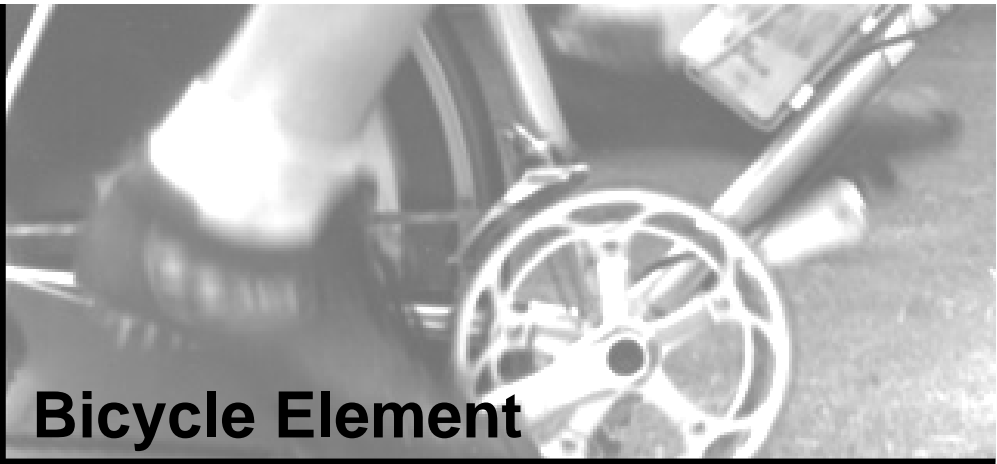


6

Bicycle Element



The bicycle is a human-powered vehicle that allows people of all ages to move independently, at relatively low cost and with little impact to the environment. Bicycling promotes the well-being of people who live and work in Milwaukie, with the added benefit of reducing auto traffic on city streets. This chapter outlines bicycle needs in Milwaukie over the next 20 years and recommends policy, operational and facility improvements to the city's bicycle system.

TSP GOAL AND POLICY FRAMEWORK

Milwaukie has developed a set of goals to guide the development of its transportation system (see Chapter 2). Several of these TSP Goals guide the City's policies on bicycle access and connectivity, specifically the following:

- **Goal 1 Livability** calls for convenient bicycling facilities, and removal of barriers that impede capacity.
- **Goal 2 Safety** directs the City to design safe bicycle connections between parks, schools, and other activity centers in Milwaukie.
- **Goal 3 Travel Choices** calls for an integrated citywide network of bikeways.
- **Goal 4 Quality Design** directs the City to integrate bicycle facilities into both public and private street and development projects.
- **Goal 6 Sustainability** calls for the City to increase bicycling as a means of transportation.

NEEDS

Milwaukie needs a safe and interconnected bicycle system that provides options for all types of cyclists. The deficiencies in Milwaukie's existing bicycle system can be categorized into three areas: Connectivity, Crossings, and Street Designations. Each of these categories is described in this section.

Connectivity

The lack of east/west and north/south on-street bicycle facilities creates significant gaps in the bicycle system for travel both in and around the city. There are two east/west roadways that include bike lanes in the city: King Rd and Lake Rd. However, neither of these facilities reach the downtown area and/or connect with other facilities that could allow for travel to other

destinations. There are also two north/south roadways that have bike lanes: Linwood Ave and 17th Ave. Similar to the east/west roadways, these corridors are not continuous.

Two off-street facilities serve Milwaukie (the Springwater Corridor and the Kellogg Creek Trail) but they also are not continuous. For example, while the connectivity of the Springwater Corridor was recently upgraded with completion of the "Three Bridges" project (three bridges constructed to cross over the Union Pacific Railroad, McLoughlin Blvd, and Johnson Creek), the trail ends just east of 17th Ave. Additionally, there are a limited number of connections through the city to the Springwater Corridor. The Kellogg Creek Trail connects the Milwaukie Riverfront area to the Island Station neighborhood, but doesn't easily connect to points south.

Major facilities such as McLoughlin Blvd, Highway 224, and the railroads create barriers to cycling through the city. This lack of connectivity (both on-street and off-street) causes significant problems for bicyclists and limits this mode of travel.

Crossings

Throughout the city, there is a need for convenient and safe crossings at arterials and collectors. There are many locations where bicycle routes cross arterials, highways or railroad tracks, and few of these crossings were designed to accommodate cyclists. Typically, such intersections have limited sight-distance, inadequate pavement space for bicycles, no means for tripping a signal, or no direct, safe connection. The following locations were identified as particular problem crossings:

- 17th Ave/Hwy 224
- 17th Ave/Harrison St/Hwy 99E
- Railroad crossing of 21st Ave at Adams
- Johnson Creek Blvd/Springwater Corridor
- King Rd/Stanley Ave
- Linwood Ave/Springwater Corridor
- King Rd/Linwood Ave
- Monroe St/Linwood Ave
- Linwood Ave/Harmony Rd

Street Designations

The designation of certain roadways for bicycle travel does not serve all of the needs for bicycle travel in and around the city. Many trips that connect to parks, schools, retail activity centers, etc., occur off of arterial and collector streets. These trips should generally be accommodated on lower volume streets, preferably on designated routes. Such facilities could be considered "shared" facilities or could have a specific designation such as a "bike boulevard," where actual treatments to the roadway are made that enhance the bicycle environment and make additional connections to bicycle destinations.

BICYCLE FACILITY IMPROVEMENT TOOLBOX

Types of Cyclists

Bicyclists are a varied group of people with different skill levels, abilities, bicycling experience, and trip types. For example, there are everyday commuters, avid recreational riders, children going to school, and families riding around in their neighborhoods. Their needs and comfort

level with the bicycle infrastructure in Milwaukie will vary as a result of these differences. The City needs to accommodate these different types of cyclists by providing adequate facilities for all different types of riders.

Bicycle trips are typically longer than walking trips and shorter than motor vehicle trips, and are attractive at distances up to three miles. Bicycle facilities can generally be categorized as multiuse paths, bike lanes, shared roadways, and bike boulevards. Each of these facilities serves a particular purpose for bicycle travel. Bike lanes and multiuse paths both accommodate this length of trip. However, if the trip is shorter or if the destination or origin of the trip is not next to a roadway with a bike lane, many bicycle trips can also be made on local streets. Table 6-1 summarizes each of these facilities with a general description of the elements inherent to each facility.

Table 6-1 Bikeway Types

Bikeway	Description
Multiuse path	Off-street route, typically recreational-focused, which can be used by several transportation modes, including bicycles, pedestrians and other nonmotorized modes (i.e. skateboards, roller blades, etc.).
Bike lane	Area within street right-of-way specifically designated for bicycle use.
Shared roadway	Roadways where bicyclists and autos share the same travel lane. May include a wider outside lane and/or bike boulevard treatment (priority given to through bikes on local streets).
Bike Boulevard	Lower-order, lower-volume streets with various treatments to promote safe and convenient bicycle travel. Usually accommodate bicyclists and motorists in the same travel lanes, often with no specific vehicle or bicycle lane delineation. Assign higher priority to through bicyclists, with secondary priority assigned to motorists. Also include treatments to slow vehicle traffic to enhance the bicycling environment.

Bicycle Facility Design Considerations

Multiuse Paths

As their name implies, multiuse paths are designed accommodate many types of users, and are typically constructed along an independent path such as a stream or greenway. Paths can also be built parallel to a roadway, but are most effective when built independent of a road, separating cyclists from auto traffic. The American Association of State Highway Transportation Officials (AASHTO)¹ and the Oregon Department of Transportation (ODOT),² state that mixed-use paths can be designed along roadways, provided several design considerations are met:

- A minimum 5-foot buffer should be provided between the path and roadway to protect path users from conflicts with motorists.
- Relatively few vehicle/path user conflict points (e.g., cross-streets or driveways).
- The path can be terminated at each end onto streets with good bicycle/pedestrian facilities or onto another safe, well-designed path.
- The path should not take the place of bicycle/pedestrian facilities (e.g., sidewalks and bicycle lanes) on the parallel street.

¹ *A Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, 1999.

² *Oregon Bicycle and Pedestrian Plan, An Element of the Oregon Transportation Plan*, Oregon Department of Transportation, Adopted June 14, 1995.

Bike Lanes

When possible, bike lanes should be directly adjacent to the curb, rather than adjacent to parked cars or combined with sidewalks. The recommended width of six feet provides sufficient travel space and additional room for bicyclists to steer clear of the curb or parked cars while maintaining a comfortable distance from adjacent moving traffic. Wide bike lanes also enable bicyclists to maneuver around drainage grates, manhole covers, glass and debris. Provision of bike lanes also benefits motor vehicles, which gain greater shy distance/emergency shoulder area, and pedestrians, who gain a buffer between walking areas and moving vehicles. Where right-of-way is limited, the bike lane can be reduced to five feet. Alternatively, widening the curb travel lane (for example, from 12 feet to 14 or 15 feet) can provide better bicycle accommodations and a greater measure of safety as well. However, with higher-volume roadways (e.g., streets with more than 3,000 Average Daily Trips), dedicated bike lanes are much more desirable than wide outside lanes.

The signing and marking of bike lanes should follow the *Manual on Uniform Traffic Control Devices* (MUTCD). Design features in the roadway can improve bicycle safety as well. For example, using curb storm drain inlets rather than catch basins significantly improves bicycle facilities.

Shared Roadways

Shared roadways can be designed to safely accommodate both bicycle and auto traffic. Figure 6-1 illustrates an example of an appropriate warning sign with a supplemental "Share the Road" plaque that may be used to draw more attention to the fact that slow-moving forms of transportation may be using the roadway. When used, the supplemental plaque must be installed below the warning sign on the same signpost. Directional pavement markings may also be considered on shared roadways to supplement the bicycle warning signs when desired. The pavement markings illustrated in Figure 6-1 below are typically called "Sharrows" or "Shared Lane Markings" and are utilized on bicycle travel routes that have on-street parking but no designated bike lanes. Sharrows are commonly used on streets where dedicated bike lanes are desirable but are not possible for any number of reasons. The marking helps to align bicyclists, to shift their travel pattern out of the direction of a parked car door opening into their travel path.

Figure 6-1 Bicycle Signs and Markings



It should be noted, however, that while posting "Bike Route" signage for bicyclists is an acceptable way for the City to demarcate bike routes, such signs should be coupled with pavement markings and/or way finding signage for bicyclists to get the most value out of the City's investment. Although this is an adopted MUTCD sign, it does not provide much information. Adding way-finding information such as distances to various destinations, directional arrows, and estimated travel times makes the sign much more useful. These signs are most effective when placed in useful locations, such as where a bike route makes a turn that is not intuitive to riders.

Bike Boulevards

Bike boulevards generally utilize streets with lower traffic volumes and vehicle speeds, such as minor collectors or local streets that pass through residential neighborhoods. Traffic controls along a bike boulevard assign priority to bicyclists while encouraging through vehicle traffic to use alternate parallel routes. Traffic calming and other treatments along the corridor reduce motor vehicle speeds so that motorists and bicyclists generally travel at the same speed, creating a safer and more comfortable environment for all users. Bike boulevards also incorporate treatments to facilitate safe and convenient crossings of major streets. Bike boulevards work best in well-connected street grids, where riders can follow reasonably direct and logical routes. Bike boulevards also work best when higher-order, parallel streets exist to serve through vehicle traffic.

Milwaukee's bike boulevard network could be developed through a variety of improvements ranging from minor street enhancements (e.g., directional pavement markings) to larger-scale projects (e.g., intersection signalization). The various treatments fall into five major application levels based on their degree of physical intensity, with Level 1 representing the least physically intensive treatments that can be implemented at relatively low cost:

- **Level 1: Signage** (e.g., way-finding and warning signs along and approaching the bike boulevard)
- **Level 2: Pavement markings** (e.g., directional pavement markings, shared lane markings)
- **Level 3: Intersection treatments** (e.g., signalization, curb extensions, refuge islands)
- **Level 4: Traffic calming** (e.g., speed humps, mini traffic circles)
- **Level 5: Traffic diversion** (e.g., choker entrances, traffic diverters)

Corridors targeted for higher-level applications would also receive relevant lower-level treatments. For instance, a street targeted for Level 3 applications should also include Level 1 and 2 applications as necessary. It should be noted that some applications might not be appropriate on all streets. In other words, it may not be necessary to implement all Level 2 applications on a particular street designated for Level 2 treatment in order to create a functional bike boulevard.

Designating a street as a "bike boulevard" does not suggest that only bicyclists should use it. In fact, the treatments applied to bike boulevards make these routes safer for pedestrians and motorists as well, and the general traffic calming adds to neighborhood livability. With that in mind, using alternative labels for "bike boulevards" might be appropriate to stress the multimodal benefit. Suggestions include "community corridors" and "neighborhood parkways."

Bicycle Parking

Bicycle parking and storage facilities are an important component of an effective bicycle system. Lack of proper storage facilities discourages potential riders from traveling by bicycle. Bike racks should be located at significant activity generators including schools, parks, and commercial areas. Racks should be placed in highly visible locations and within convenient proximity to main building entrances. Bike racks should be designed to provide two points of contact to the bicycle so the user can lock both the wheel and the frame to the rack. Bike lockers, showers, and caches of repair equipment (patch kits, tire tubes, etc.) would be helpful at locations where long-term parking is expected, such as future MAX stations, downtown bus stops, or major employment centers. The attractiveness of bicycle parking is also improved by providing covered parking and/or secured facilities where bicycles may be locked away.

RECOMMENDATIONS

Strategies

Bikeway improvements are aimed at closing the gaps in the bicycle network along arterial and collector roadways, establishing low-traffic routes that parallel arterials and collectors, and providing multimodal links to improve livability. To meet the TSP goals and policies outlined in Chapter 2, and address the needs outlined in this chapter, the City should take the following steps for improving the bicycle system:

- Fill in gaps in the existing bike corridor network (on arterials and collectors).
- Construct new bike lanes on strategic arterials and collectors.
- Connect key bicycle corridors to schools, parks, and activity centers.
- Improve crossing safety and connectivity.
- Designate bike boulevards on lower-volume streets that connect major bicycle facilities and/or bicycle destinations.
- Maintain bike lanes, off-street paths, signage, and other facility improvements.
- Construct and improve multiuse paths for recreational and commuter use.
- Involve cyclists in the design and planning of bicycle and road facilities.
- Educate cyclists and motorists about bicycle routes, laws, and opportunities.

These strategies will be used to guide and develop projects that address the needs of the bicycling community in Milwaukie as well as those of bicyclists throughout the region. The projects resulting from these strategies fall into three categories: capital, operational, and maintenance. Key projects in each of these categories are described below.

Capital

These projects are typically large-scale infrastructure projects or projects that require some sort of physical infrastructure to be built. Capital projects also typically require ongoing maintenance that must be programmed into the existing maintenance schedule.

Key projects

Several potential bike boulevard corridors have been identified to enhance Milwaukie's bicycle network. The corridors were identified with respect to major bicycling destinations as well as their proximity to desired bicycle travel routes. The recommended corridors are shown in Figure 6.2 and described below:

- Monroe St between downtown Milwaukie and Linwood Ave
- Stanley Ave between Railroad Ave and Johnson Creek Blvd
- A corridor roughly following 40th Ave north from Monroe St and then splitting into two separate corridors at Harvey St. One bike boulevard would continue north on 40th Ave and follow Olsen St and 42nd Ave to connect with Johnson Creek Blvd. The second bike boulevard would follow Harvey St west from 40th Ave and follow Balfour St, 29th Ave, and Van Water St to connect with the Springwater Corridor. If 29th Ave is extended to the south, the bike boulevard should connect to the south as well (see Figure 8-3a, which shows the future extension of 29th Ave).

- 17th Ave between Waverly Dr and Harrison St, a key bicycle connection between downtown Milwaukie and the Sellwood neighborhood in Portland. The connection should be improved by constructing bike lanes or a multiuse path.

These bike boulevards should be targeted for Level 4 applications, including signage, pavement markings, intersection treatments, and traffic calming. Each corridor currently includes some boulevard components (e.g., speed humps). Due to limited street connectivity, Level 5 bike boulevard applications (traffic diversion) are not recommended for these corridors. To identify and develop additional site-specific treatments, the City should involve the bicycling community, neighborhood groups, and the Public Works Department. Further analysis and engineering work may also be necessary to determine the feasibility of some applications.

Operational

These projects involve actions that make existing infrastructure more useable. They include upkeep of existing facilities, educational campaigns, or distributing information about the use of the transportation network. They are typically smaller in scale and dollars than capital projects and are implemented more broadly than in one specific location.

Key projects

- Driver and cyclist education, including driver and biker awareness classes, "Share the Road" safety class, bike safety education for kids and adults.
- Encouraging cycling through community events to get new cyclists involved and interested in how to commute by bike.
- Consider applying rumble strips or other treatments to safely define bike lanes in places, such as Johnson Creek Blvd, where vehicles commonly cross into the bike lane.

Policy

These projects do not typically improve the bicycle environment in a physical manner, but rather result in a fundamental change to the way bicycle travel is thought of and treated within the city of Milwaukie.

Key projects

- Enforce traffic laws that protect cyclists.
- Collect and maintain cycling traffic counts to measure the effect of improvements.
- Work with the City of Portland and Clackamas County when implementing bike boulevards, bike lanes, and multiuse paths to ensure good connectivity beyond Milwaukie.
- Consider establishing a committee to advise and advocate for implementation of the projects in this plan.

Master Plan

The Bicycle Master Plan is composed of a list of projects that address the identified needs (see Figure 6-2). Summarized in Table 6-2, the Master Plan represents the "wish list" of bicycle-related projects in Milwaukie. The planning-level cost estimates provided in Tables 6-2 and 6-3 are based on general unit costs for transportation improvements but do not reflect the unique elements that can significantly add to project costs. As projects are pursued, each of these project costs will need further refinement in order to detail right-of-way requirements and costs associated with special design details.



Transportation System Plan

FIGURE 6-2

BICYCLE MASTER PLAN

December 2007

LEGEND

Existing Bicycle Facilities	Proposed Improvements
Shared Facility	Bicycle Intersection Safety Improvement
Bicycle Lane	Bicycle Corridor Enhancement
Springwater Trail	Bike Boulevard
Kellogg Creek Trail	Bicycle Lanes
Schools	Trolley Trail
Major Roads	County Line
Streets	Parks
Railroad	Water
10' Contours	City Limits

PROPOSED PROJECTS

Improve Intersection to Increase Bicycle Safety

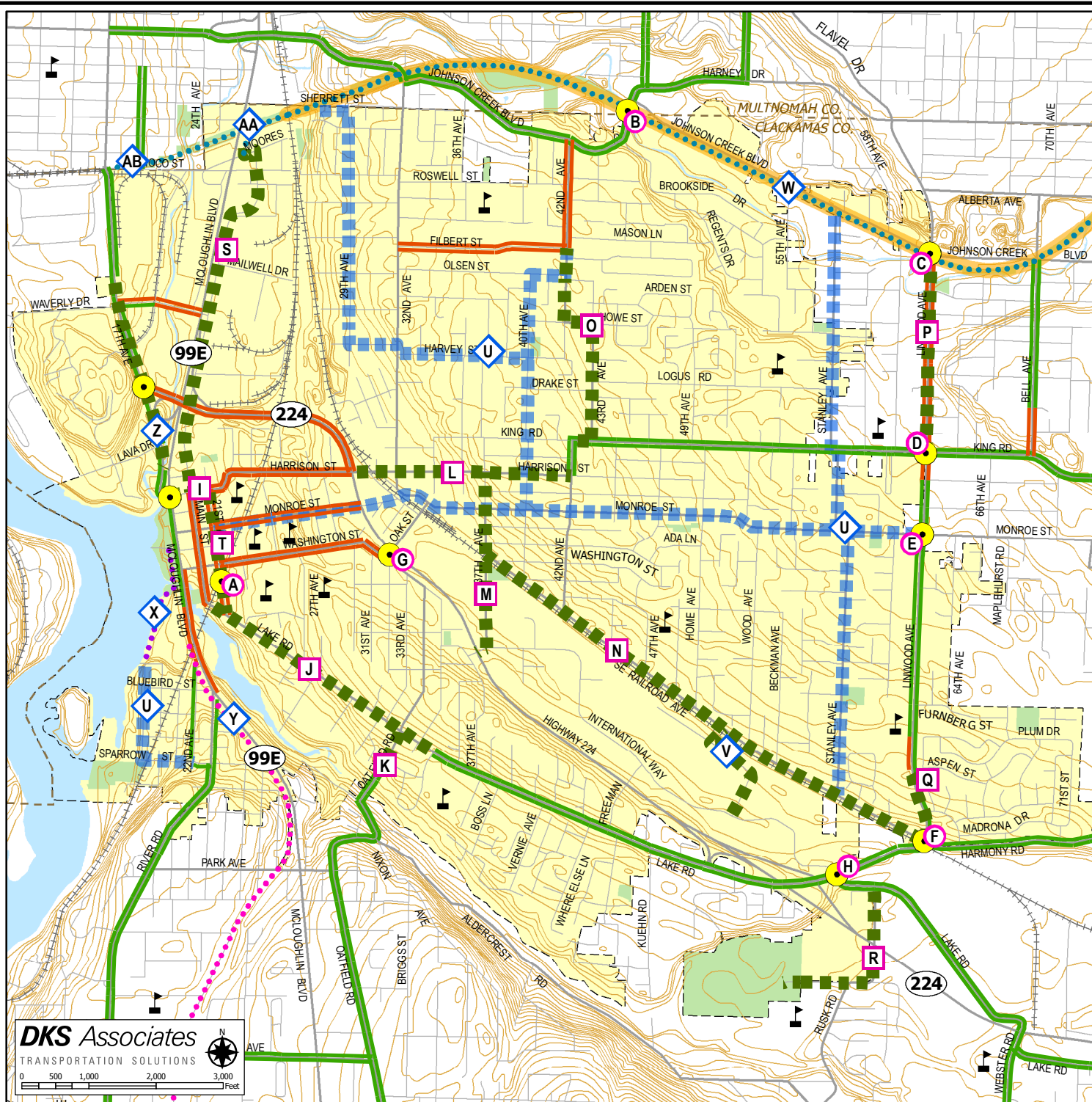
- A** Adams St/21st Ave/Railroad Crossing
- B** Johnson Creek Blvd/Springwater Trail
- C** Johnson Creek Blvd/Linwood Ave
- D** Linwood Ave/King Rd
- E** Linwood Ave/Monroe St
- F** Linwood Ave/Harmony Rd
- G** Washington St/Oak St/Hwy 224
- H** International Way/Lake Rd

Provide Bicycle Lanes Where not Currently Present

- I** Harrison St from Hwy 99E to 21st Ave
- J** Lake Rd from Main St to Guilford Dr
- K** Oatfield Rd from Guilford Ct to Lake Rd
- L** Harrison St from Hwy 224 to 42nd Ave
- M** 37th Ave from Harrison St to Hwy 224
- N** Railroad Ave from 37th Ave to Linwood Ave
- O** 43rd Ave from King Rd to Filbert St
- P** Linwood Ave from Queen Rd to Johnson Creek Blvd
- Q** Linwood Ave from approximately Juniper St to Harmony Rd
- R** Rusk Rd from Lake Rd to North Clackamas Park
- S** Main St from Harrison St to Moores St
- T** 21st Ave from Harrison St to Lake Rd

Enhance Existing Bicycle Connection

- U** Install Bike Boulevard treatments at various locations
- V** Construct bicycle overpass from Railroad Ave to International Way
- W** Improve Springwater Trail paving
- X** Improve Kellogg Creek Trail
- Y** Install Trolley Trail signage
- Z** Fill in gaps in existing bike network with bike lanes or multiuse path.
- AA** Improve intersection safety on 17th Ave at Hwy 224 and at 99E.
- AB** Improve ramp at Springwater Trail/Hwy 99E
- AB** Complete Springwater Trail along Ochoco St



DKS Associates
TRANSPORTATION SOLUTIONS

0 500 1,000 2,000 3,000 Feet

Table 6-2 Bicycle Master Plan Projects

Map ID ³	Priority	Type	Project Name	Project Description	From	To	Cost(s) \$1,000s ⁴
A	Low	C	Intersection Improvements at Adams and 21 st	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
B	Low	C	Springwater Corridor Intersection Improvements at 45 th	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
C	Low	C	Intersection Improvements at Johnson Creek Blvd and Linwood	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
D	Low	C	Intersection Improvements at Linwood and King	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
E	Low	C	Intersection Improvements at Linwood and Monroe	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
F	Low	C	Intersection Improvements at Linwood and Harmony	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
G	High	C	Hwy 224 Crossing Improvements at Oak and Washington	Improve intersection crossing safety for cyclists at Washington Street and Oak Street.	Location specific	Location specific	\$10
H	Low	C	Intersection Improvements at International Way and Lake Road	Improve safety of crossing at intersection.	Location specific	Location specific	\$10
I	Med	C	Harrison Street Bike Lanes	Fill in gaps in existing bicycle network with bike lanes (cost included with Harrison Street road widening project).	Hwy 99E	21 st Ave	NA
J	Low	C	Lake Road Bike Lanes	Fill in gaps in existing bicycle network with bike lanes (cost included with Lake Road road widening project).	Main St	Guilford Dr	NA
K	Low	C	Oatfield Road Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Guilford Ct	Lake Rd	\$348

³ See Figure 6-2

⁴ Project costs are in 2007 dollars. Future costs may be more due to inflation. Costing details can be found in the Technical Appendix. In the case of operational projects, estimated costs are for the entire 22-year planning period.

Map ID ³	Priority	Type	Project Name	Project Description	From	To	Cost(s) \$1,000s ⁴
L	Low	C	Harrison Street Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Hwy 224	42 nd Ave	\$13
M	Low	C	37 th Avenue Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Harrison St	Hwy 224	\$2,900
N	High	C	Railroad Avenue Bike Lanes	Fill in gaps in existing bicycle network with bike lanes (cost included with Railroad Avenue road widening project).	37 th Ave	Linwood Ave	NA
O	Low	C	43 rd Avenue Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	King Rd	Filbert St	\$1,014
P	Low	C	Linwood Avenue Bike Lanes (north)	Fill in gaps in existing bicycle network with bike lanes.	Queen Rd	Johnson Creek Blvd	\$1,692
Q	Low	C	Linwood Avenue Bike Lanes (south)	Fill in gaps in existing bicycle network with bike lanes.	Juniper St	Harmony Rd	\$296
R	Low	C	Rusk Road Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Lake Rd	North Clackamas Park	\$936
S	Med	C	Main Street Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Harrison St	Moores St	\$2,131
T	Low	C	21 st Avenue Bike Lanes	Fill in gaps in existing bicycle network with bike lanes.	Harrison St	Lake Rd	\$50
U	High	C	29 th /Harvey/40 th Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements.	Springwater Trail	Monroe St	\$200
U	High	C	Monroe Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements.	21 st Ave	Linwood Ave	\$300
U	Med	C	Stanley Avenue Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements.	Springwater Trail	Railroad Ave	\$300
U	Med	C	19 th and Sparrow Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements. This would connect the south end of Kellogg Creek Trail to River Rd.	Eagle St	River Rd	\$737
V	Low	C	Bicycle and Pedestrian Overpass	Establish a dedicated bicycle and pedestrian connection across Railroad Avenue and the railroad tracks.	Railroad Ave	International Way	\$2,025
W	Med	C	Springwater Trail Paving Project	Improve corridor through repaving existing trail.	29 th Ave	Linwood Ave	\$500
X	Low	C	Kellogg Creek Trail Improvements	Resurface trail and provide wayfinding signage to/from trail.	Milwaukie Riverfront	Treatment Plant	\$623
Y	Low	C	Trolley Trail Signage	Design and install Trolley Trail signage.	Milwaukie Riverfront	Southern city limits	\$54
Z	High	C	17 th Avenue Bikeway and Intersection Safety Improvements	Fill in gaps in existing bicycle network with bike lanes or multiuse path. Improve intersection safety and eastbound connection at 17 th Ave/Hwy 99E. Improve intersection safety at 17 th Ave/Hwy 224.	Waverly Dr	Harrison St	\$135

Map ID ³	Priority	Type	Project Name	Project Description	From	To	Cost(s) \$1,000s ⁴
AA	Low	C	Springwater Trail Ramp Improvement at McLoughlin	Improve ramp at Springwater Trail and McLoughlin Blvd.	Location specific	Location specific	\$15
AB	High	C	Springwater Trail Completion	Contribute to regional project to complete Springwater Trail ("Sellwood Gap") along Ochoco Street.	17 th Ave	19 th Ave	\$80
NA	Low	C	Kronberg Park Trail	Construct multimodal trail along Kellogg Creek connecting Kronberg Park to downtown Milwaukie.	McLoughlin Blvd	Downtown	\$1,200
NA	High	C	Bike Route Signage	Install neighborhood bike route signage.	Citywide	Citywide	\$150
NA	High	O	Bike Lane Maintenance	Sweep bike lanes to remove debris.	Citywide	Citywide	\$1100
NA	Low	O	Bicycle-friendly Street Grates	Install bicycle-friendly street grates.	Citywide	Citywide	\$50
NA	Low	O	Milwaukie Bike Map	Produce a Milwaukie Bike Map.	Citywide	Citywide	\$50
NA	Low	O	Police Enforcement on Drivers	Enforce laws related to bike lanes and bicycle safety.	Citywide	Citywide	\$10
NA	Low	O	Bike Lane Striping	Re-stripe existing bike lanes and stripe bike lanes on streets where buses and bicyclists share the road.	Citywide	Citywide	\$20
NA	Low	C	Springwater Trail Signage	Install wayfinding signage for Springwater Trail.	Citywide	Citywide	\$15
NA	Low	O	North Clackamas Greenway Corridor Study	Study feasibility of corridor for multiuse path construction (possibly along Kellogg Creek).	Downtown	Clackamas Regional Center	\$50
NA	Med	O	Cyclist Education	Promote cycling through bike use and route selection education.	Citywide	Citywide	\$10
NA	Med	O	Community Bicycle Rides	Coordinate community bike rides to encourage bike use.	Citywide	Citywide	\$5

Notes:

C = Capital Project High = High priority
O = Operational Project Med = Medium priority
P = Policy Project Low = Low priority

Action Plan

The Bicycle Action Plan identifies projects that are reasonably expected to be funded with City funds by 2030, which meets the requirements of the updated Transportation Planning Rule.⁵ The Action Plan project list is the result of a citywide project ranking process. All of the modal master plan projects were ranked by the TSP Advisory Committee after consideration of the Working Groups' priorities, other public support for the project, and how well each project implements the TSP goals and policies. The highest-ranking bicycle projects that are reasonably expected to be funded (see Chapter 13) are shown in Table 6-3.

Table 6-3 Bicycle Action Plan

Project Name	Project Description	From	To	Direct Funding or Grant Match
29 th /Harvey/40 th Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements.	Springwater Trail	Monroe St	Direct
Bike Route Signage	Install neighborhood bike route signage.	Citywide	Citywide	Direct
Bike Lane Maintenance	Sweep bike lanes to remove debris.	Citywide	Citywide	Direct
Monroe Bicycle Boulevard	Designate as a Bicycle Boulevard and install bicycle boulevard improvements.	21 st Ave	Linwood Ave	Match
17 th Avenue Bikeway and Intersection Safety Improvements	Fill in gaps in existing bicycle network with bike lanes or multiuse path. Improve intersection safety and eastbound connection at 17 th Ave/Hwy 99E. Improve intersection safety at 17 th Ave/Hwy 224.	Waverly Dr	Harrison St	Match

REGIONAL TRANSPORTATION PLAN (RTP) COMPLIANCE

The projects identified in the Master Plan list and further refined in the Action Plan list are inline with the Metro Regional Transportation Plan. Specifically, the projects identified are in line with Metro's goal for regional mobility and non-single occupant vehicle modal targets.

⁵ OAR Chapter 660, Department of Land Conservation and Development, Division 012, Transportation Planning, adopted on March 15, 2005, effective April 2005.