Philomath
Safe Routes to School Plan

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Acknowledgments

The City of Philomath appreciates the efforts of the numerous community members who participated in the development of this plan. Their creativity, energy, and commitment were the driving force behind this planning effort. In addition, the following residents, staff, and other agency and organization members contributed regularly to the Safe Routes to School Plan.

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ODOT Transportation & Growth Management Statement:

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Chapter 1. Introduction

Whether taking a bike ride through the willows along the Hunsaker Pathway or walking the loop around City Park, residents and visitors alike appreciate the comfortable walking and bicycling opportunities available in Philomath.

Founded as a center of learning and home to one of the longest-running rodeos in the state, Philomath is committed to the education of its children and their health, fitness and well-being. With the completion of the Philomath Couplet project along Main and Applegate Streets, Philomath resolved to improve the comfort and safety of its children walking and biking to school. This Safe Routes to School Plan is the culmination of that effort, and offers a plan to improve key routes throughout the City to make it safer, easier and more convenient for students to walk and bike to school in Philomath.

Background

In addition to an extensive sidewalk network, Philomath currently has bike lanes on several major streets, including the Main Street/Applegate Street couplet. The Hunsaker Pathway offers bicyclists and pedestrians a separated, traffic-free route between Philomath and Corvallis. The American Community Survey estimates that 8.3 percent of Philomath residents walk or bike to work – about two and a half times higher than the national average. In recent years, interest in bicycling and walking has increased, and the City has developed several proposals for new routes and paths for walkers and bicyclists. Many of these projects, such as bike lanes on 19th Street, have been implemented already, though some other longstanding proposed path projects have not yet been built.

Philomath Couplet

The Philomath Couplet project began a conversation that prompted Philomath residents to think about what they valued in their current transportation network, and what services were lacking. Although many Philomath residents and parents felt that the Couplet project improved safety in their community, the project spurred the City to consider how to improve safety for students walking and bicycling to school. In 2009, the Philomath City Council passed a resolution to pursue the creation of this Safe Routes to School Plan.

Safe Routes to Schools

With the assistance of local community group Strengthening Rural Families (SRF), Philomath Elementary School, Philomath Middle School and Clemens Primary School enrolled in the Oregon Department of

Transportation's (ODOT) Safe Routes to School program and organized biking and walking safety classes for students. A group of community leaders, parents and school staff met and developed a Safe Routes to School map, outlining the existing routes recommended for children to use to bike and walk to school. The map also identified potential new pathways and streets that could be improved to create better walking and bicycling conditions. This Safe Routes to Schools Plan is a continuation of their effort, and proposes specific improvements along these routes.

Project Objectives

The objectives of the Philomath Safe Routes to Schools plan are as follows:

- Link the Safe Routes to School bicycle and pedestrian route to key land uses and activity centers (e.g., shopping, schools, residential areas, other community destinations).
- Link the Safe Routes to School bicycle and pedestrian route to Benton County's recreational bicycle and pedestrian network.
- Provide well-designed, visible, safe and convenient route access points and street crossings.
- Increase the route's potential to function as a meaningful transportation alternative by providing shorter trip lengths (where possible) between key destinations.
- Identify the community's overall vision for route design, expressed through different treatments and design themes for distinctive route sections.
- Address the safety and security of route users.
- Identify technical standards, address Americans with Disabilities Act (ADA) and other regulatory requirements.
- Provide preliminary cost estimates and develop an implementation plan.
- Identify potential funding sources.
- Identify property owners abutting the Safe Routes to School route and consider their views in the planning process.
- Actively engage property owners, businesses, residents, stakeholders, and elected and appointed officials in all phases of this project.
- Update the applicable sections of Philomath's Transportation System Plan and other applicable City documents to provide for a safe, efficient, and multi-modal transportation network.
- Adopt the Philomath Safe Routes to School Plan.

Development of the Plan

In 2009, Philomath applied for and won an ODOT Transportation and Growth Management grant to help plan bicycle and pedestrian improvements along the City's designated Safe Routes to School. The project kicked off in June 2010, and in the following months, the project team conducted field work, completed stakeholder interviews, and evaluated existing conditions, opportunities and constraints along each street and path composing the designated Safe Routes. Next, a set of Conceptual Alternatives were proposed, providing different treatment options for each of the different segments of the Safe Routes network. Different elements of these Conceptual Alternatives were combined to create the Preferred Alternatives featured in Chapter 3 of this Plan. The Preferred Alternatives represent the final improvement recommendations that, when built, will complete the City's Safe Routes to School network. All documents that were produced during this process are included in the Appendix of this Plan.

Public Involvement

Throughout the development of this Plan, the City reached out to the community through multiple avenues to promote an open process, including tools such as:

- News articles on the City's website.
- A Safe Routes to School project website and interactive map allowing residents to suggest routes and comments.
- A front page article in the City's October 2010 Safe Routes to School Newsletter, including reference to the project website and map.
- Safe Routes to School messages on utility billing cards with information on how and where to receive additional details on the project.
- Use of the City's electronic reader board sign to announce open house meetings on Safe Routes to School.

  Dozens of Philomath residents, including city staff, elected leaders, key stakeholders, parents and interested residents have helped shape this Plan through committee meetings, stakeholder interviews and open houses. The shared knowledge of the Philomath community and their continued participation during the upcoming implementation process is essential to the success of this Plan.

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Chapter 2. Existing Conditions

Previously Proposed Safe Routes

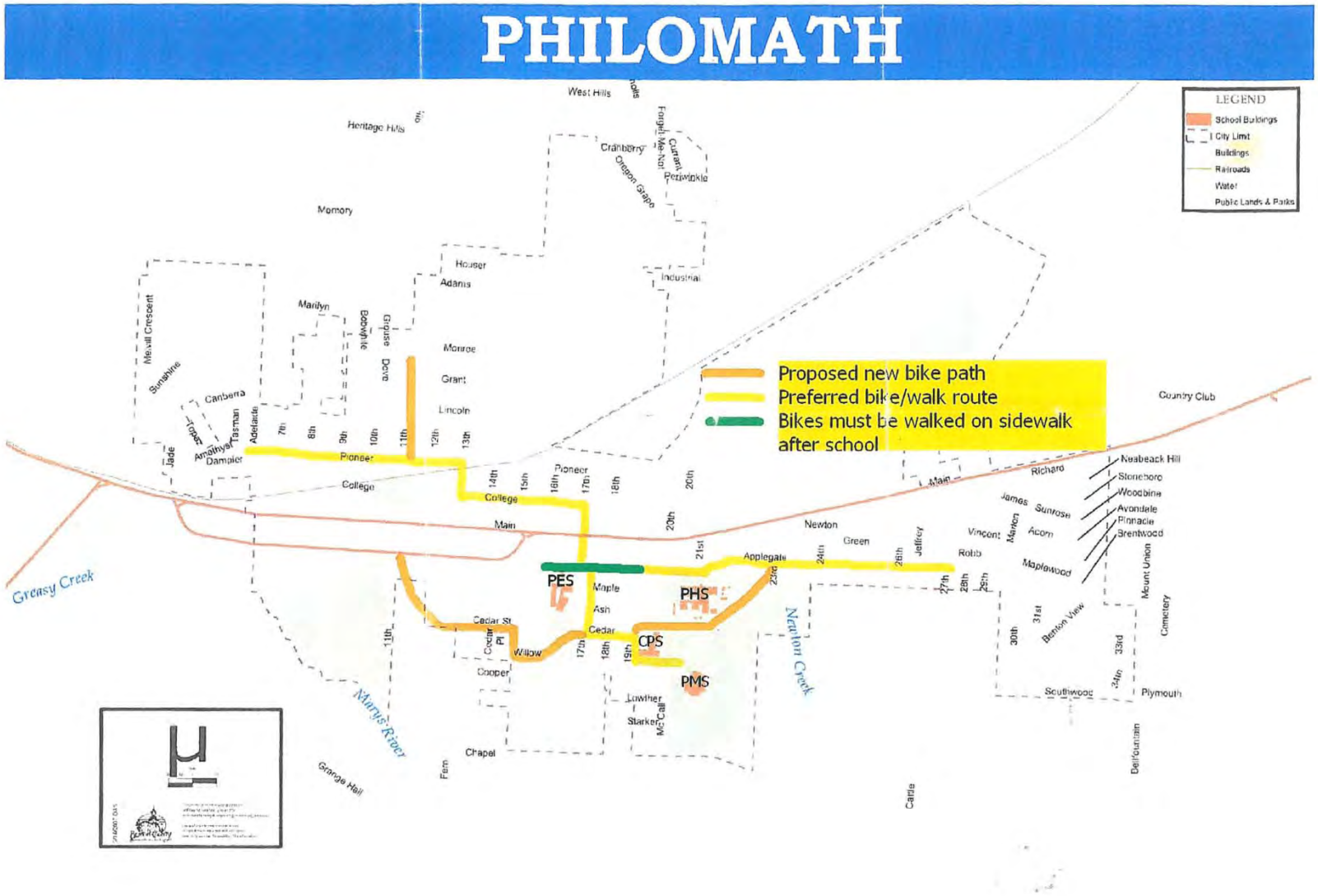
In 2008, the Philomath Safe Routes to School Program Strengthening Rural Families convened a group of parents and school leaders to develop a Safe Routes to School map. Together, the group identified preferred routes for students to use when walking and bicycling to Philomath schools. These routes included streets with good sidewalk availability such as College Street and Pioneer Street, to streets like 11th Street, which lacks sidewalks or bicycle facilities but represents the only available connection to the Quail Glen neighborhood. The map also included off-street connections that were noted for possible multi-use path development, such as the existing informal trail through Philomath Public Works property between 15th Street and 17th Street south of Philomath Elementary School. The original Safe Routes to School map is shown in Map 1: Previously Proposed Safe Routes to School (2008)

The 2008 map was used as the basis for this Safe Routes to School Plan. The routes were divided into 13 subareas to help organize the observation of existing conditions along the routes and later to develop potential improvements. The locations of the 13 subareas are listed in Table 1, and can also be viewed in Map 2.

The following sections describe the existing conditions along the Safe Routes to School subareas. Existing bicycle and pedestrian facilities, including the presence of sidewalks and curb ramps, are shown in Map 3.

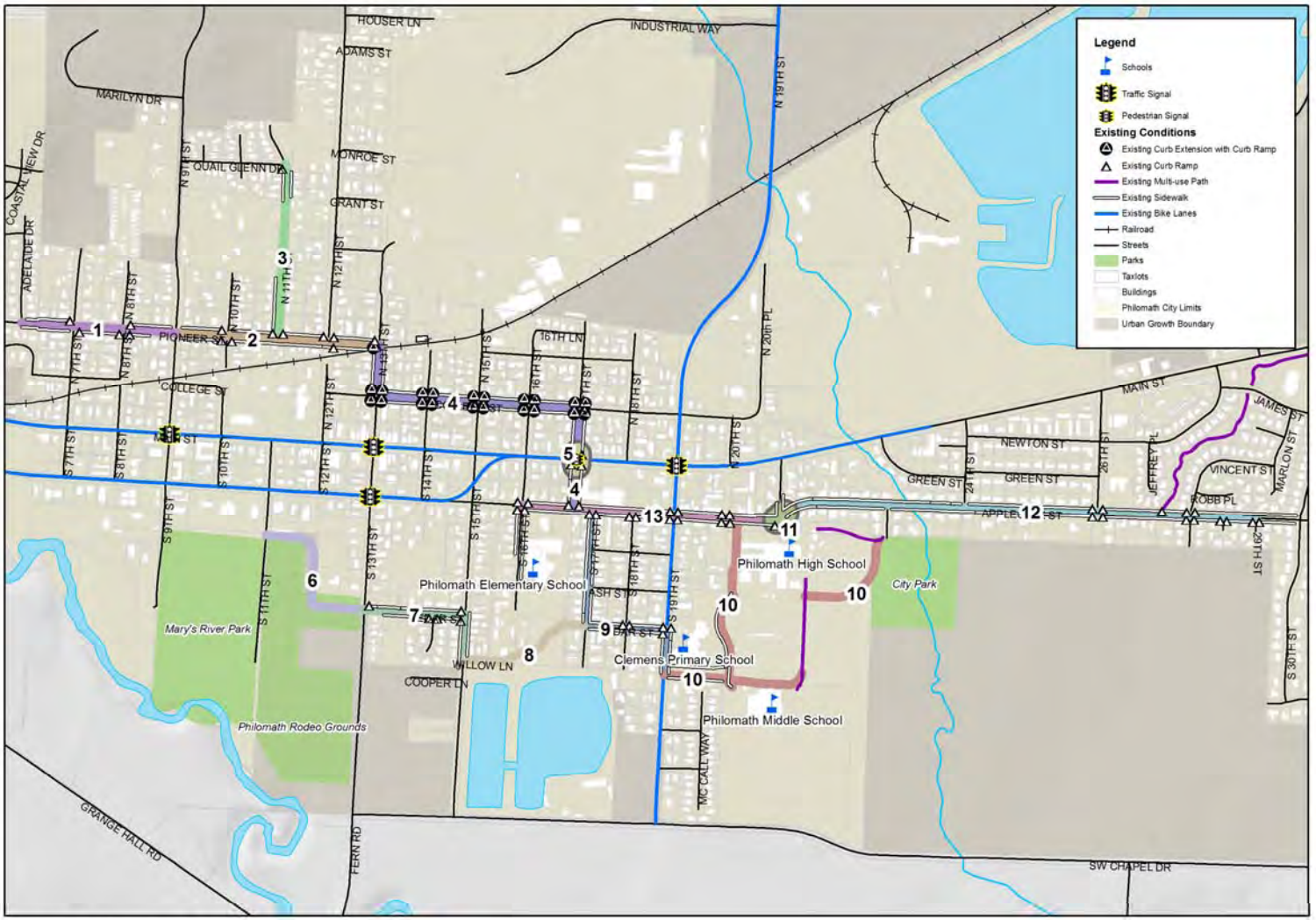
Table 1. Safe Routes to School Subareas

Subarea	Area Type	Location
1	Street Corridor	Pioneer Street, Adelaide Drive to 9th Street
2	Street Corridor	Pioneer Street, 9th Street to 13th Street
3	Street Corridor	11th Street, Quail Glen Drive to Pioneer Street
4	Street Corridor	College Street, Pioneer Street & 13th Street to Main Street & 17th Street
5	Intersection	Main Street & 17th Street
6	Proposed Multi-Use Path	Rodeo Grounds, 11th Street to 13th Street
7	Street Corridor	Cedar Street & 13th Street to Willow Lane & 15th Street
8	Proposed Multi-Use Path	Willow Lane to Cedar Street
9	Street Corridor	17th Street & Applegate Street to 19th Street & Cedar Street
10	Proposed Multi-Use Path	Philomath High School/Middle School Fields
11	Intersection	Applegate Street & 21st Street
12	Street Corridor	Applegate Street, 21st Street to 29th Street
13	Street Corridor	Applegate Street, 16th Street to 21st Street



Map 1: Previously Proposed Safe Routes to School (2008)

Map 2: Safe Routes to School Subareas



Map 3: Safe Routes to School Existing Conditions

1. Pioneer Street (Adelaide Drive to 9th Street)

Pioneer Street runs east-west, parallel to Highway 20/34, and has a fair amount of through traffic traveling to or from the northwest area of the city. There is a steep hill at the west end of the route. Each intersection along this route is controlled by a two-way stop, with traffic on Pioneer Street having priority at each intersection except at 7th Street and 9th Street. Combined with lightly used on-street parking, the 36-foot roadway width on this section of Pioneer Street generally leaves enough space for bicyclists to share the road comfortably with moderate vehicle traffic, with the possible exception of areas where bicyclists are moving slower when traveling uphill. Sidewalks along this route are mostly complete, with some gaps between 7th and 9th Streets.

Many curb ramps have been installed in recent years, but nine corners on the street remain without ADA-compliant ramps, most significantly at 7th and 9th Streets.

At 9th Street, there are no curb ramps on any of the four corners of the intersection. According to Philomath Police, traffic on 9th Street often exceeds the speed limit. As a result, Philomath Police sometimes place a radar speed display trailer on 9th Street to encourage motorists to watch their speed and obey the posted speed limit of 25 MPH within the city limits. Vehicles traveling northbound, uphill on 9th Street may have their visibility limited by the crest of the steep hill between Main Street and Pioneer Street. These combined factors may make crossing 9th Street difficult for pedestrians and bicyclists traveling on Pioneer Street.

2. Pioneer Street (9th Street to 13th Street)

This section of Pioneer Street has complete sidewalks on both sides of the street. Most areas of the sidewalk on the south side of the street were completed recently, and are five feet wide and directly adjacent to the curb. Older sections of sidewalk exist on the north side of Pioneer between 10th and 12th Streets, separated from the roadway by a planting strip. The intersection at 11th Street is controlled by an all-way stop. The roadway on Pioneer Street is generally wide enough for bicyclists to share the road comfortably with moderate vehicle traffic.

3. 11th Street (Quail Glen Drive to Pioneer Street)

The roadway along most of 11th Street is approximately 22' wide with no shoulder, except for the northernmost section where there are sidewalks within 250 feet of the intersection with Quail Glen Drive. The posted speed limit is 25 MPH, and the street centerline is striped with a double yellow line. Some parents cite the lack of sidewalks or roadway shoulders as a

concern for the safety of children walking along this route. Sidewalks are missing along most of this route, except for where there are sidewalks on both sides of the street immediately south of Quail Glenn Drive, and a section of detached sidewalk set back about 30' from the edge of the roadway on the west side of the street near Pioneer Street. Curb ramps exist at both Pioneer Street and Quail Glenn Drive. There is a drainage ditch immediately west of the roadway along most of this section of 11th Street.

4. College Street (Pioneer Street & 13th Street to Applegate Street & 17th Street)

13th Street sees a fair amount of vehicle traffic because it is one of several locations where it is possible to cross the railroad, and because there is a traffic signal at the intersection of 13th Street and Main Street to the south. Vehicular turning movements at the intersection of 13th Street and Pioneer Street may discourage pedestrians from crossing at or near the intersection. One block away, curb extensions at the intersection of 13th Street and College Street help reduce crossing distances for pedestrians and encourage motorists to yield.

College Street has sidewalks along the full length of the route between 13th Street and 17th Street, with curb extensions and ADA-compliant curb ramps at every intersection. The roadway on College Street is wide, measuring 46 feet from curb to curb with 32 feet of clearance between the curb extensions at each intersection. The street centerline is striped with a double yellow line. There is on-street parking on both sides of the street. Despite the width of the roadway, traffic appeared to be traveling at or below the posted speed limit during field observation, though no official speed survey information is available.

Along 17th Street between College Street and Applegate Street, sidewalks exist on both sides of the street, with curb ramps at the corners of each intersection.

5. 17th Street & Main Street Intersection

The intersection of 17th Street and Main Street is equipped with a marked crosswalk and a median refuge island on the north and west legs of the intersection. The west leg of the intersection (across Main Street), is equipped with a pedestrian actuated warning signal with a flashing overhead beacon to encourage motorists to yield to pedestrians attempting to cross the street. A crossing guard is posted at the intersection on school days to help children cross. Although vehicles are restricted from some turning movements at the intersection, many vehicles at the intersection turn left from 17th Street on the south leg of the intersection onto Main Street westbound, which can pose a hazard to pedestrians in the crosswalk.

The posted speed along Main Street in this area is 25 MPH, and a 20 MPH school zone sign is posted before the intersection at 17th Street.

A raised median on Main Street prevents traffic on 17th Street proceeding straight across Main Street, which means bicyclists must ride on the western sidewalk and use the pedestrian crosswalk in order to cross the highway.

6. Philomath Rodeo Grounds Path

The Philomath Rodeo Grounds are the site of the annual Philomath Frolic and Rodeo, and are owned by the Skirvin family. A gravel road exists running north to south along the center of the land between 13th Street and 11th Street, turning west to access 11th Street at the north end of the lot. At this intersection on the northwest corner of the Rodeo Grounds, 11th Street enters Mary's River Park and becomes a gravel access road. On the east, unimproved right-of-way for Cedar Street extends toward the center of the Rodeo Grounds approximately 200 feet west of 13th Street. A multi-use path across the Rodeo Grounds was proposed in the 1994 Master Philomath Bike Path and Trails Plan.

7. Cedar Street (13th Street to Willow Lane & 15th Street)

There are attached sidewalks on both sides of the street along Cedar Street in this area, except on the south side of the street near 13th Street. There are curb ramps on the two southern corners of the intersection at 14th Street. At the intersection with 13th Street, there is a curb ramp on the northeast corner of the intersection, but not the southeast corner.

The roadway along 15th Street in this area is notably wide, measuring 40' from curb to curb. There are attached sidewalks on both sides of the street along this route. There are curb ramps on the two western corners of the intersection at Cedar Street.

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street)

The western half of the route is on a 16 foot wide access road on the south side of the Philomath Public Works building, while the eastern half is through a grassy field. This route is already used informally by Philomath residents, especially students traveling to schools, despite a lack of any improvements. Heavy use of this route is apparent from a wide swath of trodden grass across the length of the field. The Philomath Elementary School athletic fields adjacent to the north are separated from this lot by a six-foot chain link fence.

9. 17th Street (Applegate Street to 19th Street & Cedar Street)

There are sidewalks along both sides of 17th Street in this area, mainly older four-foot detached sidewalks that are narrower than newer five-foot attached sidewalks on other streets in Philomath. The sidewalk on the west side of the street is in good repair, but on the east side of the street there are several missing curb ramps, with a section of older, narrow sidewalk (three feet) near Maple Street. There are curb ramps at both corners at the intersection with Applegate Street.

There are attached sidewalks along both sides of Cedar Street between 17th Street and 19th Street, but several curb ramps are missing at 17th and 18th Streets. There are curb ramps and a crosswalk at the intersection of Cedar Street and 19th Street across from Clemens Primary School. The crosswalk is part of a highly-visible school crossing, which is equipped with safety flags for children to use when crossing the street.

19th Street is striped with bike lanes. The road is managed by Benton County, and is the easternmost north-south through street in the city, carrying traffic between Chapel Road and the Highway 20/34 couplet on Main and Applegate Streets. There are school zone signs indicating a 20 MPH speed limit in the area of this route segment near Clemens Primary School.

10. Philomath High School & Middle School Path System

Several multi-use paths exist across the adjoining Philomath High School and Middle School campuses. On the northeast corner of the campus, a path connects City Park and the northeast Philomath High School parking lot. Another path between the south end of the same parking lot and the Philomath Middle School basketball courts provides a north-south connection through the fields on the east side of the campus.

A north-south fire lane road on the east side of the Clemens Primary School carries traffic traveling through the campus to each of the three schools. There is a sidewalk along the east side of the street across from Clemens Primary School where school buses load and unload students. School buses have exclusive use of this road during loading times at the beginning and end of the school day; it is open to private vehicles during other times.

An east-west fire lane connects the north-south fire lane to 19th Street. There is a sidewalk on the north side of the street, adjacent to Clemens Primary School. A ten-foot asphalt path on the south side of the street, set back approximately 25' from the curb, connects the 19th Avenue sidewalk to Philomath Middle School. At the T-intersection of the fire lanes, there are

crosswalks marked where the sidewalk and asphalt path cross the north-south fire lane.

11. Applegate Street & 21st Street Intersection

The intersection of Applegate Street and 21st Street in front of Philomath High School is a significant area for school traffic. The intersection is missing curb ramps on all but one corner, and there are no striped crosswalks. The jog in Applegate Street at this intersection reduces visibility, and the intersection geometry also increases crossing distances for pedestrians, thereby increasing exposure. A triangular island on the northeast corner of the intersection that demarcates a right turn slip lane on Applegate Street westbound, is formed by an extruded curb sitting on top of the asphalt roadway, creating an obstacle to pedestrians crossing Applegate Street on the east leg of the intersection.

Conversations with stakeholders revealed that most pedestrians walking along Applegate Street from the east avoid crossing at this intersection, preferring to cross from the northern to southern sidewalk at 23rd Street or 19th Street instead.

12. Applegate Street (21st Street to 29th Street)

There are completed sidewalks on both sides of Applegate Street along the entirety of this route. There are curb ramps at most intersections, with the exception of 21st Street near Philomath High School, and two of the corners at the intersection with 24th Street. In some places, older curb ramps are placed at awkward angles, facing the center of the street rather than diagonal or parallel to the direction of travel of pedestrians walking east-west along Applegate Street. There are also conflicts with utility poles, mailboxes and other obstacles partially blocking the sidewalk in several locations.

There is on-street parking on both sides of Applegate Street in this area. Traffic volumes are highest during periods of congestion at the beginning and end of the school day, when vehicles queue behind others waiting to make turning movements at 21st Street, and near the Philomath High School parking lots. This congestion makes riding a bicycle in the street difficult during peak school travel times, when many children choose to ride on sidewalks to avoid traffic. Traffic appeared to be traveling at or below the posted speed limit during field observation, though no official speed survey information is available.

13. Applegate Street (16th Street to 21st Street)

There are detached sidewalks on both sides of Applegate Street along this route. With the exception of the intersection at 21st Street there are curb

ramps on every corner, but there are several T-intersections along the route where curb ramps are needed midblock. Two crosswalks across Applegate Street exist at the intersection with 16th Street, which is an important intersection for traffic traveling to Philomath Elementary School.

At the intersection of Applegate Street and 19th Street, traffic on Applegate Street often backs up behind vehicles waiting to make a left turn onto 19th Street. There are curb ramps on each corner, and crosswalks striped on all legs of the intersection, as many children pass through it on the way to each of the Philomath schools. A crossing guard is posted at the intersection during peak school travel times to manage traffic while children cross.

There is on-street parking on both sides of Applegate Street in this area. Traffic volumes are highest during periods of congestion at the beginning and end of the school day, when vehicles queue behind others waiting to make turning movements at 21st Street, 19th Street, and near the Philomath High School parking lots. This congestion makes riding a bicycle in the street difficult during peak school travel times, when many children choose to ride on sidewalks to avoid traffic. Traffic appeared to be traveling at or below the posted speed limit during field observation, though no official speed survey information is available.

Schools

Conditions near schools are often the most important part of supporting safe walking and bicycling routes to school. The area around schools can feature many potential conflict points, such as where students cross the street or where cars and school buses turn across the sidewalk to enter a parking lot.

Philomath Elementary School

Philomath Elementary School is located on the east side of 16th Street, south of Applegate Street. The school's vehicle parking lot is located on the north side of the school building, adjacent to Applegate Street. There is a bike rack installed in the southwest corner of the parking lot. The intersection at 16th Street and Applegate Street is controlled by a four-way stop. There are crosswalks marked across Applegate Street, and curb ramps on all four corners. On the northeast corner of the school, 17th Street jogs at Applegate Street creating two T-intersections. Traffic on 17th Street has a stop sign at each of these intersections. At the leg of 17th Street north of Applegate Street, there is a crosswalk across Applegate Street with a curb ramp on the north side of the

Figure 1. Pedestrians walking on the sidewalk along 16th Street near Philomath elementary School lack the protection of a curb to separate them from vehicle traffic.

intersection, but there is no ramp provided on the south side (see Figure 1).

16th Street is a dead-end south of Applegate Street. In the mornings, school buses enter 16th Street and use the cul-de-sac 700 feet south of Applegate Street to turn around and drop children off on the school side of the street. In the afternoons, buses queue in the school parking lot, and school staff regulate the parking lot driveways to ensure the safety of children walking on the sidewalk from turning traffic.

Figure 2. The crosswalk at Applegate Street at 17th Street lacks a curb ramp.

There is a five- to ten-foot wide attached sidewalk (a sidewalk directly adjacent to the roadway) on the school side of 16th Street, but it is flush with the roadway shoulder with no curb to separate it from the street (see Figure 2). 16th Street was previously a gravel road but was recently paved with chip seal. However, the shoulder between the sidewalk and the chip seal roadway was not paved and remains gravel. The east side of 16th Street has an older four-foot wide detached sidewalk (a sidewalk separated from the roadway by a planting strip or other buffer). Both sidewalks end by the school field about 400 feet south of Applegate Street. Pedestrians use the gravel shoulder when walking the remaining 300 feet to the end of 16th Street.

Clemens Primary School

Clemens Primary School is located on the east side of 19th Street near Cedar Street. The school's parking lot is located on the east side of the school building, and is accessed by the school fire lanes that reach from 19th Street into the shared campus of Philomath Middle School and High School. The school has several bike racks installed near the rear entrance to the school from the parking lot.

Figure 3. The crosswalk across 19th Street at Cedar Street is equipped with curb ramps and pedestrian flags.

The intersection at 19th Street and Cedar Street is the main access for students traveling to the school from the west, and there is a crosswalk striped across 19th Street. The crosswalk is equipped with pedestrian flags that students use to increase their visibility to motorists when using the crosswalk (see Figure 3). North of the school, the intersection of 19th Street and Applegate Street is also well-used by children walking to school. 19th Street and Applegate Street has crosswalks striped on all four legs of the intersections, and is monitored by a crossing guard during school travel times.

There are five-foot wide attached sidewalks along Cedar Street and 19th Street near the school, except immediately adjacent to the school along 19th Street where the sidewalk widens to ten feet next to a student loading area/parking bay. There are bike lanes along the length of 19th Street through Philomath and past the primary school, but some students bicycling to school opt to ride on the sidewalks once they are within a few blocks of the school.

School buses use the fire lane road on the east side of the school to load and unload students. At the beginning and end of the school day, buses approach the school from Applegate Street to the north, entering the fire lanes through the parking lot on the west side of Philomath High School. Students walk to/from the buses and the school using a five-foot attached sidewalk on the west side of the fire lane road. Students walking to the school from the east may use the same route as the school buses, or they may walk along the existing paths through the Philomath Middle School and Philomath High School fields to reach the rear entrance of the school.

Philomath Middle School

Philomath Middle School is located in the southern half of a large campus shared with Philomath High School bordered by Applegate Street on the north and Chapel Drive on the south. The western edge of the campus is bordered by the backyards of adjacent homes, and agricultural land and City Park border the campus on the east. The main parking lot is located on the west side of the school, and is connected to Chapel Drive on the south by a 700-foot driveway/fire lane road. Two grid-style bike racks are installed on the north side of the main vehicle parking lot. Additional vehicular parking is located on the south side of the school, with overflow capacity available on the east side of the school in a paved area shared with several basketball courts. At the beginning and end of the school day, school buses enter the school campus from Chapel Drive, and pull into the parking lot to load and unload students directly in front of the school's main entrance.

There are no sidewalks or shoulder along Chapel Drive, so most students walking or bicycling to the middle school from the east use Applegate Street. From Applegate Street, students use the path between the high school football and baseball fields (see Figure 4). Students traveling from the north and west typically approach from 19th Street and use the asphalt path on the south side of the fire lane south of Clemens Primary School to reach the middle school.

Figure 4. Students walking to Philomath Middle School from the east use this path to pass through the Philomath High School ball fields.

Figure 6. The angled intersection of Applegate Street and 21st Street near Philomath High School creates long crossing distances for pedestrians.

Figure 5. Philomath High School lacks bike racks on the north side of the school, near the main entrance.

Philomath High School

Philomath High School is located in the northern half of a large campus shared with Philomath Middle School, as described above. The high school has several vehicle parking areas located on the all sides of the school building, with the largest parking area located on the northeast corner of the school, near 21st and Applegate Streets. There is a loop through the parking lot on the north side of the school adjacent to Applegate Street where students can be dropped off or picked up by parents in front of the main entrance. For many middle school and primary school students, the most direct route to school is through the Philomath High School parking lots. This is a concern for some parents of younger children, because there are no protected walkways or bikeways through the parking lots, and students passing through on their way to school intermix with vehicle traffic. The bicycle parking for the school is located around the back of the school near the swimming pool, while the main entrance to the school is equipped with a skateboard rack, but no bicycle rack. During field observations, several bicycles were observed unlocked, parked on the north side of the school near the main entrance (see Figure 5).

Most students reach Philomath High School from its north side along Applegate Street. Along with most other streets near the school, Applegate Street has five-foot sidewalks on both sides. To the northwest of the school, the T-intersection of 20th Street and Applegate Street has a crosswalk across Applegate. To the northeast, the angled intersection of 21st Street and Applegate Street is an all-way stop, and on the south side of the intersection 21st Street becomes the school parking lot driveway. There are curb ramps and a crosswalk on the driveway leg of the intersection, but the intersection lacks crosswalks and curb ramps on its other sides. The angle of Applegate Street at the intersection also creates longer crossing distances for pedestrians traveling through the intersection (see Figure 6).

The school is also connected to City Park by an asphalt path about 500 feet long that passes by the school forestry buildings to enter the northwestern parking lot. Another path connects the eastern school parking lot between play fields to the basketball courts behind Philomath Middle School.

Opportunities and Constraints

The pedestrian network in Philomath, especially along the previously proposed Safe Routes, provides a good level of walkability for Philomath students. A high level of street network connectivity (few dead-end streets) allows efficient routes between destinations. In some areas, the walking environment has been further improved by features such as the curb extensions along College Street.

Philomath also has several multi-use paths that provide off-street walking and bicycling routes that compliment on-street sidewalks and bike lanes. These paths include the Hunsaker Bikeway, the connection between City Park and Philomath High School, and two other paths through the Philomath High School/Middle School campus. Several other corridors, such as the informal path through the Philomath Public Works property, present opportunities to expand the existing path network and continue to provide more efficient routes for bicycles and pedestrians.

Key street crossings, such as at 17th and Main Street and at several intersections near schools, are staffed by crossing guards and are equipped with crosswalks and other treatments to help walking and bicycling students cross during other times of day.

These existing bicycle and pedestrian facilities along Philomath's Safe Routes to School provide a solid foundation on which to base future improvements. However, several issues remain that pose obstacles to children walking and bicycling to school that this Plan attempts to address.

Despite generally good sidewalk availability, key gaps exist in the sidewalk network along key routes that children use to walk to school. 11th Street is one such example, where children must walk and bike in the roadway alongside car traffic. In some areas, existing sidewalks and curb ramps could be improved by relocating utilities that obstruct the path of pedestrians. Sidewalk infill and repair, as well as the installation and replacement of curb ramps can help address these issues.

While several bike lanes exist in Philomath, few bike lanes currently exist along the Safe Routes to School. This poses an obstacle to students bicycling to school who would prefer to ride in the roadway, but lack a dedicated lane to help separate them from vehicle traffic. Motor vehicle and school bus congestion near Philomath schools at the beginning and end of the school day often creates conditions that can be intimidating to bicyclists, particularly along roads such as Applegate Street that currently lack bike lanes.

Though crossings of Main Street and Applegate Street have been recently improved with the Highway 20/34 couplet project, crossing the highway

remains a concern for some parents and children. The couplet crossing is especially significant for students living in the northern half of the city who must cross it every day. Identifying additional improvements to crossing safety and convenience will help encourage students living north of the couplet to walk and bike to school more often, and is a key goal of this Plan.

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Chapter 3. Preferred Alternatives

The Preferred Alternatives described in this Chapter represent the recommended bicycle and pedestrian improvements to complete the Philomath Safe Routes to School network. These improvements were developed in response to the existing conditions, opportunities and constraints found along the previously proposed Safe Routes, as explained in Chapter 2. The Preferred Alternative area numbers correspond to the Safe Routes subareas of the same number, shown previously in Map 2.

Alternatives Development

To develop the Preferred Alternatives, the project team reviewed the results of the existing conditions, opportunities and constraints analysis and generated a set of draft bicycle and pedestrian projects as potential improvements for each of the 13 subareas. The number of potential projects varied from two to six, depending on the existing conditions of each area. These draft projects were presented to the Philomath Bicycle and Pedestrian Committee in October 2010. With feedback from the committee, the project team adjusted these draft concepts and developed them into more detailed Conceptual Alternatives for each area, which can be referenced in Appendix D.

In December 2010, the Conceptual Alternatives were presented to the community at a joint open house/Bicycle and Pedestrian Committee meeting. At this meeting, participants offered input on the numerous Conceptual Alternatives for each subarea and aided the project management team to select which projects should be implemented as a part of the Safe Routes to School Plan. In this process, the Conceptual Alternative projects for each area were combined or modified in order to create a Preferred Alternative for each area. The bicycle and pedestrian improvements recommended in these Preferred Alternatives are detailed in the following section.

Preferred Alternatives Project Sheets

Design Guidelines

The Preferred Alternatives project sheets recommend several different types of bicycle and pedestrian facilities to be constructed as part of the Philomath Safe Routes to School network, including sidewalks, bike lanes, shared lane markings and multi-use paths. The Design Guidelines section of this Plan in Chapter 7 includes detailed information on the recommended design of these facilities for reference as this Plan is implemented.

Cost Estimates

Planning-level cost estimates are provided for each Preferred Alternative. Costs are fully burdened, and include design, construction management and contingency. However, actual costs for each project will depend on the findings of additional site and engineering review. The estimates provided are intended to be used for comparative purposes only.

Maps

Maps in the following project sheets show the improvements proposed for each Preferred Alternative; improvements proposed in adjacent Preferred Alternative areas are omitted for legibility. The most recent aerial photography available is from 2005; current conditions may be different from that shown on the maps. However, maps do show the location existing improvements such as sidewalks and curb ramps that were documented during field visits in 2010. The legend in Figure 7 below applies for all map figures in the Preferred Alternatives project sheets.

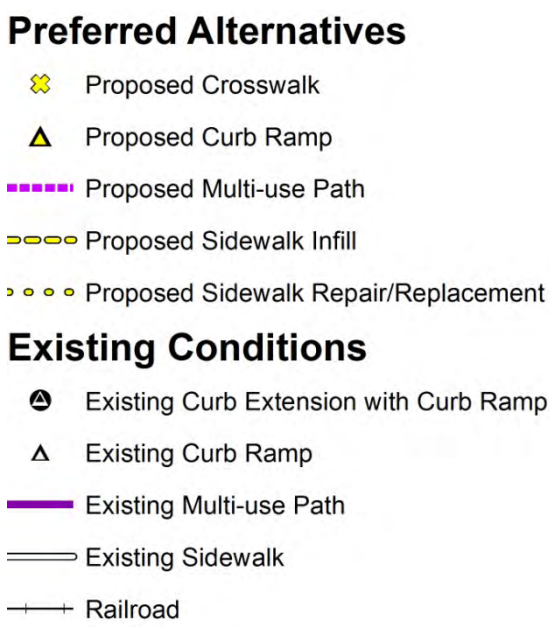


Figure 7. Preferred Alternatives Legend

1. Pioneer Street (Adelaide Drive to 9th Street)

Project Description

- Install 310 feet of new sidewalk on north side of Pioneer Street between 7th Street and 8th Street.
- Install seven new curb ramps:
  - NW corner of 8th Street & Pioneer Street.
  - NE and SW corners of 7th Street & Pioneer Street.
  - All four corners of 9th Street & Pioneer Street.
- Install four new crosswalks:
  - North and south legs of intersection of 9th Street and Pioneer Street.
  - South and west legs of intersection of 7th Street and Pioneer Street.
- Install shared lane markings along Pioneer Street between Adelaide Drive and 9th Street.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along Pioneer Street
- Leverages existing sidewalks to complete a continuous facility for pedestrians to travel east-west.
- New crosswalks improve visibility of pedestrians crossing 7th Street and 9th Street, and may indirectly benefit bicyclists.
- Shared lane markings provide a bicycle facility that can be implemented quickly without impacting other uses such as on-street vehicle parking, and immediately raises the visibility of bicyclists along the street and strongly increases awareness of bicycling throughout the community.

Cost Estimate

$77,000

Photos

An existing sidewalk gap on the south side of Pioneer Street looking toward 9th Street.

Proposed Safe Routes to School improvements along Pioneer Street.

2. Pioneer Street (9th Street to 13th Street)

Project Description

- Repair or replace heaved and damaged sidewalk on the north side of Pioneer Street between 10th Street and 11th Street.
- Install five new curb ramps:
  - NW and NE corners of Pioneer Street and 11th Street (upgrade existing ramps which do not face south to allow crossing of Pioneer Street).
  - South side of Pioneer Street at 11th Street, aligned with new curb ramps on the NW and NE corners.
  - NE corner of Pioneer Street and 10th Street.
  - SE corner of Pioneer Street and 13th Street (near where eastern sidewalk on 13th Street currently ends at railroad tracks).
- Install two new crosswalks:
  - West leg of intersection of Pioneer Street and 11th Street.
  - West leg of Pioneer Street and 13th Street.
- Control intersection of Pioneer Street and 13th Street as an all-way stop.
- Install shared lane markings along Pioneer Street between 9th Street and 13th Street.

Benefits

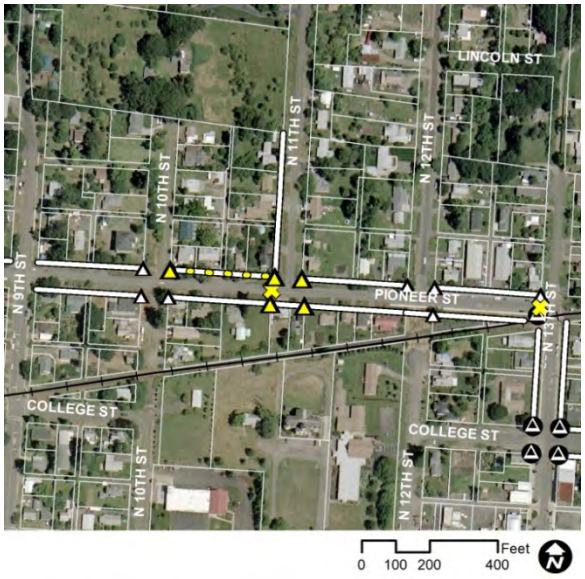
- Completes ADA accessibility along the north side of Pioneer Street.
- New crosswalk and curb ramps at 11th Street leverage investment in recently completed sidewalk along south side of Pioneer Street, and provide a new connection for students living on 11th and 12th Streets to the north.
- Crosswalk at 11th Street improves visibility of pedestrians, and promotes crossing Pioneer Street at a stop-controlled intersection rather than mid-block.
- New crosswalk improves visibility of pedestrians crossing Pioneer Street at 13th Street.
- Shared lane markings provide a bicycle facility that can be implemented quickly without impacting other uses such as on-street vehicle parking, and immediately raises the visibility of bicyclists along the street and strongly increases awareness of bicycling throughout the community.

Cost Estimate

$47,000

Photos

The northeast corner of the intersection of Pioneer Street and 10th Street currently lacks a curb ramp, limiting accessibility.



Proposed Safe Routes to School improvements along Pioneer Street.

3. 11th Street (Quail Glen Drive to Pioneer Street)

Project Description

- Upgrade 11th Street to collector street standards to include bike lanes and sidewalks.

Benefits

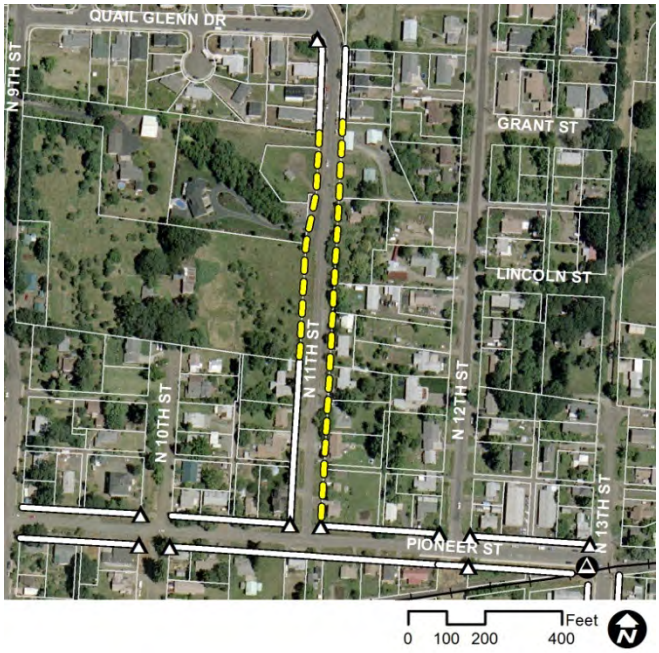
- Provides dedicated road space for bicyclists and pedestrians along 11th Street, where neighbors have concerns about the safety of bicycles and pedestrians mixing with motor vehicle traffic on the existing roadway.
- Completes a key gap, connecting numerous families and students in the Quail Glen neighborhood to safe routes to school along Pioneer and College Streets.

Cost Estimate

$311,000

Photos

11th Street has a 24 foot wide roadway with no sidewalks for most of the length between Pioneer Street and Quail Glen Drive.



Proposed Safe Routes to School improvements along 11th Street.

4. College Street (Pioneer Street & 13th Street to Applegate Street & 17th Street)

Project Description

- Install new crosswalks on north and east legs of the intersection of College Street and 13th Street, and on the north and south legs of the intersection of College Street and 15th Street
- Install bike lanes along College Street between 13th Street and 17th Street.
- Install shared lane markings on 13th Street between Pioneer Street and College Street, and on 17th Street between College Street and Applegate Street.

Benefits

- Can be implemented quickly.
- Completes transition between Pioneer Street and College Street routes through jog across railroad tracks.
- New crosswalks at 13th Street improve visibility of pedestrians and encourage crossing College Street at a location where motor vehicle traffic on College Street has a stop sign.
- New crosswalks leverage asset of existing curb extensions to create a crossing that encourages motorists to yield to pedestrians crossing the street.
- New bike lanes provide dedicated space for bicyclists along a collector street without affecting on-street vehicle parking.
- Bike lanes on College Street could be extended two blocks east to connect with existing bike lanes on 19th Street.

Cost Estimate

$27,000

Photos

Curb extensions reduce crossing distances at the intersection of College Street and 13th Street; adding high-visibility crosswalks will further establish College Street as a comfortable walking and biking route.

Proposed Safe Routes to School improvements along College Street.

5. 17th Street & Main Street Intersection

Project Information

This project is intended to increase the safety and convenience of the 17th/Main Street intersection for pedestrians and bicyclists by providing a second crosswalk across the east leg of the intersection (therefore encouraging the use of the protected crossing location) and by replacing the existing flashing light system with a Rectangular Rapid Flash Beacon (RRFB) system. RRFB systems have been shown to increase driver yielding rates to nearly 85 percent, while regular flashing beacon systems typically have yielding rates closer to 20 percent. The new RRFB system will be located on new poles at the street level (on the shoulders of the roadway, and in the center medians as shown in the project plan view). Each RRFB will be accompanied by a crosswalk and arrow sign that clearly identifies the location of the crosswalk to approaching motorists. A key element of the proposed improvement is the relocation of the flashing lights to the street level as opposed to the overhead mast arm. The current configuration and location of the flashing lights makes it difficult for pedestrians and bicyclists to know if the signal is functioning. The relocation of the flashing lights will also provide an indication to pedestrians and bicyclists that the signal has been activated and will be closer to the eye level of motorists as they approach the intersection.

Additional improvements to the intersection will include relocation of advance stop bars and accompanying warning signage in order to provide an increased buffer distance and visibility. Along with the creation of the new crosswalk on the east leg of the intersection, an additional cut through the median will be installed in order to allow northbound bicycles to pass through the intersection on 17th Street without detouring to the pedestrian crosswalk.

Benefits

- Improved visibility for pedestrians and bicyclists utilizing the crosswalk and improved visual confirmation that the signal is functioning.
- Reduced risk of multiple-threat crashes through relocation of the eastbound stop bar and new westbound stop bar.
- Greater convenience to pedestrians and bicyclists by requiring less out-of-direction north-south travel.
- RRFBs have received interim approval from the Federal Highway Administration.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.

Installation of an RRFB at 17th Street and Main Street intersection would include flashing beacons at street level on both sides of the street and the center median refuge island, as shown in this example.

5. 17th Street & Main Street Intersection

Traffic Operations Impacts

The 17th/Main Street (US20/OR34) intersection currently operates well below ODOT's mobility standards during the weekday AM and PM peak hours and is projected to continue to operate below the mobility standards over the next twenty years. While it is assumed that higher yielding rates will occur as a result of the improvements, the impact on overall traffic operations is not expected to degrade significantly or beyond what would be acceptable by ODOT. The northbound right-turn movement will be most affected, where motorists will have to yield to pedestrians in the new crosswalk across the east leg of the intersection.

Alternative Treatments

The FHWA has granted "interim approval" of the RRFB. The "interim approval" requires that with the addition of a second crosswalk across the east leg of the intersection, a total of eight (8) RRFBs; four (4) per crosswalk with two at each approach be installed. In addition, the RRFB system must be integrated between both crosswalks to prevent motorists from stopping in the middle of the crosswalk. Therefore when a user activates the pedestrian signal, all eight of the RRFBs will go on at once with four flashing in each direction.

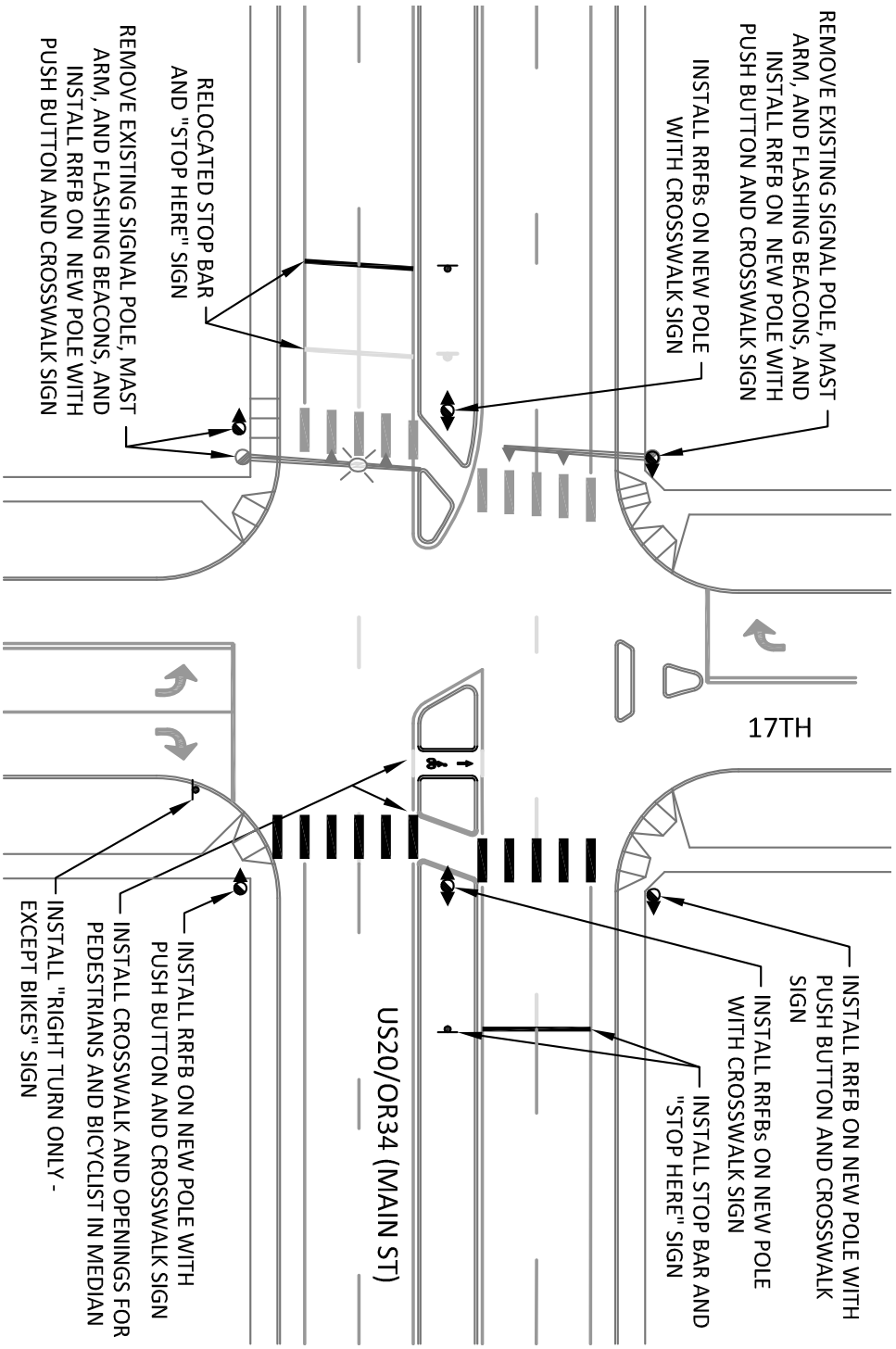
Two alternatives to the proposed plan could be considered if the requirement of installing eight RRFBs is determined to be undesirable. The RRFBs could be installed on the existing crosswalk without adding the second crosswalk (see Conceptual Alternative 5 in Appendix D). This would increase driver yielding and visibility of the signal to both pedestrians and vehicles but would not provide the convenience of dual crosswalks. The estimated cost for this alternative design is $24,000 – $25,000. Alternatively, dual crosswalks could be installed using the existing type of overhead flashing beacon but with the addition of supplemental street level beacons (one or two per approach as opposed to four). The estimated cost for this alternative design is $61,000 – $66,000.

Cost Estimate

- $65,000 – $70,000

5. 17th Street & Main Street Intersection

Proposed Improvements



6. Philomath Rodeo Grounds Path

Project Description

- Install 750 feet of new multi-use path through the Philomath Rodeo Grounds connecting 11th Street, Mary's River Park and the intersection of 13th Street and Cedar Street.
- Construct new curb ramp at the NW corner of 13th Street and Cedar Street.
- Install new crosswalk on the north leg of the intersection of 13th Street and Cedar Street.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides direct connection to Mary's River Park.

Cost Estimate

$121,000

Photos

Proposed Safe Routes to School connection through the Philomath Rodeo Grounds.

7. Cedar Street (13th Street to Willow Lane & 15th Street)

Project Description

- Install two new curb ramps on the NE and SE corners of 15th Street and Cedar Street.
- Install new crosswalk on the north leg of the intersection of 15th Street and Cedar Street.

Benefits

- Improves ADA accessibility along Cedar Street.
- Crosswalk improves the visibility of pedestrians crossing 15th Street, which is wider than most other residential streets in the area.
- Provides a connection between the proposed Willow Lane/Cedar Street Path on the east, and the proposed Philomath Rodeo Grounds path on the west.

Cost Estimate

$6,000

Photos

15th Street lacks curb ramps on the east side of the T-intersection with Cedar Street.

Proposed Safe Routes to School improvements along Cedar Street.

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street)

Project Description

- Install 650 feet of new multi-use path following the existing informal trail between 17th Street and Cedar Street and Willow Lane through Philomath Public Works.
- Install 400 feet of new multi-use path east-west on the south side of the existing fence between the Philomath Elementary School field and Philomath Public Works.
- Install 240 feet of new sidewalk on the east side of 16th Street to connect to the new path.
- Install signage on Willow Lane to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Formalizes an already heavily used pedestrian access, while improving bicycle access.
- Impacted land is already in public ownership.
- Connects to 16th Street and Philomath Elementary School, improving pedestrian circulation.

Cost Estimate

$204,000

Photos

One path alignment would connect east-west across the Philomath Elementary School field between 16th and 17th Street on the south side of the existing fence seen here.

Proposed Safe Routes to School connection through the Philomath Public Works property south of Philomath Elementary School.

9. 17th Street (Applegate Street to 19th Street & Cedar Street)

Project Description

- Replace 120 feet of sidewalk on the east side of 17th Street south of Maple Street.
- Install ten new curb ramps:
  - NE and SE corners of intersection of 17th Street and Maple Street.
  - NE and SE corners of intersection of 17th Street and Ash Street.
  - All corners of intersection of 17th Street and Cedar Street.
  - SE and SW corners of intersection of 18th Street and Cedar Street.

Benefits

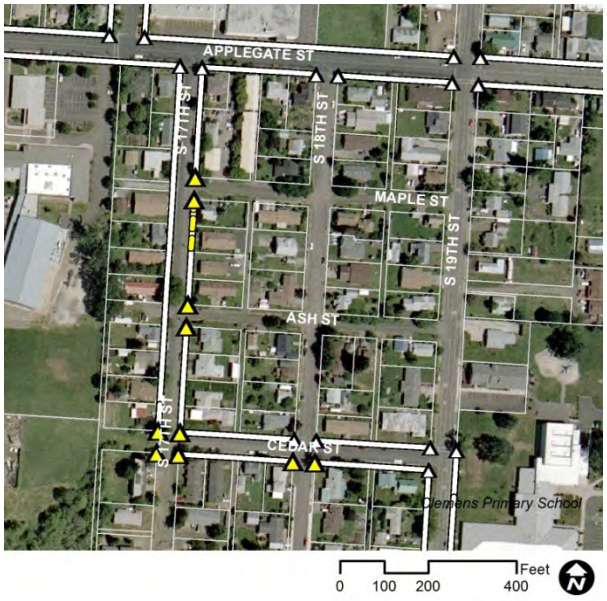
- Improves a section of deficient sidewalk along east side of 17th Street.
- Improves ADA accessibility along 17th Street and the south side of Cedar Street..
- Improvements connect existing western sidewalk along 17th Street to existing curb ramps and crosswalk across 19th Street to complete connection to Clemens Primary School.
- Provides access to the proposed Willow Lane/Cedar Street Path at 17th Street and Cedar Street.

Cost Estimate

$45,000

Photos

This existing sidewalk on the east side of 17th Street is below recommended width, and is missing a curb ramp at Maple Street.



Proposed Safe Routes to School improvements along 17th Street and Cedar Street.

10. Philomath High School & Middle School Path System

Project Description

- This is a previously proposed facility that would consist of several new multi-use paths through the Philomath Middle School/Philomath High School campus and fields:
    - Through the western Philomath High School Parking lot north to south.
    - Between City Park and the high school track, around the northern baseball field.
    - Along the east side of the existing fire lane where school buses load and unload students, from north to south.
    - Along the north side of Philomath Middle School, from east to west.
- This project has funding through a grant from ODOT, and is entering the first stages of design; a target date for construction has not been set.

Benefits

- Build upon an existing network, leveraging several existing paths through the school fields and connecting to City Park.
- Creates separated facilities through parking lots that will reduce potential conflicts with vehicles.
- Provides an off-street facility that will allow walking and bicycling students to avoid traffic on streets such as Applegate Street that experience congestion at school start and end times.
- Reduces travel distances for some bicyclists and pedestrians approaching schools, depending on direction of approach.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Cost Estimate

This project is already funded and will be constructed as part of the Philomath High School remodel project.

Photos

The future alignment of one of several funded paths, looking east along the north side of Philomath Middle School.

Preliminary design of the Philomath High School and Philomath Middle School multi-use path network.

11. Applegate Street & 21st Street Intersection

Project Description

- Install three new curb ramps at the intersection of 21st Street and Applegate Street:
  - Northwest corner.
  - Southwest corner facing north (existing curb ramp at this corner faces east only).
  - Southeast corner.
- Install two new crosswalks across west and south legs of intersection.
- Additionally, install new curb ramps at the intersection of 21st Street and Applegate Street:
  - Northeast corner.
  - Southeast corner (facing north; geometry of intersection requires separate ramps at southeast corner to align with crossings on south and east legs).
- Install new island with curb ramps or cut-throughs at location of the existing curbed area separating the right turn slip-lane from the northeast corner of the intersection.

Benefits

- Completes ADA accessibility at all corners and crossings of the 21st Street and Applegate Street intersection.
- Improves ADA accessibility near Philomath High School.
- New crosswalks improve visibility of pedestrians crossing Applegate Street and 21st Street at a busy, key location.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Cost Estimate

$31,000

Photos

Long crossing distances and a right turn slip lane create obstacles for pedestrians at the intersection of 21st Street and Applegate Street near Philomath High School.

Proposed improvements to the 21st Street and Applegate Street intersection.

12. Applegate Street (21st Street to 29th Street)

Project Description

- Repair and replace curb ramps as necessary to align curb ramp faces to accommodate sidewalk traffic traveling both east-west and north-south.
- Remove or relocate sidewalk obstructions including utility poles and mailboxes, or extend sidewalk to preserve a passable width of sidewalk compatible with ADA requirements.
- Install bike lanes on Applegate Street from 21st Street to 29th Street by removing on-street vehicle parking from one side of the street.

Benefits

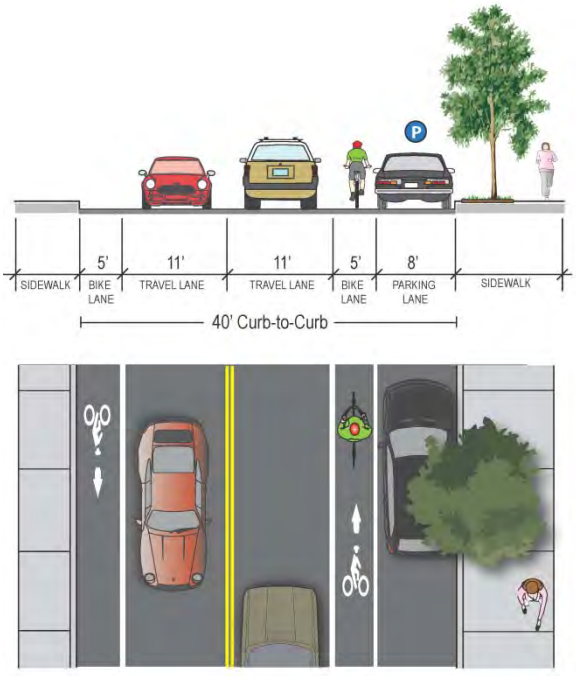
- Improves ADA accessibility along Applegate Street.
- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Current levels of use observed during field visits show that existing on-street vehicle parking use on Applegate Street could be accommodated within a single parking lane.

Cost Estimate

$43,000, assuming bike lane striping to be added as part of a near-term Applegate Street repaving project. ADA upgrades and sidewalk obstruction mitigation assumes 300 square feet of sidewalk widening near utilities and replacement of 5 curb ramps.

Photos

Several curb ramps along this area of Applegate Street do not accommodate pedestrian traffic traveling east-west, as seen here looking east on Applegate Street.



Proposed cross-section to provide Philomath students safe bicycle access to schools along Applegate Street.

13. Applegate Street (16th Street to 21st Street)

Project Description

- Install a new curb ramp on the south side of Applegate Street at the intersection with 17th Street, aligned with the existing northwest curb ramp and the crosswalk on the west leg of the intersection.
- Install bike lanes on Applegate Street from 16th Street to 21st Street by removing on-street vehicle parking from one side of the street.

Benefits

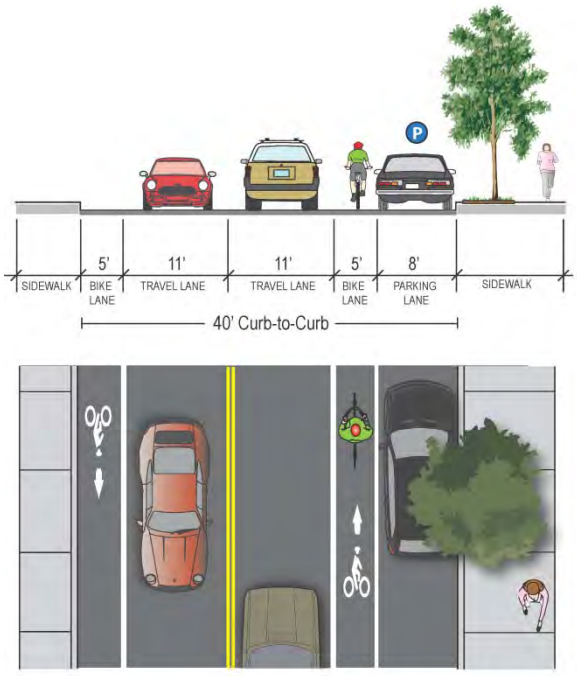
- Completes a gap in ADA accessibility along 17th Street near Philomath Elementary School.
- Leverages the utility of the existing crosswalk on the west leg of the intersection and helps discourage midblock crossings or wrong-way riding by bicyclists (wheeled users using the sidewalk may cross unpredictably in order to access another driveway or curb ramp near this location).
- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Current levels of use observed during field visits show that existing on-street vehicle parking use on Applegate Street could be accommodated within a single parking lane.

Cost Estimate

$25,000, assuming bike lane striping to be added as part of a near-term Applegate Street repaving project.

Photos

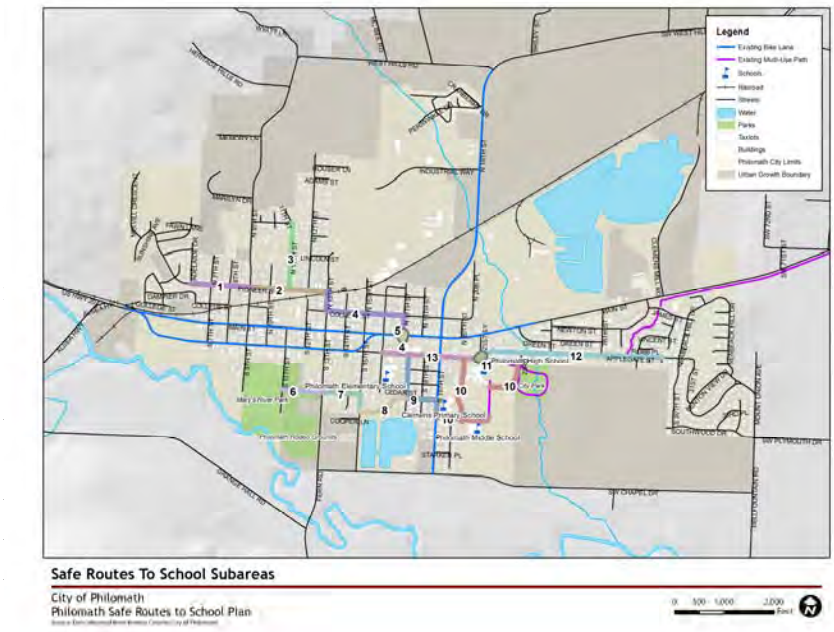
This crosswalk across Applegate Street at 17th Street is missing a curb ramp on the south side.



Proposed cross-section to provide Philomath students safe bicycle access to schools along Applegate Street.

Additional Potential Improvements

This Plan was created to provide specific bicycle and pedestrian improvement recommendations along the Safe Routes to School identified in Map 1. However, further potential improvements to the bicycle and pedestrian network along other streets and corridors have arisen during development of the Plan. Possible improvement concepts include:



Chapter 4. Implementation

Project Evaluation

The Preferred Alternatives proposed in this Plan offer a range of improvements to create Safe Routes to School across Philomath. These projects vary in cost and complexity, from simple curb ramp replacements to the design and creation of new multi-use paths. While all of the improvements identified in the Preferred Alternatives are important for creating Safe Routes to School, financial constraints require the City to prioritize which projects should be pursued first. To accomplish this task, the project team developed a set of evaluation criteria to help the City evaluate the impact of each Preferred Alternative. An initial set of criteria were developed to reflect the goals and project objectives of the Safe Routes to School Plan. These criteria were revised and finalized with input from the Philomath Bicycle and Pedestrian Committee and from community members at an open house.

Evaluation Criteria

The following eight criteria were used to rank the different improvement projects contained in this Safe Routes to Schools Plan. Descriptions are provided for each criterion, with questions that were asked of each project to help guide the ranking process.

Accommodating a Broad Range of Users

Could the project appeal to infrequent bicycle and pedestrian users and encourage them to walk and bicycle more often? Does the project include innovative design features, or does it bring a route into compliance with industry standards for bicycle and pedestrian facilities? Projects that increase access for vulnerable, less-confident or infrequent users received higher scores.

Connectivity

Does the project fill a gap in the bicycle and pedestrian network, or connect existing bicycle and pedestrian infrastructure to a new neighborhood? Projects that address major gaps in the system or significantly extend the reach of the existing bicycle and pedestrian network received higher scores.

Cost

What is the expected financial cost of the project? What are the expected maintenance costs? Could the project qualify for outside funding such as grant programs? What is the relative benefit of the project compared to its

cost? This criterion also considered whether there were lower-cost alternative projects with comparable benefits.

Land Use Connections

Does the project connect bicyclists and pedestrians to key destinations such as schools, parks, government offices, employment centers, libraries, etc.? Projects that connect directly to, or are in greater proximity to these destinations received higher scores.

Leveraging Previous Investment

Has the project previously been proposed or recommended by the City of Philomath in a published document or study? Has the project received, or is it currently pursuing grant funding? Could the project be included in a planned upcoming construction project? Higher scores for this criterion were given to projects that are most readily implemented, or are already in development.

Recreational Value

Does the project increase bicycle and pedestrian access to recreational destinations? Is the proposed facility designed to accommodate recreational or fitness activities alongside transportation use?

Route Efficiency

Does the proposed project increase convenience for bicyclists and pedestrians by providing a shorter or alternative route to a key destination? Does the project remedy obstructions that hinder bicycle and pedestrian traffic at locations that experience congestion during peak hours? Does the project create a formalized walking or bicycling facility along a popular but unofficial route?

Safety and Comfort

Does the project address a perceived or documented safety issue at a specific location? Does it improve the comfort of bicyclists or pedestrians in an area where they are especially vulnerable, such as street crossings? Does the project complete a more comfortable alternative to an existing route that vulnerable users may prefer to avoid, or establish dedicated pedestrian or bicycle space where there was none before? Projects acknowledged by community input and stakeholder interviews to address these issues received higher scores.

Evaluation Criteria Scoring

To prioritize implementation of improvements along the 13 Preferred Alternatives areas, each project was scored on its merits as it applied to the eight evaluation criteria described above. For each criterion, the projects

were awarded one of three scores, or were noted as "N/A" (not applicable). Table 2 below describes the potential scores each project could receive for each criterion. Table 3 shows how each project scored according to the evaluation criteria.

Table 2. Evaluation Criteria Scoring Ranges

Score	Description
N/A	This criterion does not apply to the project (e.g., recreational value of proposed crosswalk improvements).
●	The project fully addresses the criterion.
◑	The project partially or indirectly addresses the criterion.
○	The project minimally addresses the criterion or does not address the criterion.

Table 3. Preferred Alternatives Evaluation Criteria Scores

Project	Accommodates a Broad Range of Users	Connectivity	Cost	Land Use Connections	Leveraging Previous Investment	Recreational Value	Route Efficiency	Safety and Comfort	Total Score
Pref Alt 1	◑	○	◑	○	◑	N/A	◑	◑	2 1/2
Pref Alt 2	◑	○	◑	○	◑	N/A	◑	◑	2 1/2
Pref Alt 3	●	●	○	◑	○	N/A	◑	●	4
Pref Alt 4	◑	◑	●	◑	◑	N/A	◑	◑	4
Pref Alt 5	●	●	N/A	●	◑	N/A	◑	●	5
Pref Alt 6	●	●	○	●	○	●	●	●	6
Pref Alt 7	◑	◑	●	○	○	◑	◑	◑	3 1/2
Pref Alt 8	●	●	○	●	○	●	●	●	6
Pref Alt 9	◑	○	◑	◑	○	N/A	○	○	1 1/2
Pref Alt 10									
Pref Alt 11	●	●	●	●	◑	N/A	◑	●	6
Pref Alt 12	◑	○	●	◑	●	◑	●	◑	5
Pref Alt 13	◑	○	●	◑	●	◑	●	◑	5

(Preferred Alternative 10 has already received funding, and is currently awaiting construction and so was omitted from evaluation and prioritization analysis).

Project Prioritization

The evaluation criteria scores for each Preferred Alternative provide a rough order of implementation priorities for the Safe Routes to School network. Ordering the projects from highest to lowest scores suggests that the multi-use paths proposed in Preferred Alternatives 6 (Rodeo Grounds Path) and 8 (Willow Lane/Cedar Street Path), and the intersection improvements proposed in Preferred Alternatives 5 (17th Street and Main Street) and 11 (21st Street and Applegate Street) should be in the first tier of priority projects. These are followed by a second tier of bike lane projects on Applegate, College and 11th Streets, and a third tier of sidewalk infill and shared lane marking projects. As mentioned in Chapter 3, Preferred Alternative 10 (Philomath High School and Middle School Field Paths) is already funded and is awaiting construction.

The results of the evaluation criteria scoring provide a valuable discussion tool for prioritizing implementation of the Preferred Alternative projects. However, the City should be flexible and respond to funding opportunities as they arise, and priorities may change over time as projects are completed. For example, how the importance of installing new curb ramps on Cedar Street as part of Preferred Alternative 9 may rise significantly once the Willow Lane/Cedar Street Path is completed. Also, ongoing road maintenance programs in Philomath present the opportunity to incorporate Safe Routes to School treatments into already scheduled road construction projects, simplifying the projects and offering potential savings due to lower mobilization costs. Table 4 below provides initial project phasing recommendations.

Table 4. Recommended Project Prioritization

Preferred Alternative		Completion Timeline	Priority Level
10	Philomath High School/Middle School Path System	0-1 years	Tier 1
11	Applegate Street & 21st Street	1-5 years	Tier 1
5	Main Street & 17th Street	1-5 years	Tier 1
1	Pioneer Street, Adelaide Drive to 9th Street	1-5 years	Tier 1
2	Pioneer Street, 9th Street to 13th Street	1-5 years	Tier 1
8	Willow Lane to Cedar Street	2-5 years	Tier 2
4	College Street, Pioneer Street & 13th Street to Main Street & 17th Street	2-5 years	Tier 2
7	Cedar Street & 13th Street to Willow Lane & 15th Street	2-5 years	Tier 2
9	17th Street & Applegate Street to 19th Street & Cedar Street	2-5 years	Tier 2
12	Applegate Street, 21st Street to 29th Street	~5 years	Tier 3
13	Applegate Street, 16th Street to 21st Street	~5 years	Tier 3
6	Rodeo Grounds, 11th Street to 13th Street	3-10 years	Tier 3
3	11th Street, Quail Glen Drive to Pioneer Street	3-10 years	Tier 3

Additional Considerations

When implementing these projects, it is important to consider the potential impact of the project beyond the immediate construction costs.

Permitting and Environmental Impacts

Most of the Preferred Alternative projects included in this Plan are on-street bicycle and pedestrian facilities that are less likely to encounter significant challenges during implementation. However, several proposed projects may require an in-depth site review for permitting and environmental considerations that is beyond the scope of this Plan. The following projects should be considered for additional study.

Preferred Alternative 3 – 11th Street (Pioneer Street to Quail Glen Drive)

11th Street is proposed for a roadway expansion in order to bring the street up to the standard cross-section for a collector street, including the addition of bike lanes and sidewalks on both sides. Infill of the existing drainage ditches, especially on the west side of the roadway, should be reviewed for potential stormwater mitigation and environmental impacts. The project will also require confirmation of available right-of-way and design to accommodate a change in the roadway cross-section near Quail Glen Drive, where available right-of-way narrows.

Preferred Alternative 5 – 17th Street and Main Street Intersection

Although the proposed crossing treatments at this location have conceptual approval from ODOT, further review by the state highway engineer will be necessary before implementing any changes along Main Street (US 20/OR 34).

Preferred Alternative 6 - Philomath Rodeo Grounds Path

A crossing of the existing drainage ditch located along the east side of the Mary's River Park access road will be necessary in order to complete the southern fork of this path project. Additional site review will be necessary to determine tree removal needs and whether a culvert or small bridge needs to be constructed for the path to cross the ditch.

Preferred Alternative 8 – Willow Lane/Cedar Street Path

Although this route is already commonly used as an informal pedestrian route, low lying segments of this route through the Philomath Public Works property may potentially be a part of wetland areas located near a creek to the south. Environmental review may be necessary before constructing a paved multi-use path through this area.

Maintenance Costs

Maintenance costs are important to consider along with initial capital costs when building new transportation facilities. Table 5 below provides example maintenance regimens and costs for several bicycle and pedestrian facilities of interest.

Table 5. Maintenance Guidelines and Cost Estimates

Item Description	Unit	Qty./ Mile	Unit Cost	Total	Notes
Bike Lane					
Re-striping	LF	5,280	$4.50	$23,760	Two lanes, every two years
Sign replacement	EA	2.6	$250	$660	26 signs every ten years
Patching	LF	10,560	$0.04	$400	Twice per year
Cost per mile				$24,820	
Annual Maintenance Cost per LF:				*$4.70*	
Shared Lane Markings					
Sign replacement	EA	2.6	$250	$660	26 signs every ten years
Patching	LF	10,560	$0.04	$400	Twice per year
Cost per mile				$1,060	
Annual Maintenance Cost per LF:				*$0.20*	
Multi-Use Path					
Patching	LF	10,560	$0.04	$400	Twice per year
Concrete Panel Replacement	SY	71	$50.00	$3,550	Concrete, 10% panel replacement every 20 years
Buffer maintenance	SF	21,120	$1.25	$26,400	Two-foot shoulders each side, yearly
Cost per mile				$29,950	
Annual Maintenance Cost per LF:				*$5.67*	

Chapter 5. Funding

The Safe Routes to School improvements proposed in Chapter 3 contain a variety of on-street and off-street bicycle and pedestrian projects. Multiple funding sources will be required to build Philomath's Safe Routes to Schools network. This chapter identifies potential funding sources that the City may pursue for Safe Routes to School projects.

Pending Projects

Preferred Alternative 10, a series of multi-use paths through the Philomath High School and Middle School grounds, has already been awarded grant funding from ODOT and will be constructed in the near future. Strengthening Rural Families, a longstanding sponsor of Safe Routes to Schools in Philomath, is currently investigating potential grant funding for construction of the Willow Lane/Cedar Street Path (Preferred Alternative 8).

Prioritized Project Funding

Chapter 4 of this Plan contains recommended project prioritization and offers a suggested timeline for when the different segments of the Safe Routes to Schools network may be built. Several projects require little design work and are relatively simple to implement, such as striping bike lanes on College Street as recommended in Preferred Alternative 4. It may be possible to integrate these types of projects into near term road maintenance projects. Sidewalk projects may be incorporated into the City's ongoing sidewalk infill program by prioritizing projects located along Safe Routes to School streets. Table 6 suggests potential funding sources for the different Preferred Alternative projects.

To anticipate funding needs to implement each of the Preferred Alternatives identified in this plan, total cost by project priority level is estimated as follows:

- Tier 1: $225,000
- Tier 2: $282,000
- Tier 3: $500,000
- Safe Routes to School Plan Total: $1,007,000

Table 6: Preferred Alternative Potential Funding Sources

Preferred Alternative		Potential Funding Source	Note
10	Philomath High School/Middle School Path System	-	Already funded.
11	Applegate Street & 21st Street	Grant/SRTS Program, CAMPO	Some improvements may be possible during PHS remodel.
5	Main Street & 17th Street	Grant, ODOT, CAMPO	
1	Pioneer Street, Adelaide Drive to 9th Street	City Sidewalks Fund	Prioritize crossing improvements.
2	Pioneer Street, 9th Street to 13th Street	City Sidewalks Fund	Prioritize crossing improvements.
8	Willow Lane to Cedar Street	Grant, CAMPO	SRF currently investigating grant applications.
4	College Street, Pioneer Street & 13th Street to Main Street & 17th Street	City, CAMPO	Include in upcoming capital projects.
7	Cedar Street & 13th Street to Willow Lane & 15th Street	City Sidewalks Fund	Prioritize upon completion of Preferred Alternative 6 or 8.
9	17th Street & Applegate Street to 19th Street & Cedar Street	City Sidewalks Fund	Prioritize upon completion of Preferred Alternative 6 or 8.
12	Applegate Street, 21st Street to 29th Street	City, CAMPO	Incorporate bike lanes into Applegate Street repaving project.
13	Applegate Street, 16th Street to 21st Street	City, CAMPO	Incorporate bike lanes into Applegate Street repaving project.
6	Rodeo Grounds, 11th Street to 13th Street	Grant, City, CAMPO, Parks (connects to Mary's River Park)	Follow funding leads from Preferred Alternatives 10 and 8.
3	11th Street, Quail Glen Drive to Pioneer Street	County/City/Development fees	Include in upcoming capital projects.

Funding Sources

This section reviews financing options for implementing the Philomath Safe Routes to School Plan. The City has traditionally funded public works and park capital improvements through system development changes (SDC), utility user fees, gas taxes, reserve funds, grants, and loans. This narrative examines existing and potential federal, state, and local funding sources, and strategies available or recommended for pursuit.

Federal Funding Sources

Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU)

Federal funding is primarily distributed through a number of different programs established by Congress. The latest act, the Safe, Accountable,

Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) was enacted in August 2005 as Public Law 109-59.

SAFETEA-LU authorized the federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. SAFETEA-LU legislation expired on September 30, 2009, but at the time of writing had been extended to March 4, 2011. It is expected that Congress will extend the bill into 2011 or reauthorize the legislation. It should therefore be noted that it is not possible to guarantee the continued availability of any listed SAFETEA-LU programs, or to predict their future funding levels or policy guidance. Nevertheless, many of these programs have been authorized in some form in repeated federal transportation reauthorization acts, and thus may continue to provide capital for improvements.

Any SAFETEA-LU funding for Philomath Safe Routes to School projects would be distributed through the Corvallis Area Metropolitan Planning Organization (CAMPO). This includes Transportation Enhancements, Safe Routes to School, and other federal programs under SAFETEA-LU that are discussed later in this section. In Oregon, federal monies are administered through ODOT and regional planning agencies such as CAMPO. Further information about funding via CAMPO is discussed later in this chapter in the Local Funding Sources section.

There are a number of programs identified within SAFETEA-LU that are applicable to bicycle and pedestrian projects. These programs are discussed below.

- More information: http://www.fhwa.dot.gov/safetealu/index.htm

Transportation Enhancements

A federal program administered by the Oregon Departments of Transportation, the Transportation Enhancements (TE) program is funded by a set-aside of Surface Transportation Program (STP) monies. Ten percent of STP funds are designated for Transportation Enhancement (TE) activities, which include the "provision of facilities for pedestrians and bicycles, provision of safety and educational activities for pedestrians and bicyclists," and the "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails)" *23 USC Section 190 (a)(35)*. Other TE categories are Historic Preservation; Landscaping and Scenic Beautification; and Environmental Mitigation. Projects must serve a transportation need. TE grants can be used to build a variety of pedestrian, bicycle, streetscape, and other improvements that enhance the cultural, aesthetic, or environmental value of transportation systems. The statewide grant process is competitive.

- More information: http://www.oregon.gov/ODOT/HWY/LGS/enhancement.shtml

Safe Routes to School

ODOT administers Oregon's portion of the national Safe Routes to School (SR2S) program. Under the Oregon Safe Routes to School Program, approximately $3.7 million has been available for grants between 2006 and 2010. The grants can be used to identify and reduce barriers and hazards to children walking or bicycling to school. ODOT estimates that they have received an average of $1.37 million annually for this program through the lifetime of SAFETEA-LU.

- More information: http://www.oregon.gov/ODOT/TS/saferoutes.shtml

Surface Transportation Program

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of projects on any Federal-aid Highway including the National Highway System, bridges on any public road, and transit facilities. Bicycle and pedestrian improvements are eligible activities under the STP. This covers a wide variety of projects such as on-street facilities, off-road trails, sidewalks, crosswalks, bicycle and pedestrian signals, bicycle parking, and other ancillary facilities. SAFETEA-LU also specifically clarifies that the modification of sidewalks to comply with the requirements of the *Americans with Disabilities Act* (ADA) is an eligible activity.

As an exception to the general rule described above, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. In addition, bicycle-related non-construction projects, such as maps, coordinator positions, and encouragement programs, are eligible for STP monies. ODOT estimates that they receive an average of $84 million annually for this program through the lifetime of SAFETEA-LU.

- More information: http://www.fhwa.dot.gov/safetealu/factsheets/stp.htm

Highway Safety Improvement Program

This program is designed to help communities implement projects designed to achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. This program includes the Railway-Highway Crossings Program and the High Risk Rural Roads Program. ODOT estimates that they will receive an average of $14 million annually for this program through the lifetime of SAFETEA-LU. The City

could pursue Highway Safety Improvement Program funds for on- or off-street projects seeking to reduce serious crashes at highway or railway crossings or on rural roads.

- More information: http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/highway_safety_program.shtml

Transportation, Community, and System Preservation Program

The Transportation, Community, and System Preservation (TCSP) Program provides federal funding for transit-oriented development, traffic calming, and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services, and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. The TCSP Program funds require a 20 percent match.

Because TCSP program is one of many programs authorized under SAFETEA-LU, current funding has only been extended through March of 2011, and program officials are not currently accepting applications for 2011. In most years, Congress has identified projects to be selected for funding through the TCSP program. Relatively few Oregon communities have received monies from this program since 1999, and a majority of projects are highway-related efforts.

- More information: http://www.fhwa.dot.gov/tcsp/

Flexible Federal Funds

As an outcome of the 2009 Legislative Session, the Oregon Department of Transportation (ODOT) was asked to increase its investment in Non-Highway Transportation. In 2010, the Oregon Transportation Commission approved the formation of a new Flexible Funds Program. The intent of the program is to provide capital for transit, bicycle and pedestrian, and Transportation Demand Management (TDM). Projects must meet FHWA eligibility requirements for STP funding and must be sufficiently developed so construction funds can be obligated by September 2011 (e.g. "shovel ready" projects). This grant program has $21 million available for 2009 – 2011; future program funding levels will depend on ODOT action. The program is currently reviewing the first round of grant applications.

- More information: http://www.oregon.gov/ODOT/TD/TP/FlexFunds.shtml

Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal CDBG grantees may "use Community Development Block Grants funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs."

Philomath has been the recipient of CDBG monies in the past. Safe Routes to School Plan projects that enhance accessibility are the best fit for this funding source. CDBG funds could also be used to write an ADA Transition Plan for the City.

- More information: http://www.oregon.gov/OHCS/SFF_CDBG_Program.shtml

State Funding Sources

State funding for Philomath Safe Routes to School projects must be authorized by the CAMPO Metropolitan Transportation Improvement Program (MTIP) before they can be distributed.

Bicycle and Pedestrian Program Grants

The Pedestrian and Bicycle Grant Program is a competitive grant program providing approximately $5 million every two years to Oregon cities, counties, and ODOT regional and district offices for design and construction of pedestrian and bicycle facilities. Proposed facilities must be within public rights-of-way. Grants are awarded by the Oregon Bicycle and Pedestrian Advisory Committee and administered by ODOT. Philomath has not received a Bicycle and Pedestrian Program Grant in the past, and would be well-positioned to apply in the future.

- More information: http://www.oregon.gov/ODOT/HWY/BIKEPED/grants1.shtml

Oregon Parks and Recreation Local Government Grants

The Oregon Parks and Recreation Department (OPRD) administers a Local Government Grants program using Oregon Lottery revenues. The grants may pay for acquisition, development, and major rehabilitation projects for public outdoor park and recreation areas and facilities. The amount of money available for grants varies depending on the approved OPRD budget. Grants are available for three categories of projects: small projects (maximum $50,000 request), large projects (maximum $750,000 request, or $1,000,000 for land acquisition), and small community planning projects (maximum $25,000 request).

- More information: http://www.oregon.gov/OPRD/GRANTS/local.shtml

Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) is ODOT's short-term capital improvement program, providing project funding and scheduling information for the department and Oregon's metropolitan planning organizations. STIP project lists are updated every two years, with four-year project lists. The current cycle covers projects from 2010-2013, and the 2012-2015 STIP is under development. Project lists are developed through the coordinated efforts of ODOT, federal and local governments, Area Commissions on Transportation, tribal governments, and the public.

In developing this program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan, ODOT Modal Plans, Corridor Plans, local comprehensive plans, and SAFETEA-LU planning requirements, and coordinate with the local Metropolitan Planning Organization (MPO). For projects located within an MPO, the project must be listed within the local MTIP before being funded by the STIP. The STIP must fulfill federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on federal planning requirements and the different state plans. ODOT consults with local jurisdictions before highway-related projects are added to the STIP. Stand-alone bicycle/pedestrian projects are an eligible funding category, and multi-modal roadway projects that contain a planned pedestrian or bicycle improvement can also be funded through this mechanism.

More information: http://www.oregon.gov/ODOT/HWY/STIP/

State Highway Trust Fund

Philomath receives its share of state gas tax and weight mile tax receipts from the State Highway Trust Fund. These monies are currently used for road operations and maintenance. The state gas tax is scheduled to increase

by 6 cents a gallon in 2011; the additional revenue to the City of Philomath could be used maintain current road service levels. Operations and maintenance needs of on-street bicycle and pedestrian facilities would continue to benefit from this funding source, and multimodal roadway projects paid for through this source may result in improved bicycle and pedestrian facilities, but it is unlikely to provide for stand-alone pedestrian or bicycle facilities in the future.

Urban Trails Fund

The Urban Trails Fund (UTF) was created in 2009 by the Oregon Legislature, as part of HB 2001 (the Jobs and Transportation Act). The purpose of the Urban Trails Fund was to develop shared-use paths for non-motorized vehicles and pedestrians, within urban growth boundaries, to provide or improve links to roads and highways, footpaths, bike trails, and public transit. The UTF was specifically created in response to a gap in the current funding stream for projects outside of the public right-of-way that provide non-motorized transportation links.

The Urban Trails Fund was initially created by a one-time appropriation of $1.0 million, and was managed as a competitive grant program by ODOT. The Oregon Bicycle and Pedestrian Advisory Committee was the public advisory committee overseeing the Urban Trails Fund. The intention of the first round of funding was to demonstrate the value of the program with the hope that the Oregon Legislature will authorize additional program dollars in the future.

- More information: None available online; ODOT contact is Pat Rogers Fisher (patricia.r.fisher@odot.state.or.us)

Business Energy Tax Credits (BETC)

Offered by the Oregon Department of Energy, BETCs reward companies who invest in energy conservation, recycling, renewable energy resources, and less-polluting transportation fuels. Eligible applicants include trade, business, or rental property owners with business sites in Oregon, or Oregon non-profit organizations, tribes, or public entities partnering with an Oregon business or resident. Non-profit organizations, schools, and other public entities can use a transfer option for a cash-sum payment.

The program does not fund specific transportation infrastructure improvements, but programs and services designed to increase walking and bicycling are eligible, including SmartTrips programs, creation of bike maps, Transportation Management Associations, and bicycling and walking outreach/education/promotion efforts. Employer bicycle purchases may be eligible for a 35% of cost grant. To receive the credit, an application must be submitted prior to the beginning of the project, and again after the project is completed, demonstrating the resulting reduction in vehicle miles traveled.

BETC is not a promising funding source for the infrastructure projects identified in this plan, but it does offer potential for services and programs that can enhance public use of the facilities that are constructed.

At present, the program's sunset date for energy conservation projects (into which category transportation projects fall) is July 1, 2012. Future legislative action may modify, extend, or discontinue the program.

- More information: http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml

Oregon Revised Statute 366.514

Often referred to as the "Oregon Bicycle Bill," this law applies equally to bicycle and pedestrian facilities. The statute's intent is to ensure that future roads be built to accommodate bicycle and pedestrian travel. The statute requires the provision of bicycle and pedestrian facilities on all Major Arterial and Collector roadway construction, reconstruction, or relocation projects where conditions permit. The statute also requires that in any fiscal year, at least one percent of highway funds allocated to a jurisdiction must be used for bicycle/pedestrian projects. This amount could increase to 1.5 percent or higher in the future and could, therefore, present a greater opportunity for funding bicycle and pedestrian facilities.

- More information: http://www.oregon.gov/ODOT/HWY/BIKEPED/bike_bill.shtml

Oregon Transportation Infrastructure Bank

The Oregon Transportation Infrastructure Bank is a statewide revolving loan fund designed to promote innovative transportation solutions. Oregon's program was started in 1996 as part of a ten-state federal pilot program. Additional legislation passed in 1997 by the Oregon Legislature establishes the program in state law and includes expanded authority. OTIB may cover up to 100% of project costs. Eligible borrowers include cities, counties, transit districts, other special districts, port authorities, tribal governments, state agencies, and private for-profit and non-profit entities. Eligible projects include the following:

- Highway projects, such as roads, signals, intersection improvements and bridges
- Transit capital projects, such as buses, equipment, and maintenance or passenger facilities
- Bikeway or pedestrian access projects on highway right-of-way
- Eligible projects include preliminary engineering, environmental studies, right-of-way acquisition, construction (including project management and engineering), inspections, financing costs, and contingencies.

Bicycle and pedestrian projects are explicitly eligible for loan. While a loan may facilitate the implementation of a project, monies will still need to be identified to repay the loan. This program should primarily be seen as an implementation tool for projects identified in the Safe Routes to School Plan and not a funding source.

- More information: http://www.oregon.gov/ODOT/CS/FS/otib.shtml

Non-Traditional Grant Sources

Bikes Belong Grant Program

The Bikes Belong Coalition of bicycle suppliers and retailers has awarded $1.7 million and leveraged an additional $650 million since its inception in 1999. The program funds corridor improvements, mountain bike trails, BMX parks, trails, and park access. It is funded by the Bikes Belong Employee Pro Purchase Program.

In Oregon, the Bikes Belong Grant Program provided $7,500 to the City of Gresham for the Gresham-Fairview Trail in 2006, and $10,000 to the Bicycle Transportation Alliance of Portland for the Springwater Connector Trail in 2011.

- More information: http://www.bikesbelong.org/grants/

Active Living by Design Grants

The Robert Wood Johnson (RWJ) Foundation established the Active Living by Design (ALbD) Grant Program in 2001. Grants are awarded to promote healthy communities and lifestyles. The grant program funded and provided technical assistance to 25 community partnerships that developed and implemented local projects to support physical activity and active living, including development of parks, trails, and other bicycle commuting opportunities. The grant provided $200,000 over five years to each site, as well as providing technical assistance. While this program has not been funded since, it is a good example of community health partnership grants that may become available in the future.

- More information: http://activelivingbydesign.org/what-we-do/albd-grant-program

Volunteer Services

Local businesses can help defray some of the costs associated with trail and greenway development. Some examples include:

- Donations of services, equipment, and labor
- Cash donations
- Contribution of employee volunteer time
- Discounted materials

Neighborhood and other community groups including Eagle Scouts for a community-service project can develop some of the natural surface trails, particularly those that are on City-owned land. The City could develop a booklet of trails that would be appropriate for volunteer efforts.

A good local example of this type of volunteerism is the SW Trails Group, a neighborhood group that has built several neighborhood trails in SW Portland.[1] Volunteer work parties have built stairs, wooden bridges, and have organized an experiment to gravel a trail – by providing a pile of gravel at the trailhead and asking walkers to fill a bucket and help spread the gravel on the trail. The group also has assisted the City in the development of a trail map and lead regular group walks around the neighborhood.

Local Funding Sources

The following section describes local funding options available to the City of Philomath for implementing bicycle and pedestrian projects contained within the Safe Routes to School Plan. Each description begins with a summary table that includes the potential funding level (low, medium, or high), the action needed to implement the option, the administrative cost of implementation (low, medium, or high), anticipated community acceptance of the action, and the types of projects that could be implemented through the option. All options discussed are legal in Oregon and in use in communities today. Some require specific action in order to establish the program for the first time.

Sidewalk Program	
Potential funding level	Medium
Action needed	None
Administrative cost	No additional cost
Anticipated community acceptance	Well-received; 95 percent of affected property owners have completed the installation of their sidewalks.
Types of projects	Sidewalks

The City of Philomath currently has a citywide sidewalk construction program. Through the program, homeowners are primarily responsible for funding sidewalk infill projects, although the City has waived permitting fees.

[1] http://explorepdx.com/swtrails.html

Local Bond Measures	
Potential funding level	High
Action needed	Voter approval
Administrative cost	High
Anticipated community acceptance	Depends on the specific cost to voters and projects promised, but past successful bond measures indicate that the public is open to this option
Types of projects	Any

Local bond measures, or levies, are usually initiated by voter-approved general obligation bonds for specific projects. Bond measures are typically limited by time, based on the debt load of the local government or the project under focus. Funding from bond measures can be used for right-of-way acquisition, engineering, design, and construction of pedestrian and bicycle facilities. Bond measures are often used by cities for local match in grant application. Transportation-specific bond measures featuring a significant bicycle/pedestrian facility element have passed in other communities, such as Seattle's "Closing the Gap" measure.

Tax Increment Financing/Urban Renewal Funds	
Potential funding level	Moderate
Action needed	City Council approval
Administrative cost	No additional cost
Anticipated community acceptance	General support with some outspoken criticism
Types of projects	Projects (or portions of projects) must be within a URA; projects must be public improvements that are expected to increase property values

Tax Increment Financing (TIF) is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Tax Increment Financing typically occurs within designated Urban Renewal Areas (URAs) that meet certain economic criteria and are approved by a local governing body. To be eligible for this financing, a project (or a portion of it) must be located within the URA. It should be noted that TIF programs around the

state have been performing poorly during the current economic downturn because property values have not risen steadily as expected.

System Development Charges	
Potential funding level	Moderate
Action needed	City Council action to increase charges or change policy
Administrative cost	No additional cost
Anticipated community acceptance	Moderate support
Types of projects	Onsite or offsite transportation and parks infrastructure related directly to anticipated trips from new development

System Development Charges (SDCs) are typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- or offsite pedestrian improvements that will encourage residents/tenants to walk or use transit rather than drive. In-lieu parking fees may be used to help construct new or improved pedestrian facilities. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

Parks SDCs also build certain types of projects that benefit bicyclists and pedestrians, including ADA park improvements, neighborhood & community park acquisition, park lighting renovations, and neighborhood park renovations. SDCs are likely to continue into the future. It should be noted, however, that the current development slowdown related to the economy has reduced the amount of money identified through this mechanism.

Transportation System Maintenance Fee	
Potential funding level	High
Action needed	City Council action
Administrative cost	Low if tied to existing fee collection mechanism
Anticipated community acceptance	Expect some controversy
Types of projects	Any

The revenue generated by a Transportation System Maintenance Fee (sometimes called a transportation maintenance fee or a street user fee) is commonly used for operations and maintenance of the street system,

including maintaining on-street bicycle and pedestrian facilities, including routine sweeping of bicycle lanes and other designated bicycle routes.

Local Improvement Districts (LIDs)	
Potential funding level	Moderate
Action needed	Public Works design and public involvement process
Administrative cost	Moderate
Anticipated community acceptance	Sometimes controversial
Types of projects	Projects within LIDs

Local Improvement Districts (LIDs) are most often used by cities to construct localized projects such as streets, sidewalks, or bikeways. Through the LID process, the costs of local improvements are generally spread out among a group of property owners within a specified area. The cost can be allocated based on property frontage or other methods such as trip generation.

Economic Improvement Districts (EIDs)	
Potential funding level	Moderate
Action needed	Adoption of ordinance describing project and setting necessary assessment or fee to be collected from property owners
Administrative cost	Low
Anticipated community acceptance	Varies with project type and perceived value to businesses
Types of projects	Economic Improvement that benefit businesses within EIDs

Pedestrian improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Economic Improvement Districts collect assessments or fees on businesses in order to fund improvements that benefit businesses and improve customer access within the district. These districts may include provisions for pedestrian and bicycle improvements, such as wider sidewalks, landscaping, and ADA compliance.

Privately Engineered Public Improvements (PEPI)	
Potential funding level	Low
Action needed	None
Administrative cost	Moderate
Anticipated community acceptance	Moderate
Types of projects	Projects required based on development impacts

PEPI is an acronym for privately engineered public improvements. A PEPI permit authorizes privately engineered public improvements. It allows certain work to be constructed within existing and proposed rights-of-way. Common improvements through the PEPI include streets, sidewalks and public wastewater and stormwater utilities. This work must be constructed to national and local standards, and is inspected by Public Works during the construction phase.

When a PEPI is associated with creation of new lots through a subdivision or partition, the City issues the PEPI first, to allow construction of the public improvements before individual buildings are started. This PEPI work must be substantially complete before building permits are issued in order to protect the right-of-way.

Relatively few bicycle and pedestrian projects are funded through this mechanism, particularly in the last few years as the pace of development has slowed dramatically. This funding mechanism therefore is unlikely to be significant for the Philomath Safe Routes to School Plan.

Corvallis Area Metropolitan Planning Organization (CAMPO)	
Potential funding level	Medium
Action needed	Submit projects for including in MTIP
Administrative cost	No additional cost
Anticipated community acceptance	Well-received; established funding mechanism for local projects.
Types of projects	Any bicycle or pedestrian project within MPO; depends on application to MTIP prioritization criteria.

CAMPO distributes funding from many of the federal and state programs listed in the sections above. To receive funding from these sources, a project must first be listed in the MTIP. Funding of bicycle and pedestrian projects through CAMPO is well-established; the 2006 Regional Transportation

Plan calls for enhancement of the area's bicycle and pedestrian networks, and funded property acquisition for a bicycle and pedestrian multi-use path project.

Chapter 6. Code Revisions

This chapter details recommended revisions to City documents in order to facilitate adoption and implementation of the Philomath Safe Routes to School Plan.

Philomath Development Code (Title 18)

The following revisions are recommended to Philomath Title 18: Development Code.

Amend the following sections of Philomath Title 18: Development Code to expressly include permission for development of bicycle and pedestrian facilities, including on-street bicycle facilities, sidewalks, and multi-use paths:

- Table 18.35.020 Land Uses and Building Types Allowed in the Residential Districts
- Table 18.40.020 Land Uses and Building Types Allowed in the Commercial Districts
- Table 18.45.020 Land Uses and Building Types Allowed in the Industrial Districts
- Table 18.50.020 Land Uses and Building Types Allowed in the Public District

Philomath already allows trails and multi-use paths through natural resource overlay zones as conditional uses per the following sections of Table 18.55.020 Land Uses and Building Types Allowed in the NR Overlay District:

> **Conditional Uses**
>
> 4) Trails, boardwalks, viewing platforms, information kiosks, and trail signs.
>
> 7) Bikeways and other paved pathways.

Amend the following sections to specify efficient and usable design of bicycle parking facilities. Also review land use code compliance triggers to promote existing non-complying uses to bring their bicycle parking facilities into compliance in a timely manner when the cost of doing do is reasonable.

> **18.75.040 Bicycle parking requirements.**
>
> All uses which are subject to site design review shall provide bicycle parking, in conformance with the following standards, which are evaluated during site design review:

A. Number of Bicycle Parking Spaces. A minimum of two bicycle parking spaces per use for all uses with greater than 10 vehicle parking spaces. The following additional standards apply to specific types of development:

1. Multifamily Residences. Every residential use of three or more dwelling units provides at least one sheltered bicycle parking space for each dwelling unit. Sheltered bicycle parking spaces may be located within a garage, storage shed, basement, utility room or similar area. In those instances in which the residential complex has no garage or other easily accessible storage unit, the bicycle parking spaces may be sheltered from sun and precipitation under an eave, overhang, an independent structure, or similar cover.

2. Parking Lots. All public and commercial parking lots and parking structures provide a minimum of one bicycle parking space for every 10 motor vehicle parking spaces.

3. Schools. Elementary and middle schools, both private and public, provide one bicycle parking space for every 10 students and employees. High schools provide one bicycle parking space for every five students and employees. At least one-half of the spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

4. Colleges and trade schools shall provide one bicycle parking space for every 10 motor vehicle spaces, plus one space for every dormitory unit. At least one-half ~~Fifty percent~~ of the bicycle parking spaces shall be sheltered under an eave, overhang, independent structure, or similar cover.

5. Commercial Districts. Within the commercial districts, bicycle parking for customers shall be provided at a rate of at least one space per use. Individual uses may provide their own parking, or spaces may be clustered to serve up to six bicycles. Bicycle parking spaces should be located in front of the stores along the street, either on the sidewalks or in specially constructed areas such as pedestrian curb extensions. ~~Inverted "U" style racks are recommended.~~ Bicycle parking shall not interfere with pedestrian passage, leaving a clear area of at least 48 ~~36~~ inches between bicycles and other existing and potential obstructions. Customer spaces may or may not be sheltered. When provided, sheltered parking (within a building, or under an eave, overhang, or similar structure) should be provided at a rate of one space per 10 employees, with a minimum of one space per store.

6. Multiple Uses. For buildings with multiple uses (such as a commercial or mixed-use center), bicycle parking standards shall be calculated by using the total number of motor vehicle parking spaces required for the entire development. A minimum of one bicycle parking space for every 10 motor vehicle parking spaces is ~~recommended~~ required.

B. Exemptions. This section does not apply to single-family and two-family housing (attached, detached or manufactured housing), home occupations, agriculture and livestock uses, or other developments with fewer than 10 vehicle parking spaces.

C. Location~~ and Design~~. Bicycle parking shall be conveniently located with respect to both the street right-of-way and at least one building entrance (e.g., no farther away than the closest parking space). It should be incorporated whenever possible into building design and coordinated with the design of street furniture when it is provided. Street furniture includes benches, streetlights, planters and other pedestrian amenities.

D. Design. "Inverted U" or "staple" style racks are recommended. Bicycle racks shall provide a secure point of contact so that both the frame and wheel of a bicycle may be locked to the rack using a standard U lock. Bicycle racks are recommended to provide two points of contact between the rack and the bicycle in order to hold the bicycle securely and prevent pivoting or tipping. Individual "inverted U" or "staple" style racks shall be placed to encourage bicycles to be parked parallel to the rack and achieve maximum capacity. Where multiple racks are placed together, racks shall be placed parallel to each other spaced on four foot centers to allow access to both sides of each rack. Racks shall be placed so that a six foot bicycle may be parked without interference from nearby walls or fixed objects.

~~D~~E. Visibility and Security. Bicycle parking shall be visible to cyclists from street sidewalks or building entrances, so that it provides sufficient security from theft and damage.

~~E~~F. Options for Storage. Bicycle parking requirements for long-term and employee parking can be met by providing a bicycle storage room, bicycle lockers, racks, or other secure storage space inside or outside of the building.

~~F~~G. Lighting. Bicycle parking should be as well lit as vehicle parking for security.

~~G~~H. Hazards. Bicycle parking shall not impede or create a hazard to pedestrians. Parking areas shall be located to not conflict with vision clearance standards (Chapter 18.65 PMC, Access and Circulation). [Ord. 720 § 7[3.3.4], 2003.]

Philomath Comprehensive Plan

The following revisions are recommended to Philomath Comprehensive Plan. Revisions are presented in strikethrough/underline format; ~~strikethrough~~ text indicates text to be removed, while underlined text indicates text to be inserted. For brevity, only altered sections of text are shown; sections of text not repeated below should remain unchanged.

Parks & Recreation Policies

2. The City of Philomath shall consider the needs of children, the elderly, the handicapped, ~~and~~ the low-income, and the transportation-disadvantaged when developing recreational programs and facilities.

4. The types of recreation space which shall be provided to meet the City's recreation needs are community/district parks, ~~and~~ neighborhood parks, and linear recreation corridors such as multi-use paths.

7. The City of Philomath will consider the development of ~~bicycle~~ multi-use paths in and through city parks, and between residential areas and parks.

Transportation Policies

3. Sidewalks shall be developed along streets in all new residential and commercial developments in the City. Where sidewalks have not been developed along streets in existing residential and commercial developments, the City shall prioritize development of sidewalks in locations recommended in the Philomath Safe Routes to Schools Plan.

4. The City of Philomath shall determine appropriate locations for future ~~bike~~ multi-use paths, ~~and~~ bike lanes and other on-street bicycle facilities. Three appropriate locations may be the entire length of Applegate Street, Green Road/West Hills Road between Philomath and Corvallis, and along the Newton Creek drainageway. Additional appropriate locations for multi-use paths, bike lanes and other on-street bicycle facilities are recommended in the Philomath Safe Routes to School Plan.

13. The City shall encourage bicycle and pedestrian travel and shall consider the connectivity of ~~pedestrian and bicycle ways~~ multi-use paths in logical areas where roads are impractical. Three appropriate locations may be through Mary's River Park, across the Philomath Rodeo Grounds, and through the Philomath Public Works Grounds between 15th Street and Willow Lane and 17th Street and Cedar Street.

16. Development proposals shall be reviewed to assure the continuity of sidewalks, trails, multi-use paths, bike lanes, and other bicycle and pedestrian facilities ~~and bicycle paths and pedestrian ways~~.

Bicycle Policies

1. Bikeways shall be conveniently located, be adequately constructed, have minimal stops and obstructions, and have safe crossing on major streets.

2. Bikeways shall provide safe, efficient corridors that encourage bicycle use. Bicycle use of major streets shall be considered as improvements are made to major transportation corridors.

3. Acquisition of land and/or easements for bikeways, ~~and~~ trails and multi-use paths shall be evaluated along with the need of land for parks and open space.

4. All new collector and arterial streets shall be designed to accommodate bicycle facilities.

5. Where no bicycle facilities exist on collector and arterial streets, the addition of bicycle facilities shall be considered in the event of any major retrofit, redesign, reconstruction, or repaving project.

~~5~~6. When economically feasible, bicycle facilities shall be physically separated from pedestrian facilities.

7. Where minimizing travel distance has the potential for increasing bicycle use, direct bicycle facilities shall be provided by new development.

8. The City shall pursue completion of bicycle facilities identified in the Philomath Safe Routes to Schools Plan.

Pedestrian Ways

3. All paved streets shall have sidewalks constructed in conjunction with street improvement as appropriate to encourage pedestrian use.

4. Safe and convenient pedestrian facilities that minimize travel distance shall be provided by new development within and between new subdivisions, planned developments, shopping centers, industrial parks, residential areas, transit stops and neighborhood activity centers such as schools, ~~and~~ parks and community and government buildings.

8. The City shall pursue completion of pedestrian facilities identified in the Philomath Safe Routes to Schools Plan.

9. The City shall prioritize completion of the sidewalk infill and repair projects identified in Philomath Safe Routes to Schools Plan as part of the City's sidewalk program.

Public Works Design Standards

Philomath Public Works Design Standards 2.7 Existing Street Classifications does not include standard cross sections of arterial and collector streets, which should feature bike lanes. Current text indicates that standard cross-sections are "to be determined by upcoming TSP." Philomath Public Works Design Standards Appendix A: Standard Detail Drawings includes street cross-section figures that show base/paving schematics, but do not show any recommended distribution of roadway space, such as bike lanes.

The following revisions are recommended to the Philomath Public Works Design Standards. Revisions are presented in strikethrough/underline format; ~~strikethrough~~ text indicates text to be removed, while underlined text indicates text to be inserted. For brevity, only altered sections of text are shown; sections of text not repeated below should remain unchanged.

2.9 DEFINITIONS AND TERMS

4) Bike Lanes: A designated travel-way for bicyclists which is established within the roadway as a lane exclusively for bicycle use, ~~directly adjacent to the outside vehicular lane~~ or on a shared ~~the~~ shoulder when located outside of urban areas.

5) ~~Bike~~ Multi-Use Path: A designated travel way for bicyclist which is completely separated from the vehicular travel lanes and is within independent right-of-ways.

6) ~~Bike Route~~ Bikeway: Any on- or off-street bicycle facility, including but not limited to bike lanes and multi-use paths. ~~A designated travel-way for bicyclists which can be shared with vehicular traffic. The roadway is designated with signs for bicycling (no pavement markings for the bike route or delineation of parking spaces is used).~~

2.33 Bikeways

~~b. A bikeway may be constructed adjacent to the curb within the pavement area.~~

~~c~~b. Structural sections of bikeway facilities on streets, such as bike lanes, shall conform to that of the street or be integral with the curb. Bikeways not within a street, such as multi-use paths, shall be constructed upon compacted sub grade that has been sterilized if an asphaltic concrete bikeway, to one of the following pavement section designs:

1) 4-inches of asphalt concrete over 2-inches of compacted baserock, or

2) 2½-inches of asphalt concrete over 4-inches of compacted baserock, or

3) 4-inches of Portland cement concrete over 2-inches of compacted baserock.

d. Design Standards regarding horizontal alignment, grade, sight distance, intersections, signing, marking, structures, drainage and lighting shall conform to the AASHTO Standards. When bikeways are integrated with a curb, all inlet grates shall be designed to protect the bicyclist from the grate or opening.

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Chapter 7. Design Guidelines

The design concepts presented in this document are based on current walkway, bikeway, and multi-use path design guidelines provided in federal, state, and local design and standards documents, as well as best practices from several communities throughout the country. While the *Master Philomath Bike Path and Trails Plan* (1994) and *Philomath Transportation System Plan* (1999) each propose new bicycle facilities in Philomath, neither document contains specific design recommendations.

The guidelines are intended to find creative solutions to the problem of providing bicycle and pedestrian facilities in a wide variety of conditions. These treatments draw upon creative solutions in use in the U.S. and abroad. Some of the more innovative designs in this document are being tested, and as with all traffic devices should be carefully tailored before being applied at specific locations in Philomath. These design guidelines will allow the City to improve the quality of the pedestrian, bicycle, and multi-use path network by applying a high standard of safety, comfort, and convenience.

Key Design Principles

The following are key principles for these pedestrian and bicycle guidelines:

- **The walking and bicycling environments should be designed with safety in mind.** Sidewalks, multi-use paths, roadway crossings, and bicycle routes should be designed and built to be free of hazards and to minimize conflicts with vehicular traffic.
- **The pedestrian and bicycle network should be accessible.** Bicycle and pedestrian facilities should accommodate the needs of people regardless of age or ability. At a minimum, bicycle facilities should be designed with a goal of providing for inexperienced bicyclists (especially children and seniors) to the greatest extent possible. Pedestrian facilities should similarly be designed to accommodate people of varying physical and cognitive abilities.
- **The walking and bicycling environment should be clear and easy to use.** Design bicycle and pedestrian facilities so people, including those with mobility and sensory impairments, can easily find a direct route to a destination and delays are minimized.
- **Bicycle and pedestrian improvements should be economical.** Bicycle and pedestrian improvements should be designed to achieve the maximum benefit for their cost, including initial and maintenance costs as well as reducing reliance on more expensive modes of transportation. Where possible, improvements in the

right-of-way should stimulate, reinforce and connect with adjacent private improvements.

References

The following is a list of references and sources utilized to develop design guidelines for the Philomath Safe Routes to School Plan. Many of these documents are available online and are a wealth of information and resources available to the public.

Federal Guidelines

- American Association of Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities.*[2] (1999). www.transportation.org
- AASHTO *Policy on Geometric Design of Streets and Highways.* (2001). www.transportation.org
- *Accessibility Guidelines for Buildings and Facilities.* (2002). United States Access Board http://www.access-board.gov/adaag/html/adaag.htm
- *Manual on Uniform Traffic Control Devices* (MUTCD). (2003). Federal Highway Administration (FHWA) http://mutcd.fhwa.dot.gov
- *Public Rights-of-Way Accessibility Guidelines* (PROWAG). (2007). United States Access Board http://www.access-board.gov/PROWAC/alterations/guide.htm

State and Local Guidelines

- *Highway Design Manual.* (2003). Oregon Department of Transportation (ODOT). http://www.oregon.gov/ODOT/HWY/ENGSERVICES/hwy_manuals.shtml
- *Bicycle & Pedestrian Plan.* (1995). ODOT. http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml

Best Practices Documents

- *Berkeley Pedestrian Master Plan.* (2010). City of Berkeley, California. http://www.ci.berkeley.ca.us/ContentDisplay.aspx?id=16124
- *Bicycle Facility Selection: A Comparison of Approaches..* (2002). Michael King, for the Pedestrian and Bicycle Information Center http://www.bicyclinginfo.org/pdf/bikeguide.pdf
- *Bicycle Parking Design Guidelines.* (No Date). Bicyclinginfo.org http://www.bicyclinginfo.org/engineering/parking.cfm

[2] *The Guide for the Development of Bicycle Facilities* is currently being updated, and the new document cannot be quoted at the time of this writing. However, many of the facilities under consideration for the update are included in the following pages.

- *Bicycle Parking Guidelines, 2nd Edition.* (2010). Association of Pedestrian and Bicycle Professionals (APBP). http://www.apbp.org/resource/resmgr/webinars/bpg_exec_summary_4-21-10.pdf
- *City of Chicago Bike Lane Design Guide.* (No Date). http://www.chicagobikes.org/pdf/bike_lane_design_guide.pdf
- *Designing Sidewalks and Trails for Access.* (2001). FHWA. http://www.fhwa.dot.gov/environment/sidewalk2/contents.htm
- *Florida Bicycle Facilities Planning and Design Handbook.* (1999). Florida Department of Transportation. http://www.dot.state.fl.us/safety/ped_bike/ped_bike_standards.htm#Florida%20Bike%20Handbook
- *Portland Bicycle Master Plan for 2030.* (2010). City of Portland, Oregon Department of Transportation. http://www.portlandonline.com/transportation/index.cfm?c=44597&a=289122
- *Road Diet Handbook: Setting Trends for Livable Streets..* (2006). Jennifer Rosales.
- *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations.* (2005). FHWA Report HRT-04-100 http://www.tfhrc.gov/safety/pubs/04100/
- *The North Carolina Bicycle Facilities Planning and Design Guidelines.* (1994). North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation. http://www.ncdot.org/transit/bicycle/projects/resources/projects_facilitydesign.html
- *Wisconsin Bicycle Facility Design Handbook.* (2004). Wisconsin Department of Transportation. http://www.dot.wisconsin.gov/projects/bike.htm

On-Street Pedestrian Facilities

Sidewalks, multi-use paths, and roadway shoulders are typically recognized as pedestrian facilities. Pedestrian travel is accommodated by intersection treatments such as crosswalks, curb ramps, as well as boulevards and other amenities. Standards for accessible pedestrian facilities are primarily from the United States Access Board.

Sidewalks

Design Summary

- Recommended width (exclusive of the curb and other obstructions):
  - Minimum five feet in residential areas
  - Minimum six feet otherwise, exclusive of the curb and other obstructions.
  - Consider ten feet in Commercial Business Districts and other high use areas.
  - Minimum clear width of five feet (ODOT Highway Design Manual [HDM]).
- Do not place curbside sidewalks on streets with design speed of 45 mph or greater.
- Maintain constant grades at 5% or below, with a maximum cross-slope of 2%.

A well-designed sidewalk provides plenty of pedestrian space.

Discussion

The Oregon HDM notes that, "Sidewalks with a separated buffer (non-curb-tight) are the preferred facility for pedestrians" and that, if no buffer is present, the width should include an additional two feet. Recommended widths have the following benefits:

- Enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably.
- Allows two pedestrians to pass a third pedestrian without leaving the sidewalk.

Proposed sidewalk guidelines apply to new development and depend on available street width, motor vehicle volumes, surrounding land uses, and pedestrian activity levels. It may be possible to increase the sidewalk corridor through acquisition of right-of-way or public walkway easements or by re-allocation of the overall right-of-way (such as by narrowing roadway travel lanes or reducing the number of lanes).

Guidance

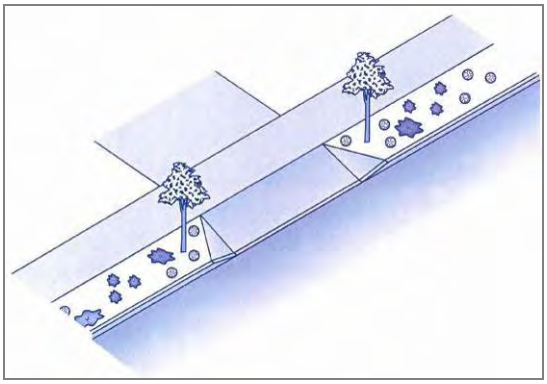
- United States Access Board. (2002). *Accessibility Guidelines for Buildings and Facilities.*
- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).
- ODOT *HDM*

Sidewalks

Addressing Sidewalk Obstructions

Design Summary

- Place obstructions such as sign posts, utility and signal poles, mailboxes, fire hydrants and street furniture between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.
- Where sidewalks abut perpendicular or angled on-street vehicle parking, use wheel stops to prevent parked vehicles from overhanging in the sidewalk.
- Where sidewalks abut hedges, fences, or buildings, add two feet of lateral clearance for shy distance.

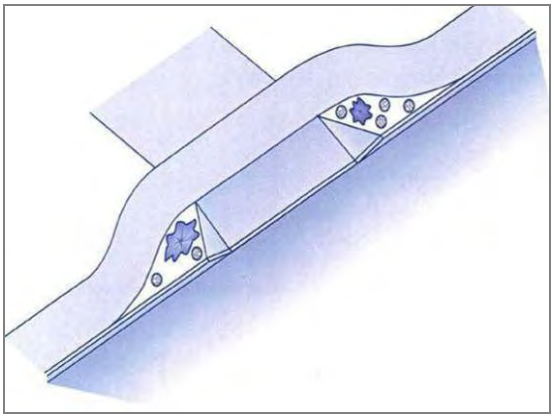


Driveway apron utilizing the planting strip.

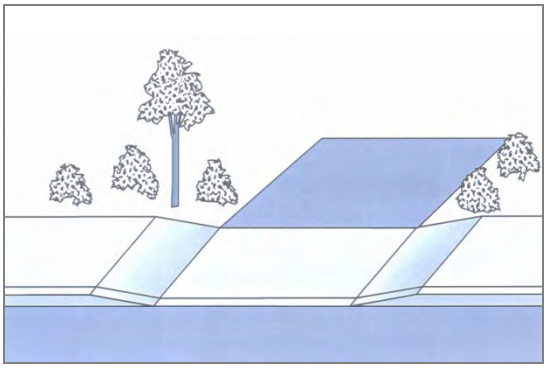
Discussion

Driveways are a common obstacle to the sidewalk network and should be minimized where possible. Where access management is not feasible, options for minimizing the impact of driveways to the sidewalk environment include:

- Provide a planter strips allowing sidewalks to remain level, with the driveway grade change occurring within the planter strip (top graphic).
- Wrap the sidewalk around the driveway (middle graphic). However, this may have disadvantages for visually-impaired pedestrians who follow the curb line for guidance.
- Dip the entire sidewalk at the driveway approach to maintain a constant grade on the cross-slope (bottom graphic). However, this may be uncomfortable for pedestrians where driveways are frequent and could create drainage problems behind the sidewalk.



Sidewalk wrapped around driveway.



Entire sidewalk dips at driveway.

Guidance

- United States Access Board. (2002). *Accessibility Guidelines for Buildings and Facilities.*
- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines (PROWAG).*

Sidewalks

Sidewalk Maintenance

Design Summary

- Minimize barriers for pedestrians, particularly with mobility and sensory impairments, by providing a level surface with a minimum of ¼ inch grade changes.
- Trim tree limbs to clear the area at least eight feet above the sidewalk.

Discussion

Root Protection

Street trees are a desirable part of the street environment, to shade pedestrians and improve aesthetics. However, sidewalk damage can occur, primarily from improper tree selection and from soil freeze and thaw. To minimize sidewalk damage from trees, choose appropriate trees based on water and light availability, the quantity of air, and root space available at the specific location.

Grates

Designers should consider using tree well grates or treatments such as unit pavers in high pedestrian use areas. All grates within the sidewalk should be flush with the level of the surrounding sidewalk surface, and should not interfere with pedestrian zone.

Hatch Covers

Hatch covers should be located within the sidewalk furnishings zone. Hatch covers must have a surface texture that is rough, with a slightly raised pattern. The surface should be slip-resistant even when wet. The cover should be flush with the surrounding sidewalk surface.

Subsurface tree roots can lift concrete sidewalk slabs, causing the surface to become uneven.

Tree well grates can create uneven sidewalk conditions and should not be placed within the thru-pedestrian zone.

Curb Ramp Maintenance

The interface between a curb ramp and the street should be maintained adequately. Asphalt street sections typically have a shorter life cycle than a concrete ramp, and can develop potholes at the foot of the ramp, which can catch the front wheels of a wheelchair. Existing ramps, and crossings without ramps, must be brought to current accessibility standards during reconstruction periods.

Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG)
- ODOT *HDM*

Intersections

Design summary

- Intersection frequency on mixed-use streets and other high pedestrian use areas:
  - Generally not farther apart than 200-300 feet where blocks are longer than 400 feet.
  - Generally not closer together than 150 feet.
- Intersection frequency on residential or local streets:
  - Frequency based on adjacent uses. Do not prohibit for more than 400 feet.
  - Generally not closer together than 150 feet.

Intersections with many user types should provide good crossing opportunities and clearly delineate crossing patterns.

Discussion

In general, pedestrians are not inclined to travel very far out-of-direction to access a designated crosswalk, so providing sufficient crossings is critical for a safe pedestrian environment. Crosswalks can also be designed for increased visibility of pedestrians, and curb ramps and vehicle turning radii should also be considered for the pedestrian environment.

In areas of high pedestrian use, the convenience and travel time of pedestrians deserves special consideration when considering signal placement and timing. In these locations, pedestrian mobility and access may need to be weighed against the efficiency of vehicle progression.

Attributes of pedestrian- and bicycle-friendly intersection design include:

- Clear Space — Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.
- Visibility — It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.
- Legibility — Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.
- Accessibility — All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, textures, must meet accessibility standards.
- Separation from Traffic — Corner design and construction must be effective in discouraging turning vehicles from driving over the pedestrian area.

Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).

Marked Crosswalks

Design Summary

- Parallel marking: two eight-inch lines separated by eight feet.
- Ladder marking: two-foot wide bars spaced three feet apart and located between one-foot wide parallel stripes that are ten feet apart.
- Mark all crosswalks at signalized intersections. At un-signalized intersections, mark crosswalks under the following conditions:
  - At a complex intersection, to orient pedestrians in finding their way across.
  - At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
  - At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At mid-block locations, mark crosswalks where:
  - There is a demand for crossing AND
  - There are no nearby marked crosswalks.

Parallel markings are the most basic crosswalk marking type, and are applied where textured concrete crosswalks are used.

Ladder-striped crossings can increase visibility of pedestrians.

Discussion

State law designates all intersections as legal crossings, regardless of whether they are marked. However, marking crosswalks signals to drivers that they should stop for pedestrians, and encourages pedestrians to cross at safer locations. Crosswalk markings also indicate to pedestrians the appropriate route across traffic, to facilitate crossing by the visually impaired and remind turning drivers of potential conflicts with pedestrians.

Use ladder pavement markings at crossings with high pedestrian use or where vulnerable pedestrians are expected, including:

- School crossings.
- Across arterial streets for pedestrian-only signals.
- At mid-block crosswalks.

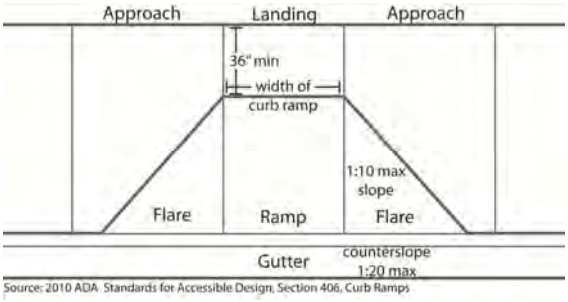
Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).
- FHWA. (2005). *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations Final Report and Recommended Guidelines.* http://www.fhwa.dot.gov/publications/research/safety/04100/
- ODOT *HDM.*

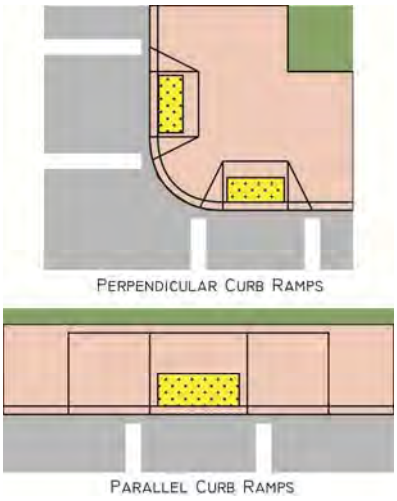
ADA-Compliant Curb Ramps

Design Summary

- Provide a landing at the top and the bottom of every curb ramp that:
  - Is at least four feet long
  - Is at least the same width as the ramp itself.
  - Slopes no more than 1:50 (2.0%) in any direction
- Maximum ramp slope: 1:12 (8.3%) with a cross slope of no more than 1:50 (2.0%).
- Minimum width of a ramp: three feet.



ADA standards for curb ramps.



Curb ramp options identified by the U.S. Access Board.

Discussion

Curb ramps allow pedestrians of all abilities to make the transition from the street to the sidewalk.

The ADA defines two types of curb ramp systems, "perpendicular ramps" and "parallel ramp," shown right. Diagonal curb ramps, which are a single ramp at a corner, are not recommended because they place the pedestrian in the middle of the intersection, rather than at the crosswalk.

Example of an ADA-compliant perpendicular curb ramp

Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).

ADA-Compliant Curb Ramps

Raised Tactile Devices Used as Detectible Warnings

Design Summary

- Raised tactile devices (also known as truncated domes) alert people with visual impairments to changes in the pedestrian environment and should be used at:
  - The edge of depressed corners.
  - The border of raised crosswalks and intersections.
  - The base of curb ramps.
  - The border of medians.
  - The edge of transit platforms where railroad tracks cross the sidewalk.
- The ADAAG and PROWAG standards for detectable warnings are:
  - Bottom diameter: 0.9 inches
  - Top diameter: 0.4 inches
  - Height: 0.2 inches
  - Center-to-center spacing: 2.35 inches
  - Visual contrast: not specified
- The US Access Board recommends:
  - Width: 24 inches
  - Location: 6 to 8 inches from the bottom of the ramp

A diagonal curb ramp with detectible warning.

Discussion

Contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident. These devices are most effective when adjacent to smooth pavement so the difference is easily detected. The devices must provide color contrast so partially sighted people can see them.

Raised Tactile Devices Used for Wayfinding

Raised tactile devices can also be used for wayfinding along a pathway or across a road. This is particularly useful to visually impaired pedestrians in areas where the pedestrian environment is unpredictable. Complex intersections, roundabouts, wide intersections and open plazas are areas where raised tactile devices could be considered. No standards or guidelines for these devices have been adopted nationally. Raised devices with bar patterns can indicate the proper walking direction. Textured pavement that provides enough material and color contrast can be used to mark the outside of crosswalks, in addition to white paint or thermoplastic.

Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).

Accommodating Bicyclists and Pedestrians at Signals

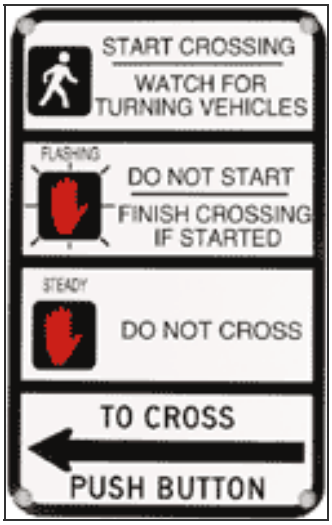
Pedestrian Push-Buttons

Design Summary

- Locate so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk.
- Mark (for example, with arrows) so that it is clear which signal is affected.
- Raise buttons above or flush with their housing.
- Provide button that are large enough for people with visual impairments to see: minimum two-inch diameter.
- The U.S. Access Board recommends the force to activate the signals should be no more than 22.2 Newtons.

Example standard pedestrian push button.

(Polara Navigator)



Pedestrian push buttons can be accompanied by informational signage.

Discussion

Pedestrian push buttons are used to permit the signal controller to detect pedestrians desiring to cross. They can be used at an actuated or semi-actuated traffic signal at intersections with low pedestrian volumes, and at mid-block crossings.

Accessible pedestrian signals are required to be installed whenever major signalized intersection upgrades are undertaken or when new signals are installed.

Signalized crossings in areas of high pedestrian use may automatically provide a pedestrian crossing phase during every signal cycle, excluding the need for pedestrian push-buttons. In high pedestrian use areas, there should be a demonstrated benefit for actuated signals before push buttons are installed. The following are some criteria for that benefit:

- The main street carries through traffic or transit, such as a major city traffic or transit street, or a district collector.
- Traffic volumes on the side street are considerably lower than on the main street.
- The pedestrian signal phase is long (for example, on a wide street) and eliminating it when there is no demand would significantly improve the level of service of the main street.

Where push buttons must be installed in high pedestrian use areas, designers should consider operating the signal with a regular pedestrian phase during off-peak hours.

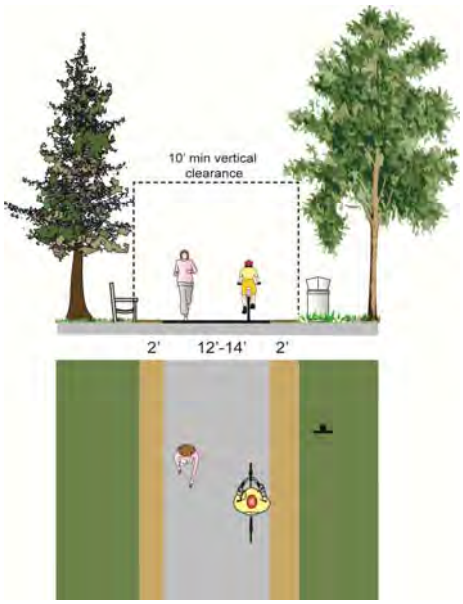
Guidance

- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).

Multi-Use Paths

Design Summary

- Width:
  - o Minimum for a two-way multi-use path (only recommended for low traffic situations): 10', or as low as 8'only when physically constrained
  - o Recommended for high-use areas with multiple users such as joggers, bicyclists, rollerbladers and pedestrians: 12 feet or greater
- Lateral clearance: two feet or greater shoulder on both sides.
- Overhead clearance: eight feet minimum, ten feet recommended.
- Maximum design speed for bike paths: 20 mph. Speed bumps or other surface irregularities should not be used to slow bicycles.
- Grade:
  - o Recommended maximum: 5%
  - o Steeper grades can be tolerated for a maximum of 500 feet



Recommended multi-use path design.

Discussion

A hard surface should be used for multi-use paths. Concrete, while more expensive than asphalt, is the hardest of all path surfaces and lasts the longest. However, joggers and runners prefer surfaces such as asphalt or decomposed granite due to its relative "softness". While most asphalt is black, dyes (such as reddish pigments) can be added to increase the aesthetic value of the path itself.

When concrete is used the path should be designed and installed using the narrowest possible expansion joints to minimize the amount of 'bumping' cyclists experience on the path.

Multi-use paths in Philomath are enjoyed by a variety of user types.

Guidance

- U.S. Access Board, *Public Rights-of-Way Accessibility Guidelines (PROWAG).*
- FHWA. *Designing Sidewalks and Trails for Access.*
- ODOT *Bicycle and Pedestrian Master Plan.*
- AASHTO *Guide for the Development of Bicycle Facilities.*

Path/Roadway Crossings

Design Summary

- Type 1: Marked/Unsignalized Unprotected crossings include path crossings of residential, collector, and sometimes major arterial streets or railroad tracks.
- Type 1+: Marked/Enhanced – Unsignalized intersections can provide additional visibility with flashing beacons and other treatments.
- Type 2: Route Users to Existing Signalized Intersection - Paths that emerge near existing intersections may be routed to these locations, provided that sufficient protection is provided at the existing intersection.
- Type 3: Signalized/Controlled - Path crossings that require signals or other control measures due to traffic volumes, speeds, and path usage.
- Type 4: Grade-separated crossings - Bridges or under-crossings provide the maximum level of safety but also generally are the most expensive and have right-of-way, maintenance, and other public safety considerations.

An offset crossing forces pedestrians to turn and face the traffic they are about to cross.

Discussion

While at-grade crossings create a potentially high level of conflict between path users and motorists, well-designed crossings have not historically posed a safety problem for path users. This is evidenced by the thousands of successful paths around the United States with at-grade crossings. In most cases, at-grade path crossings can be properly designed to a reasonable degree of safety and can meet existing traffic and safety standards.

Evaluation of path crossings involves analysis of vehicular and anticipated path user traffic patterns, including:

- Vehicle speeds.
- Street width.
- Sight distance.
- Traffic volumes (average daily traffic and peak hour traffic).
- Path user profile (age distribution, destinations served).

Crossing features for all roadways include warning signs both for vehicles and path users.

Consideration must be given for adequate warning distance based on vehicle speeds and line of sight, with visibility of any signing absolutely critical. Catching the attention of motorists jaded to roadway signs may require additional alerting devices such as a flashing light, roadway striping or changes in pavement texture. Signing for path users must include a "STOP" sign and pavement marking, sometimes combined with other features such as bollards.

Guidance

- Federal Highway Administration (FHWA), *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations.*

Path/Roadway Crossings

Guidance (continued)

Summary of Path/Roadway At-Grade Crossing Recommendations[3]

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT ≤ 9,00			Vehicle ADT > 9,000 to 2, 00			Vehicle ADT > 1,000 to 15,000			Vehic e DT > 5 000		
	Speed Limit (mph) *											
	30	3	4	3	35	40	30	35	4	30	35	40
Lanes	1	1	1/1+	1	1	1+	1	1	1+ 3	1	1/1+	1+/3
La es	1	1	1+		1/1+	1/1+	1/1+	1/1+	1+/3	1/1+	1+/3	1+/3
Multi-Lane (4+) with raised median ***	1	1	1/1+	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3
Multi-Lane (4+ lanes) without raised median	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3

**General Notes: Crosswalks should not be installed at locations that could present an increased risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossings safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding which treatment to use.*

For each pathway-roadway crossing, an engineering study is needed to determine the proper location. For each engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc. may be needed at other sites.

*** Where the speed limit exceeds 40 mi/h (64.4 km/h), marked crosswalks alone should not be used at unsignalized locations.*

**** The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m) long to adequately serve as a refuge area for pedestrians in accordance with MUTCD and AASHTO guidelines. A two-way center turn lane is not considered a median.*

Key:

1= Type 1 Crossings. Ladder-style crosswalks with appropriate signage should be used.

1/1+ = With the higher volumes and speeds, enhanced treatments should be used, including marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

1+/3 = Carefully analyze signal warrants using a combination of Warrant 2 or 5 (depending on school presence) and Equivalent Adult Unit (EAU) factoring. Make sure to project pathway usage based on future potential demand. Consider Pelican, Puffin, or Hawk signals in lieu of full signals. For those intersections not meeting warrants or where engineering judgment or cost recommends against signalization, implement Type 1 enhanced crosswalk markings with marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

[3] This table is based on information contained in the U.S. Department of Transportation Federal Highway Administration Study, " Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations," February 2002.

Path Amenities

Design Summary

Amenities can make a path more inviting to users. Costs vary depending on the design and materials selected for each amenity. Amenities should be designed and located so as not to impede accessibility.

Discussion

Benches

Providing benches at key rest areas and viewpoints encourages people of all ages to use the path by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood slates) or more ornate (e.g., stone, wrought iron, concrete).

Benches and rest areas encourage path use by seniors and families with children.

Restrooms

Restrooms benefit path users, especially in more remote areas where other facilities do not exist. Restrooms can be sited at trailheads along the path system.

Water Fountains

Water fountains provide water for people (and pets, in some cases) and bicycle racks allow recreational users to safely park their bikes if they wish to stop along the way, particularly at parks and other desirable destinations.

Bathrooms are recommended for longer paths and in more remote areas.

Bicycle Parking

Bicycle parking allows path users to store their bicycles safely for a short time. Bicycle parking should be provided if a path transitions to an unpaved pedestrian-only area.

Trash Receptacles

Litter receptacles should be placed at access points. Litter should be picked up once a week and after any special events held on the path, except where specially designed trash cans have been installed. If maintenance funds are not available to meet trash removal needs, it is best to remove trash receptacles.

Art installations can provide a sense of place for the path.

Signs

Informational kiosks with maps at trailheads and signage for other destinations can provide information path users. They are beneficial for areas with high out-of- area visitation rates as well as the local residents.

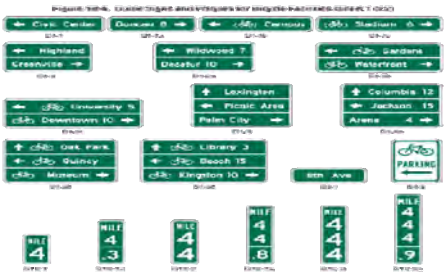
Guidance

- AASHTO *Guide for the Development of Bicycle Facilities.*

Wayfinding Standards and Guidelines

Design Summary

- Destinations for on-street signs can include:
  - On-street bikeways
  - Commercial centers
  - Regional parks and multi-use paths
  - Public transit sites
  - Civic/community destinations
  - Local parks
  - Hospitals
  - Schools



Wayfinding sign concept MUTCD sign D1-3C.

- Confirmation signs confirm that a cyclist is on a designated bikeway. Confirmation signs can include destinations and their associated distances, but not directional arrows.
- Turn signs indicate where a bikeway turns from one street onto another street. Turn signs are located on the near-side of intersections.
- Decision signs mark the junction of two or more bikeways. Decision signs are located on the near-side of intersections. They can include destinations and their associated directional arrows, but not distances.

Wayfinding that includes distance and time can aid cyclists in route finding.

Discussion

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the pedestrian and bicycle network
- Helping users identify the best routes to destinations.
- Helping to address misperceptions about time and distance.
- Helping overcome a "barrier to entry" for infrequent cyclists or pedestrians (e.g., "interested but concerned" cyclists).

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution.

Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes.

Any wayfinding signs placed in ODOT right-of-way must meet MUTCD standards.

Guidance

- City of Oakland. (2009). *Design Guidelines for Bicycle Wayfinding Signage.*
- City of Portland (2002). *Bicycle Network Signing Project.*
- MUTCD (2009)

Bike Lanes

Design Summary

- Recommended widths (minimum - maximum):
  - Adjacent to on-street parallel parking: six feet (four feet minimum - seven feet maximum)
  - Adjacent to on-street diagonal parking: six feet (five feet minimum - seven feet maximum)
  - Without on-street vehicle parking, no gutter: six feet (four feet minimum - seven feet maximum)
  - Without on-street vehicle parking, curb & gutter: six feet (five feet minimum - eight feet maximum)
- Place the bicycle lane symbol marking immediately after an intersection and other locations as needed.
- If the word or symbol pavement markings are used, "Bicycle Lane" signs shall also be used, but the signs need not be adjacent to every symbol to avoid overuse of the signs. (AASHTO guidance)

Philomath has marked several bike lanes, such as this one on Main Street.

Discussion

Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

The Oregon *Bicycle and Pedestrian Master Plan* states that bike lanes:

- "Help define the road space;
- Provide bicyclists with a path free of obstructions;
- Decrease the stress level of bicyclists riding in traffic; and
- Signal to motorists that cyclists have a right to the road."

One consideration in designing bike lanes in an urban setting is to ensure that bike lanes and adjacent parking lanes have sufficient width so that cyclists have enough room to avoid a suddenly opened vehicle door.

Guidance

- AASHTO Guide for the Development of Bicycle Facilities.
- ODOT *HDM.*
- ODOT *Bicycle and Pedestrian Master Plan.*
- MUTCD (2009)

Bike Lane Adjacent to On-Street Parallel Parking

Design Summary

- Bike Lane Width:
  - Six feet recommended when parking stalls are marked
  - Four feet minimum in constrained locations
  - Seven feet maximum (wider lanes may encourage unintended motor vehicle use)
- Travel Lane Width
  - 12 feet for a shared lane adjacent to a curb face
  - 11 feet minimum for a shared bike/parking lane where vehicle parking is permitted but not marked on streets without curbs

Discussion

On bike lanes adjacent to on-street parallel parking, suddenly-opened vehicle doors are a common hazard for bicyclists.

However, wide bike lanes may encourage the cyclist to ride farther to the right to maximize distance from passing traffic. Wide bike lanes may also cause confusion with unloading vehicles in busy areas where parking is typically full. Some alternatives include:

- Installing parking "T's" (top graphic).
- Provide a buffer zone (lower graphic). This design also provides motorists with space to stand outside the bike lane when loading and unloading.

Guidance

- AASHTO *Guide for the Development of Bicycle Facilities:*

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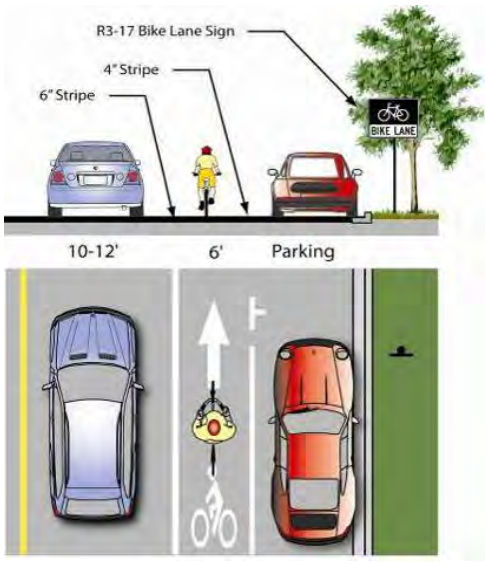
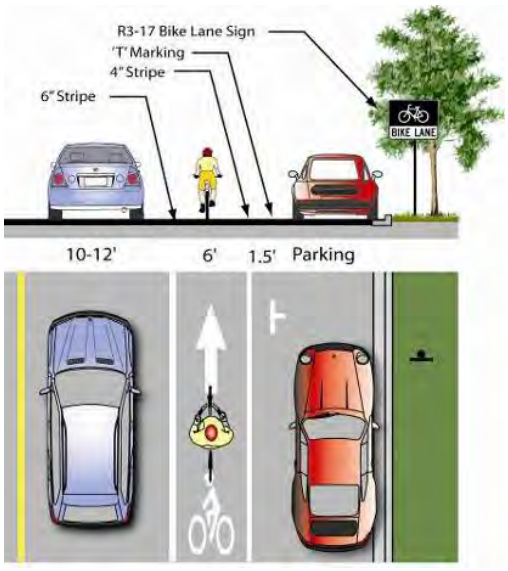


Design for a bike lane adjacent to on-street parallel parking.



Preferred design if space is available.

Bike Lane Without On-Street Parking

Design Summary

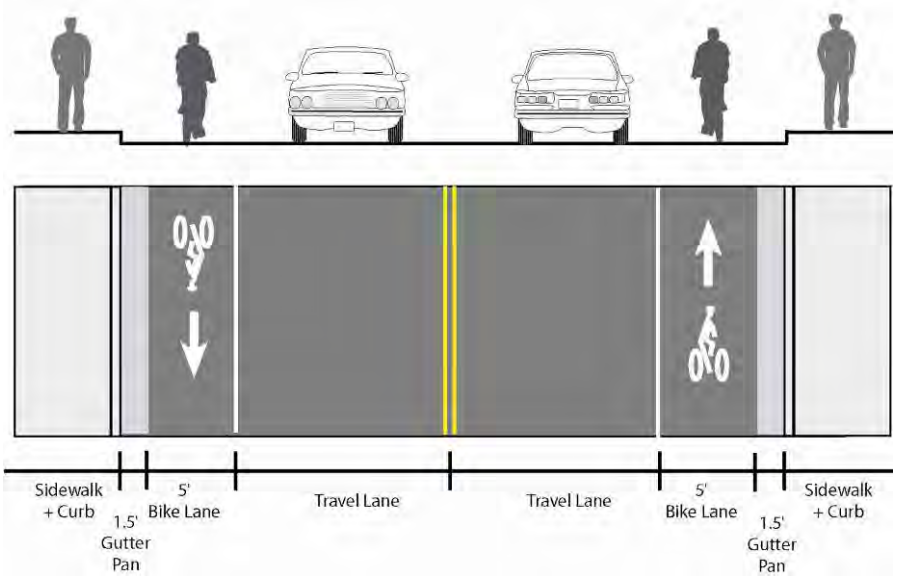
- Bike lane width:
  - 4′ minimum when no curb & gutter is present
  - 5′ minimum when adjacent to curb and gutter (3′ more than the gutter pan width if the gutter pan is wider than 2′)
- Recommended width:
  - 6′ where right-of-way allows
- Maximum width:
  - 8′ Adjacent to arterials with high travel speeds (45 mph+)

Recommended Design

Discussion

Wider bike lanes are desirable in certain circumstances such as on higher speed arterials (45 mph+) where a wider bike lane can increase separation between passing vehicles and cyclists. Wide bike lanes are also appropriate in areas with high bicycle use. A bike lane width of 6 to 8 feet makes it possible for bicyclists to ride side-by-side or pass each other without leaving the bike lane, increasing the capacity of the lane. Appropriate signing and stenciling is important with wide bike lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane.

Guidance



Two Lane Cross-Section with No Parking*

**Bike lanes may be 4′ in width under constrained circumstances*

Retrofitting Existing Streets with Bike Lanes

Parking Reduction

Design Summary

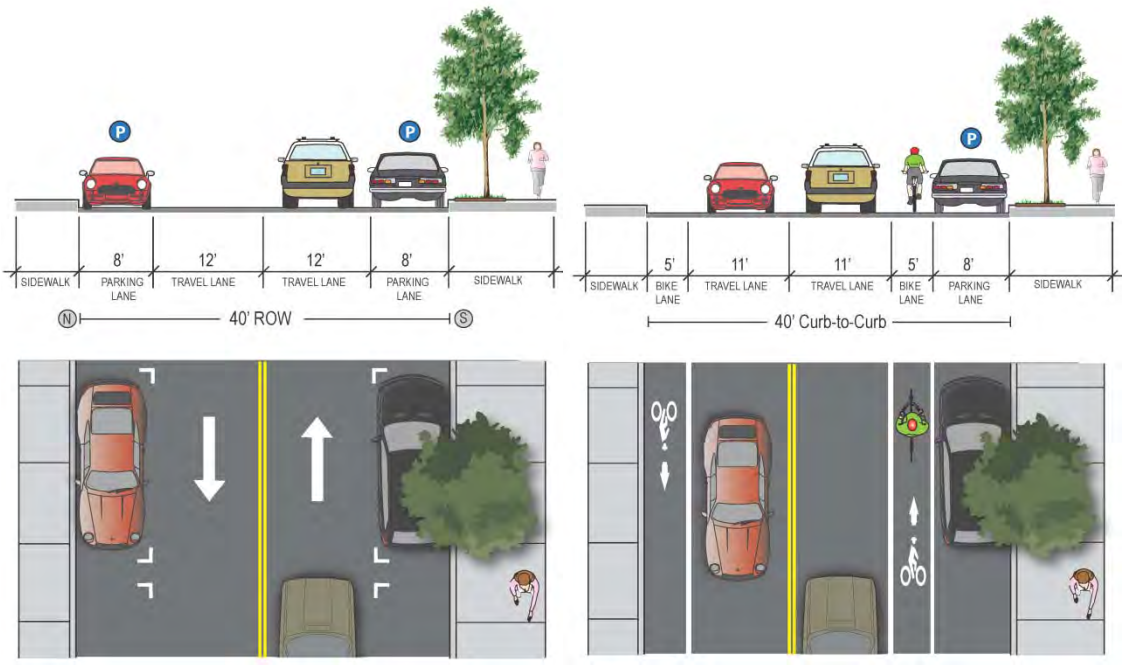
- Bike lane width: see bike lane design guidance.
- Vehicle lane width: depends on project. No narrowing may be needed depending on the width of the parking lane to be removed.

Some streets may not require parking on both sides.

Discussion

Bike lanes could replace one or more on-street parking lanes on streets where excess parking exists and/or the importance of bike lanes outweighs parking needs. For instance, parking may be needed on only one side of a street (as shown below and at right). Eliminating or reducing on-street parking also improves sight distance for cyclists in bike lanes and for motorists on approaching side streets and driveways. Prior to reallocating on-street parking for other uses, a parking study should be performed to gauge demand and to evaluate impacts to people with disabilities.

Guidance

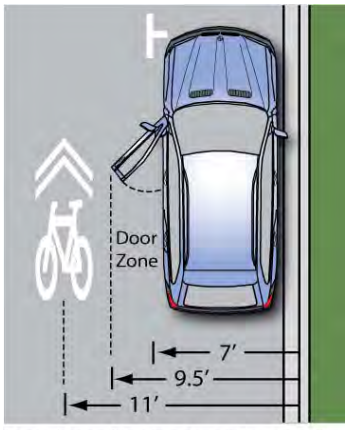


Example of parking removal to accommodate bike lanes

Shared Lane Markings

Design Summary

- Place at least 11′ from face of curb (or shoulder edge) with on-street vehicle parking.
- Place at least 4′ from face of curb (or shoulder edge) without on-street vehicle parking.
- Place every 200-400 feet and after each intersection.



Shared lane marking placement guidance for streets with on-street parking.

Discussion

Shared lane markings are high-visibility pavement markings that help position bicyclists within the travel lane. These markings are often used on streets where dedicated bike lanes are desirable but are not possible due to physical or other constraints.

Shared lane markings are placed strategically in the travel lane to alert motorists of bicycle traffic, while also encouraging cyclists to ride at an appropriate distance from the "door zone" of adjacent parked cars. These pavement markings have been successfully used in many small and large communities throughout the U.S. Shared lane markings made of thermoplastic tend to last longer than those using traditional paint.

This marking has been included in the 2010 update of the MUTCD, which allows shared lane markings to be used in locations with and without on-street vehicle parking. Placing shared lane markings between vehicle tire tracks (if possible) will increase the life of the markings.

Shared lane markings can be used on minor and major roadways.

Guidance

- MUTCD(2009)

Bikeway Intersection Treatments

Bikeway Intersection Treatments at Minor Unsignalized Intersections

Design Summary

- Reduce bicycle travel time by eliminating unnecessary stops and improving intersection crossings.

Discussion

Stop Sign on Cross-Street

Unmarked intersections can be dangerous for bicyclists because cross-traffic may not be watching for cyclists. Stop signs minimize bicycle and cross-vehicle conflicts by identifying which street has the right-of-way. However, placing stop signs at all intersections along bicycle boulevards may be unwarranted as a traffic control device (see MUTCD guidance).

Stop signs effectively minimize conflicts along bikeways on local streets

Bicycle Forward Stop Bar

A second stop bar for cyclists placed closer to the centerline of the cross street than the first stop bar increases the visibility of cyclists waiting to cross a street. This treatment is typically used with other crossing treatments (i.e. curb extension) to encourage cyclists to take full advantage of crossing design. They are appropriate at unsignalized crossings where fewer than 25 percent of motorists make a right turn movement.

Bicycle forward stop bars encourage cyclists to wait where they are more visible.

Medians/Refuge Islands

At uncontrolled intersections at major streets, a crossing island can be provided to allow cyclists to cross one direction of traffic at a time when gaps in traffic allow. The bicycle crossing island should be at least 8' wide to be used as the bike refuge area. Narrower medians can accommodate bikes if the holding area is at an acute angle to the major roadway. Crossing islands can be placed in the middle of the intersection, prohibiting left and thru vehicle movements.

Medians should provide space for a bicyclist to wait.

Guidance

- AASHTO *Guide for the Development of Bicycle Facilities.*
- MUTCD (2009)

Bicycle Parking

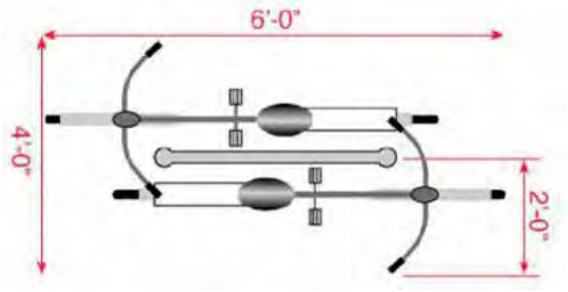
Bicycle parking can be broadly defined as either short-term or long-term parking:

- Short-term parking: parking meant to accommodate visitors, customers, messengers and others expected to depart within two hours; requires approved standard rack, appropriate location and placement, and weather protection.
- Long-term parking: parking meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking is to be provided in a secure, weather-protected manner and location.

Short-Term Bicycle Parking

Design Summary

- Location:
  - 50' maximum distance from main building entrance.
  - 2' minimum from the curb face to avoid 'dooring.'
  - Avoid fire zones, loading zones, bus zones, etc.
  - Location should be highly visible from adjacent bicycle routes and pedestrian traffic.
- Provide a minimum clear distance of 5'-6' between the bicycle rack and the property line to allow ample pedestrian movement.
- If two racks are to be installed parallel to each other, a minimum of 2.5' should be provided between the racks.



Standard bicycle rack

- The ODOT *Bicycle and Pedestrian Plan* states that, "bicycle racks must be designed so that they:
  - Do not bend wheels or damage other bicycle parts;
  - Accommodate the high security U-shaped bike locks;
  - Accommodate locks securing the frame and both wheels;
  - Do not trip pedestrians;
  - Are covered where users will leave their bikes for a long time; and
  - Are easily accessed from the street and protected from motor vehicles"

Discussion

Bicycle racks should be located close to the entrances of key destinations such as shops or shopping centres. They are generally appropriate for commercial and retail areas, office buildings, healthcare and recreational facilities, and institutional developments such as libraries and universities.

Guidance

- Association of Bicycle and Pedestrian Professionals, *Bicycle Parking Design Guidelines.* (2010).
- Bicyclinginfo.org *Bicycle Parking Design Guidelines.* (No Date).
- ODOT *Bicycle and Pedestrian Plan.*

Long-Term Bicycle Parking

Design Summary

- Place in close proximity to building entrances or transit exchanges, or on the first level of a parking garage.
- Provide door locking mechanisms and systems.
- A flat, level site is needed; concrete surfaces preferred.
- Enclosure must be rigid.
- Transparent panels are available on some models to allow surveillance of locker contents.
- Integrated solar panels have been added to certain models for recharging electric bicycles.
- Minimum dimensions: width (opening) 2.5'; height 6'; depth 4'.
- Stackable models can double bicycle parking capacity.

Bike lockers at a transit station.

Discussion

Although bicycle lockers may be more expensive to install, they can make the difference for commuters who are deciding whether or not to cycle. Bicycle lockers are large metal or plastic stand-alone boxes and offer the highest level of bicycle parking security available. Some lockers allow access to two users - a partition separating the two bicycles can help ensure users feel their bike is secure. Lockers can also be stacked, reducing the footprint of the area, although that makes them more difficult to use.

Security requirements may require that locker contents be visible, introducing a tradeoff between security and perceived safety. Though these measures are designed to increase station security, bicyclists may perceive the contents of their locker to be less safe if they are visible and will be more reluctant to use them. Providing visibility into the locker also reduces unintended uses, such as use as homeless shelters, trash receptacles, or storage areas. Requiring that users procure a key or code to use the locker also reduces these unintended uses.

Lockers available for one-time use have the advantage of serving multiple users a week. Monthly rentals, by contrast, ensure renters that their own personal locker will always be available. Bicycle lockers are most appropriate:

- Where demand is generally oriented towards long-term parking.
- At transit exchanges and park-and-rides to help encourage multi-modal travel.
- Medium-high density employment and commercial areas and universities.
- Where additional security is required and other forms of covered storage are not possible.

Guidance

- Association of Bicycle and Pedestrian Professionals, *Bicycle Parking Design Guidelines.* (2010).
- Bicyclinginfo.org *Bicycle Parking Design Guidelines.* (No Date).
- ODOT *Bicycle and Pedestrian Plan.*

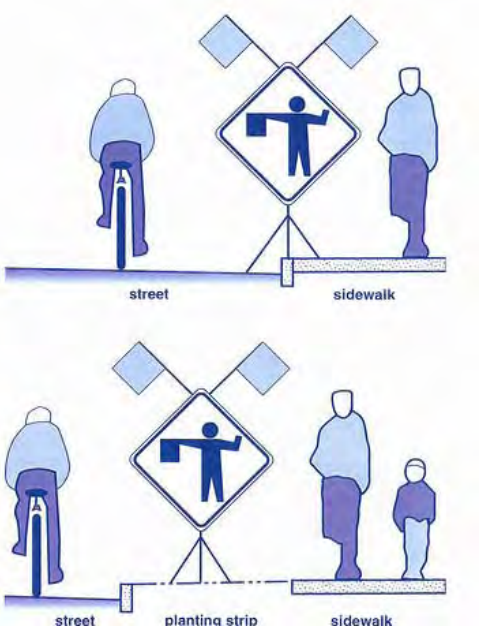
Bikeway Maintenance

This section presents guidelines for incorporating bicycle facilities into construction, maintenance and repair activities. The guidelines are a menu of options and considerations for maintenance activities, and not strict guidelines.

Street Construction and Repair

Design Summary

- Do not lead bicyclists into conflicts with work site vehicles, equipment, moving vehicles, open trenches or temporary construction signage.
- Where possible, re-create a bike lane (if one exists) to the left of the construction zone, or provide signs warning motorists to expect cyclists in the roadway.
- Place construction signage in a location that does not obstruct the path of bicyclists or pedestrians (see right).
- Require that steel plates do not have a vertical edge greater than ¼" without an asphalt lip.



Recommended construction sign placement (source: Oregon Bicycle and Pedestrian Plan)

Discussion

Safety of all roadway users should be considered during road construction and repair. Wherever bicycles are allowed, measures should be taken to provide for the continuity of a bicyclist's trip through a work zone area. Only in rare cases should pedestrians and bicyclists be detoured to another street when travel vehicle lanes remain open.

Steel plates are commonly used during construction and the plates' lip can puncture a bicycle tire and/or cause a cyclist to lose control. These plates can be dangerously slippery, particularly when wet. Non-skid materials are preferred

Guidance

- ODOT *Bicycle and Pedestrian Plan*
- MUTCD

Bikeway Maintenance

Design Summary

- Establish a seasonal sweeping schedule that prioritizes roadways with major bicycle routes.
- On all bikeways, use the smallest possible chip for chip sealing bike lanes and shoulders.
- If the condition of the bike lane is satisfactory, consider chip sealing only the travel lanes.
- Maintain a smooth surface on all bikeways that is free of potholes.
- Maintain pavement so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- Check regulatory and wayfinding signs along bikeways for signs of vandalism, graffiti, or normal wear and replace sigs as needed
- Ensure that shoulder plants do not hang into or impede passage along bikeways.

Recommended Walkway and Bikeway Maintenance Activities

Maintenance Activity	Frequency
Inspections	Seasonal –beginning and end of summer
Pavement sweeping	As needed, weekly in fall
Pavement sealing	5 - 15 years
Pothole repair	1 month after report
Culvert and drainage grate inspection	Before winter and after major storms
Shoulder plant trimming (weeds, trees, brambles)	Twice a year; middle of growing season / early fall
Tree and shrub trimming	1 – 3 years
Major damage response (washouts, flooding)	As soon as possible

Discussion

Bicyclists often avoid shoulders and bike lanes filled with gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface), nor should debris be swept from the sidewalk onto the roadway. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept.

Bicycles are more sensitive to subtle changes in roadway surface than are motor vehicles. Various materials are used to pave roadways, and some are smoother than others. Compaction after trenches and other holes are filled can lead to uneven settlement, which affects the roadway surface nearest the curb where bicycles travel.

Pavement overlays represent good opportunities to improve conditions for cyclists if done carefully. A ridge should not be left in the area where cyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects offer opportunities to widen a roadway, or to re-stripe a roadway with bike lanes.

Bikeways can become inaccessible due to overgrown vegetation. All landscaping needs to be designed and maintained to ensure compatibility with the use of the bikeways. After a flood or major storm, bikeways should be checked along with other roads, and fallen trees or other debris should be removed promptly.

Guidance

- ODOT *Bicycle and Pedestrian Plan*
- MUTCD

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Appendix A. Technical Standards and Regulations

Philomath Safe Routes to School Plan
Memorandum

To: Randy Kugler, City of Philomath and Naomi Zwerdling, ODOT

CC: **Philomath Bicycle and Pedestrian Committee**

From: Rory Renfro and Elliot Akwai-Scott, Alta Planning + Design

Date: August 13, 2010

Re: Task 1.8 – Final Memo #1: Technical Standards and Regulations

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This memo provides a summary of relevant policies and technical standards applicable to the planning and implementation of bicycle and pedestrian improvements associated with the Philomath Safe Routes to School Plan. Local plans regarding schools, parks, the roadway network and bicycle and pedestrian facilities are also reviewed.

Documents Reviewed

- *Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines*, United States Access Board[1]
- *Draft Final Accessibility Guidelines for Outdoor Developed Areas*, United States Access Board[2]
- *Title VI Guidance for Transportation Planning*, Oregon Department of Transportation[3]
- *Oregon's Statewide Planning Goals & Guidelines*, Oregon Department of Land Conservation and Development[4]
- *Oregon Revised Statute 327.043*, State of Oregon[5]
- *Oregon Revised Statute 195.115*, State of Oregon[6]
- *Oregon Highway Plan*, Oregon Department of Transportation[7]
- *Oregon Transportation Plan*, Oregon Department of Transportation[8]
- *Oregon Bicycle and Pedestrian Plan*, Oregon Department of Transportation[9]
- *Oregon Highway Design Manual*, Oregon Department of Transportation, Chapter 11 Pedestrian& Bicycle, [10]
- *Philomath Public Works Development Standards*, City of Philomath, Section 2.33 Bikeways

[1] http://www.access-board.gov/ada-aba/
[2] http://www.access-board.gov/outdoor/
[3] www.oregon.gov/ODOT/TD/TP/docs/publications/TitleVI.pdf
[4] http://www.oregon.gov/LCD/docs/goals/compilation_of_statewide_planning_goals.pdf
[5] http://www.leg.state.or.us/ors/327.html
[6] http://www.leg.state.or.us/ors/orspref.htm
[7] http://www.oregon.gov/ODOT/TD/TP/orhwyplan.shtml#1999_Oregon_Highway_Plan
[8] http://www.oregon.gov/ODOT/TD/TP/ortransplanupdate.shtml#Oregon_Transportation_Plan___Adopted_September_20__2006
[9] http://www.oregon.gov/ODOT/HWY/BIKEPED/docs/or_bicycle_ped_plan.pdf
[10] ftp://ftp.odot.state.or.us/techserv/roadway/web_drawings/HDM/Rev_E_2003Chp11.pdf

- *Master Philomath Bike Path and Trails Plan*, City of Philomath
- *Philomath Parks Master Plan*, City of Philomath
- *Philomath Transportation System Plan*, City of Philomath, pg 38 – 39, 82 – 91, 103 – 104, Appendix F
- *Philomath Couplet Project Plan*, City of Philomath, pg. 5-5 – 5-11, 8-1 – 8-2
- *Philomath Comprehensive Plan*, Bicycle Policies and Pedestrian Way Policies, pg. 52 – 53, City of Philomath

State and Federal Documents

Americans with Disabilities Act

The Americans with Disabilities Act requires pedestrian facilities to be constructed to minimum standards to insure "accessible routes" for people with disabilities. As a component of this Safe Routes to Schools plan, any recommended pedestrian facilities must be constructed to meet ADA requirements. Technical guidance on standards affecting common facilities such as sidewalks, curb ramps and bus stops is available in the United States Access Board publication *Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines*, which can be downloaded at the Access Board's ADA and ABA Accessibility Guidelines webpage.

Additional requirements for off-street facilities that may be included in this Safe Routes to School Plan, such as shared use paths and trails, are in the last stages of revision by the United States Access Board. The *Draft Final Accessibility Guidelines for Outdoor Developed Areas*, closed to public comment in 2009 after two years of review, is available for download on the Access Board's Outdoor Developed areas webpage.

Title VI

Title VI is a section of the Civil Rights Act of 1964 requiring governmental investment decisions to be made with sufficient attempts to involve minority populations and protected classes in the decision-making process. ODOT applies the principles of Title VI to transportation planning projects by collecting demographic information to identify different groups that could be affected by the project, and engaging minority populations through public meetings and other outreach strategies. Planning activities are directed to design outreach and public meetings for increased community involvement, especially from any protected classes that could be disproportionately affected by the project. Instruction on these issues as well as reporting standards can be found on the ODOT Title VI website in the 2009 document, *Title VI Guidance for Transportation Planning*.

Oregon Statewide Planning Goals and Guidelines

Oregon's Statewide Planning Goals first originated in 1973 to provide a coordinated vision of state land use policies. Ten original goals have increased to nineteen, with updating and amendments. While not all of the goals are mandatory, each has been adopted as an Oregon Administrative Rule (OAR) to be followed by government agencies.

Goal 12: Transportation, adopted as OAR 660-015-0000 (12), is a Statewide Planning Goal that directly applies to the Philomath Safe Routes to Schools Plan. This goal is "to provide and

encourage a safe, convenient and economic transportation system." Guidlines for Goal 12 are as follows:

A transportation plan shall (1) consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrian; (2) be based upon an inventory of local, regional and state transportation needs; (3) consider the differences in social consequences that would result from utilizing differing combinations of transportation modes; (4) avoid principal reliance upon any one mode of transportation; (5) minimize adverse social, economic and environmental impacts and costs; (6) conserve energy; (7) meet the needs of the transportation disadvantaged by improving transportation services; (8) facilitate the flow of goods and services so as to strengthen the local and regional economy; and (9) conform with local and regional comprehensive land use plans. Each plan shall include a provision for transportation as a key facility.

While the purpose of this Safe Routes to Schools plan does not apply strongly to guidelines 8 and 9, it will address the first seven guidelines by (1) addressing bicycle and pedestrian modes of transportation that are often underrepresented in transportation planning efforts; (2) be based upon local transportation needs as identified by previous planning efforts and a survey of community needs; (3 and 4) make considerations for the different transportation needs of different social groups while decreasing reliance on the private car and school bussing for student transportation; (5) minimize adverse social costs by improving safety; (6) conserving energy by diverting trips to energy-efficient, non-motorized modes of transportation, and (7) meet the needs of transportation disadvantaged populations by improving the service of transportation in Philomath that is appropriate for use by young students.

Oregon Administrative Rules and Statutes

This memo reviews laws directly pertinent to the subject of Safe Routes to Schools. The Oregon Bicycle and Pedestrian Plan, which is reviewed later of this memo, addresses other Oregon laws and statutes pertaining to bicycles and pedestrians not detailed in this section, and should serve as the preferred reference to those laws and statutes.

The need for and design of the Philomath Safe Routes to Schools Plan is influenced heavily by the Oregon mandatory school bussing rule, ORS 327.043:

ORS 327.043 When district required to provide transportation; waiver.

(1) A school district is required to provide transportation for elementary students who reside more than one mile from school and for secondary school students who reside more than 1.5 miles from school. A district is also required to provide transportation for any student identified in a supplemental plan approved by the State Board of Education.
(2) Notwithstanding subsection (1) of this section, the State Board of Education may waive the requirement to provide transportation for secondary school students who reside more than 1.5 miles from school. A district must present to the board a plan providing or identifying suitable and sufficient alternate modes of transporting secondary school students.

This law affects transportation patterns during times immediately before and after school hours by influencing the mode choice of students and their parents. While students living within one mile or 1.5 miles of school are not necessarily provided school bus transportation, this distance is generally regarded as feasible for walking or bicycling travel. However, the location of public schools in Philomath means that many students who live on the north side of Highway 20 are within the one to 1.5 mile radius of schools where bussing is not provided. Highway 20 is an obstacle for walking and bicycling to school for many students and their parents. This Safe Routes Plan will address the

walking and bicycling environment within areas near Philomath schools to help students who are not provided bus transportation get to school safely.

In 2003, Oregon passed ORS 195.115, which requires local governments to identify barriers to school children walking and bicycling to school, and suggests the development of improvement plans to address these barriers. This Safe Routes to Schools Plan will develop suggested bicycle and pedestrian improvements for Philomath in accordance with the law. The text of the law is as follows:

ORS 195.115 Reducing barriers for pedestrian and bicycle access to schools.
City and county governing bodies shall work with school district personnel to identify barriers and hazards to children walking or bicycling to and from school. The cities, counties and districts may develop a plan for funding of improvements to reduce barriers and hazards identified. [2001 c.940 §1]

Although no state funding was set aside in conjunction with the writing of the ORS 195.115, two years later in 2005 the state legislature created Oregon Department of Transportation Safe Routes to Schools Program with ORS 2745, which receives federal funding. More information on the Oregon Department of Transportation Safe Routes to Schools Program is available on their website[11].

Oregon Highway Plan (1999)

The Oregon Highway Plan's Policy Element includes five goals, of which, Goal 2: System Management and Goal 3: Access Management are most important to the Philomath Safe Routes to Schools Plan. The key component of Goal 2 is developing a highway system that "ensures local mobility and accessibility needs are met; and enhances [...] safety." This passage can be applied to the situation of Philomath school children who need to be able to cross Highway 20 safely in order to walk or bike to school. An outcome of the Safe Routes to School Plan that increases the safety and practicality of passage across Highway 20 is in agreement with this Oregon Highway Plan goal. The applicability of the Safe Routes Plan to Goal 3 is similar. Goal 3: Access Management also includes a safety component, and specifically references the needs of pedestrians and bicyclists. Access management on Oregon highways is also intended to "enhance community livability and support planned development patterns."

Oregon Transportation Plan (2006)

The Oregon Transportation Plan includes seven goals, each with several supporting policies, and each policy accompanied by several different strategies to be carried out in support of the larger policies and goals. The Philomath Safe Routes to Schools Plan carries out several of the strategies listed under Goals 1, 3, 4, and 5.

In regards to Goal 1 – Mobility and Accessibility, the Philomath Safe Routes to Schools Plan will address ADA compliance, sidewalks and bicycle facilities on existing roadways to improve accessibility for non-motorized travel modes. The purpose of the Safe Routes Plan also overlaps with the Oregon Transportation Plan Policy 1.2 – Equity, Efficiency and Travel Choices:

[11] http://egov.oregon.gov/ODOT/HWY/BIKEPED/safe_route_to_school.shtml

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

Under Goal 3 – Economic Vitality, the Safe Routes Plan is aligned with Strategy 3.2.2:

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

The Safe Routes to Schools Plan in Philomath will further several strategies in Policy 4.3 – Creating Communities under the Oregon Transportation Plan Goal 4 – Sustainability. These strategies include:

Strategy 4.3.2

Promote safe and convenient bicycling and walking networks in communities.

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

Strategy 4.3.5

Reduce transportation barriers to daily activities for those who rely on walking, biking, rideshare, car-sharing and public transportation by providing:

- *Access to public transportation and the knowledge of how to use it.*
- *Facility designs that consider the needs of the mobility-challenged including seniors, people with disabilities, children and non-English speaking populations.*

Lastly, the Safe Routes Plan also addresses safety as in Goal 5, Strategy 5.1.2, which directs Oregon communities to develop solutions to meet the "safety needs of vulnerable populations such as the young."

ODOT Bicycle and Pedestrian Plan (1995)

The goal of the 1995 Oregon Bicycle and Pedestrian Plan is "To provide safe, accessible and convenient bicycling and walking facilities and to support and encourage increased levels of bicycling and walking." The Bicycle and Pedestrian Plan is the official state document for the planning and development of the bicycle and pedestrian transportation network, and provides standards for design and construction of bicycle and pedestrian facilities such as sidewalks, bike lanes, and shared use paths. All facilities recommended as a part of the Philomath Safe Routes to School Plan should reference the ODOT Bicycle and Pedestrian Plan for design standards.

The Bicycle and Pedestrian Plan Appendices contain useful references, including a list of Oregon laws pertaining to bicycles and pedestrians. Several of these laws involve schools, such as ORS 332.405 which allows school districts to spend funds on bicycle and pedestrian improvements near their schools if it would improve safety for students traveling to school. This section of the Bicycle and Pedestrian Plan will be reviewed for the final Safe Routes to School Plan where information about these laws may assist with implementation.

The Bicycle and Pedestrian Plan is currently in the process of being updated, and the new version of the Plan will likely be published before all facility improvements recommended in the Philomath Safe Routes to School Plan are completed. A public comment draft was released in December 2007, and is available for download on the ODOT Bicycle and Pedestrian Program website.[12] The updated Bicycle and Pedestrian Plan should be used to instruct the completion of any bicycle and pedestrian facilities in Philomath as soon as it becomes available.

ODOT Highway Design Manual (2003)

The ODOT Highway Design Manual prescribes design standards for state highways. Chapter 11 of the Manual provides an overview of design standards for bicycle and pedestrian facilities in Oregon. The Highway Design Manual is useful as a resource for state and federal requirements regarding improvements such as bike lanes and sidewalks, but the Manual less detailed than the original sources of its material, and therefore limited in its usefulness as a construction reference. Chapter 11 of the Manual states "This chapter is meant to be a guide. For a complete description of pedestrian and bicycle design standards, consult the *Oregon Bicycle and Pedestrian Plan*."

Local Documents

Philomath Public Works Development Standards

Section 2.33 of this document sets forth standards for the construction of bicycle and pedestrian facilities in Philomath. The City shall refer to the American Association of State Highway and Transportation Officials' *Guide for the Development of Bicycle Facilities* and to the ODOT Bicycle and Pedestrian Plan in the design of its bikeways and walkways. Instruction is also provided for the construction of the pavement base for off-street facilities such as shared use paths.

Master Philomath Bike Path and Trails Plan (1994)

The goal of this 1994 plan was to "link parks, open spaces, schools, and residential areas" in Philomath with a system of bike facilities. It called for ten different projects, of which three have been completed: bike lanes along Main Street and Applegate Street installed as part of the Philomath Couplet Project, and bike lanes on 19th Street. Several of the other proposed projects rely upon the support of Benton County (bike lanes on Chapel Drive) or other outside partners or funding sources (shared use path along Mary's River to Wood Creek). Although the form of the city has changed since the Plan was written, the remaining and uncompleted projects will inform the bicycle facilities to be proposed with this Safe Routes to Schools Plan. The original ten bike projects recommended in the Master Philomath Bike Path and Trails Plan are as follows:

1. *Extend central bike path from Corvallis from Applegate Street and South 26th Street south to city limits; then west to City Park/Philomath High School to South 19th Street.*
2. *Extend northern bike path from North 19th and College Streets south along South19th Street to Chapel Road (requires widening and other improvements on South 19th Street).*
3. *Extend southern bike path east from Plymouth Road along Southwood Drive, 30th Street, and Applegate Street.*
    - *Urge County to add bike path along Chapel Road from Bellfountain Road to Fern Road (South 13th Street).*

[12] http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml

4. *Add bike path to South 13th Street from Applegate Street south to Chapel Road.*
5. *Improve and extend North 12th or North 13th from Main Street to West Hills Road. Include bike path.*
    - *Alternately, improve 9th Street adding bike path from Main Street to West Hills Road.*
6. *Connect bike path on South 13th Street across Frolic and Rodeo grounds and Mary's River Park to the Mary's River.*
7. *Provide trail and/or bike path along the Mary's River from Fern Road to Woods Creek to join with proposed section of the Corvallis-to-the-Sea Trail.*
8. *Provide trail and bike path from West Hills Road north to the Benton County Open Space Park to connect to the proposed Corvallis-to-the-Sea Trail.*
9. *Add bike lane(s) to U.S. 20/OR 34.*
10. *Provide bike lane(s) along Applegate Street from 26th Street to 11th Street.*

Philomath Parks Master Plan (1998)

Though the 1998 Philomath Parks Master Plan holds only limited relevance to the Philomath Safe Routes to Schools Plan, the Philomath Comprehensive Plan's "Bikeway Policies" section specifies the "acquisition of land and/or easements for bikeways and trails shall be evaluated along with the need of land for parks and open space". This is significant because the Parks Master Plan is currently in the process of being updated. The new Parks Plan and Safe Routes to School Plan should be coordinated to achieve maximum benefit to the city. Parks are important destinations for school children, and therefore the location of current and proposed park facilities should be incorporated into the planning of bicycle and pedestrian improvements with this Safe Routes to Schools Plan.

One of the key findings of the 1998 Parks Master Plan was that the majority of park and recreational resources in the city were located south of Main Street/ Highway 20. The same holds true for schools, with all four Philomath public schools being located in the same vicinity in the southeast quadrant of the city. The implementation of bicycle and pedestrian improvements as a result of this Safe Routes to Schools Plan may have the added benefit of increasing access to parks for residents in other areas of the city.

Philomath Transportation System Plan (1999)

Pedestrian System Plan

At the writing of the 1999 Philomath Transportation System Plan, a survey of pedestrian facilities revealed the city's sidewalk network to be fragmented and lacking in compliance with ADA standards for curb ramps. The Plan notes that the city's ongoing sidewalk infill program, in its third year at the time of the Plan's writing, would develop several miles of new sidewalk in Philomath. The Transportation System Plan stated that the infill project would "significantly improve pedestrian access, safety, and connectivity," but further recommended, "The city should expand sidewalk coverage to all paved city roads." The infill program is carried out in accordance with Philomath Ordinance No. 608, which requires property owners to install sidewalks along roads with curb and gutter. The City notifies property owners of their responsibility to install sidewalks up to several years in advance of construction by the Public Works department; owners can then anticipate the expense and are responsible for the cost of the sidewalk after it is completed. The City typically completes about 10 sidewalk infill projects per year. The Public Works Committee is responsible for prioritizing infill projects.

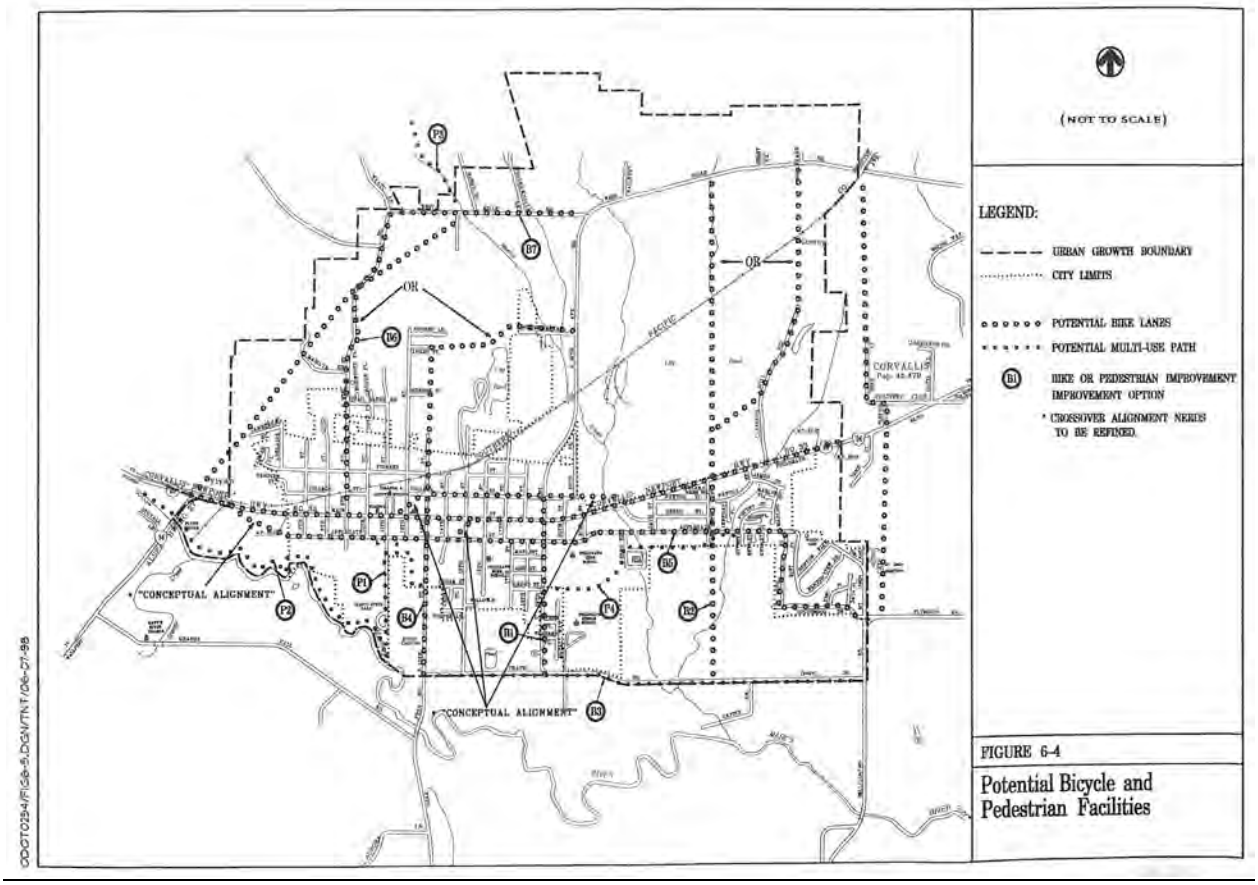


Figure 1. Proposed bicycle and pedestrian improvement projects from the 1999 Philomath Transportation System Plan.

Bicycle Facilities

The existing bicycle facilities described in the 1999 Transportation System Plan are largely outside of the Philomath city core, including several facilities in the area that are outside of the city limits or urban growth boundary. These facilities are helpful for bicyclists traveling longer distances for recreation or exercise, but do not connect directly to important destinations that are the purpose of short trips in Philomath that could be made by bicycle. Since the Transportation System Plan was completed, bike lanes on Main Street, Applegate Street and 19th Street have been added within the central city. The 19th Street bike lanes are most relevant to the Safe Routes to Schools Plan, connecting directly to Clemens Primary School and passing nearby Philomath High School and Philomath Middle School. The 19th Street bike lanes, along with most other proposed projects in the Transportation System Plan (see Figure 1), were originally listed in the 1994 Master Philomath Bike Path and Trails Plan.

Philomath Couplet Project Plan (2003)

The Philomath Couplet Project Plan reviewed bicycle and pedestrian conditions in Philomath while determining the final alignment of the Highway 20 couplet on Main Street and Applegate Street through downtown. College Street, which at the time was under consideration to be included as part of the couplet project, was noted to have an improved pedestrian environment as a result of recently installed curb extensions that reduced crossing distances for pedestrians. The

plan also noted that the width of College Street allowed for two travel lanes and bike lanes whether the street were striped as either a one-way or two-way street. With mostly-complete sidewalks and ADA-compliant curb ramps, the Couplet Project Plan highlights College Street's potential as a key bicycling and walking route in Philomath.

The completed couplet project did not affect College Street, but resulted in several other improvements for bicycle and pedestrian movements in Philomath. These improvements include bike lanes on Main Street and Applegate Street as well as several pedestrian crossing treatments of the couplet including a crosswalk with a median refuge island and pedestrian actuated warning signal at 17th Street.

Philomath Comprehensive Plan (2003)

The Philomath Comprehensive Plan includes guiding policies for the provision of bikeways and walkways on pages 52-53. Key bicycle policies state that bikeways in Philomath shall be efficient and safe, with an emphasis on safe crossings of major streets. Philomath bikeways should also be "conveniently located" to encourage use, with "minimal stops and obstructions". In the context of the Philomath Safe Routes to Schools Plan, these policies encourage the development of bikeways that provide direct access to schools, with the implementation of safe crossing treatments of Main Street, Applegate Street, and other major roads.

The City of Philomath requires "safe, convenient and direct" pedestrian facilities such as sidewalks and shared use paths throughout the community. Several city policies emphasize the importance of direct pedestrian routes to encourage and increase walking, especially in the case of routes to community destinations such as schools. Philomath also endorses the "timely installation" of improvements such as sidewalks in order to reduce hazards to pedestrians.

These policies together support the concept of the Philomath Safe Routes to School plan, which will identify walking and bicycling routes for improvements to increase directness and safety, with the goal of increasing bicycle and pedestrian use.

Appendix B. Philomath Couplet Crossing Location Analysis

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: October 21, 2010 Project #: 10631

To: Randy Kugler, City of Philomath
Naomi Zwerdling, ODOT

CC: Philomath Bicycle and Pedestrian Committee

From: Susan Wright, P.E. and Matthew Bell, Kittelson & Associates, Inc.

Project: Philomath Safe Routes to School Plan

Subject: Technical Memorandum #2: Philomath Couplet Crossing Location Analysis

INTRODUCTION

This memorandum is intended to provide an overview of existing and future traffic conditions at four key study intersections within the City of Philomath in support of the Philomath Safe Routes to School Plan update. The study intersections selected for the analyses were based on the location of existing pedestrian and bicycle routes as well as the location of potential future pedestrian and bicycle routes within the City of Philomath. The study intersections include:

- US20/OR34 Westbound (Main Street)/7th Street
- US20/OR34 Westbound (Main Street)/17th Street
- US20/OR34 (Main Street)/19th Street
- US20/OR34 Eastbound (Applegate Street)/11th Street

EXISTING CONDITIONS

The existing conditions analysis identifies the current operational, geometric, and safety characteristics of the roadways within the study area. These conditions will be compared with future conditions later in this report.

Transportation Facilities

US20/OR34 is the primary ODOT facility serving the City of Philomath. US20/OR34 was recently converted to a one-way couplet west of 16th Street, with westbound travel lanes along Main Street and eastbound travel lanes along Applegate Street. Pedestrian and bicycle facilities are provided along both Main and Applegate Street. There is a pedestrian signal at the Main Street/17th Street intersection and pedestrian actuated traffic signals at the Main Street intersections with 19th Street, 13th Street, and 9th Street and the Applegate Street intersection with 13th Street. Figure 1 illustrates

the existing traffic control devices along Main and Applegate Street and the existing lane configurations and traffic control devices at the four study intersections.

Traffic Volumes and Peak Hour Operations

Manual turning-movement counts were conducted at the study intersections on a typical mid-week day in March, 2010. All counts were conducted over a 14-hour period between 6:00 a.m. and 8:00 p.m. and include 15-minute count data during the morning (6:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak time periods and one-hour count data during all other times. The counts conducted at the Main Street/7th Street and Main Street/17th Street intersections include vehicular turning movements, pedestrian movements, bikes, and wheeled pedestrians (wheelchairs, skateboards, etc), while the counts conducted at the Main Street/19th Street and Applegate Street/11th Street intersection include vehicular turning movement counts only.

Two supplemental counts were conducted at the Main Street/11th Street and Applegate Street/17th Street intersections that include turning movements, pedestrian movements, bikes, and wheeled pedestrians (wheelchairs, skateboards, etc). Information from these counts is included in the tables below. *Appendix "A" contains the traffic count worksheets used in this study*

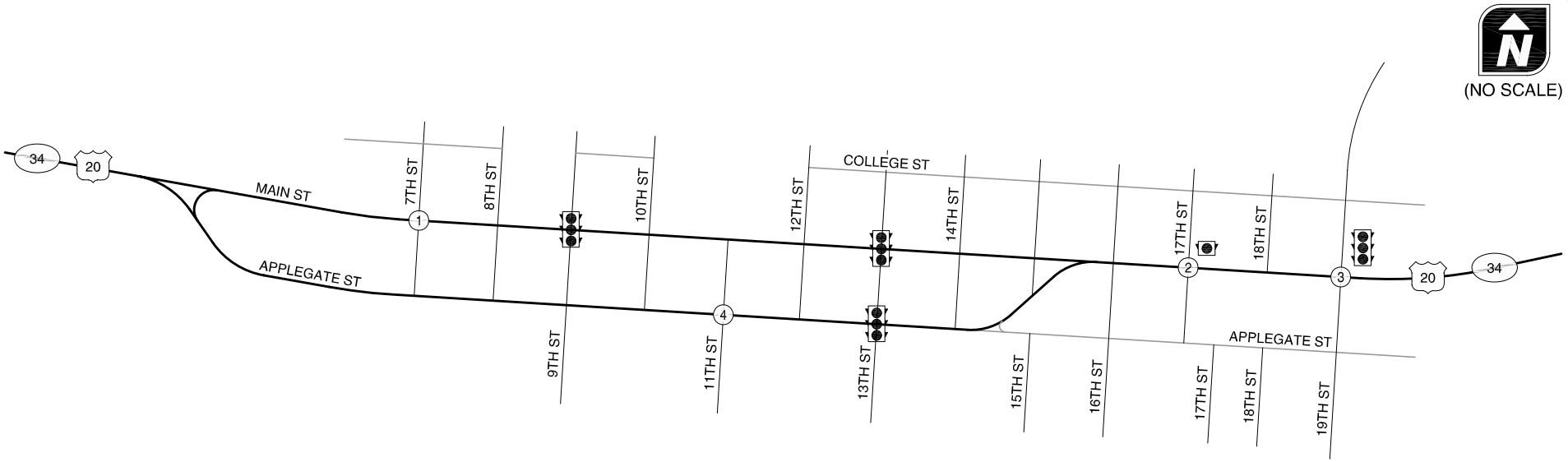
Peak Hour Development

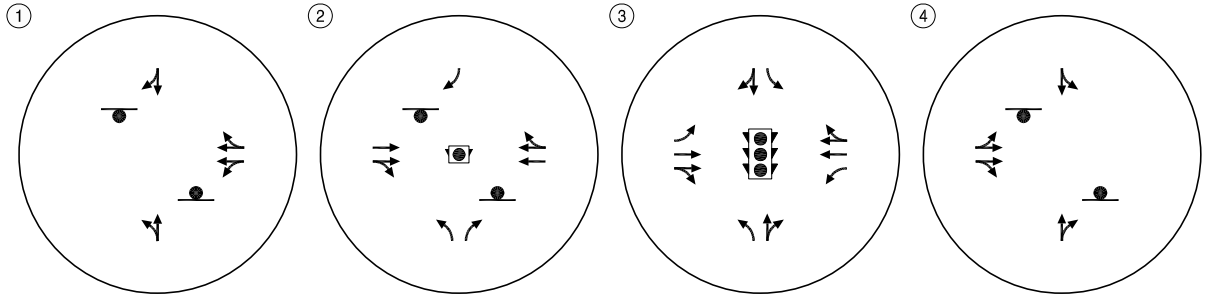
The traffic counts were reviewed at each of the study intersections to determine a consistent one-hour system peak period for the operations analysis. The morning and evening peak hours for vehicular traffic was found to occur at slightly different times than the morning and evening peak hours for pedestrian and bicycle traffic. Table 1 summarizes the system-wide peak hours for vehicle, pedestrian, and bicycle traffic.

Table 1
System-Wide Peak Hour by Count Type

Count Type	Weekday AM Peak Hour		Weekday PM Peak Hour	
	Peak Hour	Volume	Peak Hour	Volume
Vehicle	7:30 to 8:30	4,122	4:15 to 5:15	4,812
Pedestrian	7:00 to 8:00	26	3:00 to 4:00	53
Bicycle	7:30 to 8:30	10	3:00 to 4:00	11

Tables B1 through B6 in Appendix "B" summarize the hourly vehicle, pedestrian, and bicycle counts conducted during the 14-hour study period at the study intersections and the supplemental intersections. Chart 1 graphically displays the information provided in Tables B1 through B6 as a percent of total traffic volumes over the 14-hour count period.





LEGEND

- STOP SIGN
- PEDESTRIAN SIGNAL
- TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL DEVICES PHILOMATH, OREGON

FIGURE 1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

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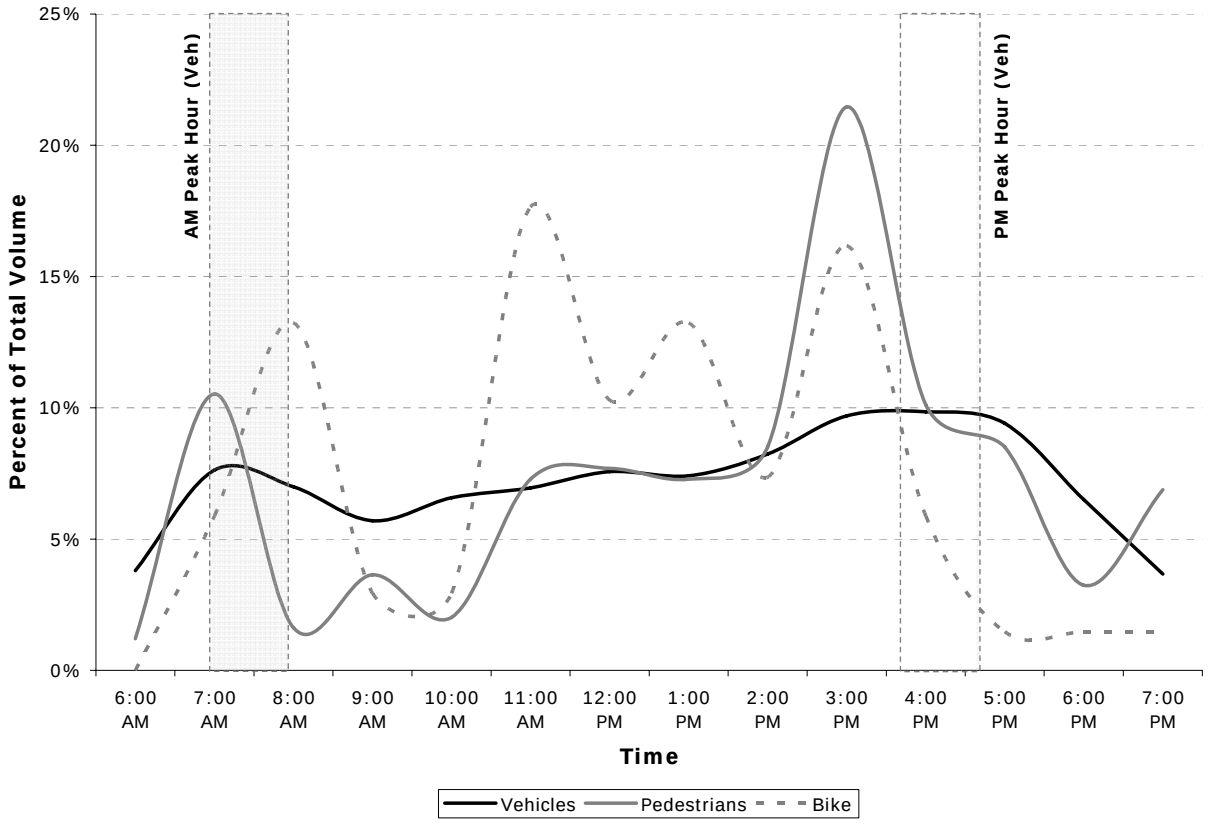
Chart 1
Traffic Count Summary



As shown in Chart 1, the system-wide peak hour for vehicular traffic captures a sufficient portion of the morning and evening pedestrian and bicycle activity. Therefore, the system-wide morning and evening peak hours selected for the operations analysis include the 7:30 to 8:30 a.m. and 4:15 to 5:15 p.m. peak hours, respectively.

Mobility Standards

ODOT uses volume-to-capacity ratio standards to assess intersections operations. Table 6 of the *Oregon Highway Plan* (OHP – Reference 2) provides maximum volume-to-capacity ratios for all signalized and unsignalized intersections outside the Portland Metro area. The ODOT controlled intersections within the study area are located along US20/OR34 which is a designated freight route on a Statewide Highway and inside the urban growth boundary of the Corvallis Area Metropolitan Planning Organization (MPO). The minimum required performance standards are shown in Table 2 and reflect the posted speed limit and traffic control at the study intersection (whether the intersection is signalized or unsignalized).

Table 2
Summary of ODOT Intersection Performance Standards

Intersection	Traffic Control[1]	Posted Speed Limit (mph)	OHP Mobility Standard[2]
US20/7th Street (WB)	TWSC	25	V/C = 0.80
US20/17th Street	TWSC	25	V/C = 0.80
US20/19th Street	Signal	25	V/C = 0.80
US20/11th Street (EB)	TWSC	25	V/C = 0.80

[1]TWSC: Two-way stop-controlled (unsignalized)
[2]OHP Oregon Highway Plan

Peak Hour Operations

Figure 2 provides a summary of the year 2010 turning-movement counts at the study intersections, which were seasonally adjusted and rounded to the nearest five vehicles per hour for the weekday a.m. and p.m. peak hours. Figure 2 also displays the results of the operations analysis at the study intersections during the weekday a.m. and p.m. peak hours. As shown, all of the study intersections currently operate acceptably. *Appendix "C" contains information on the seasonal adjustment factor. Appendix "D" contains the existing conditions analysis worksheets used in this study.*

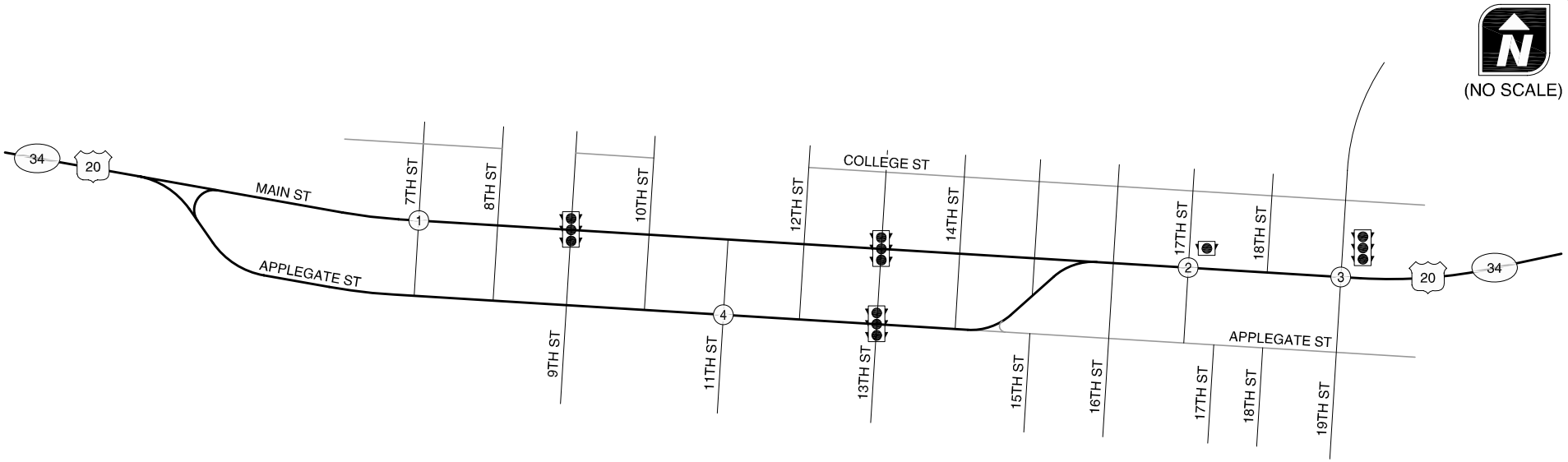
Traffic Safety

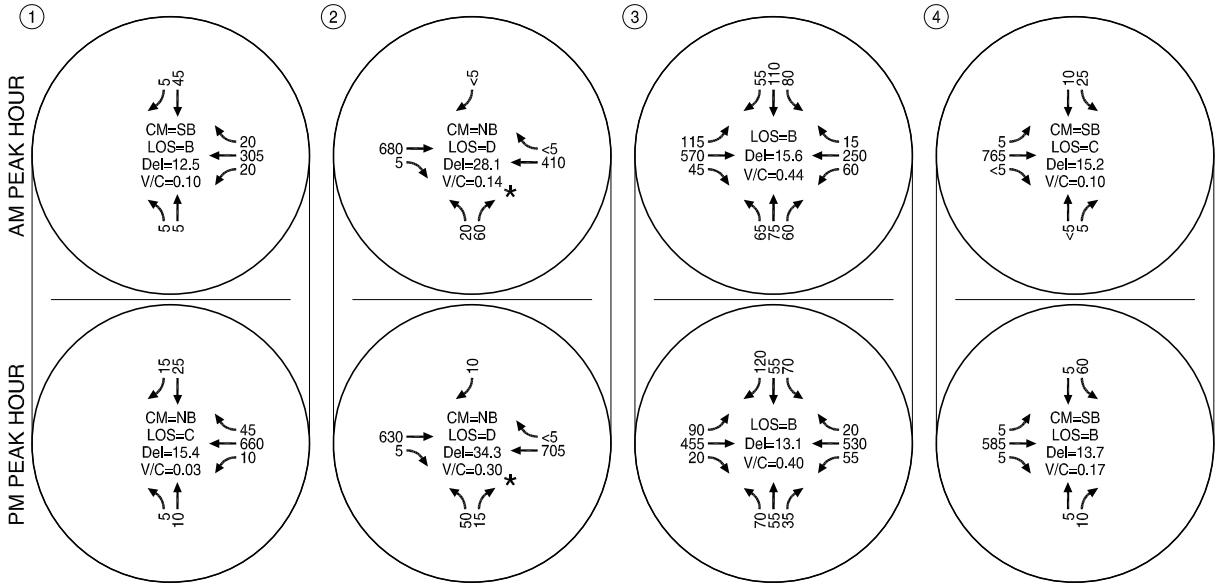
The crash history of each study intersection was reviewed in an effort to identify potential safety issues. Crash records were obtained from ODOT for the five-year period from January 1, 2005 through December 31, 2009 per the scope of work. It should be noted that major geometric changes occurred at the study intersections following the completion of the US20/OR34 couplet in early 2007. A summary of the intersection crash data is provided in Table 3.

Table 3
Intersection Crash History (January 1, 2005 – December 31, 2009)

Intersection	Collision Type				Severity			Total	Crash Rate[2]
	Rear-End	Turning	Angle	Other	PDO[1]	Injury	Fatal		
Main Street/7th Street	0	0	1	0	1	0	0	1	0.08
Main Street/17th Street	2	0	0	1	2	1	0	3	0.11
Main Street/19th Street	1	7	1	3	7	3	2	12	0.37
Applegate Street/11th Street	0	1	1	0	1	1	0	2	0.13

[1] PDO – Property Damage Only.
[2] Crash Rate = Crashes per million entering vehicles.





LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

* OPERATIONS REFLECT TIMES WHEN THE PEDESTRIAN SIGNAL IS NOT IN USE

EXISTING TRAFFIC CONDITIONS
WEEKDAY AM AND PM PEAK HOUR
PHILOMATH, OREGON

FIGURE **2**

Based on a preliminary review of available data, one intersection was identified for further investigation as described below. The remaining study intersections did not exhibit any particular trends or safety deficiencies. *Appendix "E" contains the crash data received from ODOT.*

Main Street / 19th Street

The annual crash records for the Main Street/19th Street intersection are summarized in Table 4.

Table 4
Annual Reported Crashes, Main Street / 19th Street

Year	Collision Type				Severity			Total
	Rear-End	Turning	Angle	Other	PDO[1]	Injury	Fatal	
2005		2			1	1		2
2006	1	1		2	3		1	4
2007				1			1	1
2008		2			1	1		2
2009		2	1		2	1		3

[1] Property Damage Only

As shown in Table 4, six crashes have occurred since the complete of the US20/OR34 couplet. Four of the crashes have been classified as turning movement crashes, one as an angle crash, and one as "other". Three of the six crashes resulted in property damage only, two in injuries, and one in a fatality. Of the four turning movement crashes and one angle crash, no particular trends were identified in the crash data. The one "other" crash, which resulted in a fatality, was reported to have occurred on a Wednesday evening in October at approximately 5:00 p.m. when a driver traveling westbound on US 20/OR34 failed to maintain the travel lane, ran off the road, and collided with a fixed object. As a result the Main Street/19th Street intersection was placed on the ODOT SPIS List for 2009.

Statewide Priority Index System

The Statewide Priority Index System (SPIS) was developed by ODOT for identifying hazardous locations on state highways through consideration of crash frequency, crash rate, and crash severity. As described in ODOT's SPIS description, a roadway segment is designated as a SPIS site if a location experiences three or more crashes or one or more fatal crashes over a three-year period. Based on the number and severity of crashes at the Main Street/19th Street intersection, it was included in the top 5 percent of ODOT SPIS sites in 2009, which will result in further investigation by the regions traffic manager's office.

Traffic Signal Warrants

The Manual on Uniform Traffic Control Devices (MUTCD – Reference 2) outlines the methodology for determining the need for traffic signals based on a series of warrants. Section 4C.05 of the MUTCD provides the guidelines for Warrant 4, which is intended for application where "the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street." Warrant 4 requires a minimum of 75[1] pedestrian crossings over any four hour period or 93 pedestrian crossings during the peak hour to warrant a traffic signal based on pedestrian volumes alone Figures 4C-6 and 4C-8 illustrate the minimum threshold for a traffic signal. Based on the March 2010 traffic counts, none of the study intersections currently meet the minimum requirement for a traffic signal.

While there are no specific warrants for pedestrian crossing treatments, such as the flashing beacon at the Main Street/17th Street intersection, the MUTCD does provide guidelines for the application of pedestrian hybrid beacons in Section 4F.01. Based on information provided in this section, pedestrian hybrid beacons should be considered on facilities where the posted speed limit is 35 mph or less and there are more than 20 pedestrian crossings during any one-hour period; provided the length of the crossing is sufficient to necessitate the treatment. Figure 4F-1 of the MUTCD illustrates the minimum threshold for pedestrian hybrid beacons on low-speed roadways. Based on the March 2010 traffic counts and the relative crossing lengths, none of the study intersections currently meet the minimum requirement for a pedestrian hybrid beacon. *Appendix "F" contains the MUTCD figures indicated above.*

FUTURE TRAFFIC CONDITIONS

The future conditions analysis identifies how the four study intersections will operate in the future 2030 horizon year. The intent of this analysis is to determine if traffic signals (that would provide additional signalized crossing locations for pedestrians and bicycles) may be warranted in the future at any of the study intersections. Future traffic volumes for the analysis were developed by first applying a 20-year growth factor to the 2010 traffic volumes along US20/OR34 as well as to the minor street turning movements.

Growth Rate

The 20-year growth rate used in the future conditions analysis was derived from a review of the ODOT *Future Volume Tables*. Three data points were selected along US20/OR34 for review that include existing (2006) and model based forecast (2028) Average Annual Daily Traffic (AADT). Table 5 summarizes the information provided in the future volume tables and provides the 22-year growth factor for each data point.

[1] Section 4C.05.03 of the MUTCD states that the minimum threshold for populations of less than 10,000 is 75 pedestrian crossings or 70 percent of the minimum threshold of for populations of more than 10,000.

Table 5
Growth Rate Calculations

Highway Mile Point	Location	AADT		22-Year Growth Factor
		2006	2026	
50.11	West City Limits of Philomath	12,200	17,100	1.40
50.60	0.02 miles east of 13th Street	15,200	22,500	1.48
50.83	0.02 miles east of 16th Street	16,000	21,600	1.35
	Average 22-Year Growth Factor			***1.41***

Based on the information provided in Table 5, the average 22-year growth factor for Philomath is 1.41. Assuming linear growth over the 22-year period, the average annual growth factor is 0.019 ((1.41 - 1) / 22 years). Therefore, future traffic volumes were derived by increasing the year 2010 traffic volumes by a factor of 1.38 (0.019 x 20 years) to represent 20 years of regional growth. This rate was conservatively applied to the side street and highway turning movements as well as no local rates were available.

Peak Hour Operations

Figure 3 provides a summary of the year 2030 future traffic volumes, which were rounded to the nearest five vehicles per hour. Figure 3 also displays the results of the future traffic conditions operations analysis at the study intersections during the weekday a.m. and p.m. peak hours. As shown, all of the study intersections are forecast to continue to operate with relatively low volume-to-capacity ratios. None of the study intersections is likely to become the location of a future traffic signal based on traffic volume projections and operations. *Appendix "G" contains the future traffic conditions analysis worksheets used in this study.*

CONCLUSION

The results of this analysis indicate that the existing transportation system is sufficient to accommodate existing and estimated future 2030 traffic conditions. The findings of this analysis are discussed below.

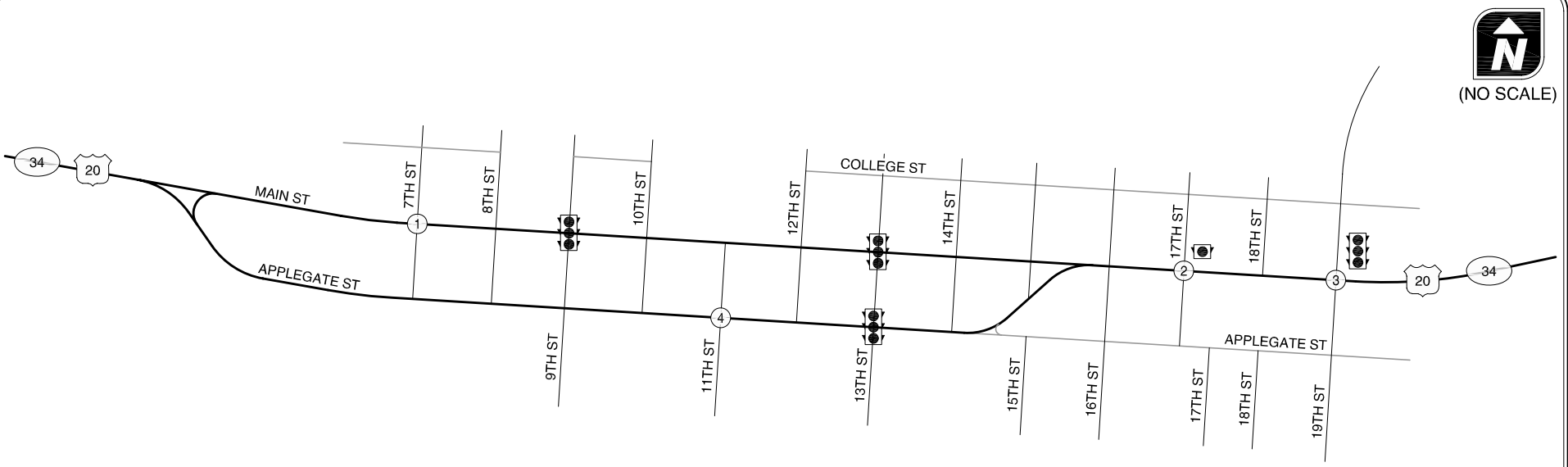
Existing Traffic Conditions

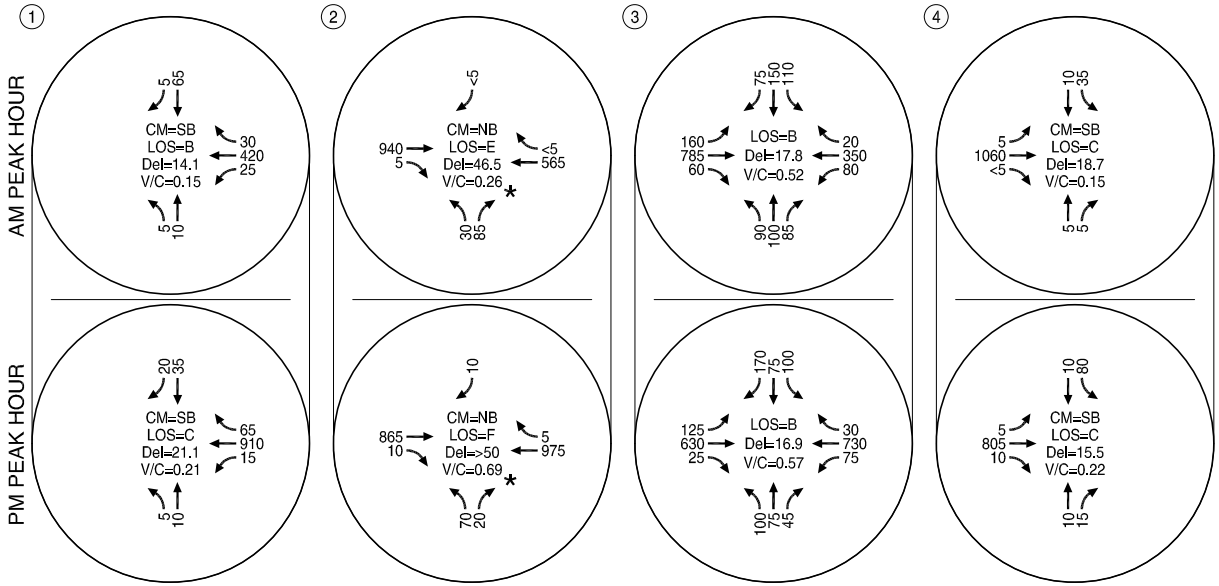
- All of the study intersections currently operate acceptably during the weekday a.m. and p.m. peak hours.
- A review of historical crash data did not reveal any patterns or trends in the site vicinity that require mitigation associated with this project.
    - The Main Street/19th Street intersection is on the ODOT 2009 SPIS list given the frequency and severity of crashes over previous three year period. Future investigation of the crashes and safety deficiencies at the intersection will be investigated by the regional manager's office.

- None of the study intersections currently meet the minimum requirements for a traffic signal or pedestrian hybrid beacon crossing treatment based observed pedestrian volumes.

Future Traffic Conditions

- Traffic volumes in the study area are expected to grow by a factor of 1.28 over the next 20 year period
- All of the study intersections are forecast to operate with relatively low volume-to-capacity ratios during the weekday a.m. and p.m. peak hours.
- No new traffic signals are anticipated based on vehicle volume and operations.





LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

* OPERATIONS REFLECT TIMES WHEN THE PEDESTRIAN SIGNAL IS NOT IN USE

FUTURE TRAFFIC CONDITIONS
WEEKDAY AM AND PM PEAK HOUR
PHILOMATH, OREGON

FIGURE **3**

REFERENCES

1. The Oregon Department of Transportation. *Analysis Procedures Manual*. 2006.
2. The Oregon Department of Transportation. *Oregon Highway Plan*. 1999.
3. US Department of Transportation. Federal Highway Administration. *Manual on Uniform Traffic Control Devices.* 2009.

APPENDIX

A. Traffic Counts
B. Intersection Count Summary
C. Seasonal Adjustment
D. Existing Traffic Conditions Worksheets
E. Crash Data
F. Pedestrian Treatment Thresholds
G. Future Traffic Conditions Worksheets

Appendix A:
Traffic Counts

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Weather: Clear

Source

Site Number: 2012010
Mile Point: 50.58
Street Number: 033
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

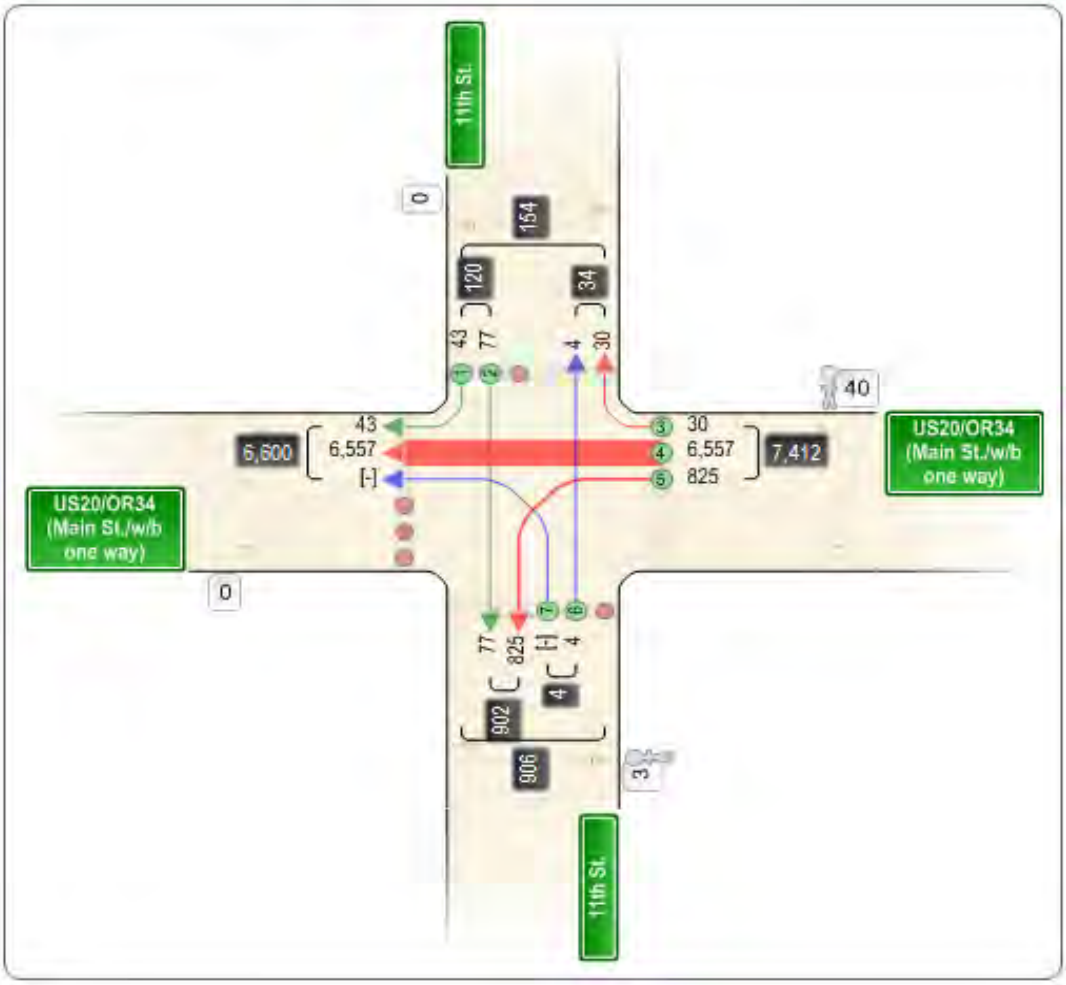
Source Description

Location Description: US20/OR34(Main St./one way w/b) @ 11th St.

site 2188 - east leg

traffic combined when dark

County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2012010
County: Benton
City: Philomath
Milepoint: 50.58
Count Number: 1.00

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
way w/b) @ 11th St.
Location:
Weather: Clear

	Summary By Movements									Entering Volumes		
Time of Day	N-S	N-W	E-N	E-S	E-W	S-N	S-W		TOTAL	North	East	South
6:00	0	1	0	6	188	0	0		195	1	194	0
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	0	0	0	12	42	0	1		55	0	54	1
7:15	0	0	0	7	47	0	2		56	0	54	2
7:30	1	0	0	8	71	1	2		83	1	79	3
7:45	1	0	0	13	78	0	0		92	1	91	0
8:00	0	1	2	8	83	1	0		95	1	93	1
8:15	0	4	0	5	77	0	1		87	4	82	1
8:30	1	6	0	7	72	0	0		86	7	79	0
8:45	9	2	0	4	67	0	1		83	11	71	1
9:00	5	2	2	32	289	0	1		331	7	323	1
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	3	0	3	61	359	0	4		430	3	423	4
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	5	0	1	64	344	0	3		417	5	409	3
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	4	3	2	67	410	0	8		494	7	479	8
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	12	4	3	70	405	0	5		499	16	478	5
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	7	1	4	76	443	1	9		541	8	523	10
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	4	3	1	98	605	0	5		716	7	704	5
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	2	0	22	120	0	1		145	2	142	1
16:15	0	0	0	18	166	0	1		185	0	184	1
16:30	4	1	0	15	129	0	3		152	5	144	3
16:45	2	0	1	14	156	0	1		174	2	171	1
17:00	0	0	0	15	180	0	4		199	0	195	4
17:15	1	0	2	13	165	0	1		182	1	180	1
17:30	0	0	0	14	162	0	0		176	0	176	0
17:45	0	0	1	11	147	0	0		159	0	159	0
18:00	3	4	3	23	498	0	8		539	7	524	8
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	3	2	0	16	253	0	4		278	5	269	4
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
Total Count	65	36	25	699	5556	3	65		6449	101	6280	68
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18
24hr Volume	77	43	30	825	6557	4	77		7610	119	7410	80

Summary Of Bicycle Count
Transportation Development Division

Site: 2012010
County: Benton
City: Philomath
Milepoint: 50.58
Count Number: 1.00

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
way w/b) @ 11th St.
Location:
Weather: Clear

	Summary By Movements									Entering Volumes		
Time of Day	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	0	0		0	0	0	0
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	0	0	0	0	1	0	0		1	0	1	0
7:15	0	0	0	0	0	0	0		0	0	0	0
7:30	0	0	0	0	1	0	0		1	0	1	0
7:45	0	0	0	0	0	0	0		0	0	0	0
8:00	0	0	0	0	1	0	0		1	0	1	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	0	0	0		0	0	0	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	0	0	0	1	0	0	0		1	0	1	0
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	0	0	0	0	0		0	0	0	0
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	0	0	0	1	0	0		1	0	1	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	0	0	0	0	1	0	0		1	0	1	0
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	0	0	0	4	0	0		4	0	4	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	2	0	0		2	0	2	0
16:15	0	0	0	0	0	0	0		0	0	0	0
16:30	0	0	0	0	0	0	0		0	0	0	0
16:45	0	0	0	0	0	0	0		0	0	0	0
17:00	0	0	0	0	0	0	0		0	0	0	0
17:15	0	0	0	0	1	0	0		1	0	1	0
17:30	0	0	0	0	1	0	0		1	0	1	0
17:45	0	0	0	0	0	0	0		0	0	0	0
18:00	0	0	0	0	0	0	0		0	0	0	0
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	0	0	0	0	0	0		0	0	0	0
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
Total Count	0	0	0	1	15	0	0		16	0	16	0
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18
24hr Volume	0	0	0	2	18	0	0		19	0	19	0

Summary Of Pedestrian Count
Transportation Development Division

Site: 2012010
County: Benton
City: Philomath

Milepoint: 50.58
Count Number: 1.00

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
Location: US20/OR34(Main St./one way w/b) @ 11th St.
Weather: Clear

Time of Day	Pedestrian			
	North	East	South	West
6:00				
6:15				
6:30				
6:45				
7:00		1		
7:15				
7:30		1		
7:45				
8:00		1		
8:15				
8:30				
8:45				
9:00		2		
9:15				
9:30				
9:45				
10:00				
10:15				
10:30				
10:45				
11:00		5		
11:15				
11:30				
11:45				
12:00		3	1	
12:15				
12:30				
12:45				
13:00		5		
13:15				
13:30				
13:45				
14:00		3	2	
14:15				
14:30				
14:45				
15:00		10		
15:15				
15:30				
15:45				
16:00		2		
16:15				
16:30		1		
16:45				
17:00		1		
17:15		2		
17:30		1		
17:45				
18:00				
18:15				
18:30				
18:45				
19:00		2		
19:15				
19:30				
19:45				
Total	0	40	3	0

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Weather: Clear

Source

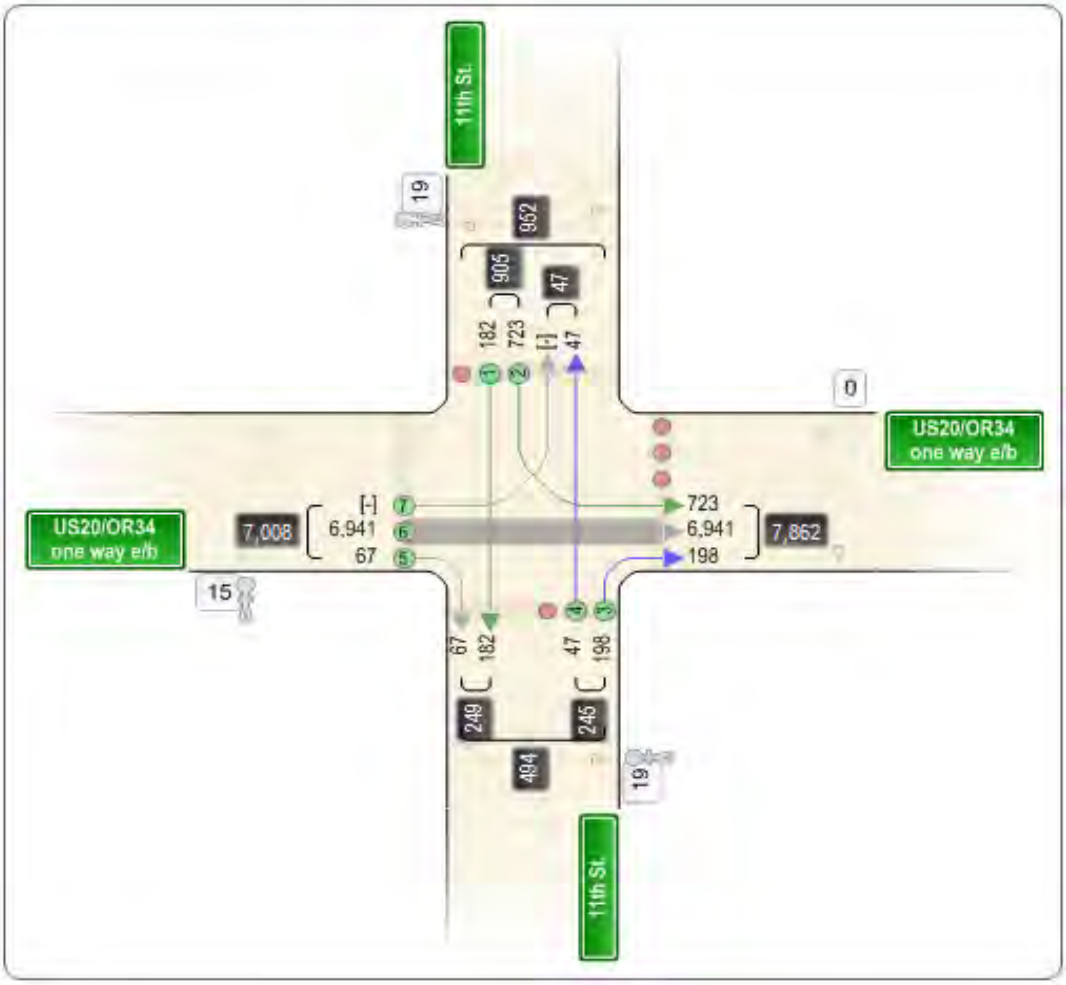
Site Number: 2022010
Mile Point: 50.48
Street Number: 033
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: US30/OR34(one way e/b) @ 11th St.

traffic combined when dark

site 17920
County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2022010
County: Benton
City: Philomath
Milepoint: 50.48
Count Number: 1.00

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
@ 11th St.
Location:
Weather: Clear

	Summary By Movements									Entering Volumes		
Time of Day	N-E	N-S	S-N	S-E	W-N	W-E	W-S		TOTAL	North	South	West
6:00	3	5	0	0	0	318	0		326	8	0	318
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	5	4	1	8	1	112	2		133	9	9	115
7:15	6	2	0	1	2	150	0		161	8	1	152
7:30	6	3	2	1	0	198	0		210	9	3	198
7:45	8	3	0	1	1	189	0		202	11	1	190
8:00	6	1	0	1	2	151	0		161	7	1	153
8:15	4	2	0	1	2	129	0		138	6	1	131
8:30	5	2	1	2	0	130	3		143	7	3	133
8:45	12	1	0	0	0	107	0		120	13	0	107
9:00	33	7	1	5	0	385	6		437	40	6	391
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	55	16	1	12	5	424	5		518	71	13	434
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	67	9	2	17	4	423	4		526	76	19	431
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	58	11	2	17	4	415	5		512	69	19	424
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	71	10	3	11	2	422	8		527	81	14	432
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	62	18	5	17	3	470	4		579	80	22	477
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	74	29	3	25	3	496	4		634	103	28	503
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	19	5	2	6	0	102	1		135	24	8	103
16:15	16	0	1	2	1	122	1		143	16	3	124
16:30	19	1	2	1	1	161	2		187	20	3	164
16:45	13	1	0	3	0	116	2		135	14	3	118
17:00	11	5	3	5	1	108	2		135	16	8	111
17:15	12	5	0	4	1	98	0		120	17	4	99
17:30	10	3	0	7	0	117	1		138	13	7	118
17:45	11	1	1	2	0	107	1		123	12	3	108
18:00	14	5	6	10	0	303	4		342	19	16	307
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	5	0	0	0	0	0		5	5	0	0
19:00	12	0	3	8	1	129	1		154	12	11	131
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
Total Count	612	154	39	167	34	5882	56		6944	766	206	5972
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18
24hr Volume	723	182	47	198	41	6941	66		8194	904	243	7047

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

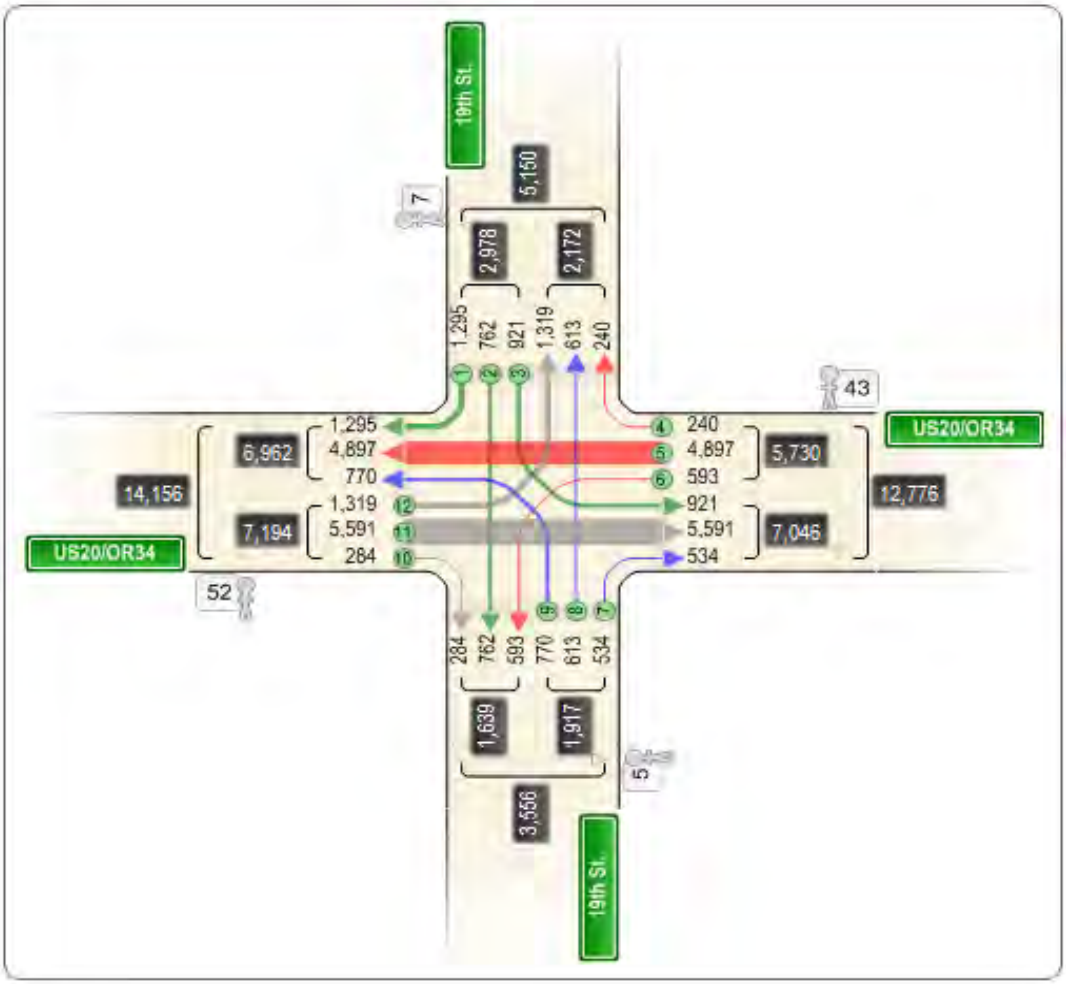
Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Weather: Clear;Rain

Source

Site Number: 2032010
Mile Point: 51.04
Street Number: 033
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: US20/OR34 @ 19th St. site 2121 - east leg
traffic combined when dark
County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2032010
County: Benton
City: Philomath

Milepoint: 51.04
Count Number: 1.00

Date: 3/10/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
east leg
Location: traffic combined when dark
Weather: Clear;Rain

	Summary By Movements														Entering Volumes			
Time of Day	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
6:00	53	12	30	15	7	128	13	25	7	47	242	5		584	95	150	45	294
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	15	14	7	4	5	36	5	9	5	18	46	1		165	36	45	19	65
7:15	13	14	11	5	4	54	10	11	6	24	91	9		252	38	63	27	124
7:30	33	35	12	7	12	43	16	10	14	24	152	12		370	80	62	40	188
7:45	18	44	13	2	21	63	23	23	24	31	148	14		424	75	86	70	193
8:00	14	22	12	3	19	62	32	17	22	33	109	14		359	48	84	71	156
8:15	14	7	17	1	7	51	3	11	7	29	85	3		235	38	59	21	117
8:30	15	6	9	6	6	57	8	9	7	24	120	2		269	30	69	24	146
8:45	12	8	12	2	4	67	5	7	9	18	87	4		235	32	73	21	109
9:00	47	25	53	16	26	224	17	30	30	76	316	12		872	125	266	77	404
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	41	31	65	9	19	274	32	35	27	82	351	11		977	137	302	94	444
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	50	38	70	7	31	289	35	29	43	73	367	11		1043	158	327	107	451
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	49	46	98	16	35	295	33	31	50	89	361	21		1124	193	346	114	471
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	54	20	83	12	33	346	29	29	30	85	371	13		1105	157	391	88	469
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	64	67	104	15	51	348	37	31	50	78	386	20		1251	235	414	118	484
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	75	64	115	14	40	413	65	44	100	99	384	33		1446	254	467	209	516
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	21	10	37	6	12	99	15	9	17	17	88	3		334	68	117	41	108
16:15	16	12	27	6	14	128	11	9	9	23	86	3		344	55	148	29	112
16:30	17	14	39	4	9	80	16	8	15	25	127	4		358	70	93	39	156
16:45	23	9	32	3	17	109	12	8	16	19	89	6		343	64	129	36	114
17:00	15	18	24	9	15	144	17	8	31	23	94	5		403	57	168	56	122
17:15	17	20	32	5	16	79	10	8	13	23	71	5		299	69	100	31	99
17:30	19	14	37	5	23	140	5	7	14	24	98	3		389	70	168	26	125
17:45	12	21	30	6	14	106	11	9	9	22	79	2		321	63	126	29	103
18:00	43	43	75	16	33	318	31	26	55	76	270	17		1003	161	367	112	363
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	30	31	53	9	29	197	28	9	42	35	120	7		590	114	235	79	162
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	780	645	1097	203	502	4150	519	452	652	1117	4738	240		15095	2522	4855	1623	6095
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18	1.18
24hr Volume	921	762	1295	240	593	4897	613	534	770	1319	5591	284		17813	2976	5729	1916	7193

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

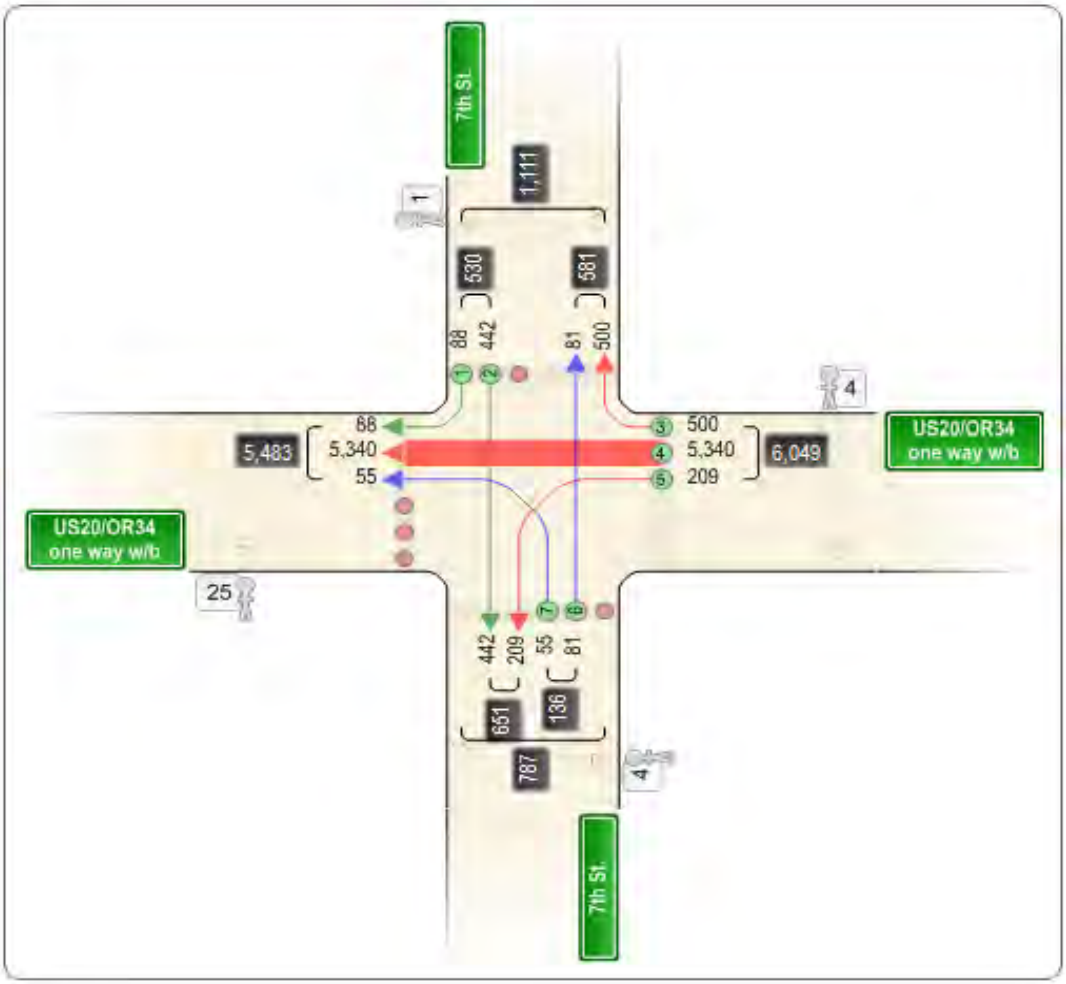
Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Weather: Clear

Source

Site Number: 2042010
Mile Point: 50.13
Street Number: 033
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: US20/OR34/Main St./ one way w/b) @ 7th St.
site 2117 - eawt leg
County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2042010
County: Benton
City: Philomath
Milepoint: 50.13
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
way w/b) @ 7th St.
Location: site 2117 - eawt leg
Weather: Clear

	Summary By Movements									Entering Volumes		
Time of Day	N-S	N-W	E-N	E-S	E-W	S-N	S-W		TOTAL	North	East	South
6:00	28	5	5	25	144	4	1		212	33	174	5
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	9	0	1	8	55	3	0		76	9	64	3
7:15	13	1	2	6	46	2	0		70	14	54	2
7:30	20	1	8	3	49	2	1		84	21	60	3
7:45	9	2	2	9	78	2	2		104	11	89	4
8:00	9	0	10	7	77	1	0		104	9	94	1
8:15	8	0	0	0	60	2	0		70	8	60	2
8:30	8	0	3	3	74	1	0		89	8	80	1
8:45	6	0	3	2	51	0	1		63	6	56	1
9:00	12	1	14	9	223	1	1		261	13	246	2
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	16	4	23	8	250	1	2		304	20	281	3
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	26	4	25	16	291	6	3		371	30	332	9
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	31	2	34	13	336	4	5		425	33	383	9
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	28	3	36	10	339	3	3		422	31	385	6
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	31	4	28	12	377	4	3		459	35	417	7
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	25	9	53	10	481	1	7		586	34	544	8
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	4	22	8	139	1	2		185	13	169	3
16:15	5	0	12	2	135	1	1		156	5	149	2
16:30	6	11	12	3	137	3	0		172	17	152	3
16:45	7	1	13	2	143	2	1		169	8	158	3
17:00	8	2	10	3	157	2	1		183	10	170	3
17:15	9	9	16	1	136	3	1		175	18	153	4
17:30	7	0	18	6	120	6	3		160	7	144	9
17:45	4	1	12	4	109	2	2		134	5	125	4
18:00	31	5	32	6	319	6	5		404	36	357	11
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	9	5	29	1	199	5	1		249	14	229	6
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
Total Count	374	74	423	177	4525	68	46		5687	448	5125	114
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18
24hr Volume	442	88	500	209	5340	81	55		6711	529	6048	135

Summary Of Bicycle Count
Transportation Development Division

Site: 2042010
County: Benton
City: Philomath
Milepoint: 50.13
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
way w/b) @ 7th St.
Location: site 2117 - eawt leg
Weather: Clear

	Summary By Movements									Entering Volumes		
Time of Day	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	0	0		0	0	0	0
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	0	0	0	0	0	0	0		0	0	0	0
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	2	0	0	1	0	0	0		3	2	1	0
8:15	0	0	1	0	0	0	0		1	0	1	0
8:30	1	0	0	0	0	0	0		1	1	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	0	0	0	0	0	0	0		0	0	0	0
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	2	0	0	0	2	1	0		5	2	2	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	0	2	0	0	0	0		2	0	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	2	0	0	0	0	1	0		3	2	0	1
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	0	0	0	0	1	0	0		1	0	1	0
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	0	2	0	0	0	0		2	0	2	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	0	0	0		0	0	0	0
16:15	0	0	0	0	0	0	0		0	0	0	0
16:30	0	0	0	0	0	0	0		0	0	0	0
16:45	0	0	0	0	0	0	0		0	0	0	0
17:00	0	0	0	0	0	0	0		0	0	0	0
17:15	0	0	0	0	0	0	0		0	0	0	0
17:30	0	0	0	0	0	0	0		0	0	0	0
17:45	0	0	0	0	0	0	0		0	0	0	0
18:00	0	0	0	0	0	0	0		0	0	0	0
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	0	0	0	1	0	0		1	0	1	0
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
Total Count	7	0	5	1	5	2	0		20	7	11	2
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18
24hr Volume	9	0	6	2	6	3	0		24	9	13	3

Summary Of Pedestrian Count
Transportation Development Division

Site: 2042010
County: Benton
City: Philomath

Milepoint: 50.13
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
Location: US20/OR34/Main St./ one way w/b) @ 7th St.
Weather: Clear

Time of Day	Pedestrian			
	North	East	South	West
6:00				
6:15				
6:30				
6:45				
7:00				3
7:15				
7:30				
7:45				
8:00				
8:15				
8:30				
8:45				
9:00				
9:15				
9:30				
9:45				
10:00				
10:15				
10:30				
10:45				
11:00	1	1	1	2
11:15				
11:30				
11:45				
12:00				
12:15				
12:30				
12:45				
13:00		1	1	2
13:15				
13:30				
13:45				
14:00				2
14:15				
14:30				
14:45				
15:00		1	1	4
15:15				
15:30				
15:45				
16:00				1
16:15				1
16:30				
16:45				1
17:00				
17:15				1
17:30				3
17:45				
18:00		1	1	4
18:15				
18:30				
18:45				
19:00				1
19:15				
19:30				
19:45				
Total	1	4	4	25

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

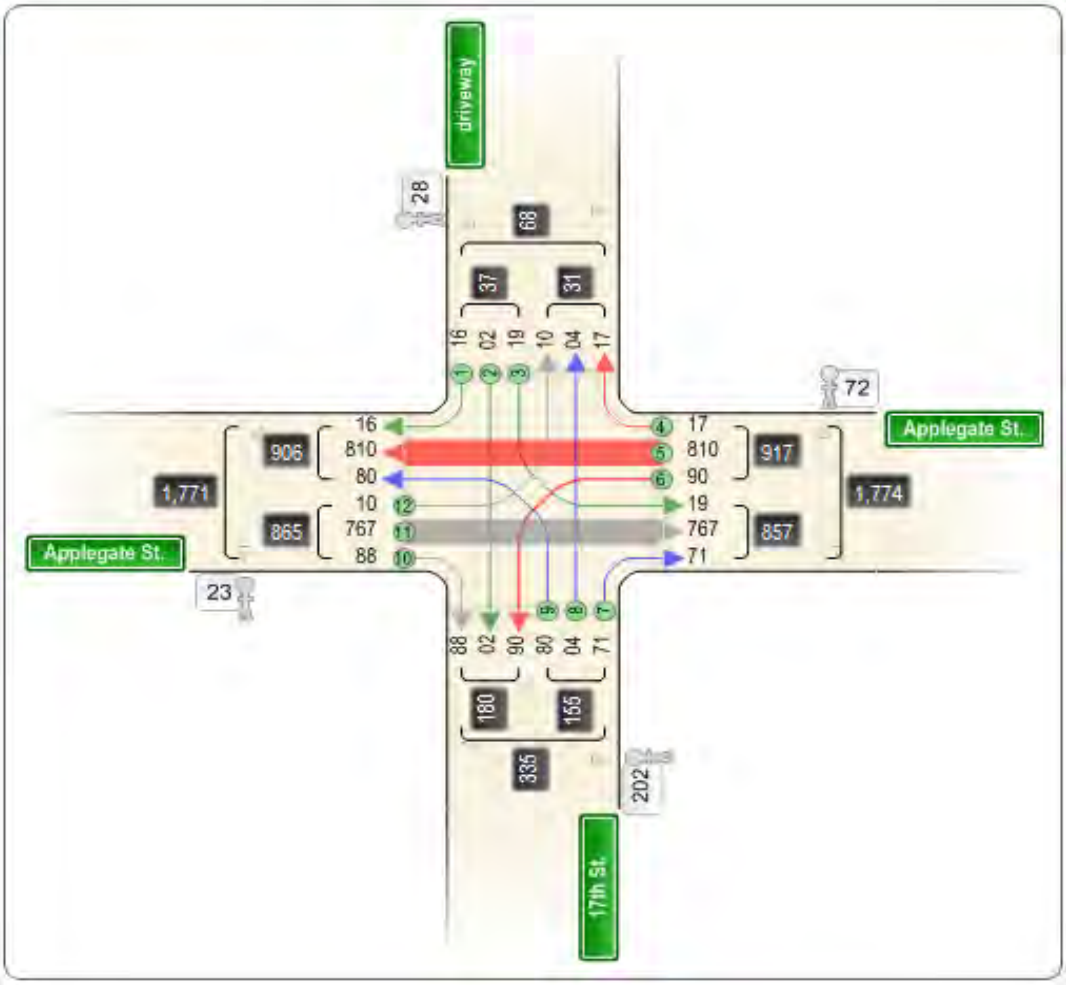
Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Weather: Cloudy;Rain

Source

Site Number: 2052010
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: Applegate St. @ 17th St.
County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2052010
County: Benton
City: Philomath
Milepoint:
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #:
Applegate St. @ 17th St.
Location:
Weather: Cloudy;Rain

	Summary By Movements														Entering Volumes			
Time of Day	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
6:00	0	0	0	0	0	10	0	2	1	0	8	2		23	0	10	3	10
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	0	0	0	0	6	0	0	1	0	5	1		13	0	6	1	6
7:15	0	0	1	0	0	4	0	2	4	1	9	0		21	1	4	6	10
7:30	1	0	1	2	4	15	0	2	4	0	17	4		50	2	21	6	21
7:45	0	1	0	1	2	56	1	3	5	0	31	3		103	1	59	9	34
8:00	0	0	0	0	1	43	0	1	4	0	42	4		95	0	44	5	46
8:15	0	0	0	0	0	7	0	1	0	0	12	0		20	0	7	1	12
8:30	0	0	1	0	0	9	0	0	1	1	4	2		18	1	9	1	7
8:45	0	0	0	0	0	8	0	1	0	0	4	1		14	0	8	1	5
9:00	0	0	1	0	4	37	0	5	3	0	35	3		88	1	41	8	38
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	2	0	0	2	1	35	0	7	1	1	38	4		91	2	38	8	43
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	3	0	1	1	3	52	1	1	4	1	40	4		111	4	56	6	45
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	1	0	1	1	5	36	0	2	6	1	46	2		101	2	42	8	49
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	1	0	2	1	6	53	1	7	3	1	33	6		114	3	60	11	40
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	2	0	4	0	10	78	0	3	7	1	68	5		178	6	88	10	74
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	1	0	0	1	6	64	0	1	6	0	62	6		147	1	71	7	68
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	1	0	0	0	2	16	0	2	1	0	14	1		37	1	18	3	15
16:15	0	0	1	0	1	15	0	1	0	1	13	1		33	1	16	1	15
16:30	1	0	0	1	2	13	0	0	0	0	15	2		34	1	16	0	17
16:45	1	0	0	1	4	9	0	0	2	0	16	1		34	1	14	2	17
17:00	0	0	0	0	0	12	0	1	0	0	15	3		31	0	12	1	18
17:15	0	0	0	0	4	15	0	3	2	0	20	1		45	0	19	5	21
17:30	0	0	0	0	3	9	0	3	2	0	17	4		38	0	12	5	21
17:45	0	0	0	0	3	17	0	0	1	0	11	4		36	0	20	1	15
18:00	1	0	0	2	6	41	0	5	6	0	47	5		113	1	49	11	52
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	1	0	0	1	9	26	0	7	3	0	28	5		80	1	36	10	33
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	16	1	13	14	76	686	3	60	67	8	650	74		1668	30	776	130	732
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18	1.18
24hr Volume	19	2	16	17	90	810	4	71	80	10	767	88		1969	36	916	154	864

Summary Of Bicycle Count
Transportation Development Division

Site: 2052010
County: Benton
City: Philomath
Milepoint:
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #:
Applegate St. @ 17th St.
Location:
Weather: Cloudy;Rain

	Summary By Movements														Entering Volumes			
Time of Day	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
6:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	1	0		1	0	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	1	0		1	0	0	0	1
8:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:15	0	0	0	0	0	1	0	0	0	0	2	0		3	0	1	0	2
8:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:00	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	0	0	0	0	0	2	1	0	1	0	1	0		5	0	2	2	1
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	3	0		3	0	0	0	3
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	1	0	1	1		3	0	0	1	2
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	0	0	0	0	0	1	0	0	0	0	1	0		2	0	1	0	1
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	3	0		3	0	0	0	3
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	1	0		1	0	0	0	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	0	0	0	0	0	7	1	0	2	0	14	1		25	0	7	3	15
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18	1.18
24hr Volume	0	0	0	0	0	9	2	0	3	0	17	2		30	0	9	4	18

Summary Of Pedestrian Count
Transportation Development Division

Site: 2052010
County: Benton
City: Philomath
Milepoint:
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #:
Applegate St. @ 17th St.
Location:
Weather: Cloudy;Rain

Time of Day	Pedestrian			
	North	East	South	West
6:00		3	2	
6:15				
6:30				
6:45				
7:00	1	1	3	1
7:15		1	10	
7:30	4		14	
7:45		1	10	
8:00			3	
8:15		2	2	
8:30		1	1	
8:45			1	
9:00			14	6
9:15				
9:30				
9:45				
10:00	2	1	6	1
10:15				
10:30				
10:45				
11:00		5	6	4
11:15				
11:30				
11:45				
12:00	8	6	5	
12:15				
12:30				
12:45				
13:00		5	5	1
13:15				
13:30				
13:45				
14:00	6	6	44	
14:15				
14:30				
14:45				
15:00	4	18	55	5
15:15				
15:30				
15:45				
16:00				
16:15	1	3	3	1
16:30	1	5		2
16:45		2	1	
17:00		2	7	2
17:15	1	1	7	
17:30				
17:45		2		
18:00		2	3	
18:15				
18:30				
18:45				
19:00		5		
19:15				
19:30				
19:45				
Total	28	72	202	23

Transportation Development Division
Transportation System Monitoring Unit
Vehicular Volume

Time settings

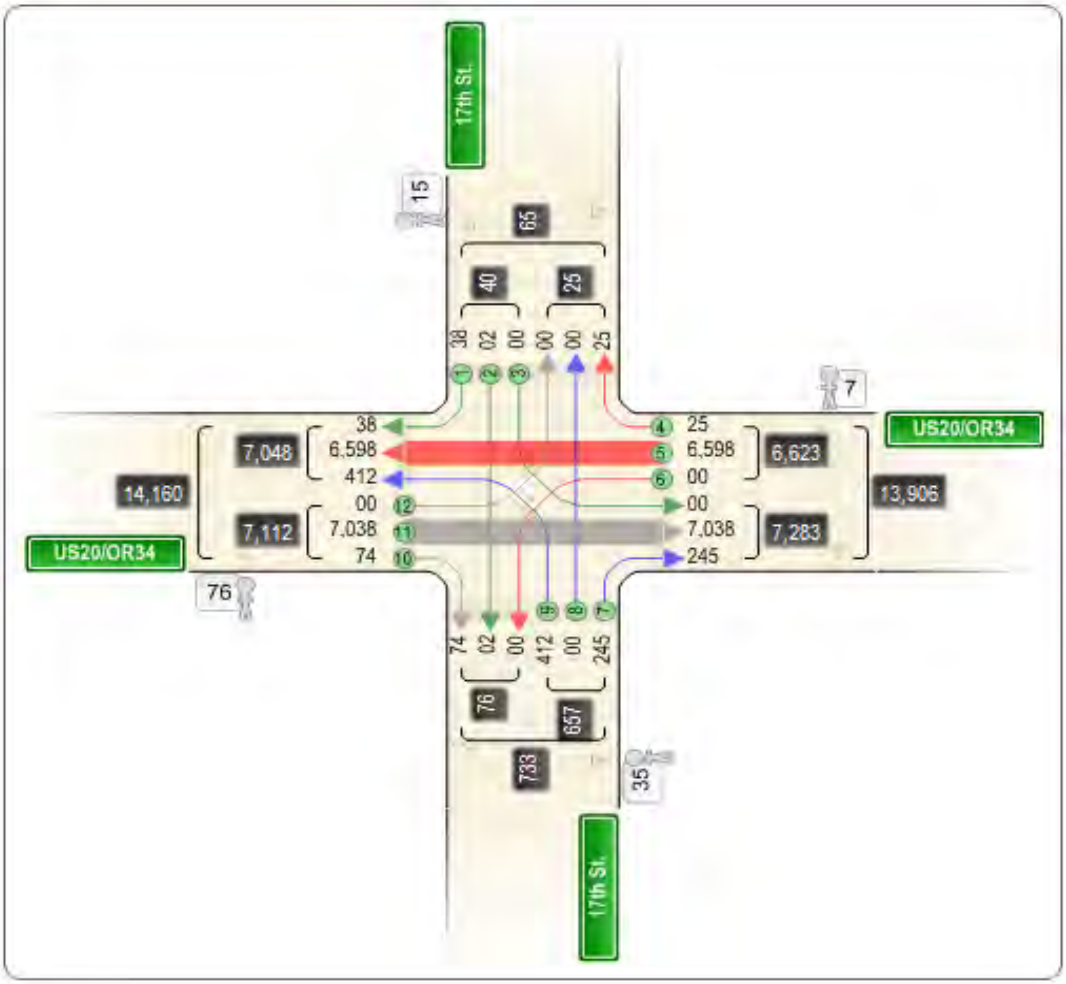
Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Weather: Cloudy;Rain

Source

Site Number: 2062010
Mile Point: 50.89
Street Number: 033
Vehicle Type: Vehicles
Crossing Flow: Pedestrians

Source Description

Location Description: US30/OR34 @ 17th St.
site 2120 - west leg traffic combined when dark
County: Benton
City: Philomath



Summary of Traffic Count
Transportation Development Division

Site: 2062010
County: Benton
City: Philomath
Milepoint: 50.89
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
site 2120 - west leg traffic
Location: combined when dark
Weather: Cloudy;Rain

	Summary By Movements														Entering Volumes			
Time of Day	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
6:00	0	0	2	0	0	166	0	3	3	0	312	1		487	2	166	6	313
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	0	1	1	0	61	0	2	4	0	106	2		177	1	62	6	108
7:15	0	0	0	0	0	71	0	3	0	0	125	2		201	0	71	3	127
7:30	0	0	1	0	0	72	0	9	4	0	177	1		264	1	72	13	178
7:45	0	0	0	0	0	97	0	25	4	0	174	0		300	0	97	29	174
8:00	0	1	0	0	0	111	0	25	8	0	111	1		257	1	111	33	112
8:15	0	0	0	0	0	75	0	1	5	0	131	3		215	0	75	6	134
8:30	0	0	0	0	0	85	0	0	6	0	131	0		222	0	85	6	131
8:45	0	0	0	0	0	72	0	2	3	0	108	0		185	0	72	5	108
9:00	0	0	3	0	0	273	0	10	24	0	431	8		749	3	273	34	439
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	0	0	1	1	0	327	0	12	20	0	476	5		842	1	328	32	481
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	0	0	3	0	0	385	0	11	19	0	450	6		874	3	385	30	456
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	0	0	7	2	0	441	0	18	26	0	478	9		981	7	443	44	487
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	0	0	0	4	0	465	0	12	27	0	385	2		895	0	469	39	387
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	0	0	0	1	0	458	0	18	36	0	438	2		953	0	459	54	440
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	0	0	0	3	0	568	0	17	27	0	508	5		1128	0	571	44	513
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	0	0	2	0	0	181	0	2	9	0	141	1		336	2	181	11	142
16:15	0	0	1	0	0	152	0	4	12	0	133	3		305	1	152	16	136
16:30	0	0	0	1	0	154	0	6	12	0	155	1		329	0	155	18	156
16:45	0	0	5	0	0	164	0	4	12	0	124	0		309	5	164	16	124
17:00	0	0	2	1	0	145	0	2	13	0	134	2		299	2	146	15	136
17:15	0	0	0	2	0	169	0	1	5	0	98	1		276	0	171	6	99
17:30	0	0	0	2	0	134	0	2	10	0	108	3		259	0	136	12	111
17:45	0	0	3	0	0	134	0	2	4	0	97	1		241	3	134	6	98
18:00	0	0	1	2	0	391	0	9	31	0	293	2		729	1	393	40	295
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	0	0	0	1	0	240	0	7	25	0	140	1		414	0	241	32	141
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	0	1	32	21	0	5591	0	207	349	0	5964	62		12227	33	5612	556	6026
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18	1.18
24hr Volume	0	2	38	25	0	6598	0	245	412	0	7038	74		14428	39	6623	657	7111

Summary Of Bicycle Count
Transportation Development Division

Site: 2062010
County: Benton
City: Philomath
Milepoint: 50.89
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
site 2120 - west leg traffic
Location: combined when dark
Weather: Cloudy;Rain

	Summary By Movements														Entering Volumes			
Time of Day	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
6:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:00	0	0	0	0	0	1	0	0	1	0	0	0		2	0	1	1	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	1	0		1	0	0	0	1
12:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:00	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:00	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:00	0	0	0	0	0	0	0	1	0	0	1	0		2	0	0	1	1
15:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
16:30	0	0	0	0	0	1	0	0	0	0	0	0		1	0	1	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:00	0	1	0	0	0	0	0	0	0	0	0	0		1	1	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Total Count	0	1	0	0	0	4	0	1	1	0	2	0		9	1	4	2	2
24hr Factor	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18		1.18	1.18	1.18	1.18	1.18
24hr Volume	0	2	0	0	0	5	0	2	2	0	3	0		11	2	5	3	3

Summary Of Pedestrian Count
Transportation Development Division

Site: 2062010
County: Benton
City: Philomath

Milepoint: 50.89
Count Number: 1.00

Date: 3/9/2010
Hours: 6:00 AM-8:00 PM
Highway #: 033
US30/OR34 @ 17th St.
Location: site 2120 - west leg traffic
Weather: Cloudy;Rain

Time of Day	Pedestrian			
	North	East	South	West
6:00			1	
6:15				
6:30			2	
6:45				
7:00			1	3
7:15			2	
7:30			2	10
7:45			2	4
8:00				
8:15				
8:30				
8:45			1	
9:00				1
9:15				
9:30				
9:45				
10:00	2		3	3
10:15				
10:30				
10:45				
11:00	2			1
11:15				
11:30				
11:45				
12:00	2		8	10
12:15				
12:30				
12:45				
13:00	2			4
13:15				
13:30				
13:45				
14:00			3	10
14:15				
14:30				
14:45				
15:00	1		5	15
15:15				
15:30				
15:45				
16:00	1			
16:15				
16:30	2		2	5
16:45	1		1	1
17:00		1	1	1
17:15	1			2
17:30				2
17:45	1			
18:00				1
18:15				
18:30				
18:45				
19:00		6	1	3
19:15				
19:30				
19:45				
Total	15	7	35	76

Appendix B: Intersection Count Summary

STUDY INTERSECTION COUNT SUMMARY

Table B1 Main Street / 7th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	212	0	0
7:00 to 8:00 a.m.	334	0	3
8:00 to 9:00 a.m.	326	5	0
9:00 to 10:00 a.m.	261	1	0
10:00 to 11:00 a.m.	304	0	0
11:00 to 12:00 p.m.	371	5	3
12:00 to 1:00 p.m.	425	2	0
1:00 to 2:00 p.m.	422	3	3
2:00 to 3:00 p.m.	459	1	2
3:00 to 4:00 p.m.	586	2	5
4:00 to 5:00 p.m.	682	0	3
5:00 to 6:00 p.m.	652	0	4
6:00 to 7:00 p.m.	404	0	5
7:00 to 8:00 p.m.	249	1	1
Total	***5,687***	***20***	***29***

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

Table B2 Main Street / 17th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	487	0	0
7:00 to 8:00 a.m.	942	0	17
8:00 to 9:00 a.m.	879	0	0
9:00 to 10:00 a.m.	749	0	1
10:00 to 11:00 a.m.	842	0	3
11:00 to 12:00 p.m.	874	2	1
12:00 to 1:00 p.m.	981	1	10
1:00 to 2:00 p.m.	895	1	4
2:00 to 3:00 p.m.	953	1	10
3:00 to 4:00 p.m.	1,128	2	15
4:00 to 5:00 p.m.	1,279	1	6
5:00 to 6:00 p.m.	1,075	0	6
6:00 to 7:00 p.m.	729	1	1
7:00 to 8:00 p.m.	414	0	9
Total	***12,227***	***9***	***83***

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

Table B3 Main Street/19th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	584		
7:00 to 8:00 a.m.	1211		
8:00 to 9:00 a.m.	1098		
9:00 to 10:00 a.m.	872		
10:00 to 11:00 a.m.	977		
11:00 to 12:00 p.m.	1043		
12:00 to 1:00 p.m.	1124		
1:00 to 2:00 p.m.	1105		
2:00 to 3:00 p.m.	1251		
3:00 to 4:00 p.m.	1446		
4:00 to 5:00 p.m.	1379		
5:00 to 6:00 p.m.	1412		
6:00 to 7:00 p.m.	1003		
7:00 to 8:00 p.m.	590		
Total	***15,095***		

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

Table B4 Applegate Street/11th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	326		
7:00 to 8:00 a.m.	706		
8:00 to 9:00 a.m.	562		
9:00 to 10:00 a.m.	437		
10:00 to 11:00 a.m.	518		
11:00 to 12:00 p.m.	526		
12:00 to 1:00 p.m.	512		
1:00 to 2:00 p.m.	527		
2:00 to 3:00 p.m.	579		
3:00 to 4:00 p.m.	634		
4:00 to 5:00 p.m.	600		
5:00 to 6:00 p.m.	516		
6:00 to 7:00 p.m.	342		
7:00 to 8:00 p.m.	154		
Total	***6,939***		

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

SUPPLEMETNAL INTERSECTION COUNT SUMMARY

Table B5 Main Street/11th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	195	0	0
7:00 to 8:00 a.m.	286	2	2
8:00 to 9:00 a.m.	351	1	1
9:00 to 10:00 a.m.	331	0	2
10:00 to 11:00 a.m.	430	1	0
11:00 to 12:00 p.m.	417	0	5
12:00 to 1:00 p.m.	494	1	3
1:00 to 2:00 p.m.	499	2	5
2:00 to 3:00 p.m.	541	1	3
3:00 to 4:00 p.m.	716	4	10
4:00 to 5:00 p.m.	656	2	3
5:00 to 6:00 p.m.	716	0	4
6:00 to 7:00 p.m.	539	0	0
7:00 to 8:00 p.m.	278	0	2
Total	***6,449***	***14***	***40***

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

Table B6 Applegate Street/17th Street Hourly Traffic Count Summary

Time	Vehicle[1]	Bicycle[2]	Pedestrian[2]
6:00 to 7:00 a.m.	23	0	3
7:00 to 8:00 a.m.	187	2	4
8:00 to 9:00 a.m.	147	3	3
9:00 to 10:00 a.m.	88	1	6
10:00 to 11:00 a.m.	91	1	2
11:00 to 12:00 p.m.	111	5	9
12:00 to 1:00 p.m.	101	3	6
1:00 to 2:00 p.m.	114	3	6
2:00 to 3:00 p.m.	178	2	6
3:00 to 4:00 p.m.	147	3	23
4:00 to 5:00 p.m.	138	1	13
5:00 to 6:00 p.m.	150	1	7
6:00 to 7:00 p.m.	113	0	2
7:00 to 8:00 p.m.	80	0	5
Total	***1,668***	***25***	***95***

1 Reported vehicle volume is an intersection Total Entering Volume (TEV) and includes all legs of the intersection.
2 Reported bicycle and pedestrian volumes are highway crossing volumes only and do not include side street crossing movements.

Appendix C:
Seasonal Adjustment

SEASONAL ADJUSTMENT

30th Hour Volumes (30 HV) for US20/OR34 were calculated based on the traffic counts collected in March, 2010. Raw traffic volumes were seasonally adjusted in accordance with the methodology described in the ODOT *Analysis Procedures Manual* (APM – Reference 1) for locations *without* an Automatic Traffic Recorder (ATR) near the project site. The Characteristic Table Method requires that the ATR be located on a facility that shares similar characteristics with the facility to be adjusted, such as seasonal traffic trends, area type, and number of lanes. In addition, the Average Annual Daily Traffic (AADT) collected by the ATR must be within 10 percent of the AADT near the project area. Information on AADT for highway segments throughout Oregon can be found in ODOT's *Transportation Volume Tables*.

The ATR selected for this analysis (ATR #36-006) is located along the Salmon River Highway (OR 18), 3.36 miles south of Pacific Highway West (OR 99W), southwest of McMinnville, and between Portland and the Oregon Coast. OR18 is a State Highway with a summer seasonal trend located on a small urban fringe, similar to US20/OR34. In addition the ADT reported during the peak month at the ATR is within 10 percent of the AADT reported in Philomath. The ATR was installed in July 2000 and has traffic count data for the last nine years. Based on historical traffic data provided by the ATR, the Peak Month generally occurs in August, while the traffic counts for this study were conducted in March. Table C1 summarizes the average weekday traffic percent of average daily traffic (ADT) for the past five years.

Table C1
Seasonal Adjustment Factor (ATR #36-006)

Year	2005	2006	2007	2008	2009
Peak Month (August)	115	113	115	116	115
Count Month (March)	100	99	101	101	98

Note: Shaded values dropped from average calculation per ODOT methodology.

Based on the data in Table C1, average monthly factors were determined as follows:

- Peak month average (August): (115% + 115% + 115%) / 3 = 115%
- Count month average (November): (100% + 99% + 101) / 3 = 100%
- Seasonal adjustment: August/November = 115% / 100% = **1.15**

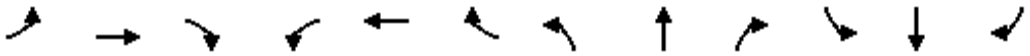
Therefore, traffic volumes from March 2010 on US 30/OR34 were increased by a factor of 1.15 to develop the 30 HV.

Appendix D:
Existing Traffic Conditions Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	19	304	20	3	7	0	0	46	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.991						0.993	
Flt Protected					0.997			0.987				
Satd. Flow (prot)	0	0	0	0	2677	0	0	1585	0	0	1705	0
Flt Permitted					0.997			0.987				
Satd. Flow (perm)	0	0	0	0	2677	0	0	1585	0	0	1705	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		795			1574			385			389	
Travel Time (s)		21.7			42.9			10.5			10.6	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	0%	21%	24%	5%	33%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	22	349	23	3	8	0	0	53	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	394	0	0	11	0	0	56	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized



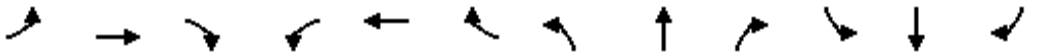
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	19	304	20	3	7	0	0	46	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	22	349	23	3	8	0	0	53	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	372			0			248	416	0	409	405	186
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	372			0			248	416	0	409	405	186
tC, single (s)	4.1			4.5			8.2	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.8	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	98	100	100	90	100
cM capacity (veh/h)	1197			1494			554	523	1091	520	526	830

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	197	198	11	56
Volume Left	22	0	3	0
Volume Right	0	23	0	3
cSH	1494	1700	532	538
Volume to Capacity	0.01	0.12	0.02	0.10
Queue Length 95th (ft)	1	0	2	9
Control Delay (s)	0.9	0.0	11.9	12.5
Lane LOS	A		B	B
Approach Delay (s)	0.5		11.9	12.5
Approach LOS			B	B

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	20.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	682	5	0	408	0	21	0	60	0	0	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999							0.850			0.865
Flt Protected							0.950					
Satd. Flow (prot)	0	3165	0	0	2842	0	1662	0	1377	0	0	1514
Flt Permitted							0.950					
Satd. Flow (perm)	0	3165	0	0	2842	0	1662	0	1377	0	0	1514
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		381			769			380			384	
Travel Time (s)		10.4			21.0			10.4			10.5	
Confl. Peds. (#/hr)			4	4			14					14
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	5%	0%	0%	17%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	793	6	0	474	0	24	0	70	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	799	0	0	474	0	24	0	70	0	0	1
Sign Control		Free			Free			Stop			Stop	

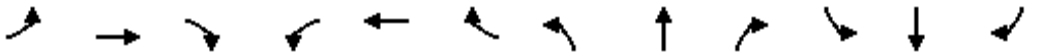
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	682	5	0	408	0	21	0	60	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	793	6	0	474	0	24	0	70	0	0	1
Pedestrians		14						4				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					769							
pX, platoon unblocked												
vC, conflicting volume	474			803			1052	1274	403	941	1277	251
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	474			803			1052	1274	403	941	1277	251
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			86	100	88	100	100	100
cM capacity (veh/h)	1098			827			180	168	578	194	167	746

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	529	270	316	158	24	70	1
Volume Left	0	0	0	0	24	0	0
Volume Right	0	6	0	0	0	70	1
cSH	1700	1700	1700	1700	180	578	746
Volume to Capacity	0.31	0.16	0.19	0.09	0.14	0.12	0.00
Queue Length 95th (ft)	0	0	0	0	12	10	0
Control Delay (s)	0.0	0.0	0.0	0.0	28.1	12.1	9.8
Lane LOS					D	B	A
Approach Delay (s)	0.0		0.0		16.2		9.8
Approach LOS					C		A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

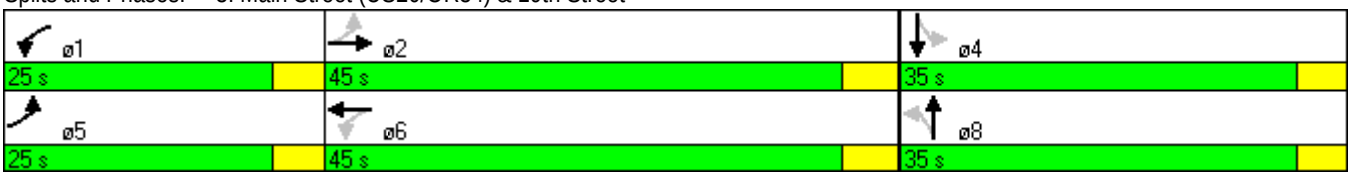


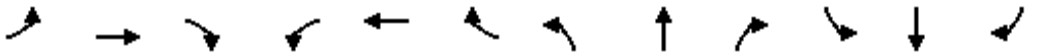
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	568	43	59	252	13	67	74	61	79	108	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	160		0	140		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.993			0.932			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1614	3187	0	1614	2856	0	1614	1533	0	1568	1521	0
Flt Permitted	0.520			0.355			0.467			0.549		
Satd. Flow (perm)	883	3187	0	603	2856	0	793	1533	0	906	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			6			40			24	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		769			820			388			395	
Travel Time (s)		21.0			22.4			10.6			10.8	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	3%	3%	7%	3%	16%	8%	3%	10%	2%	6%	3%	22%
Adj. Flow (vph)	143	693	52	72	307	16	82	90	74	96	132	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	143	745	0	72	323	0	82	164	0	96	198	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	24.5		9.5	27.5		32.0	32.0		32.0	32.0	
Total Split (s)	25.0	45.0	0.0	25.0	45.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	23.8%	42.9%	0.0%	23.8%	42.9%	0.0%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	21.0	40.5		21.0	40.5		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			16.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
v/c Ratio	0.21	0.40		0.15	0.21		0.55	0.51		0.56	0.65	
Control Delay	5.2	10.7		5.4	10.6		42.7	26.5		41.6	35.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	5.2	10.7		5.4	10.6		42.7	26.5		41.6	35.5	
Queue Length 50th (ft)	17	94		8	37		35	52		41	75	
Queue Length 95th (ft)	43	154		24	71		73	98		81	129	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			740			308			315	
Turn Bay Length (ft)	160			140			100			100		
Base Capacity (vph)	827	1873		707	1536		326	654		372	639	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.17	0.40		0.10	0.21		0.25	0.25		0.26	0.31	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 76	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 3: Main Street (US20/OR34) & 19th Street

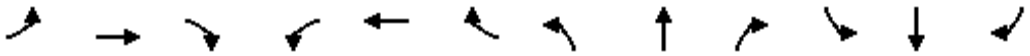




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	568	43	59	252	13	67	74	61	79	108	54
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3186		1614	2855		1614	1534		1568	1521	
Flt Permitted	0.52	1.00		0.35	1.00		0.47	1.00		0.55	1.00	
Satd. Flow (perm)	884	3186		603	2855		793	1534		906	1521	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	143	693	52	72	307	16	82	90	74	96	132	66
RTOR Reduction (vph)	0	4	0	0	3	0	0	33	0	0	20	0
Lane Group Flow (vph)	143	741	0	72	320	0	82	131	0	96	178	0
Heavy Vehicles (%)	3%	3%	7%	3%	16%	8%	3%	10%	2%	6%	3%	22%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	53.0	44.6		47.2	41.7		14.2	14.2		14.2	14.2	
Effective Green, g (s)	53.0	44.6		47.2	41.7		14.2	14.2		14.2	14.2	
Actuated g/C Ratio	0.69	0.58		0.61	0.54		0.18	0.18		0.18	0.18	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	690	1850		443	1550		147	284		168	281	
v/s Ratio Prot	c0.02	c0.23		0.01	0.11			0.09			c0.12	
v/s Ratio Perm	0.12			0.09			0.10			0.11		
v/c Ratio	0.21	0.40		0.16	0.21		0.56	0.46		0.57	0.64	
Uniform Delay, d1	4.1	8.8		6.0	9.0		28.4	27.9		28.5	28.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.6		0.2	0.3		4.5	1.2		4.6	4.6	
Delay (s)	4.3	9.4		6.2	9.3		33.0	29.1		33.2	33.5	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		8.6			8.8			30.4			33.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	76.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	767	0	0	0	0	0	2	4	24	9	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.904				
Flt Protected											0.965	
Satd. Flow (prot)	0	3105	0	0	0	0	0	1582	0	0	1642	0
Flt Permitted											0.965	
Satd. Flow (perm)	0	3105	0	0	0	0	0	1582	0	0	1642	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1577			1350			577			380	
Travel Time (s)		43.0			36.8			15.7			10.4	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	20%	7%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	6	902	0	0	0	0	0	2	5	28	11	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	908	0	0	0	0	0	7	0	0	39	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	767	0	0	0	0	0	2	4	24	9	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	902	0	0	0	0	0	2	5	28	11	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			902			919	914	451	469	914	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			902			919	914	451	469	914	0
tC, single (s)	4.5			4.1			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	99	99	94	96	100
cM capacity (veh/h)	1500			762			222	274	561	465	274	1091

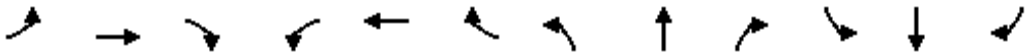
Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	457	451	7	39
Volume Left	6	0	0	28
Volume Right	0	0	5	0
cSH	1500	1700	416	391
Volume to Capacity	0.00	0.27	0.02	0.10
Queue Length 95th (ft)	0	0	1	8
Control Delay (s)	0.1	0.0	13.8	15.2
Lane LOS	A		B	C
Approach Delay (s)	0.1		13.8	15.2
Approach LOS			B	C

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	658	47	3	8	0	0	26	14
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.990						0.953	
Flt Protected					0.999			0.988				
Satd. Flow (prot)	0	0	0	0	3187	0	0	1729	0	0	1588	0
Flt Permitted					0.999			0.988				
Satd. Flow (perm)	0	0	0	0	3187	0	0	1729	0	0	1588	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		795			1574			385			389	
Travel Time (s)		21.7			42.9			10.5			10.6	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	20%	3%	2%	0%	0%	0%	0%	4%	7%
Adj. Flow (vph)	0	0	0	11	708	51	3	9	0	0	28	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	770	0	0	12	0	0	43	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized



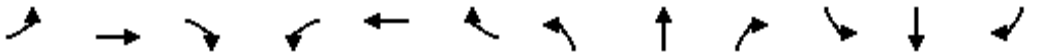
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	10	658	47	3	8	0	0	26	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	0	11	708	51	3	9	0	0	28	15
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	758			0			406	780	0	759	754	381
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	758			0			406	780	0	759	754	381
tC, single (s)	4.1			4.5			7.5	6.5	6.9	7.5	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			99			99	97	100	100	92	98
cM capacity (veh/h)	862			1500			484	327	1091	292	330	603

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	365	404	12	43
Volume Left	11	0	3	0
Volume Right	0	51	0	15
cSH	1500	1700	359	392
Volume to Capacity	0.01	0.24	0.03	0.11
Queue Length 95th (ft)	1	0	3	9
Control Delay (s)	0.3	0.0	15.4	15.3
Lane LOS	A		C	C
Approach Delay (s)	0.1		15.4	15.3
Approach LOS			C	C

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	628	6	0	707	2	49	0	16	0	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999							0.850			0.865
Flt Protected							0.950					
Satd. Flow (prot)	0	3195	0	0	3260	0	1662	0	1377	0	0	1514
Flt Permitted							0.950					
Satd. Flow (perm)	0	3195	0	0	3260	0	1662	0	1377	0	0	1514
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		381			769			380			384	
Travel Time (s)		10.4			21.0			10.4			10.5	
Confl. Peds. (#/hr)	3		4	4		3	7		1	1		7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	668	6	0	752	2	52	0	17	0	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	674	0	0	754	0	52	0	17	0	0	9
Sign Control		Free			Free			Stop			Stop	

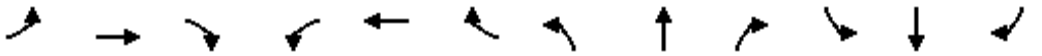
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	628	6	0	707	2	49	0	16	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	668	6	0	752	2	52	0	17	0	0	9
Pedestrians		7			1			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					769							
pX, platoon unblocked												
vC, conflicting volume	757			678			1067	1433	342	1108	1435	387
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	757			678			1067	1433	342	1108	1435	387
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			70	100	97	100	100	99
cM capacity (veh/h)	861			920			174	135	634	161	134	612

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	445	229	501	253	52	17	9
Volume Left	0	0	0	0	52	0	0
Volume Right	0	6	0	2	0	17	9
cSH	1700	1700	1700	1700	174	634	612
Volume to Capacity	0.26	0.13	0.29	0.15	0.30	0.03	0.01
Queue Length 95th (ft)	0	0	0	0	30	2	1
Control Delay (s)	0.0	0.0	0.0	0.0	34.3	10.8	11.0
Lane LOS					D	B	B
Approach Delay (s)	0.0		0.0		28.5		11.0
Approach LOS					D		B

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	40.0%	ICU Level of Service	A	
Analysis Period (min)	15			

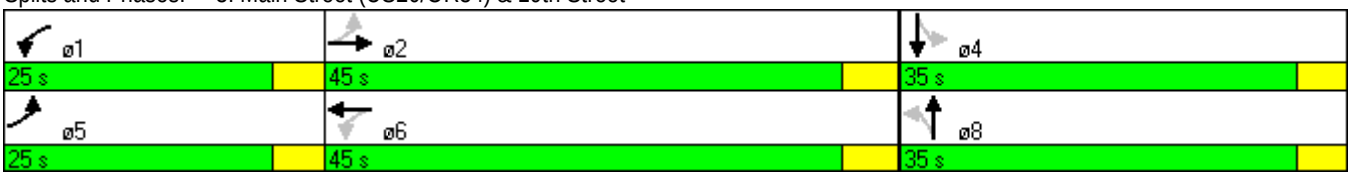


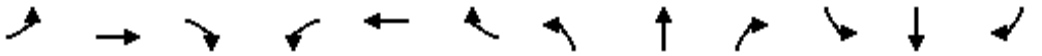
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	455	18	55	530	22	71	56	33	71	53	122
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	160		0	140		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.994			0.944			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1599	3141	0	1662	3212	0	1614	1614	0	1662	1545	0
Flt Permitted	0.381			0.457			0.448			0.693		
Satd. Flow (perm)	641	3141	0	800	3212	0	761	1614	0	1213	1545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			4			29			112	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		769			820			388			395	
Travel Time (s)		21.0			22.4			10.6			10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	5%	11%	0%	3%	0%	3%	2%	3%	0%	0%	2%
Adj. Flow (vph)	100	506	20	61	589	24	79	62	37	79	59	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	526	0	61	613	0	79	99	0	79	195	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	24.5		9.5	27.5		32.0	32.0		32.0	32.0	
Total Split (s)	25.0	45.0	0.0	25.0	45.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	23.8%	42.9%	0.0%	23.8%	42.9%	0.0%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	21.0	40.5		21.0	40.5		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			16.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
v/c Ratio	0.18	0.27		0.10	0.32		0.64	0.34		0.40	0.56	
Control Delay	4.5	7.9		4.2	9.5		51.5	23.4		33.2	19.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.5	7.9		4.2	9.5		51.5	23.4		33.2	19.5	
Queue Length 50th (ft)	10	55		6	68		33	27		32	33	
Queue Length 95th (ft)	30	105		20	130		78	69		71	93	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			740			308			315	
Turn Bay Length (ft)	160			140			100			100		
Base Capacity (vph)	751	1978		837	1893		338	732		538	748	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.13	0.27		0.07	0.32		0.23	0.14		0.15	0.26	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 70.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 3: Main Street (US20/OR34) & 19th Street

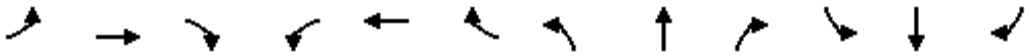




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	455	18	55	530	22	71	56	33	71	53	122
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	3142		1662	3213		1614	1614		1662	1545	
Flt Permitted	0.38	1.00		0.46	1.00		0.45	1.00		0.69	1.00	
Satd. Flow (perm)	641	3142		800	3213		761	1614		1213	1545	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	100	506	20	61	589	24	79	62	37	79	59	136
RTOR Reduction (vph)	0	2	0	0	2	0	0	24	0	0	94	0
Lane Group Flow (vph)	100	524	0	61	611	0	79	75	0	79	101	0
Heavy Vehicles (%)	4%	5%	11%	0%	3%	0%	3%	2%	3%	0%	0%	2%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	50.4	44.5		46.2	42.4		11.5	11.5		11.5	11.5	
Effective Green, g (s)	50.4	44.5		46.2	42.4		11.5	11.5		11.5	11.5	
Actuated g/C Ratio	0.70	0.62		0.64	0.59		0.16	0.16		0.16	0.16	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	525	1934		557	1884		121	257		193	246	
v/s Ratio Prot	c0.02	0.17		0.01	c0.19			0.05			0.07	
v/s Ratio Perm	0.12			0.06			c0.10			0.07		
v/c Ratio	0.19	0.27		0.11	0.32		0.65	0.29		0.41	0.41	
Uniform Delay, d1	3.7	6.4		4.9	7.6		28.5	26.8		27.3	27.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.1	0.5		12.0	0.6		1.4	1.1	
Delay (s)	3.9	6.8		5.0	8.1		40.5	27.4		28.8	28.5	
Level of Service	A	A		A	A		D	C		C	C	
Approach Delay (s)		6.3			7.8			33.2			28.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	583	7	0	0	0	0	6	11	59	7	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998						0.914				
Flt Protected											0.957	
Satd. Flow (prot)	0	3134	0	0	0	0	0	1600	0	0	1645	0
Flt Permitted											0.957	
Satd. Flow (perm)	0	3134	0	0	0	0	0	1600	0	0	1645	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1577			1350			577			380	
Travel Time (s)		43.0			36.8			15.7			10.4	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	6%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	4	729	9	0	0	0	0	8	14	74	9	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	742	0	0	0	0	0	22	0	0	83	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	583	7	0	0	0	0	6	11	59	7	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	729	9	0	0	0	0	8	14	74	9	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			738			745	741	369	389	745	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			738			745	741	369	389	745	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	98	86	97	100
cM capacity (veh/h)	1636			878			300	346	634	523	344	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	368	373	21	82
Volume Left	4	0	0	74
Volume Right	0	9	14	0
cSH	1636	1700	490	495
Volume to Capacity	0.00	0.22	0.04	0.17
Queue Length 95th (ft)	0	0	3	15
Control Delay (s)	0.1	0.0	12.7	13.7
Lane LOS	A		B	B
Approach Delay (s)	0.0		12.7	13.7
Approach LOS			B	B

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	35.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix E:
Crash Data

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Applegate Street @ 17th Street
January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR:														
TOTAL														
FINAL TOTAL														

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 20 (Hwy 033) @ 17th Street
January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2009														
PEDESTRIAN	0	1	0	1	0	1	0	0	1	1	0	1	0	0
REAR-END	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2009 TOTAL	0	1	1	2	0	1	0	0	2	1	1	2	0	0
YEAR: 2005														
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2005 TOTAL	0	0	1	1	0	0	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	2	3	0	1	0	1	2	2	1	3	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

033 CORVALLIS-NEWPORT

US 20 (Hwy 033) @ 17th Street
January 1, 2005 through December 31, 2009

SER# / INVEST	SPEED	ALCHL	DRUGS	WORK ZONE	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN EVENT	CAUSE
00890	N	N	N		12/17/2009	BENTON	1 14			INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE	STRGHT										07
CITY					Thu	PHILOMATH	0 0		MAIN ST	E		SP PED SIG	N	WET	REAR		PRVTE	E W									000	00
					5P	CORVALIS UA	50.89		17TH ST	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y OR<25		043	000	07
																02	NONE	STOP										
																	PRVTE	E W									011	00
																	PSNGR CAR		01	DRVR	NONE	51	F	OR-Y OR<25		000	000	00
00254	N	N	N		04/06/2005	BENTON	1 14			INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										07
CITY					Wed	PHILOMATH	0 0		MAIN ST	W		STOP SIGN	N	DRY	REAR		PRVTE	W E									000	00
					11A	CORVALIS UA	50.89		17TH ST	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		043	000	07
																02	NONE 0	STOP										
																	PRVTE	W E									011	00
																	PSNGR CAR		01	DRVR	NONE	59	M	OR-Y OR<25		000	000	00
00168	N	N	N		03/21/2009	BENTON	1 14			INTER	CROSS	N	N	RAIN	PED	01	NONE 0	STRGHT										02
NO RPT					Sat	PHILOMATH	0 0		MAIN ST	W		SP PED SIG	N	WET	PED		PRVTE	W E									000	00
					5P	CORVALIS UA	50.89		17TH ST	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	63	F	OR-Y OR<25		029	000	02
																		STRGHT N S	01	PED	INJC	16	F		01	000	035	00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 20 (Hwy 033) @ 19th Street
January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2009														
ANGLE	0	1	0	1	0	1	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	2	2	0	0	0	1	1	1	1	2	0	0
2009 TOTAL	0	1	2	3	0	1	0	2	1	1	2	3	0	0
YEAR: 2008														
TURNING MOVEMENTS	0	1	1	2	0	1	0	1	1	1	1	2	0	0
2008 TOTAL	0	1	1	2	0	1	0	1	1	1	1	2	0	0
YEAR: 2007														
FIXED / OTHER OBJECT	1	0	0	1	1	1	0	1	0	1	0	1	0	1
2007 TOTAL	1	0	0	1	1	1	0	1	0	1	0	1	0	1
YEAR: 2006														
BACKING	0	0	1	1	0	0	0	1	0	1	0	1	0	0
PEDESTRIAN	1	0	0	1	1	0	1	1	0	1	0	1	0	0
REAR-END	0	0	1	1	0	0	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2006 TOTAL	1	0	3	4	1	0	1	3	1	3	1	4	0	0
YEAR: 2005														
TURNING MOVEMENTS	0	1	1	2	0	3	1	1	1	2	0	2	0	0
2005 TOTAL	0	1	1	2	0	3	1	1	1	2	0	2	0	0
FINAL TOTAL	2	3	7	12	2	6	2	8	4	8	4	12	0	1

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

033 CORVALLIS-NEWPORT

US 20 (Hwy 033) @ 19th Street
January 1, 2005 through December 31, 2009

SER# / INVEST	SPEED	ALCHL	DRUGS	WORK ZONE	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / LIGHT	SURF	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00288	N	N	N		04/24/2006	BENTON	1 14			INTER	CROSS	N	N	CLR	S-STRGHT		01	NONE 0	STRGHT												27,07
CITY					Mon	PHILOMATH	0 0		MAIN ST	E		TRF SIGNAL	N	DRY	REAR			PRVTE	E W											000		00
					5P	CORVALIS UA	51.04		19TH ST	06	0		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		016,043,026	038		27,07
																	02	NONE 0	STRGHT										006	013	00
																		PRVTE	E W										000		00
																		PSNGR CAR		01	DRVR	NONE	50	F	OR-Y OR<25		000	000		00
																	03	NONE 0	STOP										022		00
																		RENTL	E W										000		00
																		PSNGR CAR		01	DRVR	NONE	43	F	OR-Y OR>25		000	000		00
00242	Y	N	N	N	04/28/2009	BENTON	1 14			INTER	CROSS	N	N	CLD	O-OTHER		01	NONE 0	TURN-R													08,01
CITY					Tue	PHILOMATH	0 0		MAIN ST	W		TRF SIGNAL	N	DRY	TURN			PRVTE	N W										000		00
					3P	CORVALIS UA	51.04		19TH ST	05	0		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	76	F	OR-Y OR<25		007,047	000		08,01
																	02	NONE 0	TURN-L										000		00
																		PRVTE	S W										000		00
																		PSNGR CAR		01	DRVR	NONE	19	F	OR-Y OR<25		000	000		00
00352	N	Y	N		06/16/2006	BENTON	1 14			INTER	CROSS	N	N	CLD	PED		01	NONE 1	STRGHT													18
COUNTY					Fri	PHILOMATH	0 0		MAIN ST	W		TRF SIGNAL	N	DRY	PED			PRVTE	W E										000		00
					3P	CORVALIS UA	51.04		19TH ST	06	0		N	DAY	FAT			SEMI TOW		01	DRVR	NONE	35	M	OR-Y OR<25		000	000		00
																			STRGHT S N	01	PED	KILL	46	M		02	055	035		18
00586	N	N	N		08/19/2005	BENTON	1 14			INTER	CROSS	N	N	CLR	O-1TURN		01	NONE 0	TURN-L													02
CITY					Fri	PHILOMATH	0 0		MAIN ST	CN		TRF SIGNAL	N	DRY	TURN			PRVTE	S W										000		00
					2P	CORVALIS UA	51.04		19TH ST	01	0		N	DAY	INJ			PSNGR CAR		01	DRVR	INJB	20	M	OR-Y OR>25		028	000		02
																				02	PSNG	INJC	18	M			000	000		00
																	02	NONE 0	STRGHT										000		00
																		PRVTE	N S										000		00
																		PSNGR CAR		01	DRVR	NONE	15	M	OR-Y OR<25		000	000		00
																				02	PSNG	INJB	47	M			000	000		00
00726	N	N	N		10/31/2007	BENTON	1 14			INTER	4-LEG	N	Y	CLD	FIX OBJ		01	NONE 0	STRGHT											055		10
CITY					Wed	PHILOMATH	0 0		MAIN ST	CN		TRF SIGNAL	N	DRY	FIX			PRVTE	E W										000	055	00
					5P	CORVALIS UA	51.04		19TH ST	01	0		N	DAY	FAT			PSNGR CAR		01	DRVR	KILL	79	M	OR-Y OR<25		080,081	017		10
																				02	PSNG	INJA	74	F			000	000		00
00991	N	N	N	N	12/22/2006	BENTON	1 14			INTER	CROSS	N	N	RAIN	O-1TURN		01	NONE 0	STRGHT											058		04
CITY					Fri	PHILOMATH	0 0		MAIN ST	CN		L-TURN REF	N	WET	TURN			PRVTE	E W										000		00
					5A	CORVALIS UA	51.04		19TH ST	02	0		N	DLIT	PDO			PSNGR CAR		01	DRVR	NONE	28	M	OR-Y OR<25		020	000		04

033 CORVALLIS-NEWPORT

US 20 (Hwy 033) @ 19th Street
January 1, 2005 through December 31, 2009

SER# / INVEST	SPEED	ALCHL	DRSLK	SWOR	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
																02	NONE 0 PRVTE PSNGR CAR	TURN-L W N										000	058	00
																			01	DRVR	NONE	37	M	OR-Y OR<25		000	000		00
00315 CITY	N	N	N	N	04/28/2008 Mon 3P	BENTON PHILOMATH CORVALIS UA	1 14 0 0 51.04		MAIN ST 19TH ST	INTER CN 02	CROSS 0	N TRF SIGNAL	N N	CLR DRY DAY	O-1TURN TURN INJ	01	NONE 0 PRVTE MTRCYCLE	TURN-L W N	01	DRVR	INJC	19	M	OR-Y OR<25		004,028	000		02,08 00 02,08
																02	NONE 0 PRVTE PSNGR CAR	STRGHT E W										000		00
																			01	DRVR	NONE	61	M	OR-Y OR>25		000	000		00
00871 CITY	N	N	N	N	12/11/2009 Fri 5P	BENTON PHILOMATH CORVALIS UA	1 14 0 0 51.04		MAIN ST 19TH ST	INTER CN 03	CROSS 0	N TRF SIGNAL	N N	CLD WET DUSK	O-1TURN TURN PDO	01	NONE PRVTE PSNGR CAR	TURN-L E S	01	DRVR	NONE	24	M	OR-Y OR<25		020	000		04 00 04
																02	NONE PRVTE PSNGR CAR	STRGHT W E										000		00
																			01	DRVR	NONE	73	M	OR-Y OR<25		000	000		00
00052 CITY	N	N	N	N	01/14/2008 Mon 4P	BENTON PHILOMATH CORVALIS UA	1 14 0 0 51.04		MAIN ST 19TH ST	INTER CN 04	CROSS 0	N TRF SIGNAL	N N	RAIN WET DUSK	O-1TURN TURN PDO	01	NONE 0 PRVTE PSNGR CAR	STRGHT S N	01	DRVR	NONE	20	F	OR-Y OR<25		000	000		02,08 00 00
																02	NONE 0 PRVTE PSNGR CAR	TURN-L N E										000		00
																			01	DRVR	NONE	85	M	OR-Y OR>25		004	000		08,02
00280 CITY	N	N	N	N	05/08/2009 Fri 9P	BENTON PHILOMATH CORVALIS UA	1 14 1 0 51.04		MAIN ST 19TH ST	INTER CN 03	CROSS 0	N TRF SIGNAL	N N	CLR DRY DLIT	ANGL-OTH ANGL INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT W E	01	DRVR	NONE	58	F	OTH-Y N-RES		020	000		04 00 04
																02	NONE 0 PRVTE PSNGR CAR	STRGHT N S										000		00
																			01	DRVR	NONE	50	M	OR-Y OR<25		000	000		00
																			02	PSNG	INJC	30	F			000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF PHILOMATH, BENTON COUNTY

US 20 (Hwy 033) @ 19th Street

January 1, 2005 through December 31, 2009

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL TRLR / OWNER / VEH TYPE	USE QTY / MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00910	Y	N	N			11/30/2005	16	MAIN ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE	1 TURN-R										08,01
NONE						Wed	0	19TH ST	N		UNKNOWN	N	ICE	TURN		PRVTE	E N									000		00
						7A			06	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	32	M	OR-Y OR<25		001,080	017		08,01
															02	NONE	0 STRGHT											00
																PRVTE	N S									000		00
																PSNGR CAR		01	DRVR	NONE	24	M	OTH-Y OR<25		000	000		00
00557	N	N	N			08/10/2006	16	MAIN ST	INTER	CROSS	N	N	CLR	O-1STOP	01	NONE	0 BACK											092	10,26
						Thu	0	19TH ST	N		STOP SIGN	N	DRY	BACK		PRVTE	S N									007		26
						1P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y OR<25		011	000		10,26
															02	NONE	0 STOP											
																PRVTE	N S									011		00
																PSNGR CAR		01	DRVR	NONE	55	M	OR-Y OR<25		000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 20 (Hwy 033) Eastbound @ 11th Street
January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2007														
ANGLE	0	1	0	1	0	1	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	1	0	1	0	1	0	0
2007 TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0
FINAL TOTAL	0	1	1	2	0	1	0	2	0	2	0	2	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

CITY OF PHILOMATH, BENTON COUNTY

US 20 (Hwy 033) Eastbound @ 11th Street

January 1, 2005 through December 31, 2009

SER# / INVEST	SPEC	ALC	DRUG	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF-CONTL	OFF-RD RNDBT DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00512	N	N	N	N	N	07/15/2007	19	APPLEGATE ST	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											03
COUNTY						Sun	0	11TH ST	CN		STOP SIGN	N	DRY	ANGL		PRVTE	N S										000		00
						11A			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	M	OR-Y OR>25		000	000		00
															02	NONE 0	STRGHT										000		00
																PRVTE	W E												
																PSNGR CAR		01	DRVR	INJC	48	F	OR-Y OR>25		021	000		03
00433	N	N	N	N	N	06/15/2007	19	APPLEGATE ST	INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	TURN-L											08
COUNTY						Fri	0	11TH ST	CN		ONE-WAY	N	DRY	TURN		PRVTE	W N										000		00
						1P			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	90	F	OR-Y OR<25		006	000		08
															02	NONE 0	STRGHT										000		00
																PRVTE	W E												
																PSNGR CAR		01	DRVR	NONE	84	M	OR-Y OR<25		000	000		00

TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 20 (Hwy 033) Westbound @ 7th Street

January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2005														
ANGLE	0	0	1	1	0	0	0	0	1	0	1	1	0	0
2005 TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	0
FINAL TOTAL	0	0	1	1	0	0	0	0	1	0	1	1	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

033 CORVALLIS-NEWPORT

US 20 (Hwy 033) Westbound @ 7th Street
January 1, 2005 through December 31, 2009

SER# / INVEST	SPEED	ALCHL	DRUGS	SCHL ZN	WORK ZN	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# COMPNT / MLG TYP / MILEPNT	FC / CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00157	N	N	N			03/01/2005	BENTON	1 14		INTER	CROSS	N		N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
CITY						Tue	PHILOMATH	0 0	MAIN ST	CN		STOP SIGN		N	WET	ANGL		PRVTE	N S									015	00
						7A	CORVALIS UA	50.17	7TH ST	01	0			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	62	M	OR-Y OR<25		028	028		02
																	02	NONE 0	STRGHT											
																		PRVTE	E W									000	00
																		PSNGR CAR		01	DRVR	NONE	71	F	OR-Y UNK		000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

US 20 (Hwy 033) Westbound @ 11th Street
January 1, 2005 through December 31, 2009

COLLISION TYPE	FATAL CRASHES	NON-FATAL CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-SECTION	INTER-SECTION RELATED	OFF-ROAD
YEAR: 2009														
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	1	0	1	0	0
2009 TOTAL	0	0	1	1	0	0	0	0	1	1	0	1	0	0
YEAR: 2008														
TURNING MOVEMENTS	0	1	0	1	0	1	0	1	0	1	0	1	0	0
2008 TOTAL	0	1	0	1	0	1	0	1	0	1	0	1	0	0
FINAL TOTAL	0	1	1	2	0	1	0	1	1	2	0	2	0	0

Note: Legislative changes to DMV's vehicle crash reporting requirements, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

033 CORVALLIS-NEWPORT

US 20 (Hwy 033) Westbound @ 11th Street
January 1, 2005 through December 31, 2009

SER# / INVEST	SPEED	ALCOHOL	DRUGS	RSLK	SCHL	WORK	DATE / DAY / TIME	COUNTY / CITY / URBAN AREA	RD# COMPNT / MLG TYP / MILEPNT	FC / CONN # / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYP (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CNTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH TYP / COLL TYP / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / VEH TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACTN	EVENT	CAUSE
00600	N	N	N	N	N		09/07/2008	BENTON	2 14		INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 0	TURN-L											08
CITY							Sun	PHILOMATH	1 0	MAIN ST	CN		ONE-WAY	N	DRY	TURN		PRVTE	E S									000	00
							12P	CORVALIS UA	50.43	11TH ST	04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	61	F	OR-Y OR<25		006	000		08
																	02	NONE 0	STRGHT											
																		PRVTE	E W										000	00
																		PSNGR CAR		01	DRVR	INJC	65	F	OR-Y OR<25		000	000		00
																				02	PSNG	NONE	04	F			000	000		00
00075	N	N	N				02/06/2009	BENTON	2 14		INTER	3-LEG	N	N	RAIN	S-1TURN	01	NONE 0	STRGHT											08
NONE							Fri	PHILOMATH	1 0	MAIN ST	CN		ONE-WAY	N	WET	TURN		PRVTE	E W									000	00
							12P	CORVALIS UA	50.45	11TH ST	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	53	M	OR-Y OR<25		000	000		00
																	02	NONE 0	TURN-L											
																		PRVTE	E S										000	00
																		PSNGR CAR		01	DRVR	NONE	42	F	OTH-Y N-RES		006	000		08

ACTION CODE TRANSLATION LIST

ACTION CODE	SHORT DESCRIPTION	LONG DESCRIPTION
000	NONE	NO ACTION OR NON-WARRANTED
001	SKIDDED	SKIDDED
002	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE
003	LOAD OVR	OVERHANGING LOAD STRUCK ANOTHER VEHICLE, ETC.
006	SLOW DN	SLOWED DOWN
007	AVOIDING	AVOIDING MANEUVER
008	PAR PARK	PARALLEL PARKING
009	ANG PARK	ANGLE PARKING
010	INTERFERE	PASSENGER INTERFERING WITH DRIVER
011	STOPPED	STOPPED IN TRAFFIC NOT WAITING TO MAKE A LEFT TURN
012	STP/L TRN	STOPPED BECAUSE OF LEFT TURN SIGNAL OR WAITING, ETC.
013	STP TURN	STOPPED WHILE EXECUTING A TURN
015	GO A/STOP	PROCEED AFTER STOPPING FOR A STOP SIGN/FLASHING RED.
016	TRN A/RED	TURNED ON RED AFTER STOPPING
017	LOSTCTRL	LOST CONTROL OF VEHICLE
018	EXIT DWY	ENTERING STREET OR HIGHWAY FROM ALLEY OR DRIVEWAY
019	ENTR DWY	ENTERING ALLEY OR DRIVEWAY FROM STREET OR HIGHWAY
020	STR ENTR	BEFORE ENTERING ROADWAY, STRUCK PEDESTRIAN, ETC. ON SIDEWALK OR SHOULDER
021	NO DRVR	CAR RAN AWAY - NO DRIVER
022	PREV COL	STRUCK, OR WAS STRUCK BY, VEHICLE OR PEDESTRIAN IN PRIOR COLLISION BEFORE ACC. STABILIZED
023	STALLED	VEHICLE STALLED
024	DRVR DEAD	DEAD BY UNASSOCIATED CAUSE
025	FATIGUE	FATIGUED, SLEEPY, ASLEEP
026	SUN	DRIVER BLINDED BY SUN
027	HDLGHTS	DRIVER BLINDED BY HEADLIGHTS
028	ILLNESS	PHYSICALLY ILL
029	THRU MED	VEHICLE CROSSED, PLUNGED OVER, OR THROUGH MEDIAN BARRIER
030	PURSUIT	PURSUING OR ATTEMPTING TO STOP ANOTHER VEHICLE
031	PASSING	PASSING SITUATION
032	PRKOFFRD	VEHICLE PARKED BEYOND CURB OR SHOULDER
033	CROS MED	VEHICLE CROSSED EARTH OR GRASS MEDIAN
034	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
035	X W/ SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
036	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
037	BTWN INT	CROSSING BETWEEN INTERSECTIONS
038	DISTRACT	DRIVER'S ATTENTION DISTRACTED
039	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
040	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
041	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
042	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
043	PLAYINRD	PLAYING IN STREET OR ROAD
044	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
045	WORK ON	WORKING IN ROADWAY OR ALONG SHOULDER
050	LAY ON RD	STANDING OR LYING IN ROADWAY
051	ENT OFFRD	ENTERING / STARTING IN TRAFFIC LANE FROM OFF-ROAD
088	OTHER	OTHER ACTION
099	UNK	UNKNOWN ACTION

CAUSE CODE TRANSLATION LIST

CAUSE CODE	SHORT DESCRIPTION	LONG DESCRIPTION
00	NO CODE	NO CAUSE ASSOCIATED AT THIS LEVEL
01	TOO-FAST	TOO FAST FOR CONDITIONS (NOT EXCEED POSTED SPEED
02	NO-YIELD	DID NOT YIELD RIGHT-OF-WAY
03	PAS-STOP	PASSED STOP SIGN OR RED FLASHER
04	DIS--RAG	DISREGARDED R-A-G TRAFFIC SIGNAL.
05	LEFT-CTR	DROVE LEFT OF CENTER ON TWO-WAY ROAD
06	IMP-OVER	IMPROPER OVERTAKING
07	TOO-CLOS	FOLLOWED TOO CLOSELY
08	IMP-TURN	MADE IMPROPER TURN
09	DRINKING	ALCOHOL OR DRUG INVOLVED
10	OTHR-IMP	OTHER IMPROPER DRIVING
11	MECH-DEF	MECHANICAL DEFECT
12	OTHER	OTHER (NOT IMPROPER DRIVING)
13	IMP LN C	IMPROPER CHANGE OF TRAFFIC LANES
14	DIS TCD	DISREGARDED OTHER TRAFFIC CONTROL DEVICE
15	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY
16	FATIGUE	DRIVER DROWSY/FATIGUED/SLEEPY
18	IN RDWY	NON-MOTORIST ILLEGALLY IN ROADWAY
19	NT VISBL	NON-MOTORIST CLOTHING NOT VISIBLE
20	IMP PKNG	VEHICLE IMPROPERLY PARKED
21	DEF STER	DEFECTIVE STEERING MECHANISM
22	DEF BRKE	INADEQUATE OR NO BRAKES
24	LOADSHFT	VEHICLE LOST LOAD OR LOAD SHIFTED
25	TIREFAIL	TIRE FAILURE
26	PHANTOM	PHANTOM / NON-CONTACT VEHICLE
27	INATTENT	INATTENTION
30	SPEED	DRIVING IN EXCESS OF POSTED SPEED
31	RACING	SPEED RACING (PER PAR)
32	CARELESS	CARELESS DRIVING (CITATION ISSUED)
33	RECKLESS	RECKLESS DRIVING (CITATION ISSUED)
34	AGGRESV	AGGRESSIVE DRIVING (PER PAR)
35	RD RAGE	ROAD RAGE (PER PAR)

COLLISION TYPE CODE TRANSLATION LIST

COLL CODE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OTH	MISCELLANEOUS
-	BACK	BACKING
0	PED	PEDESTRIAN
1	ANGL	ANGLE
2	HEAD	HEAD-ON
3	REAR	REAR-END
4	SS-M	SIDESWIPE - MEETING
5	SS-O	SIDESWIPE - OVERTAKING
6	TURN	TURNING MOVEMENT
7	PARK	PARKING MANEUVER
8	NCOL	NON-COLLISION
9	FIX	FIXED OBJECT OR OTHER OBJECT

CRASH TYPE CODE TRANSLATION LIST

CRASH TYPE	SHORT DESCRIPTION	LONG DESCRIPTION
&	OVERTURN	OVERTURNED
0	NON-COLL	OTHER NON-COLLISION
1	OTH RDWY	MOTOR VEHICLE ON OTHER ROADWAY
2	PRKD MV	PARKED MOTOR VEHICLE
3	PED	PEDESTRIAN
4	TRAIN	RAILWAY TRAIN
6	BIKE	PEDALCYCLIST
7	ANIMAL	ANIMAL
8	FIX OBJ	FIXED OBJECT
9	OTH OBJ	OTHER OBJECT
A	ANGL-STP	ENTERING AT ANGLE - ONE VEHICLE STOPPED
B	ANGL-OTH	ENTERING AT ANGLE - ALL OTHERS
C	S-STRGHT	FROM SAME DIRECTION - BOTH GOING STRAIGHT
D	S-1TURN	FROM SAME DIRECTION - ONE TURN, ONE STRAIGHT
E	S-1STOP	FROM SAME DIRECTION - ONE STOPPED
F	S-OTHER	FROM SAME DIRECTION-ALL OTHERS, INCLUDING PARKING
G	O-STRGHT	FROM OPPOSITE DIRECTION - BOTH GOING STRAIGHT
H	O-1TURN	FROM OPPOSITE DIRECTION - ONE TURN, ONE STRAIGHT
I	O-1STOP	FROM OPPOSITE DIRECTION - ONE STOPPED
J	O-OTHER	FROM OPPOSITE DIRECTION-ALL OTHERS INCL. PARKING

DRIVER LICENSE CODE TRANSLATION LIST

LIC CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NOT LICENSED (HAD NEVER BEEN LICENSED)
1	OR-Y	VALID OREGON LICENSE
2	OTH-Y	VALID LICENSE, OTHER STATE OR COUNTRY
3	SUSP	SUSPENDED/REVOKED

DRIVER RESIDENCE CODE TRANSLATION LIST

RES CODE	SHORT DESC	LONG DESCRIPTION
1	OR<25	OREGON RESIDENT WITHIN 25 MILE OF HOME
2	OR>25	OREGON RESIDENT 25 OR MORE MILES FROM HOME
3	OR-?	OREGON RESIDENT - UNKNOWN DISTANCE FROM HOME
4	N-RES	NON-RESIDENT
9	UNK	UNKNOWN IF OREGON RESIDENT

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
000	NONE	NO ERROR
001	WIDE TRN	WIDE TURN
002	CUT CORN	CUT CORNER ON TURN
003	FAIL TRN	FAILED TO OBEY MANDATORY TRAFFIC TURN SIGNAL, SIGN OR LANE MARKINGS
004	L IN TRF	LEFT TURN IN FRONT OF ONCOMING TRAFFIC
005	L PROHIB	LEFT TURN WHERE PROHIBITED
006	FRM WRNG	TURNED FROM WRONG LANE
007	TO WRONG	TURNED INTO WRONG LANE
008	ILLEG U	U-TURNED ILLEGALLY
009	IMP STOP	IMPROPERLY STOPPED IN TRAFFIC LANE
010	IMP SIG	IMPROPER SIGNAL OR FAILURE TO SIGNAL
011	IMP BACK	BACKING IMPROPERLY (NOT PARKING)
012	IMP PARK	IMPROPERLY PARKED
013	UNPARK	IMPROPER START LEAVING PARKED POSITION
014	IMP STRT	IMPROPER START FROM STOPPED POSITION
015	IMP LGHT	IMPROPER OR NO LIGHTS (VEHICLE IN TRAFFIC)
016	INATTENT	FAILED TO DIM LIGHTS (UNTIL 4/1/97) / INATTENTION (AFTER 4/1/97)
017	UNSF VEH	DRIVING UNSAFE VEHICLE (NO OTHER ERROR APPARENT)
018	OTH PARK	ENTERING, EXITING PARKED POSITION WITH INSUFFICIENT CLEARANCE OR OTHER IMPROPER PARKING MANEUVER
019	DIS DRIV	DISREGARDED OTHER DRIVER'S SIGNAL
020	DIS SGNL	DISREGARDED TRAFFIC SIGNAL
021	RAN STOP	DISREGARDED STOP SIGN OR FLASHING RED
022	DIS SIGN	DISREGARDED WARNING SIGN, FLARES OR FLASHING AMBER
023	DIS OFCR	DISREGARDED POLICE OFFICER OR FLAGMAN
024	DIS EMER	DISREGARDED SIREN OR WARNING OF EMERGENCY VEHICLE
025	DIS RR	DISREGARDED RR SIGNAL, RR SIGN, OR RR FLAGMAN
026	REAR-END	FAILED TO AVOID STOPPED OR PARKED VEHICLE AHEAD OTHER THAN SCHOOL BUS
027	BIKE ROW	DID NOT HAVE RIGHT-OF-WAY OVER PEDALCYCLIST
028	NO ROW	DID NOT HAVE RIGHT-OF-WAY
029	PED ROW	FAILED TO YIELD RIGHT-OF-WAY TO PEDESTRIAN
030	PAS CURV	PASSING ON A CURVE
031	PAS WRNG	PASSING ON THE WRONG SIDE
032	PAS TANG	PASSING ON STRAIGHT ROAD UNDER UNSAFE CONDITIONS
033	PAS X-WK	PASSED VEHICLE STOPPED AT CROSSWALK FOR PEDESTRIAN
034	PAS INTR	PASSING AT INTERSECTION
035	PAS HILL	PASSING ON CREST OF HILL
036	N/PAS ZN	PASSING IN "NO PASSING" ZONE
037	PAS TRAF	PASSING IN FRONT OF ONCOMING TRAFFIC
038	CUT-IN	CUTTING IN (TWO LANES - TWO WAY ONLY)
039	WRNGSIDE	DRIVING ON WRONG SIDE OF THE ROAD
040	THRU MED	DRIVING THROUGH SAFETY ZONE OR OVER ISLAND
041	F/ST BUS	FAILED TO STOP FOR SCHOOL BUS

ERROR CODE TRANSLATION LIST

ERROR CODE	SHORT DESCRIPTION	FULL DESCRIPTION
042	F/SLO MV	FAILED TO DECREASE SPEED FOR SLOWER MOVING VEHICLE
043	TO CLOSE	FOLLOWING TOO CLOSELY (MUST BE ON OFFICER'S REPORT)
044	STRDL LN	STRADDLING OR DRIVING ON WRONG LANES
045	IMP CHG	IMPROPER CHANGE OF TRAFFIC LANES
046	WRNG WAY	WRONG WAY ON ONE-WAY ROADWAY (VEHICLE IS DELIBERATELY TRAVELING ON WRONG SIDE)
047	BASCRULE	DRIVING TOO FAST FOR CONDITIONS (NOT EXCEEDING POSTED SPEED)
048	OPN DOOR	OPENED DOOR INTO ADJACENT TRAFFIC LANE
049	IMPEDING	IMPEDING TRAFFIC
050	SPEED	DRIVING IN EXCESS OF POSTED SPEED
051	RECKLESS	RECKLESS DRIVING (PER PAR)
052	CARELESS	CARELESS DRIVING (PER PAR)
053	RACING	SPEED RACING (PER PAR)
054	X N/SGNL	CROSSING AT INTERSECTION - NO TRAFFIC SIGNAL PRESENT
055	X W/SGNL	CROSSING AT INTERSECTION - TRAFFIC SIGNAL PRESENT
056	DIAGONAL	CROSSING AT INTERSECTION - DIAGONALLY
057	BTWN INT	CROSSING BETWEEN INTERSECTIONS
059	W/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER WITH TRAFFIC
060	A/TRAF-S	WALKING, RUNNING, RIDING, ETC., ON SHOULDER FACING TRAFFIC
061	W/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT WITH TRAFFIC
062	A/TRAF-P	WALKING, RUNNING, RIDING, ETC., ON PAVEMENT FACING TRAFFIC
063	PLAYINRD	PLAYING IN STREET OR ROAD
064	PUSH MV	PUSHING OR WORKING ON VEHICLE IN ROAD OR ON SHOULDER
065	WK IN RD	WORKING IN ROADWAY OR ALONG SHOULDER
070	LAYON RD	STANDING OR LYING IN ROADWAY
073	DIS POL	DISREGARDING POLICE (ELUDING)
080	FAIL LN	FAILED TO MAINTAIN LANE
081	OFF RD	RAN OFF ROAD
082	NO CLEAR	DRIVER MISJUDGED CLEARANCE
083	OVRSTEER	OVER CORRECTING
084	NOT USED	CODE NOT IN USE
085	OVRLOAD	OVERLOADING OR IMPROPER LOADING OF VEHICLE WITH CARGO OR PASSENGERS
097	UNA DIS TC	UNABLE TO DETERMINE WHICH DRIVER DISREGARDED TRAFFIC CONTROL DEVICE

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
001	FEL/JUMP	OCCUPANT FELL, JUMPED OR WAS EJECTED FROM MOVING VEHICLE
002	INTERFER	PASSENGER INTERFERED WITH DRIVER
003	BUG INTF	ANIMAL OR INSECT IN VEHICLE INTERFERED WITH DRIVER
004	PED INV	PEDESTRIAN INVOLVED (NON-PEDESTRIAN ACCIDENT)
005	SUB-PED	"SUB-PED": PEDESTRIAN INJURED SUBSEQUENT TO COLLISION, ETC.
006	BIKE INV	TRICYCLE-BICYCLE INVOLVED
007	HITCHIKR	HITCHHIKER (SOLICITING A RIDE)
008	PSNGR TOW	PASSENGER BEING TOWED OR PUSHED ON CONVEYANCE
009	ON/OFF V	GETTING ON OR OFF STOPPED OR PARKED VEHICLE (OCCUPANTS ONLY)
010	SUB OTRN	OVERTURNED AFTER FIRST HARMFUL EVENT
011	MV PUSHD	VEHICLE BEING PUSHED
012	MV TOWED	VEHICLE TOWED OR HAD BEEN TOWING ANOTHER VEHICLE
013	FORCED	VEHICLE FORCED BY IMPACT INTO ANOTHER VEHICLE, PEDALCYCLIST OR PEDESTRIAN
014	SET MOTN	VEHICLE SET IN MOTION BY NON-DRIVER (CHILD RELEASED BRAKES, ETC.)
015	RR ROW	AT OR ON RAILROAD RIGHT-OF-WAY (NOT LIGHT RAIL)
016	LT RL ROW	AT OR ON LIGHT-RAIL RIGHT-OF-WAY
017	RR HIT V	TRAIN STRUCK VEHICLE
018	V HIT RR	VEHICLE STRUCK TRAIN
019	HIT RR CAR	VEHICLE STRUCK RAILROAD CAR ON ROADWAY
020	JACKNIFE	JACKKNIFE; TRAILER OR TOWED VEHICLE STRUCK TOWING VEHICLE
021	TRL OTRN	TRAILER OR TOWED VEHICLE OVERTURNED
022	CN BROKE	TRAILER CONNECTION BROKE
023	DETACH TRL	DETACHED TRAILING OBJECT STRUCK OTHER VEHICLE, NON-MOTORIST, OR OBJECT
024	V DOOR OPN	VEHICLE DOOR OPENED INTO ADJACENT TRAFFIC LANE
025	WHEELOFF	WHEEL CAME OFF
026	HOOD UP	HOOD FLEW UP
028	LOAD SHIFT	LOST LOAD, LOAD MOVED OR SHIFTED
029	TIREFAIL	TIRE FAILURE
030	PET	PET: CAT, DOG AND SIMILAR
031	LVSTOCK	STOCK: COW, CALF, BULL, STEER, SHEEP, ETC.
032	HORSE	HORSE, MULE, OR DONKEY
033	HRSE&RID	HORSE AND RIDER
034	GAME	WILD ANIMAL, GAME (INCLUDES BIRDS; NOT DEER OR ELK)
035	DEER ELK	DEER OR ELK, WAPITI
036	ANML VEH	ANIMAL-DRAWN VEHICLE
037	CULVERT	CULVERT, OPEN LOW OR HIGH MANHOLE
038	ATENUATN	IMPACT ATTENUATOR
039	PK METER	PARKING METER
040	CURB	CURB (ALSO NARROW SIDEWALKS ON BRIDGES)
041	JIGGLE	JIGGLE BARS OR TRAFFIC SNAKE FOR CHANNELIZATION
042	GDRL END	LEADING EDGE OF GUARDRAIL
043	GARDRAIL	GUARD RAIL (NOT METAL MEDIAN BARRIER)
044	BARRIER	MEDIAN BARRIER (RAISED OR METAL)
045	WALL	RETAINING WALL OR TUNNEL WALL
046	BR RAIL	BRIDGE RAILING (ON BRIDGE AND APPROACH)
047	BR ABUT	BRIDGE ABUTMENT (APPROACH ENDS)
048	BR COLMN	BRIDGE PILLAR OR COLUMN (EVEN THOUGH STRUCK PROTECTIVE GUARD RAIL FIRST)
049	BR GIRDR	BRIDGE GIRDER (HORIZONTAL STRUCTURE OVERHEAD)
050	ISLAND	TRAFFIC RAISED ISLAND
051	GORE	GORE
052	POLE UNK	POLE - TYPE UNKNOWN
053	POLE UTL	POLE - POWER OR TELEPHONE
054	ST LIGHT	POLE - STREET LIGHT ONLY
055	TRF SGNL	POLE - TRAFFIC SIGNAL AND PED SIGNAL ONLY
056	SGN BRDG	POLE - SIGN BRIDGE
057	STOPSIGN	STOP OR YIELD SIGN
058	OTH SIGN	OTHER SIGN, INCLUDING STREET SIGNS
059	HYDRANT	HYDRANT

EVENT CODE TRANSLATION LIST

EVENT CODE	SHORT DESCRIPTION	LONG DESCRIPTION
060	MARKER	DELINEATOR OR MARKER (REFLECTOR POSTS)
061	MAILBOX	MAILBOX
062	TREE	TREE, STUMP OR SHRUBS
063	VEG OHED	TREE BRANCH OR OTHER VEGETATION OVERHEAD, ETC.
064	WIRE/CBL	WIRE OR CABLE ACROSS OR OVER THE ROAD
065	TEMP SGN	TEMPORARY SIGN OR BARRICADE IN ROAD, ETC.
066	PERM SGN	PERMANENT SIGN OR BARRICADE IN/OFF ROAD
067	SLIDE	SLIDES, ROCKS OFF OR ON ROAD, FALLING ROCKS
068	FRGN OBJ	FOREIGN OBSTRUCTION/DEBRIS IN ROAD (NOT GRAVEL)
069	EQP WORK	EQUIPMENT WORKING IN/OFF ROAD
070	OTH EQP	OTHER EQUIPMENT IN OR OFF ROAD (INCLUDES PARKED TRAILER, BOAT)
071	MAIN EQP	WRECKER, STREET SWEEPER, SNOW PLOW OR SANDING EQUIPMENT
072	OTHER WALL	ROCK, BRICK OR OTHER SOLID WALL
073	IRRGL PVMT	SPEED BUMP, OTHER BUMP, POTHOLE OR PAVEMENT IRREGULARITY (PER PAR)
075	CAVE IN	BRIDGE OR ROAD CAVE IN
076	HI WATER	HIGH WATER
077	SNO BANK	SNOW BANK
078	HOLE	CHUCKHOLE IN ROAD, LOW OR HIGH SHOULDER AT PAVEMENT EDGE
079	DITCH	CUT SLOPE OR DITCH EMBANKMENT
080	OBJ F MV	STRUCK BY ROCK OR OTHER OBJECT SET IN MOTION BY OTHER VEHICLE (INCL. LOST LOADS)
081	FLY-OBJ	STRUCK BY OTHER MOVING OR FLYING OBJECT
082	VEH HID	VEHICLE OBSCURED VIEW
083	VEG HID	VEGETATION OBSCURED VIEW
084	BLDG HID	VIEW OBSCURED BY FENCE, SIGN, PHONE BOOTH, ETC.
085	WIND GUST	WIND GUST
086	IMMERSED	VEHICLE IMMERSED IN BODY OF WATER
087	FIRE/EXP	FIRE OR EXPLOSION
088	FENC/BLD	FENCE OR BUILDING, ETC.
089	OTH ACDT	ACCIDENT RELATED TO ANOTHER SEPARATE ACCIDENT
090	TO 1 SIDE	TWO-WAY TRAFFIC ON DIVIDED ROADWAY ALL ROUTED TO ONE SIDE
092	PHANTOM	OTHER (PHANTOM) NON-CONTACT VEHICLE (ON PAR OR REPORT)
093	CELL-POL	CELL PHONE (ON PAR OR DRIVER IN USE)
094	VIOL GDL	TEENAGE DRIVER IN VIOLATION OF GRADUATED LICENSE PGM
095	GUY WIRE	GUY WIRE
096	BERM	BERM (EARTHEN OR GRAVEL MOUND)
097	GRAVEL	GRAVEL IN ROADWAY
098	ABR EDGE	ABRUPT EDGE
099	CELL-WTN	CELL PHONE USE WITNESSED BY OTHER PARTICIPANT
100	UNK FIXD	UNKNOWN TYPE OF FIXED OBJECT
101	OTHER OBJ	OTHER OR UNKNOWN OBJECT, NOT FIXED
104	OUTSIDE V	PASSENGER RIDING ON VEHICLE EXTERIOR
105	PEDAL PSGR	PASSENGER RIDING ON PEDALCYCLE
106	MAN WHLCHR	PEDESTRIAN IN NON-MOTORIZED WHEELCHAIR
107	MTR WHLCHR	PEDESTRIAN IN MOTORIZED WHEELCHAIR
110	N-MTR	NON-MOTORIST STRUCK VEHICLE
111	S CAR VS V	STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM) STRUCK VEHICLE
112	V VS S CAR	VEHICLE STRUCK STREET CAR/TROLLEY (ON RAILS AND/OR OVERHEAD WIRE SYSTEM)
113	S CAR ROW	AT OR ON STREET CAR/TROLLEY RIGHT-OF-WAY
114	RR EQUIP	VEHICLE STRUCK RAILROAD EQUIPMENT (NOT TRAIN) ON TRACKS
120	WIRE BAR	WIRE OR CABLE MEDIAN BARRIER
124	SLIPPERY	SLIDING OR SWERVING DUE TO WET, ICY, SLIPPERY OR LOOSE SURFACE
125	SHLDR	SHOULDER GAVE WAY

FUNCTIONAL CLASSIFICATION TRANSLATION LIST

FUNC CLASS	DESCRIPTION
01	RURAL PRINCIPAL ARTERIAL - INTERSTATE
02	RURAL PRINCIPAL ARTERIAL - OTHER
06	RURAL MINOR ARTERIAL
07	RURAL MAJOR COLLECTOR
08	RURAL MINOR COLLECTOR
09	RURAL LOCAL
11	URBAN PRINCIPAL ARTERIAL - INTERSTATE
12	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXP
14	URBAN PRINCIPAL ARTERIAL - OTHER
16	URBAN MINOR ARTERIAL
17	URBAN COLLECTOR
19	URBAN LOCAL
78	UNKNOWN RURAL SYSTEM
79	UNKNOWN RURAL NON-SYSTEM
98	UNKNOWN URBAN SYSTEM
99	UNKNOWN URBAN NON-SYSTEM

HIGHWAY COMPONENT TRANSLATION LIST

CODE	DESCRIPTION
0	MAINLINE STATE HIGHWAY
1	COUPLET
3	FRONTAGE ROAD
6	CONNECTION
8	HIGHWAY - OTHER

INJURY SEVERITY CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
1	KILL	FATAL INJURY
2	INJA	INCAPACITATING INJURY - BLEEDING, BROKEN BONES
3	INJB	NON-INCAPACITATING INJURY
4	INJC	POSSIBLE INJURY - COMPLAINT OF PAIN
5	PRI	DIED PRIOR TO CRASH
7	NO<5	NO INJURY - 0 TO 4 YEARS OF AGE

LIGHT CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	DAY	DAYLIGHT
2	DLIT	DARKNESS - WITH STREET LIGHTS
3	DARK	DARKNESS - NO STREET LIGHTS
4	DAWN	DAWN (TWILIGHT)
5	DUSK	DUSK (TWILIGHT)

MEDIAN TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	NONE	NO MEDIAN
1	RSDMD	SOLID MEDIAN BARRIER
2	DIVMD	EARTH, GRASS OR PAVED MEDIAN

MILEAGE TYPE CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
0	REGULAR MILEAGE
T	TEMPORARY
Y	SPUR
Z	OVERLAPPING

MOVEMENT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	STRGHT	STRAIGHT AHEAD
2	TURN-R	TURNING RIGHT
3	TURN-L	TURNING LEFT
4	U-TURN	MAKING A U-TURN
5	BACK	BACKING
6	STOP	STOPPED IN TRAFFIC
7	PRKD-P	PARKED - PROPERLY
8	PRKD-I	PARKED - IMPROPERLY

PARTICIPANT TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	OCC	UNKNOWN OCCUPANT TYPE
1	DRVR	DRIVER
2	PSNG	PASSENGER
3	PED	PEDESTRIAN
4	CONV	PEDESTRIAN USING A PEDESTRIAN CONVEYA
5	PTOW	PEDESTRIAN TOWING OR TRAILERING AN OB
6	BIKE	PEDALCYCLIST
7	BTOW	PEDALCYCLIST TOWING OR TRAILERING AN
8	PRKD	OCCUPANT OF A PARKED MOTOR VEHICLE
9	UNK	UNKNOWN TYPE OF NON-MOTORIST

PEDESTRIAN LOCATION CODE TRANSLATION LIST

CODE	LONG DESCRIPTION
00	AT INTERSECTION - NOT IN ROADWAY
01	AT INTERSECTION - INSIDE CROSSWALK
02	AT INTERSECTION - IN ROADWAY, OUTSIDE CROSSWALK
03	AT INTERSECTION - IN ROADWAY, XWALK AVAIL UNKNWN
04	NOT AT INTERSECTION - IN ROADWAY
05	NOT AT INTERSECTION - ON SHOULDER
06	NOT AT INTERSECTION - ON MEDIAN
07	NOT AT INTERSECTION - WITHIN TRAFFIC RIGHT-OF-WAY
08	NOT AT INTERSECTION - IN BIKE PATH
09	NOT-AT INTERSECTION - ON SIDEWALK
10	OUTSIDE TRAFFICWAY BOUNDARIES
15	NOT AT INTERSECTION - INSIDE MID-BLOCK CROSSWALK
18	OTHER, NOT IN ROADWAY
99	UNKNOWN LOCATION

TRAFFIC CONTROL DEVICE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
000	NONE	NO CONTROL
001	TRF SIGNAL	TRAFFIC SIGNALS
002	FLASHBCN-R	FLASHING BEACON - RED (STOP)
003	FLASHBCN-A	FLASHING BEACON - AMBER (SLOW)
004	STOP SIGN	STOP SIGN
005	SLOW SIGN	SLOW SIGN
006	REG-SIGN	REGULATORY SIGN
007	YIELD	YIELD SIGN
008	WARNING	WARNING SIGN
009	CURVE	CURVE SIGN
010	SCHL X-ING	SCHOOL CROSSING SIGN OR SPECIAL SIGNAL
011	OFCR/FLAG	POLICE OFFICER, FLAGMAN - SCHOOL PATROL
012	BRDG-GATE	BRIDGE GATE - BARRIER
013	TEMP-BARR	TEMPORARY BARRIER
014	NO-PASS-ZN	NO PASSING ZONE
015	ONE-WAY	ONE-WAY STREET
016	CHANNEL	CHANNELIZATION
017	MEDIAN BAR	MEDIAN BARRIER
018	PILOT CAR	PILOT CAR
019	SP PED SIG	SPECIAL PEDESTRIAN SIGNAL
020	X-BUCK	CROSSBUCK
021	THR-GN-SIG	THROUGH GREEN ARROW OR SIGNAL
022	L-GRN-SIG	LEFT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
023	R-GRN-SIG	RIGHT TURN GREEN ARROW, LANE MARKINGS, OR SIGNAL
024	WIGWAG	WIGWAG OR FLASHING LIGHTS W/O DROP-ARM GATE
025	X-BUCK WRN	CROSSBUCK AND ADVANCE WARNING
026	WW W/ GATE	FLASHING LIGHTS WITH DROP-ARM GATES
027	OVRHD SGNL	SUPPLEMENTAL OVERHEAD SIGNAL (RR XING ONLY)
028	SP RR STOP	SPECIAL RR STOP SIGN
029	ILUM GRD X	ILLUMINATED GRADE CROSSING
037	RAMP METER	METERED RAMPS
038	RUMBLE STR	RUMBLE STRIP
090	L-TURN REF	LEFT TURN REFUGE (WHEN REFUGE IS INVOLVED)
091	R-TURN ALL	RIGHT TURN AT ALL TIMES SIGN, ETC.
092	EMR SGN/FL	EMERGENCY SIGNS OR FLARES
093	ACCEL LANE	ACCELERATION OR DECELERATION LANES
094	R-TURN PRO	RIGHT TURN PROHIBITED ON RED AFTER STOPPING

ROAD CHARACTER CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	INTER	INTERSECTION
2	ALLEY	DRIVEWAY OR ALLEY
3	STRGHT	STRAIGHT ROADWAY
4	TRANS	TRANSITION
5	CURVE	CURVE (HORIZONTAL CURVE)
6	OPENAC	OPEN ACCESS OR TURNOUT
7	GRADE	GRADE (VERTICAL CURVE)
8	BRIDGE	BRIDGE STRUCTURE
9	TUNNEL	TUNNEL

VEHICLE TYPE CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
01	PSNGR CAR	PASSENGER CAR, PICKUP, ETC.
02	BOBTAIL	TRUCK TRACTOR WITH NO TRAILERS (BOBTAIL)
03	FARM TRCTR	FARM TRACTOR OR SELF-PROPELLED FARM EQUIPMENT
04	SEMI TOW	TRUCK TRACTOR WITH TRAILER/MOBILE HOME IN TOW
05	TRUCK	TRUCK WITH NON-DETACHABLE BED, PANEL, ETC.
06	MOPED	MOPED, MINIBIKE, MOTOR SCOOTER, OR MOTOR BICYCLE
07	SCHL BUS	SCHOOL BUS (INCLUDES VAN)
08	OTH BUS	OTHER BUS
09	MTRCYCLE	MOTORCYCLE
10	OTHER	OTHER: FORKLIFT, BACKHOE, ETC.
11	MOTRHOME	MOTORHOME
12	TROLLEY	MOTORIZED STREET CAR/TROLLEY (NO RAILS/WIRES)
13	ATV	ATV
14	MTRSCTR	MOTORIZED SCOOTER
15	SNOWMOBILE	SNOWMOBILE
99	UNKNOWN	UNKNOWN VEHICLE TYPE

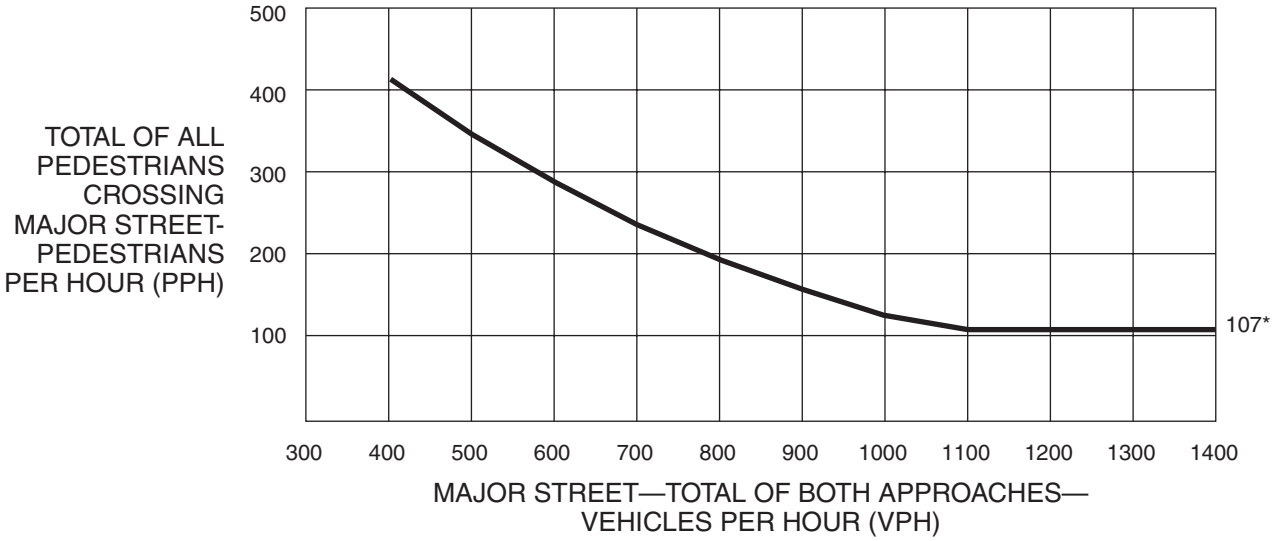
095	BUS STPSGN	BUS STOP SIGN AND RED LIGHTS
099	UNKNOWN	UNKNOWN OR NOT DEFINITE

WEATHER CONDITION CODE TRANSLATION LIST

CODE	SHORT DESC	LONG DESCRIPTION
0	UNK	UNKNOWN
1	CLR	CLEAR
2	CLD	CLOUDY
3	RAIN	RAIN
4	SLT	SLEET
5	FOG	FOG
6	SNOW	SNOW
7	DUST	DUST
8	SMOK	SMOKE
9	ASH	ASH

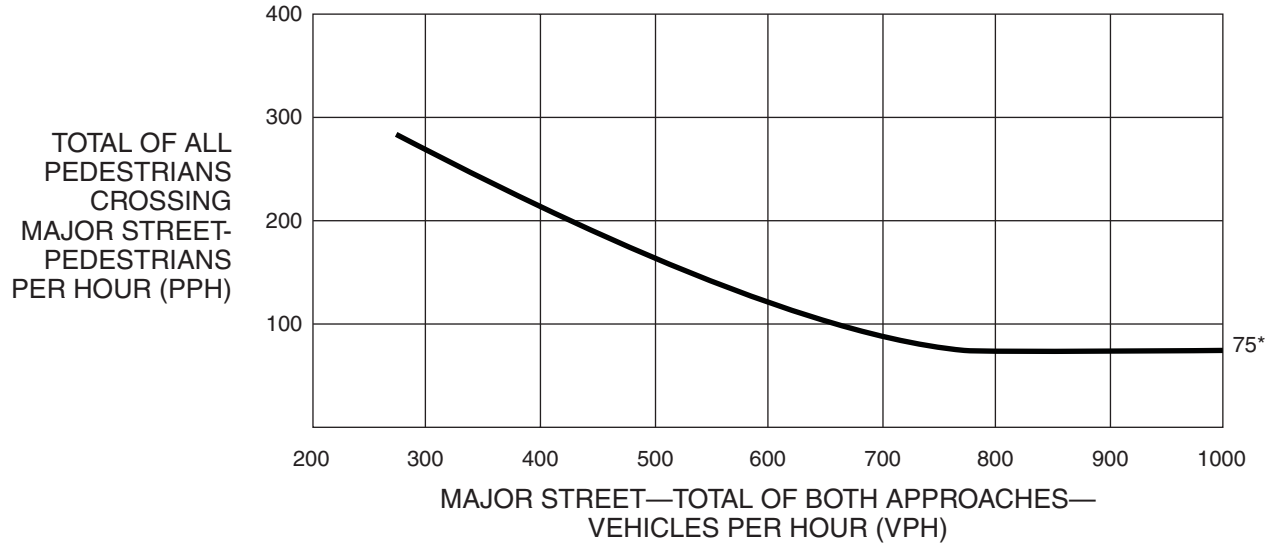
Appendix F:
Pedestrian Treatment Thresholds

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



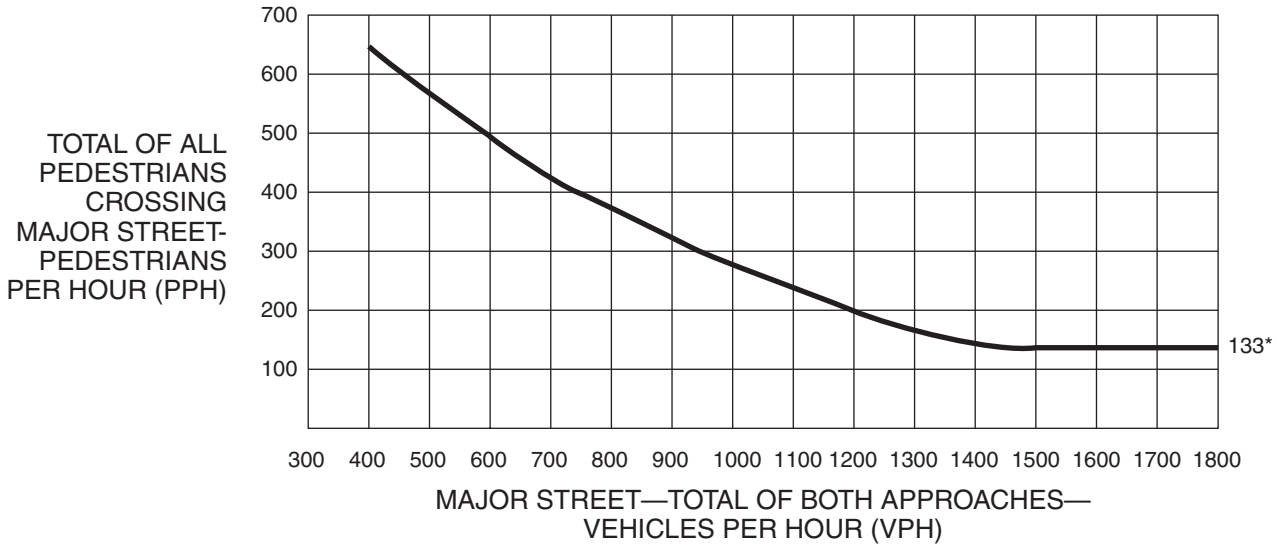
*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



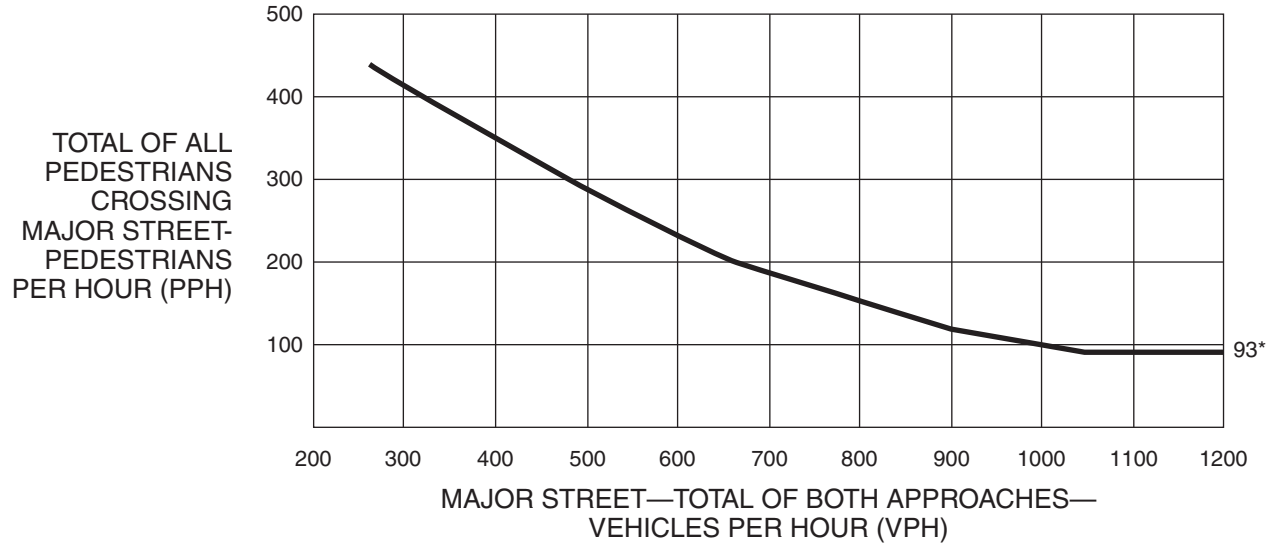
*Note: 75 pph applies as the lower threshold volume.

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



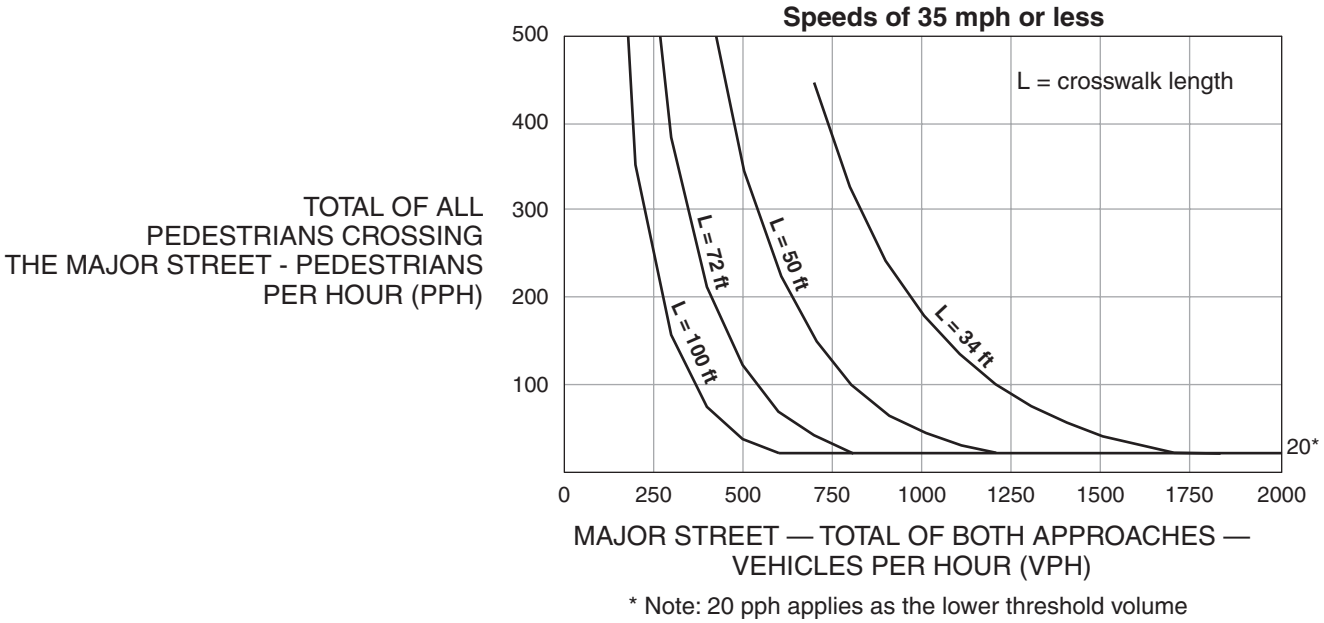
*Note: 133 pph applies as the lower threshold volume.

Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)



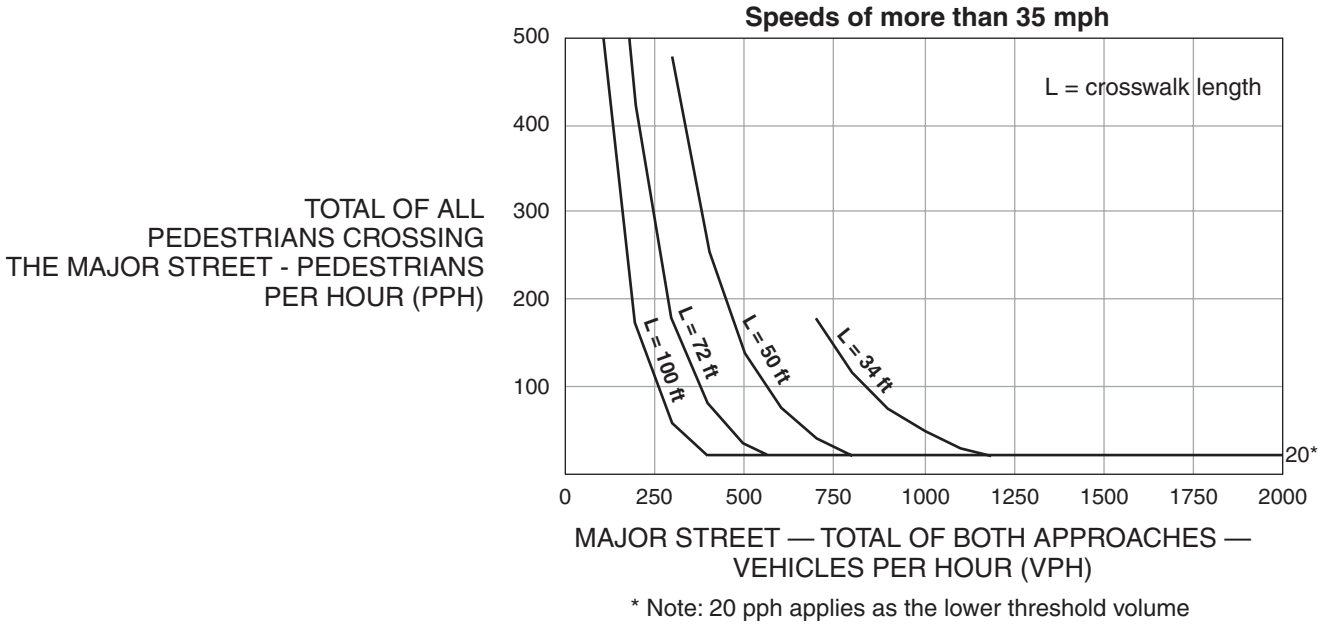
*Note: 93 pph applies as the lower threshold volume.

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



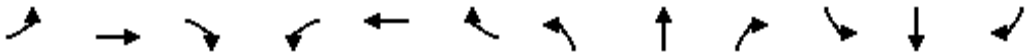
* Note: 20 pph applies as the lower threshold volume

Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways



* Note: 20 pph applies as the lower threshold volume

Appendix G:
Future Traffic Conditions
Worksheets



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	26	419	28	4	10	0	0	63	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.991						0.992	
Flt Protected					0.997			0.987				
Satd. Flow (prot)	0	0	0	0	2677	0	0	1588	0	0	1704	0
Flt Permitted					0.997			0.987				
Satd. Flow (perm)	0	0	0	0	2677	0	0	1588	0	0	1704	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		795			1574			385			389	
Travel Time (s)		21.7			42.9			10.5			10.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	21%	24%	5%	33%	0%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	27	441	29	4	11	0	0	66	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	497	0	0	15	0	0	70	0
Sign Control		Free			Free			Stop			Stop	

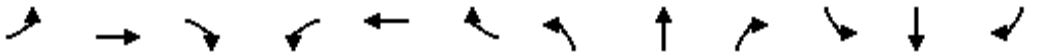
Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	26	419	28	4	10	0	0	63	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	27	441	29	4	11	0	0	66	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	471			0			313	525	0	516	511	235
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			0			313	525	0	516	511	235
tC, single (s)	4.1			4.5			8.2	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.8	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			99	98	100	100	85	99
cM capacity (veh/h)	1102			1494			474	452	1091	433	456	773

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	248	250	15	71
Volume Left	27	0	4	0
Volume Right	0	29	0	4
cSH	1494	1700	458	468
Volume to Capacity	0.02	0.15	0.03	0.15
Queue Length 95th (ft)	1	0	2	13
Control Delay (s)	1.0	0.0	13.1	14.1
Lane LOS	A		B	B
Approach Delay (s)	0.5		13.1	14.1
Approach LOS			B	B

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	25.4%	ICU Level of Service	A	
Analysis Period (min)	15			



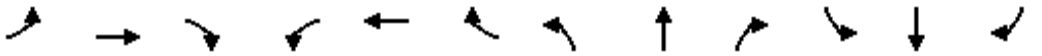
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	941	7	0	563	0	29	0	83	0	0	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999							0.850			0.865
Flt Protected							0.950					
Satd. Flow (prot)	0	3165	0	0	2842	0	1662	0	1377	0	0	1514
Flt Permitted							0.950					
Satd. Flow (perm)	0	3165	0	0	2842	0	1662	0	1377	0	0	1514
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		381			769			380			384	
Travel Time (s)		10.4			21.0			10.4			10.5	
Confl. Peds. (#/hr)			4	4			14					14
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	5%	0%	0%	17%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	991	7	0	593	0	31	0	87	0	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	998	0	0	593	0	31	0	87	0	0	1
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	941	7	0	563	0	29	0	83	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	991	7	0	593	0	31	0	87	0	0	1
Pedestrians		14						4				
Lane Width (ft)		12.0						12.0				
Walking Speed (ft/s)		4.0						4.0				
Percent Blockage		1						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					769							
pX, platoon unblocked												
vC, conflicting volume	593			1002			1310	1591	503	1175	1595	310
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593			1002			1310	1591	503	1175	1595	310
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			74	100	82	100	100	100
cM capacity (veh/h)	993			697			117	108	497	123	108	683

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	660	338	395	198	31	87	1
Volume Left	0	0	0	0	31	0	0
Volume Right	0	7	0	0	0	87	1
cSH	1700	1700	1700	1700	117	497	683
Volume to Capacity	0.39	0.20	0.23	0.12	0.26	0.18	0.00
Queue Length 95th (ft)	0	0	0	0	24	16	0
Control Delay (s)	0.0	0.0	0.0	0.0	46.5	13.8	10.3
Lane LOS					E	B	B
Approach Delay (s)	0.0		0.0		22.3		10.3
Approach LOS					C		B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

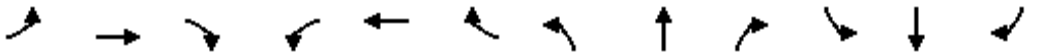


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	784	59	81	348	18	92	102	84	109	149	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	160		0	140		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.993			0.932			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1614	3187	0	1614	2856	0	1614	1533	0	1568	1520	0
Flt Permitted	0.479			0.288			0.406			0.492		
Satd. Flow (perm)	814	3187	0	489	2856	0	690	1533	0	812	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			6			40			24	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		769			820			388			395	
Travel Time (s)		21.0			22.4			10.6			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	3%	3%	7%	3%	16%	8%	3%	10%	2%	6%	3%	22%
Adj. Flow (vph)	169	825	62	85	366	19	97	107	88	115	157	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	887	0	85	385	0	97	195	0	115	236	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	24.5		9.5	27.5		32.0	32.0		32.0	32.0	
Total Split (s)	25.0	45.0	0.0	25.0	45.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	23.8%	42.9%	0.0%	23.8%	42.9%	0.0%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	21.0	40.5		21.0	40.5		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			16.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
v/c Ratio	0.26	0.49		0.21	0.26		0.67	0.55		0.68	0.70	
Control Delay	6.3	13.1		6.9	12.7		52.2	28.3		49.5	37.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.3	13.1		6.9	12.7		52.2	28.3		49.5	37.7	
Queue Length 50th (ft)	24	132		11	50		44	67		52	96	
Queue Length 95th (ft)	64	245		35	107		101	136		114	180	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			740			308			315	
Turn Bay Length (ft)	160			140			100			100		
Base Capacity (vph)	775	1821		637	1473		272	628		320	613	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.49		0.13	0.26		0.36	0.31		0.36	0.38	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 79.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	

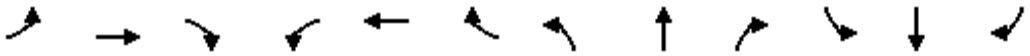
Splits and Phases: 3: Main Street (US20/OR34) & 19th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	784	59	81	348	18	92	102	84	109	149	75
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.93		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1614	3186		1614	2855		1614	1534		1568	1520	
Flt Permitted	0.48	1.00		0.29	1.00		0.41	1.00		0.49	1.00	
Satd. Flow (perm)	814	3186		490	2855		689	1534		813	1520	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	169	825	62	85	366	19	97	107	88	115	157	79
RTOR Reduction (vph)	0	4	0	0	3	0	0	32	0	0	19	0
Lane Group Flow (vph)	169	883	0	85	382	0	97	163	0	115	217	0
Heavy Vehicles (%)	3%	3%	7%	3%	16%	8%	3%	10%	2%	6%	3%	22%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	54.6	45.3		47.6	41.8		16.6	16.6		16.6	16.6	
Effective Green, g (s)	54.6	45.3		47.6	41.8		16.6	16.6		16.6	16.6	
Actuated g/C Ratio	0.68	0.56		0.59	0.52		0.21	0.21		0.21	0.21	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	647	1800		372	1488		143	318		168	315	
v/s Ratio Prot	c0.03	c0.28		0.02	0.13			0.11			c0.14	
v/s Ratio Perm	0.15			0.12			0.14			0.14		
v/c Ratio	0.26	0.49		0.23	0.26		0.68	0.51		0.68	0.69	
Uniform Delay, d1	4.7	10.5		7.1	10.6		29.3	28.2		29.4	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.0		0.3	0.4		12.1	1.4		11.0	6.2	
Delay (s)	4.9	11.5		7.4	11.0		41.4	29.6		40.3	35.6	
Level of Service	A	B		A	B		D	C		D	D	
Approach Delay (s)		10.4			10.4			33.5			37.1	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	1059	0	0	0	0	0	3	6	33	12	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.910				
Flt Protected											0.965	
Satd. Flow (prot)	0	3105	0	0	0	0	0	1592	0	0	1641	0
Flt Permitted											0.965	
Satd. Flow (perm)	0	3105	0	0	0	0	0	1592	0	0	1641	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1577			1350			577			380	
Travel Time (s)		43.0			36.8			15.7			10.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	20%	7%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%
Adj. Flow (vph)	7	1115	0	0	0	0	0	3	6	35	13	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1122	0	0	0	0	0	9	0	0	48	0
Sign Control		Free			Free			Stop			Stop	

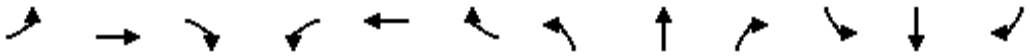
Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	1059	0	0	0	0	0	3	6	33	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	1115	0	0	0	0	0	3	6	35	13	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			1115			1136	1129	557	580	1129	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1115			1136	1129	557	580	1129	0
tC, single (s)	4.5			4.1			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	98	99	91	94	100
cM capacity (veh/h)	1500			634			151	205	479	382	205	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	565	557	9	47
Volume Left	7	0	0	35
Volume Right	0	0	6	0
cSH	1500	1700	331	310
Volume to Capacity	0.00	0.33	0.03	0.15
Queue Length 95th (ft)	0	0	2	13
Control Delay (s)	0.2	0.0	16.2	18.7
Lane LOS	A		C	C
Approach Delay (s)	0.1		16.2	18.7
Approach LOS			C	C

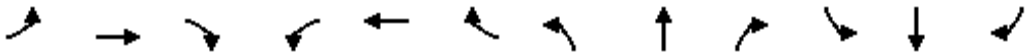
Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	14	908	65	4	11	0	0	36	19
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.990						0.953	
Flt Protected					0.999			0.988				
Satd. Flow (prot)	0	0	0	0	3187	0	0	1729	0	0	1588	0
Flt Permitted					0.999			0.988				
Satd. Flow (perm)	0	0	0	0	3187	0	0	1729	0	0	1588	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		795			1574			385			389	
Travel Time (s)		21.7			42.9			10.5			10.6	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	20%	3%	2%	0%	0%	0%	0%	4%	7%
Adj. Flow (vph)	0	0	0	15	956	68	4	12	0	0	38	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1039	0	0	16	0	0	58	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

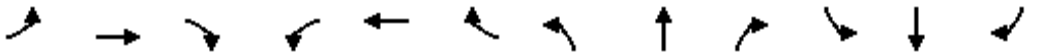
Control Type: Unsignalized



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	14	908	65	4	11	0	0	36	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	15	956	68	4	12	0	0	38	20
Pedestrians		2										
Lane Width (ft)		0.0										
Walking Speed (ft/s)		4.0										
Percent Blockage		0										
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1024			0			548	1054	0	1025	1019	514
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1024			0			548	1054	0	1025	1019	514
tC, single (s)	4.1			4.5			7.5	6.5	6.9	7.5	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	100			99			99	95	100	100	84	96
cM capacity (veh/h)	686			1500			352	226	1091	183	230	492

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	493	546	16	58
Volume Left	15	0	4	0
Volume Right	0	68	0	20
cSH	1500	1700	250	282
Volume to Capacity	0.01	0.32	0.06	0.21
Queue Length 95th (ft)	1	0	5	19
Control Delay (s)	0.3	0.0	20.4	21.1
Lane LOS	A		C	C
Approach Delay (s)	0.2		20.4	21.1
Approach LOS			C	C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		



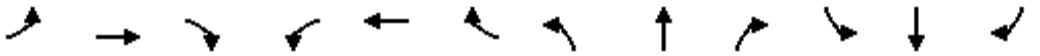
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	867	8	0	976	3	68	0	22	0	0	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	0		0	0		0	100		0	0		0
Storage Lanes	0		0	0		0	1		1	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999							0.850			0.865
Flt Protected							0.950					
Satd. Flow (prot)	0	3195	0	0	3260	0	1662	0	1377	0	0	1514
Flt Permitted							0.950					
Satd. Flow (perm)	0	3195	0	0	3260	0	1662	0	1377	0	0	1514
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		381			769			380			384	
Travel Time (s)		10.4			21.0			10.4			10.5	
Confl. Peds. (#/hr)	3		4	4		3	7		1	1		7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	0%	0%	2%	0%	0%	0%	8%	0%	0%	0%
Adj. Flow (vph)	0	913	8	0	1027	3	72	0	23	0	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	921	0	0	1030	0	72	0	23	0	0	12
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	867	8	0	976	3	68	0	22	0	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	913	8	0	1027	3	72	0	23	0	0	12
Pedestrians		7			1			4			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					769							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1034			925			1453	1954	466	1512	1957	525
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	861			925			1317	1862	466	1382	1865	308
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			31	100	96	100	100	98
cM capacity (veh/h)	724			745			104	67	525	92	67	633

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	608	313	685	346	72	23	12
Volume Left	0	0	0	0	72	0	0
Volume Right	0	8	0	3	0	23	12
cSH	1700	1700	1700	1700	104	525	633
Volume to Capacity	0.36	0.18	0.40	0.20	0.69	0.04	0.02
Queue Length 95th (ft)	0	0	0	0	88	3	1
Control Delay (s)	0.0	0.0	0.0	0.0	93.8	12.2	10.8
Lane LOS					F	B	B
Approach Delay (s)	0.0		0.0		73.8		10.8
Approach LOS					F		B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

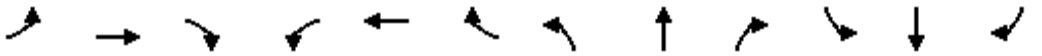


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	628	25	76	732	30	98	77	46	98	73	168
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	160		0	140		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.994			0.944			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1599	3141	0	1662	3213	0	1614	1614	0	1662	1545	0
Flt Permitted	0.275			0.377			0.363			0.639		
Satd. Flow (perm)	463	3141	0	660	3213	0	617	1614	0	1118	1545	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5			29			112	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		769			820			388			395	
Travel Time (s)		21.0			22.4			10.6			10.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	5%	11%	0%	3%	0%	3%	2%	3%	0%	0%	2%
Adj. Flow (vph)	131	661	26	80	771	32	103	81	48	103	77	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	687	0	80	803	0	103	129	0	103	254	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.0	24.5		9.5	27.5		32.0	32.0		32.0	32.0	
Total Split (s)	25.0	45.0	0.0	25.0	45.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	23.8%	42.9%	0.0%	23.8%	42.9%	0.0%	33.3%	33.3%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	21.0	40.5		21.0	40.5		31.0	31.0		31.0	31.0	
Yellow Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			16.0		21.0	21.0		21.0	21.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
v/c Ratio	0.30	0.38		0.16	0.47		0.82	0.37		0.45	0.63	
Control Delay	7.2	11.9		6.3	14.2		73.3	23.2		33.4	22.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.2	11.9		6.3	14.2		73.3	23.2		33.4	22.5	
Queue Length 50th (ft)	18	92		10	116		47	41		43	60	
Queue Length 95th (ft)	51	181		34	230		#118	89		92	137	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			740			308			315	
Turn Bay Length (ft)	160			140			100			100		
Base Capacity (vph)	631	1799		730	1695		249	668		451	690	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.38		0.11	0.47		0.41	0.19		0.23	0.37	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 77.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: Main Street (US20/OR34) & 19th Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	628	25	76	732	30	98	77	46	98	73	168
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.94		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1599	3142		1662	3213		1614	1614		1662	1546	
Flt Permitted	0.28	1.00		0.38	1.00		0.36	1.00		0.64	1.00	
Satd. Flow (perm)	463	3142		659	3213		617	1614		1118	1546	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	131	661	26	80	771	32	103	81	48	103	77	177
RTOR Reduction (vph)	0	2	0	0	2	0	0	23	0	0	89	0
Lane Group Flow (vph)	131	685	0	80	801	0	103	106	0	103	165	0
Heavy Vehicles (%)	4%	5%	11%	0%	3%	0%	3%	2%	3%	0%	0%	2%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	52.8	44.5		47.6	41.9		15.9	15.9		15.9	15.9	
Effective Green, g (s)	52.8	44.5		47.6	41.9		15.9	15.9		15.9	15.9	
Actuated g/C Ratio	0.67	0.57		0.61	0.53		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	431	1779		472	1713		125	326		226	313	
v/s Ratio Prot	c0.03	0.22		0.01	c0.25			0.07			0.11	
v/s Ratio Perm	0.17			0.09			c0.17			0.09		
v/c Ratio	0.30	0.39		0.17	0.47		0.82	0.32		0.46	0.53	
Uniform Delay, d1	5.3	9.5		6.4	11.4		30.0	26.8		27.5	28.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.6		0.2	0.9		33.7	0.6		1.5	1.6	
Delay (s)	5.7	10.1		6.6	12.3		63.7	27.3		29.0	29.6	
Level of Service	A	B		A	B		E	C		C	C	
Approach Delay (s)		9.4			11.8			43.5			29.4	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	78.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	805	10	0	0	0	0	8	15	81	10	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998						0.910				
Flt Protected											0.958	
Satd. Flow (prot)	0	3134	0	0	0	0	0	1592	0	0	1647	0
Flt Permitted											0.958	
Satd. Flow (perm)	0	3134	0	0	0	0	0	1592	0	0	1647	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		1577			1350			577			380	
Travel Time (s)		43.0			36.8			15.7			10.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	6%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	4	847	11	0	0	0	0	8	16	85	11	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	862	0	0	0	0	0	24	0	0	96	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	805	10	0	0	0	0	8	15	81	10	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	847	11	0	0	0	0	8	16	85	11	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			858			866	861	429	452	866	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			858			866	861	429	452	866	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	97	97	82	96	100
cM capacity (veh/h)	1636			791			243	295	580	466	293	1091

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	428	434	24	96
Volume Left	4	0	0	85
Volume Right	0	11	16	0
cSH	1636	1700	434	438
Volume to Capacity	0.00	0.26	0.06	0.22
Queue Length 95th (ft)	0	0	4	21
Control Delay (s)	0.1	0.0	13.8	15.5
Lane LOS	A		B	C
Approach Delay (s)	0.0		13.8	15.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix C. Existing Conditions, Opportunities and Constraints

Philomath Safe Routes to School Plan
Memorandum

To: Randy Kugler, City of Philomath and Naomi Zwerdling, ODOT

CC: **Philomath Bicycle and Pedestrian Committee**

From: Rory Renfro and Elliot Akwai-Scott, Alta Planning + Design

Date: October 13, 2010

Re: Task 2.5 – Final Memo #3: Opportunities & Constraints

Safe Routes to School Vision

The final Philomath Safe Routes to School Plan will serve the children of Philomath by providing an improved system of preferred routes that will help them walk and bicycle to school safely and efficiently. These routes will give parents greater confidence that their child can travel to school safely, whether traveling alone, with an adult or with other students. Children using these routes will learn independence, safe travel habits, and the shared responsibilities of all road users on Philomath's streets. Encouraging children and parents to choose active transportation modes such as walking and bicycling that incorporate physical exercise will also benefit the health of Philomath residents who take advantage of Safe Routes. By creating a system of preferred routes that reach to different areas of the city and cross barriers to bicycle and pedestrian movement such as the Highway 20/34 couplet, the city will increase transportation equity and improve access to Philomath schools and other destinations such as parks and city government.

Existing Conditions

Philomath has the foundation of a sound bicycle and pedestrian transportation network that has been supported by recent investments. The recently completed Highway 20/34 couplet project added bike lanes to the city's main corridor on Main and Applegate Streets, and 19th Street has bike lanes that pass by Clemens Primary School. The Hunsaker Bikeway is a multi-use path that begins near 27th Street and Applegate Street, giving residents convenient and comfortable walking and bicycling access to nearby Corvallis. For pedestrians, sidewalks along Main and Applegate Streets were reconstructed with the couplet project, and an ongoing sidewalk infill program has been completing gaps in the city's sidewalk network for over a decade. The couplet project also installed several new traffic signals that give pedestrians a protected crossing of the Highway 20/34 couplet of Main and Applegate Streets.

However, several issues in the city remain that pose obstacles to children walking and bicycling to school. Gaps exist in the sidewalk network along key routes that children use to walk to school, requiring children to walk in the roadway alongside car traffic. In some areas, existing sidewalks and curb ramps could be improved by relocating utilities that obstruct the path of pedestrians. Though crossings of Main and Applegate Streets have been recently improved with the Highway

20/34 couplet project, crossing the highway remains a concern for some parents and children, especially those living in the northern half of the city. Because all Philomath schools are located south of the highway couplet, all Philomath school children living north of Highway 20/34 must cross the highway on a daily basis in order to reach school. While the existing bike lanes are useful for adult bicyclists, traffic speeds and volumes along these streets may not be appropriate for younger bicyclists who are not as experienced riding near traffic. Finally, motor vehicle and school bus congestion near Philomath schools at the beginning and end of the school day often creates conditions that can be intimidating to bicyclists and pedestrians, discouraging students and parents from choosing to walk and bike to school.

Schools

This section describes bicycle and pedestrian conditions in the immediate vicinity of Philomath schools. Conditions near schools are often the most important part of supporting safe walking and bicycling routes to school, as they feature many potential conflict points where students cross the street or where cars and school buses turn across the sidewalk to enter a parking lot. Existing conditions near Philomath schools can be seen in Maps 3 and 4.

Philomath Elementary School

Philomath Elementary School is located on the east side of 16th Street, south of Applegate Street. The school's parking lot is located on the north side of the school building, adjacent Applegate Street. There is a bike rack installed in the southwest corner of the parking lot. The intersection at 16th Street and Applegate Street is controlled by a four-way stop. There are crosswalks marked across Applegate Street, and curb ramps on all four corners. On the northeast corner of the school, 17th Street jogs at Applegate Street creating two T intersections. Traffic on 17th Street has a stop sign at each of these intersections. At the leg of 17th Street north of Applegate Street, there is a crosswalk across Applegate Street with a curb ramp on the north side of the intersection, but there is no ramp provided on the south side (see Figure 1).

16th Street is a dead-end south of Applegate Street. In the mornings, school buses enter 16th Street and use the cul-de-sac 700 feet south of Applegate Street to turn around and drop children off on the school side of the street. In the afternoons, buses queue in the school parking lot, and school staff regulate the parking lot driveways to ensure the safety of children walking on the sidewalk from turning traffic.

Figure 1. The crosswalk at Applegate Street at 17th Street lacks a curb ramp.

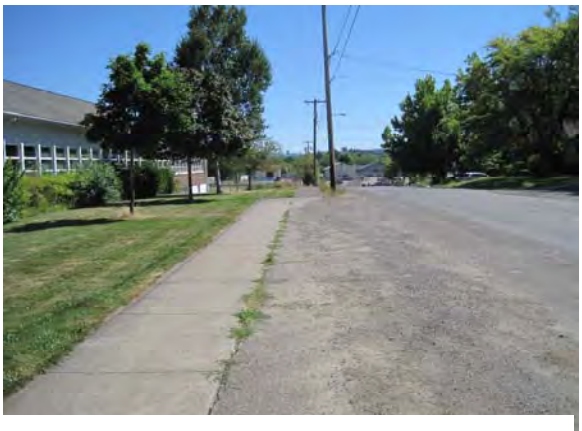


Figure 2. The sidewalk is flush with the roadway on 16th Street near Philomath Elementary School.

There is a 5' to 10' wide attached sidewalk (a sidewalk directly adjacent to the roadway) on the school side of 16th Street, but it is flush with the roadway shoulder with no curb to separate it from the street (see Figure 2). 16th Street was previously a gravel road but was recently paved with chip seal. However, the shoulder between the sidewalk and the chip seal roadway was not paved and remains gravel. The east side of 16th Street has an older 4' wide detached sidewalk (a sidewalk separated from the roadway by a planting strip or other buffer). Both sidewalks end by the school field about 400' south of Applegate Street. Pedestrians use the gravel shoulder when walking the remaining 300' feet to the end of 16th Street.

Clemens Primary School

Clemens Primary School is located on the east side of 19th Street near Cedar Street. The school's parking lot is located on the east side of the school building, and is accessed by the school fire lanes that reach from 19th Street into the shared campus of Philomath Middle School and High School. The school has several bike racks installed near the rear entrance to the school from the parking lot.

Figure 3. The crosswalk across 19th Street at Cedar Street is equipped with curb ramps and pedestrian flags.

The intersection at 19th Street and Cedar Street is the main access for students traveling to the school from the west, and there is a crosswalk striped across 19th Street. The crosswalk is equipped with pedestrian flags that students use to increase their visibility to motorists when using the crosswalk (see Figure 3). North of the school, the intersection of 19th Street and Applegate Street is also well-used by children walking to school. 19th Street and Applegate Street has crosswalks striped on all four legs of the intersections, and is monitored by a crossing guard during school travel times.

There are 5' wide attached sidewalks along Cedar Street and 19th Street near the school, except immediately adjacent to the school along 19th Street where the sidewalk widens to 10' next to a student loading area/parking bay. There are bike lanes along the length of 19th Street through Philomath and past the primary school, but students bicycling to school opt to ride on the sidewalks once they are within a few blocks of the school.

School buses use the fire lane road on the east side of the school to load and unload students. At the beginning and end of the school day, buses approach the school from Applegate Street to the north, entering the fire lanes through the parking lot on the west side of Philomath High School. Students walk to/from the buses and the school using a 5' attached sidewalk on the west side of the fire lane road. Students walking to the school from the east may use the same route as the school buses, or they may walk along the existing paths through the Philomath Middle School and Philomath High School fields to reach the rear entrance of the school.

Philomath Middle School

Philomath Middle School is located in the southern half of a large campus shared with Philomath High School bordered by Applegate Street on the north and Chapel Drive on the south. The

western edge of the campus is bordered by the backyards of adjacent homes, and agricultural land and City Park border the campus on the east. The main parking lot is located on the west side of the school, and is connected to Chapel Drive on the south by a 700' long driveway/fire lane road. Two grid-style bike racks are installed on the north side of the main parking lot. Additional parking is located on the south side of the school, and there is overflow parking on the east side of the school in a paved area shared with several basketball courts. At the beginning and end of the school day, school buses enter the school campus from Chapel Drive, and pull into the parking lot to load and unload students directly in front of the school's main entrance.

Figure 4. Students walking to Philomath Middle School from the east use this path to pass through the Philomath High School ball fields.

There are no sidewalks or shoulder along Chapel Drive, so most students walking or bicycling to the middle school from the east use Applegate Street to get to school. From Applegate Street, students use the path between the high school football and baseball fields (see Figure 4). Students traveling from the north and west typically approach from 19th Street and use the asphalt path on the south side of the fire lane south of Clemens Primary School to reach the middle school.

Philomath High School

Philomath High School is located in the northern half of a large campus shared with Philomath Middle School, as described above. The high school has several parking areas located on the all sides of the school building, with the largest parking area located on the northeast corner of the school, near 21st and Applegate Streets. Many middle school and primary school students walk through these parking lots to reach their respective destinations, which is a concern for some parents of younger children. There is a loop through the parking lot on the north side of the school adjacent to Applegate Street where students can be dropped off or picked up by parents in front of the main entrance. The bicycle parking for the school is located around the back of the school near the swimming pool, while the main entrance to the school is equipped with a skateboard rack, but no bicycle rack. During field work, several bicycles were observed unlocked, parked on the north side of the school near the main entrance (see Figure 5).

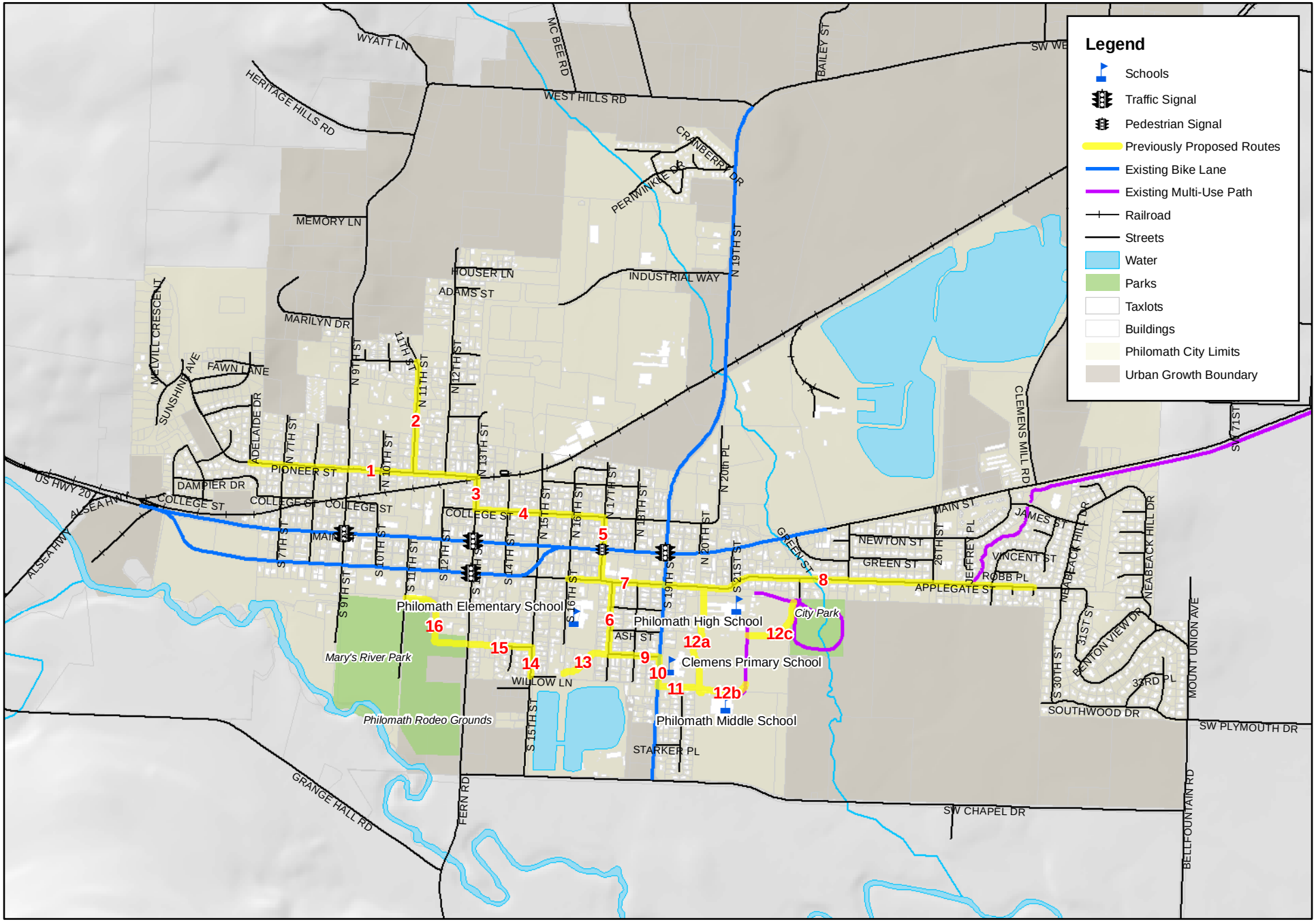
Figure 5. Philomath High School lacks bike racks on the north side of the school, near the main entrance.

Most students reach Philomath High School from its north side along Applegate Street. Along with most other streets near the school, Applegate Street has 5' wide sidewalks on both sides. To the northwest of the school, the T intersection of 20th Street and Applegate Street has a crosswalk across Applegate. To the northeast, the angled intersection of 21st Street and Applegate Street is an

all-way stop, and on the south side of the intersection 21st Street becomes the school parking lot driveway. There are curb ramps and a crosswalk on the driveway leg of the intersection, but the intersection lacks crosswalks and curb ramps on its other sides. The angle of Applegate Street at the intersection also creates longer crossing distances for pedestrians traveling through the intersection (see Figure 6).

The school is also connected to City Park by an asphalt path about 500' long that passes by the school forestry buildings to enter the northwestern parking lot. Another path connects the eastern school parking lot between play fields to the basketball courts behind Philomath Middle School.

Figure 6. The angled intersection of Applegate Street and 21st Street near Philomath High School creates long crossing distances for pedestrians.



Map 1: Previously Proposed Safe Routes To School

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

Previously Proposed Routes

In 2008, stakeholders seeking to improve facilities for children walking and bicycling to schools in Philomath proposed a system of routes that would serve children traveling from across the city. These previously proposed routes are shown in Map 1 (previous page). This Plan will research and document the bicycling and walking conditions along these routes in order to recommend eventual improvements to improve the safety and convenience of children traveling to school.

With some exceptions, the streets along these previously proposed routes have relatively complete sidewalks on both sides, and many have recently been retrofitted with ADA-compliant curb ramps. Most routes also follow streets with traffic speeds and volumes that are compatible with children riding bicycles.

During field observation, these routes were divided into smaller segments and numbered for ease of identification. Maps 2-6 (see pages 13-17) show the presence of key facilities along the routes, including sidewalks, curb ramps, bike lanes and multi-use paths. Descriptions of the conditions observed along the routes are as follows:

1. Pioneer Street (Adelaide Drive to 13th Street)

- Road Conditions –Pioneer Street runs east-west, parallel to Highway 20/34, and has a fair amount of through traffic traveling to or from the northwest area of the city. There is a steep hill at the west end of the route. Each intersection along this route is controlled by a two-way stop, with traffic on Pioneer Street having priority at each intersection except at 7th Street and 9th Street. Combined with lightly used on-street parking, the 36' roadway width on this section of Pioneer Street generally leaves enough space for bicyclists to share the road comfortably with moderate vehicle traffic, with the possible exception of areas where bicyclists are moving slower when traveling uphill.

- Sidewalk Conditions – Sidewalks along this route are mostly complete, with some gaps between 7th and 9th Streets. Most sidewalks are attached (directly adjacent to the roadway) and fairly new, with older sections of detached sidewalk (separated from the roadway by a planting strip) on the north side of Pioneer between 10th and 12th Streets. Many curb ramps have been installed in recent years, but 9 corners on the street remain without ADA-compliant ramps, most significantly at 7th and 9th Streets.

- Key Intersections – At 9th Street, there are no curb ramps on any of the four corners of the intersection. Traffic on 9th Street is often traveling at high speeds; Philomath Police sometimes place a radar speed display trailer on 9th Street to encourage motorists to watch their speed and obey the posted speed limit of 25 MPH within the city limits. Vehicles traveling northbound, uphill on 9th Street may have their visibility limited by the crest of the steep hill between Main Street and Pioneer Street. These combined factors may make crossing 9th Street difficult for pedestrians and bicyclists traveling on Pioneer Street.

2. 11th Street (Quail Glen Drive to Pioneer Street)

- Road Conditions – The roadway along most of this street segment is approximately 22' wide with no shoulder, except for the northernmost section which widens to 30' and adds sidewalks within 250' of Quail Glen Drive. The posted speed limit is 25 MPH, and the street centerline is

striped with a double yellow line. Traffic speeds and volumes on the road, along with the lack of sidewalks or roadway shoulders to walk on, have many parents concerned about the safety of their children walking along this route.

- Sidewalk Conditions – This route is missing sidewalks along most of its length, although there are sidewalks on both sides of the street immediately south of Quail Glenn Drive, and a section of detached sidewalk set back about 30' from the edge of the roadway on the west side of the street near Pioneer Street. Curb ramps exist at both Pioneer Street and Quail Glenn Drive. There is a drainage ditch immediately west of the roadway along most of this section of 11th Street.

3. 13th Street (Pioneer Street to College Street)

- Road Conditions – 13th Street is one of several locations where it is possible to cross the railroad, and one block to the south there is a traffic signal at the intersection of 13th Street and Main Street, so this route sees a fair amount of vehicle traffic.

- Sidewalk Conditions – There are attached sidewalks on both sides of the street along this route, and along with curb ramps at all corners of the intersection with College Street. There are curb ramps at the northwest and southwest corners of the intersection with Pioneer Street, but there is no curb ramp on the east side of the intersection where the 13th Street sidewalk ends at the railroad.

- Key Intersections – Both intersections at the end of this short segment are important. The large volume of turning traffic may discourage pedestrians from crossing the street near Pioneer Street. Curb extensions at the intersection of 11th and College Streets help reduce crossing distances for pedestrians and encourage motorists to yield.

4. College Street (13th Street to 17th Street)

- Road Conditions – This is a wide roadway, 46' from curb to curb with 32'of clearance between the curb extensions at each intersection. The street centerline is striped with a double yellow line. There is on-street parking on both sides of the street. Despite the width of the roadway, traffic speeds observed during field work were moderate.

- Sidewalk Conditions – There are sidewalks along the full length of this route; mainly detached, with a short section of attached sidewalk near 15th Street. There are curb extensions with ADA-compliant curb ramps at every intersection. There are no crosswalks along this route, but stop bars are striped at each stop sign, which may help encourage motorists to yield to pedestrians attempting to cross the street.

5. 17th Street (College Street to Applegate Street)

- Road Conditions – This route crosses Highway 20/34 (Main Street); the posted speed along Main Street in this area is 25 MPH, and a 20 MPH school zone sign is posted before the intersection at 17th Street. Vehicle traffic occasionally queues on 17th Street on either side of Main Street, as motorists wait to make turns onto the highway. Traffic entering and exiting the driveway to the Thriftway parking lot on the east side of 17th Street, south of Main Street, may be a concern for pedestrians walking on the east side of the street. A raised median on Main Street prevents traffic on 17th Street proceeding straight across Main Street, which means bicyclists must ride on the western sidewalk and use the pedestrian crosswalk in order to cross the highway.

- Sidewalk Conditions – Sidewalks exist on both sides of the street along this route, and there are curb ramps the corners of each intersection.

- Key Intersections – The intersection of 17th Street and Main Street is equipped with a marked crosswalk and a median refuge island on the north and west legs of the intersection. The west leg of the intersection (across Main Street), is equipped with a pedestrian actuated warning signal to encourage motorists to yield to pedestrians attempting to cross the street. A crossing guard is posted at the intersection on school days to help children cross. Although vehicles are restricted from some turning movements at the intersection, there is often a significant volume of vehicles turning left from 17th Street on the south leg of the intersection onto Main Street westbound, which can pose a hazard to pedestrians in the crosswalk.

6. 17th Street (Applegate Street to Cedar Street)

- Road Conditions – This is a residential street; during field work the Project Team observed low traffic and volumes.

- Sidewalk Conditions – There are sidewalks along both sides of the street on this route, mainly older, 4' wide detached sidewalks that are narrower than newer 5'wide attached sidewalks on other streets in Philomath. The sidewalk on the west side of the street is in good repair, but on the east side of the street there are several missing curb ramps, with a section of older, narrow sidewalk (3' wide) near Maple Street. There are curb ramps at both corners at the intersection with Applegate Street.

7. Applegate Street (16th Street to 19th Street)

- Road Conditions – This route sees a fair amount of traffic leaving the highway eastbound on Applegate, as well as traffic traveling to all four Philomath Schools. There is on-street parking on both sides of the street, and the centerline is striped with a double yellow line.

- Sidewalk Conditions – There are detached sidewalks on both sides of the street on this route. There are curb ramps on every corner, but there are several T intersections along the route where curb ramps are needed midblock. For example, there is a crosswalk across Applegate Street at the western leg of 17th Avenue, where a crosswalk is marked between the northwest corner of the intersection and the southern sidewalk along Applegate Street. The northern end of the crosswalk has a curb ramp at the corner, but there is no curb ramp on the southern end of the crosswalk meets where it meets the Applegate Street sidewalk.

- Key Intersections – The intersection of Applegate Street and 16th Street is important for traffic traveling to Philomath Elementary School, and the intersection of Applegate Street and 19th Street is important for traffic traveling to the other three Philomath Schools. Both intersections are fully equipped with curb ramps. The 19th Street intersection has crosswalks on all legs of the intersection; the 16th Street intersection has two crosswalks across Applegate.

8. Applegate Street (19th Street to 29th Street)

- Road Conditions – This route is the only east-west through street south of Highway 20/34. There is on-street parking on both sides of the street, and the street centerline is striped with a double yellow line. Traffic speeds and volumes are moderate, except during periods of congestion at the beginning and end of the school day, when vehicles queue behind others waiting to make turning movements at 19th Street, 21st Street, and near the Philomath High School parking lots. This congestion makes riding a bicycle in the street difficult during peak school travel times, when many children choose to ride on sidewalks to avoid traffic.

- Sidewalk Conditions – There are completed sidewalks on both sides of Applegate Street along the entirety of this route. The most of the sidewalks are attached, with some detached sections near Philomath High School. There are curb ramps at most intersections, with the exception of 21st Street near Philomath High School, and two of the corners at the intersection with 24th Street. In some places, older curb ramps are placed at awkward angles, facing the center of the street rather than diagonal or parallel to the direction of travel of pedestrians walking east-west along Applegate Street. There are also conflicts with utility poles, mailboxes and other obstacles partially blocking the sidewalk in several locations.

- Key Intersections – At the intersection of Applegate Street and 19th Street, traffic on Applegate Street often backs up behind vehicles waiting to make a left turn onto 19th Street. Applegate Street has stop signs at this intersection, while 19th Street does not. There are curb ramps on each corner, and crosswalks striped on all legs of the intersection, as many children pass through it on the way to each of the Philomath schools. A crossing guard is posted at the intersection during peak school travel times to manage traffic while children cross.
The intersection at 21st Avenue in front of Philomath High School is also a significant area for school traffic, but it is missing curb ramps on all but one corner, and there are no striped crosswalks. The jog in Applegate Street at this intersection reduces visibility, and the intersection geometry also increases crossing distances for pedestrians, thereby increasing exposure. Most pedestrians walking through the intersection to reach the high school, middle school or primary school know to cross over from the northern to southern sidewalk before reaching the intersection at 21st Street, preferring to cross Applegate Street at 23rd Street or 19th Street.
Applegate Street and 23rd Street is also an important intersection because of its proximity to City Park. The intersection is a three-way stop with curb ramps on each corner and crosswalks on all three legs. It is located far enough from Philomath High School that it does not experience very much peak hour congestion, and not many vehicles make turning movements at the intersection during those times.

9. Cedar Street (17th Street to 19th Street)

- Road Conditions – This is a residential street; during field work the Project Team observed low traffic and volumes.

- Sidewalk Conditions – There are attached sidewalks along the length of this route. There are curb ramps and a crosswalk at the intersection with 19th Street across from Clemens Primary School, but several curb ramps are missing at 17th and 18th Streets.

- Key Intersections – This route connects to the proposed Cedar Street/Willow Lane Path at 17th Street. The intersection at 19th Avenue is a highly-visible school crossing, equipped with safety flags for children to use when crossing the street.

10. 19th Street (Cedar Street to School Fire Lane)

- Road Conditions – This route is one of three streets in Philomath that are striped with bike lanes. It carries a fairly high volume of motor vehicle traffic, as it is the easternmost north-south through street in the city, carrying traffic between Chapel Road and the Highway 20/34 couplet on Main and Applegate Streets. There are school zone signs indicating a 20 MPH speed limit in the area of this route segment near Clemens Primary School.

- Sidewalk Conditions – There are complete attached sidewalks along this route, with curb ramps at the intersection with Cedar Street.

- Key Intersections – The intersection at 19th Avenue is a highly-visible school crossing, equipped with safety flags for children to use when crossing the street.

11. School Fire Lane Road (near Clemens Primary School)

- Road Conditions – This road carries traffic traveling to the Clemens Primary School, Philomath Middle School and Philomath High School parking lots, as well as school buses taking children to all three schools. This road leads to the north-south fire lane between the middle school and high school parking lots, which is open to private vehicles during most times of day but is restricted to school buses during loading times at the beginning and end of the school day.

- Sidewalk Conditions – there is a detached sidewalk on the north side the street, set back approximately 15' from the curb. There is also a 10' asphalt path on the south side of the street set back approximately 25' from the curb. At the north-south fire lane between the middle school and high school parking lots, the sidewalk and asphalt path each have curb ramps and crosswalks marked to cross to the sidewalk on the east side of the north-south fire lane.

12. Philomath Middle School/Philomath High School Campus Paths

This is a previously proposed facility that would consist of several new paths through the Philomath Middle School/Philomath High School campus and fields. This would provide a walking and bicycling connection between the three schools and City Park to the east while avoiding school bus traffic on the school fire lane roads. Several paths already exist on the campus that may form a part of the future path system: the City Park/Philomath High School path, and the path between the eastern Philomath High School parking lot and the Philomath Middle School basketball courts. This project has funding through a grant from ODOT, and is entering the first stages of design; a target date for construction has not been set.

13. Cedar Street/Willow Lane Path (15th Street to 17th Street)

This is a previously proposed facility that would provide a new east-west connection between 15th and 17th Streets. The path would offer a midpoint alternative to detouring to Applegate Street on the north or Chapel Drive on the south. This route is already used informally by Philomath students despite a lack of any improvements. The western half of the route is on a 16 foot wide access road to Philomath Public Works, while the eastern half is through a grassy field. The route is immediately south of the Philomath Elementary School campus, and past proposals have included connecting this route directly to the elementary school.

14. 15th Street (Cedar Street to Willow Lane)

- Road Conditions – This is a residential street; during field work the Project Team observed low traffic and volumes. The roadway is notably wide, measuring 40' from curb to curb.

- Sidewalk Conditions – There are attached sidewalks on both sides of the street along this route. There are curb ramps on the two western corners of the intersection at Cedar Street.

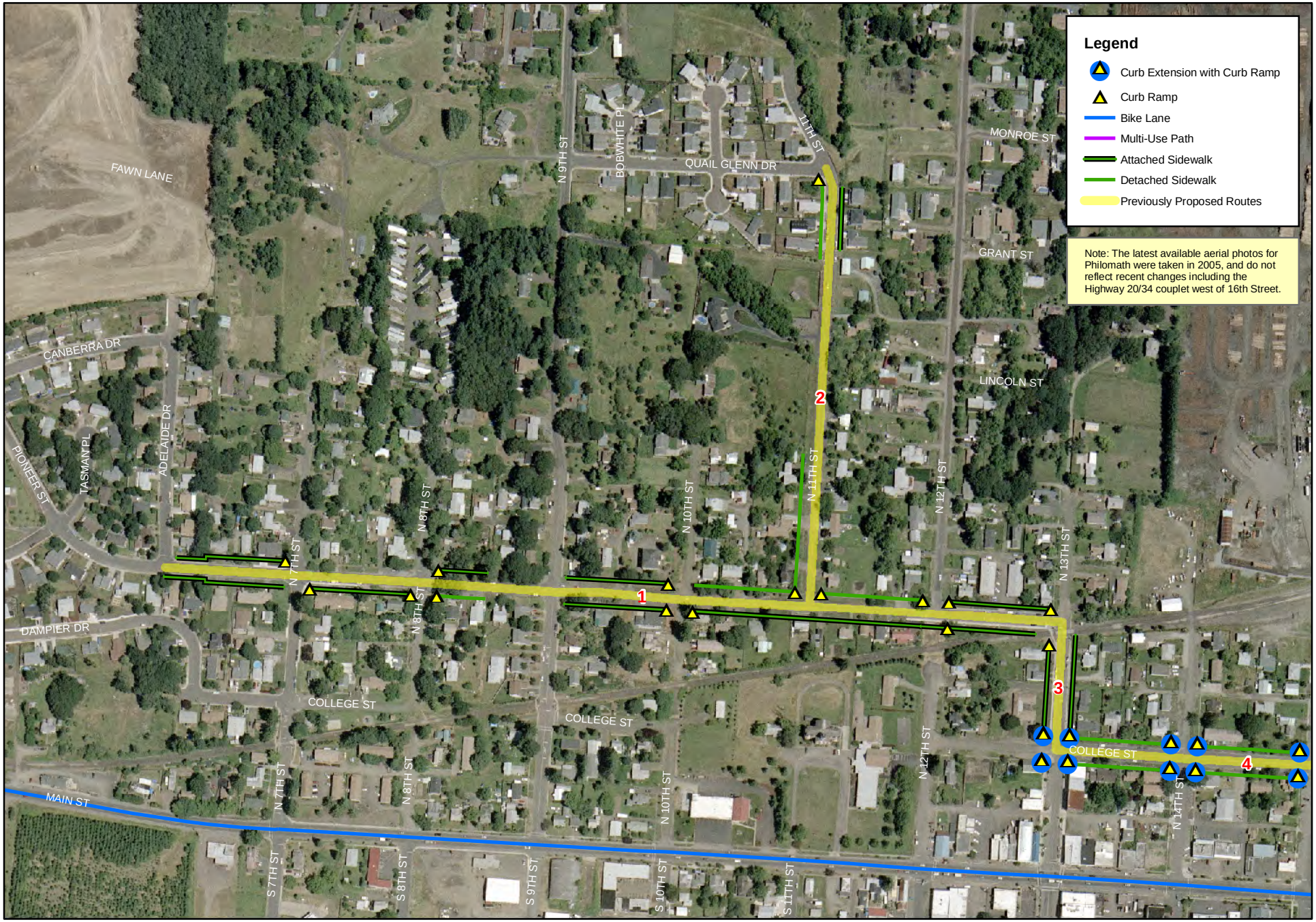
15. Cedar Street (13th Street to 15th Street)

- Road Conditions – This is a residential street; during field work the Project Team observed low traffic and volumes.

- Sidewalk Conditions – There are attached sidewalks on both sides of the street along this route, except on the south side of the street near 13th Street. There are curb ramps on the two southern corners of the intersection at 14th Street. At the intersection with 13th Street, there is a curb ramp on the northeast corner of the intersection, but not the southeast corner.

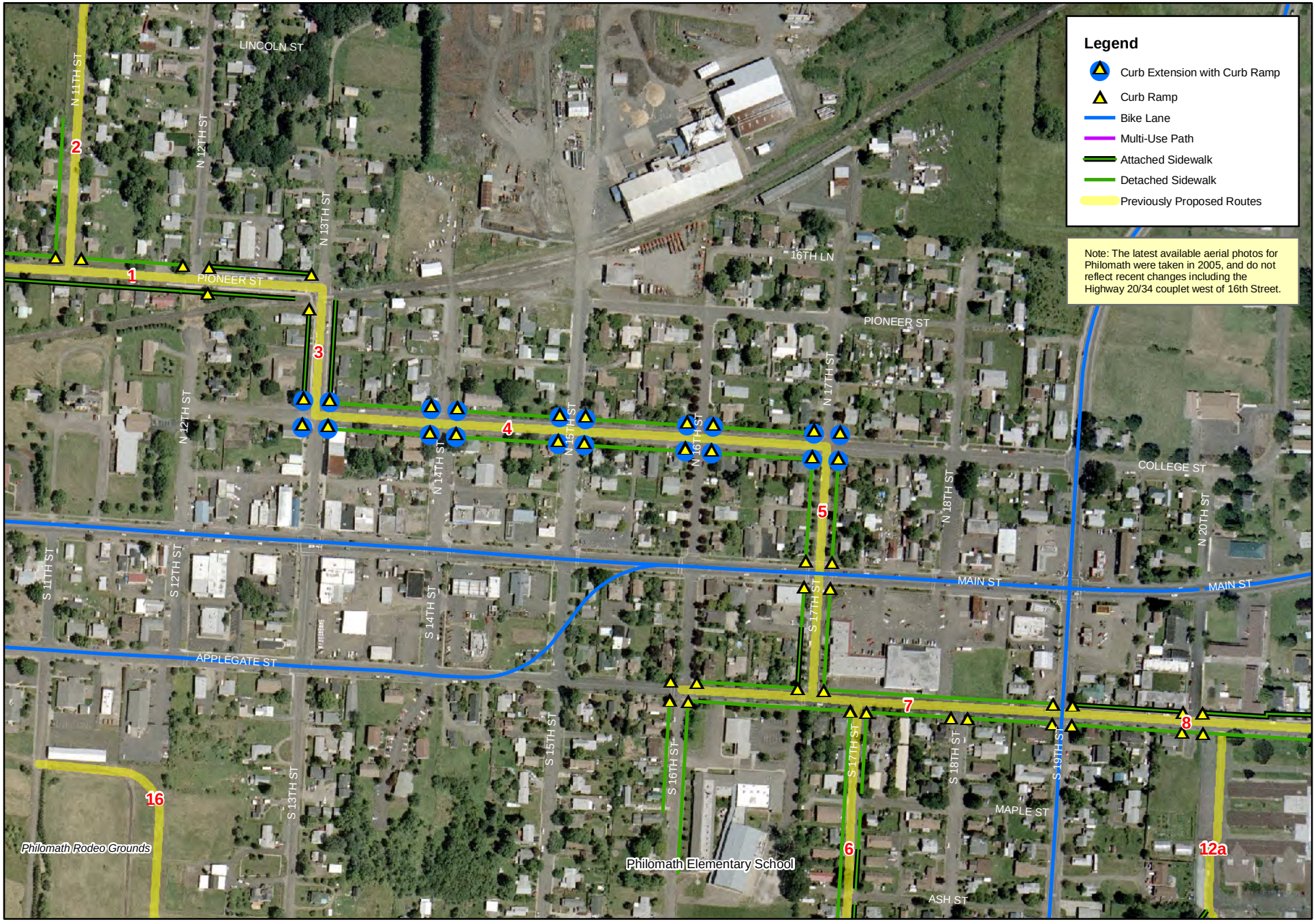
16. Rodeo Grounds Path (11th Street to 13th Street)

This is a previously proposed facility that would provide a parallel route to Applegate Street, away from highway traffic, and would allow children to bypass 13th Street (which does not have sidewalks) when traveling to the library. The path would cross the Philomath Rodeo Grounds from near the entrance to Mary's River Park on the west to the intersection of 13th Street and Cedar Street on the east.



Map 2: Existing Conditions - Northwest Philomath

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

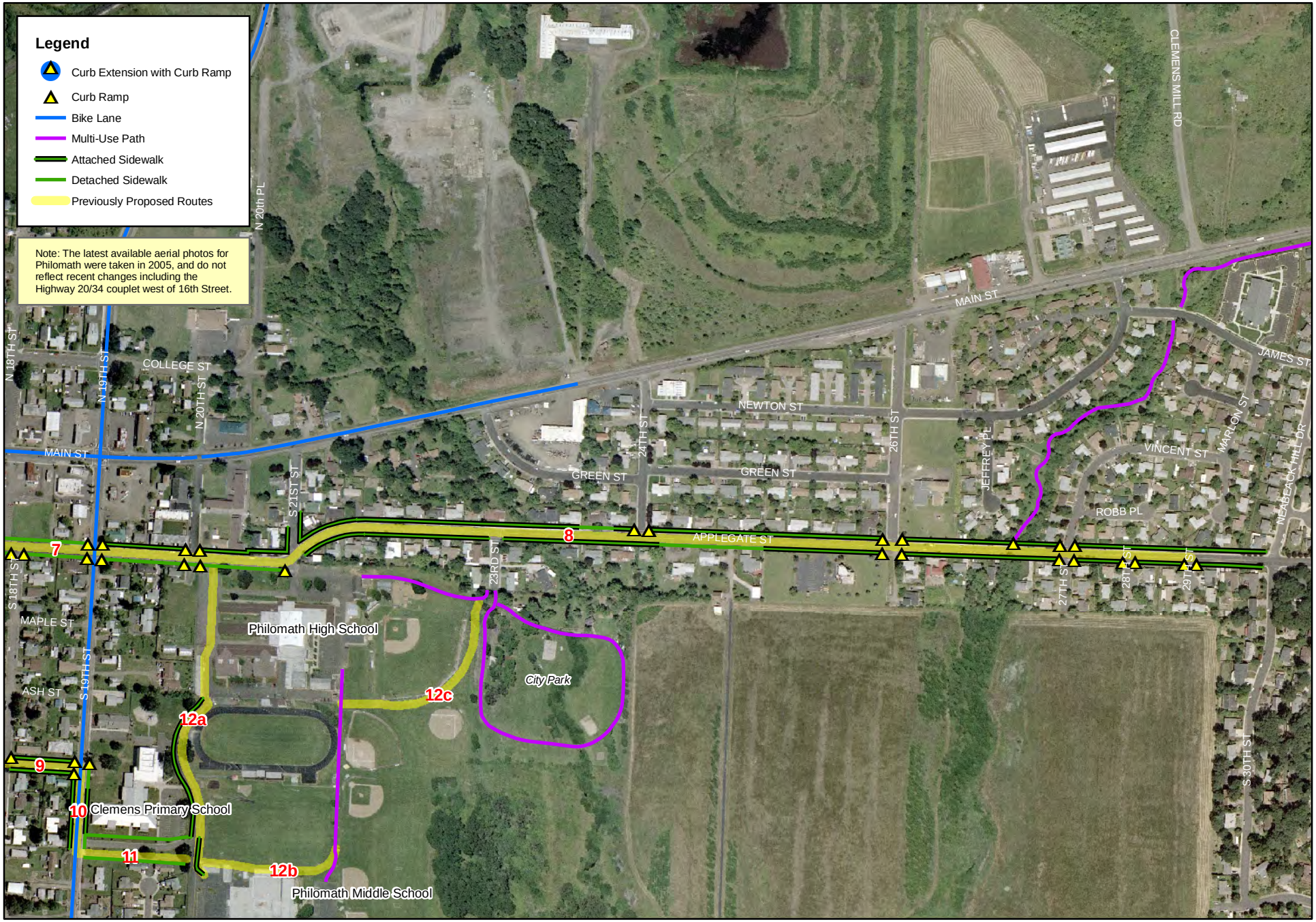


Map 3: Existing Conditions - Central Philomath

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

0 200 400 800 Feet

alta PLANNING + DESIGN



Map 4: Existing Conditions - East Philomath

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

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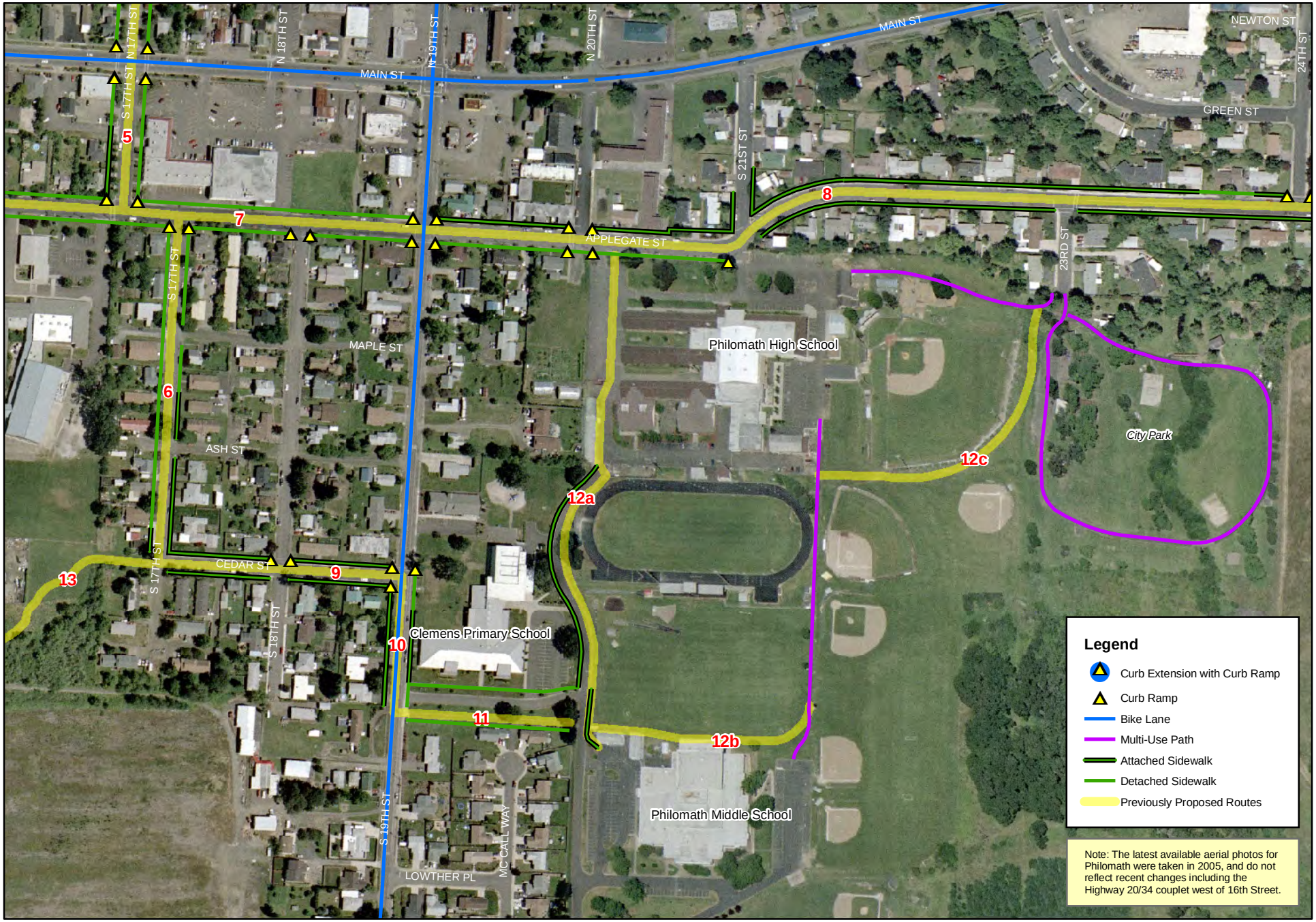

Map 5: Existing Conditions - Philomath Schools

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

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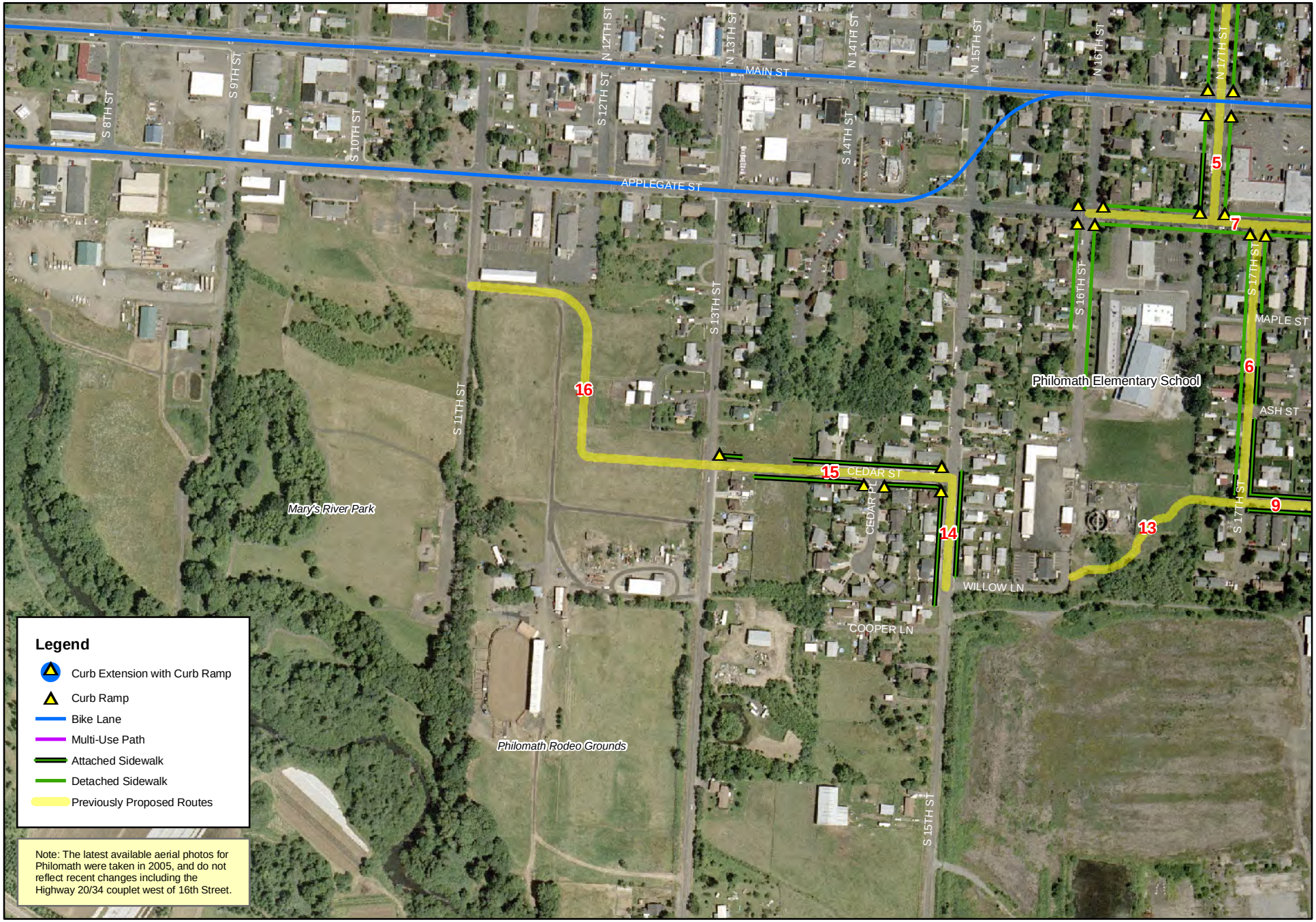


Map 6: Existing Conditions - Southwest Philomath

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

0 200 400 800 Feet

alta PLANNING + DESIGN

Opportunities & Constraints

From observations of the conditions along the previously proposed Safe Routes to School, the project team has identified a list of key areas and issues that provide opportunities for creating improved facilities or routes for children to use when walking and bicycling to school, as well as constraints that may reduce the options available for improving preferred routes, or problem areas that will need special attention. These are divided into several categories listed below. The locations of these conditions appear on Map 7.

Opportunities

1. College Street curb extensions reduce crossing distances for pedestrians.
2. 19th Street traffic signal allows protected pedestrian crossing of Main Street/Highway 20/34.
3. Hunsaker Bikeway connects to Corvallis, recreational walking and bicycling opportunities.
4. Existing path connects City Park and Philomath High School.
5. Existing path from Philomath High School parking lot and Philomath Middle School basketball courts could be part of new school campus path system.
6. Land available on northern edge of Mary's River Park could be used for a multi-use path.
7. 17th Street pedestrian actuated warning signal at Main Street is staffed by crossing guards during school travel times.
8. Possible path through Philomath Rodeo Grounds would connect students to Philomath Library and other after-school destinations.
9. 9th Street traffic signal at Main Street presents the possibility for a new route to cross Highway 20/34.
10. 19th Street bike lanes provide connection to three Philomath Schools via the school fire lane roads.
11. High level of street network connectivity in most areas allows efficient routes between destinations.
12. Both sides of Applegate Street have complete sidewalks, a key connection for students walking to school from eastern Philomath.
13. Pedestrians and bicyclists can cross the railroad at 7th, 9th and 13th Streets.
14. Recent sidewalk infill projects on Pioneer Street have improved pedestrian conditions on the street.

15. Proposed Cedar Street/Willow Lane path is located on land owned by Philomath Public Works.

16. Cedar Street/Willow Lane path could provide new connection to Philomath Elementary School.

17. Bike lanes and sidewalks on 19th Avenue are already well-used by students traveling to reach Clemens Primary School and Philomath Middle School.

18. Crossing guards are provided at the intersections of 17th Street and Main Street and 19th Street and Applegate Street during peak school travel times.

Constraints

1. Ditch along west side of 11th Avenue presents obstacle to building new sidewalks.

2. Existing path connecting City Park and Philomath High School is in need of repair.

3. Attached sidewalk along the previously proposed route on Applegate Street between 21st Street and 29th Street contains utilities and other obstacles that partially block sidewalk in places, with few options for relocation.

4. Intersection at 21st Street and Applegate Street near Philomath High School lacks curb ramps, crosswalks.

5. Curve in Highway 20/34 couplet eastbound on Applegate Street reduces visibility where children cross Applegate Street midblock between 15th Street and 16th Street to reach McDonald's. This curve precludes the installation of a crosswalk.

6. Intersection of 9th Street and Pioneer Street is missing curb ramps on all corners.

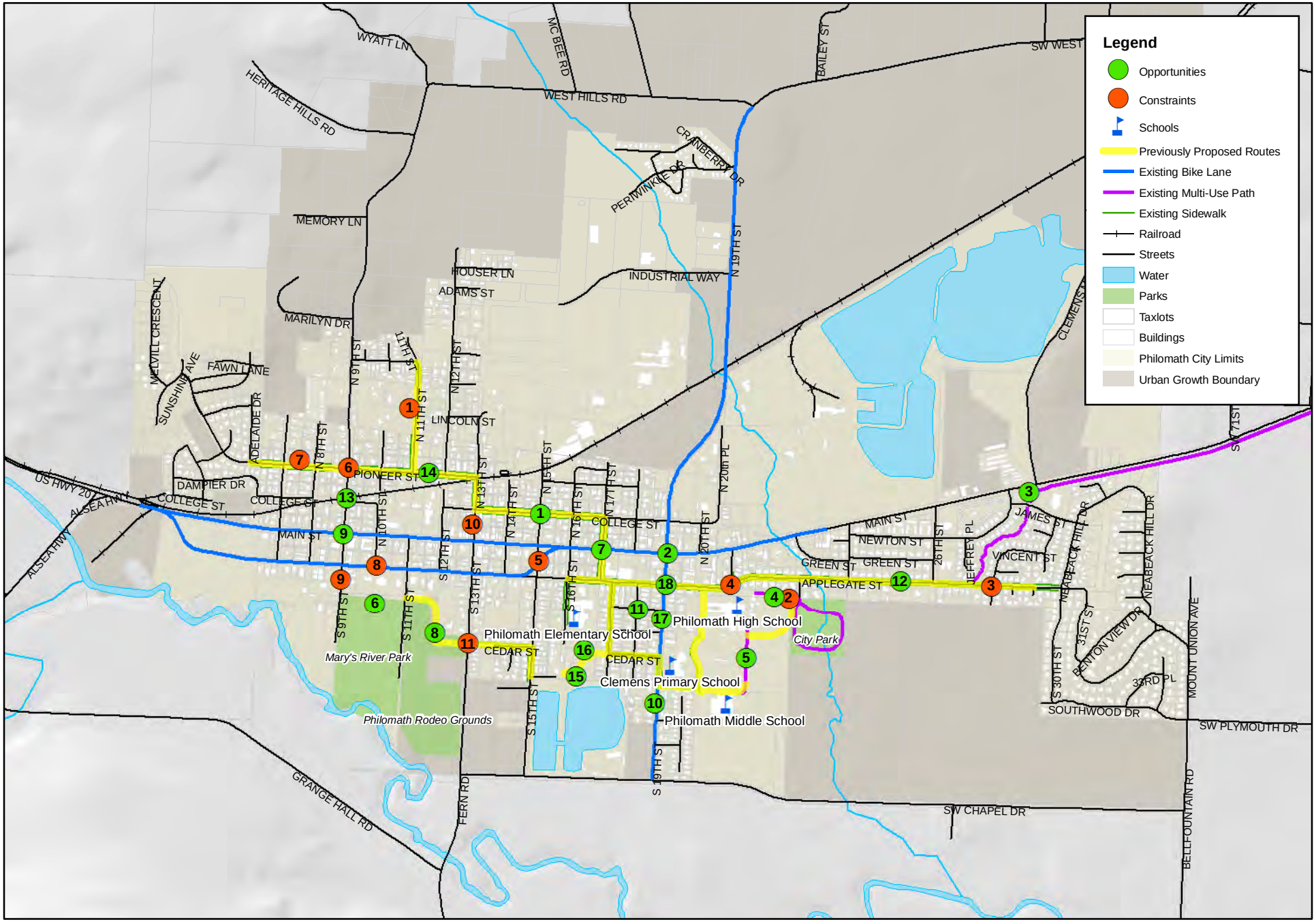
7. Trees in right-of-way present an obstacle to completing sidewalks along the north side of Pioneer Street between 7th and 9th streets.

8. No marked crosswalks on Applegate Street/Highway 20/34 west of 11th Street.

9. 9th Street south of Applegate Street is gravel, presenting an obstacle to creating an ADA-compliant/bicycle friendly connection a potential path through Mary's River Park.

10. There is no wayfinding signage posted to help encourage children to walk along the previously proposed routes to school.

11. Lack of consistent sidewalks, truck traffic on 13th Street creates difficult walking conditions.



Map 7: Opportunities & Constraints

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

Safety and Maintenance Considerations

The improvements to the routes recommended in the final Safe Routes to School Plan will be based on the following safety and maintenance issues. This section provides an initial discussion of some subjects; the Draft Safe Routes to School Plan document will include a full discussion of design and maintenance issues.

Separation of Modes

While it isn't possible to completely segregate bicycles from motor vehicle traffic, improvements proposed in the final Safe Routes to School Plan should generally seek to separate travel modes, as some younger children walking or bicycling on the routes will not yet possess a full awareness of their surroundings, or of the dynamics of traffic laws when encountering other vehicles. For pedestrians, sidewalks exist along most of the previously proposed routes documented in this memo, but in some areas new sidewalks may need to be constructed. Several previously proposed routes would create new off-street paths that would provide bicycles and pedestrians a parallel route to streets used by motor vehicles. Separation will not be possible for bicycles along most of the previously proposed routes due to space constraints, so the improved safety of bicyclists should be pursued through other treatments.

Visibility

Pedestrians and bicycles, especially small children, are naturally less visible than larger vehicles. Visibility along the proposed routes can be improved by trimming vegetation, restricting parking near street corners, and constructing curb extensions (such as those on College Street). Signage and pavement markings can also call attention to the presence of bicycles and pedestrians, and to potential conflict points, increasing visibility.

Crossings

Pedestrians are most vulnerable when crossing a street. Crossing safety can be improved by creating better visibility, by reducing the time/area when pedestrians are exposed during a crossing, and by reducing vehicle speeds near crossings. Curb extensions can reduce exposure by shortening crossing distances equal to the width of the parking lane on each side of a given street. Median refuge islands can reduce exposure by giving pedestrians the option of breaking their crossing into two separate stages. Both curb extensions and median refuge islands also increase the visibility of pedestrians. Speed bumps and raised crosswalks can be used to reduce traffic speeds in areas where pedestrians often cross the street. Signage, pavement markings and warning lights of various designs, can all increase visibility at crossings. When designed correctly, many of these crossing treatments will also improve safety for bicycles at intersections.

Accessibility

Improvements to the routes recommended in the final Safe Routes to School Plan should be developed with people of all ages and physical abilities in mind. Federal guidelines require cities to

improve access to persons with disabilities by complying with ADA design standards when constructing new buildings and transportation facilities. Creating new curb ramps will reduce obstacles to accessing public sidewalks. Repairing areas of cracked or heaved sidewalks and paths will ensure that people can travel over the surface safely, whether walking, riding a bicycle, or using a wheelchair. Paving gravel roadway shoulders and providing regular sweeping of debris could also improve safety for bicyclists and wheelchair users.

Appendix D. Conceptual Alternatives

Philomath Safe Routes to School Plan
Memorandum

To: Randy Kugler, City of Philomath and Naomi Zwerdling, ODOT

CC: **Philomath Bicycle & Pedestrian Committee**

From: Rory Renfro and Elliot Akwai-Scott, Alta Planning + Design
Susie Wright and Matt Bell, Kittleson & Associates

Date: January 11, 2011

Re: Task 3.4 – Final Conceptual Alternatives

Overview

The Philomath Safe Routes to School Conceptual Alternatives detailed in this memorandum were developed in response to the existing conditions, opportunities and constraints along the previously proposed routes documented in Memo #3.

Prior to BPC Meeting #3, the previously proposed routes (see Figure 1) were divided into 13 unique areas that are the subject of the conceptual alternatives. Street segments with similar characteristics were grouped together, while some corridors were split on either side of key intersections. Several proposed multi-use paths located in off-street areas, and two intersections that are key crossing locations, were separated from street corridors for detailed analysis. The previously proposed routes are shown in Figure 1; the location of the 13 conceptual alternative areas can be viewed in Figure 2, and in Table 1 below.

Table 1. Conceptual Alternative Areas from Previously Proposed Routes

Area ID	Area Type	Location
1	Street Corridor	Pioneer Street, Adelaide Drive to 9th Street
2	Street Corridor	Pioneer Street, 9th Street to 13th Street
3	Street Corridor	11th Street, Quail Glen Drive to Pioneer Street
4	Street Corridor	College Street, Pioneer Street & 13th Street to Main Street & 17th Street
5	Intersection	Main Street & 17th Street
6	Proposed Multi-Use Path	Rodeo Grounds, 11th Street to 13th Street
7	Street Corridor	Cedar Street & 13th Street to Willow Lane & 15th Street
8	Proposed Multi-Use Path	Willow Lane to Cedar Street
9	Street Corridor	17th Street & Applegate Street to 19th Street & Cedar Street
10	Proposed Multi-Use Path	Philomath High School/Middle School Fields

11	Intersection	Applegate Street & 21st Street
12	Street Corridor	Applegate Street, 21st Street to 29th Street
13	Street Corridor	Applegate Street, 16th Street to 21st Street

The 13 conceptual areas were vetted at Bicycle and Pedestrian Committee (BPC) Meeting #3, when the project team presented an initial set of draft conceptual alternatives for each of the 13 areas. The City of Philomath, ODOT and the Philomath Bicycle and Pedestrian Committee offered feedback on these initial alternatives and approved them for further study. The following section provides a detailed comparison of these draft conceptual alternatives for consideration in the Philomath Safe Routes to School Plan.

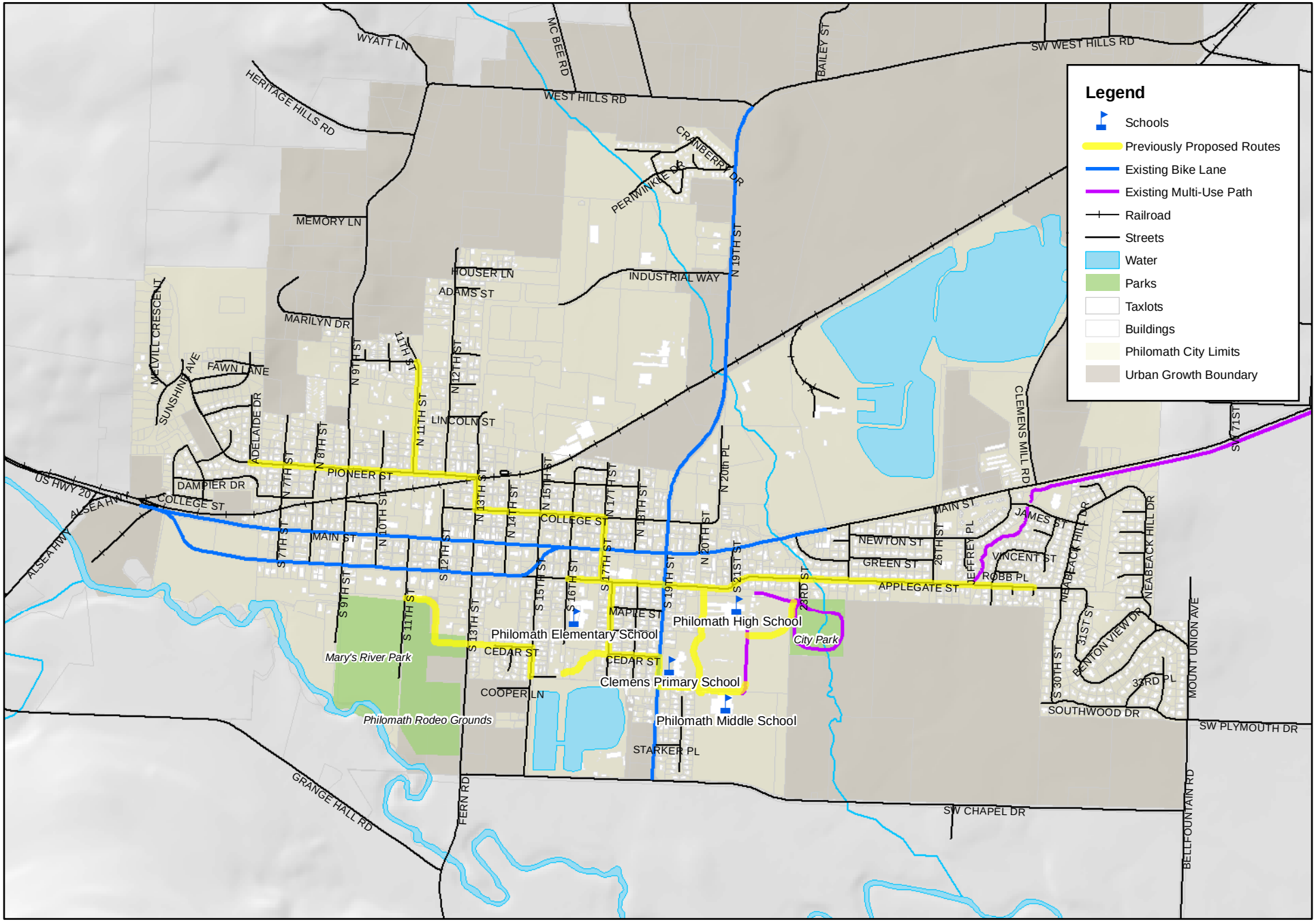


Figure 1: Previously Proposed Safe Routes To School

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

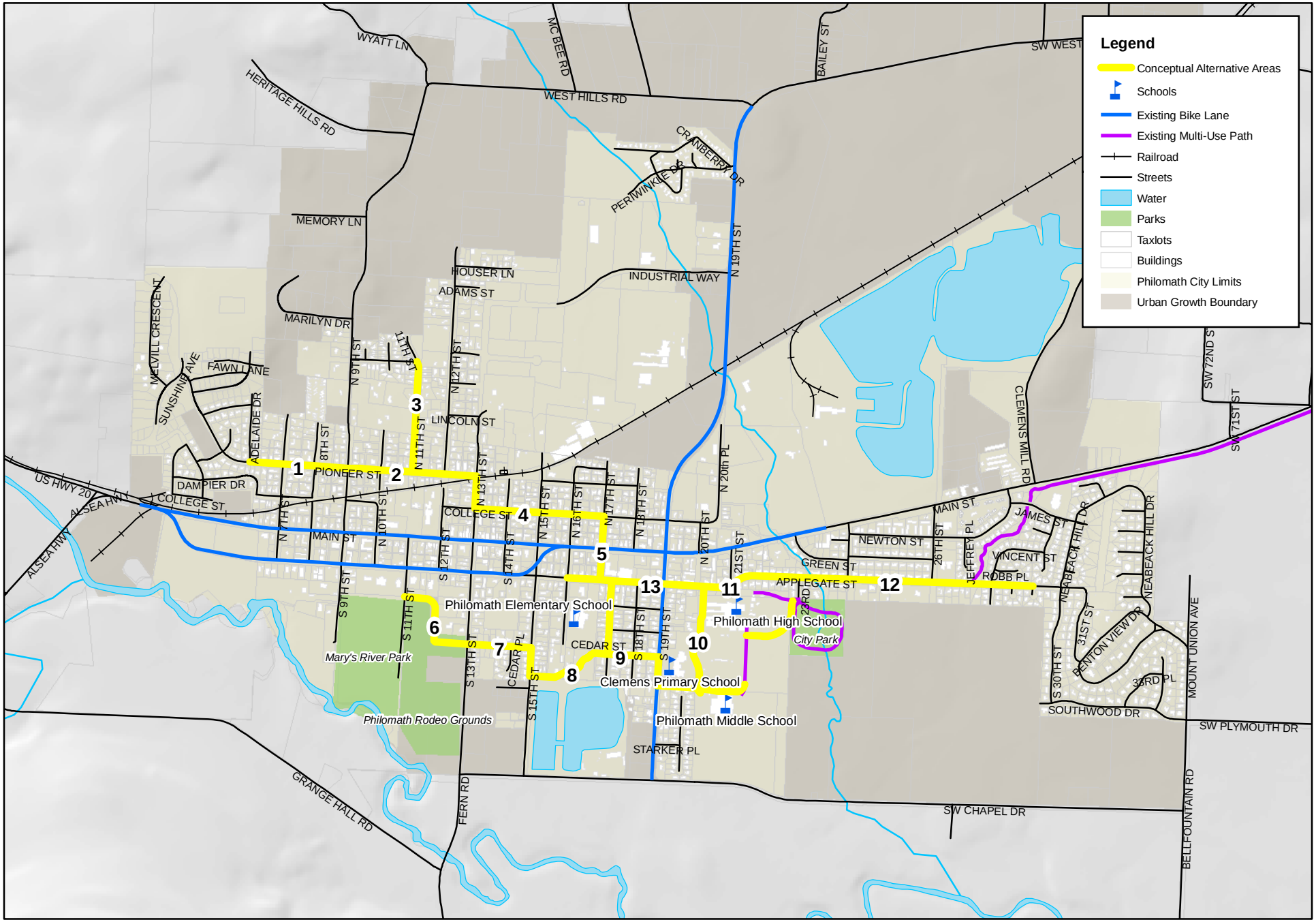


Figure 2: Conceptual Alternative Areas

City of Philomath
Philomath Safe Routes to School Plan
Source: Data obtained from Benton County, City of Philomath

Conceptual Alternatives

The following project sheets explain the conceptual alternatives for consideration along the 13 areas described above in Table 1 and Figure 2. Each area has two to four conceptual alternatives for consideration, with the exception of area 10, where bicycle and pedestrian improvements are being addressed by a multi-use path project that has already been funded and will be constructed shortly.

Comparing Conceptual Alternatives

The conceptual alternatives were developed as packaged sets of related bicycle and/or pedestrian improvements. Each alternative seeks to address an identified need in the area. The installation of curb ramps and a crosswalk at a key crossing location is one example of a package of related improvements; another example may be several areas of sidewalk infill that together complete a contiguous sidewalk facility on one side of a street.

However, many conceptual alternative areas have multiple areas of need, each of which may be addressed with different types of improvements, creating numerous potential permutations. For brevity, most conceptual alternatives are presented as independent improvement packages that are either in competition with or may be combined with the other alternatives presented for the area in question.

As a result, the preferred conceptual alternative for a given area may be a combination of one or more conceptual alternatives offered. For example, Conceptual Alternative 4A (crosswalk treatments) may be combined with either Conceptual Alternative 4B (bike lanes) or 4C (shared lane markings) to create the preferred conceptual alternative recommended for that area in the Philomath Safe Routes to Schools Plan.

Project Sheet Information

Each conceptual alternative project sheet contains a project description, and a summary of the project's relative benefits and drawbacks. A photo illustrating the existing bicycle and pedestrian conditions in the area is provided where possible.

Cost Estimates

Planning-level cost estimates are provided for each conceptual alternative. These estimates are intended to be used for comparative purposes only, and should not be used for budgeting.

Maps

Maps show only the improvements proposed in the conceptual alternative being discussed; improvements proposed in other conceptual alternatives are omitted for legibility. The most recent aerial photography available is from 2005, so current conditions may be different from that shown on the maps. A summary of the current conditions for all conceptual alternative areas is available in Philomath Safe Routes to School Plan Memo #3: Existing Conditions, Opportunities and Constraints. However, maps do show the location existing improvements such as sidewalks and curb ramps that were documented during field visits in June and July 2010. The legend in Figure 3 below applies for all map figures in the following section.

Figure 3. Conceptual Alternative Map Legend

Title Bar

To help increase legibility, the title bar color on each project sheet alternates for each conceptual alternative discussed. For example, the title bar is red for conceptual alternatives in area 1, grey for area 2, red for area 3, and so on.

1. Pioneer Street, Adelaide Drive to 9th Street | Alternative A

Project Description

- Install 150 feet of new sidewalk on south side of Pioneer Street between 8th Street and 9th Street.
- Install three new curb ramps:
  - SW corner of 7th Street & Pioneer Street.
  - SW and SE corners of 9th Street & Pioneer Street
- Install new crosswalk on south leg of intersection of 9th Street and Pioneer Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along the south side of Pioneer Street
- Leverages existing sidewalks to complete a continuous facility for pedestrians to travel east-west.
- New crosswalk improves visibility of pedestrians crossing 9th Street, and may indirectly benefit bicyclists.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address sidewalk gaps on the north side of Pioneer Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$28,900

Photos

An existing sidewalk gap on the south side of Pioneer Street looking toward 9th Street.

Conceptual Alternative 1A- proposed improvements.

1. Pioneer Street, Adelaide Drive to 9th Street | Alternative B

Project Description

- Install 470 feet of new sidewalk on south side of Pioneer Street between 7th Street and 9th Street:
  - One full block between 7th Street and 8th Street.
  - Fill midblock gap between 8th Street and 9th Street, where sidewalk ends due to a large existing tree.
- Install three new curb ramps:
  - NE corner of 7th Street & Pioneer Street.
  - NW corner of 8th Street & Pioneer Street.
  - NW and NE corners of 9th Street & Pioneer Street.
- Install new crosswalk on north leg of intersection of 9th Street and Pioneer Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along the south side of Pioneer Street.
- Leverages existing sidewalks to complete a continuous facility for pedestrians to travel east-west.
- New crosswalk improves visibility of pedestrians crossing 9th Street, and may indirectly benefit bicyclists.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not directly address needs of bicyclists.
- Trees in the right-of-way complicate construction; tree removal may cause community concern, environmental impacts.
- Increased cost compared to sidewalk completion on south side of Pioneer Street in Conceptual Alternative 1A.

Cost Estimate

$80,700

Photos

A mature tree in the right of way creates a sidewalk gap on the north side of Pioneer Street.

Conceptual Alternative 1B- proposed improvements.

1. Pioneer Street, Adelaide Drive to 9th Street | Alternative C

Project Description

- Install shared lane markings along Pioneer Street between Adelaide Drive and 9th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Provides a bicycle facility that can be implemented quickly without impacting other uses such as parking.
- Immediately raises the visibility of bicyclists along the street while and strongly increases awareness of bicycling throughout the community.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Shared lane markings are a relatively new treatment that may be unfamiliar to local residents, requiring an accompanying education and outreach effort.
- Does not provide dedicated space for bicyclists.
- Does not directly address needs of pedestrians.

Cost Estimate

$6,500

Photos

Shared lane markings could increase visibility and awareness of bicyclists along this residential segment of Pioneer Street.

Conceptual Alternative 1C- proposed improvements.

2. Pioneer Street, 9th Street to 13th Street | Alternative A

Project Description

- Repair heaved and damaged sidewalk on the north side of Pioneer Street between 10th Street and 11th Street.
- Install one new curb ramp on the NE corner of Pioneer Street and 10th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes ADA accessibility along gap along the north side of Pioneer Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not directly address needs of bicyclists.

Cost Estimate

$25,500, depending on extent of repairs.

Photos

The northeast corner of the intersection of Pioneer Street and 10th Street lacks a curb ramp.

Conceptual Alternative 2A- proposed improvements.

2. Pioneer Street, 9th Street to 13th Street | Alternative B

Project Description

- Install four new curb ramps:
  - NW and NE corners of Pioneer Street and 11th Street (upgrade existing ramps which do not face south to allow crossing of Pioneer Street).
  - South side of Pioneer Street at 11th Street, aligned with new curb ramps on the NW and NE corners.
- Install new crosswalk across west leg of intersection of Pioneer Street and 11th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Connects 11th Street to southern sidewalk on Pioneer Street, improves ADA accessibility.
- New crosswalk improves visibility of pedestrians crossing Pioneer Street at 11th Street, and promotes crossing Pioneer Street at a stop-controlled intersection rather than mid-block.
- Leverages investment in recently completed sidewalk along south side of Pioneer Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not directly address needs of bicyclists.

Cost Estimate

$6,800

Photos

The existing curb ramps on the north side of the intersection of Pioneer Street and 11th Street only face east-west, making it difficult to cross Pioneer Street.

Conceptual Alternative 2B- proposed improvements.

2. Pioneer Street, 9th Street to 13th Street | Alternative C

Project Description

- Install new curb ramp on the SE corner of Pioneer Street and 13th Street (near where eastern sidewalk on 13th Street currently ends at railroad tracks).
- Install new crosswalk on the west leg of Pioneer Street and 13th Street.
- Control intersection of Pioneer Street and 13th Street as an all-way stop.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- New crosswalk improves visibility of pedestrians crossing Pioneer Street at 13th Street
- New crosswalk promotes crossing Pioneer Street at a stop-controlled intersection rather than mid-block.
- Crossing of Pioneer Street provides connection to students on 11th and 12th Streets to the north.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Turning movements at Pioneer Street at 13th Street are common, so many pedestrians are already accustomed to avoiding crossing at this intersection and may not change their behavior.
- Does not directly address needs of bicyclists.

Cost Estimate

$800

Photos

The wide intersection of Pioneer Street and 13th Street can be difficult to cross due to common vehicle turning movements. .

Conceptual Alternative2C- proposed improvements.

2. Pioneer Street, 9th Street to 13th Street | Alternative D

Project Description

- Install shared lane markings along Pioneer Street between 9th Street and 13th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Provides a bicycle facility that can be implemented quickly without impacting other uses such as parking.
- Immediately raises the visibility of bicyclists along the street while and strongly increases awareness of bicycling throughout the community.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Shared lane markings are a relatively new treatment that may be unfamiliar to local residents, requiring an accompanying education and outreach effort.
- Does not provide dedicated space for bicyclists.
- Does not directly address needs of pedestrians.

Cost Estimate

$8,100

Photos

Shared lane markings could increase visibility and awareness of bicyclists along this residential segment of Pioneer Street.

Conceptual Alternative 2D – proposed improvements.

3. 11th Street, Quail Glen Drive to Pioneer Street | Alternative A

Project Description

- Install a new multi-use path along the west side of 11th Street between Quail Glen Drive and Pioneer Street, approximately 1300 feet.
- In the south, the multi-use path will be set back from the street near the alignment of the existing sidewalk near Pioneer Street (the existing sidewalk will be replaced by the new multi-use path).
- The path will transition towards the street in the north in order to interface with the existing sidewalk south of Quail Glen Drive.
- The existing landscape strip between the curb and the detached sidewalk on 11th Street near Quail Glen Drive will be filled in, to expand the effective width of the sidewalk to accommodate increased traffic.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.
- This project should be completed in conjunction with Conceptual Alternative 2B to provide a connection across Pioneer Street.

Benefits

- Provides a separated facility for bicyclists and pedestrians along 11th Street, where neighbors have concerns about the safety of bicycles and pedestrians mixing with motor vehicle traffic on the existing roadway.
- Completes a key gap, connecting numerous families and students in the Quail Glen neighborhood to previously proposed routes to school along Pioneer and College Streets.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.
- Avoids construction of new curb and gutter associated with attached sidewalks.

Drawbacks

- Only provides a facility along one side of 11th Street.
- Asphalt paths, though less expensive initially, have a shorter lifespan and require more maintenance than concrete paths.
- Adjacent residents currently use 11th Street right-of-way for vehicle parking, and may be concerned about property impacts.
- Removal of the existing landscape strip between the sidewalk and gutter on 11th Street in the north near Quail Glen Drive will require drainage treatments.

Cost Estimate

$102,500

Photos

11th Street has a 24 foot wide roadway with no sidewalks for most of the length between Pioneer Street and Quail Glen Drive.

Conceptual Alternative 3A- proposed improvements.

3. 11th Street, Quail Glen Drive to Pioneer Street | Alternative B

Project Description

- Install 600 feet of new sidewalk along the west side of 11th Street between the existing sidewalks near Quail Glen Drive in the north and near Pioneer Street in the south.
- Install shared lane markings along 11th Street between Quail Glen Drive and Pioneer Street.
- This project should be completed in conjunction with Conceptual Alternative 2B to provide a connection across Pioneer Street.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along 11th Street.
- Completes a key gap, connecting numerous families and students in the Quail Glen neighborhood to previously proposed routes to school along Pioneer and College Streets.
- Leverages existing sidewalk assets.
- Most of the new sidewalk will be detached, on the west side of existing drainage ditch, and may not require curb and gutter.
- Provides a bicycle facility that can be implemented without expanding the existing roadway.
- Immediately raises the visibility of bicyclists along the street while and strongly increases awareness of bicycling throughout the community.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Only provides a pedestrian facility along one side of 11th Street.
- Does not improve existing 4' sidewalk near Pioneer Street to 5' city standard.
- Shared lane markings are a relatively new treatment that may be unfamiliar to local residents, requiring an accompanying education and outreach effort.
- Does not provide a dedicated space for bicyclists, along a street where neighbors have concerns about the safety of bicycles mixing with motor vehicle traffic on the existing roadway.

Cost Estimate

$86,400

Photos

Missing sidewalk on the west side of 11th Street, looking south.

Conceptual Alternative 3B- proposed sidewalk improvements.

Conceptual Alternative 3B- proposed roadway improvements.

4. College Street (Pioneer Street & 13th Street to Main Street & 17th Street) | Alternative A

Project Description

- Install new crosswalks on north and east legs of the intersection of College Street and 13th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes transition between Pioneer Street and College Street routes through jog across railroad tracks.
- Leverages assets of existing curb extensions to create a crossing that encourages motorists to yield to pedestrians crossing 13th Street.
- New crosswalk improves visibility of pedestrians crossing 13th Street and College Streets.
- New crosswalk encourages crossing College Street at a location where motor vehicle traffic on College Street has a stop sign.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not directly address needs of bicyclists.

Cost Estimate

$1,500

Photos

Existing curb extensions on each corner of the intersection of College Street and 13th Street help reduce pedestrian crossing distances.

Conceptual Alternative 4A- proposed improvements.

4. College Street (Pioneer Street & 13th Street to Main Street & 17th Street) — Alternative B

Project Description

- Install bikes lanes along College Street between 13th Street and 17th Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Provides dedicated space for bicyclists along a collector street with moderate traffic volumes.
- Utilizes available roadway space without requiring parking removal.
- Can be implemented quickly.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.
- Could be extended to connect with existing bike lanes on 19th Street.

Drawbacks

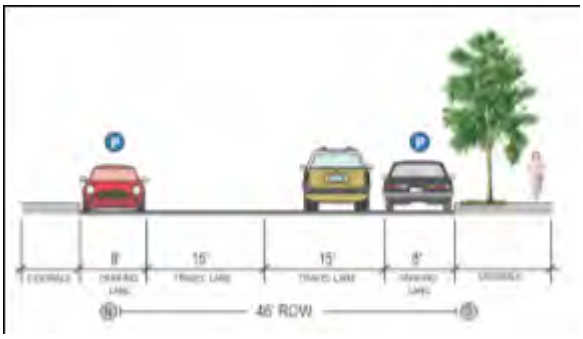
- Does not directly address needs of pedestrians.

Cost Estimate

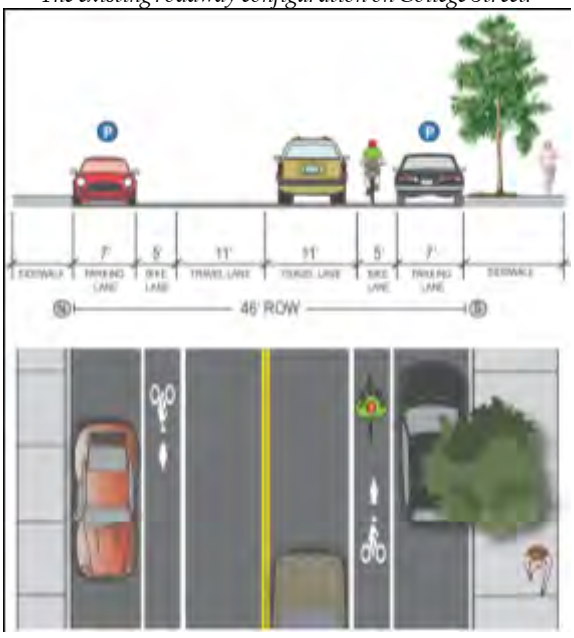
$46,400

Photos

College Street has a 46' wide roadway in the area from 13th Street to 17th Street.



The existing roadway configuration on College Street.



Conceptual Alternative 4B- proposed improvements.

4. College Street (Pioneer Street & 13th Street to Applegate Street & 17th Street) | Alternative C

Project Description

- Install shared lane markings (also known as "sharrows") along College Street between 13th Street and 17th Street, and on 13th and 17th Streets to connect to Main Street bike lanes and shared lane markings on Pioneer Street proposed in Conceptual Alternative 2D.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Calls attention to the presence of bicyclists and reinforces the right of bicyclists to use the roadway.
- Utilizes available roadway space without requiring parking removal.
- Can be implemented quickly.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

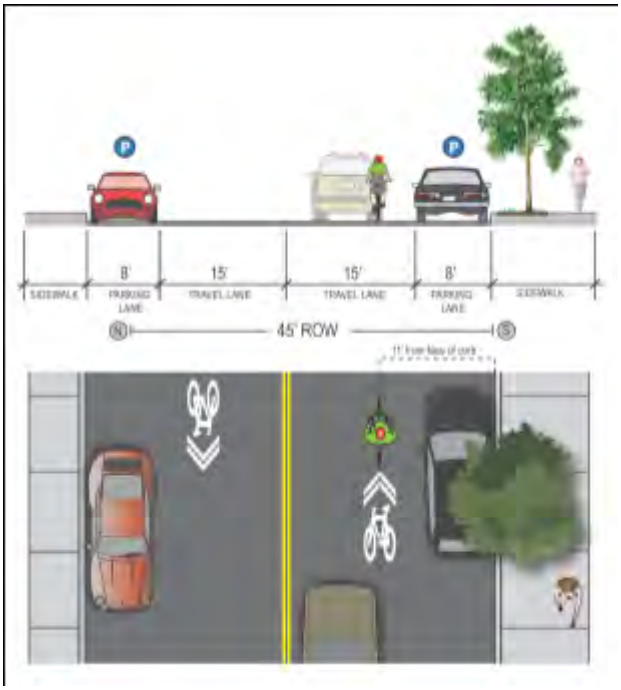
Drawbacks

- Shared lane markings are a relatively new treatment that may be unfamiliar to residents, requiring outreach to explain the meaning of the new markings.
- Does not directly address needs of pedestrians.

Cost Estimate

$8,600

Photos



Conceptual Alternative 4C- College Street proposed improvements.

5. 17th Street & Main Street Intersection — Alternative A

Project Information

This alternative enhances the existing pedestrian crossing adding flashing beacons to the existing signal poles and to a new pole in the center median. This alternative also includes the relocation of the eastbound stop bar, the provision of a westbound stop bar, and an optional median opening for northbound bicyclists.

This alternative is intended to increase visibility of the flashing beacons and increase driver awareness of pedestrians and bicyclists at the intersection. The current configuration and location of the flashing beacons makes it difficult for pedestrians, bicyclists, and motorists to know if the signal is functioning.

Benefits

- Improved visibility for pedestrians and bicyclists utilizing the crosswalk and improved visual confirmation that the signal is functioning.
- Improved driver awareness of pedestrians and bicyclists at the crosswalk and therefore improved pedestrian and bicyclist safety.
- Reduced risk of multiple-threat crashes through relocation of the eastbound stop bar and provision of the westbound stop bar.
- Utilizes existing poles and flashing beacons to minimize costs associated with improvements.

Drawbacks

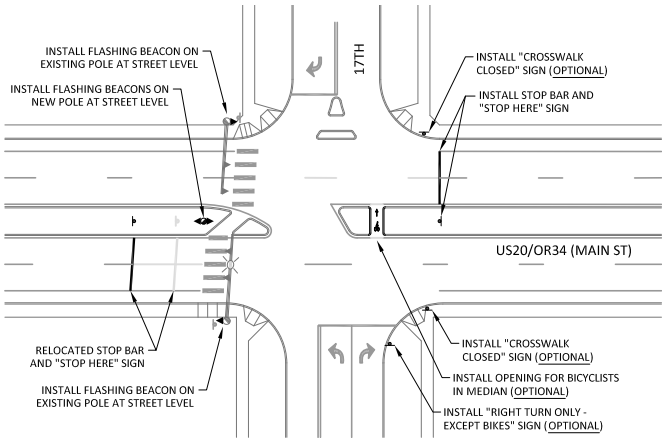
- Pedestrians and bicyclists have to activate the flashing beacons at the signal pole.
- Pedestrians and bicyclists do not receive an indication when it is safe to cross.
- Vehicles do not receive a red light requiring them to stop.
- Current configuration requires some out-of-direction travel.

Cost Estimate

- $8,000 - $10,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the additional flashing beacons. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5A- proposed improvements.

Example of a crosswalk configured with flashing beacons mounted on either side of the crossing.

5. 17th Street & Main Street Intersection — Alternative B

Project Information

In addition to the enhancements identified in Alternative 5A, this alternative includes the provision of a crosswalk across the east side of the intersection. This requires the relocation of the eastbound signal pole and mast arm and the provision of additional vehicle pedestals in the northeast and southwest corners of the intersection as well as in the center medians on the east and west side.

This project is intended to provide greater convenience to pedestrians and bicyclists allowing them to cross both sides of the intersection.

Benefits

- In addition to the benefits described in the previous alternative, this alternative provides greater convenience to pedestrians and bicyclists by requiring less out-of-direction travel.

Drawbacks

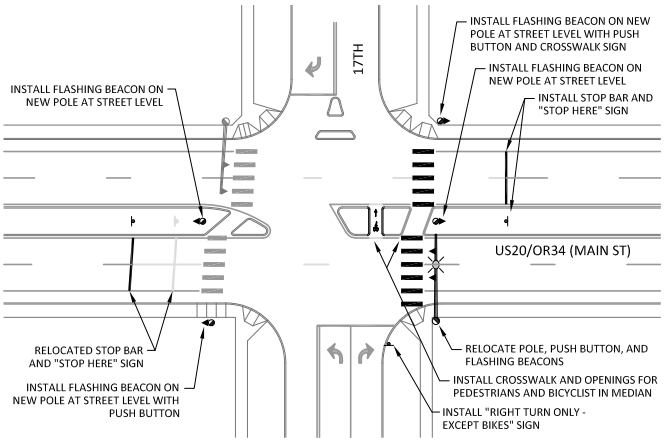
- In addition to the drawbacks described in the previous alternative, there are significant costs associated with the relocation of the eastbound signal pole and mast arm and the installation of vehicle pedestals and pedestrian pushbuttons as well as the provision of a crosswalk through the median.
- The addition of a second crossing may also be confusing to motorists.

Cost Estimate

- $43,000 - $50,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the additional flashing beacons. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5B- proposed improvements.

5. 17th Street & Main Street Intersection — Alternative C

Project Information

This alternative enhances the existing pedestrian crossing by replacing the flashing beacons on the signal poles with Rectangular Rapid Flash Beacons (RRFB) and installing additional RRFBs on the pedestrian push button poles and in the center median at the street level. This alternative also includes the relocation of the eastbound stop bar, the provision of a westbound stop bar, and an optional median opening for northbound bicyclists.

Similar to the existing flashing beacons, RRFBs are pedestrian activated warning lights that alert drivers of the presence of pedestrians and bicyclists at the intersection. However, RRFBs have been shown to significantly increase driver compliance over standard flashing beacons.

Benefits

- In addition to the benefits described in Alternative A, RRFBs have a higher compliance rate than the existing flashing beacons; 80 percent vs. less than 20 percent.
- Mounting RRFBs overhead as well as along side the roadway further improves compliance.
- RRFBs are less expensive than pedestrian hybrid signals.
- RRFBs have received interim approval from the Federal Highway Administration.

Drawbacks

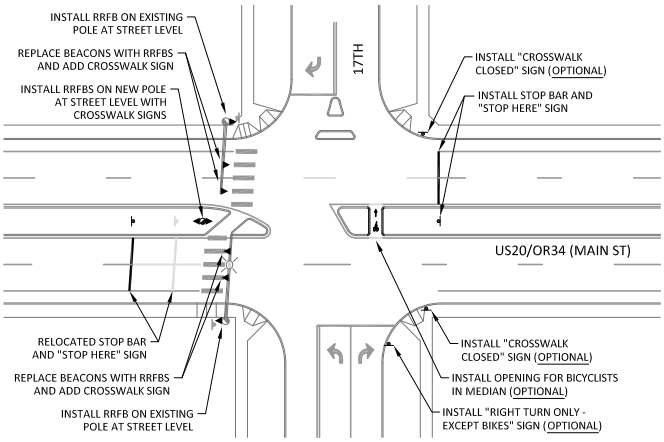
- In addition to the drawbacks described in Alternative A, there are significant costs associated with replacing the existing flashing beacons with RRFBs.

Cost Estimate

- $15,000 - $17,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the new RRFBs and signage. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5C- proposed improvements.

Example of a crosswalk configured with RRFBs on either side of the crossing and in the median island.

5. 17th Street & Main Street Intersection | Alternative D

Project Information

In addition to the enhancements identified in Alternative 5C, this alternative includes the provision of a crosswalk across the east side of the intersection. This requires the relocation of the eastbound signal pole and mast arm and the provision of additional vehicle pedestals in the northeast and southwest corners of the intersection as well as in the center medians on the east and west side.

This project is intended to provide greater convenience to pedestrians and bicyclists allowing them to cross both sides of the intersection.

Benefits

- In addition to the benefits described in the previous alternative, this alternative provides greater convenience to pedestrians and bicyclists by requiring less out-of-direction travel.

Drawbacks

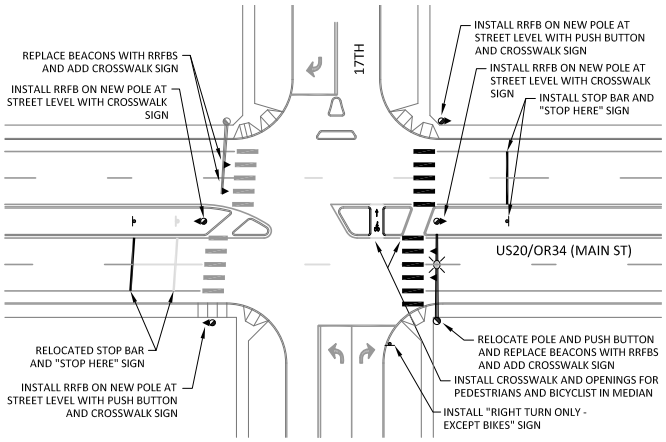
- In addition to the drawbacks described in the previous alternative, there are significant costs associated with the relocation of the eastbound signal pole and mast arm and the installation of vehicle pedestals and pedestrian pushbuttons as well as the provision of a crosswalk through the median.
- The addition of a second crossing may also be confusing to motorists.

Cost Estimate

- $50,000 – $57,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the new RRFBs and signage. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5D- proposed improvements.

5. 17th Street & Main Street Intersection | Alternative E

Project Information

This alternative enhances the existing pedestrian crossing by replacing the flashing beacons on the signal poles with Pedestrian Hybrid Beacons and installing additional Pedestrian Hybrid Beacons on the pedestrian push button poles. This alternative also includes the relocation of the eastbound stop bar, the provision of a westbound stop bar, and an optional median opening for northbound bicyclists.

The modified configuration is also known as a High-Intensity Activated Crosswalk or HAWK signal. A HAWK signal acts like a normal traffic signal with a solid red-light indication that motorists have to stop. The light sequence begins when a pedestrian activates the signal, which rests in dark. First the lower light flashes yellow, then turns to a solid yellow, and then turns dark as the two top lights turn to solid red. The solid red lights then alternate flashing red as the pedestrians and/or bicyclists clear the intersection.

Benefits

- In addition to the benefits described in Alternative A, Pedestrian Hybrid Beacons have the highest compliance rate of all three treatments.
- A pedestrian signal head provides indication of when pedestrians and bicyclists utilizing the crosswalk have the right-of-way.
- Motorists are given a red light indication that they have to stop.

Drawbacks

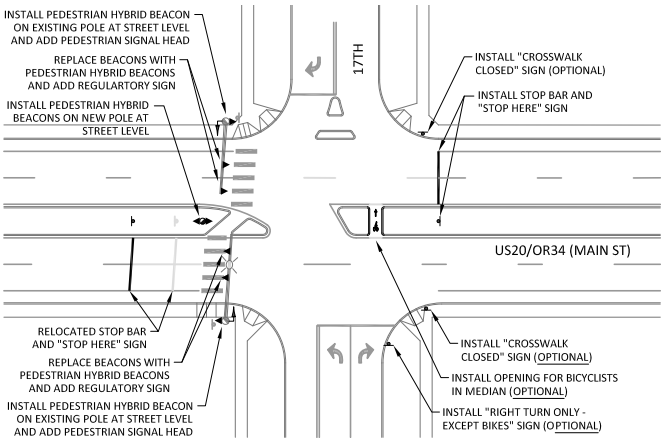
- In addition to the drawbacks described in Alternative A, there are significant costs associated with replacing the existing flashing beacons with pedestrian hybrid beacons.
- The MUTCD specifies that pedestrian hybrid beacons should be no less than 100 feet from a stop controlled side street.
- Potential for motorist confusion with dark signal displays and along side streets.

Cost Estimate

- $20,000 - $23,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the new pedestrian hybrid beacons and signage. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5E- proposed improvements.

Example of a HAWK signal on a street with a five lane cross section similar to the current configuration of Main Street.

5. 17th Street & Main Street Intersection | Alternative F

Project Information

In addition to the enhancements identified in Alternative 5E, this alternative includes the provision of a crosswalk across the east side of the intersection. This requires the relocation of the eastbound signal pole and mast arm and the provision of additional vehicle pedestals in the northeast and southwest corners of the intersection as well as in the center medians on the east and west side.

This project is intended to provide greater convenience to pedestrians and bicyclists allowing them to cross both sides of the intersection.

Benefits

- In addition to the benefits described in the previous alternative, this alternative provides greater convenience to pedestrians and bicyclists by requiring less out-of-direction travel.

Drawbacks

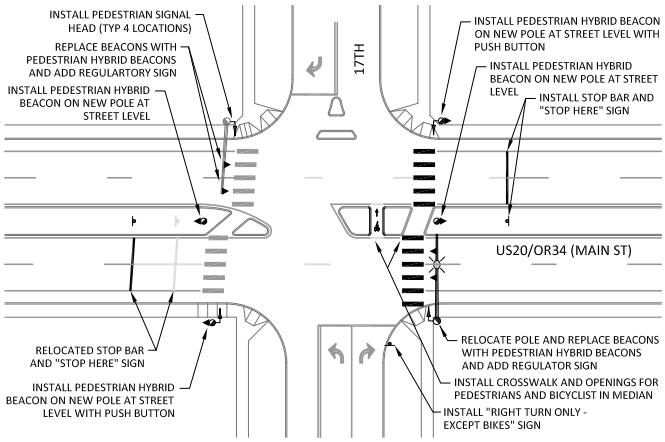
- In addition to the drawbacks described in the previous alternative, there are significant costs associated with the relocation of the eastbound signal pole and mast arm and the installation of vehicle pedestals and pedestrian pushbuttons as well as the provision of a crosswalk through the median.
- The addition of a second crossing may also be confusing to motorists.

Cost Estimate

- $53,000 - $61,000
- This cost estimate assumes that the existing poles can accommodate wind and dead loads associated with the new pedestrian hybrid beacons and signage. The structural integrity of the existing poles needs to be confirmed prior to installation.

Photos

The 17th Street and Main Street intersection is currently configured with a crosswalk and a pedestrian-actuated flashing overhead beacon.



Conceptual Alternative 5F- proposed improvements.

6. Philomath Rodeo Grounds Path | Alternative A

Project Description

- Install 750 feet of new multi-use path through the Philomath Rodeo Grounds between the intersection of 13th Street and Cedar Street and the Mary's River park access road along 11th Street, aligned east-west in continuation of the Cedar Street right-of-way.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides direct connection to Mary's River Park.
- Provides the shortest route across the Rodeo Grounds, yielding the lowest cost of path construction.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Does not provide shortest route across Rodeo Grounds between the Philomath Library (at 11th and Applegate Street) and 13th Street/Cedar Street; some path users may take the shortest route by leaving the path to cut across the Rodeo Grounds diagonally.
- Use of Mary's River Park access road along 11th Street may require change of park regulations to allow access to new path during hours when the park is closed.
- The Mary's River Park access road along 11th Street is currently paved with gravel. The road would have to be repaved at additional cost to become ADA accessible.
- A connection to Mary's River Park access road on the western edge of the Rodeo Grounds will require tree removal and a culvert to cross an existing drainage ditch.
- East-west alignment intersects with existing gravel road through Rodeo Grounds.

Cost Estimate

$61,200

Photos

Conceptual Alternative 6A- proposed improvements.

6. Philomath Rodeo Grounds Path | Alternative B

Project Description

- Install 1000 feet of new multi-use path through the Philomath Rodeo Grounds between the intersection of 13th Street and Cedar following the Cedar Street right-of-way west until entering Rodeo Grounds property, then continuing northwest to where 11th Street enters Mary's River Park.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides the shortest route between the Philomath Library (at 11th and Applegate Street) and 13th Street/Cedar Street which is among the most common destinations the path is anticipated to serve.
- Provides an ADA accessible route.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Does not provide direct access to Mary's River Park from the east.
- Diagonal alignment intersects with existing gravel road through Rodeo Grounds.
- Diagonal alignment through Rodeo Grounds may require closing the path during the Philomath Frolic and Rodeo.

Cost Estimate

$81,600

Photos

Conceptual Alternative 6B- proposed improvements.

6. Philomath Rodeo Grounds Path | Alternative C

Project Description

- Install 1200 feet of new multi-use path through the Philomath Rodeo Grounds between the intersection of 13th Street and Cedar following the Cedar Street right-of-way west until entering Rodeo Grounds property, then hugging the east and north edges of the Rodeo Grounds property to where 11th Street enters Mary's River Park.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Alignment hugging property line has the least impact on year-round uses of the Rodeo Grounds, and has the best chance of remaining open to the public during the Philomath Frolic and Rodeo.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Does not provide shortest route across Rodeo Grounds between the Philomath Library(at 11th and Applegate Street) and 13th Street/Cedar Street; some path users may take the shortest route by leaving the path to cut across the Rodeo Grounds diagonally.
- Does not provide direct access to Mary's River Park from the east.

Cost Estimate

$95,500

Photos

Conceptual Alternative 6C- proposed improvements.

6. Philomath Rodeo Grounds Path | Alternative D

Project Description

- Install 450 feet of new multi-use path through the Philomath Rodeo Grounds between the intersection of 13th Street and Cedar following the Cedar Street right-of-way west until reaching the existing north-south gravel road through the center of the Rodeo Grounds.
- Pave 750 feet of the existing north-south gravel road through the center of the Rodeo Grounds to where 11th Street enters Mary's River Park.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Provides a formalized connection with the existing gravel road through the Rodeo Grounds.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Does not provide shortest route across Rodeo Grounds between the Philomath Library (at 11th and Applegate Street) and 13th Street/Cedar Street; some path users may take the shortest route by leaving the path to cut across the Rodeo Grounds diagonally.
- Does not provide direct access to Mary's River Park from the east.
- Alignment through the center of the Rodeo Grounds may require closing the path during the Philomath Frolic and Rodeo.

Cost Estimate

$97,900, depending on condition of existing gravel road.

Photos

Conceptual Alternative 6D- proposed improvements.

7. Cedar Street (13th Street to Willow Lane & 15th Street) | Alternative A

Project Description

- Install one new curb ramp on the northwest corner of 13th Street and Cedar Street, aligned with the proposed multi-use path described in Conceptual Alternatives 6A through 6D.
- Install new crosswalk on north leg of intersection of 13th Street and Cedar Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along Cedar Street.
- New crosswalk improves visibility of pedestrians crossing 13th Street.
- Provides connection across 13th Street to proposed Philomath Rodeo Grounds path.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address access across 15th Street to the proposed Willow Lane/Cedar Street Path.
- Does not directly address needs of bicyclists.

Cost Estimate

$2,300

Photos

Looking south on 13th Street toward the intersection with Cedar Street, where users would cross 13th Street to access the proposed Rodeo Grounds path.

Conceptual Alternative 7A- proposed improvements.

7. Cedar Street (13th Street to Willow Lane & 15th Street) | Alternative B

Project Description

- Complete Conceptual Alternative 7A:
  - Install one new curb ramp on the northwest corner of 13th Street and Cedar Street, aligned with the proposed multi-use path described in Conceptual Alternatives 6A through 6D.
  - Install new crosswalk on north leg of intersection of 13th Street and Cedar Street.
- Install two new curb ramps:
  - Northeast corner of 15th Street and Cedar Street.
  - Southeast corner of 15th Street and Cedar Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes improves ADA accessibility along Cedar Street.
- Provides access to the proposed Willow Lane/Cedar Street Path.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address sidewalk gap on Cedar Street near 13th Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$5,300 (inclusive of Conceptual Alternative 7A)

Photos

Looking north on 15th Street toward Cedar Street from Willow Lane.

Conceptual Alternative 7B- proposed improvements.

7. Cedar Street (13th Street to Willow Lane & 15th Street) | Alternative C

Project Description

- Complete Conceptual Alternative 7A:
  - Install one new curb ramp on the northwest corner of 13th Street and Cedar Street, aligned with the proposed multi-use path described in Conceptual Alternatives 6A through 6D.
  - Install new crosswalk on north leg of intersection of 13th Street and Cedar Street.
- Install 120 feet of new sidewalk on the south side of Cedar Street near the corner at 13th Street.
- Install one new curb ramp on the southeast corner of 13th Street and Cedar Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes sidewalk gaps and improves ADA accessibility along Cedar Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address access to the proposed Willow Lane/Cedar Street Path across 15th Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$22,600 (inclusive of Conceptual Alternative 7A)

Photos

There is a sidewalk gap on the south side of Cedar Street near the corner of 13th Street.

Conceptual Alternative 7C- proposed improvement

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street) | Alternative A

Project Description

- Install approximately 650 feet of new multi-use path following the existing demand trail between 17th Street and Cedar Street and Willow Lane through Philomath Public Works.
- Install signage on Willow Lane to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Formalizes an already heavily used pedestrian access, while improving bicycle access.
- Impacted land is already in public ownership.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Does not provide access to adjacent Philomath Elementary School.
- Does not further improve connectivity by providing access from nearby 16th Street.
- Does not provide a separated bicycle and pedestrian facility on Willow Lane due to space constraints.

Cost Estimate

$50,600

Photos

Many Philomath residents and children connect between Willow Lane and 17th Street using the undeveloped Cedar Street right-of-way as an informal pedestrian access.

Conceptual Alternative 8A- proposed improvements.

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street) | Alternative B

Project Description

- Complete Conceptual Alternative 8A:
  - Install 650 feet of new multi-use path following the existing demand trail between 17th Street and Cedar Street and Willow Lane through Philomath Public Works.
  - Install signage on Willow Lane to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.
- Install 400 feet of new multi-use path east-west on the north side of the existing fence between the Philomath Elementary School field and Philomath Public Works.
- Install 240 feet of new sidewalk on the east side of 16th Street to connect to the new path.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Formalizes an already heavily used pedestrian access, while improving bicycle access.
- Impacted land is already in public ownership.
- Connects to 16th Street and Philomath Elementary School.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- May impact existing uses of the Philomath Elementary School field.

Cost Estimate

$121,800 (inclusive of Conceptual Alternative 8A)

Photos

A proposed path would connect from 17th Street west across the Philomath Elementary School field to 16th Street on the north side of the existing fence.

Conceptual Alternative 8B – proposed improvements.

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street) | Alternative C

Project Description

- Complete Conceptual Alternative 8A:
  - Install 650 feet of new multi-use path following the existing demand trail between 17th Street and Cedar Street and Willow Lane through Philomath Public Works.
  - Install signage on Willow Lane to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.
- Install 400 feet of new multi-use path east-west on the south side of the existing fence between the Philomath Elementary School field and Philomath Public Works.
- Install 240 feet of new sidewalk on the east side of 16th Street to connect to the new path.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Formalizes an already heavily used pedestrian access, while improving bicycle access.
- Impacted land is already in public ownership.
- Connects to 16th Street and Philomath Elementary School.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Impacts actively used portion of Philomath Public Works property.

Cost Estimate

$123,500 (inclusive of Conceptual Alternative 8A)

Photos

One path alignment would connect east-west across the Philomath Elementary School field between 16th and 17th Street on the south side of the existing fence seen here.

Conceptual Alternative 8C – proposed improvements.

8. Willow Lane/Cedar Street Path (Willow Lane to Cedar Street) | Alternative D

Project Description

- Complete Conceptual Alternative 8A:
  - Install 650 feet of new multi-use path following the existing demand trail between 17th Street and Cedar Street and Willow Lane through Philomath Public Works.
  - Install signage on Willow Lane to advise traffic accessing Philomath Public Works to expect bicycles and pedestrians on the roadway.
- Install 600 feet of new multi-use path north-south following the eastern edge of the Philomath Elementary School field, then turning west to connect to the existing asphalt path that accesses the school gym from 16th Street.
- Install 70 feet of new sidewalk on the east side of 16th Street to connect to the new path.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes gap in street network connectivity to reduce out-of-direction travel between key destinations for walking and bicycling students.
- Provides an alternative pedestrian and bicycle facility parallel to Applegate Street, free of vehicle traffic.
- Provides an ADA accessible route.
- Formalizes an already heavily used pedestrian access, while improving bicycle access.
- Impacted land is already in public ownership.
- Connects to 16th Street and Philomath Elementary School.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists near path access points.

Drawbacks

- Alignment is unintuitive because of deviation from the logical extension of the east-west Cedar Street right-of-way; midblock connection to 16th Street may require additional signage.
- Directs through traffic near Philomath Elementary School rear entrances.
- May impact existing uses of the Philomath Elementary School field.

Cost Estimate

$109,800 (inclusive of Conceptual Alternative 8A)

Photos

A potential alignment of the Willow/Cedar Street Path could follow the eastern edge of the Philomath Elementary School field.

Conceptual Alternative 8D – proposed improvements.

9. 17th Street (Applegate Street to 19th Street & Cedar Street) | Alternative A

Project Description

- Replace 120 feet of sidewalk on the east side of 17th Street south of Maple Street.
- Install four new curb ramps:
  - Northeast and southeast corners of intersection of 17th Street and Maple Street.
  - Northeast and southeast corners of intersection of 17th Street and Ash Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Improve section of deficient sidewalk along east side of 17th Street.
- Improves ADA accessibility along east side of 17th Street.
- Improvements connect with existing curb ramps on Applegate Street and 19th Street on either end of route to complete connection to Clemens Primary School.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address access across 17th Street and Cedar Street to the proposed Willow Lane/Cedar Street Path.
- Does not provide ADA accessibility and connections to existing western sidewalk along 17th Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$24,900

Photos

This existing sidewalk on the east side of 17th Street is below recommended width, and is missing a curb ramp at Maple Street.

Conceptual Alternative 9A – proposed improvements.

9. 17th Street (Applegate Street to 19th Street & Cedar Street) | Alternative B

Project Description

- Install two new curb ramps:
  - Northwest corner of intersection of 17th Street and Cedar Street.
  - Northeast corner of intersection of 17th Street and Cedar Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Improves ADA accessibility along west side of 17th Street.
- Improvements connect existing western sidewalk along 17th Street to existing curb ramps and crosswalk across 19th Street to complete connection to Clemens Primary School.
- Provides access to the proposed Willow Lane/Cedar Street Path at 17th Street and Cedar Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address ADA accessibility along the eastern sidewalk of 17th Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$3,000

Photos

The northeast corner of this intersection with 17th Street is missing a curb ramp, as seen looking east on Cedar Street.

Conceptual Alternative 9B – proposed improvements.

9. 17th Street (Applegate Street to 19th Street & Cedar Street) — Alternative C

Project Description

- Install four new curb ramps:
  - Southeast and southwest corners of intersection of 17th Street and Cedar Street.
  - Southeast and southwest corners of intersection of 18th Street and Cedar Street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Improves ADA accessibility along south side of Cedar Street.
- Provides access to the proposed Willow Lane/Cedar Street Path at 17th Street and Cedar Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Improvements do not align with existing crossing of 19th Street to Clemens Primary School along north leg of intersection of 19th Street and Cedar Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$6,000

Photos

Conceptual Alternative 9C – proposed improvements.

10. Philomath High School & Middle School Path System

Project Description

- This is a previously proposed facility that would consist of several new multi-use paths through the Philomath Middle School/Philomath High School campus and fields:
    - Through the western Philomath High School Parking lot north to south.
    - Between City Park and the high school track, around the northern baseball field.
    - Along the east side of the existing fire lane where school buses load and unload students, from north to south.
    - Along the north side of Philomath Middle School, from east to west.
- This project has funding through a grant from ODOT, and is entering the first stages of design; a target date for construction has not been set.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Build upon an existing network, leveraging several existing paths through the school fields and connecting to City Park.
- Creates separated facilities through parking lots that will reduce potential conflicts with vehicles.
- Provides an off-street facility that will allow walking and bicycling students to avoid traffic on streets such as Applegate Street that experience high volumes at school start and end times.
- Reduces travel distances for some bicyclists and pedestrians approaching schools, depending on direction of approach.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Depending on final alignment and plans for upcoming school reconstruction, there may be negative impacts on parking circulation.

Cost Estimate

This project is already funded.

Photos

The future alignment of one of several funded paths, looking east along the north side of Philomath Middle School.

Conceptual Alternative 10 – proposed improvements.

11. Applegate Street & 21st Street | Alternative A

Project Description

- Install three new curb ramps at the intersection of 21st Street and Applegate Street:
  - Northwest corner.
  - Southwest corner facing north (existing curb ramp at this corner faces east only).
  - Southeast corner.
- Install two new crosswalks across west and south legs of intersection.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Improves ADA accessibility along Applegate Street.
- Improves ADA accessibility near Philomath High School.
- New crosswalk improves visibility of pedestrians crossing Applegate Street and 21st Street at a busy, key location.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not address crossings and ADA accessibility of north and east legs of intersection of 21st Street and Applegate Street.
- Does not directly address needs of bicyclists.

Cost Estimate

$4,500

Photos

The geometry of the intersection of Applegate Street and 21st Street creates long pedestrian crossing distances, seen here looking south on the western leg of the intersection.

Conceptual Alternative 11A – proposed improvements.

11. Applegate Street & 21st Street — Alternative B

Project Description

- Complete Conceptual Alternative 11A:
    - Install three new curb ramps at the intersection of 21st Street and Applegate Street:
        - Northwest corner.
        - Southwest corner facing north (existing curb ramp at this corner faces east only).
        - Southeast corner.
    - Install two new crosswalks across west and south legs of intersection.
    - Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.
- Additionally, install new curb ramps at the intersection of 21st Street and Applegate Street:
    - Northeast corner.
    - Southeast corner (facing north; geometry of intersection requires separate ramps at southeast corner to align with crossings on south and east legs).
- Install new island with curb ramps or cut-throughs at location of the existing curbed area separating the right turn slip-lane that the northeast corner of the intersection.

Benefits

- Completes ADA accessibility at all corners and crossings of the 21st Street and Applegate Street intersection.
- Improves ADA accessibility near Philomath High School.
- New crosswalks improve visibility of pedestrians crossing Applegate Street and 21st Street at a busy, key location.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not directly address needs of bicyclists.

Cost Estimate

$16,300 (inclusive of Conceptual Alternative 11A)

Photos

A right turn slip lane on Applegate Street turning north onto 21st Street creates additional obstacles for pedestrian crossings.

Conceptual Alternative 11A – proposed improvements.

12. Applegate Street, 21st Street to 29th Street | Alternative A

Project Description

- Repair and replace curb ramps as necessary to align curb ramp faces to accommodate sidewalk traffic traveling both east-west and north-south.
- Remove or relocate sidewalk obstructions including utility poles and mailboxes, or extend sidewalk to preserve a passable width of sidewalk compatible with ADA requirements.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Improves ADA accessibility along Applegate Street.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Utility relocation may be unfeasible, restricting remediation options to solely sidewalk extensions.
- Mailbox relocation may create mail delivery issues, restricting remediation options to solely sidewalk extensions.
- Does not directly address needs of bicyclists.

Cost Estimate

$10,200, assuming 150' of sidewalk widening near utilities and replacement of 5 curb ramps.

Photos

Several curb ramps along this area of Applegate Street do not accommodate pedestrian traffic traveling east-west, as seen here looking east on Applegate Street.

12. Applegate Street, 21st Street to 29th Street | Alternative B

Project Description

- Install bike lanes on Applegate Street from 21st Street to 29th Street by removing on-street parking from one side of the street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Current levels of use observed during field visits show that existing on-street parking use on Applegate Street could be accommodated within a single parking lane.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

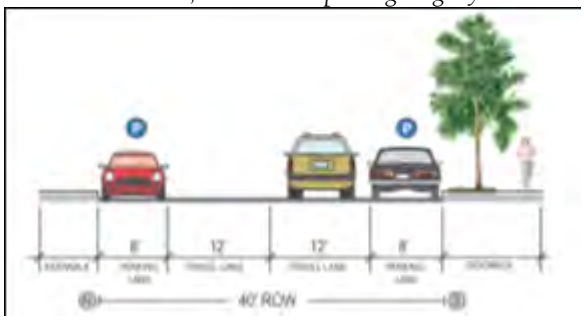
- Parking removal along one side of Applegate Street may impact overflow parking capacity during large events held at Philomath High School.
- Parking removal along one side of Applegate Street may unpopular or politically challenging.
- Does not directly address needs of pedestrians.

Cost Estimate

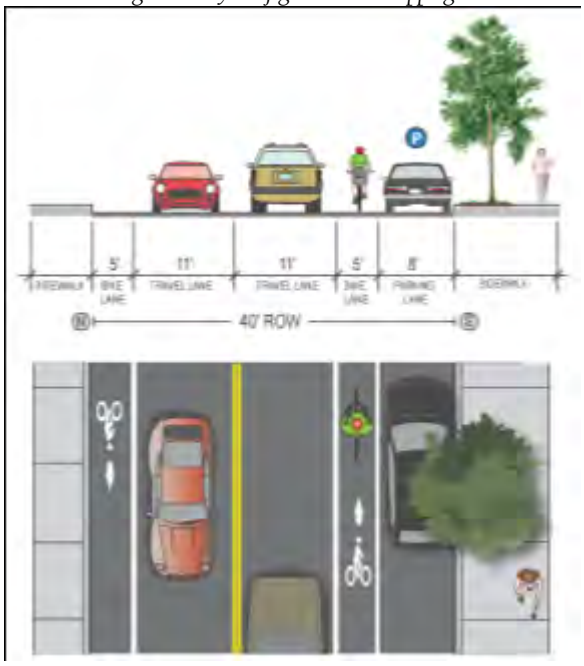
$107,300

Photos

Most of Applegate Street has a 40' roadway width between 21st Street and 29th Street, and on-street parking is lightly used.



The existing roadway configuration on Applegate Street.



Conceptual Alternative 12B – proposed improvements.

12. Applegate Street, 21st Street to 29th Street | Alternative C

Project Description

- Install shared lane markings on Applegate Street between 21st Street and 29th Street.

Benefits

- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Provides a bicycle facility that can be implemented quickly without impacting other uses such as parking.
- Immediately raises the visibility of bicyclists along the street while and strongly increases awareness of bicycling throughout the community.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Does not provide dedicated space for bicyclists.
- Does not directly address needs of pedestrians.

Cost Estimate

$20,000

Photos

Bicycles parked on the sidewalk along Applegate Street.

Conceptual Alternative 12C – proposed improvements.

13. Applegate Street, 16th Street to 21st Street | Alternative A

Project Description

- Install a new curb ramps on the south side of Applegate Street at the intersection with 17th Street, aligned with the existing northwest curb ramp and the crosswalk on the west leg of the intersection.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Completes a gap in ADA accessibility along 17th Street near Philomath Elementary School.
- Leverages the utility of the existing crosswalk on the west leg of the intersection and helps discourage midblock crossings or wrong-way riding by bicyclists (wheeled users using the sidewalk may cross unpredictably in order to access another driveway or curb ramp near this location).
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Curb ramp design and alignment may have to be modified to avoid existing utilities.

Cost Estimate

$1,500

Photos

This crosswalk across Applegate Street at 17th Street is missing a curb ramp on the south side.

Conceptual Alternative 8C – proposed improvements.

13. Applegate Street, 16th Street to 21st Street | Alternative B

Project Description

- Install bike lanes on Applegate Street from 16th Street to 21st Street by removing on-street parking from one side of the street.
- Install wayfinding treatments as part of an overall Safe Routes to School wayfinding project.

Benefits

- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Current levels of use observed during field visits show that existing on-street parking use on Applegate Street could be accommodated within a single parking lane.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

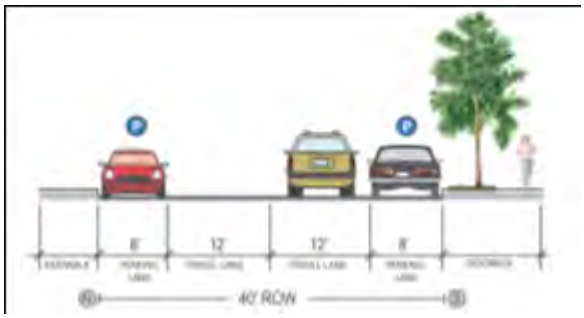
Drawbacks

- Current levels of use observed during field visits show that existing on-street parking use levels on Applegate Street may be difficult to accommodate within a single parking lane between 16th Street and 18th Street, near Philomath Elementary School.
- Parking removal along one side of Applegate Street may impact overflow parking capacity during large events held at Philomath Elementary School.
- Parking removal along one side of Applegate Street may unpopular or politically challenging.
- Does not directly address needs of pedestrians.

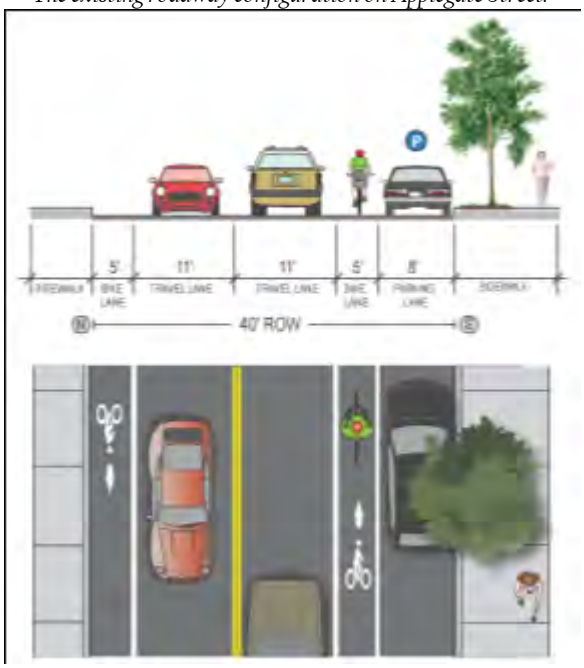
Cost Estimate

$58,000

Photos



The existing roadway configuration on Applegate Street.



Conceptual Alternative 13B – proposed improvements.

13. Applegate Street, 16th Street to 21st Street | Alternative C

Project Description

- Install shared lane markings on Applegate Street between 16th Street and 21st Street.

Benefits

- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Provides a bicycle facility that can be implemented quickly without impacting other uses such as parking.
- Immediately raises the visibility of bicyclists along the street while and strongly increases awareness of bicycling throughout the community.
- Wayfinding treatments will encourage students to use this route to travel to school, and remind motorists to expect pedestrians and bicyclists in the area.

Drawbacks

- Shared lane markings are a relatively new treatment that may be unfamiliar to local residents, requiring an accompanying education and outreach effort.
- Does not provide dedicated space for bicyclists.
- Does not directly address needs of pedestrians.

Cost Estimate

$10,800

Photos

Conceptual Alternative 13C – proposed improvements.

Philomath
Safe Routes to School Plan

Final Plan
June 30, 2011