Philomath
Safe Routes to School Plan

PREPARED BY:
Alta Planning + Design
Kittelson & Associates, Inc.

Final Plan
June 30, 2011

This page intentionally left blank

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.

Project Management Team

Randy Kugler, Philomath City Manager
Naomi Zwerdling, ODOT Region 2

Bicycle & Pedestrian Committee

Marlys Cappert, Benton County Bicycle Advisory Committee
Valerie Davis, Philomath Resident
John McGee, Principal, JD McGee, Inc – Engineering and Surveying
Paul Skirvin, Philomath Frolic & Rodeo
Rocky Sloan, Philomath City Council

Stakeholder Committee

Molly Bell, Philomath Resident
Ken Elwer, Police Chief
Rod Harvey, Philomath Community Foundation
Sonlla Heern, Strengthening Rural Families

Alta Planning + Design

Rory Renfro, Associate
Elliot Akwai-Scott, Planner

Kittelson and Associates, Inc.

Susie Wright, Senior Engineer
Matt Bell, Transportation Analyst

ODOT Transportation & Growth Management Statement:

This project is partially funded by a grant from the Transportation and Growth Management (TGM) Program, a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. This TGM grant is financed, in part, by federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), local government, and the State of Oregon funds. The contents of this document do not necessarily reflect the views or policies of the State of Oregon.

Table of Contents

Chapter 1. Introduction 1

Background 1

Project Objectives 2

Development of the Plan 3

Chapter 2. Existing Conditions 5

Previously Proposed Safe Routes 5

Schools 14

Opportunities and Constraints 18

Chapter 3. Preferred Alternatives 21

Alternatives Development 21

Preferred Alternatives Project Sheets 21

Additional Potential Improvements 38

Chapter 4. Implementation 39

Project Evaluation 39

Project Prioritization 42

Additional Considerations 43

Chapter 5. Funding 45

Pending Projects 45

Prioritized Project Funding 45

Funding Sources 46

Chapter 6. Code Revisions 61

Philomath Zoning Code (Title 18) 61

Philomath Comprehensive Plan 64

Public Works Design Standards 66

Chapter 7. Design Guidelines 69

Key Design Principles 69

References 70

Appendix A. Technical Standards and Regulations 97

Appendix B. Philomath Couplet Crossing Location Analysis .....

Appendix C. Existing Conditions, Opportunities and Constraints .....

Appendix D. Conceptual Alternatives .....

List of Tables

Table 1. Safe Routes to School Subareas 5

Table 2. Evaluation Criteria Scoring Ranges 41

Table 3. Preferred Alternatives Evaluation Criteria Scores 41

Table 4. Recommended Project Prioritization 42

Table 5. Maintenance Guidelines and Cost Estimates 44

Table 6: Preferred Alternative Potential Funding Sources 46

List of Maps

Map 1: Previously Proposed Safe Routes to School (2008) 6

Map 2: Safe Routes to School Subareas 7

Map 3: Safe Routes to School Existing Conditions 8

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.

This page intentionally left blank

Chapter 2. Existing Conditions

Previously Proposed Safe Routes

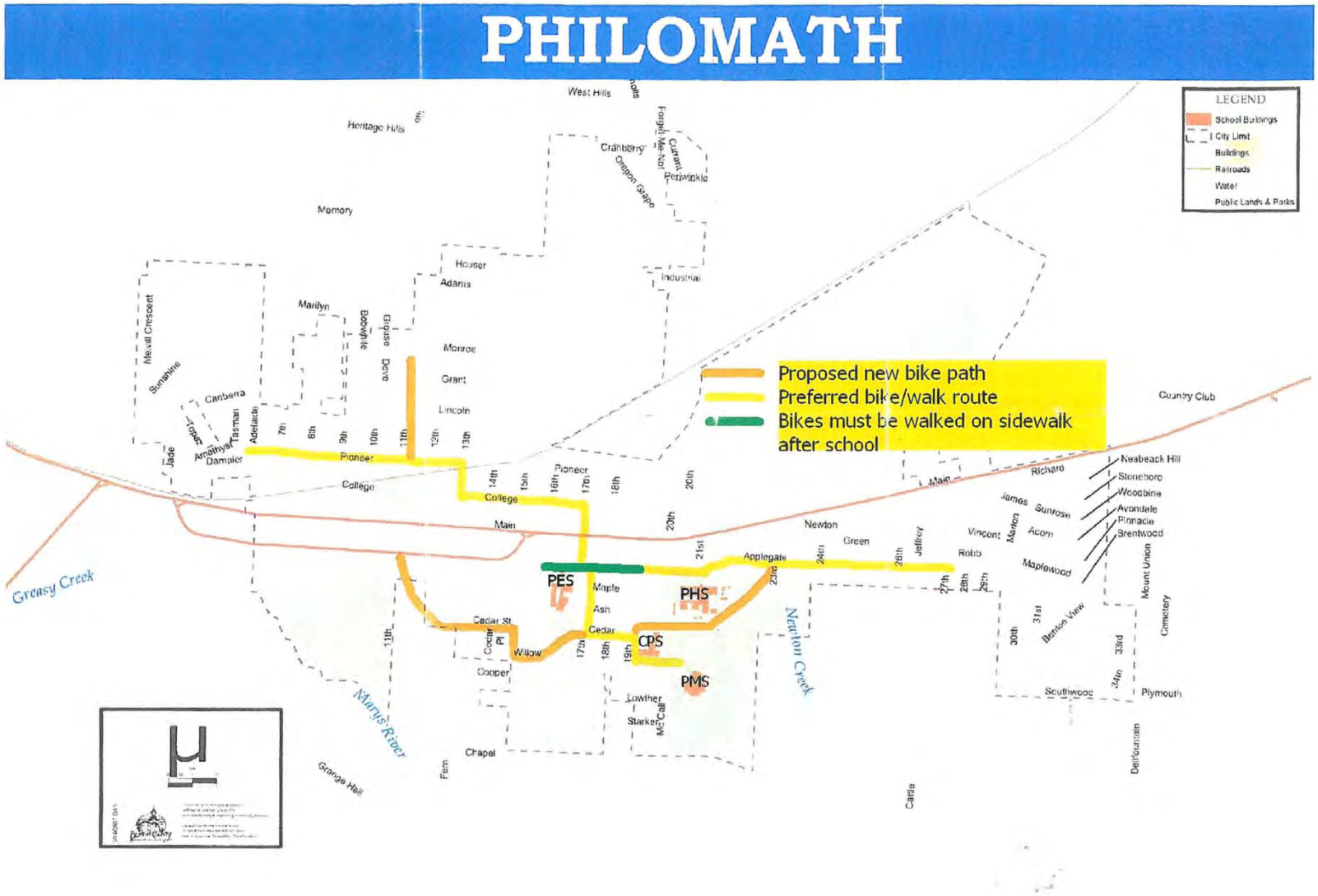
In 2008, the Philomath Safe Routes to School Program Strengthening Rural Families convened a group of parents and school leaders to develop a Safe Routes to School map. Together, the group identified preferred routes for students to use when walking and bicycling to Philomath schools. These routes included 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.

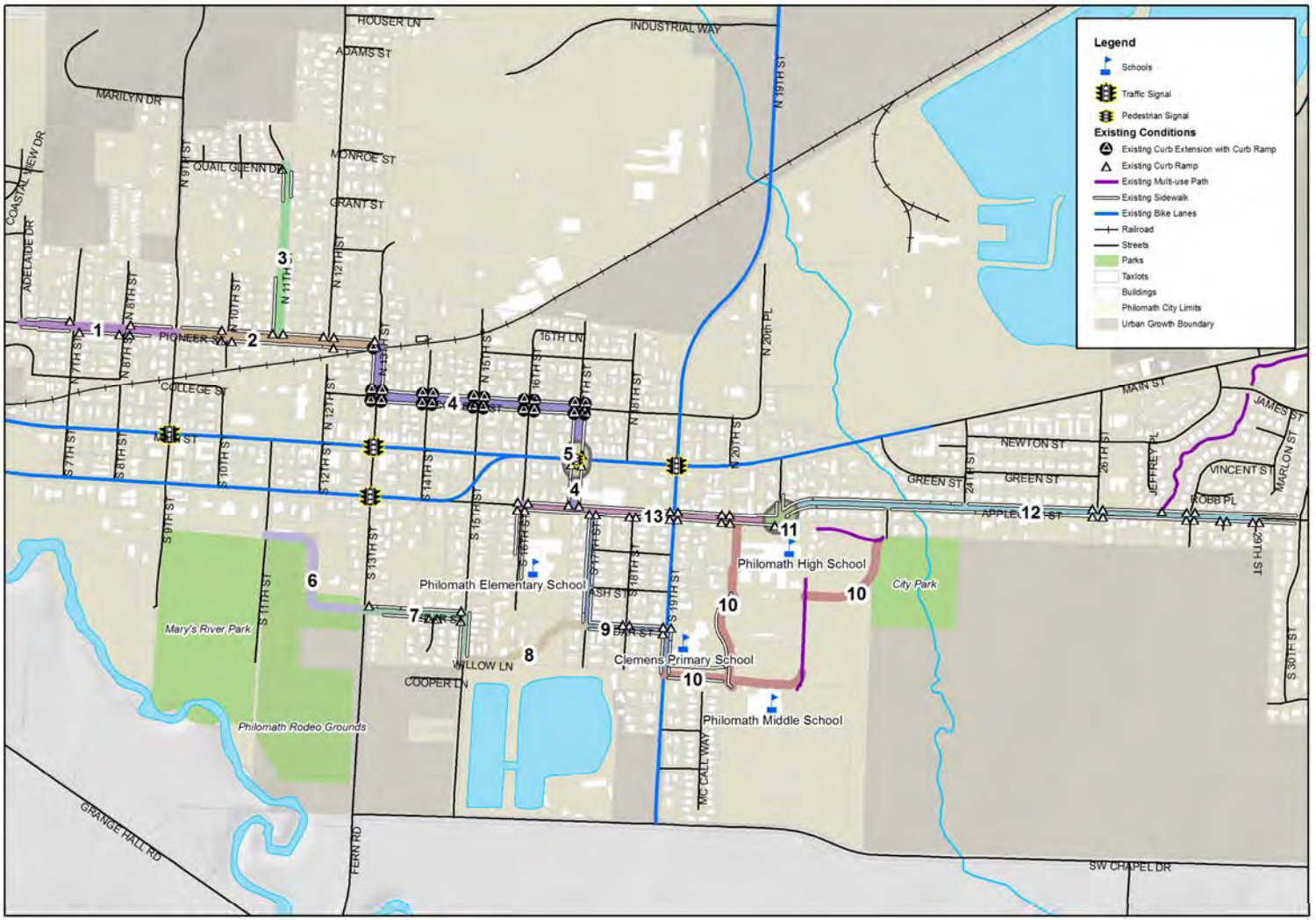
Table 1. Safe Routes to School Subareas

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.

This page intentionally left blank.

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.

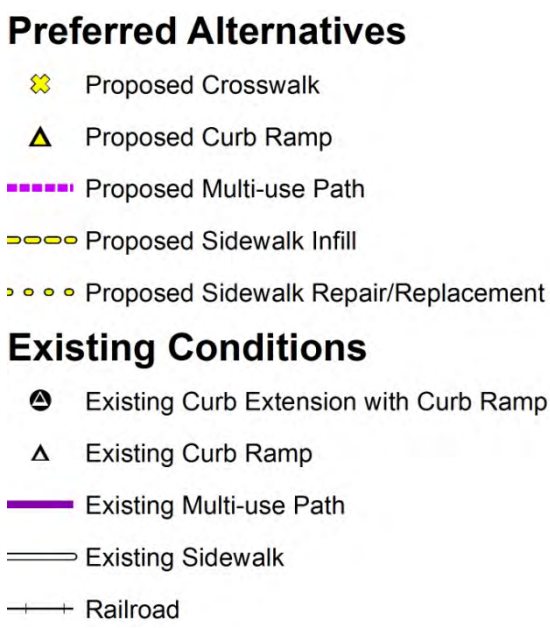


Figure 7. Preferred Alternatives Legend

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

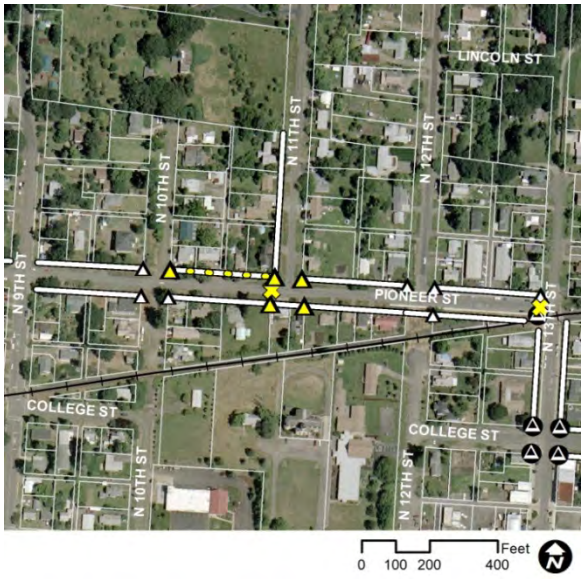
- Completes ADA accessibility along the north side of Pioneer Street.
- New crosswalk and curb ramps at 11th Street leverage investment in recently completed sidewalk along south side of Pioneer Street, and provide a new connection for students living on 11th and 12th Streets to the north.
- Crosswalk 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

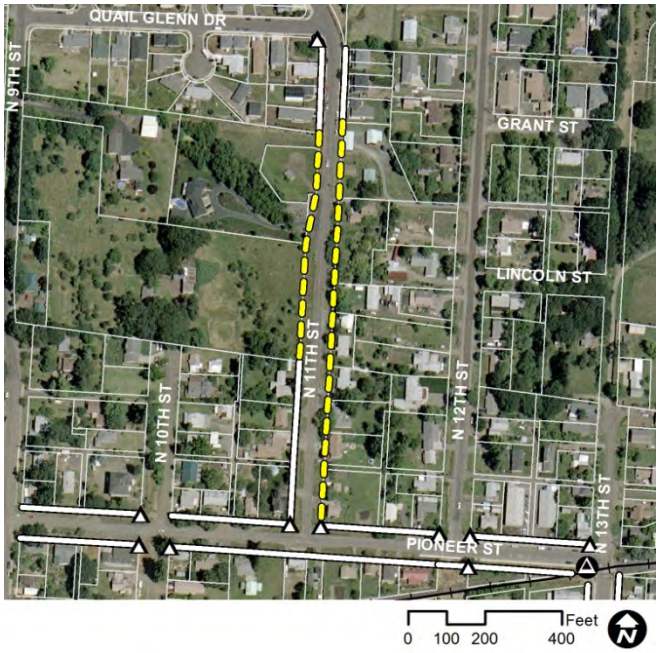
- Provides dedicated road space for bicyclists and pedestrians along 11th Street, where neighbors have concerns about the safety of bicycles and pedestrians mixing with motor vehicle traffic on the existing roadway.
- Completes a key gap, connecting numerous families and students in the Quail Glen neighborhood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

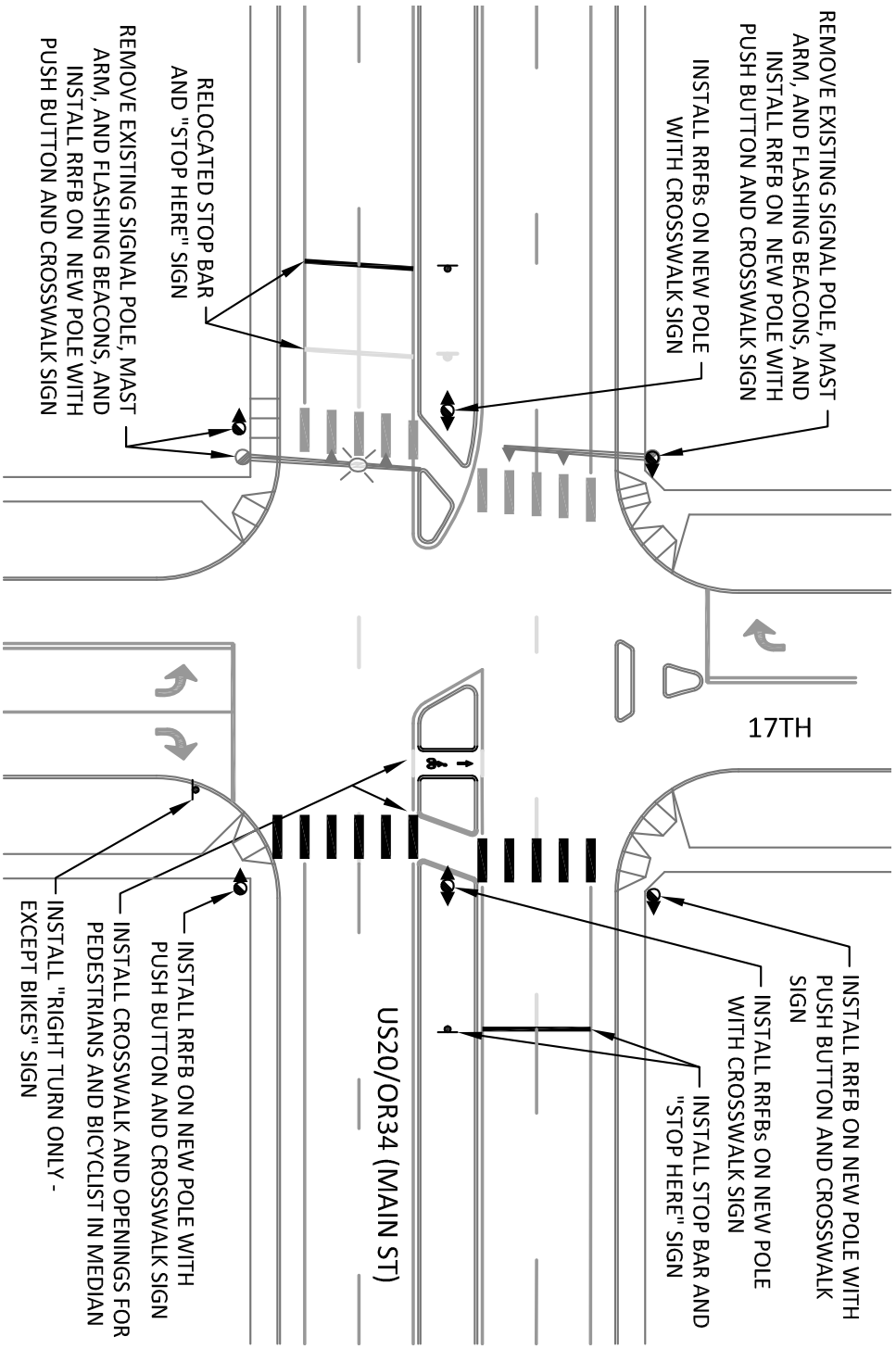
Two alternatives to the proposed plan could be considered if the requirement of installing eight RRFBs is determined to be undesirable. The RRFBs could be installed on the existing crosswalk without adding the second crosswalk (see Conceptual Alternative 5 in Appendix D). This would increase driver yielding 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

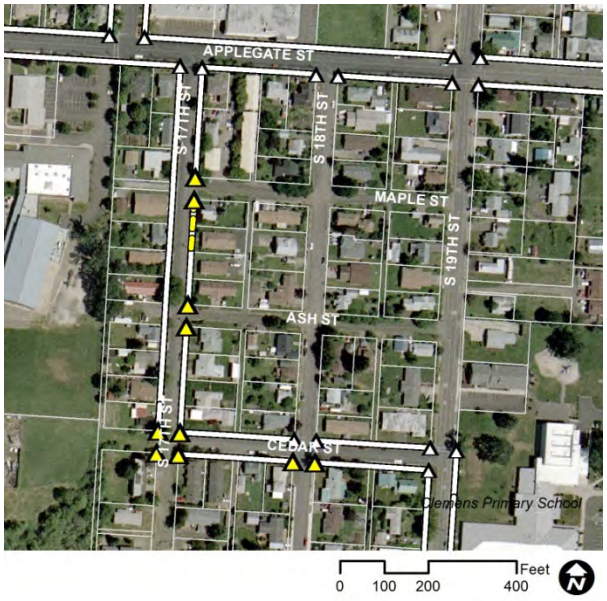
- Improves a section of deficient sidewalk along east side of 17th Street.
- Improves ADA accessibility along 17th Street and the south side of Cedar Street..
- Improvements connect existing western sidewalk along 17th Street to existing curb ramps and crosswalk across 19th Street to complete connection 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

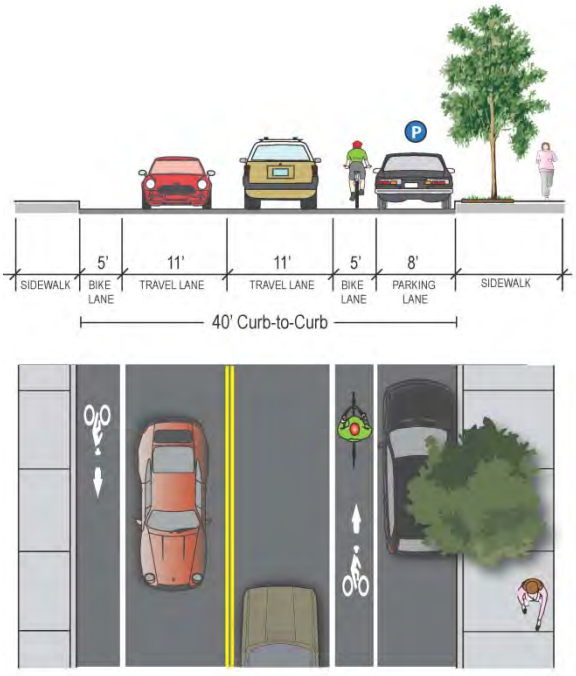
- Improves ADA accessibility along Applegate Street.
- Provides dedicated space for bicyclists traveling along Applegate Street to and from Philomath schools.
- Current levels of use observed during field visits show that existing on-street vehicle parking use on Applegate Street could be accommodated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

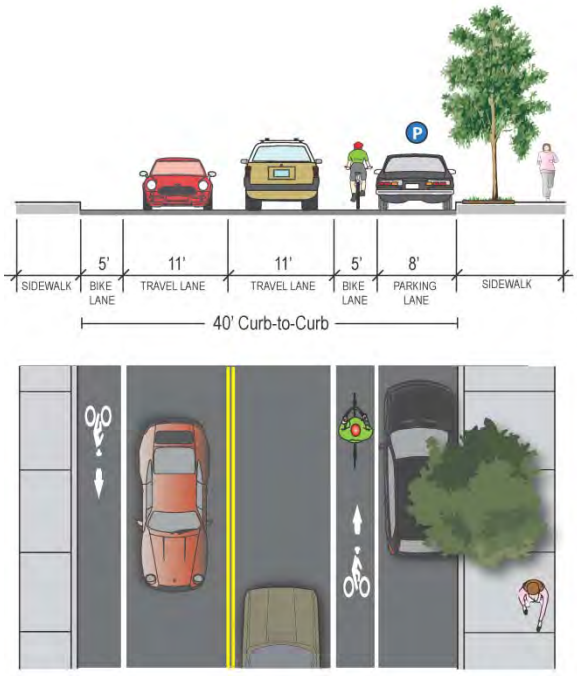
- Completes a gap in ADA accessibility along 17th Street near Philomath Elementary School.
- Leverages the utility of the existing crosswalk on the west leg of the intersection and helps discourage midblock crossings or wrong-way riding by bicyclists (wheeled users using the sidewalk may cross unpredictably 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

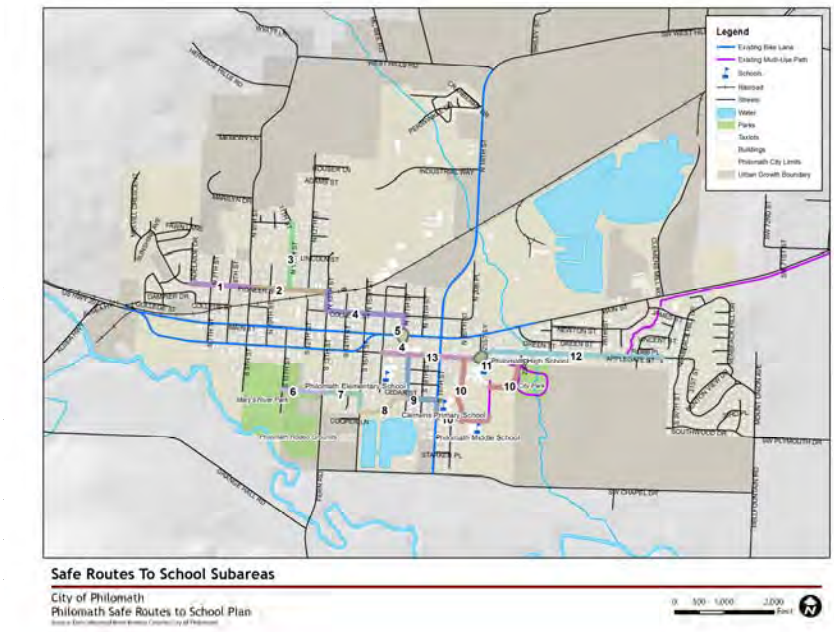
This crosswalk across Applegate Street at 17th Street is missing a curb ramp on the south side.



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.

This page intentionally left blank

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

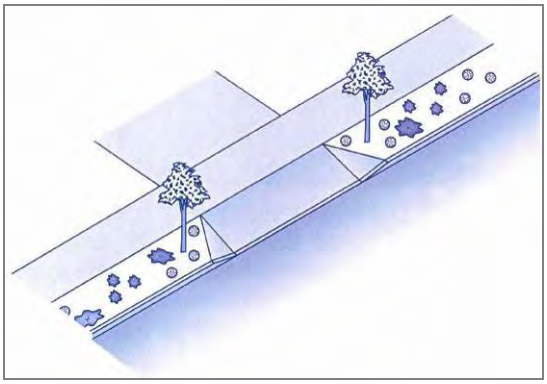
- United States Access Board. (2002). *Accessibility Guidelines for Buildings and Facilities.*
- United States Access Board. (2007). *Public Rights-of-Way Accessibility Guidelines* (PROWAG).
- ODOT *HDM*

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.

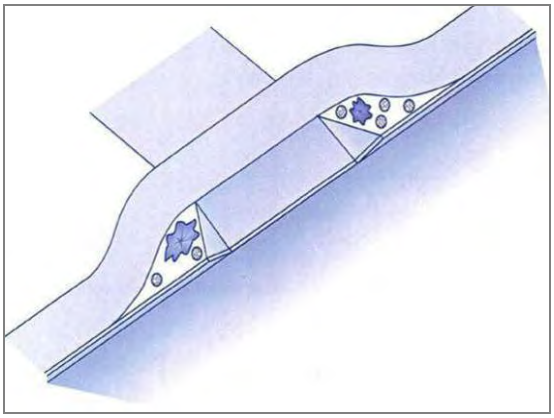


Driveway apron utilizing the planting strip.

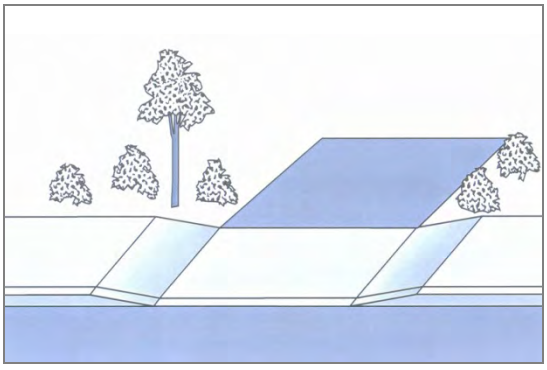
Discussion

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.

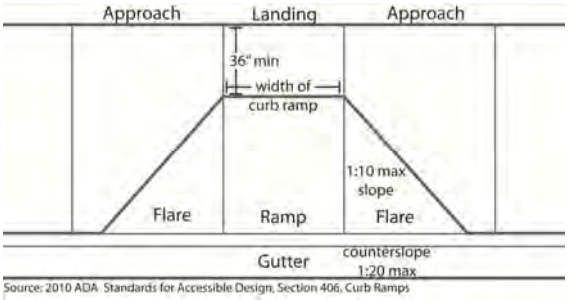
Guidance

- 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.*

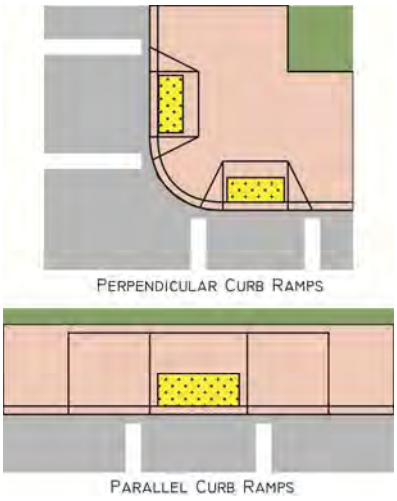
ADA-Compliant Curb Ramps

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

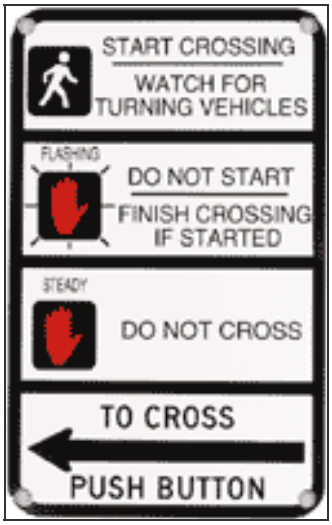
Pedestrian Push-Buttons

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.

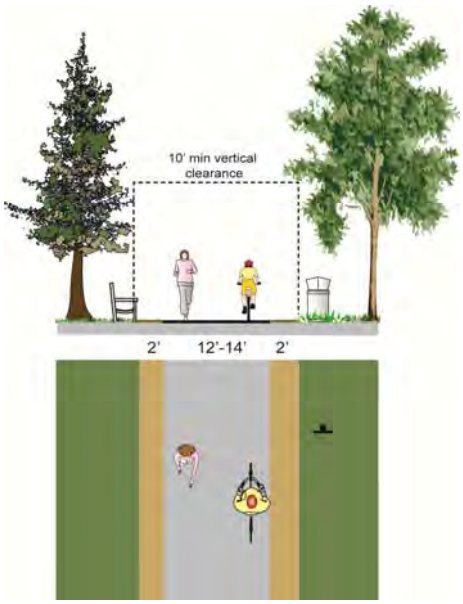
Guidance

- 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.

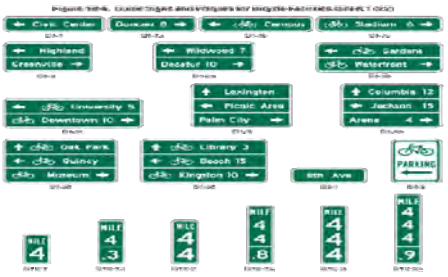
Guidance

- 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.

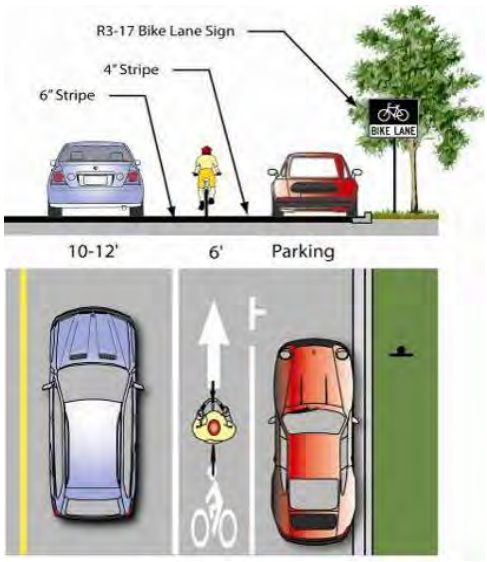
However, wide bike lanes may encourage the cyclist to ride farther to the right to maximize distance from passing traffic. Wide bike lanes may also cause confusion with unloading vehicles in busy areas where parking is typically full. Some alternatives include:

- 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.

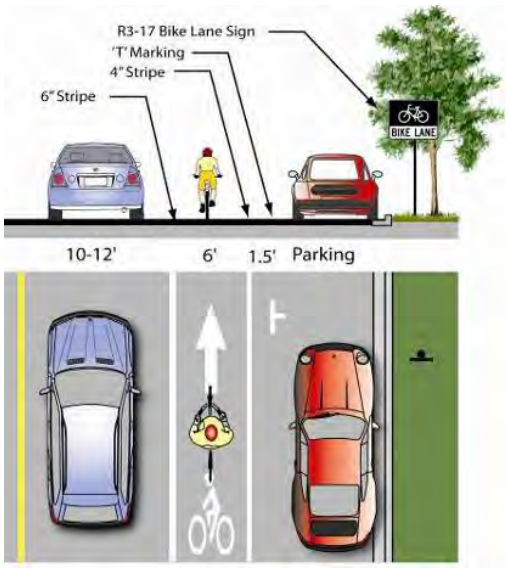
Guidance

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

."



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

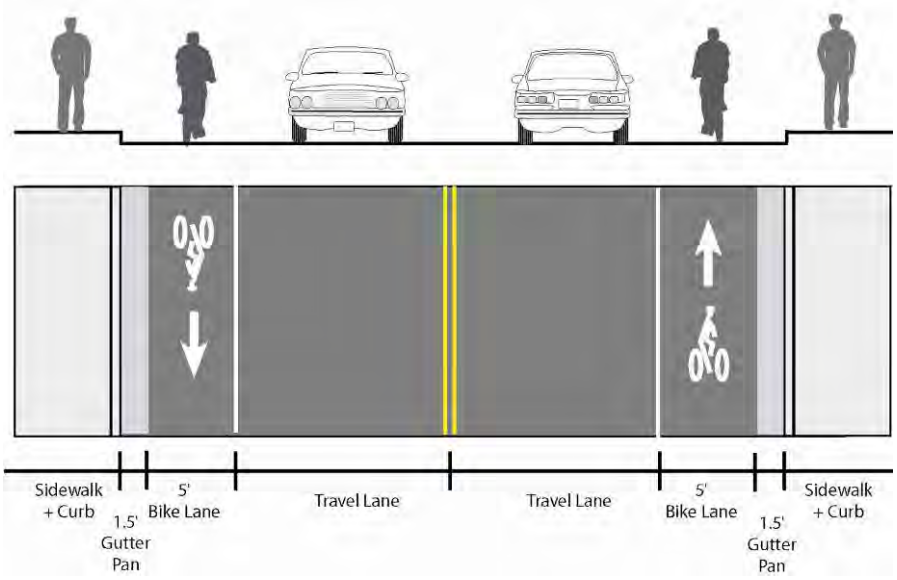
- Bike lane width:
  - 4′ minimum when no curb & gutter is present
  - 5′ minimum when adjacent to curb and gutter (3′ more than the gutter pan width if the gutter pan is wider than 2′)
- Recommended width:
  - 6′ where right-of-way allows
- Maximum width:
  - 8′ Adjacent to arterials with high travel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

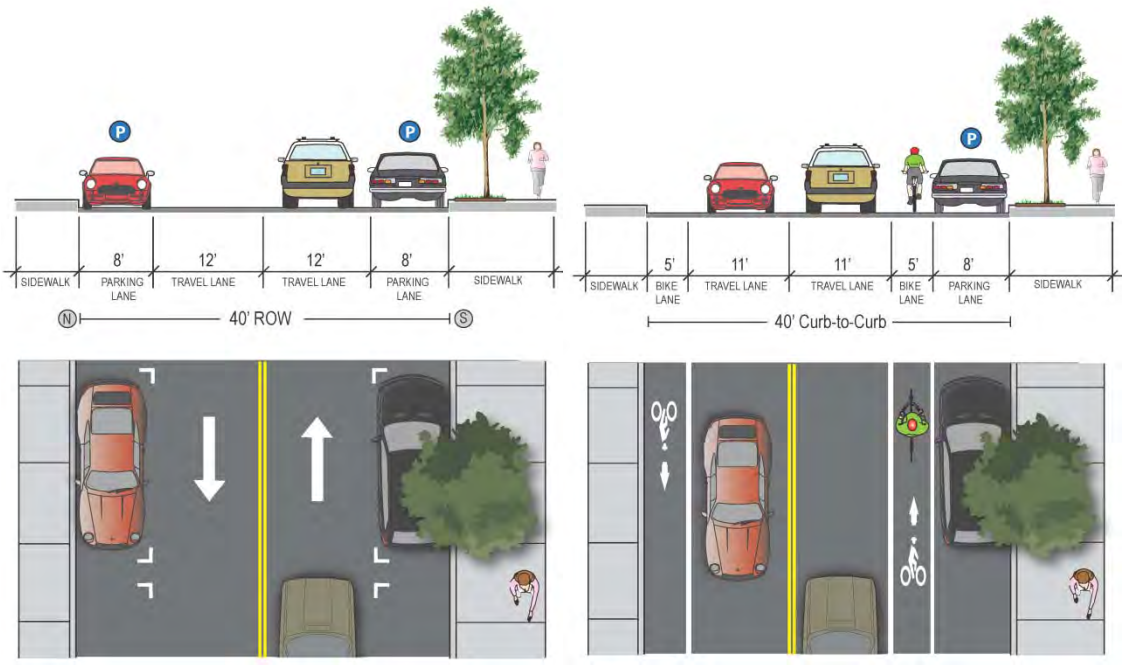
- Bike lane width: see bike lane design guidance.
- Vehicle lane width: depends on project. No narrowing may be needed depending on the width of the parking lane to be removed.

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

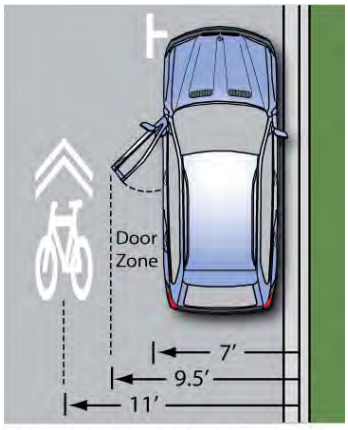


Example of parking removal to accommodate bike lanes

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

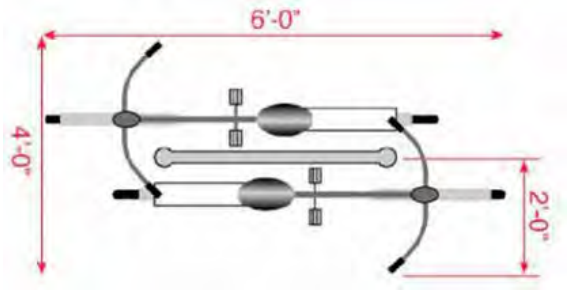
Bicycle parking can be broadly defined as either short-term or long-term parking:

- 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.*

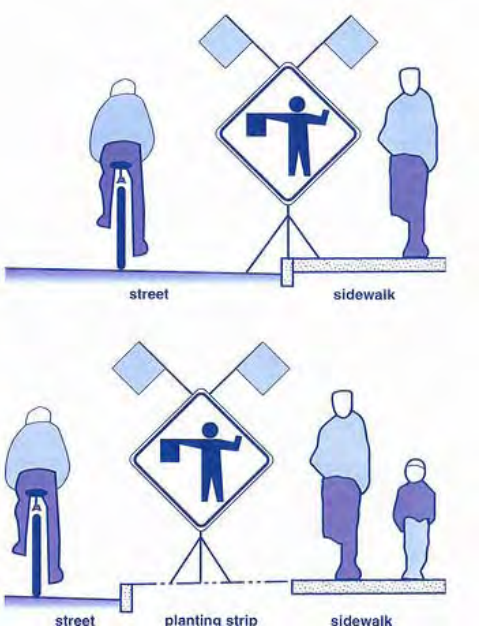
Bikeway Maintenance

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

This page intentionally left blank

Philomath
Safe Routes to School Plan

Final Plan
June 30, 2011