

Time of Day	Summary By Movements							TOTAL	Entering Volumes		
	NE-SE	NE-SW	SE-NE	SE-SW	SW-NE	SW-SE			North-East	South-East	South-West
0:00	0	0	0	0	0	0		0	0	0	0
0:15	0	0	0	0	0	0		0	0	0	0
0:30	0	0	0	0	0	0		0	0	0	0
0:45	0	0	0	0	0	0		0	0	0	0
1:00	0	0	0	0	0	0		0	0	0	0
1:15	0	0	0	0	0	0		0	0	0	0
1:30	0	0	0	0	0	0		0	0	0	0
1:45	0	0	0	0	0	0		0	0	0	0
2:00	0	0	0	0	0	0		0	0	0	0
2:15	0	0	0	0	0	0		0	0	0	0
2:30	0	0	0	0	0	0		0	0	0	0
2:45	0	0	0	0	0	0		0	0	0	0
3:00	0	0	0	0	0	0		0	0	0	0
3:15	0	0	0	0	0	0		0	0	0	0
3:30	0	0	0	0	0	0		0	0	0	0
3:45	0	0	0	0	0	0		0	0	0	0
4:00	0	0	0	0	0	0		0	0	0	0
4:15	0	0	0	0	0	0		0	0	0	0
4:30	0	0	0	0	0	0		0	0	0	0
4:45	0	0	0	0	0	0		0	0	0	0
5:00	0	0	0	0	0	0		0	0	0	0
5:15	0	0	0	0	0	0		0	0	0	0
5:30	0	0	0	0	0	0		0	0	0	0
5:45	0	0	0	0	0	0		0	0	0	0
6:00	0	0	0	0	0	0		0	0	0	0
6:15	0	0	0	0	0	0		0	0	0	0
6:30	0	0	0	0	0	0		0	0	0	0
6:45	0	0	0	0	0	0		0	0	0	0
7:00	0	0	0	0	0	0		0	0	0	0
7:15	0	0	0	0	0	0		0	0	0	0
7:30	0	0	0	0	0	0		0	0	0	0
7:45	0	0	0	0	0	0		0	0	0	0
8:00	0	0	0	0	0	0		0	0	0	0
8:15	0	0	0	0	0	0		0	0	0	0
8:30	0	0	0	0	0	0		0	0	0	0
8:45	0	0	0	0	0	0		0	0	0	0
9:00	0	0	0	0	0	0		0	0	0	0
9:15	0	0	0	0	0	0		0	0	0	0
9:30	0	0	0	0	0	0		0	0	0	0
9:45	0	0	0	0	0	0		0	0	0	0
10:00	0	0	0	0	0	0		0	0	0	0
10:15	0	0	0	0	0	0		0	0	0	0
10:30	0	0	0	0	0	0		0	0	0	0

[illegible]

24hr Factor	1	1	1	1	1	1		1	1	1	1
24hr Volume	0	0	0	0	0	0		0	0	0	0

## Summary Of Pedestrian Count Transportation Development Division

Site: 38456  
County: Columbia  
City: St. Helens

Date: 9/10/2013-9/11/2013  
Hours: 9/11/2013 6:00 AM  
Highway #: 2718

Milepoint: 2.03  
Count Number: 1.00

Location: Columbia Blvd and 9th St  
Weather: Clear

Time of Day	Pedestrian		
	North-East	South-East	South-West
0:00			
0:15			
0:30			
0:45			
1:00			
1:15			
1:30			
1:45			
2:00			
2:15			
2:30			
2:45			
3:00			
3:15			
3:30			
3:45			
4:00			
4:15			
4:30			
4:45			
5:00			
5:15			
5:30			
5:45			
6:00	2		
6:15			
6:30			
6:45			
7:00	42		10
7:15			
7:30			
7:45			
8:00	7	1	9
8:15			
8:30			
8:45			
9:00	24	2	8
9:15			
9:30			
9:45			
10:00	14		13
10:15			
10:30			

10:45			
11:00	16		11
11:15			
11:30			
11:45			
12:00	6	1	3
12:15			
12:30			
12:45			
13:00	10		10
13:15			
13:30			
13:45			
14:00	18	12	76
14:15			
14:30			
14:45			
15:00	4		20
15:15			
15:30			
15:45			
16:00	2		7
16:15	2	1	2
16:30	1	1	6
16:45	4		1
17:00	1		4
17:15	3		5
17:30	1		4
17:45	7		3
18:00	4		6
18:15	3		5
18:30	2		2
18:45	4		3
19:00	21	2	11
19:15	8		
19:30	12		
19:45			
20:00	7		15
20:15			
20:30			
20:45			
21:00	12		6
21:15			
21:30			
21:45			
22:00			
22:15			
22:30			
22:45			
23:00			
23:15			
23:30			
23:45			
Total	237	20	240

## Appendix C   LTS Data

	Description	Class	Func. Class	One-way	Speed (mph)	# of Lanes*	Lane width**	Lane blockage	Turn Length (ft)	LTS	Notes
1	St. Helens St. from S 4th St to 1st St	Mixed traffic	Minor Arterial		25	2				3	Originally LTS 2, but X factor of diagonal parking bumps up to LTS 3
2	S 1st St from St. Helens to Columbia Blvd.	Mixed traffic	Collector		20	2				2	
3	Columbus Blvd. from S 1st St to S 3rd St	Bike lane with parking	Collector		25	1	15	Rare		1	
4	Columbus Blvd. from S 3rd St to S 4th St	Bike lane with parking	Minor Arterial		25	1	16 EB, 14 WB	Rare		1 EB, 2 WB	Ground measurements would be helpful
5	Columbus Blvd from S 4th St to 5th ST	Bike lane with parking	Minor Arterial		25	1	14	Rare		2	Ground measurements would be helpful
6	Columbus Blvd from S 5th St to 6th ST	Bike lane with parking	Minor Arterial		25	1	13.5 EB, 15 WB	Rare		3 EB, 1 WB	Ground measurements would be helpful
7	Columbus Blvd from S 6th St to 7th St	Bike lane with parking	Minor Arterial		25	1	14 EB, 15 WB	Rare		2 EB, 1 WB	
8	Columbus Blvd. from S 7th to S 9th St	Bike lane no parking	Minor Arterial		25	1	5	Rare		2	Ground measurements would be helpful
9	Columbus Blvd. from S 9th St to 11th St	Bike lane no parking	Minor Arterial		20	1	5.5		EB 90	2	School Zone. Intersection Approach Used for EB, assuming turning speed 15 mph
10	Columbus Blvd. from S 11th St to 12th St	Bike lane with parking	Minor Arterial		20	1	12 EB, 9 WB	Rare		3	School Zone.

	Description	Class	Func. Class	One-way	Speed (mph)	# of Lanes*	Lane width**	Lane blockage	Turn Length (ft)	LTS	Notes
11	Columbus Blvd. from S 12th St to 13th St	Bike lane with parking	Minor Arterial		25	1	12	Rare		3	Ground measurements would be helpful
12	St Helens St. from S 13th St to 14th St	Bike lane with parking	Minor Arterial	One-way	25	1	14	Rare		2	Start of one-way traffic
13	St Helens St. from S 14th to 21st St	Bike lane with parking	Minor Arterial	One-way	25	2	13	Rare		3	Ground measurements would be helpful
14	St Helens St. from S 21st St to US 30	Mixed traffic	Minor Arterial	One-way	25	3		Rare		4	Intersection Approach Used, assuming turning speed 15 mph
15	Columbus Blvd. from Bradley St to US 30	Mixed traffic	Minor Arterial		25	2				4	West leg of Columbia/US 30 analyzed to see EB approach. Intersection Approach Used, shared turn lane.
16	Columbus Blvd. from US 30 to S 19th St	Bike lane with parking	Minor Arterial	One-way	20	2	13	Rare		3	Bus blockage.
17	Columbus Blvd. from S 19th St to S 18th St		Minor Arterial	One-way	20	2	14.5		75	3	Intersection Approach Used, assuming turning speed 15 mph
18	Columbus Blvd. from S 18th St to 13th St	Bike lane with parking	Minor Arterial	One-way	25	2	13	Rare		3	Ground measurements would be helpful
19	US 30 from Pittsburg Rd to Gable Rd	Bike lane no parking	Major Arterial		35	2			All > 150	3	Intersection Approach Used, assuming turning speed 15 mph

\* for lanes, counts both direction if mixed traffic, one direction if bike lane

\*\* includes width of parking if there is street parking



TECHNICAL MEMORANDUM #4:

# Land Use and Urban Design

ST. HELENS - US 30 & COLUMBIA BLVD./ST. HELENS ST. CORRIDOR MASTER PLAN

December 2013



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This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Moving Ahead for Progress in the 21st Century (MAP-21), local government, and the State of Oregon funds.

The contents of this document do not necessarily reflect views or policies of the State of Oregon.

# Introduction

The City of St. Helens has been awarded a Transportation and Growth Management (TGM) grant in order to develop a Corridor Plan for the US 30, and Columbia Blvd / St Helens Street and Old Towne/1st Street corridors. The Plan will reflect the community's vision of how these areas should appear and function in the future, and to determine how the plans can be implemented. The Plans will focus primarily on how the major streets and intersections in these areas are designed and improved over time to ensure that vehicles, bicyclists and pedestrians have ready access to local businesses and can travel safely and comfortably within and between these different parts of town.

As one of the initial steps in the corridor planning process, the City's project team is preparing a series of technical memoranda describing existing and projected future conditions in the study area, including land use, urban design, access and relevant plans and policies, as well as different strategies or approaches that may be used to meet the goals for the corridor. This memo focuses on land use and urban design conditions in the area and addresses the following topics:

- Existing and future land use plans and projections
- Development code requirements
- Urban design conditions, i.e., the design character of uses within the planning area
- Non-conforming uses and code issues
- Conclusions about how the conditions and character of the area relates to possible Streetscape Design tools or options



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# Existing and Future Land Use Plans and Projections

Following is a summary of land use characteristics of each corridor segment, including current land use and expectations regarding future land use.

## US 30 CORRIDOR SEGMENT

Land on the west side of US 30 is zoned and used primarily for commercial development. Figures 1 and 2 show land use patterns and building footprints in the northern and southern portions of the area. Consistent with the area's zoning, the area is primarily characterized by highway commercial developments including grocery stores, pharmacies, hotels, restaurants, banks and a variety of other retail and commercial businesses. There are relatively few vacant properties in this area although some parcels have relatively large parking lots, with buildings taking up a relatively small portion of the site, representing some opportunities for future additional development or redevelopment. Within about 150 feet from the highway, land uses alternate between commercial and residential development.

The Portland and Western rail line parallels US 30 to the east, with a landscaping strip separating the highway from the rail corridor. As

Figure 1. Existing Land Use - US 30 North



a result, no businesses directly front the highway’s east side. Milton Way parallels US 30 and the rail line approximately 150 from US 30 between Port Avenue and Columbia Blvd, providing access to land east of the rail line in this area. Land uses along Milton Way are a mix of commercial, industrial and residential uses. Commercial uses are generally located in the vicinity of intersections of Gable Road, St. Helens Street and Columbia Boulevard. A mix of industrial and commercial uses are located north of Gable Road along Milton Way and residential uses are located between this area and the Houlton business area near St. Helens and Columbia.

Land use projections prepared for the City’s Transportation System Plan assumed continued development of this area, consistent with zoning in the area, with additional potential development on properties with the capacity for more development based on the parcel size, amount of existing development and remaining additional capacity.

Figure 2. Existing Land Use - US 30 South





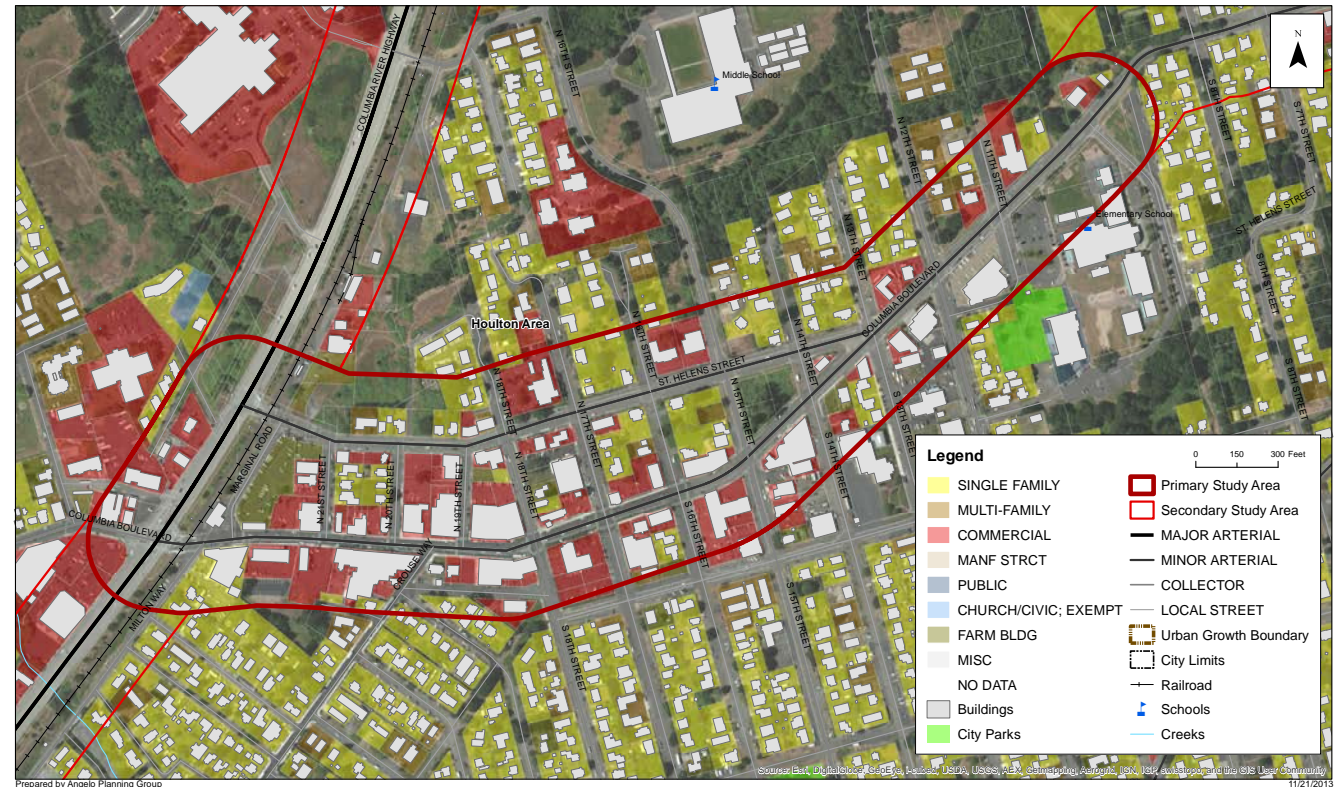
## HOULTON (ST. HELENS STREET/COLUMBIA BLVD.) CORRIDOR SEGMENT

This area is a key shopping district for residents and visitors to St. Helens and also serves as a gateway to the Olde Towne area. Land in this area is generally zoned and used for commercial use although the character of uses differs along the two streets. Along Columbia Blvd. between US 30 and 12th Street, virtually all properties on both sides of the road are zoned and used for commercial businesses. Many properties in this area are substantially built out, with buildings covering the majority or all of the parcel, although some sites feature larger parking areas. Most buildings along Columbia are located relatively close to the sidewalk. A wide variety of retail and commercial uses are located in the area, including restaurants, auto parts stores, insurance agencies, medical uses, a grocery store and many others.

Along St. Helens Street, there is more of a mix of commercial and residential uses and the pattern of development is less built up, with larger areas devoted to parking and a larger percentage of buildings set farther back from the street. The property between 14th and 15th Streets and Columbia and St. Helens is vacant. This and a number of partially vacant or underutilized properties in this area represent opportunities for future redevelopment. Future land use projections prepared for the TSP assumed additional development in this area during the 20-year planning horizon.

The Lewis and Clark Elementary School is located at the eastern end of the corridor, just west of 9th Street and area between the school and the Olde Towne area is primarily used for housing although the area is zoned for a mix of housing, retail and commercial uses.

Figure 3. Existing Land Use - Houlton



OLDE TOWNE CORRIDOR SEGMENT

For the purposes of this study, this segment includes land along Columbia Blvd. between approximately 8th and 1st Streets, the area along 1st Street between Columbia and St. Helens, and St. Helens Street between 1st and 4th Streets. The area along Columbia Blvd. is zoned for mixed use although the majority of properties are used for housing. The same is generally true for the portion of 1st Street in this area, which is zoned for a combination of mixed use and apartment residential use. However at St. Helens Street and to the south, land uses transition to re-tail and commercial uses in the Olde Towne business area (also home to City Hall and the Columbia County Court-house and services building). Most properties along the St. Helens Street portion of this corridor segment also are home to commercial businesses. There are relatively few vacant parcels in this area although some of the buildings along 1st are vacant and some of the properties with single-family homes potentially could be used more intensively

in the future, given uses allowed in the City’s mixed use (MU) and apartment residential (AR) zones.

Figure 4. Existing Land Use - Olde Towne





# Summary of Development Code Requirements

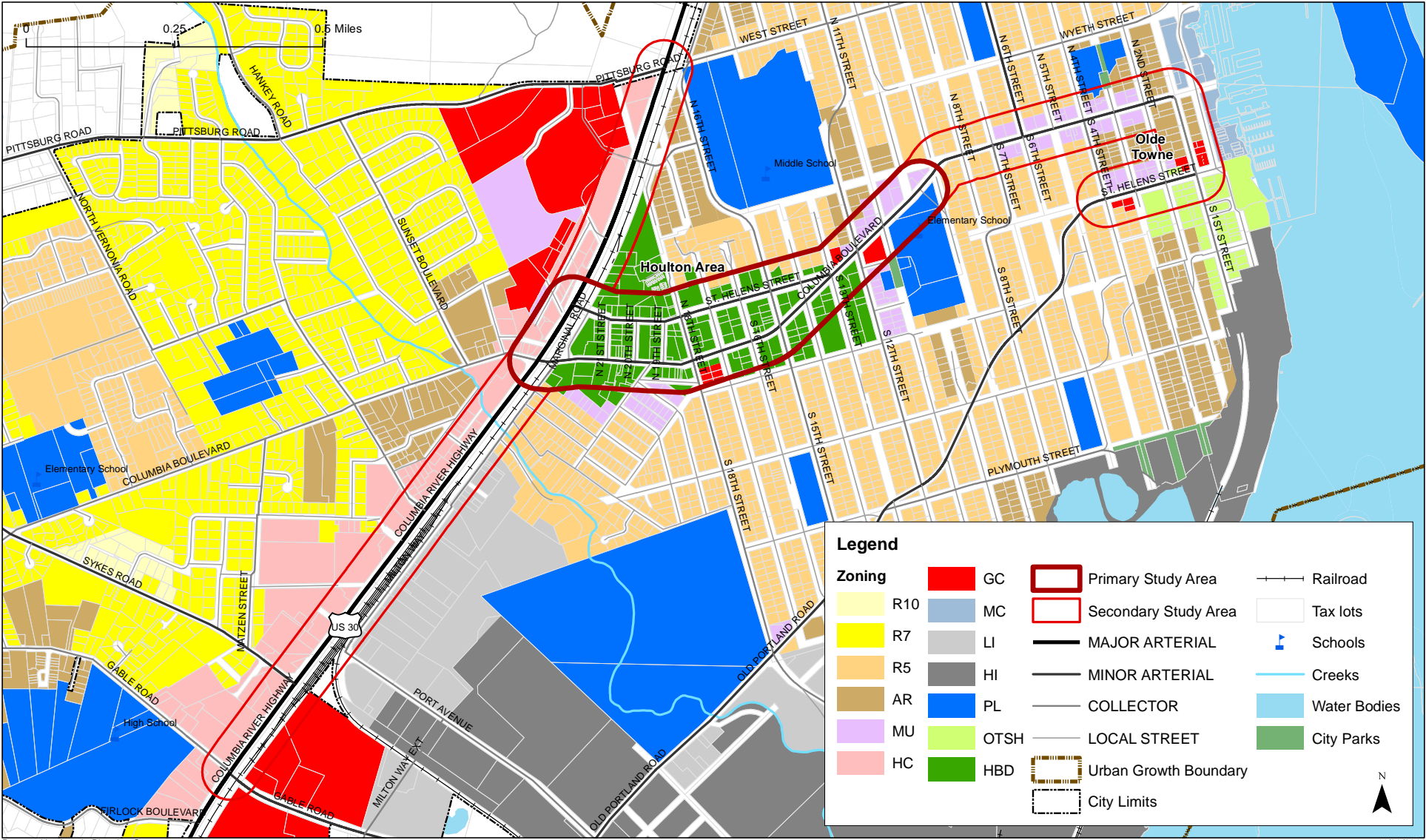
Study area zoning, described briefly in the previous section, regulates the way in which sites within the corridor planning area can develop, including allowed land uses, building heights, building setbacks, lot coverage, and landscaping requirements. These elements affect the way the site is experienced from the sidewalk or street. Elements like vehicle and bicycle parking also can impact the way people experience the streetscape. Development regulations are established in the City's Community Development Code, Title 17 of the St. Helens Municipal Code (SHMC). Zoning regulations are found in SHMC Chapter 17.32.

Figure 5 shows the zoning designations in the study area. Table 1 summarizes applicable zones by study area segments. Several of the zones are found in more than one of the study area segments – e.g., General Commercial, General Residential, and Apartment Residential – while other zones are more unique to the study area segments. The Highway Commercial (HC), Houlton Business District (HBD), and Olde Towne St. Helens (OTSH) zones are the predominant and characteristic zones of the US 30, Houlton, and Old Towne segments in the study area, respectively.

Table 1. Zoning in Study Area Segments

	Highway	Houlton	Olde Towne
Highway Commercial (HC)	X		
General Commercial (GC)	X	X	X
Marine Commercial (MC)			X
Light Industrial (LI)	X		
General Residential (R-5)	X	X	X
Apartment Residential (AR)	X	X	X
Mixed Use (MU)		X	X
Public Lands (PL)		X	
Houlton Business District (HBD)		X	
Olde Towne St. Helens (OTSH)			X

Figure 5. Project Area Zoning



Prepared by Angelo Planning Group

11/20/2013

The following sub-sections provide an overview of zoning regulations regarding permitted uses, maximum building heights, minimum and maximum building setbacks, maximum lot coverage, and minimum landscaping requirements in study area zones. Parking and building design, which the code addresses in supplemental developmental regulations, are also summarized. Many of these regulations are also discussed in Technical Memorandum #1, so the following sub-sections include references to that report as well.

## USES

Table 2 below presents a summary of the types of uses permitted outright and permitted conditionally in zones in the study area. The use provisions specify that zones other than the residential zones (with some exceptions) are subject to site development provisions in SHMC Chapter 17.96 as well as other supplemental development regulations in the code. Conditional uses are subject to provisions in SHMC Chapter 17.100.

Use provisions outlined in Table 2 compare in the following ways between zones.

- **Commercial zones.** The Highway Commercial (HC) and General Commercial (GC) zones are similar in their use provisions. The HC zone specifies that retail services and offices that are permitted outright be motorist-oriented, including drive-ups and drive-throughs. Civic/cultural services (e.g., libraries) and housing above allowed uses are permitted outright in the GC zone, while multi-dwelling unit buildings and care/residential facilities are permitted conditionally. Residential care facilities and multi-dwelling unit buildings are not permitted in the HC zone. The Marine Commercial (MC) zone blends residential (houseboats and multi-dwelling housing) and commercial uses that are oriented toward marine residential and recreational uses.
- **Residential zones.** Uses permitted outright are the same for the R-5 and Apartment Residential (AR) zones except for multi-dwelling units, which are permitted outright in the AR zone but only conditionally in the R-5 zone. There are also more uses permitted conditionally in the AR zone, including schools, hospitals, and care facilities.
- **Mixed use zone.** The Mixed Use (MU) zone blends City commercial and residential zones. It permits commercial uses like those in the GC zone, which do not have to be vehicle-/motorist-oriented to be permitted outright as is required in the HC zone. Like the R-5 zone, the MU zone permits multi-dwelling unit buildings and auxiliary dwelling units only conditionally, however like other commercial zones, multi-dwelling units are permitted over ground floor nonresidential uses outright.
- **HBD and OTSH zones.** The Houlton Business District (HBD) and Olde Towne St. Helens (OTSH) zones are essentially mixed use zones which combine the permitted uses of the AR, GC, and PL (Public Lands) zones,

## SUMMARY OF DEVELOPMENT CODE REQUIREMENTS

allowing for a variety of uses that can be developed and redeveloped in the HBD and OTSH zones, which is a major City objective. The same sets of uses are permitted in the HBD and OTSH zones. As will be discussed in following sub-sections, they also share the same development regulations. The main distinction between the zones is the set of architectural design guidelines that have been adopted for the OTSH zone.

Table 2. Summary of Permitted Uses in Study Area Zones

Zone	Uses	Uses
<p>I Pursuant to SHMC 17.16.010, minor public facilities include the following public service improvements developed by or for a public agency:</p> <p>(a) Minor utility structures, except substations, but including poles, lines, pipes or other such facilities.</p> <p>(b) Sewer, storm drainage, or water system structures except treatment plants, reservoirs, or trunk lines, but including reconstruction of existing facilities, pump stations, manholes, valves, hydrants or other portions of the collection, treatment and distribution systems located within public property or specified easement.</p> <p>(c) Street improvements within existing development including sidewalks, curbs, gutters, catch basins, paving, signs and traffic control devices and street lights.</p> <p>(d) Transit improvements, such as shelters or pedestrian and bicycle safety improvements, located within public right-of-way or on public property.</p>	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Retail sales establishments, motorist-oriented</li> <li>▪ Offices, motorist-oriented services</li> <li>▪ Personal and business services</li> <li>▪ Eating and drinking establishments</li> <li>▪ Most drive-in/drive-up/drive-through services</li> <li>▪ Vehicle sales, services, and repair</li> <li>▪ Parking lots</li> <li>▪ Produce stands</li> <li>▪ Minor public facilities<sup>1</sup></li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Retail establishments, not motorist-oriented</li> <li>▪ Dwelling units above outright permitted uses</li> <li>▪ Hospitals</li> <li>▪ Parks and recreational facilities</li> <li>▪ Schools</li> <li>▪ Religious assembly</li> <li>▪ Major public facilities<sup>2</sup></li> </ul>
<p>2 Major public facilities include any public service improvement or structure developed by or for a public agency that is not defined as a minor public facility.</p>	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Retail sales establishments</li> <li>▪ Offices</li> <li>▪ Personal and business services</li> <li>▪ Dwellings above permitted uses</li> <li>▪ Eating and drinking establishments</li> <li>▪ Small equipment sales, rental and repairs</li> <li>▪ Retail product maintenance and repair</li> <li>▪ Cultural and library services</li> <li>▪ Produce stands</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Drive-up businesses and services</li> <li>▪ Parking lots</li> <li>▪ Vehicle repair, service, and sales</li> <li>▪ Transit and rail stations</li> <li>▪ Bars</li> <li>▪ Bed and breakfast facilities and boarding houses</li> <li>▪ Child care facility/nursery</li> <li>▪ Hospitals and senior or convalescent care facilities</li> <li>▪ Residential facilities</li> <li>▪ Multi-dwelling units</li> <li>▪ Parks and recreational facilities</li> <li>▪ Schools</li> <li>▪ Civic assembly</li> <li>▪ Religious assembly</li> <li>▪ Major public facilities</li> </ul>

Zone	Uses	
Marine Commercial (MC)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Boat and boat-oriented facilities and services (e.g., moorage, equipment sales, service, storage, rental, or repair)</li> <li>▪ Retail sales, marine recreation-oriented</li> <li>▪ Retail sale, tourist-oriented</li> <li>▪ Eating and drinking establishments</li> <li>▪ Houseboats</li> <li>▪ Dwellings located above permitted uses</li> <li>▪ Parking lots</li> <li>▪ Public parks and public recreational facilities</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Commercial amusement and recreational facilities and private parks</li> <li>▪ Multi-dwelling units</li> <li>▪ Private parks</li> <li>▪ Major public facilities</li> </ul>
Light Industrial (LI)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Manufacturing, repairing, compounding, research, assembly, fabricating, or processing activities of prepared materials, without off-site impacts</li> <li>▪ Laboratories and research services</li> <li>▪ Warehousing, enclosed</li> <li>▪ Wholesale trade</li> <li>▪ Equipment sales, storage, repair, and rentals</li> <li>▪ Building supply including outdoor storage</li> <li>▪ Mini storage and storage site</li> <li>▪ Vehicle sales, service, repair, and painting.</li> <li>▪ Parking lots</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Manufacturing, repairing, compounding, research, assembly, fabricating, processing or packing of resource materials, with some off-site impacts</li> <li>▪ Industrial park to combine light manufacturing, offices, and complementary related commercial uses</li> <li>▪ Wrecking and junkyards</li> <li>▪ Eating and drinking establishments and bars</li> <li>▪ Child care facilities</li> <li>▪ Public parks and public and private recreational and amusement facilities</li> <li>▪ Major public facilities</li> </ul>

## SUMMARY OF DEVELOPMENT CODE REQUIREMENTS

Zone	Uses	
General Residential (R-5)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Single-dwelling unit, detached</li> <li>▪ Single-dwelling units, attached (five units maximum)</li> <li>▪ Duplex dwelling units</li> <li>▪ Public parks</li> <li>▪ Residential facilities and homes</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Auxiliary dwelling units</li> <li>▪ Multi-dwelling units</li> <li>▪ Bed and breakfast and boarding houses</li> <li>▪ Children's day care/nursery</li> <li>▪ Elderly/convalescent home</li> <li>▪ Private parks and commercial recreation facilities</li> <li>▪ Cultural exhibits and library services</li> <li>▪ Religious assembly</li> <li>▪ Neighborhood stores/plazas</li> <li>▪ Major public facilities</li> </ul>
Apartment Residential (AR)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Single-dwelling unit, detached</li> <li>▪ Single-dwelling units, attached (five units maximum)</li> <li>▪ Duplex dwelling units</li> <li>▪ Multi-dwelling units</li> <li>▪ Public parks</li> <li>▪ Residential facilities and homes</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Auxiliary dwelling units</li> <li>▪ Multi-dwelling units</li> <li>▪ Hospitals and care homes</li> <li>▪ Schools and related facilities</li> <li>▪ Bed and breakfast and boarding houses</li> <li>▪ Children's day care/nursery</li> <li>▪ Private parks and commercial recreation facilities</li> <li>▪ Cultural exhibits and library services</li> <li>▪ Civic assembly</li> <li>▪ Religious assembly</li> <li>▪ Neighborhood stores/plazas</li> <li>▪ Parking facilities</li> <li>▪ Major public facilities</li> </ul>

Zone	Uses	
Mixed Use (MU)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Retail sales establishments</li> <li>▪ Offices</li> <li>▪ Personal and business services</li> <li>▪ Eating and drinking establishments</li> <li>▪ Small equipment sales, rental and repairs</li> <li>▪ Retail product maintenance and repair</li> <li>▪ Cultural and library services</li> <li>▪ Produce stands</li> <li>▪ Dwellings: single-dwelling detached or attached, duplexes, and multi-dwelling above permitted uses</li> <li>▪ Residential facilities and homes</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Drive-up businesses and services</li> <li>▪ Parking lots</li> <li>▪ Vehicle repair, service, and sales</li> <li>▪ Transit and rail stations</li> <li>▪ Bars</li> <li>▪ Bed and breakfast facilities and boarding houses</li> <li>▪ Child care facility/nursery</li> <li>▪ Hospitals and senior or convalescent care facilities</li> <li>▪ Residential facilities and homes</li> <li>▪ Multi-dwelling units</li> <li>▪ Auxiliary dwelling units</li> <li>▪ Dwellings on same level as nonresidential use</li> <li>▪ Parks and recreational facilities</li> <li>▪ Schools</li> <li>▪ Religious assembly</li> <li>▪ Major public facilities</li> </ul>
Public Lands (PL)	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Cultural exhibits and library services</li> <li>▪ Parks and playgrounds</li> <li>▪ Schools and colleges</li> <li>▪ Minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Hospitals</li> <li>▪ Major public facilities</li> </ul>



Zone	Uses	
<p>Houlton Business District (HBD) and Olde Towne St. Helens (OTSH)</p>	<p>Uses Permitted Outright</p> <ul style="list-style-type: none"> <li>▪ Dwellings above nonresidential permitted uses (single-family, duplex, townhouse, and multi-family dwellings)</li> <li>▪ Historic residential structures, with or without auxiliary dwelling unit</li> <li>▪ Transient housing</li> <li>▪ Public and institutional uses</li> <li>▪ Cultural/historical exhibits and library services</li> <li>▪ Education and research facilities</li> <li>▪ Government administrative facilities/offices</li> <li>▪ Civic assembly</li> <li>▪ Parks and recreation facilities</li> <li>▪ Public parking lots</li> <li>▪ Schools and colleges</li> <li>▪ Artisan workshops and art studios/galleries</li> <li>▪ Bed and breakfast facilities</li> <li>▪ Retail sales establishments</li> <li>▪ Produce stands</li> <li>▪ Small equipment sales, rental, and repairs</li> <li>▪ Retail product repair and maintenance facilities/services</li> <li>▪ Offices</li> <li>▪ Business and personal services, including health and fitness clubs</li> <li>▪ Eating and drinking establishments and bars</li> <li>▪ Major and minor public facilities</li> </ul>	<p>Uses Permitted Conditionally</p> <ul style="list-style-type: none"> <li>▪ Transit and rail stations</li> <li>▪ Business with outdoor storage</li> <li>▪ Vehicle repair, service, and sales</li> <li>▪ Drive-up businesses and services</li> <li>▪ Child care facility/day nursery</li> <li>▪ Hospitals, clinics, and care homes</li> <li>▪ Religious assembly</li> <li>▪ Private parking lots/facilities</li> </ul>

Unless they have particular off-site impacts, the uses described above and in Attachment \_\_ may not affect the streetscape as much as other development regulations. These other development regulations are discussed in the following sub-sections.



## BUILDING HEIGHT

Building heights, in conjunction with building setbacks in cases when there are no or minimal setbacks, help provide a sense of enclosure and place along a street and corridor. Limiting heights contributes to the character of an area (e.g., a traditional or small town feeling) and its human scale and orientation.

As shown in Table 3, in the study area maximum building heights are generally limited to roughly three to four stories in the commercial and mixed use zones (HC, GC, MU, HBD, and OTSH), and two to three stories in the residential zones (R-5 and AR).<sup>3</sup> Building heights are determined on an individual basis in the more specialized MC and PL zones.

SHMC 17.68.040 establishes additional limitations and exceptions to building height regulations in individual zones. These provisions include building height criteria related to scenic resources, which affects only the Olde Towne segment of the study area. These requirements specify that no new development over one story (or 15 feet in height) on lots fronting South 2nd Street, North and South 1st Street, and River Street in the study area shall significantly obstruct<sup>4</sup> views of the Columbia River.

Another set of height-related development regulations are City vision clearance area regulations (SHMC Chapter 17.76). These provisions, also addressed in Technical Memorandum #1, more directly address the streetscape. They create a triangular area at the intersection of streets, railroads, and driveways in which there shall be no obstructions taller than three feet, except “the occasional utility pole” and trees whose branches must be removed up to eight feet in height.

Table 3. Development Standards in Study Area Zones

Zone/Corridor Segment	Building Height (Maximum)	Building Setback (Minimum/Maximum)	Lot Coverage (Maximum)	Landscaping (Minimum)
Highway Commercial (HC)	40 feet	No setbacks specified <sup>a</sup>	90%	10% of gross land area
General Commercial (GC)/ All corridor segments	45 feet	No setbacks specified <sup>a</sup>	90%	10% of gross land area
Marine Commercial (MC)/ Olde Towne	Case-by-case determination <sup>b</sup>	No setbacks specified <sup>a</sup>	90%	10% of gross land area
Light Industrial (LI)/US 30	75 feet <sup>c</sup>	Standards shall be determined by proximity to residential zones, anticipated off-site impacts, and other supplemental code chapters		

- 3 The exception is the LI zone, found in the Highway segment of the study area. SHMC 17.68.020 permits buildings up to 75 feet (roughly six to seven stories) in industrial zones, given requirements related to total building floor area and yard setbacks as a percentage of height requirements in adjacent zones. However, existing development in this area of LI zoning is generally not this tall.
- 4 SHMC 17.68.040(3) defines significantly obstruct as: “...restrict(ing) the ability to see the full view of the Columbia River by more than 50 percent. This shall apply to an accumulation of view from all living spaces with view at time of new development application.”

SFR Single-family/single-dwelling residential

MFR Multi-family/multi-dwelling residential

- a Proposed setbacks are subject to site development review, SHMC Chapter 17.96.
- b Buffers and screens must be provided according to proposed use and existing adjacent use, pursuant to the matrix (Figure 13) in SHMC 17.72.130.
- c With provisions regarding total floor area and yard setbacks related to building height regulations in adjacent zones (SHMC 17.68.020)
- d Except for multi-dwelling housing. SHMC 17.64.030 establishes special development standards for multi-dwelling housing.

## SUMMARY OF DEVELOPMENT CODE REQUIREMENTS

- e Single-dwelling units and duplexes shall comply with R-5 standards, and multi-dwelling units and units above permitted uses must comply with AR standards.
- f The maximum setback in the Olde Towne St. Helens and Houlton Business Districts can be increased if the increased setback is used for pedestrian-oriented amenities, such as a sidewalk cafe, plaza, or courtyard, pursuant to SHMC 17.32.170 and SHMC 17.32.175(4).
- g Development featuring 100% lot coverage may be approved with payment of a lot coverage fee to the Olde Towne St. Helens and Houlton Business District community capital improvement accounts, pursuant to SHMC 17.32.170 and SHMC 17.32.175.

Zone/Corridor Segment	Building Height (Maximum)	Building Setback (Minimum/Maximum)	Lot Coverage (Maximum)	Landscaping (Minimum)
General Residential (R-5)/ All Corridor Segments	35 feet	Front: 20 feet Side: 5 feet (SFR and duplex), 10 feet (MFR and corner lots) Rear: 10 feet	35% (SFR detached) 50% (SFR attached and MFR)	25% <sup>d</sup>
Apartment Residential (AR)/ Houlton and Olde Towne	35 feet	Front: 20 feet Side: 5 feet (SFR detached), 10 feet (SFR attached, duplex, MFR, and corner lots) Rear: 10 feet	50%	25% <sup>d</sup>
Mixed Use (MU) <sup>e</sup> /Houlton and Olde Towne	45 feet	Buffer and screening requirements <sup>b</sup>	90% (non-residential)	-
Public Lands (PL)/Houlton	Case-by-case determination <sup>b</sup>	Standards shall be determined by proximity to residential zones, anticipated off-site impacts, and other supplemental code chapters		
Houlton Business District (HBD)/Houlton	45 feet <sup>b</sup>	Front: No min setback, zero max setback <sup>f</sup> Side and Rear: No min setback (adjacent to non-residential zone) or 1 foot per foot of building wall height (non-residential use adjacent to residential zone), min 10 feet	90%**	10% open space**
Olde Towne St. Helens (OTSH)/Olde Towne	45 feet <sup>b</sup>	Front: No min setback, zero max setback <sup>f</sup> Side and Rear: No min setback (adjacent to non-residential zone) or 1 foot per foot of building wall height (non-residential use adjacent to residential zone), min 10 feet	90% <sup>g</sup>	10% open space <sup>g</sup>

## BUILDING SETBACKS

As noted in the previous section, building setbacks – particularly front and side building setbacks – can play a significant role in the sense of enclosure and place experienced on the sidewalk and street. This is of particular importance in the HBD and OTSH zones, where the City would like to encourage more development and redevelopment.

Building setbacks for zones in the study area are summarized in Table 3. Many setbacks are determined during the development review process. However, the HBD and OTSH zones make a point of bringing buildings up to the property lines except when sites are adjacent to residential zones or are providing pedestrian amenities like seating and plazas in the front yard setback.

The requirements for uses along those streets are as follows:

- **Major arterials (US 30).** Setback distance required by the zoning district plus 50 feet measured from the centerline of the street.
- **Minor arterials (Columbia Boulevard and St. Helens Street).** Setback distance required by the zoning district plus 30 feet measured from the centerline of the street.
- **Collectors (1st Street).** Setback distance required by the zoning district plus 25 feet measured from the centerline of the street.

## LOT COVERAGE AND LANDSCAPING

In the same way that setbacks regulate where buildings will be located on a site, lot coverage requirements regulate the extent to which buildings can cover a site. Like setbacks, this also influences how people experience buildings from the sidewalk and street. The commercial and mixed use zones that account for most of the zoning in the study area (HC, GC, MC, MU, HBD, and OTSH) allow for relatively high lot coverages. In the HBD and OTSH zones, where the City wants to encourage development and redevelopment and reinforce a traditional small city look and feel, 100% coverage is permitted in exchange for payment of a fee to district capital improvement accounts (SHMC 17.32.170 and SHMC 17.32.175).

Landscaping requirements are related to lot coverage standards in the City's code and also affect the look and feel of development in an area. As can be seen in Table 3, whatever part of the lot is not covered by a building needs to be landscaped. City landscaping and screening provisions (SHMC Chapter 17.72) apply to construction of new structures and to changes of use, and not to single-family and two-family dwelling units or to uses that do not require site design review or a conditional use permit.

As is also discussed in Technical Memorandum #1, landscaping and screening provisions primarily address on-site requirements. Landscaping in the right-of-way (e.g., street trees) is part of the streetscape. SHMC Chapter 12.06 (Street Trees) and SHMC 17.72.030 (Street trees) specify the conditions under which the City and property owners must provide street trees as well as exceptions to those conditions.

## OTHER DEVELOPMENT REQUIREMENTS

### **Vehicle Parking and Loading**

Minimum off-street parking requirements are established according to land use in SHMC 17.80. Parking issues that most affect the streetscape are whether parking is permitted between the building and the sidewalk (in the front yard setback) and the extent to which parking requirements must be met on-site, i.e., how much of the site is devoted to parking. Of the zones in the study area, only the HBD and OTSH address these issues.

There are maximum zero-foot front yard setbacks in the HBD and OTSH zones, which do not allow for parking between buildings and the street.

No additional on-site parking is required for sites when existing development covers more than 50% of the site area; there is a change of use; or remodeling being done does not change the footprint of existing development.

New development may use on-street parking spaces in adjacent right-of-way to help meet off-street parking requirements. Alternately, new development can buy out of on-site parking requirements by contributing to the districts' capital improvement accounts for the provision of future parking facilities in the districts.

### **Bicycle Parking**

Providing bicycle parking is important in encouraging biking in a community, and it also can be a contributing element of the streetscape. Currently, bicycle parking is required for multi-family residential, commercial, civic/institutional, and industrial uses in St. Helens, pursuant to SHMC 17.80.020(15). The minimum number of required bicycle parking spaces is generally scaled to the number of required vehicle parking spaces. Bicycle parking must be constructed within 50 feet of primary building entrances and not within landscape areas or pedestrian ways. Cover should be provided where possible.

### **Building Design**

Generally, there are no building design standards or guidelines in the City of St. Helens. However, the City has determined that it is important to develop architectural design guidelines for the Olde Towne St. Helens district in order

to support development and design that is complementary to historic buildings and the traditional feel of the district, particularly in terms of materials, scale, features, and orientation. Guidelines and a review process have been adopted into the code (SHMC 17.32.170). The guidelines address awnings and canopies, building façades/entries, building lighting, building signage, and building setback, orientation, and bulk. Historic photos of Olde Towne are included in the guidelines for reference.

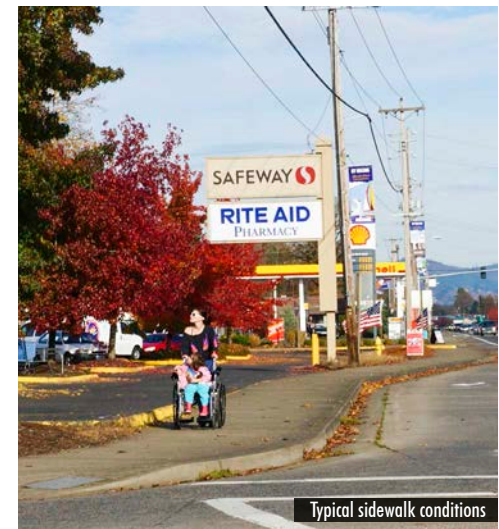
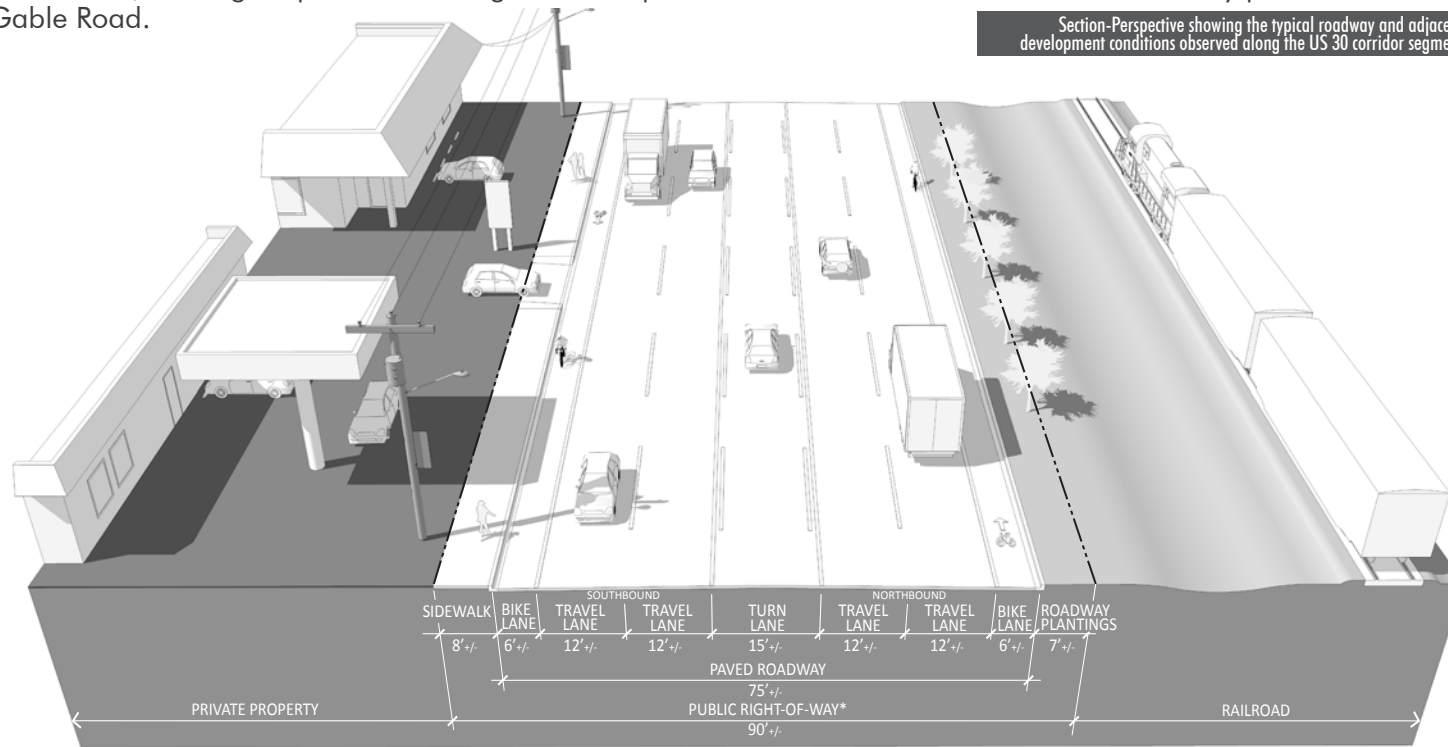
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# Urban Design Conditions

This section summarizes physical and environmental characteristics that will have implications for enhancing the design of streets and future development in each corridor segment of the project area. This will help advance the overall goal of creating viable, aesthetically pleasing, safe and sustainable business districts in these areas. A description of each corridor segment summarizes the roadway configuration, pedestrian facilities, and adjacent development. Graphic section-perspectives show the typical conditions observed in each corridor segment, providing a visual analysis of the relationships between each of these spaces.

## US 30

The US 30 corridor segment is a major arterial characterized by a wide concrete roadway with four lanes of traffic, a continuous center turn lane, and north- and southbound bicycle lanes on each side of the street. The roadway widens to provide right-turn only lanes at three signalized intersections, each of which provide striping and crosswalk signals for pedestrian crossing. This segment currently lacks pedestrian refuge islands or planted medians at any intersection, although a pedestrian refuge island is provided at the US 30 entrance to the Safeway just north of Gable Road.







East side of US 30



Typical crosswalk conditions



Typical back of sidewalk condition - lack of screening

Pedestrian facilities on the west side of the street consist of a narrow curb-tight sidewalk with frequent utility poles occurring behind the sidewalk. Very few, if any, pedestrian amenities or street trees exist. The east side of the street is predominately grassy drainage ditch lined with occasional groupings of small to medium sized ornamental trees, beyond which is a railroad right-of-way with a high frequency of daily freight trains. Crosswalks and curb ramps are provided for pedestrians at signalized intersections.

Adjacent development is primarily situated along the west side of US 30, and consists of service-related and retail businesses with various setbacks ranging from zero to 100+ feet. Buildings are predominately single-story and utilitarian in character, lacking a cohesive definitive architectural style. Business frontages consist predominately of asphalt-paved parking and vehicular-oriented areas, very few of which have adequate edge screening or interior landscape areas.

Based on these conditions, this corridor segment lacks an overall identity, or a sense of place. Public and private spaces are not clearly distinguished from one another, nor do they provide amenities for pedestrians to feel welcome. The corridor is generally oriented towards vehicular users, resulting in ready access for vehicles but creating intimidating conditions for pedestrians to easily move through or around.

Streetscape improvements within the ODOT right-of-way along the east side of US 30 are generally favored by railroad representatives, however special consideration must be given to any physical improvements to ensure they do not impact operations or safety. For example, clearly designated pedestrian pathways are encouraged, granted they are located at least 25 feet from the tracks or within the outer 10 feet of the right-of-way. Landscaping is permissible, however, trees and shrubs must be located so that they do not interfere with railroad operations. Fencing is also permissible, granted it is tall enough to discourage people from climbing over it, and it is located on both sides of the tracks. Pedestrian and bicycle improvements at railroad crossings are generally supported, so long as clear sight distances are maintained. Since ODOT Rail owns the right-of-way within which the railroad operates, any proposed improvements would need to be coordinated through ODOT Rail.

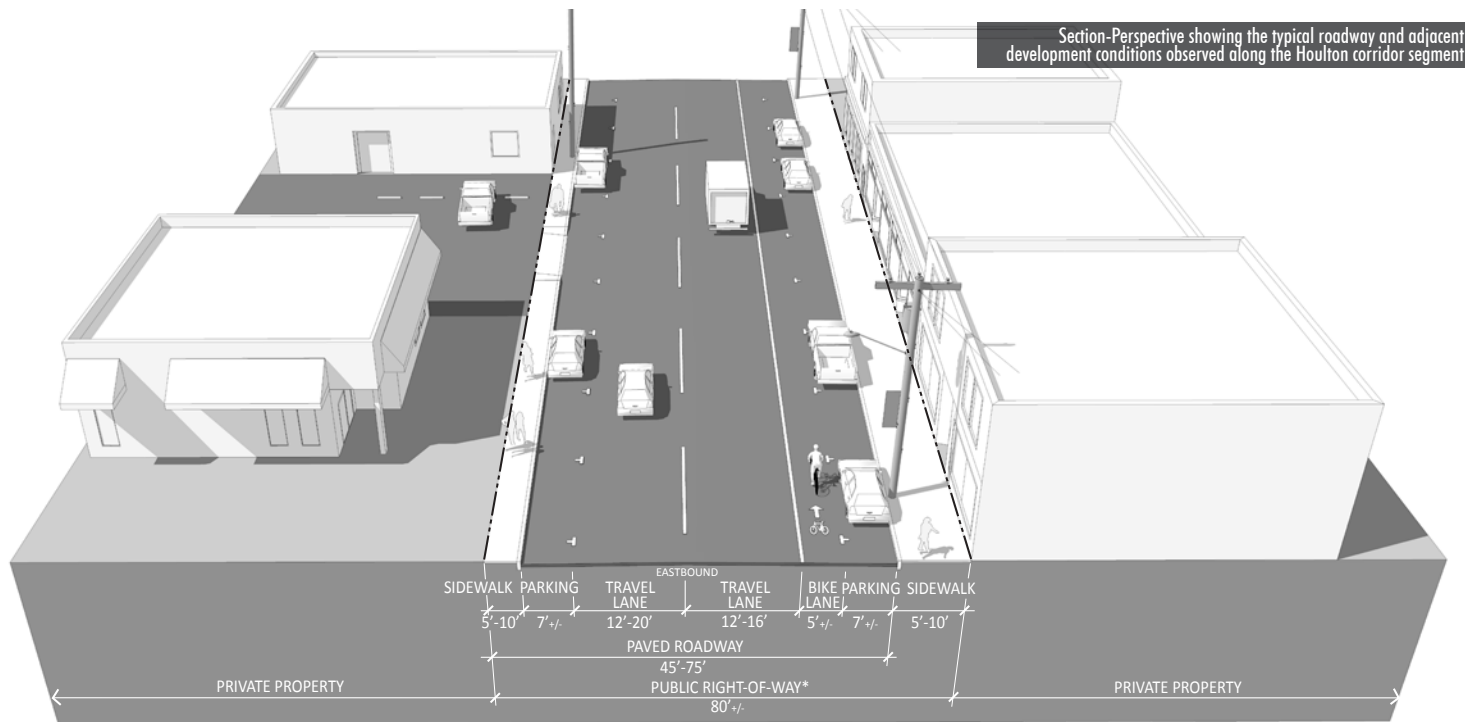




## HOULTON AREA

The Houlton corridor segment consists of the Columbia Boulevard / St. Helens Street couplet, which turns into Columbia Boulevard at the 13th Street intersection. The asphalt roadway typically consists of two travel lanes, one to two bike lanes, and parallel parking on each side of the street. Striped crosswalks are provided for pedestrian crossing at each intersection. New curb ramps have relatively recently been installed at a number of intersections; however, other intersections lack adequate curb ramps. Curbs are observed to range in height from flush with the roadway to over 8" in height in some locations. This corridor segment is separated from US 30 by a 100-foot wide railroad right-of-way.

Pedestrian facilities generally consists of narrow, curb-tight, concrete sidewalks with utility poles, fire hydrants, and roadway signs occurring just behind the curb, constricting the path of travel at each location. Due to the difficulty of planting trees in the underlying layer of basalt rock, this segment area currently has no street trees, though isolated clusters of small ornamental trees in container planters occur in the right-of-way in some locations. Relatively few pedestrian amenities exist along this corridor segment, although customized benches have been provided just behind the sidewalk in some locations. Cobra-style roadway lighting provides the only pedestrian illumination

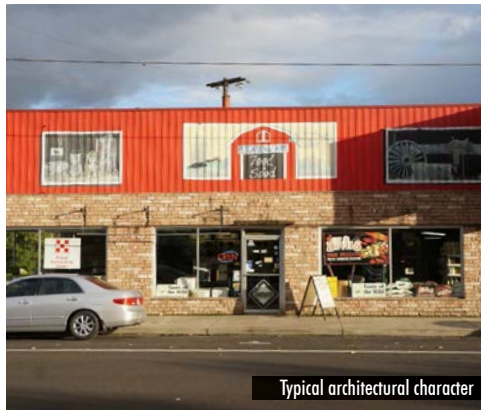




Typical sidewalk conditions



Example of an underutilized pedestrian-oriented setback



Typical architectural character

during night-time hours. An ornamental landscape area with a fountain feature marks the St. Helens St. and Columbia Blvd intersection, although this is the only landscape feature along this corridor segment. Seasonal decorations such as cornstalks, scarecrows, and American flags are placed along the street by neighborhood and business associations during holiday celebrations.

Adjacent development is predominately commercial and civic in nature, with some vacant lots and single-family residences occurring in between Columbia and St. Helens, and along the north side of the corridor segment. Buildings are one- to two-story, and have setbacks ranging from zero to 20+ feet. Architecturally, many retail buildings are of the early 20th century commercial vernacular, with some articulation of the facades. Many buildings have glass fronts, allowing for some visibility between the insides of the businesses and the public street. Many buildings that are set back from the sidewalk have attempted to create pedestrian-oriented spaces in front, though most are separated from the sidewalk with small parking lots. Very few properties have landscaped areas along this segment, though some mature trees are observed in this project segment.

Based on these conditions, this corridor segment has an identity that lacks a clear distinction, though some “pockets” exhibit some consistency in character and feel. Public and private spaces are not generally distinguished from one another, although there are a few exceptions. This corridor segment is more pedestrian-oriented than US 30; however, sidewalks are generally too narrow and travel lanes are excessively wide for this street classification, and the lack of amenities does little to make pedestrians want to linger.

The extensive system overhead utility lines along Columbia Boulevard and St. Helens Street visually clutters the streetscape and can significantly impact many potential streetscape improvements by limiting, for example, locations of street trees and constricting pedestrian routes. Undergrounding existing overhead utilities is an effective way to reduce this visual clutter, opening up valuable space in a constricted pedestrian environment for a number of streetscape improvements. However, the high costs associated with excavating bedrock and undergrounding utility lines and vaults can be prohibitively expensive, but may be combined with other municipal and/or privately funded projects in the vicinity.

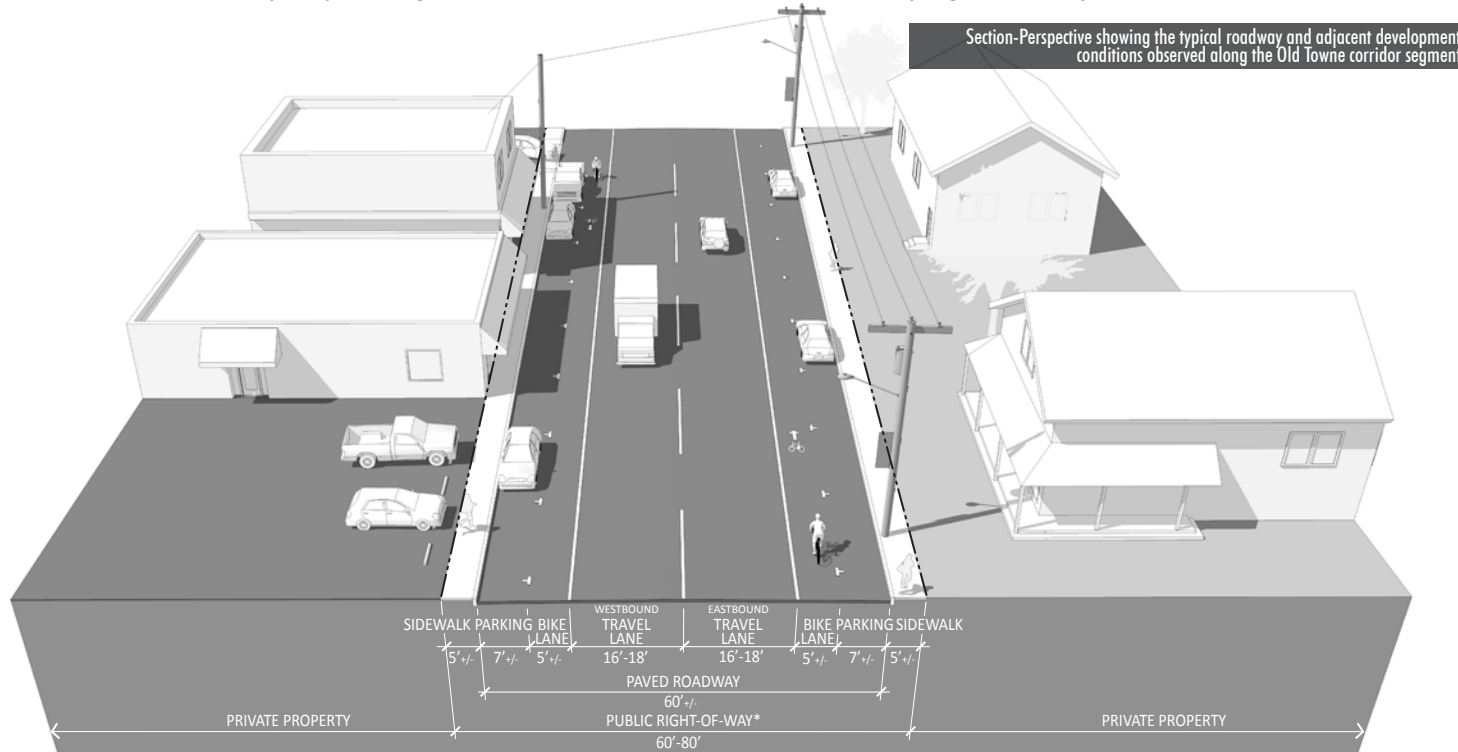




## OLD TOWNE

The Olde Towne study area is split into two segments: Uppertown, or the area above Dispaïne's Hill, and Lowertown, the area below Dispaïne's Hill. Similar to the Houlton area, the roadway in the Old Towne corridor segment consists of two travel lanes, two bike lanes, and parallel parking on each side of the street. However, a large basalt outcropping encroaches the roadway on Columbia Blvd. and on S. 1st Street, having significant impact on the roadway cross section. Additionally, the St. Helens Street portion of this corridor segment consists of a wider roadway with angle-in parking between 1st and 4th Streets. Striped crosswalks are provided for pedestrian crossings at nearly every intersection of the Old Towne corridor segment.

Pedestrian facilities also are similar to those in the Houlton area, with narrow, curb-tight concrete sidewalks and few pedestrian amenities. Utility poles with cobra-style roadway lighting are located just behind the curb, as well as fire hydrants and roadway signs. Broken sections of sidewalk are observed at some locations, and are either in disrepair, or have been paved over with asphalt. Street trees are also absent from this corridor segment, with the exception of four maple trees on the south side of Columbia Blvd. between 2nd and 3rd Streets. This also is likely a function of the difficulty of planting street trees in areas where the underlying basalt layer forms a natural barrier.





## URBAN DESIGN CONDITIONS



Unique conditions observed along Columbia Blvd



Typical setback and sidewalk conditions



Commercial business "hub"

Adjacent development is a mix of one- to two-story commercial buildings and single family residences, parking lots and vacant lots. Setbacks range from zero to 20+ feet, and consist primarily of minimally-landscaped front yards and parking areas. Very few commercial buildings are architecturally significant, though many residences are craftsman bungalows that have been well-maintained and have a strong presence along this corridor segment.

The Old Towne area has a strong residential character along the eastern end of the segment, though lacks a consistent set of facilities and amenities for pedestrians. The western end of the segment lacks a clear character due to the inconsistent quality and frequency of adjacent development. The basalt outcrops present significant barriers to pedestrian and bicycle movement in these areas, limiting sight lines and acting to divide this portion of the project area into three distinct segments. Like Houlton, Old Towne is more geared towards pedestrians than US 30; however, the sidewalks are also generally too narrow and the travel lanes are excessively wide to make travel for pedestrian feel safe and comfortable.



# Non-Conforming Uses and Code Violations

While non-conforming uses and code violations are not significant issues in the study area from the perspective of City staff, there are a number of issues that the City has identified as challenges in the study area, particularly in the US 30 and Houlton segments of the study area. These issues are discussed below. Example images are provided to illustrate the issues being discussed, although many of the images come from other communities.

## US 30

**Built-out nature of the area.** There are relatively few undeveloped parcels in the Highway segment. This may limit the amount of redevelopment that will occur in the area in the foreseeable future and, thus, limit the use of redevelopment to help directly fund streetscape improvement projects (e.g., establishing planting strips, medians, etc.).

**Older nature of development in the area.** Much of the development in the US 30 segment occurred before current code provisions were implemented. As a result, development in this area may not be consistent with current requirements for streetscape and site elements such as parking or landscaping. This makes these uses non-conforming in this respect and may present challenges for property owners during an expansion or redevelopment process.

**Signs.** There have been difficulties with highway signs and temporary signs in this area, particularly on the railroad side of the highway and at key intersections. Temporary signs often are not consistent with city standards and/or remain in place beyond the duration allowed.



An example of older development



Temporary Signs





Pedestrian Crossing without Sidewalk

**Lack of Landscape Cover.** Many properties along US 30 appear to lack the minimum amount (10%) of landscape coverage, which detracts from civic identity.

**Pedestrian Crossings.** Several intersections exhibit sub-par pedestrian crossing features, including curb ramps and detectable warning strips. Though the latter may not necessarily be in violation of the City's code, there are a number of locations where pedestrian crossings across US 30 terminate at a curb, or at a curb ramp with no sidewalk.

## HOULTON AND OLDE TOWNE

**Older nature of development in Houlton.** As in the Highway segment, the age of existing development in Houlton means that it is not always consistent with current requirements for streetscape and site elements such as parking or landscaping.

**Ground floor residential uses.** These are no longer permitted uses in Houlton, resulting in a number of non-conforming uses. There is concern that if these uses become vacant and do not redevelop in the future, they may become derelict uses and degrade the character and quality of the streetscape.

**Setbacks and off-street parking.** Buildings are required to be built close to the street in the Houlton and Olde Towne area pursuant to existing requirements. As a result, parking must be placed on the side of or behind buildings. There may be some uses in these areas that do not conform to these setback requirements.

**Parking.** On-street parking spaces may be counted towards meeting off-street parking requirements in Houlton and Olde Towne, so that development may be able to provide a few less off-street parking spaces. Buildings that occupy 50% or more of a site are exempt from meeting off-street parking requirements, which may make them more reliant on on-street parking. In these and other cases, on-street parking is an important asset and streetscape improvements that reduce on-street parking may face resistance from local businesses.

**Street trees and planters.** Both private and public improvements can trigger the requirement for the City or property owners to provide street trees or planters. The City Council can waive those requirements under certain circumstances. The corridor planning project represents an opportunity to refine that process and set criteria for making those decisions based on analysis and recommendations generated during this process.



Example of large setback with parking



Street Trees and Planters in St. Helens

# Conclusions

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**US 30.** The pattern and character of development in this corridor segment from land use, zoning and urban design character is very vehicle-oriented as would be expected along a state highway. Short of undergoing a very significant transformation through major redevelopment, this character is not likely to change in the near future. However, enhancements to the streetscape in this area can improve the overall appearance of the corridor and improve the safety and comfort of pedestrians and bicycles. The design of targeted improvements should focus on the following:

- Provide more landscaping and greenery along the east side of the road.
- Establish an enhanced landscaping plan for the west side of the road adjacent to the rail line.
- Enhance pedestrian crossings, particularly at key intersections.
- Establish gateway features either at entrances to the town or at key intersections (Gable and Columbia/St. Helens).
- Consider implementation of a landscaped central median along portions of the road to enhance its appearance, manage access and improve safety.
- Consider updating standards for parking lot landscaping and design to increase landscaping and improve pedestrian connections and encourage businesses to voluntarily make such improvements, possibly through some kind of business association.

**Houlton.** This is a key shopping and business district for residents and visitors, as well as a gateway to the Olde Towne area. It currently features wide rights-of-way and limited pedestrian amenities. Land use patterns and design standards have the potential to encourage a mix of land uses and a relatively pedestrian-oriented district with building built close to the sidewalk, parking located to the side or rear of buildings and requirements for future street trees (in containers) and/or other landscaping. The design of future streetscape improvements in this area should include:

- Improve pedestrian crossings through pavement treatments, curb extensions or other strategies.
- Use excess right-of-way to enhance landscaping, as well as bicycle and pedestrian facilities and create a narrower feel to the road that can help slow traffic.
- Establish a gateway feature and improved signage at the intersection of Columbia Blvd and US 30 to draw

people into the Houlton area and toward Olde Towne.

- Provide improved pedestrian amenities (e.g., pedestrian scale light, street furniture, etc.) to create more of sense of place and unique identity for the area; use signage both for this purpose and to guide people to Olde Towne.
- Consider creating a small park or pedestrian plaza somewhere in the area to serve as an amenity and gathering place for residents and visitors.

**Old Towne.** This corridor segment represents an opportunity for more future mixed use development and helps draw people towards civic uses and businesses north of St. Helens Street and activities on the Riverfront. It has a strong residential character but pedestrian and bicycle facilities are constrained. Streetscape improvements in this area should include:

- Continue signage from the Houlton area guiding people towards Olde Towne and the Columbia River.
- Improve facilities for bicyclists and pedestrians, working within constraints posed by topography and geology.
- Ensure that on and off-street parking requirements and availability are integrated to meet the needs of existing and future land uses and businesses in the area.



# APPENDIX C. MILTON WAY/ COLUMBIA BOULEVARD INTERSECTION CONCEPT OPTIONS

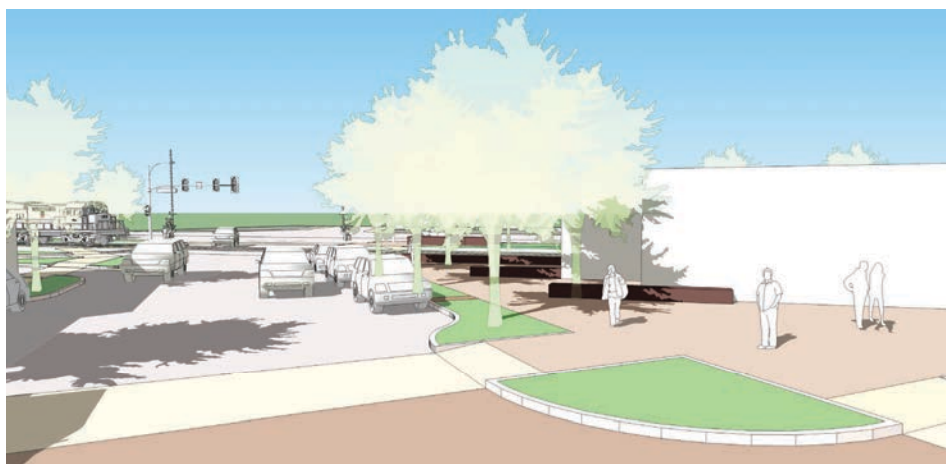


During the Corridor Master Planning process, two basic options were considered for potential future improvements to the intersection of Milton Way and Columbia Boulevard, in combination with a proposed gateway in that area. Each option was intended to support creation of a gateway and address safety issues associated with people traveling south on Milton Way through this intersection. Currently, drivers travel the wrong way on Columbia Boulevard for a short distance to access Milton Way south of Columbia. One option would facilitate or legitimize that movement, while the other would make it more difficult than it is today to further discourage or prevent it. These options are described in the text below and the following graphics.

**A. ALLOW southbound movement to Milton Way.** A separate westbound left-turn lane from Columbia Boulevard to Milton Way would be added in this option. This potential modification would provide a way for motorists to continue south along Milton Way without traveling the wrong way on Columbia Boulevard. This modification also includes narrowing the east leg of the US 30/Columbia Boulevard intersection to a single lane with continuous bike lane striping from US 30 to east of Milton Way. The primary benefit of this alternative would be to continue to provide direct access southbound on Milton Way and to adjacent neighborhoods. The primary disadvantages would be to narrow Columbia Boulevard to one lane between US 30 and Milton Way and to continue to create potential conflicts between vehicles and pedestrians in this area.

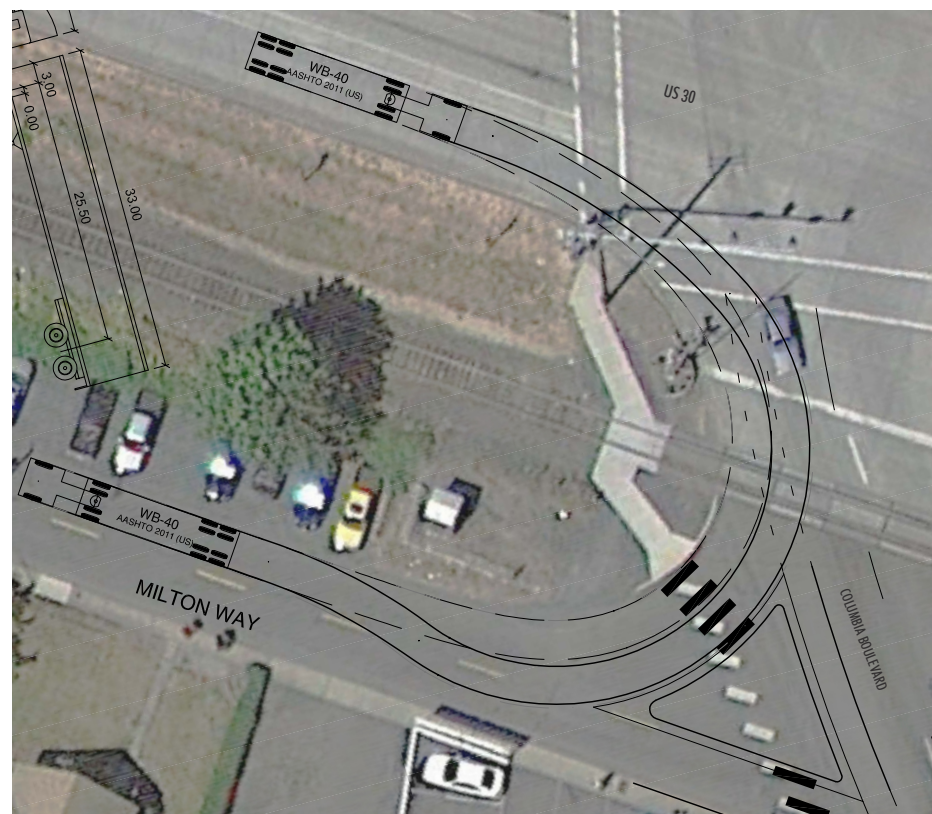


**B. PREVENT southbound movement to Milton Way.** A “splitter island” would be installed at the northbound approach to the Milton Way/Columbia Boulevard intersection. This island would prevent southbound motorists on Milton Way north of Columbia Boulevard from traveling the wrong way on Columbia Boulevard to continue south along Milton Way. The island offers the added benefit of providing pedestrians along Columbia Boulevard with a refuge while crossing Milton Way. This option was subsequently refined to also extend the curb and create a plaza adjacent to the Chamber of Commerce building. This would narrow the intersection, further discouraging the movement to southbound Milton Way.





The St. Helens City Council ultimately recommended Option B, as described and illustrated in the Draft Corridor Master Plan. The schematic design shown in the proposed option would enable city bus and fire trucks to turn right onto southbound Milton Way from US 30/ Columbia, as well as trucks with a wheel base of 40 feet (WB40 truck classification) or less. This equates to a truck that is a little more than 40-feet long and has a cab that is approximately 33-feet long. Larger trucks (e.g., WB62 and WB67 vehicles) would not be able to make this turning movement without refinements to the design of the intersection.





# APPENDIX D. DRAFT IMPLEMENTING POLICIES AND ORDINANCES





# St. Helens Corridor Master Plan - Memorandum

To: Jacob Graichen, City of St. Helens  
Naomi Zwerdling, Oregon Department of Transportation

From: Matt Hastie and Shayna Rehberg, Angelo Planning Group (w/ City Planner  
fixes on 10272014) (and with Planning Commission suggested edits from  
their 11042014 meeting)

CC:

Date: November 21, 2014

Re: Revised Implementing Policies and Ordinances (Subtask 7.2)

## Overview

Conclusions from the Land Use and Urban Design report (Technical Memorandum #4) and recommendations from the Corridor Master Plan Design Options and Evaluation Report were developed into draft policy and code changes that were proposed in the first draft of this memorandum. These changes are needed in order to implement the Corridor Master Plan.

The proposed changes are presented in “adoption-ready” format, which means that language that is proposed to be added is underlined and language that is proposed to be removed is ~~struck through~~. In a few cases underlined language is presented in [brackets], which indicate language options to be considered by the reviewers.

An initial draft of this proposed policy and code language has been reviewed by the Project Management Team, Technical Advisory Committee, and Citizen Advisory Committee and has been revised to reflect their comments. It will now be forwarded as part of the Corridor Master Plan for public hearing and review. Further refinements to the amendments will continue to be made, as needed as the result of results of Planning Commission and City Council work sessions and public hearings, as well as other public comments.

## Implementing Policies

Existing economic development policies in the Comprehensive Plan and transportation policies in the 2011 Transportation System Plan (TSP) address many of the guiding principles developed for this project (*Vision, Goals and Guiding Principles*, Final Draft February 3, 2014). However, it is recommended that a few new policies be added to address project principles primarily related to improving the aesthetics and increasing multimodal access in the US 30, Columbia Boulevard, and St. Helens Street corridors.

### Comprehensive Plan

#### 19.08.020 Economic goals and policies.

(3) Policies. It is the policy of the city of St. Helens to:

(a) Develop program strategies with other agencies, groups and businesses in an effort to improve the local economy...

(b) Assist in programs to attract diverse businesses and industries ~~in terms of diversification and nonpollution rather than accept any business or industry which may wish to locate here; additionally, to prohibit industries with levels of pollution or other effects which would outweigh economic benefits or threaten the existing quality of living.~~

(c) Work with applicable agencies at the state and federal levels in enacting controls and performance standards for industrial operators to reduce the possibility of adverse impacts on the environment.

(d) Encourage enterprises offering local residents a far greater selection of goods and services to locate here.

(e) Make waterfront development a high priority.

(f) Develop and implement public facility designs and development standards to revitalize businesses and business districts in the US 30 and Columbia Boulevard/St. Helens Street Corridor Master Plan area.

(g) Create gateways and improve access and wayfinding signage to Houlton Business District and Historic Downtown.

(h) Improve the appearance, attractiveness, and safety of the Houlton Business District and Historic Downtown, through an enhanced street design that includes street trees, landscaping and more public spaces and pedestrian amenities.

~~(f)~~ Develop the local tourist and recreation sectors of the economy.

~~(g)~~ Allocate adequate amounts of land for economic growth and support the creation of commercial and industrial focal points.

~~(h)~~ Identify special locations for industrial activities that will assist in energy conservation.

~~(i)~~ Discourage the leapfrog development of industrial lands, unless there is a program to provide sewer and water to intervening properties.

~~(j)~~ Make commercial designation large enough to accommodate a large variety of commercial development with sufficient buffers.

~~(k)~~ Encourage land uses that are compatible with the transportation facilities.

#### **19.12.080 Highway commercial category goals and policies.**

(2) Policies. It is the policy of the city of St. Helens to:

(a) Designate as highway commercial such areas along portions of U.S. 30 where highway business has already become well established.

(b) Designate as highway commercial such areas at major road intersections where access to business sites does not conflict with safe traffic movement.

(c) Encourage enterprises which cater to the traveling public to locate in this designation.

(d) Encourage curbing along Highway 30 and limit the number of curb-cuts to minimize traffic hazards as a result of conflicts between through traffic and shopper traffic.

(e) Preserve areas for business use by limiting incompatible uses within them.

(f) Improve the appearance and safety of US 30 and sites along US 30, through means such as landscaped medians, banner poles, landscaping along the highway right-of-way, and landscaping in parking lots.

(g) Encourage undergrounding of overhead utilities.

## **Transportation System Plan**

### **Section 2 Goals and Policies**

#### **Non-motorized and Transit Modes Policies**

It is the policy of the City of St. Helens to:

p) Develop a plan for walking trails.

q) Maintain, implement, and update the City's bikeway plan.

r) Provide safe and convenient bicycle access to all parts of the community through a signed network of on- and off-street facilities, low-speed streets, and secured bicycle parking.

s) Promote safe, convenient, and fun opportunities for children to bicycle and walk to and from schools.

t) Improve and expand walkways to existing and planned schools, parks, senior residential areas, and commercial areas. In particular, improve pedestrian and bicycle connectivity (including wayfinding to points of interest) between the US 30 and Columbia Boulevard/St. Helens Street corridors and adjacent open spaces and parks, trail and bicycle networks, transit stops, and neighborhoods; see US

30 & Columbia Boulevard/St Helens Street Corridor Master Plan (Ordinance No. \_\_\_\_\_,  
Attachment \_\_\_\_\_).

- u) Work with Columbia County and other agencies in their efforts to meet the needs of the transportation disadvantaged in the community.
- v) Encourage increased opportunities for local and regional public transit facilities.
- w) 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.
- x) Work in partnership with the County in planning for public transit facilities located within city limits and, when feasible, facilitate the setting and operation of such facilities.

### **Economic Development Policies**

It is the policy of the City of St. Helens to:

- y) Improve rail and water connections to enhance and provide economic opportunity.
- z) Maintain a road and multimodal transportation network that contributes to the viability of existing commercial areas.
- aa) 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.
- bb) Continue to explore the viability of waterfront shuttle service as an alternative to private vessel/vehicle use along the city's waterfront and to enhance connectivity to waterfront amenities and recreational venues.

### **Natural Resources and Recreation Policies**

It is the policy of the City of St. Helens to:

- cc) Develop a multi-modal transportation system that avoids reliance upon one form of transportation as well as minimizes energy consumption and air quality impacts.
- dd) Encourage development patterns that decrease reliance on single occupancy vehicles.
- ee) Minimize and mitigate the adverse impacts that transportation-related construction has on the natural environment, including impacts to wetlands, estuaries, and other wildlife habitat.
- ff) Identify opportunities for integrating sustainable design strategies into streetscape design and implement them where appropriate.
- ffgg) Maintain and enhance access to parks and recreational and scenic resources. Look for opportunities to connect these community resources through pedestrian and bicycle trails.
- ~~gg~~hh) Create a nature trail around portions of Dalton Lake that provides recreational (e.g. walking, hiking and biking) opportunities for city residents and visitors.
- ~~hh~~ii) Create a trail system along the waterfront that will provide access to the river, and connect existing and potential waterfront parks and amenities.

## **Community Policies**

It is the policy of the City of St. Helens to:

- ~~ii~~jj) Design, enhance, and maintain safe and secure access between residential neighborhoods and community gathering areas such as, parks, schools, public plazas, and natural areas.
- ~~jj~~kk) Provide transportation improvements that protect the area's historical character and neighborhood identity.
- ~~kk~~ll) Require new development to include pedestrian, bicycle, and transit-supportive improvements within the right-of-way in accordance with adopted city policies and standards.
- mm) Balance the need for local access and traffic calming with through-traffic and emergency vehicle movements (particularly in the US 30 corridor).



## Implementing Ordinances

Ordinances to implement the St. Helens Corridor Master Plan consist primarily of amendments to the City of St. Helens Community Development Code, which is Title 17 in the St. Helens Municipal Code (SHMC).

As discussed in the Corridor Master Plan Design Options and Evaluation Report, development code changes and strategies focus on the following concepts:

- Pedestrian connections through parking lots to US 30
- Landscaping standards for parking lots and yards fronting US 30, Columbia Boulevard, and St. Helens Street
- Street trees in planter/landscape strips along Columbia Boulevard and St. Helens Street
- Pedestrian amenities (e.g., pedestrian-scale lighting, street furniture, etc.) along Columbia Boulevard and St. Helens Street
- Parklets in on-street parking spaces

These code concepts are discussed in terms of pedestrian access standards, landscaping standards, pedestrian amenity standards, and parklet procedures and guidelines in the following sections. Code amendments that are recommended in the following sections come primarily from the following sources:

- Existing St. Helens code language that has been re-arranged and/or slightly modified;
- Oregon Transportation and Growth Management's Model Development Code for Small Cities, 3<sup>rd</sup> Edition ("Model Code"); and
- Web pages and manuals regarding parklets from City of Portland, City of San Francisco, and the University of California Los Angeles (UCLA).

As noted in the overview, this proposed code language will be reviewed and revised by City and ODOT staff, project Citizens and Technical Advisory Committees and the City's Planning Commission and Council before being forwarded as part of the Corridor Master Plan for public hearing and review.



## Pedestrian Access Standards

Existing pedestrian access and circulation provisions in SHMC 17.84.050 (Required walkway location) establish walkway requirements between buildings on a site and between building entrances and streets. They also require separated or demarcated walkways when crossing motor vehicle traffic ways in parking lots. Principles developed for the St. Helens Corridor Master Plan include increasing pedestrian access and connectivity in the project area, which is particularly needed between buildings fronting US 30 and sidewalks, bicycle lanes, and transit facilities on US 30.

**Recommendation:** It is recommended that walkways be required across large parking lots in St. Helens, many of which are likely to front US 30. It is proposed that these requirements be included in the pedestrian access and circulation requirements in Chapter 17.84 SHMC, which apply to construction of new structures, to remodeling of existing structures, and to changes of use which increase on-site parking or loading requirements or change access requirements. The spacing interval of 150 feet is generally based on half of the existing pedestrian/bicycle accessway spacing requirement in St. Helens (approximately 300 feet) for blocks 600 feet or more in length (SHMC 17.152.040(2)(b)).

### 17.84.050 Required walkway location.

(1) Walkways shall extend from the ground floor entrances or from the ground floor landing of stairs, ramps, or elevators of all commercial, institutional, and industrial uses, to the streets which provide the required access and egress. Walkways shall provide convenient connections between buildings in multi-building commercial, institutional, and industrial complexes. Walkways also shall provide access to existing and planned transit stops adjacent to the development site. Unless impractical, walkways should be constructed between a new development and neighboring developments.

(2) Within all attached housing and multifamily developments, each residential dwelling shall be connected by walkway to the vehicular parking area, and common open space and recreation facilities.

(3) Where a site for proposed commercial, institutional, or multifamily development is located within at least one-quarter mile of an existing or planned transit stop, the proposed pedestrian circulation system must ~~include demonstrate~~ a safe and direct pedestrian ~~route~~ walkway from building entrances to the transit stop or to a public right-of-way that provides access to the transit stop.

(4) In parking lots one acre or larger, pedestrian walkways shall connect from buildings to sidewalks in the adjacent rights-of-way, and shall be provided at least every 150 feet between rows of parking.

(45) Wherever required walkways cross vehicle access driveways or parking lots, such crossings shall be designed and located for pedestrian safety. Required walkways shall be physically separated from motor vehicle traffic and parking by either a minimum six-inch vertical separation (curbed) or a minimum three-foot horizontal separation, except that pedestrian crossings of traffic aisles are permitted for distances no greater than 36 feet if appropriate landscaping, pavement markings, or contrasting pavement materials are used. Walkways shall be a minimum of four feet in width, exclusive of vehicle overhangs and obstructions such as mailboxes, benches, bicycle racks, and sign posts, and shall be in compliance with ADA standards.

(56) Required walkways shall be paved with hard-surfaced materials such as concrete, asphalt, stone, brick, etc. Walkways ~~may~~ shall be required to be lighted and/or signed as needed for safety purposes. Soft-surfaced public use pathways may be provided only if such pathways are provided in addition to required pathways.

## Landscaping Standards

Existing City development code requirements for landscaping and screening (Chapter 17.72 SHMC) apply to construction of new structures, remodeling of existing structures, and to changes of use that increase on-site parking or loading requirements or change access requirements. The following sections address standards related to parking lot landscaping, yard landscaping, and street trees, and how they can implement the Corridor Master Plan vision, goals, and principles.

### Parking Lot Landscaping

The vision, goals, and principles developed for the St. Helens Corridor Master Plan commit to improving the aesthetics and desirability of the project area, which in part entails “greening”, softening, and beautifying typically less attractive areas like parking lots. Recommended code changes related to landscape screening of parking lots and landscaping requirements inside parking lots are addressed below.

#### *Screening*

The screening of parking lots is particularly important for improving the streetscape where parking lots are adjacent to right-of-way in the project area. This is most common along US 30 where parking lots are permitted between buildings and the right-of-way.

**Recommendation:** It is recommended that code provisions be modified for screening that is required between parking lots and the right-of-way on US 30. This includes setting buffer requirements between parking lots and US 30 that are not currently called for in the development code. In addition, the City has requested that screening provisions be specified for roof-mounted service facilities and equipment, a related issue of aesthetics in the project area and elsewhere in the City. Last, it is recommended that existing requirements under the screening provisions related to interior parking lot landscaping – technically not screening – be moved to a new subsection, which is addressed in the next section of this memorandum.

### 17.72.110. Screening – Special provisions.

#### (1) Screening of Parking and Loading Areas.

[...]

(b) Screening of parking (larger than three spaces) and loading areas (larger than 400 square feet) is required. The specifications for this screening are as follows:

- (i) Landscaped parking areas shall include special design features which effectively screen the parking lot areas from view. These design features may include the use of landscaped berms, decorative walls, and raised planters. Berms, planters, and other forms of vegetative

landscaping are permitted for screening that fronts US 30. Walls are prohibited for screening that fronts US 30;

(ii) Landscape planters may be used to define or screen the appearance of off-street parking areas from the public right-of-way;

(iii) Materials to be installed should achieve a balance between low-lying and vertical shrubbery and trees;

~~(iv) Trees shall be planted in landscaped islands in all parking areas, and shall be equally distributed and on the basis of one tree for each seven parking spaces in order to provide a canopy effect; and~~

~~(v) The minimum dimension of the landscape islands shall be three feet and the landscaping shall be protected from vehicular damage by some form of wheel guard or curb.~~

(2) Screening of Service Facilities. Except for single-dwelling units and duplexes, service facilities such as gas meters and air conditioners which would otherwise be visible from a public street, customer or resident parking area, any public facility or any residential area shall be screened from view by placement of a solid wood fence or masonry wall between five and eight feet in height or evergreens already to correct height minimums. All refuse materials shall be contained within the screened area. Rooftop service facilities and equipment shall be screened from view from adjacent streets and adjacent properties in one of the following ways:

(a) A parapet wall of adequate height;

(b) A screen around the equipment that is made of a primary exterior finish material used on other portions of the building; or

(c) Setback such that it is not visible from the public street(s) and adjacent properties.

[...]

**17.72.130 Buffer matrix.**

(1) The buffer matrix (Figure 13) shall be used in calculating widths of buffering and screening to be installed between proposed uses and abutting zoning districts or specified types of streets.

(2) An application for a variance to the standards required in Figure 13 shall be processed in accordance with Chapter 17.108 SHMC.

Existing Abutting Use of Zoning District	Parking Lot	Parking Lot
	4-50 spaces	51 or more spaces
Detached Single-Family (R-10, R-7, R-5)	10' S	20' S
Attached Dwelling Units (1 story)	10' S	20' S
Attached Dwelling Units (2 or more stories)	10' S	20' S
Mobile Home Parks	10' S	20' S
<del>Any</del> Arterial Street ( <u>except US 30</u> )	0'	0'
<u>US 30</u>	<u>5'</u> <u>S</u>	<u>5'</u> <u>S</u>
Commercial Uses	0'	0'

Existing Abutting Use of Zoning District	Parking Lot 4-50 spaces	Parking Lot 51 or more spaces
Industrial Park	0'	0'
Heavy Industrial	0'	0'
Any Parking Lot with 4-50 spaces	0'	0'
Any Parking Lot with 51 or more spaces	0'	0'

“S” indicates screening required

#### ***Interior parking lot landscaping***

As noted above, there are some existing standards for interior parking lot landscaping found in the screening requirements for parking lots. However, the existing standards do not provide a threshold parking lot size to which the standards apply, set relatively small minimum dimension for the landscape islands, and do not address planting other than trees in the islands.

**Recommendation:** It is recommended that existing requirements be moved from the landscape screening section to a new subsection for interior parking lot landscaping. This new subsection includes existing standards about the spacing/frequency of landscape islands in parking lots as well as larger minimum dimension standards and additional requirements about planting other than trees, based on state Model Code provisions.

#### **17.72.130 Buffer matrix...**

#### **17.72.140 Interior parking lot landscaping.**

(1) All parking areas with more than 20 spaces shall provide landscape islands with trees that provide a canopy effect and break up the parking area into rows of not more than 7 contiguous parking spaces.

(2) Landscape islands and planters shall have dimensions of not less than 48 square feet of area and no dimension of less than 6 feet, to ensure adequate soil, water, and space for healthy plant growth.

(3) All required parking lot landscape areas not otherwise planted with trees must contain a combination of shrubs and groundcover plants so that, within two years of planting, not less than 50 percent of that area is covered with living plants.

(4) The landscaping shall be protected from vehicular damage by some form of wheel guard or curb permanently fixed to the ground.

### **Yard Landscaping**

There are no front yard setbacks required in the Highway Commercial (HC) zone, the predominant zone along US 30 in the project area, and there is a zero front yard setback in the Houlton Business District and Olde Towne St. Helens District. The development code allows the maximum setback in Houlton and Olde Towne to be increased if the increased setback is used for pedestrian-oriented amenities, such as a sidewalk cafe, plaza, or courtyard (SHMC 17.32.170 and SHMC 17.32.175(4)). Similar to the enhanced landscaping and screening standards recommended for parking lots adjacent to US 30, setbacks with landscaping and pedestrian amenities in yards that front US 30 will serve to “green”, beautify, and improve pedestrian conditions in this part of the project area.

**Recommendation:** It is recommended that a minimum setback for yards fronting US 30 be established in the HC zone, and that landscaping and pedestrian-oriented amenities be required in this setback.

### **17.32.100 Highway commercial – HC.**

(4) Standards. In the HC zone the following standards shall apply:

(a) The maximum building height shall be 40 feet.

(b) The minimum yard (as defined by Chapter 17.16 SHMC) adjacent to US 30 shall be 10 feet. The setback shall be occupied by landscaping or pedestrian-oriented amenities (such as a walkway, seating, or a plaza, including such amenities as part of a transit stop) in addition to landscaping. Landscaping in the setback may be credited toward the minimum landscape requirement for the site established in subsection (f).

~~(bc)~~ Outdoor storage abutting or facing a lot in a residential zone shall comply with Chapter 17.72 SHMC.

~~(ed)~~ Parking shall comply with Chapter 17.80 SHMC.

~~(ee)~~ Maximum lot coverage including all impervious surfaces shall be 90 percent.

~~(ef)~~ Minimum landscaping shall be 10 percent of gross land area associated with the use.



## Street Trees

Existing code (SHMC 17.152.060(2)) requires at least five feet separation between the curb and sidewalk (i.e., planter strip) for arterials and collectors, with some exceptions. For example, the separation may be different if otherwise indicated in street designs in the TSP or in other adopted street plans.

Subsection (3) establishes that maintenance of sidewalks, planter strips, and curbs is the responsibility of the adjacent property owner.

Pursuant to SHMC Chapter 12.06 (Street Trees), the City or a development applicant is required to plant street trees where there is a lack of street trees, which is defined as the absence of trees for 100 lineal feet or more along one or both sides of the street. The City or applicant must provide street trees when involved in the following:

- Replacing or substantially repairing 30 lineal feet or more of sidewalk;
- Performing an asphalt overlay of the entire street width for a street section longer than 50 feet; or
- Making underground utility repairs that require any of the work described above.

In addition, street tree provisions in SHMC 17.72.030 require that all development fronting a public street, a private street, or a private driveway more than 100-feet long provide street trees and provide the trees according to a City-approved plan. Exemptions to street tree requirements may be granted under a specified set of conditions including that the tree could not be supported by the ground/soil conditions within the public right-of-way. In cases of exemption, the applicant may be required to provide a landscaping easement outside of the public right-of-way or pay a fee to the City commensurate with the cost of the trees that would have otherwise been provide.

Existing street tree provisions in Chapter 17.72 SHMC address the location, spacing, size, and species of the trees. Particular street tree species are suited to the corridor segments in the project area. Existing spacing standards (e.g., 20 feet maximum spacing for trees up to 25 feet tall and 30 feet maximum spacing for trees 25 to 40 feet tall) were reviewed and found to provide a density of trees in the project area that is consistent with the principles and recommended designs of the Corridor Master Plan.

**Recommendation:** It is recommended that landscaping requirements be modified to specify trees that are suited to the soils and conditions in the project area corridor segments. These trees should be spaced relatively closely in the Houlton and Olde Towne corridor segments, except when other spacing standards related to intersections and utilities apply.

### 17.72.030 Street trees.

[...]

(2) Certain trees can severely damage utilities, streets, and sidewalks or can cause personal injury.

Approval of any planting list shall be subject to review by the director. ~~(List~~ A list of suggested

appropriate tree species is located at the end of this chapter.} Additional or alternative tree species also may be recommended by the applicant or determined by the Director based on information provided in adopted city plans, policies, ordinances, studies or resolutions. Proposals by the applicant shall require approval by the Director.

#### **17.72.060 Exemptions**

(4) If one or more conditions described in subsection (2) of this section are shown to exist on the site, the director may require the following to fulfill the street tree requirements of this chapter:

(b) An applicant may, with the consent of the director, elect to compensate the city for costs commensurate with the number of street trees that would have otherwise been required for the site. The fee, established by resolution of the city council, will be generally based on the city's approved street tree list in Chapter 17.72 SHMC and market value of the tree(s).

#### **Pedestrian Amenity Requirements**

Existing street improvement standards require that street lights to be provided "in accordance with regulations adopted by the city's direction," and that, at a minimum, "there shall be a street light at each street intersection" (SHMC 17.152.030(24)). There is not further guidance – or references to guidance – about the location, type, or design of lighting. The code also currently does not include requirements for providing street furniture or other pedestrian amenities in the planter/landscape strip as part of development. Pedestrian amenities such as seating, waste receptacles, and pedestrian-scale street lighting are envisioned as part of the streetscape in Houlton and Olde Towne in the Corridor Master Plan.

**Recommendation:** It is recommended that provisions be added to landscaping standards that require development to either contribute toward or provide pedestrian amenities in the planter/landscape strip adjacent to the development site. The contribution toward or provision of amenities would be based on the general vision of amenities in the Corridor Master Plan. The fee would be established by resolution and will be collected to, ideally, enable the installation of amenities by the City as part of a single uniform project and process.

Specific code requirements for pedestrian amenities and/or calculation of a fee-in-lieu resolution would be prepared as part of a follow-up process to the Corridor Master Plan project to ensure that all aspects of these requirements are carefully considered and do not act as an impediment to development or redevelopment in the area. However, amendments to the City's lighting standards are recommended at this time to ensure provision of pedestrian scale lighting in the Columbia Boulevard/St. Helens Street corridor, consistent with the Corridor Master Plan.

Examples of and guidelines for pedestrian amenities including pedestrian-scale lighting and street furniture also should be provided in the City Engineering Standards Manual, which the development code can refer to.

## Chapter 17.152

### STREET AND UTILITY IMPROVEMENT STANDARDS

#### 17.152.030 Streets.

[...]

(24) Street Light Standards. Street lights shall be installed in accordance with regulations adopted by the city's direction. At the very least, there shall be a street light at each street intersection. In addition, lighting within the Columbia Boulevard/St. Helens Street Corridor Master Plan area shall be installed in accordance with the US30 and Columbia Boulevard/St. Helens Street Corridor Master Plan (Ordinance No. \_\_\_\_\_, Attachment \_\_\_\_\_) and shall be:

(a) Pedestrian-scale lighting between 12 to 18 feet in height;

(b) Uniform in design;

(c) Placed in the planter/landscape strip or curb extension (e.g., at street corners) when possible;  
and

(d) Spaced no more than 100 feet apart along the block face.

## Chapter 18.20

### TRAFFIC DEVICES AND STREET ILLUMINATION

#### 18.20.050 Street Illumination.

Street lighting shall be designed by Columbia River ~~People's~~ Public Utility District (CRPUD), except within the Columbia Boulevard/St. Helens Street Corridor Master Plan area; see SHMC 17.152.030(24). This shall be done at the applicant's initiative and expense. The lighting plan shall be included with the submittals to the city. Lamp type used should be uniform.

## Parklet Procedures, Standards, and Guidelines

Parklets are envisioned at several locations throughout the Houlton and Olde Towne corridor segments, both in on-street parking spaces and in curb extension areas. New procedures, standards, and guidelines are needed in order to allow and implement parklets in St. Helens, particularly in on-street parking spaces. Other communities have regulated these types of parklets in street/traffic and building code, but not development code. They have provided a permitting process and guidelines for design, construction, and maintenance. For example, Portland’s “Street Seats” program is implemented through a permitting process developed and administered by the Portland Bureau of Transportation (PBOT).

**Recommendation:** It is recommended that procedures and guidelines for establishing parklets in on-street parking spaces be provided in the City Engineering Standards Manual (SHMC Title 18). These procedures and guidelines are primarily based on those from the “Street Seats” program in Portland<sup>1</sup>, which also relies heavily on recommendations from the UCLA Luskin School of Public Affairs’ *Reclaiming the Right-of-Way: A Toolkit for Creating and Implementing Parklets* (September 2012)<sup>2</sup> and City of San Francisco’s *Parklet Manual* (February 2013)<sup>3</sup>. Related amendments should be made in code sections about uses and obstructions in the right-of-way in SHMC Title 8 (Health and Safety). A reference to new and amended sections of Title 8 and Title 18 should be included in the street improvement standards section of SHMC Title 17 (Community Development Code).

### Title 18

### ENGINEERING STANDARDS MANUAL

#### Chapter 18.04

#### ABBREVIATIONS AND DEFINITIONS

##### 18.04.010 Abbreviations and definitions.

“Parking lot” means paved surfaces on private property intended for the movement and storage of six or more vehicles.

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<sup>1</sup> City of Portland “Street Seats” web page, <http://www.portlandoregon.gov/transportation/59158>

<sup>2</sup> UCLA Luskin School of Public Affairs’ *Reclaiming the Right-of-Way: A Toolkit for Creating and Implementing Parklets* (September 2012), <http://innovation.luskin.ucla.edu/sites/default/files/parklettoolkit.pdf>

<sup>3</sup> City of San Francisco’s *Parklet Manual* (February 2013), [http://pavementtoparks.sfplanning.org/docs/SF\\_P2P\\_Parklet\\_Manual\\_1.0\\_FULL.pdf](http://pavementtoparks.sfplanning.org/docs/SF_P2P_Parklet_Manual_1.0_FULL.pdf)

“Temporary Parklet” means the use of a vehicle space (e.g., on-street parking space) or curb extension for public use, social interaction, and passive or active recreation. Temporary parklets in an on-street parking space are typically comprised of a platform, barriers to traffic, and seating, yet creativity in incorporating landscaping, art, and other elements is encouraged, given safety requirements are met. The duration of temporary parklets and the design varies accordingly. See SHMC 18.12.190.

“PRV” means pressure-reducing valve.

## **Chapter 18.12**

### **STREETS**

#### **18.12.170 Utilities...**

#### **18.12.180 Planter/landscape strip – Pedestrian amenities.**

#### **18.12.190 Temporary Parklets – In on-street parking spaces.**

The following are procedures for establishing a temporary parklet in an on-street parking space in the city. Applications are received and processed by City Administration. The City Administrator, or his or her designee, issues a temporary parklet application permit upon review and approval by the City Public Works, Engineering, Planning and Building departments. The City Administrator, or his or her designee, may revoke an approved temporary parklet permit if it is being conducted contrary to this section or any condition of the temporary parklet permit approval, or if the temporary parklet and associated use or activities is otherwise found to be contrary to public health, safety and welfare. The parklet application steps and regulations are as follows:

- (1) The maximum duration for a temporary parklet permit is 6 months; permits can be renewed subject to City approval. The maximum renewal duration is 6 months per renewal. If a parklet permit becomes void due to revocation, expiration or otherwise, the related improvement shall be immediately removed and the location restored to its original condition.

(2) The applicant selects a location according to location criteria.

- Temporary parklets shall only be allowed along non-residential uses. Temporary parklets along and/or associated with residential uses is prohibited.
- Temporary parklets are not permitted on streets where parking lanes become tow-away zones during morning or afternoon hours, in front of fire hydrants, in active bus zones, across driveways, or over manholes or public utility valves or covers.
- The proposed site should be located at least one standard-size parking space in from a corner. Otherwise, a protected bollard, curb extension, or other similar feature as approved by the City must be present if located at the corner.
- The proposed site should be located on a street with a speed limit of 25 MPH or less. Locations on streets with higher speeds will be considered on a case-by-case basis.
- The location of the proposed site shall be generally consistent with potential locations and guidance provided in the St. Helens US 30 and Columbia Boulevard/St. Helens Street Corridor Master Plan.
- The street grade shall be less than 5 percent.

(3) The applicant develops a preliminary conceptual design, using the general design guidelines, design criteria, and design elements below.

General Design Guidelines:

- Design for easy removal. Because the temporary parklet sits on top of critical infrastructure and utilities, it needs to be designed for easy removal in case of emergency or other needed access to the infrastructure. Some applicants elect to remove the temporary parklet during colder months.
- No advertising. Logos, advertising, or other branding is prohibited.
- Be creative. There are possibilities beyond the standard tables and chairs on a platform.

Design Criteria:

- Design quality. What is the level of quality and creativity of the design?
- Public seating. Does the proposal provide open public use of the space and is not just an extension of a business?
- Streetscape enhancement. How will the proposal enhance the aesthetic quality of the streetscape?
- Quality of materials. What is the quality and durability of proposed materials and furniture?
- Appropriateness of location. Is the proposed parklet likely to be well-used and active?
- Community support. Is there demonstrated neighborhood support for proposal at the proposed location (including neighboring businesses and properties)?

Design Elements:

- Platform should be on the same plane as and flush with the sidewalk height. At least 12 feet of the platform must be flush with the adjacent sidewalk for wheelchair access.
- Platform must be designed to accommodate the crown and cross slope of the street surface. Close attention must be paid to existing curb condition and height to ensure platform is flush with curb.
- The use of high quality, durable materials capable of withstanding the elements of any season and extended use (with proper permit renewals) is required.
- The design should not include any bolts/anchors or other elements that require disturbing the street surface or sidewalk. No temporary parklet component may weigh more than 200 pounds per square foot.



- The platform may not extend beyond six feet from the curb line where there is parallel parking to allow some separation from vehicle travel lanes. Angled or perpendicular parking locations and associated dimensions may be approved on a case-by-case basis, but still must allow some separation from vehicle travel lanes.
- The maximum length of the platform must not be longer than the frontage of the applicant's/permit holder's establishment. A platform may be located along the frontage of multiple properties/businesses provided all applicable parties are applicants/permit holders.
- Design must maintain a minimum six-foot clear pedestrian through zone in the sidewalk corridor.
- Platform must be designed to allow for curblane stormwater drainage.
- Platform design must include a physical barrier along the street while maintaining clear visual sightlines to the street. Vertical elements, such as planters and umbrellas, should be included so that the facility is visible to vehicles.
- A setback on either end of the platform, adjacent to parallel parking, will need to be reserved for wheel stops with embedded reflective candlesticks or other similar features that reflect light and protect the platform from parking maneuvers. These may be installed by the public works department as deemed necessary after facility construction is complete. Additional features may be added to the final design by City staff for safety.
- Temporary parklet furniture shall be subject to City approval. Furniture must be able to accommodate those with disabilities, wheelchairs, or mobility devices.
- Proposed covers or shelters may be subject to additional structural engineering requirements.
- Loose surface materials, such as sand or loose stone, are not permitted in the temporary parklet.

- Public temporary parklets must be clearly posted with signs to differentiate them from private business temporary parklets and restaurant/café seating. Such signage shall not conflict with the City sign regulations, Chapter 17.88 SHMC.
- (4) The applicant begins gathering and documenting community support (meetings, letters, petitions, site posting, etc.) to be submitted as part of the application package.
- (5) The applicant prepares a detailed design document and plan package. It is recommended to contract or consult with professional design assistance.
- Parklet Location and Context Plan
  - Detailed Site Plan
  - Elevations
  - Sections (Profile Drawings)
  - Renderings and Perspectives (optional)
- (6) An application package consists of the following:
- A completed right-of-way encroachment permit application form
  - Design document and plan package
  - Community support documentation. The applicant shall provide written support of the proposed temporary parklet from adjacent businesses and/or property owners.

The applicant completes the application package and submits for review by the City.

- (7) Business and property owners within the immediate vicinity of the proposed temporary parklet will be notified and will have the opportunity to submit comments within 14 days to be included in the evaluation of an application.
- (8) If the application is approved, the applicant will finalize and submit construction drawings.

- (9) The City will schedule a pre-construction site visit.
- (10) The applicant submits payment and provides proof of liability insurance, and the public works department issues a right-of-way encroachment permit, which includes conditions for maintenance.
- Fees: The applicable fees, as set by resolution of the City Council, may include but not be limited to addressing the following components:
    - Application/encroachment permit fee
    - Café seating permit fee, if applicable
    - Additional costs (e.g., changing/removing loading zone sign), if applicable
  - Insurance: Evidence of at least \$1 million in liability insurance naming the City as additional insured must be provided. Most businesses already carry this insurance.
  - Encroachment permit and maintenance terms: The permit requires that the facility is swept daily and debris is removed from under and around the platform a minimum of once a week.
- (11) The applicant must install the temporary parklet within 90 days of permit issuance. Failure to do so voids any temporary parklet permit approval.
- (12) The applicant must notify the City within 48 hours of completing construction to schedule a post-construction site inspection.
- (13) Post-construction, the City will monitor the temporary parklet for compliance with the permit, design guidelines, and maintenance agreement as applicable.

**Title 8**  
**HEALTH AND SAFETY**

**Chapter 8.12**  
**NUISANCES**

**8.12.010 Definitions.**

(1) As used in this chapter, except where the context indicates otherwise, the following shall mean:

[...]

(d) “Nuisance” means any violation of any provision of this chapter.

(e) “Temporary Parklet” means the use of a vehicle space (e.g., on-street parking space) or curb extension for public use, social interaction, and passive or active recreation. Temporary parklets in an on-street parking space are typically comprised of a platform, barriers to traffic, and seating, yet creativity in incorporating landscaping, art, and other elements is encouraged, given safety requirements are met. The duration of temporary parklets and the design varies accordingly. See SHMC 18.12.190.

(ef) “Person” means every natural person, firm, partnership, association or corporation.

(ff) “Premises” means real property located in the city, including submerged lands, regardless of the ownership form, together with any and all buildings and structures located thereon, including floating structures, as well as more transient personal property where nuisance material or conditions may accumulate or occur such as vehicles, barges, or open storage vessels located on the property.

(gh) “Public place” means any building, place or accommodations, whether publicly or privately owned, open and available to the public.

[...]

#### **8.12.080 Obstructions in passageways.**

(1) Purpose. The purpose of this section is to identify objects prohibited from being placed in the sidewalks, streets, and other public rights-of-way, and to ensure that any objects not prohibited that are placed on sidewalks, streets, and other public rights-of-way are appropriately located, are compatible with surrounding allowed uses, and are conducive to the public health, safety, and welfare. Another purpose of this section is for enhancement and beautification of the commercial areas.

(2) Definitions and General Notes.

(a) “Sidewalk furniture” includes items placed in the public sidewalk by businesses for incidental use by their customers while patronizing said business, and includes but is not limited to:

- (i) Chairs.
- (ii) Flower boxes.
- (iii) Tables.
- (iv) Umbrellas.
- (v) Lights.
- (vi) Heaters.
- (vii) Street clocks.
- (viii) Trash cans and ashtrays.
- (ix) Shelving for merchandise.
- (x) Devices to hang merchandise.

- (xi) Any other fixture or furnishing deemed to be similar by the council-designated person.
  - (b) Sidewalk furniture does not include signs which are regulated by another ordinance.
  - (c) Objects and furniture used by street vendors are covered by another ordinance.
  - (d) Public utilities, authorized public agencies, and other organizations recognized by the city council are not restricted by this section.
  - (e) No advertising on sidewalk furniture, benches or planters.
  - (f) Sidewalk furniture shall not interfere with parking of vehicles in street rights-of-way unless permitted as part of a “temporary parklet” through permitting procedures referred to subsection (6). Interference shall be determined by the city engineer and city manager/administrator and shall generally mean that vehicles that have painted lines and/or wheel stops shall be allowed to use them.
- (3) Planter Boxes. Planter boxes may be allowed on sidewalks and passageways lying within street rights-of-way in accordance with the following:
- (a) “Planter box” is defined as a container with a display of landscape plant material, excluding city-approved and/or installed street trees.
  - (b) A planter box shall be clean and the plants well-maintained.
  - (c) It is the responsibility of the permittee to position the planter box to provide an unobstructed passageway on the sidewalk in compliance with Americans with Disabilities Act Administrative Guidelines (ADAAG).
  - (d) A planter box shall be located ~~at the curb in the planter/landscape strip, in a curb extension,~~ or against the building within the front yard setback as established by zone in Chapter 17.32 SHMC.
  - (e) A planter box shall be positioned to not obstruct any entrances or exits to buildings or to legally parked vehicles.

(f) A planter box shall not be placed on a corner, except on a corner with a curb extension and located in a manner consistent with the City's visual clearance area requirements in Chapter 17.76 SHMC or SHMC 8.12.212.

(g) There shall be no fee or permit required for a planter box.

(4) Merchandise. Merchandise, owned by the merchant abutting the area where displayed, may be displayed on sidewalks and passageways lying within street rights-of-way in accordance with the following:

(a) Shelves used to display merchandise of any character, including but not limited to groceries, vegetables, and products, must be a stable status, must not block normal flow of users and must at least comply with American with Disabilities Act Administrative Guidelines (ADAAG).

(b) Shelves must be removed no later than sunset each evening and cannot be set up again until at least sunrise the next morning.

(i) Merchandise may be displayed on sidewalks in front of/abutting a properly approved and licensed commercial enterprise or business in commercial zones as long as they meet the following standards:

(A) Location shall not interfere with pedestrian rights to travel on the city sidewalk; and

(B) Merchandise shall be secured against being blown away; and

(C) Merchandise shall not be more than six feet from the building frontage, except when permitted as part of a "temporary parklet" in a curb extension or in an on-street parking space pursuant to permit procedures referred to in subsection (6); and

(D) Merchandise shall be removed from the sidewalk during hours when business is closed.

(ii) There shall be no fee required for display of merchandise on the sidewalk.

(iii) The provisions of this section do not apply to the delivery of merchandise or equipment. No person may permit such delivered merchandise or equipment to remain on a street or sidewalk beyond a reasonable time.

(5) Tables, Chairs, and Equipment Associated with the Serving of Food and Beverages. Tables, chairs, and equipment associated with the serving of food and beverages are permitted on sidewalks and passageways and in on-street parking spaces lying within street rights-of-way in accordance with the following requirements and permitting procedures referred to in subsection (6):

(a) The tables, chairs, and equipment are for the purpose of serving food and beverages and for the comfort of patrons to a particular business.

(b) The business is required to keep the area occupied by the tables, chairs, and equipment clean and well-maintained.

(c) All tables, chairs, and other equipment associated with the serving of food and beverages must be stored next to the building daily at the close of the business for which they are associated and at least five feet of unobstructed sidewalk must be maintained from sunset to sunrise, or if the area where the furniture is located is well-lit and secure and does not present a danger to the public or block required accessways and pathways, then it can remain in place at all times (not permanently attached to the public sidewalks but can be secured against theft in a temporary manner, such as a lock and/or chain).

(d) It is the responsibility of the permittee to position the table and chairs to provide an unobstructed passageway at all times on the sidewalk in compliance with Americans with Disabilities Act Administrative Guidelines (ADAAG).

(e) Umbrellas, heaters, and such tall equipment shall not interfere with pedestrians below a height of seven feet on a sidewalk.

(f) The smoking rules still apply as to proximity to the entrance of a business.



(g) Short fences, not over three feet in height, may be used to delineate seating areas for restaurants and such users of tables and chairs in the rights-of-way where the furniture is not required to be moved inside each sunset.

(h) These rules shall not override more restrictive rules such as building codes and federal or state laws.

(6) Permit Requirements. Use of sidewalks and passageways lying within street rights-of-way described in this section shall be in accordance with the following:

(a) Before use of a sidewalk area, ~~a~~ Use of Public Passageway Permit application with the required fee, as set by resolution of the city council, must be submitted to the council-designated person. The permit fee shall apply to all furniture for a single business at one location and shall not be charged on each individual component. The permit shall be valid for one year and shall expire on the last day of a year. A permit is not required for a planter box or approved bench.

(b) The permittee is liable in damages to a person injured upon a sidewalk because of the permittee's fault or negligence in the placement or condition of obstructions placed upon such sidewalk by the permittee.

(c) The permittee is responsible for compliance with Americans with Disabilities Act Administrative Guidelines (ADAAG) concerning the placement or condition of obstructions placed upon such sidewalk by the permittee.

(d) Additional guidance for designing and permitting temporary parklets in on-street parking spaces is provided in SHMC 18.12.190. This is separate from the Use of Public Passageway Permit noted previously in this subsection. Generally, the Use of Public Passageway Permit applies to use of sidewalks and passageways and the Temporary Parklet Permit applies to use of on-street parking spaces.

## Title 17

### COMMUNITY DEVELOPMENT CODE

#### 17.16.010 General and land use definitions.

“Parking space” means a space for the parking of a motor vehicle within a public or private parking area.

“Temporary parklet” means the use of a vehicle space (e.g., on-street parking space) or curb extension for public use, social interaction, and passive or active recreation. Temporary parklets in an on-street parking space are typically comprised of a platform, barriers to traffic, and seating, yet creativity in incorporating landscaping, art, and other elements is encouraged, given safety requirements are met. The duration of temporary parklets and the design varies accordingly. See SHMC 18.12.190.

“Parkway” means that portion of street right-of-way lying between the curb line of the improved roadway and the adjacent private property line.

## Chapter 17.152

### STREET AND UTILITY IMPROVEMENT STANDARDS

#### 17.152.200 Engineer’s certification required...

#### 17.152.210 Temporary Parklets.

Temporary parklets may be permitted in the right-of-way in on-street parking spaces pursuant to procedures in SHMC 18.12.190 and SHMC 8.12.080.

### Housekeeping Amendments

City staff has requested two sets of minor “housekeeping” code amendments to be included with the other code amendments being proposed for adoption in conjunction with the Corridor Master Plan. The first set of amendments acknowledges provisions in the code that may allow for flexibility in crediting on-street parking toward parking requirements. The second set of amendments, which removes drive-to-drive spacing standards on local streets, simplifies code by removing provision that are not needed because other provisions in the section already limit the number and width of access drives per use on local streets.

#### Chapter 17.80

#### OFF-STREET PARKING AND LOADING

##### 17.80.020 General provisions.

[...]

(22) On-Street parking. Parking spaces in a public street or alley shall not be eligible as fulfilling any part of the parking requirement except as otherwise provided in this code.

#### Chapter 17.84

#### ACCESS, EGRESS, AND CIRCULATION

Table 17.84.040-2: Access Spacing Standards on City Streets

Functional Classification	Public Street ( <u>street-to-street</u> ) (feet)	Private Access Drive ( <u>street-to-drive or drive-to-drive</u> ) (feet)
Local Street	150	50 <sup>1</sup>
Collector	300	100
Minor Arterial	350 or block length	200 or mid-block

Functional Classification	Public Street ( <u>street-to-street</u> )  (feet)	Private Access Drive ( <u>street-to-drive or drive-to-drive</u> )  (feet)
Major Arterial <sup>2</sup>	350 or block length	350 or block length
<sup>1</sup> <del>For single dwelling units, attached, on local streets only, 25 feet is allowed.</del> This applies to street-to-drive spacing only. <u>There is no minimum spacing standard for access points (drive-to-drive) on local streets.</u>		
<sup>2</sup> Access standards identified in the Oregon Highway Plan supersede this table on all state highways.		

# APPENDIX E. ACCESS MANAGEMENT ELEMENT





# KITTELSON & ASSOCIATES, INC.

TRANSPORTATION ENGINEERING / PLANNING

610 SW Alder Street, Suite 700, Portland, OR 97205 P 503.228.5230 F 503.273.8169

## MEMORANDUM

Date: August 27, 2014

Project #: 13172.7

To: Jacob Graichen, City of St Helens and Naomi Zwerdling, Oregon Department of Transportation

From: Matthew Bell and Chris Brehmer, P.E.

Project: US 30 & Columbia Boulevard/St Helens Street Corridor Master Plan

Subject: Draft Access Management Element

This memorandum summarizes City of St. Helens (City) and Oregon Department of Transportation (ODOT) access management policies and standards related to the US 30 & Columbia Boulevard/St Helens Street Corridor Master Plan. The standards presented in this memorandum were obtained from the City's 2011 Transportation System Plan (TSP), prepared by Kittelson & Associates, Inc. (KAI) in conjunction with the City, Columbia County, and ODOT as well as other adopted City Ordinances.

The access spacing standards adopted by ODOT and the City were considered during development of the project alternatives shown in the *Corridor Design Options and Evaluation Report*. In particular, conceptual median treatments along US 30 were developed in a manner that preserves existing access locations while accommodating future projected queuing needs along US 30.

### ODOT Access Management Standards

Oregon Administrative Rule 734, Division 51 establishes procedures, standards, and approval criteria used by ODOT to govern highway approach permitting and access management consistent with Oregon Revised Statutes (ORS), Oregon Administrative Rules (OAR), statewide planning goals, acknowledged comprehensive plans, and the Oregon Highway Plan (OHP). The OHP serves as the policy basis for implementing Division 51 and guides the administration of access management rules, including mitigation and public investment, when required, to ensure highway safety and operations pursuant to this division.

Access management standards for approaches to state highways are based on the classification of the highway and highway designation, type of area, and posted speed. The OHP classifies US 30 as a Statewide Highway and a designated Freight Route. Future developments along US 30 (new development, redevelopment, zone changes, and/or comprehensive plan amendments) will be required to meet the OHP access management policies and standards. Table 1 summarizes ODOT's current access management standards for US 30 per the OHP. It is important to note that the information presented in Table 1 reflects recent updates in ODOT's access management policies and

standards that occurred following the adoption of the TSP. These updates allow for closer spacing along US 30 in areas where posted speeds at less than 50 mph.

**Table 1: US 30 Access Spacing Standards**

Posted Speed (MPH)	Spacing Standards (Feet) <sup>1</sup>
≤ 25	350
30 and 35	500
40 and 45	800
50	1,100
≥ 55	1,320
<sup>1</sup> These access management spacing standards do not apply to approaches in existence prior to April 1, 2000 except as provided in OAR 734-051-5120(9).	

## City Roadway Access Standards

Table 2 summarizes the access spacing standards for the City's roadway network as they relate to new development and redevelopment. It should be noted that the access spacing standards for local streets have been modified from those presented in the City's Transportation System Plan (City Code Table 17.84.040-2), primarily to provide more flexibility for access along local streets. Minimum and maximum standard widths for private driveways are summarized in Table 3.

**Table 2: City Street Access Spacing Standards**

Functional Classification	Public Street (feet)	Private Access Drive (feet)
Local Street	150	50 <sup>1</sup>
Collector	300	100
Minor Arterial	350 or block length	200 or mid-block
Major Arterial	350 or block length	350 or block length <sup>2</sup>
<sup>1</sup> This standard applies to street-to-drive spacing only. There is no minimum spacing standard for access points (drive-to-drive) on local streets.		
<sup>2</sup> Access standards identified in the <i>Oregon Highway Plan</i> supersede this table on all state highways.		

**Table 3: Private Driveway Width Standards**

Land Use	Minimum (Feet)	Maximum (Feet)
Single Family Residential	12	24
Multi-Family Residential	24	30
Commercial	30	40
Industrial	30	40

## Application of Access Spacing Standards to Project Alternatives

The segment of US 30 located within the project area currently has multiple access points that do not meet ODOT's access spacing standards. The *Corridor Design Options and Evaluation Report* preserves



existing access locations to US 30 and does not identify the closure, consolidation, or relocation of any existing private access points.

The potential raised median islands identified along US 30 were conceptually developed and located to ensure continued access to the current public and private access points located along US30 as well as to accommodate projected future queues at key intersections. Further refinement of the specific median design and extent will need to be prepared if and when a detailed median design effort is pursued.

Similar to US 30, the segments of Columbia Boulevard and St Helens Street located within the project area currently have multiple access points that do not meet the City's access spacing standards. As with US 30, the draft corridor plan does not call for the closure, consolidation, or relocation of any existing access points. The *Corridor Design Options and Evaluation Report* was developed in a manner that preserves existing access rights along Columbia Boulevard and St Helens Street. The new sidewalks, curb extensions, street patios, and other amenities were developed to ensure continued access to the properties located along Columbia Boulevard and St Helens Streets.

As private properties redevelop in the future, ODOT and the City development review processes will require review of access spacing with respect to access spacing requirements. The development review process will determine if the potential changes in land use require the consolidation or reconfiguration of existing accesses. ODOT and the City retain the legal authority to close or restrict driveways on an as-needed basis if safety or other conditions warrant. In the interim, many of the existing driveways that do not conform with the access spacing standards may continue to operate acceptably due to: 1) relatively low traffic volumes and travel speeds in many areas, 2) separation of left and right-turn movements at many of city's the major intersections, and 3) the presence of a two-way left-turn lane along US 30 and Columbia Boulevard east of St Helens Street.

## NEXT STEPS

The City's access spacing standards should be amended (specifically Table 17.84.040-2) to reflect the revised local street access spacing standards identified by City staff. These changes can be incorporated into the text amendments proposed in conjunction with the overall project.

Future planning and detailed design efforts associated with implementation of the *Corridor Design Options and Evaluation Report* should seek to facilitate access management goals and develop refined plans that support City and ODOT access goals. Potential future modifications to existing access points should move in the direction of meeting, or ideally satisfying, adopted City and ODOT access management standards.



# APPENDIX F. STREET TREES MEMORANDUM



## MEMORANDUM

DATE: October 29, 2014  
TO: Jacob Graichen, Matt Hastie  
FROM: Robin Craig  
PROJECT: US 30 St Helens Corridor Master Plan  
RE: Street Tree Appendix

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This memo responds to questions in regards to the Street Tree component of the St Helens US 30 Corridor Master Plan. The main areas of concern include the following topics:

- I. THE IMPORTANCE OF STREET TREES
- II. CONTEXT OF TREE GROWTH
- III. STREET TREE MAINTENANCE
- IV. STREET TREE DESIGN ALTERNATES

### I. THE IMPORTANCE OF STREET TREES

Urban trees and landscapes are assets that require the expenditure of resources – labor, energy, and even water - on their proper management. The question that might be asked: *"What is the value of the benefits that are provided by trees? Or perhaps what does society get in return?"* The U.S Forest Service facts, figures and new traffic safety studies detail many urban street tree benefits. Once seen as highly problematic for many reasons, street trees are proving to be a great value to people living, working, shopping, socializing, walking and motoring in, around and through urban places. For a planting cost of \$250-600 or even \$1500.00 (includes first 3 years of maintenance) a single street tree returns over \$90,000 of direct benefits (not including aesthetic, social and natural) in the lifetime of the tree. Street trees (generally planted from 4 feet to 8 feet from curbs) provide many benefits to those streets they occupy. These trees provide so many benefits that they should always be considered as an urban area default street making feature. With new attentions being paid to global warming, the need for energy independence, and more urban living more is becoming known about the many negative environmental impacts of treeless urban streets. We are well on the way to recognizing the need for urban street trees to be the default mandatory design requirement for livable communities, rather than a luxury item.



## **A. ENVIRONMENTAL VALUE**

- Climate Control

People value both the aesthetic and physical quality of our environment. Trees contribute to this quality by modifying *local climates, reducing noise and air pollution, and by protecting soil and water.*

Climate control is one important service that trees provide naturally in the landscape, but the urban landscape is far from natural. Streets, parking lots and buildings have changed the climate of urban areas by absorbing solar radiation. Water that once percolated into the soil and later evapotranspired from soil and plants now drains away or dries on the hard surfaces. These changes have increased the temperatures of cities. Compared to the surrounding rural areas, the urban "heat islands" are five to nine degrees Fahrenheit warmer (three to five degrees Celsius). Trees help moderate the "heat island" effect. They also greatly increase human comfort: indoors or outdoors. On hot days, trees pump hundreds of gallons of water through their foliage. This water evaporates, keeping the tree and its immediate surroundings cool.

While groves of trees reduce local air temperatures, individual trees increase human comfort primarily by controlling solar radiation, not air temperature. Trees and other vegetation shield people from direct sunlight. Trees also shade soil, pavement, buildings, and other surfaces that would absorb solar energy and then radiate that heat back to the surroundings. Without the protection of trees, city dwellers are literally surrounded by radiant heat. At night, radiation moves heat in the opposite direction: from the relatively warm earth to the relatively cool sky. Again, tree cover steps in by blocking radiant heat loss from homes and people. Icy mornings provide evidence of this process, lawns otherwise white with frost often have green circles under the trees.

Indoor air temperatures are also affected by trees growing around buildings. During hot weather, trees reduce cooling costs by buffering high air temperatures and blocking unwanted solar energy. But during winter months, solar gain is desirable, because it cuts heating costs. To get the best balance, on the south and west sides of buildings plant deciduous trees that have thin, open branches to allow winter sun penetrate into the building. In addition, the schedule of leaf growth and leaf drop should coincide with the need for heating and cooling. Few, if any, species will meet these requirements perfectly, but it's wise to select species that give the best possible match.

- Air Pollution

Air pollution control is another way that trees improve the urban environment. The reductions in air pollution are modest, and air pollution poses some risk to the trees themselves.

Trees are fairly effective at removing both solid and gaseous particulates from the air. In one study, stands of trees reduced particulates by 9 to 13 percent, and the amount of dust reaching the ground was 27 to 42 percent less under a stand of trees than in an open area. Among gaseous pollutants, ozone, chlorine, fluorine, sulphur dioxide and PAN (peroxyacetylnitrate, a photochemical component of smog) are all absorbed by trees. In most cases, these gases also damage the trees. Unfortunately, trees remove little, if any, carbon monoxide which amounts to roughly one-half the total weight of air pollutants in this country.

Increasingly, carbon dioxide is being recognized as a "greenhouse gas" pollutant with potentially devastating consequences, such as global warming, dramatic changes in rainfall patterns, and rising sea levels that threaten flooding in coastal cities since photosynthesis in green plants consumes carbon dioxide, plants could help to counteract the increase of this gas in the atmosphere. Rosenfeld, Martin, and Rainer report that planting urban trees could reduce heating and cooling demands enough to significantly cut fossil fuel consumption. They suggest that urban trees could be about 10 times as effective as forest trees for lowering carbon dioxide in cities.

Noise pollution from highways and other sources can be reduced with trees. Used alone, trees must be planted in belts 35 to 100 feet wide to create noticeable reductions. However, earth berms can cut traffic noise by up to half, if they are tall enough to hide the source of noise and are planted with trees, shrubs, and grasses. Where this kind of adjustment to the topography is not possible, a row of trees and a solid wall reaching up to the base of the crowns will provide a similar reduction.

- Soil and Water Quality

Soil and water quality are protected by trees. In urban settings, large areas are covered by buildings, pavement, and other impervious surfaces. Instead of percolating into the soil, rainwater and snowmelt are concentrated and accelerated, increasing soil erosion and silt accumulation in streams. Trees and other vegetation protect the soil from erosion. Along watercourses, roots and fallen leaves help hold the soil together and shield it against the cutting forces of surface water. Vegetation also absorbs some of the force of falling rain, so soil particles are not dislodged. And, the leaf litter that accumulates under trees creates an environment for earthworms and other organisms that help maintain soil porosity.

In studies at Pennsylvania State University, tracts of trees in municipal watersheds were used to purify partly treated sewage and protect surface waters. By adjusting sewage water application rates researchers prevented the ground water from becoming contaminated with nitrates. Ninety percent of the water applied went into recharging the underlying aquifer. Heavy metals, a worrisome component of municipal sewage, did not become a problem.

## **B. SOCIAL VALUE**

Scientific studies confirm our intuition that trees in cities provide social and psychological benefits. Humans derive substantial pleasure from trees, whether it is inspiration from their beauty, a spiritual connection, or a sense of meaning (Dwyer et al. 1992; Lewis 1996). Following natural disasters people often report a sense of loss if the urban forest in their community has been damaged. Views of trees and nature from homes and offices provide restorative experiences that ease mental fatigue and help people to concentrate. Desk-workers with a view of nature report lower rates of sickness and greater satisfaction with their jobs compared to those having no visual connection to nature. Trees provide important settings for recreation and relaxation in and near cities. The act of planting trees can have social value, for community bonds between people and local groups often result.

The presence of trees in cities provides public health benefits and improves well-being of those who live, work and recreate in cities. Physical and emotional stress has both short term and long-term effects. Prolonged stress can compromise the human immune system. A series of studies on human stress caused by general urban conditions and city driving show that views of nature reduce stress response of both body and mind. City nature also appears to have an "immunization effect," in that people show less stress response if they've had a recent view of trees and vegetation. Hospitalized patients with views of nature and time spent outdoors need less medication, sleep better, and have a better outlook than patients without connections to nature. Trees reduce exposure to ultraviolet light, thereby lowering the risk of harmful effects from skin cancer and cataracts.

## **C. ECONOMIC VALUE**

The following study was provided by the USDA Forest Service and the University of Washington: College of the Environment in order to review the relationship between street trees and urban environment and the value street trees offered on the market economy.

Central business districts are the retail and civic centers of many urban neighborhoods and smaller cities. Main Street merchants now face competitive challenges from big-box retailers, regional malls, and online purchasing. As business associations implement district improvements and strategies to attract and retain shoppers, some retailers overlook the importance of a quality streetscape on visitors' encounters with a business district. The direct costs of an urban forest improvement program can be readily tallied; assessing the consumer response benefits is more difficult. Negative perceptions about trees based on costs can have broad implications, because business constituents often are politically influential and may voice opinions that impact public policy and decision making throughout a city. City planners can now point to extensive studies that document the environmental services that urban forests provide. However, business people do not consider such evidence to be salient to the bottom line of stores and shops. What can justify investment in tree planting and



management in the retail streetscape? Merchants must be able to see some potential of return on green investment. A series of studies has explored the psychosocial response of shoppers to outdoor consumer environments, revealing consistently positive associations between streetscapes having trees and consumer preferences, perceptions, and behavior. The survey research has targeted the Main Street business districts of large, midsize, and small cities. The research program helps to better understand and reconcile the tensions that often are associated with trees in consumer environments.

Economists and other social scientists have devised reliable nonmarket valuation methods to represent natural assets in cities and towns. There are several valuation methods that are used to convert intangible benefits to dollar sums.<sup>1,2</sup> on order to assist in quantifying the market value of street trees in urban environments. Overall findings have shown:

- A study found 7% higher rental rates for commercial offices having high quality landscapes.<sup>3</sup>
- Shoppers claim that they will spend 9% to 12% more for goods and services in central business districts having high quality tree canopy.<sup>4</sup>
- Shoppers indicate that they will travel greater distance and a longer time to visit a district having high quality trees, and spend more time there once they arrive.<sup>5</sup>

- Visual Quality

Visual quality describes settings that people find pleasing and desirable. Through a series of surveys, people have been asked to rate how much they like each scene in of a collection of images. Ratings were summarized and compared. Across all studies, consumer ratings increased steadily in proportion to the presence of trees. Visual preference scores were lower for scenes without trees and much higher for places with trees. Business districts with tidy sidewalks and well-designed buildings, but no trees were rated at the low end of the scores. Images containing well-tended, large trees received the highest ratings, particularly when large trees formed an orderly canopy over the sidewalk and street

- Place Perceptions

People form mental impressions of and associations with places, new or familiar. In one set of studies, people were asked to rate their level of agreement with a series of statements about a variety of retail places. Again, trees were associated with higher ratings of amenity and visual quality across the studies. Moving beyond the obvious visual content, the respondents made inferences about the settings. Positive scores for maintenance were given to districts with trees, despite cues indicating the same level of building care and street tidiness in areas without trees. Judgments of products and merchants

were more positive in forested places, as were inferences regarding product value, product quality, and merchant responsiveness.

A consumer's expectations regarding shopping experiences begin at the curb, long before entering a store. Features such as storefronts and sidewalk character can create favorable or negative impressions that subconsciously affect shopper behaviors. It appears that a quality urban forest in a district can affect such impressions.

- Patronage Behavior

Shopper patronage measures are commonly used in retail and marketing studies. Study participants projected their probable patronage behavior while viewing street and sidewalk scenarios. More positive responses were found for places having trees, compared to no-tree settings, across cities of different sizes. Potential shoppers claim they are willing to travel more often, for longer amounts of time, and over greater distances to shop in a retail district containing trees, and once arriving will spend more time there.

Why is such patronage behavior important? Shoppers traveling farther to visit a business district having trees could translate to an expanded trade area radius, adding thousands of people within urban population centers. Once there, shoppers report that they would stay longer, which could mean greater sales revenue.<sup>6</sup>

Shoppers do not purchase goods and services just to meet needs; many shoppers pursue a positive shopping experience in addition to making purchases. The streetscape is an important part of creating a welcoming, interesting shopping place. Trees can be part of a street improvements program that provides business benefits. Earlier research found that pedestrianized retail areas show an increase in foot traffic by 20% to 40%, and an increase in retail rents by 22%. An additional study found that promoting pedestrian activity will have small but significant positive effects on workers and businesses, and a small but positive impact on retail activity and rents.<sup>7</sup>

- Valuation and Community Decisions

Land ownership and improvements can be expensive in urban areas. If the values of intangibles are not represented, hard costs become powerful disincentives to invest in natural capital. Without some indicator of economic value, there may be little financial incentive to consider urban nature in land-use decisions, market transactions, and capital investment budgets.

In the public sector, local leaders often make decisions about natural resources based on cost-benefit analysis. Any public investment or policy proposal that incurs public costs or affects private development brings forward advocates with evidence on how much market value will be gained or lost. Those who favor conserving or creating "nonproductive" nature are often at a disadvantage, as they cannot

readily express the monetary gains or losses arising from environmental changes.

The challenge for monetary valuation is that city trees and open space are public goods.<sup>8,9</sup> Consumption of a public good by one individual does not reduce the amount of the good available for consumption by others. Another key property of public goods is that they are nonexcludable; any number of people who walk under a splendid street tree can enjoy its shade and beauty immediately or over the course of several decades, irrespective of who pays for the planting and maintenance of the tree. It is nearly impossible to exclude any nonpaying individuals from consuming the good.

Government authorities have often invested in public goods that members of society accept as providing value, such as education or emergency response systems. Having some way to estimate the value of nature's services helps local governments to weigh costs against returns from development or prioritize payments for green versus gray infrastructure.

Nonmarket valuation is helpful in the private sector as well. The pursuit of profit is based on estimates of costs and revenues. Nonmarket valuations offer the developer and land manager information to estimate return on investment for land development projects. For instance, there may be extra costs associated with taking greater care to protect trees during site preparation, but those costs may be offset by higher purchase prices for the building lots.

- **Closer to Home: A Study by the USDA Forest Service PNW on the Value of Trees in Portland, Oregon**

In a recent study in the City of Portland, The USDA Forest Service PNW Research Station provided a research study to specifically study the value of street trees in the City of Portland in March 2008. The intent of the study was to determine the economic value of urban trees in light of their long history of being taken for granted. By examining how trees affect house prices, the USDA Forest Service demonstrated that the benefits of street trees in Portland far outweigh their costs.

Few previous studies have looked at the impact of street trees on the housing market, and those that did only examined the effect of the number of trees. In this study, Forest Service tested whether a wide range of tree attributes such as species, basal area, and height influenced sales price. The USDA found that only crown area within 100 feet of the house, and number of trees fronting the house was significant. When combined, these two variables add an average of \$7,020 to the price of a house, which is equivalent to adding 106 finished square feet to a house. Extrapolating our results to the entire city, the total value of Portland's street trees is \$1.1 billion, which compounded into the future is equivalent to a perpetual benefit of \$45 million annually. Assuming street trees also increase the assessed value of houses, they increase annual property tax revenues for the City of Portland by \$13 million.<sup>10</sup>

The study even relates the value and benefits that trees provided to neighboring houses. For example, a tree with a canopy cover of 312 square feet (the average for the study) adds \$7,593 to the house it fronts. However, it also positively influences the prices of houses within 100 feet. On average, there are 7.6 houses within 100 feet of a street tree. Therefore, a tree with 312 square feet of canopy cover adds, on average, \$9,241 to the value of neighboring houses.<sup>11</sup>

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## II. CONTEXT OF TREE GROWTH

### A. Understanding Soil and Valley Anatomy

The Columbia Basin of eastern Washington is plastered with deep layers of a fine grained black rock known as basalt. The basalt is lava that cooled and hardened after it flooded over the landscape. These astounding lava floods occurred on a scale unequalled anywhere else on the entire planet. Lava began flowing in the Columbia Basin about 17 million years ago and continued until about 6 million years ago. In all, there may have been 300 individual outbreaks. Streams of basalt lava carved a wide path through the Columbia Gorge region and then on to the Pacific Coast. The coverage area for Columbia River flood basalts exceeds 60,000 square miles. At least 50,000 cubic miles of basalt can be found within that area, and some estimates go as high as 90,000 cubic miles.

Structurally, the network of vertical fractures makes columnar basalt especially vulnerable to weathering, as evidence by the piles of broken rock at the bases of basalt outcroppings. Plants that have survived over the millennia have done so by adapting, pushing roots into cracks in solid rock, pulling nutrients out of clay or sand or whatever was available to them. The temperate climate and the richness of the Columbia River basin contributes to the diverse native plant communities, agricultural communities and forest communities that has made this region of the most productive landscapes in the country. The overall aerial view of St. Helens presents a view of a city within a forest.

Trees and plants survive and thrive in the city's current geologic condition which includes a base layer of basalt.

## **B. Understanding Tree Anatomy**

Tree root systems consist of large perennial roots and smaller, short-lived feeder roots. The large, woody tree roots and their primary branches increase in size and grow horizontally. They are predominantly located in the top 6 to 24 inches of the soil and occasionally can grow deeper 3 to 7 feet if soil conditions allow. Root functions include water and mineral conduction, food and water storage, and anchorage. Roots grow where water, minerals and oxygen are found in the soil and allow root growth. Roots need some water and oxygen but if soils are saturated with water, most roots will die. Because oxygen is usually located in the upper surface layer of soil, the largest concentration of feeder roots exists in this zone. Feeder roots, although averaging only 1/16 inch in diameter, constitute the major portion of the root system's surface area. These smaller roots grow outward and predominantly upward from the large roots near the soil surface, where minerals, water and oxygen are relatively abundant. The major function of feeder roots is the absorption of water and minerals. Under normal conditions, feeder roots die and are replaced on a regular basis throughout the life of the tree.

Other factors that determine root growth include soil compaction (reduction in air pockets resulting from soil particles being packed together) and soil temperature. In general, as the depth increases, soil compaction increases, while the availability of minerals, oxygen and soil temperature all decrease. In some instances, hard, compacted soil (hardpans) can occur near the surface, which restricts root growth. In areas of shallow soils, trees can and will survive in the unlikelyst of locations. For example, the old basalt quarry in



Ridgefield, WA currently has trees growing on top of the abandoned quarry. Another example of the perseverance of trees can be observed at the significant basalt outcropping on Columbia Boulevard between South 9<sup>th</sup> Street and South 8<sup>th</sup> Street. The significant basalt formation causes the alignment of Columbia Boulevard to curve to the north and then descend to the Columbia River following the natural topography. As a landmark, a tree grows directly on top of this nob of basalt.



Moving forward with street trees for the US 30 St Helens Corridor Master Plan, planting street trees in shallow soils is viable alternative for the proposed streetscape. Jack-hammering of the basalt to create a soil pocket for the tree planting will be necessary in areas of basalt that prevent initial planting. Tree longevity and survival in this landscape is not a factor in the proposition of the street trees for this corridor. Discussion and concerns appear to be entirely based on the difficulty of installation.

### III. STREET TREE MAINTENANCE

More and more communities are beginning to recognize the tangible benefits that trees provide in the urban environment. Healthy trees increase property values, reduce air and noise pollution, provide energy-saving shade and cooling, furnish habitat for wildlife, enhance aesthetics, and are an important contributor to community image, pride, and quality of life. Because street trees are one of the most important organizing elements of the streetscape environment, appropriate tree species selection, location and design of the planting site is essential. Proper tree selection and planting will ensure the healthy growth and longevity of trees, enhance the streetscape character, reduce maintenance issues and maximize the City of St Helen's investment.

Growing trees in an urban environment and within the street median is a challenge and takes careful planning. The primary consideration is one of space. It is critical that the tree selected is appropriate for the amount of space available both above ground and below ground. Above ground, the tree must not interfere with overhead utility lines, must be of suitable structure to be pruned with adequate clearance beneath its canopy and cannot interfere with critical site distances. Below ground the tree needs significant soil volume to grow. It is easy to overlook planting space, but the long term health of the tree is directly related to the amount and quality of the soil space that is available. As with most tree "problems," smart landscape design and tree selection is the key to preventing problems. Pavement damage can be greatly minimized or avoided by proper planning. The following narrative describes the typical areas of maintenance for street trees in the urban environment:



1. **Pruning**
2. **Soils**
3. **Tree Roots**
4. **Approaches and Responsibilities**

The American National Standards Institute (ANSI) ANSI 300 standards are the generally accepted industry standards for tree care practices. They are voluntary industry consensus standards developed by Tree Care Industry Association (TCIA) and written by a committee called the Accredited Standards Committee (ASC) A300, whose mission is to develop consensus performance standards based on current research and sound practice for writing specifications to manage trees, shrubs, and other woody plants. (more information can be found on the following website along with the individual ANSI A 300 chapters which are available for download with a fee: <http://tcia.org/business/ansi-a300-standards> )

## 1. **PRUNING**

A300 Pruning standards recognize four basic methods for pruning:

- *Clean*: Selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.
- *Thin*: Selective pruning to reduce density of live branches
- *Raise*: Selective pruning to provide vertical clearance.
- *Reduce*: Selective pruning to decrease height and/or spread (consideration must be given to the ability of a species to tolerate reduction pruning).

Certain pruning practices are not acceptable and can injure trees:

- *Topping*: The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit
- *Lion's Tailing*: The removal of an excessive number of inner, lateral branches from parent branches

The United States Department of Agriculture provides a fantastic resource with guidelines on how to prune trees for specific pruning approaches, pruning cuts and pruning practices that harm trees and when to prune:

[http://na.fs.fed.us/spfo/pubs/howtos/ht\\_prune/htprune-rev-2012-screen.pdf](http://na.fs.fed.us/spfo/pubs/howtos/ht_prune/htprune-rev-2012-screen.pdf)

### **A. Pruning and maintenance guidelines on Public Sidewalks and Medians:**

- On the vehicular traffic side of the sidewalk, the lowest branch should provide clearance of at least 7.5 feet over sidewalks, 11 feet over residential streets, and 14 feet over main arterial streets.
- Tree or landscape material should not obscure traffic or parking signs/signals or vehicular sightlines.
- Tree foliage should be maintained to provide a minimum 6' clearance

from any public streetlight.

## 2. SOILS

A growing tree will send roots far into the surrounding soil. In uncompacted soil, the roots of a mature tree can spread to more than twice the width of the tree's canopy. Trees get nutrients from soil, but roots also need the air and water that occupy voids between soil particles. In uncompacted soil, these voids are abundant. In dense urban areas where soils are often compacted and covered by pavement, the soil has few voids. Tree roots cannot penetrate highly compacted soil and will not grow in soil that lacks air and water. Roots of street trees frequently grow in the space between the compacted soil and overlying pavement, where air and water are present. As these roots grow, they lift the pavement and cause sidewalk heaving.

Trees growing in typical urban "tree boxes" are usually surrounded by compacted soil. If the tree roots cannot expand into the surrounding soil, they will continue to grow in the tree box until they have filled up the available space. When the needs of the tree exceed the capacity of the soil, the health of the tree will begin to decline and it will eventually die. Trees in typical urban tree boxes rarely reach their full growth potential and cannot provide the wide range of benefits that mature, healthy trees offer.

Published research suggests that trees need 1 to 2 cubic feet of soil volume for every square foot of crown area spread. For example, the recommended amount of soil volume to ensure a beautiful, healthy and vibrant tree (30 feet in canopy diameter) is 400 cubic feet. With a typical 36" planting depth, this requires 470 square feet of root space available and generally, a square or circular root space is more desirable than a long and narrow rectangular space. However, trees are adaptable and if we give them a space to fill with their roots, they typically will do so. Several techniques may be used to expand the available root zone for a street tree, including: providing structural soil under pavements, providing adjacent green space areas for root development, and providing paths for roots under pavements in order to encourage trees to reach available root space on the opposite side of a walk or drive.

Several design methods can be used to achieve adequate soil volumes. Soil areas can be open or covered, and root paths can be used to connect soil spaces where needed.

- **Open Soil Area**

Open soil area is an unpaved area of soil surrounding a tree, which contains existing, new or amended soil. An open soil area may be planted or covered with mulch. Open soil areas reduce impervious surface and stormwater runoff.

- **Root Paths**

Root paths use aeration or drainage strips to give roots a way to grow out of the tree space and under pavement in order to access better planting soils. Root paths can connect tree spaces and adjacent green spaces. Root paths are constructed by trenching a 4" wide by 14" deep trench to fully connect two soil areas. A 1" thick x 12" tall plastic aeration sheet is inserted along the length of the root path. Top soil or amended soil is lightly compacted around the aeration sheet, filling the trench completely. Root paths may be



used to connect trees planted in paved parkways to adjacent greenspace. Root paths should be placed no more than 4 feet on center in a radial pattern from each tree to the adjacent greenspace.

- **Covered Soil Area**

A covered soil area is an area of soil that is under pavement and specially designed to accommodate tree root growth. Design methods include structural soil, sidewalk support including pervious pavement and soil cells.

- **Structural soil**

Structural soil (or engineered soil) is a medium that has been used to grow trees in areas where soil must be compacted to support pavement. The first widely used structural soil was developed by Nina Bassuk and her colleagues at Cornell University. The soil consists of a particular mix of crushed gravel (uniformly about 1 inch diameter) and soil (clay loam). When properly constituted and installed, the gravel in the mix provides a locked weight-bearing matrix that can support pavement. The voids between the gravel pieces are mostly filled with the clay loam, which holds moisture and nutrients needed for tree growth. A hydrogel is added when the components are mixed to prevent separation of soil and gravel components.

Structural soil's main advantage is its ability to be compacted to load-bearing specifications. In street tree plantings, structural soil is primarily used under pavement. New trees are planted directly into a suitable topsoil rather than the structural soil.

Due to its limited water holding capacity, trees planted in structural soil need to be irrigated. However, the high permeability of structural soil allows it to function as a reservoir for absorbing storm runoff. Pollutants present in the runoff can then be degraded in the structural soil matrix, rather than flowing into streams or lakes. Researchers are also investigating the use of structural soils to better manage urban runoff.

- **Pervious Pavement**

Pervious pavement provides another way to manage urban runoff. It allows contaminated water to infiltrate into the soil where soil microorganisms can degrade contaminants. This prevents oils and other toxic materials from flowing directly into surface waters. In a well-designed system, pervious pavement can help reduce stormwater runoff, help meet U.S. Environmental Protection Agency stormwater regulations, and recharge groundwater that can be used by urban trees.

Several types of pervious pavement are now available. Pavers of various types and materials allow infiltration to occur through openings between or within pavers. In addition, porous versions of concrete are available that allow water to percolate directly through a continuous paved surface to provide tree roots with adequate water.

A variety of pavements, both solid and permeable, can be used to create a covered tree space. Pavers, such as granite cobbles and permeable paver blocks placed with gaps between the stones allow water to flow to the soil below.

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#### ○ **Soil Cells**

Soil cells are plastic structures designed to be filled with soil and covered with pavement. Tree roots grow in the uncompacted soil between the structural supports. The soil cell is a modular suspended pavement system that holds unlimited amounts of lightly compacted soil while supporting traffic loads beneath paving. The healthy soil housed within the soil cell serves two important functions: growing large trees and treating stormwater onsite.

Technical guidelines that provide specifications for soils can be found in the ANSI A300 Part 2 which addresses the following items.

#### Soil Management

##### a. Modification section

- Evaluating site soil condition practices
- Managing soil organic matter content practices
- Incorporation of soil amendments
- Compaction – prevention and mitigation practices
- Mechanical soil loosening
- Surface application of organic mulch
- Soil Management

##### b. Fertilization section

- Soil reaction (pH) adjustment
- Fertilization practices
- Calculations for fertilization area
- Fertilization applications
- Structural soil

### **3. TREE ROOTS**

Many researchers and urban foresters have tested a variety of techniques for dealing with conflicts between tree roots and nearby sidewalks and curbs. These include reconfiguration of sidewalks around trees, use of different sidewalk construction techniques and materials, and the use of root barriers.

The two main causes of conflicts between trees and sidewalks include:

- Trunk flare damage where the actual trunk of the tree lifts the sidewalk
- Root damage where a root originating from the tree has caused damage to the sidewalk

#### **Trunk flare**

The cause of trunk flare damage is a lack of space. The sidewalk is actually in contact with and lifted or offset by the enlarging tree trunk. Increasing the distance between the tree and sidewalk is the optimum way to perform the trunk flare damage sidewalk repair while retaining the tree. Again, proper selection of the right tree in the right place is an integral component of streetscape design in order to avoid heaving of the sidewalk by a tree that is too large for its location.

### **Root Damage**

The causes of root damage vary from shallow and surface roots in contact with the sidewalk to the radial growth increase of deeper roots causing sidewalk displacement. Sometimes the offending shallow or surface roots may be pruned. Pruning roots is only a temporary solution. The interval between root pruning and renewed sidewalk lifting is about five years. This relatively short repair interval can create an escalating and compounding effect of needed repairs as the trees continue to grow. An additional problem with root pruning is the loss of tree stability. Trees have stability against the wind because of their lateral roots. Tap roots are rare and quite small in most broadleaf trees and provide virtually no support. When the important lateral roots are pruned, tree stability can be reduced. Again, proper selection of the right tree in the right place is an integral component of streetscape design.

### **Root Control**

Root barriers are often specified by landscape architects and sometimes recommended in conjunction with root pruning. Physical barriers, usually panels made of heavy plastic, are used to either circle the tree's rootball or as liners for the planting pit. Another often-seen alternative is landscape fabric with nodules containing trifluralin, an herbicide, or coated with Spin Out, a root growth regulator. The use of root barriers has been a point of contention. Root barriers reduce the amount of roots in a given space. Care must be taken if the top of the barrier is above grade. Mulch or topsoil often allows roots to grow over the barrier. Because of increased incidence of root defects associated with some root barriers, they are not as commonly used or recommended as in the past. Rather than install barriers, plant trees appropriate to the site.

The ANSI A300 (Part 8) - 2013 Root Management Standard seeks to improve the quality, life expectancy, and safety of trees by promoting and facilitating the care of roots. Part 8 Root Management Standard is a guide and addresses the following:

- Trenching near a tree
- Root pruning to mitigate tripping hazards and infrastructure damage
- Managing stem-girdling and stem-circling roots

## **4. STREET TREE MAINTENANCE APPROACHES AND RESPONSIBILITIES**

### **Maintenance Approaches**

Maintenance of street trees and other pedestrian amenities is key to maintaining the appearance and function of the sidewalk and associated pedestrian areas. This typically involves pruning trees, removing leaves and otherwise keeping these areas free of debris. It also may involve maintaining or repairing benches, lighting or other features. Similar to many other communities in Oregon, the City of St. Helens municipal code requires adjacent property owners to maintain trees and other plants located in the public right-of-way next to their properties. However, in practice, City public works staff frequently maintain street trees located in the right-of-way.

In the future, a variety of approaches could be considered and implemented to ensure adequate, regular maintenance of street trees and furnishings. For example, to reduce the requirements for property owner maintenance, the City could share maintenance responsibilities, possibly requiring property owners to perform basic day-to-day maintenance such as removing leaves or debris from the sidewalk while the city prunes trees and bushes and maintains all other street plantings and furnishings (benches, lighting, etc.). Another option would be for local businesses and/or property owners to form a local association or district, collect fees from participants, and use these fees to pay a private entity to regularly maintain street trees, other plantings and pedestrian features. This is a common approach in a number of downtown and Main Street areas in other communities in Oregon and elsewhere. Whatever approach is selected, it should be fair and equitable to local property and business owners, be cost-effective and be consistent with available public and private resources.

#### IV. STREET TREE DESIGN ALTERNATES

The following vision statements were developed in the early stages of the project and used to develop and evaluate corridor design options and recommended actions throughout the US 30 St Helens Corridor Master Plan process:

##### US 30 CORRIDOR SEGMENT

Highway 30 will provide safe, convenient access to local businesses along the highway, while balancing that with state goals for traffic mobility. The appearance of the highway will be improved over time **to enhance landscaping** and other elements that will **make it a more attractive place** for people to travel by car, bicycle, walking or transit. Key intersections such as at Gable Road, Columbia Blvd. and St. Helens Street will be improved to enhance safety for all types of travel and **to create attractive, clearly recognizable gateways** to other parts of St. Helens, helping meet the community's goals for economic revitalization in those areas.

##### COLUMBIA BLVD./ST. HELENS STREET SEGMENT

Columbia Blvd. and St. Helens Street will provide safe, convenient travel to access the Houlton business area, Olde Towne and adjacent neighborhoods by drivers, bicyclists and pedestrians. These streets will provide good access to local businesses and **be attractively designed** to help draw people to the area and enhance their shopping and travel experiences. Street designs will incorporate **opportunities for landscaping**, public art and signage that directs people to the Houlton area and Olde Towne. Designs **will recognize physical conditions and constraints**, be cost-effective and build on natural and cultural features and other opportunities in the area.

Through the master planning of the streetscape sections for the different areas of the corridor, street trees and planter medians were developed as an important component of the streetscape design. The City of St. Helen's has an adopted street tree list that was developed several years ago. The existing street tree list was used as a basis for the selection of street tree alternatives suggested in the master plan. Based on the age of the current City of St. Helens street tree list, the design team was encouraged to provide additional suggestions to augment the list. The design team consulted the City of Portland street tree list based on the significant amount of peer review provided to create their street tree list by certified arborists, landscape architects, urban designers, city planners, and city engineers and the resources expended by the City of Portland to develop their street tree list. The City of Portland street tree list offers specific tree lists based on the size of the planter median available for planting. The Portland Street Tree

list was cross referenced to the City of St. Helens list to determine additional trees that would meet the design needs of the new proposed corridors.

The design team considered the following design parameters in the selection of the street tree alternatives

- Harsh urban conditions
- Urban pollution
- Heat Island effect
- Extensive soil compaction
- Large areas of pavement
- Lack of nutrients and water
- Underground utilities
- Lack of long term managed care

Overall, street tree alternatives were suggested based on the possession of the following traits:

- Non-aggressive growth or root conditions
- Attractive seasonal display (minimum three season performer), Seasonal color and variety desired
- Tree Form: Uniform upright variety and trees with availability in uniform caliper, width, and canopy structure
- Canopy Character: Open, airy and transparent, non-opaque, good form
- Fruit: No messy fruit set or seed pod drop (minimal maintenance)
- Leaf: Ease of maintenance for overall clean-up and removal. Small, narrow blade leaves should be avoided.
- Proven performer in urban street conditions

#### **A. US 30 Corridor Segment Tree Planting Option – 1**

Single Species along corridor with median and intersection accents

East Side (Planter Width 7' +/-)

\**Styrax japonicus* 'JFS-D' – Snowcone Japanese Snowbell

East Side (Planter Width 7' +/-) - between Columbia Blvd. and St. Helens St.

*Quercus shumardii* – Shumard Oak

West Side (Planter Width 3')

\**Styrax japonicus* 'JFS-D' – Snowcone Japanese Snowbell

Medians – (Planter Width 14')

*Quercus robur* x *Q. alba* 'Crimschmidt' – Crimson Spire Oak

Intersections (West side of US 30) – First two trees North and South of each intersection

\**Acer grandidentatum* 'Schmidt' – Rocky Mountain Glow Maple

## **B. US 30 Corridor Segment Tree Planting Option – 2**

Mixed tree variety by block/planter width with median accents

East Side (Planter Width 7' +/-)

Between Gable Rd. and S. Vernonia Rd.

\**Tilia cordata* 'Glenleven' – Glenleven Linden

Between S. Vernonia Rd. and Columbia Blvd.

*Ulmus carpinifolia* x *U. parvifolia* 'Frontier' – Frontier Elm

Between Columbia Blvd. and St. Helens St.

*Ulmus japonica* x *U. wilsoniana* 'Morton' – Accolade Elm

Between St. Helens St. and Howard St.

*Ulmus carpinifolia* x *U. parvifolia* 'Frontier' – Frontier Elm

Between Howard St. and Pittsburgh Rd.

\**Tilia cordata* 'Glenleven' – Glenleven Linden

West Side (Planter Width 3')

Between Gable Rd. and S. Vernonia Rd.

\**Acer grandidentatum* 'Schmidt' – Rocky Mountain Glow Maple

Between S. Vernonia Rd. and Howard St.

*Amelanchier grandiflora* 'Princess Diana' – Princess Diana Serviceberry

Between Howard St. and Pittsburgh Rd.

\**Acer grandidentatum* 'Schmidt' – Rocky Mountain Glow Maple

Medians – Columnar (Planter Width 14')

*Amelanchier grandiflora* 'Princess Diana' – Princess Diana Serviceberry

## **C. Houlton / Olde Towne – Option 1**

North and South sides of Columbia Blvd between Milton Way and 8th St.  
(Planter Width 4'-6')

\**Ginkgo biloba* 'Saratoga' – Saratoga Ginkgo (Note: desirable males do not produce fruit)

North and South sides of St. Helens St. between Milton Way and 8th St. (Planter Width 4'-6')

\**Ginkgo biloba* 'Saratoga' – Saratoga Ginkgo (Note: desirable males do not produce fruit)

North and South sides of Columbia Blvd between 8th St. and 1st St.

*Cornus kousa* x *nuttalii* 'Starlight' – Starlight Dogwood

St Helens St.

\**Cercis Canadensis* 'Forest Pansy' – Forest Pansy Redbud

## **D. Houlton / Olde Towne – Option 2**

North and South sides of Columbia Blvd between Milton Way and 14th St.  
(Overhead PowerLines)

\**Ginkgo biloba* 'Saratoga' – Saratoga Ginkgo (Note: desirable males do not produce fruit)

North and South sides of St. Helens St. between Milton Way and 14th St. (No Overhead PowerLines)

A graphic example of the street trees accompanies this Appendix and provides images of the street tree qualities and the relationships of the proposed design alternates of the different street trees for the corridor. Note: Trees included in both St. Helens and City of Portland recommended street trees.

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\*Trees included in both St. Helens and City of Portland recommended street trees

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