Bremerton Non-Motorized Transportation Plan

Parametrix

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Acknowledgments

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Kitsap Transit
Kitsap County
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Harrison Medical Center
Mosquito Fleet Trail Advocates
West Sound Cycling Club
Puget Sound Naval Shipyard
Washington State Ferries
City of Bremerton Department of Community Development
City of Bremerton Department of Parks and Recreation
City of Bremerton School District

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1. Executive Summary

1.1 Vision

Imagine stepping off a ferry in downtown Bremerton and walking all the way to Evergreen Park on a Boardwalk overlooking Port Washington Narrows. Imagine taking in Evergreen Park's sites and views, then making your way to Olympic College on a series of completed sidewalks and safe street crossings. The walk continues across Port Washington Narrows on a pedestrian/bicycle bridge directly to Lions Community Playfield and its abundant recreation opportunities. Now imagine walking through East Bremerton's vibrant neighborhoods and to Harrison Medical Center on safe, comfortable, and convenient pedestrian routes.

Now imagine bicycling your way through Bremerton on the Mosquito Fleet Trail. From East Bremerton, imagine cruising down Trenton Avenue on a wide shoulder away from car traffic. As you enter Enetai, Trenton Avenue becomes a bicycle-friendly street where autos and bikes travel at the same speed. As you near the bottom of the hill, the ride takes you on a new bicycle/pedestrian path along Upper Shore Drive through Manette, leading you to a new Manette Bridge with dedicated space for bikes. Now imagine passing through downtown Bremerton on the newly extended Louis Mentor Boardwalk. The ride continues west on lower-speed bicycle-friendly streets through Charleston, ultimately linking to a path along SR 304 to Gorst.

Finally, imagine building a transportation system that reduces fuel consumption, enables freedom of mobility, encourages more physical activity, allows children to walk and bike to school, reduces traffic congestion, and makes it possible to create economic growth at the same time... this is the vision for Bremerton's walking and bicycling system.

The foundation of a potentially tremendous bikeway/walkway network is already in place or in development. The downtown core and several neighborhoods have well-connected streets with few sidewalk gaps, while some streets also act as good bicycling routes.

Several high-profile pedestrian/bicycle projects, including the Louis Mentor Boardwalk extension and Manette Bridge replacement, are also underway. Bremerton residents and leaders desire to make their community even more attractive for walkers and bicyclists. In some areas, especially around schools, commercial centers, transit stops, and business districts, bicycle/pedestrian system upgrades are needed. These include intersection improvements, sidewalk completion, Americans with Disabilities Act (ADA) compliance, completing bikeway network gaps, and establishing new connections. In addition, the Safe Routes to School and other innovative programs covered in this Plan seek to address the needs of people of all ages and abilities.

Biking Safety Lessons

Walking is fun

This Non-Motorized Transportation Plan (NMTP) will take Bremerton to the next level. This Plan presents the vision of a fully developed bicycle/pedestrian system over the next 20 years, serving residents, commuters, shoppers, and visitors alike. A complete bikeway and walkway network will increase connections within the community, increase the number of children walking and bicycling to school, and promote the health of Bremerton residents by making walking and bicycling safe, comfortable, and attractive travel modes.

1.2 Purpose of Plan

This NMTP provides an updated inventory and assessment of existing bicycle and pedestrian conditions. Based on the inventory and input from stakeholders, this Plan recommends comprehensive strategies for systemwide improvements, and specifies exactly what needs to be done to achieve the City's goal of becoming a better walking and bicycling community. These recommendations will help Bremerton leverage the necessary funding and other resources needed to achieve this goal.

City staff, stakeholder groups, and most of all, Bremerton residents, helped guide this Plan. Community workshops were held throughout the project's duration, enabling residents and other interested individuals to express concerns and ideas for improvements. The Project Team conducted stakeholder interviews to identify their bicycle and pedestrian issues. The Bremerton Planning Commission and City Council provided insights in a series of work sessions and public meetings.

1.3 Existing Conditions

The existing system was evaluated to determine existing gaps, barriers, and bottlenecks that prevent facility users from traveling to destinations within a neighborhood, throughout the region, or from connecting to points within the region. Factors that determine or influence the state of the existing system include:

- Accessibility from points of origin (coverage),
- Comfort level of streets used in terms of vehicle traffic, crossing protection, lane width, driveways, and other items,
- Topography and grades,
- Support facilities such as benches and drinking fountains at major destinations, and
- Coherence of the system to the average user attempting to reach an unfamiliar destination.

Bremerton's existing bicycle and pedestrian network consists of sidewalks, bicycle lanes, shoulder bikeways, shared roadways, and shared use paths that range in quality. Map 1 shows the locations of these elements. A positive bicycling and walking environment is already established in a number of places including:

Trails for everyone

- Pedestrian-friendly environment in downtown, Harborside District, and other areas,
- Warning signage advising motorists of pedestrian and bicycle traffic on city streets,
- Traffic calming devices on several streets, and
- Intersection treatments to facilitate safe and convenient pedestrian crossings in some areas.

Areas for improvement were located and described by stakeholders and community members in outreach events and group interviews and include:

- Impaired sight distances resulting from steep topography,
- Limited street connectivity in some areas,
- Natural and man-made barriers (e.g., waterways, fencing, wide streets with high traffic volumes),
- Excessive vehicle speeds on some streets where bicyclists and motorists share the same lanes,
- Narrow sidewalks in some areas, including bridges,
- Fragmented sidewalk network in some areas,
- Sidewalk obstructions (e.g., light poles, fire hydrants, etc.),
- Difficult pedestrian crossings at several intersections,
- Fragmented shared use path network,
- Lack of bicycle parking facilities in several areas, and
- Lack of wayfinding tools to orient bicyclists and pedestrians.

These issues and opportunities are diagrammed in Map 2 and Map 3.

1.4 Stakeholder and Public Outreach

The City held two meetings with stakeholders and the public to obtain input and ideas on pedestrian and bicycle system deficiencies, safety concerns, and ideas for project improvements. Each workshop was organized similar to a design charette, where the individual stakeholder representatives provided input during a pre-scheduled 1-hour meeting. The first workshop was held on March 13, 2007 with stakeholder meetings during the day followed by an evening open house-workshop with other community members. The evening open house with the community was an opportunity to share input from the stakeholder workshop and seek broad public input. A second workshop presented the Draft Plan and requested input from the stakeholders on specific improvements and priorities. Information about the public workshops/open houses was disseminated through mailings, flyer posting, e-mail, and websites.

Kitsap Way today

Vision for Kitsap Way

The stakeholder meetings were held with the following groups and their key concerns are briefly summarized below. All input became the basis for the projects list and recommendations.

- City of Bremerton Department of Community Development
- City of Bremerton Department of Parks and Recreation
- City of Bremerton School District
- Kitsap County Transit
- Kitsap Health District, Harrison Medical Center
- Mosquito Fleet Trail Advocates
- West Sound Cycling Club
- Puget Sound Naval Shipyard
- Washington State Ferries

The public participation process was concluded with final meetings at the City of Bremerton Planning Commission and City Council for the formal review and approval of the Non-Motorized Transportation Plan.

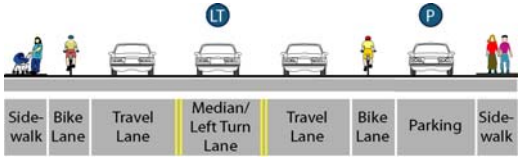
1.5 Recommendations

This Plan lays out a comprehensive system connecting key walking and bicycling destinations and surrounding areas. The recommended system was developed based on input from City staff, stakeholder groups, and Bremerton residents, and builds upon recommendations from previous and on-going City, County, and State planning efforts. The proposed systems, diagrammed in Map 4 and Map 5, comprise a variety of facilities including sidewalks, bicycle lanes, shoulder bikeways, an expanded shared roadway/Bicycle Boulevard network, shared use paths, and intersection improvements. Table 1 summarizes the proposed projects.

The basis for the recommendations is the in-depth existing conditions evaluation discussed in Section 2. These recommendations are discussed in greater detail in Sections 3 and 4: Section 3 focuses on facility or capital improvements such as sidewalks and bicycle lanes; and Section 4 focuses on programs such as Safe Routes to Schools and transit connections. Section 5 presents the prioritization rationale and possible funding sources. Appendix B contains the prioritized recommendations with cost opinions that may be used for the Capital Improvement Projects list.

To get the momentum going, the City should start today with a few key strategies (later chapters discuss these strategies in greater detail):

- Implement bikeway and walkway projects along the Mosquito Fleet Trail: Developing Bremerton's section of the regional Mosquito Fleet Trail provides a valuable opportunity for the City to implement and showcase each of the bicycle/ pedestrian facility types proposed in this Plan. Passing through Bremerton, the trail would follow a combination of streets, sidewalks, and paths.



Naval Avenue with bike lanes

Traffic Circle

This Plan recommends some minor alignment changes to take advantage of several proposed bikeway and walkway projects. Efforts to develop this trail are well underway, as shown by the planned Boardwalk extension and Manette Bridge replacement. The City should keep this momentum going.

- Implement a Bicycle Boulevard demonstration project: In many areas, Bremerton benefits from a generally well-connected system of lower-volume streets that—with the addition of relatively small-scale treatments—could become spectacular bicycling routes for riders of all ages and skills. Using a variety of treatments, the City could develop a Bicycle Boulevard network to make riding safer and more comfortable on streets where motorists and cyclists share the same space. To get started, the City should implement a Bicycle Boulevard demonstration project to test these applications. Segments of the proposed Mosquito Fleet Trail route are ideal locations for a demonstration project.
- Develop and implement a Wayfinding Signage Plan: Wayfinding signage is one of the most cost-effective and visible ways to promote bikeway and walkway system use. While encouraging people to get out and use the system, wayfinding signage also orients walkers and bicyclists to appropriate routes. Bremerton should develop and implement a citywide Wayfinding Signage Plan to visibly demonstrate its commitment to creating an easy-to-use system.
- Implement Safe Routes to School pilot projects: The City should build upon the School District's tremendous Safe Routes to School efforts by implementing several pedestrian safety pilot projects. This Plan identifies two schools where the City should concentrate its initial efforts of completing sidewalk gaps and updating intersection crossings.
- Revisit and update Municipal Code bicycle parking requirements: Bremerton has an immediate low-cost opportunity to ensure future developments provide adequate bicycle parking facilities. The City should evaluate its current bicycle parking requirements, and update the Municipal Code to include more detail regarding space requirements and facility design. The Code update should address both short- and long-term bicycle parking. This effort would allow the City to take advantage of new development and redevelopment projects.
- Create a Bicycle/Pedestrian Technician position: A Bicycle/Pedestrian Technician dedicated exclusively to non-motorized project implementation could physically oversee, assist, and/or lead project construction. The technician could expedite smaller-scale project implementation such as signage and pavement markings, and

Bremerton Wayfinding Sign

Group Ride

Bicycle Parking

monitor the condition of bicycle/pedestrian infrastructure to identify and address maintenance issues as needed. Other responsibilities could include installing, repairing, and replacing public bike racks, bike lockers, and other facilities as needed. The technician could also oversee the update and implementation of Municipal Code bicycle parking requirements and provide coordination with major employers required to comply with the Commute Trip Reduction Act.

Equally important to the walkway and bikeway network are support programs. Additional strategies for improving walking and bicycling in Bremerton include:

- Building on and continuing the Safe Routes to School program
- Updating the Municipal Code's bicycle parking requirements
- Improving pedestrian/bicycle access to Kitsap Transit and Washington State Ferries
- Creating an alternative transportation coordinator or advisory committee
- Coordinating with Kitsap Transit and major employers to increase bicycle and pedestrian commute trips as part of Commute Trip Reduction Act requirements.
- Creating a Bicycle/Pedestrian Technician position
- Developing a Wayfinding Signage Plan
- Developing a capital spot improvement program
- Continuing the City's Sidewalk Program for filling system gaps
- Developing an ADA Transition Plan
- Developing education programs (e.g., safety handbook)
- Developing encouragement programs (e.g., employer incentives, multi-modal access guides, bicycle/pedestrian events)
- Enforcing traffic laws relating to pedestrians and cyclists

Table 1. Recommended Pedestrian and Bicycle Projects

Project	From – to
Intersection Improvements	
11th St. at Callow Ave.	N/A
11th St. at Pacific Ave.	N/A
Kitsap Way at Harlow Dr.	N/A
Kitsap Way at North Lake Way	N/A
Loxie Eagans Blvd. at National Ave.	N/A
Loxie Eagans Blvd. at SR 3 NB Ramps	N/A
Loxie Eagans Blvd. at SR 3 SB Ramps	N/A
Marion St. at Renaissance High School	N/A
National Ave. at Preble St.	N/A
Old Wheaton Way north of Lebo Blvd.	N/A
Old Wheaton Way at Harkins St.	N/A
Old Wheaton Way at Lebo Blvd./Cherry Ave.	N/A
Perry Ave. at Holman St.	N/A
Perry Ave. at Stone Way	N/A
Sheridan Rd. at Pine Rd.	N/A
SR 303/Warren Ave. at 4th St.	N/A
SR 303/Warren Ave. at 5th St.	N/A
SR 303/Warren Ave. at 11th St.	N/A
SR 303/Warren Ave. at 13th St.	N/A
SR 303/Warren Ave. at 16th St.	N/A
SR 303/Wheaton Way at Riddell Rd.	N/A
SR 303/Wheaton Way at Sheridan Rd.	N/A
SR 303/Wheaton Way at Sylvan Way	N/A
SR 304/Burwell St. at Callow Ave.	N/A
SR 304/Burwell St. at Montgomery Ave.	N/A
SR 304/Burwell St. at State Ave.	N/A
SR 310/Kitsap Way between Forrest and Pershing	N/A
SR 310/Kitsap Way at 11th St.	N/A
SR 310/Kitsap Way at SR 3 NB Ramps	N/A
SR 310/Kitsap Way at SR 3 SB Ramps	N/A

Project	From – to
Sidewalks	
1st St.	Auto Ctr. Blvd./Bruenn Ave. to Auto Ctr. Way
1st St.	Marion Ave. to Callow Ave.
6th St.	Price Rd. to Auto Center Way
11th St.	SR 310/Kitsap Way to Callow Ave.
15th St.	Corbet Dr. to Lafayette Ave.
16th St.	Old Wheaton Way to Trenton Ave.
18th St.	Old Wheaton Way to Perry Ave.
25th St.	Wycoff Ave. to Snyder Ave.
26th St.	Phinney Bay Dr. to Wycoff Ave.
Arsenal Way	Loxie Eagans Blvd. to Yantic Ave.
Arsenal Way	Oyster Bay Ave. to Loxie Eagans Blvd.
Corbet Dr.	SR 310/Kitsap Way to Phinney Bay Dr.
Harlow Dr.	Kitsap Way to Price Rd.
Harlow Dr.	Price Rd. to Bruenn Ave.
Hartford St.	Arsenal Way/Yantic Ave. to 1st St.
Magnusson Way/Stone Way	Schley Blvd.
Marine Dr.	Rocky Point Rd. to northern terminus
Marion Ave./Adele Ave.	Arsenal Way to SR 310/Kitsap Way
Naval Ave.	13th St. to 15th St.
Old Wheaton Way	Callahan Dr. to Sheridan Rd.
Old Wheaton Way	Harkins St. to Callahan Dr.
Oyster Bay Ave.	"C" St. to Loxie Eagans Blvd.
Oyster Bay Ave.	Arsenal Way to SR 310/Kitsap Way
Petersville Rd.	Sheridan Rd. to Sylvan Way
Phinney Bay Dr.	Rocky Point Rd. to Corbet Dr.
Preble St.	National Ave. to Lafayette Ave.
Price Rd.	Harlow Dr. to 6th St.
Rocky Point Rd.	Marine Dr. to northern terminus
Roosevelt Blvd.	3rd Ave. to Oyster Bay Ave.
Schley Blvd.	Old Wheaton Way to Sheridan Rd.
Shorewood Dr.	SR 310/Kitsap Way to NAD Park
Snyder Ave.	15th St. to 25th St.
Terrace St.	Perry Ave. to Trenton Ave.
Tracyton Beach Rd.	Bremerton city limits to east of Sheridan Rd.
Trenton Ave.	Shore Dr. to Stone Way
Wycoff Ave.	25th St. to 26th St.

Table 1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to
Sidewalks and Bicycle Lanes	
Almira Dr.	Sylvan Way to Riddell Rd.
Austin Dr.	Kitsap Way to SR 3 interchange
Austin Dr./SR 3 overcrossing	N/A
Auto Center Way	Loxie Eagans Blvd. to SR 310/Kitsap Way
Harlow Dr.	Kitsap Way to Price Rd.
Harlow Dr.	Price Rd. to Auto Center Blvd.
Kitsap Way	North Lake Way to SR 3 interchange
Loxie Eagans Blvd.	National Ave. to Arsenal Way
Manette Br.	Washington Ave. to Old Wheaton Way
Marine Dr.	SR 310/Kitsap Way to Rocky Point Rd.
National Ave.	Charleston Beach Rd. to SR 310/Kitsap Way
Olympus Dr.	Sheridan Rd. to Sylvan Way
Perry Ave.	Magnusson Way/ Stone Way to Sylvan Way
Pine Rd.	Sheridan Rd. to Riddell Rd.
Riddell Rd.	Pine Rd. to Perry Ave.
SR 304/Navy Yard Hwy.	Charleston Beach Rd. (west junction) to Charleston Beach Rd. (east junction)
Sheridan Rd.	SR 303/Wheaton Way to Perry Ave.
Sylvan Way	Monticola Dr. to SR 303/Wheaton Way
Sylvan Way	Olympus Dr. to Trenton Ave.

Shared Use Paths	
Dockside subdivision accessways	N/A
NAD Park-Jackson Park Naval Housing Area Shared Use Path	Shorewood Dr. northern terminus to existing path in Jackson Park Naval Housing Area
SR 3 Shared Use Path	SR 16 to SR 304
SR 3/Searle St. Bicycle/Pedestrian Overcrossing	Baer Blvd. to overcrossing's east end
Shore Dr. Shared Use Path	10th St. to Vandalia Ave.
Port Washington Narrows Bicycle/Pedestrian Bridge	West of SR 303/Warren Ave. Bridge
SR 303/Warren Ave. Pedestrian/Bicycle Overcrossing	SR 303/Warren Ave. at 15th St.
West End Rail Corridor	N/A

Project	From – to
Shoulder Bikeways	
Chico Way	SR 3 to North Lake Way
Erlands Point Rd.	Chico Way to Austin Dr.
Kitsap Lake Rd.	North Lake Way to Price Rd.
North Lake Way	Kitsap Way to Kitsap Lake Rd.
Perry Ave.	Sylvan Way to Riddell Rd.
Price Rd.	Kitsap Lake Rd. to Harlow Dr.
Riddell Rd.	Tracyton Beach Rd. to Pine Rd.
SR 304/Navy Yard Hwy.	SR 3 to Charleston Beach Rd. (west junction)
Tracyton Beach Rd.	Bremerton city limits to Riddell Rd.
Trenton Ave.	Stone Way to Sylvan Way
Union Ave./3rd Ave./Kent Ave./Sherman Heights Rd.	Loxie Eagans Blvd. to SR 3

Bicycle Lanes	
1st St.	Montgomery Ave. to Naval Ave.
6th St.	Callow Ave. to Park Ave.
6th St.	Park Ave. to Washington Ave.
11th St./Washington Ave.	Park Ave. to Manette Br.
Austin Dr.	SR 3 interchange to Erlands Point Rd.
Auto Center Blvd./Bruenn Ave.	Kean Blvd. to Auto Center Way (northern junction)
Lebo Blvd.	Bremerton city limits to Old Wheaton Way
Loxie Eagans Blvd.	Auto Center Way to National Ave.
Naval Ave.	1st St. to 15th St.
Old Wheaton Way	Manette Br. to Sheridan Rd.
SR 310/Kitsap Way	SR 3 interchange to Callow Ave.
Sheridan Rd.	Lebo Blvd. to SR 303/Wheaton Way
Sylvan Way	SR 303/Wheaton Way to Olympus Dr.

Table 1. Recommended Pedestrian and Bicycle Projects (continued)

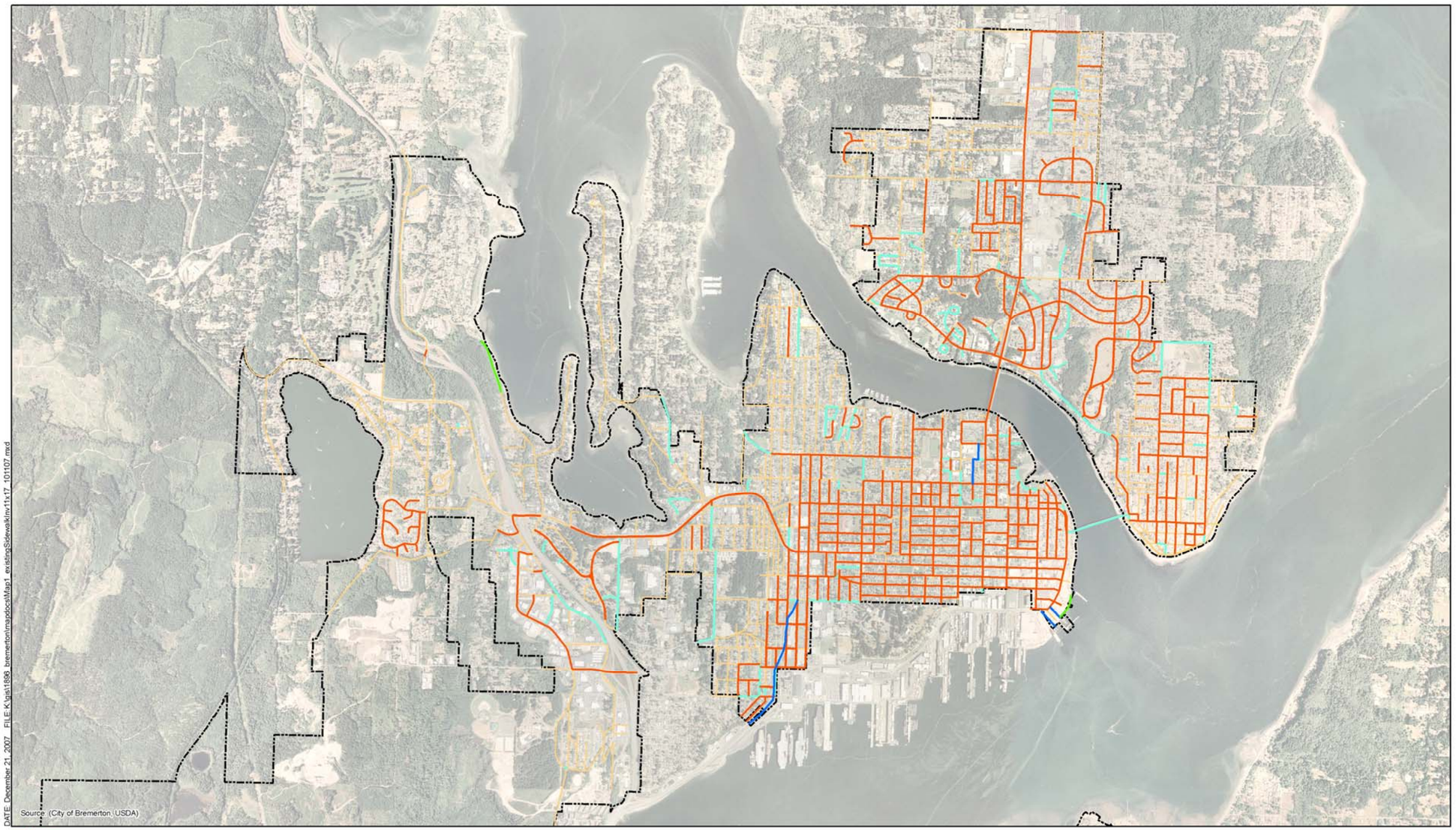
Project	From – to
Shared Roadways/Bicycle Boulevards	
1st St.	Auto Center Blvd./Bruenn Ave. to Auto Center Way
1st St.	Hartford Ave. to Naval Ave.
4th and 5th Sts.	Olympic Ave. to Washington Ave.
11th St.	Winfield Ave. to Trenton Ave.
13th St.	Naval Ave. to Park Ave.
15th St.	Lafayette Ave. to High Ave.
16th St./Chester Ave.	SR 303/Warren Ave. to future Port Washington Narrows bike/ped bridge
17th St.	SR 303/Warren Ave. to Park Ave.
18th St./Terrace St.	Old Wheaton Way to Trenton Ave.
Arsenal Way/Hartford Ave.	National Ave. to 1st St.
Baer Blvd./Russell Rd./Arsenal Way	SR 310/Kitsap Way to National Ave.
Cherry Ave.	Old Wheaton Way to Sheridan Rd.
Constitution Ave./Marion Ave./Adele Ave.	Preble St. to SR 310/Kitsap Way
Elm St.	Lebo Blvd. to Sheridan Rd.
Eastlake Dr./Lakehurst Dr.	Harlow Dr. to Lakehurst Dr. southern terminus
Halverson Ave./Spruce Ave.	Sheridan Rd. to Almira Dr.
High Ave.	5th St. to 15th St.
Holman St.	Perry Ave. to Trenton Ave.
Ironsides Ave./Nipsic Ave.	Shore Dr. to Holman St.
Magnusson Way/Stone Way	Schley Blvd. to Trenton Ave.

Project	From – to
Shared Roadways/Bicycle Boulevards	
Marine Dr.	Rocky Point Rd. to northern terminus
Montgomery Ave.	1st St. to 15th St.
Olding Rd./Shore Rd./Root Ct.	Austin Dr. to existing shared use path along Ostrich Bay
Olympic Ave./Whitney Ave.	4th St. to 15th St.
Osprey Cir.	Segment along Kitsap Lake
Oyster Bay Dr.	Arsenal Way to SR 310/Kitsap Way
Pacific Ave.	1st St. to 13th St.
Park Ave.	4th St. to 17th St.
Perry Ave.	Holman St. to Magnusson Way/ Stone Way
Pitt Ave.	10th St. to 11th St.
Phinney Bay Dr.	Rocky Point Rd. to Lafayette Ave.
Robin Ave./Solie Ave.	Sheridan Rd. to Sylvan Way
Rocky Point Rd.	Marine Dr. to northern terminus
Searle St.	Auto Center Way to SR 3 bicycle/ pedestrian overcrossing
Schley Blvd.	Old Wheaton Way to Sheridan Rd.
Shore Dr.	10th St. to 11th St.
Shorewood Dr.	SR 310/Kitsap Way to NAD Park
Trenton Ave.	Shore Dr. to Stone Way
Washington Ave.	1st St. to Manette Br.

Table 1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to
Other Projects	
Citywide bicycle wayfinding signage plan	N/A
Kitsap Lake Trail Feasibility Study	N/A
Bremerton Transportation Center Bicycle/ Pedestrian Sub-Area Plan	N/A
Municipal Code Bicycle Parking Requirements Update	N/A
Armin Jahr Elem. School safe routes to school Improvements	N/A
Crown Hill Elem. School safe routes to school Improvements	N/A
Kitsap Lake Elem. School safe routes to school Improvements	N/A
Naval Avenue Elem. School safe routes to school Improvements	N/A
View Ridge Elem. School safe routes to school Improvements	N/A
West Hills Elem. School safe routes to school Improvements	N/A
Bremerton 8th Grade/Freshman Academy safe routes to school Improvements	N/A
Mountainview Middle School safe routes to school Improvements	N/A
Bremerton High School safe routes to school Improvements	N/A
Renaissance High School safe routes to school Improvements	N/A

1 This project (or elements of the project) is included in the 2001 Kitsap County Bikeways Plan.
2 This project (or elements of the project) is included in the 1995 Kitsap County Greenways Master Plan.
3 This project (or elements of the project) is included in the 2001 Mosquito Fleet Trail Master Plan.
4 This project (or elements of the project) is included in the Bremerton 2006-2011 Transportation Improvement Plan.
5 This project (or elements of the project) is included in the 2004 Bremerton Comprehensive Plan (Transportation Element).



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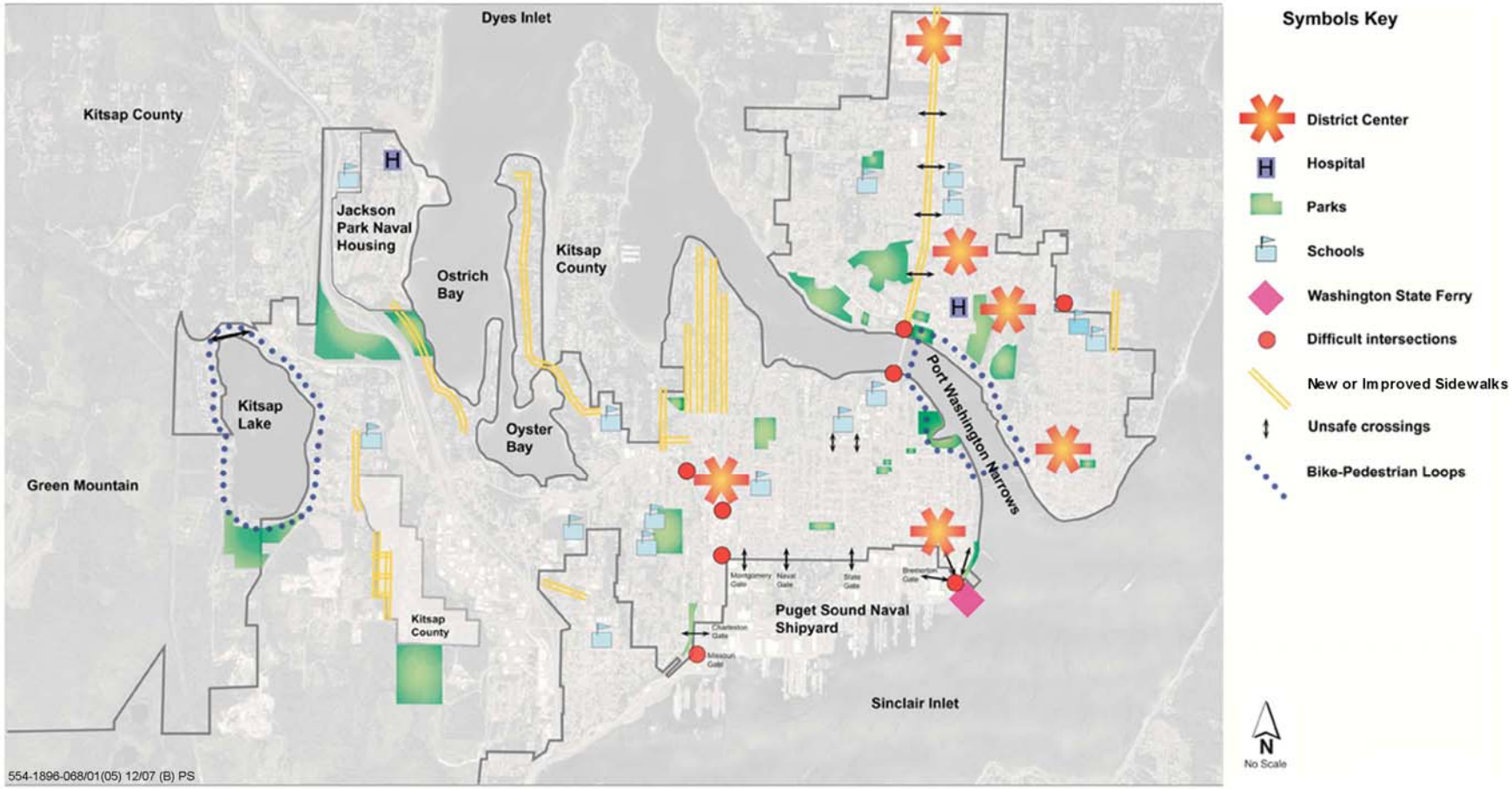
N

0 2,500 Feet

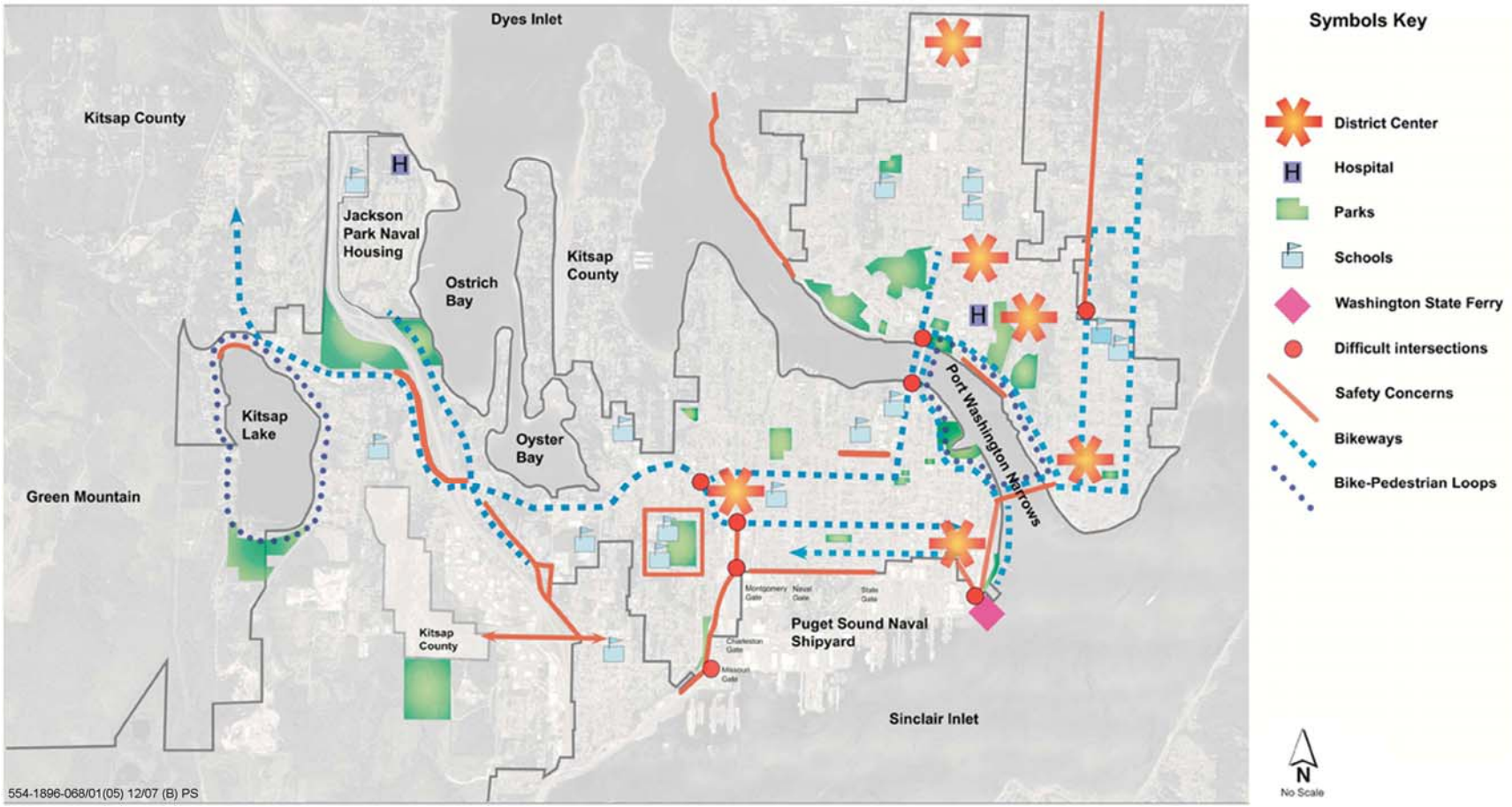
Legend

- Existing Bicycle Lane
- Existing Shared-Use Trail
- Sidewalk Both Sides
- Sidewalk One Side
- No Sidewalk Conditions Data
- City of Bremerton

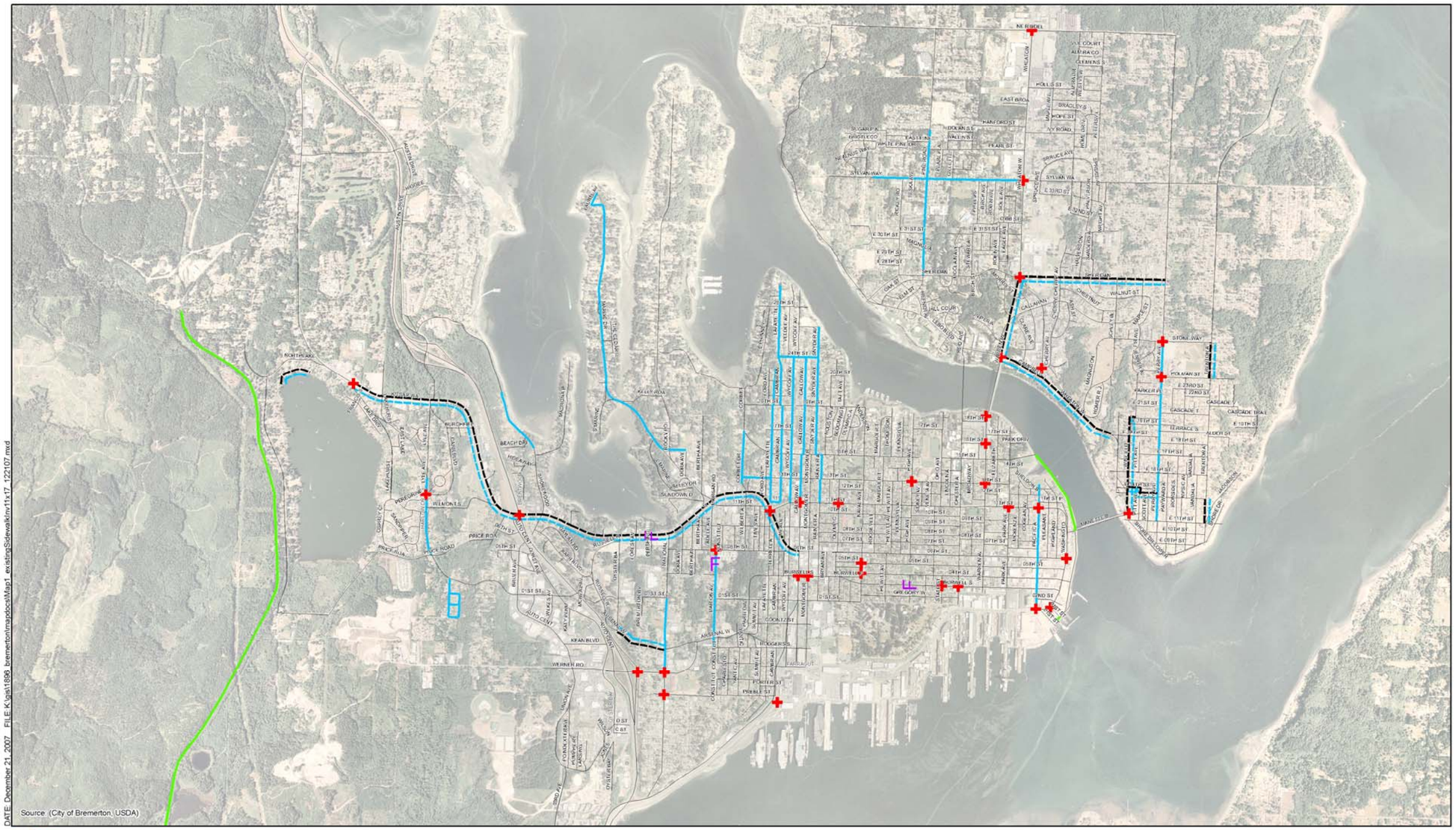
Map 1
Bremerton Non- Motorized Transportation Plan
Existing Sidewalk and Bicycle Lanes Inventory



Map 2
Pedestrian Issues and Opportunities Diagram



Map 3
Bicycle Issues and Opportunities Diagram



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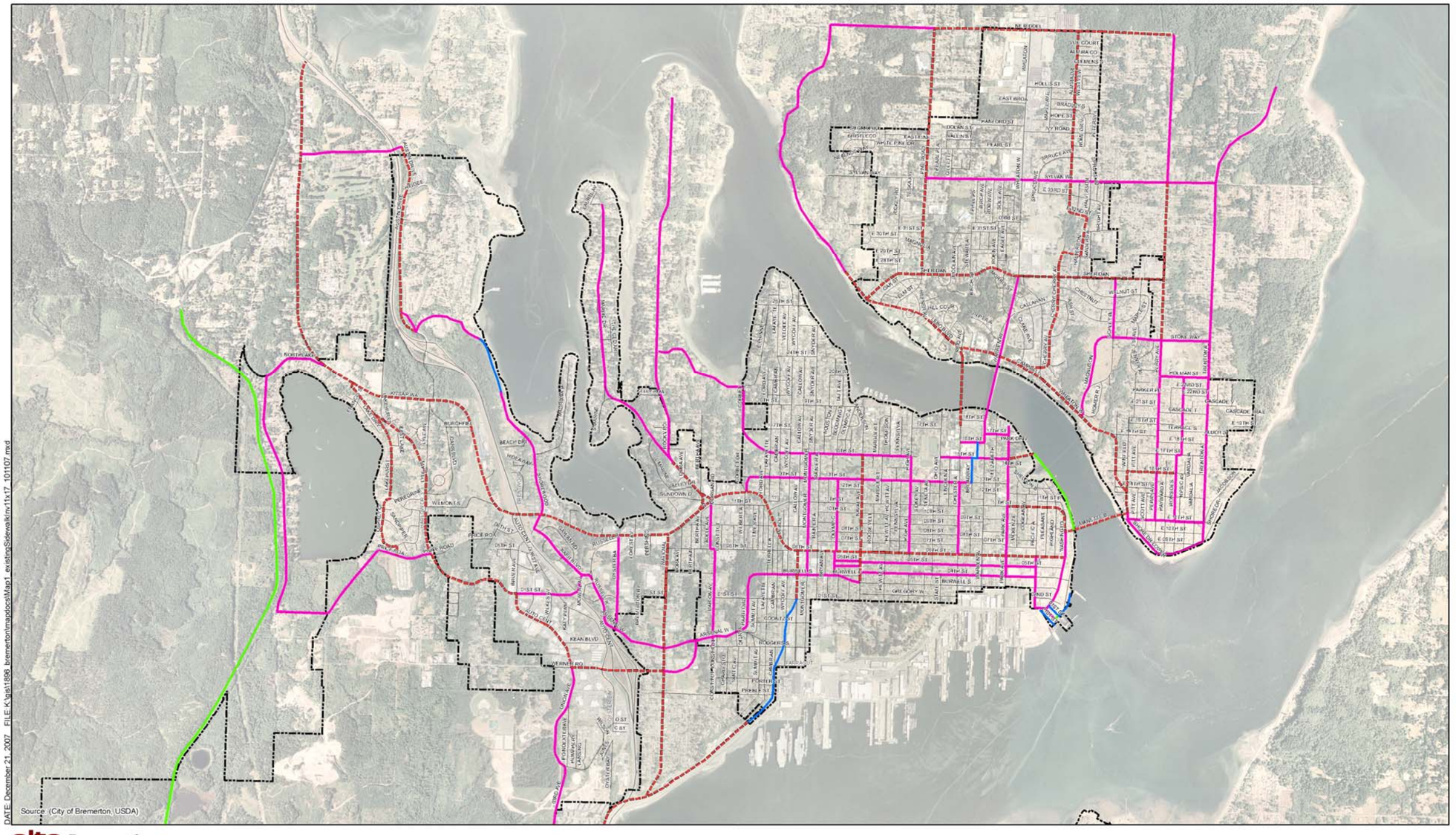
0 2,500
Feet

Legend

- Mid-Block Crossing
- Difficult Intersection
- Proposed Off-Street Trail
- Street
- Pedestrian Improvements
- Sidewalk Improvements

Map 4
Bremerton Non- Motorized Transportation Plan
Proposed Pedestrian Network Improvements



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N

0 2,500 Feet

Legend

- Street
- Existing Bicycle Lane
- Proposed Off-Street Trail
- Proposed Bicycle Lane or Shoulder
- Proposed Bicycle Route or Sharrow
- City of Bremerton

Map 5
Bremerton Non-Motorized Transportation Plan
Proposed Bicycle Facility Network

2. Facilities Evaluation

A moderate-sized city (about 35,000 people), Bremerton is built around a historic downtown and what is now the Puget Sound Naval Shipyard. Recognizing the economic potential of siting a community adjacent to a naval facility, William Bremer platted the original town site in 1891, with the City incorporating in 1901. Today, Bremerton has a redeveloping downtown and Harborside District, healthy neighborhoods, great parks, and a beautiful natural environment. The city's proximity to other Puget Sound communities and the Olympic Peninsula will only make the community more desirable in the future.

2.1 Existing Conditions

This section describes both deficiencies and positive attributes of the existing system. West and East Bremerton are described separately. Appendix A provides a glossary with definitions for the technical terms used below and a discussion of the technologies.

2.1.1 Shared Facilities

West Bremerton

Shared Use Paths

Today, Bremerton has the foundation of what could be a spectacular interconnected path system. Several notable paths comprise the base of this system, including the Louis Mentor Boardwalk, and popular shared use paths in Evergreen Park, Lions Community Playfield, and along Ostrich Bay in the Jackson Park Naval Housing Area. The Louis Mentor Boardwalk connects the Bremerton Transportation Center with Evergreen Park and nearby restaurants and hotels in the downtown Harborside District. The Boardwalk includes several pedestrian amenities, offers views across the Narrows toward Manette, and will be extended northward in 2007. This impressive structure is designed to highlight the waterfront, attract new development, and celebrate Bremerton's nautical history and culture.

Shared use paths exist within several West Bremerton parks, including an 8-foot-wide path along the Port Washington Narrows in Evergreen Park, as well as loop paths within Lions Community Playfield. Shared use paths also follow the west side of Ostrich Bay in the Jackson Park Naval Housing Area and on a vacated segment of Shorewood Drive in NAD Park.

A pedestrian/bicycle overpass crosses SR 3 between the Loxie Eagans Boulevard and SR 310/Kitsap Way interchanges. Approximately 7.5 feet wide, the bridge connects commercial land uses along Auto Center Way with residential neighborhoods on the east side of SR 3.

Louis Mentor Boardwalk

Shared use path in Evergreen Park

Several proposed trail corridors would utilize existing and future shared use paths, as well as sidewalks and bicycle lanes on the city street system. Largely following existing streets, the Port Washington Narrows Trail (also known as the Bridge-to-Bridge Trail) would form a loop between East and West Bremerton along Lebo Boulevard, Old Wheaton Way, the Manette Bridge, Washington and Pacific Avenues, the shared use path in Evergreen Park, and the Warren Avenue Bridge.

The regional Mosquito Fleet Trail would pass through Bremerton and connect several historic Mosquito Fleet docks throughout Kitsap County. Within Bremerton, the trail corridor would follow Illahee Road, Trenton Avenue, 11th Street, the Manette Bridge, 4th and 5th streets, Charleston Road, and SR 304/Navy Yard Highway.

Roadway Shoulders

In many parts of West Bremerton and surrounding areas, roadway shoulders accommodate bicycle and pedestrian travel where sidewalks do not exist. Such streets include portions of SR 310/Kitsap Way and Austin Drive. Although roadway shoulders are appropriate in rural areas, Bremerton's predominantly urban and suburban character generally attracts higher traffic volumes on area roads, indicating a need to separate pedestrians and cyclists from motorists. This is especially true on corridors such as those listed above.

Accessways

Several neighborhood accessways offer direct pedestrian and bicycle connections in areas where the surrounding street system provides limited connectivity. Some accessways are formalized paved paths, including a short path on Burwell Street between Lafayette and Summit Avenues near Forest Ridge Park, and a path connecting SR 310/Kitsap Way with nearby residences on Brentwood Drive. Other accessways are less formal, unpaved facilities, but still serve as key pedestrian/bicycle connections. Less formal accessways on Osprey Circle, for instance, connect with surrounding streets providing a continuous loop around Kitsap Lake.

Bridges

Two bridges provide pedestrian/bicycle connections between East and West Bremerton. Constructed in 1953, the Warren Avenue Bridge has 4-foot-wide sidewalks on both sides that are separated from high-speed traffic with a short concrete barrier. Narrow stairways (without ramps) are difficult for some cyclists and pedestrians wishing to access Lebo Boulevard from the bridge's north end.

The Manette Bridge, built in 1930, includes a sidewalk (approximately 4 feet wide) on the south side only. This bridge is scheduled to be replaced in 2012, although the pedestrian and bicycle facilities have not yet been determined.

Unpaved accessway connecting Osprey Circle and Price Road

Narrow sidewalk on the Manette Bridge

Narrow sidewalk on the Warren Avenue Bridge

East Bremerton

Shared Use Paths

Shared use paths exist within several East Bremerton parks, including loop paths within Haddon Park. Northeast of Bremerton, Illahee State Park provides a system of earthen hiking trails that lead to a boat dock on Sinclair Inlet.

Several proposed trail corridors would use existing and future shared use paths, as well as sidewalks and bicycle lanes on the city street system. These corridors are discussed in the preceding section describing shared use paths in West Bremerton.

Roadway Shoulders

In many parts of East Bremerton and surrounding areas, roadway shoulders accommodate pedestrian travel where sidewalks do not exist. Such streets include portions of Perry Avenue, Trenton Avenue, and Tracyton Beach Road. Although roadway shoulders are appropriate in rural areas, Bremerton's predominantly urban and suburban character generally attracts higher traffic volumes on area roads, indicating a need to separate pedestrians and cyclists from motorists. This is especially true on corridors such as those listed above.

Accessways

East Bremerton does not appear to have any accessways.

Bridges

Please refer to the "Bridges" section in the West Bremerton subsection for a discussion of pedestrian issues on the Warren Avenue and Manette Bridges.

2.1.2 Pedestrian Facilities

West Bremerton

Sidewalks

The presence and condition of sidewalks vary considerably throughout West Bremerton. Most streets in the area bounded by SR 304/Burwell Street, 13th Street, Callow Avenue, and Washington Avenue have sidewalks on both sides. The downtown core's sidewalk environment includes a variety of complementary pedestrian facilities such as textured crosswalks, pedestrian signals, ADA-compliant curb ramps, pedestrian-scale lighting, and amenities like benches and trash receptacles.

Wider sidewalks in Downtown Bremerton

Curb-tight sidewalks on both sides of streets in newer subdivisions

National Avenue lacks sidewalks in most locations

Most streets in the outlying areas of West Bremerton either have sidewalks on one side only (e.g., Auto Center Way) or no sidewalks altogether (e.g., Marine Drive and portions of National Avenue). Sidewalks along some major and minor streets (e.g., SR 310/Kitsap Way) abruptly end, forcing pedestrians to walk along roadway shoulders or landscaped areas that are often used for vehicle parking. Some popular walking routes (e.g., roads traveling around Kitsap Lake) also lack dedicated pedestrian facilities.

It should be noted that several West Bremerton neighborhoods (e.g., near West Hills Elementary School, along Rocky Point Road, and some areas west of SR 3) that lack sidewalks are outside Bremerton city limits and are within Kitsap County's jurisdiction. Newer residential developments in West Bremerton and throughout the city have sidewalks on both sides of the street per a City ordinance requiring sidewalks and other street frontage improvements to be built in conjunction with new development and redevelopment projects.

Sidewalk widths vary from 4 feet in older residential areas (e.g., along 13th Street near Bremerton High School) to over 12 feet in commercial centers like downtown Bremerton. Planter strips, with widths ranging between 2 and 8 feet, are used in some places to separate sidewalks and curbs.

Intersection Treatments

In West Bremerton, the quality of intersections from a pedestrian perspective varies by location. Marked crosswalks and curb ramps exist at most signalized intersections on major streets and within downtown Bremerton. Most signalized intersections also include pedestrian-activated signals or have pre-timed signal phasing allowing pedestrian crossing movements concurrent with parallel vehicle movements.

A pedestrian "half signal" is used at SR 310/Kitsap Way between Forrest and Pershing Avenues. Half signals allow pedestrians to cross major streets where full signalized intersections do not exist. Half signals include traditional signal heads for approaching vehicles, and WALK/DON'T WALK signals on the perpendicular pedestrian approaches.

Intersection conditions along lower-order streets vary by location. Marked crosswalks exist at intersections near most schools and other pedestrian trip generators. Some intersections have relatively new curb ramps with detectable warning strips (e.g., SR 304/Burwell Street at Pacific Avenue), but most intersections either lack curb ramps or have existing ramps that are in poor condition.

ADA-compliant curb ramps with detectable warning strips on Burwell Street at Pacific Avenue

Perry Avenue near Mountain View Middle School

East Bremerton

Sidewalks

The Manette and Harrison Medical Center neighborhoods have sidewalks on one or both sides of the street. Most north-south streets in Manette and the commercial corridor along 11th Street have sidewalks. Most major streets near Harrison Medical Center (e.g., SR 303/Wheaton Way, Lebo Boulevard, and portions of Sheridan Road) have sidewalks on both sides. However, several other streets (e.g., Perry Avenue near Mountain View Middle School) have sidewalks on one side only while other streets (e.g., Tracyton Beach Road) lack sidewalks altogether.

As in West Bremerton, sidewalk widths vary by location, with widths ranging from 4 feet in older residential areas to over 12 feet in commercial centers like Manette. Planter strips are used occasionally to separate sidewalks and curbs, with widths ranging between 2 and 8 feet.[1]

Intersection Treatments

Marked crosswalks and curb ramps exist at most signalized intersections on major streets (e.g., along SR 303/Wheaton Way). Most signalized intersections also include pedestrian-activated signals or have pre-timed signal phasing allowing pedestrian crossing movements concurrent with parallel vehicle movements. Marked crosswalks exist at intersections near most schools and other pedestrian trip generators. Some intersections have relatively new curb ramps with detectable warning strips, but most intersections either lack curb ramps or have existing ramps that are in poor condition.

[1] Planter strips, with varying widths, are situated adjacent to the curb, without obstructing the pedestrian "clear zone."

2.1.3 Bicycle Facilities

Map 1, Existing Sidewalk and Bicycle Lane Inventory, depicts Bremerton's current designated bicycle routes. In reality, bicyclists follow a variety of street routes and often resort to sidewalks. Part of the discrepancy may be that the entrances or bicycle gateways into Bremerton are not well defined or signed. In addition, cyclists will choose a more direct route between destinations than a planned route. For example, bicyclists ride on sidewalks along 1st Street between Washington Avenue and Pacific Avenue because this is the most direct route between the Washington State Ferry Terminal and Puget Sound Naval Shipyard Main Gate. The route along 1st Street avoids the circuitous route along Burwell Street and Pacific Avenue.

1st Street between Ferry Terminal and Puget Sound Naval Shipyard Gate

Outbound Bicycle Lane from Ferry Terminal

Most minor collector and local streets in the city can be categorized as shared roadways due to their low traffic volumes; however, the streets do not have signs to indicate that vehicles must share lanes with cyclists.

West Bremerton

Bicycle Lanes and Shoulder Bikeways

The only striped bicycle lanes in the city are on SR 304 between Burwell Street and the Missouri Gate of the Puget Sound Naval Shipyard, and on the entrance and exit roadways to the ferry terminal.

SR 3 and Kitsap Way have nearly continuous shoulder bikeways and are the most convenient north-south and east-west bicycle routes, respectively. While riding on the SR 3 shoulders is legal, many bicyclists feel unsafe or uncomfortable riding next to high-speed freeway traffic. Hazardous conditions, such as recessed or slotted grates and cracked asphalt, exist in the shoulders along Kitsap Way near Cemetery Hill (west of SR 3) and between 11th and 6th Streets.

For the most part, shoulder bikeways in West Bremerton are narrow, rough, or non-existent. Places of particular concern are North Lake Road along the north edge of Kitsap Lake, Warren Avenue north of 11th Street, and the Warren Avenue Bridge. An alternate east-west route between SR 304 and downtown Bremerton is along 11th Street, but the travel lanes are not wide enough to ensure safe travel for cyclists.

Bicycle Parking

Covered bicycle parking exists at the Bremerton Transportation Center in the parking garage adjacent to the Washington State Ferry Terminal. Bicycle racks are also found in several other downtown Bremerton locations.

East Bremerton

Shoulder Bikeways

There are no designated shoulder bikeways in East Bremerton, but shoulders and shared roadways are the primary bicycle pathways. A very popular scenic route is along Tracyton Beach Road and Lebo Boulevard; however, the shoulders along this road are too narrow to safely accommodate cyclists and vehicles.

Hazardous conditions exist on Warren Avenue in the vicinity of the Warren Avenue Bridge where there is usually debris on the road and glass on the sidewalks. Along Wheaton Way and particularly near the hospital, the stormwater grates are not flush with the road surface, which creates a snagging hazard.

Bicycle Lanes and Shoulder Bikeways

East Bremerton does not have striped bicycle lanes.

Inbound Bicycle Lane to Ferry Terminal

Bicycle Parking at the Bremerton Transportation Center

2.2 Positive System Attributes

Many characteristics contribute to a positive pedestrian environment in Bremerton.

2.2.1 Pedestrian-Friendly Environment

Bremerton benefits from a pedestrian-friendly environment in several parts of the community. Notable places include:

- The Louis Mentor Boardwalk is an attractive pedestrian environment with a large public plaza, waterfront promenade, benches, ornamental lighting, and public art.
- 4th Street offers an inviting pedestrian environment between Pacific and Washington Avenues in downtown Bremerton with a narrow cross-section, meandering flow, street trees, and other pedestrian amenities.
- Shared use paths invite pedestrian travel in several city parks, such as Evergreen Park and Lions Community Playfield.
- Newly constructed sidewalks within subdivisions and other development contribute to a more complete pedestrian network.
- Land use characteristics contribute to a pedestrian-friendly environment. For instance, buildings fronting the sidewalk edge in Manette and downtown Bremerton create a sense of compact urban form and an inviting pedestrian atmosphere. Walking as a means for running errands is also encouraged through the grouping of diverse land uses in downtown Bremerton and Manette.
- A relatively well-connected street grid in downtown Bremerton, inner West Bremerton, and Manette facilitates convenient and direct pedestrian travel.
- Wide planter strips between sidewalks and curbs (e.g., on Gregory Way) provide a buffer between pedestrians and motor vehicle traffic.

2.2.2 Warning Signage

Although many streets throughout Bremerton lack sidewalks or other dedicated pedestrian facilities, the City has placed warning signs in many places to alert motorists that pedestrians are using the street.

2.2.3 Traffic Calming

Many local streets throughout Bremerton have traffic calming structures to slow vehicle speeds and encourage through-traffic to use higher-order streets. For example, a small traffic circle is located on Park Avenue at 14th Street near Evergreen Park. Speed humps also exist on Park Avenue and several other streets throughout the city.

Warning sign on Kelly Road advising motorists of pedestrians in the roadway

2.2.4 Intersection Treatments for Pedestrian Crossings

Half Signals

Half signals allow pedestrians to cross major streets where full signalized intersections do not exist, and include traditional signal heads for approaching vehicles and WALK/DON'T WALK signals on the perpendicular pedestrian approaches. These signals are typically placed at locations where the demand for convenient and direct crossings is high and they can reduce the potential for pedestrians crossing (jay-walking) at less-safe locations. A half signal currently exists on SR 310/Kitsap Way between Forrest and Pershing Avenues, allowing pedestrians to access commercial businesses and residential areas on opposite sides of the street.

Pedestrian Refuge Islands

Pedestrian refuge islands simplify pedestrian crossings at major streets by allowing pedestrians to break the crossing into multiple segments. In Bremerton, a refuge island at the intersection of SR 304/Burwell Street and Callow Avenue enables pedestrians crossing the intersection's southern leg to cross the wide street in two phases while encountering only one direction of traffic at a time.

Curb Extensions and Mid-block Crossings

Curb extensions slow vehicle traffic by creating a visual "pinch point" for approaching motorists. Typically constructed within the on-street parking lane, these devices can calm traffic passing through or turning at an intersection. Curb extensions also reduce pedestrian crossing distances and increase the visibility of pedestrians waiting to cross the street. These features currently exist at several intersections along SR 304/Burwell Street between Naval and Pacific Avenues and along segments of 5th Street and Park Avenue. A mid-block curb extension facilitates pedestrian crossings on Callow Avenue between SR 304/Burwell Street and 6th Street.

High-Visibility Crosswalks and Signage

High-visibility crosswalks exist at several intersections throughout Bremerton. High-visibility crosswalks usually include multiple wide stripes oriented perpendicular to the pedestrian's direction of travel while crossing the street. Examples include the intersections of SR 304/Burwell Street at Chester and State Avenues. Bremerton also has several crosswalks with textured and/or colored pavement to increase motorists' awareness of pedestrian crossings. Examples include the intersections of Washington Avenue at 2nd Street, and SR 304/Burwell Street at Pacific Avenue. Some intersections also include warning signage to alert motorists of the presence of foot traffic. SR 304/Burwell Street at Chester and State Avenues, for instance, provide warning signage.

Mini traffic circle on Park Avenue

2.3 System Deficiencies

This section identifies locations and describes conditions where pedestrians face obstacles.

2.3.1 Sight Distances

Bremerton's hilly terrain creates short sight distances, which means that motorists have relatively short distances during which to react to pedestrians or cyclists crossing a road. Steep slopes on streets such as Perry Avenue and 15th Street can be a challenge for seniors and pedestrians with disabilities. This is especially problematic on streets (e.g., 13th Street near Lafayette Avenue) where a lack of sidewalks forces pedestrians to walk in the road.

2.3.2 Limited Street Connectivity

Although well-connected street grids exist in downtown Bremerton, inner West Bremerton, and Manette, in other areas discontinuous streets impede direct travel between pedestrian destinations. Circuitous streets characterize neighborhoods in outer West Bremerton (especially west of SR 3) and the northern portions of East Bremerton.

2.3.3 Barriers

Natural and man-made barriers limit the ability of cyclists and pedestrians to bike or walk directly between certain parts of Bremerton. Natural barriers include the Port Washington Narrows, Ostrich Bay, Oyster Bay, and Phinney Bay. Man-made barriers include SR 3 and fences and gates around the Puget Sound Naval Shipyard and the Jackson Park Naval Housing Area. Major streets with minimal pedestrian crossing treatments also act as barriers, such as SR 303/Warren Avenue, SR 303/Wheaton Way, and SR 310/Kitsap Way.

2.3.4 Uncomfortable Sidewalks

Pedestrians experience an uncomfortable environment on streets with narrow sidewalks, and on high-volume streets lacking buffers between sidewalks and vehicle traffic. Curb-tight sidewalks on SR 303/Warren Avenue force pedestrians to walk close to adjacent high-speed traffic. Other streets with similar characteristics include 6th and 11th Streets and Loxie Eagans Boulevard.

2.3.5 Cyclist and Motorist Behaviors

Frequent conflicts occur between motorists and cyclists regarding knowledge and respect of state laws that permit bicycles to share travel lanes. Signage such as "Bicyclist May Take Lane" is needed for these locations. In addition, traffic moves faster than the posted 35-mph speed limit along Warren Avenue posing a threat to cyclists.

High-visibility crosswalk on Burwell Street at State Avenue

Sight distance problems on 13th Street

Limited crossing opportunities make Warren Avenue a barrier to pedestrian travel

2.3.6 Fragmented Sidewalk Network

Some parts of Bremerton benefit from a fairly complete sidewalk network while other areas experience a fragmented network. Generally, a relatively complete sidewalk network exists in inner West Bremerton, but many streets in outer West Bremerton and portions of East Bremerton have no sidewalks. Several popular walking routes have discontinuous pedestrian facilities, which is partially a result of some streets being located outside Bremerton's city limits.

2.3.7 Sidewalk Obstructions

Although sidewalks exist on numerous streets, their use is occasionally hindered by obstructions like vegetation, utility poles, fire hydrants, and other items. For example, there is a 13-foot-wide sidewalk on the south side of 1st Street, but temporary fencing blocks at least 5 feet of usable space. Overgrown vegetation obstructs paths and sidewalks in some areas (e.g., on portions of Trenton Avenue), forcing pedestrians to walk in the adjacent planter strip or the road.

2.3.8 Narrow Bridge Sidewalks

The Manette Bridge has a narrow sidewalk on the south side, but lacks a sidewalk on the north side. Narrow sidewalks on both sides of the Warren Avenue Bridge are separated from high-speed traffic with short concrete barriers.

2.3.9 Incomplete Shared Use Path Network

Although shared use paths exist in several parks and other areas throughout Bremerton, the community lacks a comprehensive and connected system. For instance, two separate paths (in proximity to one another) exist along the west side of Ostrich Bay: one segment on a vacated section of Shorewood Drive in NAD Park, and another segment in the Jackson Park Naval Housing Area. However, the two sections are separated by fencing and a gate at NAD Park's north end.

2.3.10 Difficult Crossings

<u>High-Volume Streets</u>

Crossing SR 303/Warren Avenue is challenging for pedestrians because of the relatively long distances between signalized intersections and marked crossings. This affects pedestrians traveling between residential neighborhoods east of the road and Olympic College and Bremerton High School on the west side. The minimal number of marked and signalized crossings also poses difficulties for pedestrians and cyclists trying to reach transit stops on both sides of the street.

Sidewalk obstructions on Washington Avenue

SR 303/Wheaton Way north of the Port Washington Narrows has similar conditions. High vehicle speeds and lengthy distances between signalized intersections discourage pedestrians from walking to services along this corridor. In some cases, pedestrians chose to cross the roadway between designated crossings to reach their desired destinations.

The intersections of SR 304/Burwell Street at Chester and State Avenues have marked crosswalks and supplemental warning signs for approaching motorists. However, additional treatments appear to be needed. Data from the Puget Sound Naval Shipyard show that approximately 1,000 to 1,500 pedestrians cross SR 304/Burwell Street at these locations on a typical weekday afternoon as employees depart from nearby shipyard entrance gates. Puget Sound Naval Shipyard recently requested that a signal be installed at one or both intersections to improve the pedestrian crossing environment. Vehicle-bicycle conflicts also exist at this location, especially between the Missouri and Charleston Gates due to high speed right turn movements across the bicycle lane/shoulder.

The intersections of other major streets throughout Bremerton could benefit from pedestrian crossing enhancements. Pedestrian and cyclist comfort and safety could be improved by adding crossing treatments at intersections along SR 303/Warren Avenue, SR 303/Wheaton Way, and SR 310/Kitsap Way.

Other difficult crossings due to lack of traffic control and crossing signals are:

- Old Wheaton Way and Sheridan Road
- Perry Avenue at Stone Way
- Kitsap Way at the QFC driveway
- Burwell Street at Naval Avenue
- Kitsap Way at 11th Street
- Burwell Street at Montgomery Avenue
- Burwell Street at Callow Avenue
- Burwell Street at State Street
- Burwell Street at Chester Street

Some of the conflicts on Burwell Street between bicyclists, pedestrians, and motorists leaving ferries are because the travel ways are not clearly indicated for each group.

A difficult connection particular to cyclists is the transition to and from the Warren Bridge because of the stairs. Cyclists often divert to Manette Bridge to avoid the stairs.

Offset Intersections

In some areas, the break between Bremerton's multiple street grids creates offset intersections (e.g., along Naval Avenue and 6th Street), some of which include complex pedestrian crossings.

Faded crosswalk markings at the Manette Bridge's east end

Crosswalk Issues

At many intersections (e.g., SR 310/Kitsap Way at Marine Drive; Washington Avenue at 6th Street), crosswalks are difficult to see for approaching motorists. Crosswalk bars on many of the city's longitudinal crosswalks (also known as "ladder style") are fairly narrow. Furthermore, crosswalk bars have faded or have been worn off by vehicle tires, as in the case of Callow Avenue at 11th Street, SR 310/Kitsap Way at Harlow Drive, and the Manette Bridge's east end.

Prohibited Crossing Movements and Out-of-Direction Travel

In some areas, pedestrians must walk long distances to reach marked and/or signalized street crossings. Although the street network surrounding Harrison Medical Center generally includes lower volume, lower speed streets, several street segments and intersections lack marked crosswalks. This can be a problem for seniors and mobility-impaired pedestrians unwilling or unable to walk extra distances to reach a marked crosswalk. Most streets surrounding the Medical Center also have relatively steep grades, further indicating the need for safe, convenient, and direct pedestrian crossings.

Pedestrian crossings are prohibited on some legs of major intersections throughout the city. Notable locations include ramp terminal intersections along SR 3 at SR 310/Kitsap Way and at Loxie Eagans Boulevard, where north-south pedestrian crossings are prohibited on most legs to accommodate high volumes of turning vehicles.

Pedestrian crossings are also prohibited on some legs at the intersections of SR 310/Kitsap Way at 11th Street, SR 303/Warren Avenue at 16th Street, and at the Manette Bridge's east end. Although pedestrian crossing prohibitions can efficiently accommodate vehicle turning movements, they often require pedestrians to cross multiple legs of intersections to remain on their desired travel routes.

Difficulties for Disabled Pedestrians

Curb ramps at some intersections are in poor condition or disrepair, and some intersections lack curb ramps altogether (e.g., Washington Avenue at 6th Street). In some cases, marked crosswalks lead to sidewalks with no curb ramps (e.g., on 13th Street near Bremerton High School), or to a roadway shoulder with no sidewalk (e.g., on Marion Avenue at Renaissance High School; Harlow Drive at Carr Boulevard). This can make traveling by wheelchair or motorized mobility device challenging, if not impossible. Visually- and mobility-impaired pedestrians also experience difficulty navigating through intersections with curb ramps oriented diagonally toward the intersection's center rather than toward a crosswalk.

Intersection without curb ramps on Nipsic Avenue

Crosswalk without curb ramp on 13th Street at Bremerton High School

At some signalized intersections, pedestrian activation buttons are placed at a height exceeding guidelines prescribed in AASHTO's Guide for the Planning, Design, and Operation of Pedestrian Facilities. AASHTO recommends a 42-inch maximum activation button height to accommodate wheelchair users. Activation buttons on Lebo Boulevard at Old Wheaton Way, for instance, are about 50 inches high. Signalized intersections throughout Bremerton also lack audible pedestrian signals to facilitate safe crossings for the visually impaired.

Interchange Areas

Pedestrians and cyclists face crossing difficulties at highway interchange areas. They are likely to travel out-of-direction because of the crossing prohibitions on some legs of the SR 3 ramp terminal intersections with Loxie Eagans Boulevard and SR 310/Kitsap Way. Channelized right turns at these intersections induce higher vehicle turning speeds, especially for motorists entering freeway on-ramps from the local street network.

In addition to high vehicle speeds, vegetation impedes motorists' sight of crossing pedestrians at some ramp terminal intersections (e.g., westbound motorists on Loxie Eagans Boulevard entering the SR 3 northbound on-ramp). Broad vehicle turning radii at some ramp terminals also create excessively long vehicle/pedestrian conflict zones, as in the case of Loxie Eagans Boulevard at the SR 3 southbound on-ramp.

Cyclists and pedestrians also experience difficulties crossing on- and off-ramps that allow free-flow vehicle movements (e.g., SR 303/Wheaton Way at Callahan Drive).

Limited Transit Stop Facilities

Kitsap Transit operates several bus routes throughout Bremerton. However, many transit stops lack shelters, benches, and posted schedules. Walkways providing access to some stops are also in substandard condition, and, in some locations, formalized walkways do not exist. This is described in more detail in a later section.

Poor Lighting in Some Areas

Some areas have minimal or no street lighting, which can potentially decrease comfort and safety. The Warren Avenue Bridge, portions of SR 310/Kitsap Way, and some areas in Manette lack sufficient street lighting.

Lack of Wayfinding Tools

Bremerton would benefit from signage and other wayfinding tools to orient cyclists and pedestrians to and through major destinations like downtown, the Bremerton Transportation Center, Manette, and Olympic College.

Gravel and debris on the sidewalk on Kitsap Way

Maintenance Issues

Existing sidewalks and shared use paths in several parts of Bremerton (e.g., portions of Harlow Drive, and the path accessing the SR 3 pedestrian/bicycle overpass) suffer from cracking or heaving. The SR 3 pedestrian/bicycle overpass, along with other facilities, is also littered with graffiti and broken glass. Gravel and other debris are also found on some sidewalks (e.g., portions of SR 310/Kitsap Way).

2.4 Bicycle/Pedestrian Crash History

The City of Bremerton provided bicycle/pedestrian crash data for 2004 through 2006. A total of 95 reported crashes involving non-motorized users occurred during this period. Depicted on Map 6, the crash locations cover the entire city and mostly occurred along major streets characterized by multiple travel lanes, numerous driveway accesses, and higher vehicle speeds and volumes. The data show that most bicycle/pedestrian crashes occurred on a few major street corridors, including:

- SR 303/Wheaton Way
- SR 304/Burwell Street
- SR 310/Kitsap Way
- 6th Street (West Bremerton)
- 11th Street (West Bremerton)
- Sheridan Road

The majority of Bremerton's reported crashes occurred at intersections and involved motorists striking a bicyclist or pedestrian. Several intersections throughout the city experienced bicycle/pedestrian-related collisions in the 2004 to 2006 period; however, some locations experienced higher crash frequencies. Intersections experiencing three or more reported crashes include the following:

- SR 303/Wheaton Way at Hanford Avenue
- SR 303/Wheaton Way at Sheridan Road
- SR 303/Wheaton Way at Sylvan Way
- SR 310/Kitsap Way at 11th Street
- SR 310/Kitsap Way at Marine Drive
- SR 310/Kitsap Way at Morgan Drive
- SR 310/Kitsap Way at Wilbert Avenue/Corbet Drive

Nearly all reported crashes at the intersections listed above involved right-turning motorists failing to yield the right-of-way to pedestrians in a crosswalk (or driveway) or bicyclists on the adjacent shoulder. Driver inattention represented the main contributing cause of these collisions.

The intersection of SR 310/Kitsap Way at 11th Street experienced the highest number of reported bicycle/pedestrian crashes (four crashes) between 2004 and 2006.

This "T" intersection includes multiple through lanes on both streets, as well as double left-turn lanes on SR 310/Kitsap Way and double right-turn lanes on 11th Street. Pedestrian crossings are prohibited on the intersection's northern leg, while crosswalk markings on the remaining legs have faded. One crash involved a motorist striking a pedestrian when the motorist disobeyed the traffic signal, while two crashes involved right-turning motorists striking pedestrians in the crosswalk. A similar crash involved a right-turning motorist striking a bicyclist.

Of the 95 reported crashes between 2004 and 2006, 52 crashes resulted in bicyclist/pedestrian injuries, while one crash resulted in a fatality. This crash, located on Kitsap Way near Crawford Drive, involved an inattentive motorist striking a bicyclist riding on the roadway shoulder.

2.5 Destinations and Connections

Major pedestrian and bicycle destinations include educational facilities, employment centers, shopping centers, neighborhood commercial areas, and parks. In addition, several roads provide direct connections to other Kitsap County communities like Gorst and Silverdale.

Within Bremerton, popular pedestrian and bicycle destinations include:

- Downtown
- Manette
- Puget Sound Naval Shipyard
- Bremerton Transportation Center
- West Bremerton Transfer Center
- Harrison Medical Center
- Schools
- Olympic College
- Parks and recreation areas
- Services along commercial corridors (e.g., SR 303/Warren Avenue, SR 303/Wheaton Way, and SR 310/Kitsap Way)

2.5.1 Connections with Transit and Ferries

Ensuring a strong pedestrian and bicycle link to transit is an important part of making non-motorized transportation a part of daily life in Bremerton. Several main components of bicycle and pedestrian-transit integration are:

- Allowing bicycles on transit
- Providing benches, shelters, posted schedules, bicycle parking, and other features at transit stops
- Improving connections between walkways, bikeways, and transit
- Encouraging use of bicycle and transit programs

Kitsap Transit operates several bus routes throughout East and West Bremerton, providing connections to intermodal transfer centers and other communities in Kitsap County.

Transit stop with minimal passenger facilities on Almira Drive

The quantity and quality of pedestrian infrastructure along bus routes varies by location. Streets along some routes have sidewalks on both sides, such as SR 304/Burwell Street, Washington Avenue, and Lebo Boulevard.

Streets along other routes have sidewalks on one side only, including segments of Perry and Trenton Avenues). In some cases, buses travel along streets without sidewalks, such as Almira Drive.

Conditions at transit stops also vary by location. While some stops only include a bus route sign, others provide shelters, benches, and posted schedules.

Kitsap Transit provides "ACCESS" demand-response shuttle service for seniors and passengers who are physically unable to use the fixed route bus system. Riders must meet eligibility requirements and make reservations at least 1 day prior to their scheduled trip.

Bremerton Transportation Center

Located adjacent to the Louis Mentor Boardwalk at 1st Street and Washington Avenue, the Bremerton Transportation Center provides direct connections between various transit services:

- Fixed route buses (operated by Kitsap Transit)
- The Bremerton-Port Orchard passenger ferry (operated by Kitsap Transit)
- The Bremerton-Seattle auto/passenger ferry (operated by Washington State Ferries)

The Transportation Center is a two-level indoor and outdoor facility, with the upper level serving bus passengers and foot traffic entering and leaving the Bremerton-Seattle Ferry. Passenger boarding/alighting for the Bremerton-Port Orchard ferry occurs on the lower level.

A complete network of sidewalks and the Louis Mentor Boardwalk provide pedestrian connections between the Transportation Center and downtown Bremerton. Sidewalks are in relatively good condition, with infrastructure also in place to serve pedestrians with mobility impairments.

There is a general lack of wayfinding signage to orient cyclists and pedestrians approaching or leaving the Transportation Center. Improved signage could help direct passengers to their desired buses or ferries, and help connect arriving passengers with key destinations in the immediate area. The Transportation Center has a designated pick-up/drop-off area located at the Kitsap Credit Union building on 2nd Street. These activities also take place informally along Washington Avenue north of 1st Street and other locations, occasionally blocking vehicle travel lanes.

Pedestrian crossing at 1st Street and Washington Avenue near the Bremerton Transportation Center

Pedestrians and cyclists also experience conflicts with vehicle traffic near the Transportation Center. Most foot traffic accessing or leaving the Transportation Center passes through or near the intersection of 1st Street and Washington Avenue. Although marked crosswalks exist on the south leg, pedestrians must cross multiple bus lanes and passenger auto lanes.

West Bremerton Transfer Center

The West Bremerton Transfer Center is located on 5th Street at Bruenn Avenue, and serves several Kitsap Transit bus routes. The facility includes a large shelter for transit users in addition to signage with bus route information. The sidewalk network is fragmented in the vicinity of the Transfer Center, with 5th Street and Bruenn Avenue having sidewalks on some segments. Other nearby streets, including Auto Center Way, do not have sidewalks.

2.5.2 Connections with Schools and Olympic College

Elementary Schools

Armin Jahr Elementary School

Armin Jahr Elementary School's designated walking catchment area is generally bounded by SR 303/Wheaton Way, Lebo Boulevard, Appaloosa Way, Sylvan Way, and Hanford Avenue. A relatively well-connected street grid with sidewalks on both sides exists east of the school, while streets to the west are less connected and lack sidewalks on one or both sides. Several higher-volume streets are in the immediate vicinity, including Sheridan Road, Sylvan Way, and Pine Road. While the sidewalk network is more complete on Sheridan Road, Sylvan Way and Pine Road lack sidewalks in several locations.

Few marked crosswalks exist in the vicinity of the school, with most located on higher-volume roads and at major intersections.

Crown Hill Elementary School

Crown Hill Elementary School's designated walking catchment area is bounded by Phinney Bay Drive, Corbet Drive, SR 310/Kitsap Way, and Marine Drive. With the exception of SR 310/Kitsap Way and short segments along the east side of Marine Drive and Rocky Point Road, most streets near the school do not have sidewalks. Marked crosswalks exist on Marine Drive and Rocky Point Road immediately adjacent to the school, along with crosswalks at the intersection of Marine Drive and SR 310/Kitsap Way. Crossing guards assist students at some crosswalks for 15- to 20-minute periods in the morning and afternoon.

Sidewalk on Robin Avenue near Armin Jahr Elementary School

Kitsap Lake Elementary School

Kitsap Lake Elementary School's designated walking catchment area is generally bounded by SR 310/Kitsap Way, Price Road, and Kitsap Lake. In the vicinity of the school, streets with sidewalks include Osprey Circle and surrounding streets in the Dockside subdivision. A narrow paved path also exists on the east side of Harlow Drive north of Carr Boulevard. Most other streets lack sidewalks and have narrow or no shoulders for pedestrian travel.

Topographic variations also create sight-distance problems for motorists on several streets like Wilmont Street. Marked crosswalks exist on Harlow Drive at Carr Boulevard, and on Lyle Avenue at the school entrance. Crossing guards are posted at these locations for 20 minutes in the morning and 10 minutes in the afternoon.

Naval Avenue Elementary School

Naval Avenue Elementary School's designated walking catchment area is bounded by SR 303/Warren Avenue, SR 304/Burwell Street, Callow Avenue, and 11th Street. The school is located within a well-connected street network with sidewalks in generally good condition.

Most nearby streets have sidewalks on both sides, and marked crosswalks are located at several nearby intersections. Several higher-volume streets surround the immediate area, including SR 304/Burwell Street, 6th and 11th Streets, and Naval Avenue.

View Ridge Elementary School

View Ridge Elementary School's designated walking catchment area is generally bounded by Perry Avenue, Sheridan Road, SR 303/Wheaton Way, and Riddell Road. Streets in the area have limited connectivity, and sidewalks exist predominantly on streets within proximity of the school. Higher-volume streets in the area include SR 303/Wheaton Way, Sheridan Road, Sylvan Way, and Riddell Road.

West Hills Elementary School

The West Hills Elementary School designated walking catchment area is bounded by Callow Avenue, SR 304/Navy Yard Highway, SR 3, SR 310/Kitsap Way, and 9th Street. Many streets in the immediate vicinity of the school have sidewalks on one side (e.g., Naval Avenue) or lack sidewalks altogether. In some cases, gravel paths and shoulders substitute for sidewalks (e.g., along the south side of Loxie Eagans Boulevard near the school). It should be noted that West Hills Elementary is located outside Bremerton city limits, with most surrounding streets under Kitsap County's jurisdiction.

Within the walking catchment area, streets with sidewalks include Baer Boulevard, along with other streets east of Forest Ridge Park.

Sidewalk in the Dockside subdivision near Kitsap Lake Elementary School

Sidewalk near Naval Avenue Elementary

Perry Avenue at Stone Way

Marked crosswalks exist at several intersections near the school, and crossing guards assist students on National Avenue at Loxie Eagans Boulevard and Preble Street, and on Arsenal Way at Marion Avenue.

Middle Schools

Bremerton 8th Grade/Freshman Academy

Bremerton's 8th Grade/Freshman Academy's designated walking catchment area is roughly bounded by Perry and Trenton Avenues, Old Wheaton Way, Lebo Boulevard, SR 303/Wheaton Way, and Riddell Road. Streets north of the school have limited connectivity and a fragmented sidewalk system. Streets to the south, especially those in Manette, have better connectivity and a more complete sidewalk network. The walking catchment area also has several high-volume roads including SR 303/Wheaton Way, Sheridan Road, Sylvan Way, and Riddell Road. Marked crosswalks exist at major intersections throughout the area.

Mountain View Middle School

Mountain View Middle School's designated walking catchment area is bounded by Sinclair Inlet, Port Washington Narrows, SR 303/Wheaton Way, and Sylvan Way.

A well-connected street grid exists south of the school with a fairly complete sidewalk network, while a more-circuitous street system with fragmented sidewalks exists to the west. Some streets immediately adjacent to the school lack sidewalks on one or both sides, including Stone Way, and Perry and Trenton Avenues. Marked crosswalks exist at several intersections in the vicinity of the school, yet some crosswalks lead students to gravel shoulders (e.g., Perry Avenue at Holman Street and at Stone Way).

High Schools

Bremerton High School

Bremerton High School's designated walking catchment area is fairly large, and bounded by Port Washington Narrows, Sinclair Inlet, Callow Avenue, SR 310/Kitsap Way, and Marine Drive. Streets south and east of the high school are generally well-connected with sidewalks on both sides, while many streets in the walking catchment's western area lack sidewalks (some streets are within Kitsap County's jurisdiction). Relatively long distances between protected pedestrian crossings on some higher-volume roads (e.g., SR 303/Warren Avenue) create a challenging pedestrian crossing environment. Crosswalks are present at many intersections in the school's immediate vicinity, but some lack curb ramps to facilitate convenient wheelchair crossings.

Pedestrian mall at Olympic College

Renaissance High School

With the exception of Marion Avenue, Constitution Avenue, and 1st Street, nearly all streets in the vicinity of Renaissance High School lack sidewalks. Pedestrians must either walk on adjacent shoulders or in the road. Crosswalks are present at intersections near the school, but often lead to areas without sidewalks, curb ramps, and other basic pedestrian facilities.

Olympic College

The pedestrian network surrounding Olympic College is similar to that of Bremerton High School. Streets to the south and east are well connected and generally include sidewalks on both sides, while streets to the west are less connected and lack sidewalks in many locations. SR 303/Warren Avenue serves as a major barrier between the college and residential neighborhoods to the east. Within the campus, however, pedestrians benefit from attractive pedestrian malls linking various campus buildings and facilities.

Map 6
2004-2006 Bicycle/Pedestrian Crash Locations

3. Pedestrian and Bicycle Facility Improvements

Bremerton has the potential to transform itself into one of Puget Sound's most walkable and bikeable communities. Although challenges lie ahead, the foundation of a fantastic system already exists. This chapter lays out a 20-year plan for completing this system. The recommended network builds upon previous and on-going local and regional planning efforts, and reflects the extensive input offered by City staff, bicycle/pedestrian stakeholder groups, and Bremerton residents.

The recommended network includes a comprehensive and diverse set of walking and bicycling facilities connecting key destinations throughout Bremerton. System improvements include filling on-street walkway and bikeway gaps, upgrading intersections for safer bicycle/pedestrian crossings, expanding the shared use path network, and implementing other infrastructure projects to encourage bicycling and walking. Suggested improvements include low-cost measures yielding immediate results, such as striping bicycle lanes where sufficient street width already exists. Other suggested improvements, such as bicycle/pedestrian overcrossings, represent longer-term strategies for transforming Bremerton into a truly bicycle and pedestrian friendly community.

This chapter describes suggested improvements, with high priority projects defined as those that will provide significant bicycling and walking improvements within the first 5 years of the Plan implementation. A section at the end of this chapter suggests specifically where the City should concentrate its infrastructure improvement efforts first.

3.1 Pedestrian Facilities

The recommended pedestrian network builds upon Bremerton's existing system of sidewalks, shared use paths, and other pedestrian infrastructure currently in place. Depicted on the Proposed Pedestrian Network Improvements Map (Map 4), the recommended projects are intended to increase pedestrian safety and convenience while making walking an attractive and viable travel mode. Recommendations include filling gaps in the sidewalk system, developing an interconnected shared use path network, and targeting specific intersections for pedestrian crossing enhancements. The sections below discuss specific pedestrian facilities in greater detail.

Pedestrian Countdown Signal

3.1.1 Sidewalks

Locations: please refer to Map 4

Bremerton benefits from a relatively complete sidewalk system in several areas (e.g., the inner portions of East and West Bremerton), while streets in most outlying areas have fragmented sidewalks or no sidewalks at all. A City ordinance requires sidewalks to be built along new roads and as properties redevelop along existing streets. As a result, the major challenge lies in retrofitting existing streets where sidewalks are fragmented or lacking altogether, and in areas where significant redevelopment is not expected to occur.

The Proposed Pedestrian Network Improvements Map illustrates the proposed sidewalk system. While the map only depicts future sidewalks on collector and arterial roadways, the City should work to provide sidewalks on all streets to ensure maximum pedestrian connectivity. Maintaining and improving the existing system holds equal importance. The City should also thoroughly inventory the existing sidewalk network to identify needed improvements (e.g., cracked or heaving pavement, intersections lacking curb ramps, etc.) and dedicate resources on a continual basis to address these problem areas.

3.1.2 Intersection Improvements

Locations: SR 303 and Wheaton Way, near schools, SR 303 at Warren Avenue, SR 304 at Burwell Street, SR 3 interchanges

The intersections identified on the Proposed Pedestrian Network Improvements Map were recognized by City staff and residents as having a high level of importance. Most highlighted intersections are located on streets with wide cross-sections (e.g., with multiple travel lanes), higher vehicle speeds and volumes, and/or other conditions complicating pedestrian crossing movements. In East Bremerton, most of the recommended improvements are located along SR 303/Wheaton Way and in areas with higher volumes of children walking to school. In West Bremerton, intersections targeted for improvements are located along SR 303/Warren Avenue, SR 304/Burwell Street, and the interchange areas along SR 3. This plan also recommends intersection improvements along several proposed bicycle boulevard corridors in East and West Bremerton to facilitate easy and safe crossings for bicyclists and pedestrians at major streets. A later section in this chapter discusses bicycle boulevards in greater detail.

Dual curb ramps with detectable warning strips

3.1.3 Signal Timing Evaluation and Modification

Locations: requires assessment

Traffic signals in Bremerton are either pre-timed or actuated. Pre-timed signals accommodate pedestrian crossings through automatic "phasing" concurrent with parallel vehicle traffic. Jurisdictional responsibility for signals depends on the intersection under focus; therefore, the City, Kitsap County, and WSDOT should periodically evaluate signal timing plans to ensure adequate pedestrian crossing times are provided.

3.1.4 Pedestrian Signals

Locations: Downtown, SR 310 at Kitsap Way, SR 303 at Warren Avenue and Wheaton Way

Three technologies are available for controlling pedestrian traffic in signalized intersections. An advanced type of Pedestrian Countdown Signal contains a countdown signal, in addition to the WALK/DON'T WALK symbol. The countdown signal displays the number of seconds remaining for the pedestrian to complete the crossing.

Leading Pedestrian Interval signals give pedestrians a 3- to 4-second head start into the intersection before parallel traffic is released by the green light. This technology ensures that pedestrians are well into the intersection and visible to turning vehicles prior to vehicles entering the crosswalk.

Accessible pedestrian signals supplement pedestrian signal indications with audible and/or vibrotactile information.

3.1.5 Curb Ramps

Locations: All intersections

Curb ramps are a fundamental element of an accessible public system. A sidewalk without a curb ramp is inaccessible to a wheelchair occupant, forcing the occupant back to a driveway and out into the street for access. Likewise, street crossings must be aligned and properly designed to accommodate the needs of all people. Many of the single-access ramps built in previous decades direct users diagonally into the street intersection (rather than straight into the crosswalk area). This can be problematic for visually-impaired pedestrians because they could experience difficulty orienting themselves toward the crosswalk. Where possible, all intersection corners should provide dual curb ramps oriented directly across the street. Curb ramps should also have detectable warning strips to accommodate the visually impaired.

3.1.6 Crosswalks

Locations: Inventory is Required

A variety of crosswalk marking types currently exist in Bremerton, including transverse (also called parallel bar) markings consisting of two bars crossing an intersection, and longitudinal (also called ladder style) markings. Crosswalks with pavement texturing

Longitudinal ("ladder") crosswalk

Developing informal accessways into shared use paths could greatly improve pedestrian and bicycle access in the Dockside subdivision

and color also exist in the downtown core. The City's crosswalk marking standards reflect the longitudinal design, which provide greater visibility compared with transverse markings. The City also requires illumination at all crosswalks. Many existing marked crosswalks throughout the community do not currently meet the standards described above. The City should inventory the existing system and develop a schedule to re-stripe and illuminate crosswalks as needed.

3.1.7 Streetscape Improvements

Locations: implement design guidelines throughout Bremerton

Several recently completed and ongoing sub-area plans offer incredible opportunities for enhancing Bremerton's walking environment. The plans each include a variety of streetscape improvements based on design guidelines developed specifically for each geographic area under focus. Recent and ongoing planning efforts include:

- The Downtown Sub-Area Plan
- The Eastpark Sub-Area Plan
- The Westpark Sub-Area Plan
- The Wheaton-Riddell Sub-Area Plan

The recommended street design guidelines and associated streetscape projects emphasize pedestrian comfort and safety. The streetscape enhancements include wide sidewalks, planter strips, pedestrian refuge islands, street trees, and other treatments. Complementing these enhancements are pedestrian-oriented land use recommendations for properties that are developed or re-developed. The City of Bremerton should actively pursue opportunities to implement the recommendations of these sub-area plans.

3.1.8 Shared Use Paths

Locations: Searle Street pedestrian overcrossing (repairs); desire-paths in Dockside subdivision; Kitsap Lake trail; NAD Park to Jackson Park Naval Housing Area; Shore Drive

Relatively small-scale improvements could substantially enhance the path system already in place. In West Bremerton, for instance, the Searle Street pedestrian/bicycle overcrossing provides a critical non-motorized link between Auto Center Way and Westpark; yet, cracking and heaving on the narrow eastern approach path complicates bicycle and pedestrian travel. The City could show its commitment to system preservation by reconstructing and widening this relatively short link.

Path corridors, such as the unpaved accessways in the Dockside subdivision, should be formalized. Children use the informal accessways to reach Kitsap Lake Elementary School and other pedestrians and bicyclists use them as a recreational route along Kitsap Lake. Formalizing these short links (which are located within the public right-of-way) could greatly improve recreational and utilitarian bicycling and walking opportunities.

The upper portion of Shore Drive in East Bremerton could be developed into a shared use path

In East Bremerton, the upper portion of Shore Drive could be converted into a shared use path. Steep topography currently separates bi-directional traffic on this local street. The upper portion could serve foot and bicycle traffic while the lower portion would remain open to vehicles. Because of the lack of driveways on the upper side, trail development could occur with minimal effects on private property access.

In West Bremerton, a short but critical bicycle/pedestrian gap could be filled between NAD Park and the Jackson Park Naval Housing Area. Currently, a fence separates the northern end of Shorewood Drive from the nearby shared use path along Ostrich Bay. Completing this link would offer pedestrians and bicyclists a scenic and more direct route linking the Naval Housing Area, NAD Park, and other West Bremerton neighborhoods.

The City can maximize opportunities to develop intercity paths by working with WSDOT and other agencies to implement the Mosquito Fleet Trail Master Plan. The plan includes a proposed shared use path along SR 3 linking West Bremerton and Gorst, with potential connections to Port Orchard and other West Sound communities.

3.1.9 Pedestrian/Bicycle Bridges

Locations: Link Olympic College with Lions Community Playfield

Pedestrian/bicycle bridges represent one strategy for overcoming large barriers such as waterways or major streets. A pedestrian/bicycle overcrossing linking Olympic College with Lions Community Playfield would provide a safe, convenient, and comfortable alternative to the SR 303/Warren Avenue Bridge. Such a structure would be a critical non-motorized link between East and West Bremerton and could serve as an opportunity for the community to display its identity. This project would enable pedestrians and bicyclists to freely travel between Olympic College, Evergreen Park, and surrounding neighborhoods without having to cross SR 303/Warren Avenue at-grade.

3.1.10 Path Feasibility Studies

Locations: Kitsap Lake Perimeter Study

Path feasibility studies devote detailed attention to specific trail projects. These studies examine a particular trail corridor in depth, and include opportunities and constraints analyses, development of potential path alignment options, selection of a preferred alignment, and preliminary cost estimates. Feasibility studies are particularly useful for agencies exploring potential path corridors in areas faced with topographic, environmental, political, or other challenges. Bremerton residents have consistently expressed a desire for shared use paths in potentially challenging areas, most notably around Kitsap Lake. The City should conduct a feasibility study to explore the possibility of developing a Kitsap Lake Perimeter Trail.

Pedestrian/bicycle overcrossings enable communities to express their identity while enhancing non-motorized connections

3.2 Bicycle Facilities

The recommended bicycle network depicted in Map 5 builds upon the existing system of bicycle lanes, shoulder bikeways, and shared use paths and also takes advantage of many lower-volume bicycle-friendly streets. These proposed projects aim to fill system gaps and develop a more complete network. The proposed system includes an expanded bicycle lane network on streets where bicyclists could benefit from delineated separation from motorists, and shoulder bikeways (serving bicyclists and pedestrians) are provided on several roadways at the urban/rural fringe. The recommended network also includes a comprehensive Shared Roadway/Bicycle Boulevard system, taking advantage of Bremerton's extensive network of lower-volume streets. As discussed in Section 3.1 Pedestrian Facilities, the network also includes a system of shared use paths.

3.2.1 Bicycle Lanes

With the exception of SR 304/Navy Yard Highway, portions of Auto Center Way, and a few streets near Olympic College, Bremerton's major streets lack dedicated bicycle lanes. Safely accommodating bicyclists on major roadways is important for several reasons. First, major streets generally offer the most direct routes between bicyclist destinations while providing better connectivity compared with lower-order streets. Consequently, commuter cyclists and those traveling longer distances often gravitate to these routes. Second, the commercial character of major streets makes these corridors destinations in and of themselves.

To safely accommodate bicyclists on corridors with current or anticipated high traffic volumes, bicycle lanes are proposed on several major streets throughout Bremerton. In developing the proposed bicycle lane network, consideration was given to several factors, including:

- Gaps in the existing bicycle lane system
- Previous and ongoing planning efforts identifying the need for bicycle lanes on specific streets
- Planned street improvements that would include bicycle lanes as part of construction
- Whether an existing street could be retrofitted to include bicycle lanes
- Planned land development projects with the potential to generate bicycle travel demand on major streets

Existing wide shoulders on SR 310/Kitsap Way (with bike lane)

Proposed bicycle lane striping and pavement markings (no bike lane)

Existing short-term and long-term transportation plans do not propose any new major streets in Bremerton, nor do they include many major street reconstruction projects. As a result, the City will need to largely focus on retrofitting existing streets. Though physical and other constraints preclude bicycle lane development on some corridors, the City of Bremerton could employ various approaches to work around these challenges. These approaches are discussed below.

Shoulder Striping and Pavement Markings

SR 310 and Kitsap Way in West Bremerton are wide enough to provide bicycle lanes through enhanced striping and pavement markings on existing shoulders.

Uphill Bicycle Lanes

This relatively low-cost, yet highly effective treatment could be implemented immediately on Old Wheaton Way in East Bremerton and 15th Street in West Bremerton. Uphill bicycle lanes could also serve as an interim solution for streets that might eventually be widened to include bicycle lanes on both sides.

Road Diets

Road diets reallocate a portion of a street for striping modifications. In Bremerton, several streets appear to have more width than is currently needed for vehicles and this excess capacity could be striped for non-motorized uses. 6th Street in West Bremerton currently provides four vehicle travel lanes, yet traffic volumes are relatively low compared with nearby parallel routes such as 11th Street and SR 304/Burwell Street.

The City could take advantage of this opportunity by re-striping 6th Street to include bicycle lanes and a center left-turn lane. Although this strategy would reduce the number of travel lanes, the addition of a center turn lane could improve traffic operations on this street. This strategy would transform 6th Street into a safer bicycle corridor.

The Downtown Sub-Area Plan has identified 6th Street as a road diet candidate. The road diet could accommodate a landscaped center median with center turn pockets at key intersections.

Contra-Flow Bicycle Lanes

The City could add an eastbound contra-flow lane on 1st Street between Montgomery and Naval Avenues as part of a larger bicycle boulevard project. With low traffic volumes and no intersecting driveways on the contra-flow lane side of the street, this corridor is an ideal candidate for this innovative treatment. The contra-flow lane would also enable cyclists to avoid SR 304/Burwell Street, the nearest alternative route.

Old Wheaton Way near Parkside Dr. (existing conditions)

Old Wheaton Way with uphill bicycle lane (with bike lane)

Street Widening

The City of Bremerton could add bicycle lanes to several streets with unused right-of-way. Although street widening incurs higher expenses compared with re-striping projects, the City could develop short- and long-term strategies. As a short-term measure, the City could focus on streets currently lacking curbs, gutters, and sidewalks (e.g., Almira Drive). The City could add bicycle lanes to these streets without the high costs of major infrastructure reconstruction. In the long term, however, the City should find opportunities to add bicycle lanes to other major streets where they are needed. Opportunities include adding bicycle lanes as streets and bridges are widened for additional auto capacity, or as property development necessitates street reconstruction.

3.2.2 Shoulder Bikeways

Locations: Tracyton Beach Road and Other Outlying Roads

Shoulder bikeways are common in less-developed and rural areas, and typically consist of a paved shoulder for pedestrian and bicycle travel. Although these facilities may suitably accommodate bicyclists and pedestrians today, the City will need to consider additional treatments (e.g., bicycle lanes, sidewalks, and shared use paths) as new development occurs and as traffic volumes increase.

3.2.3 Shared Roadways/Bicycle Boulevards

Locations: SR 303 and Wheaton Way; Perry Avenue; Downtown, Olympic College, Bremerton High School, Westpark, Jackson Park Naval Housing Area

Bremerton benefits from a generally well-connected system of lower-volume streets that could become spectacular bicycling routes for riders of all ages and skills with the addition of relatively small-scale treatments. These streets (commonly referred to as shared roadways) accommodate bicyclists and motorists in the same travel lanes, often with no specific vehicle or bicycle lane delineation. Communities throughout the county are transforming their shared roadways into even better facilities, known as bicycle boulevards.

Many streets throughout East and West Bremerton could benefit from a variety of shared roadway/bicycle boulevard improvements. In East Bremerton, several bicycle boulevards would provide riders alternatives to major street corridors such as SR 303 at Wheaton Way (characterized by high vehicle speeds and volumes) and the southern portion of Perry Avenue (characterized by a steep grade and narrow cross-section).

In West Bremerton, bicycle boulevards would enhance non-motorized connections between downtown and Olympic College, Bremerton High School, Westpark, and the Jackson Park Naval Housing Area.

3.2.4 The Mosquito Fleet Trail: Tying it all Together

As a first step toward implementing the Non-Motorized Transportation Plan, the City could develop a series of projects demonstrating its commitment to improving bicycling and walking, both locally and regionally. The Mosquito Fleet Trail provides a tremendous opportunity to achieve this objective.

Kitsap County completed a master plan for the regional Mosquito Fleet Trail in 2001. Utilizing a combination of shared use paths, roadways and sidewalks, this trail would connect several communities (including Bremerton) and historic Mosquito Fleet docks throughout the County. The Bremerton Non-Motorized Transportation Plan recognizes this trail as a key local and regional asset.

Developing Bremerton's section of the Mosquito Fleet Trail provides a valuable opportunity for the City to implement and showcase each bicycle/pedestrian facility type described in this chapter. Passing through Bremerton, the proposed trail alignment (as outlined in the Master Plan) would follow a combination of streets, sidewalks, and paths. The Non-Motorized Transportation Plan recommends some minor alignment changes that would offer trail users a safer, more comfortable, and pleasant experience as they pass through the community. The trail alignment changes also take advantage of several exciting projects proposed in this Plan. Efforts to develop specific trail alignments are already underway. The City is in the process of extending the Louis Mentor Boardwalk, while WSDOT will soon replace the Manette Bridge with improved pedestrian/bicycle facilities. These two highly visible projects could serve as the catalyst for a systemwide trail development effort.

Table 2 outlines the recommended Mosquito Fleet Trail route through Bremerton. Beginning in East Bremerton, the table identifies specific alignments and bicycle/pedestrian facilities. Please refer to Section 6 for a discussion of other projects and project prioritizations.

Table 2. Proposed Mosquito Fleet Trail Route in Bremerton

Segment	From-to	Facility Type
Trenton Ave.	Sylvan Way to Stone Way	Shoulder bikeway
Trenton Ave.	Stone Way to Shore Dr.	Bicycle boulevard and sidewalks
Shore Dr.	Trenton Ave. to Vandalia Ave.	Bicycle boulevard and sidewalks
Shore Dr.	Vandalia Ave. to 10th St.	Shared use path
10th St./Pitt Ave./Harkins St.	Shore Dr. to Manette Br.	Bicycle boulevard and sidewalks
Manette Br.	Old Wheaton Way to Bremerton Boardwalk	Shared use path or bicycle lanes and sidewalks
Bremerton Boardwalk	Manette Br. to 2nd St.	Shared use path
2nd St./Washington Ave.	Bremerton Boardwalk to 4th/5th Sts.	Bicycle boulevard and sidewalks
4th and 5th Sts.	Washington Ave. to Naval Ave.	Bicycle boulevard and sidewalks
Naval Ave.	4th/5th Sts. to 1st St.	Bicycle lanes and sidewalks
1st St.	Naval Ave. to SR 304/Navy Yard Hwy.	Bicycle boulevard and sidewalks (including eastbound contra-flow bicycle lane)
Routes from West Bremerton to Gorst		
Primary Route		
SR 304/Navy Yard Hwy.	1st St. to Charleston Blvd. (west junction)	Bicycle lanes and sidewalks
SR 304/Navy Yard Hwy.	Charleston Blvd. (west junction) to SR 3	Shoulder bikeway
SR 3	SR 304/Navy Yard Hwy. to SR 16	Shared use path
Secondary Route		
1st St.	SR 304/Navy Yard Hwy. to Hartford Ave.	Bicycle boulevard and sidewalks
Hartford Ave./Arsenal Way	1st St. to Loxie Eagans Blvd.	Bicycle boulevard and sidewalks
Loxie Eagans Blvd.	Arsenal Way to Auto Center Way	Bicycle lanes and sidewalks
Union Ave./3rd Ave./Kent Ave./Sherman Heights Rd.	Loxie Eagans Blvd. to SR 3	Shoulder bikeway
SR 3	Sherman Heights Rd. to SR 16	Shared use path
Routes from West Bremerton to Chico Bay		
1st St.	SR 304/Navy Yard Hwy. to Hartford Ave.	Bicycle boulevard and sidewalks
Hartford Ave./Arsenal Way	1st St. to Loxie Eagans Blvd.	Bicycle boulevard and sidewalks
Arsenal Way/Russell Rd./Baer Blvd.	Loxie Eagans Blvd. to SR 310/Kitsap Way	Bicycle boulevard and sidewalks
Shorewood Dr.	SR 310/Kitsap Way to northern terminus	Bicycle boulevard and sidewalks
North of Shorewood Dr. terminus	Area between NAD Park and existing shared use path along Ostrich Bay in Jackson Park Naval Housing Area	Shared use path
Root Ct./Shore Rd./Olding Rd.	Existing shared use path along Ostrich Bay to Austin Dr.	Bicycle boulevard and sidewalks
Austin Dr.	Olding Rd. to Erlands Pt. Rd.	Bicycle lanes and sidewalks
Erlands Pt. Rd.	Austin Dr. to Chico Way	Shoulder bikeway
Chico Way	Erlands Pt. Rd. to SR 3	Shoulder bikeway

4. Pedestrian and Bicycle Program Improvements

To become a truly pedestrian- and bicycle-friendly community requires a multi-faceted approach, including strategies beyond traditional infrastructure projects. Utilizing several innovative approaches, Bremerton has the potential to become a model bicycling and walking community.

This chapter builds on the comprehensive pedestrian and bicycle network outlined in Chapter 3. The sections below largely focus on non-infrastructure strategies for improving walking and bicycling (although some physical infrastructure needs are discussed). These strategies include providing children safe and convenient walking routes to school, along with educational and enforcement measures to get the message out about safe walking, bicycling, and driving. This chapter also proposes that the City promote its bikeway and walkway network. Building the system is a major investment; encouraging people to use the system makes the investment worthwhile.

The following sections discuss the recommended pedestrian and bicycle programs in greater detail. A section at the end of this chapter suggests specifically where the City should concentrate its programmatic efforts first.

4.1 Safe Routes to School

Safe Routes to School (SR2S) refers to multi-disciplinary programs aimed at promoting walking and bicycling to school, and improving traffic safety around school areas through education, incentives, increased law enforcement, and engineering measures. SR2S programs typically involve partnerships among municipalities, school districts, community and parent volunteers, and law enforcement agencies. Bremerton's SR2S efforts are a vital component of the Non-Motorized Transportation Plan, because they will facilitate the implementation and funding for specific improvements that will help increase bicyclist and pedestrian safety and encourage fewer auto trips.

Bremerton has a vested interest in encouraging school children to lead active lifestyles. SR2S programs offer ancillary benefits to neighborhoods by helping to slow traffic and provide reasonable facilities for walking by all age groups.

4.1.1 Why Do We Need SR2S?

The purpose of a SR2S program is to identify and improve school commute routes, to increase the number of students who walk and/or bicycle to school in Bremerton, to lessen traffic congestion, and to improve health.

Crossing

Although most children walked or biked to school before and during the 1980s, the number of children walking or bicycling to school has sharply declined since, due to urban growth patterns and design that have made it less safe to do so, in addition to general lifestyle changes emphasizing more driving. Walking and bicycling to school are healthy alternatives to being driven and can provide a sense of independence for children who may otherwise be restricted by school bus or parents' schedules.

4.1.2 What are the Benefits of a SR2S Program?

The primary benefit of implementing a SR2S program is the resulting increase in safety for children walking and riding bicycles to school. A comprehensive strategy based on a cooperative effort among school officials, parents, residents, and city planning staff will ensure that specific school-related traffic calming projects and pedestrian and bicycle improvements will become priority projects eligible for state, federal, or other grant funding. Involvement of various stakeholders throughout the SR2S process increases the likelihood for implementation of needed safety improvements. While the primary focus of a SR2S program is improving safety for children walking and biking to school, these safety benefits often extend to all age and activity groups. A SR2S program also helps to integrate physical activity into the everyday routine of school children. Health concerns related to sedentary lifestyles have become the focus of efforts both statewide and nationally. Identifying and improving routes for children to safely walk and bicycle to school is also one of the most cost-effective means of reducing weekday morning traffic congestion and can help reduce auto-related pollution.

4.1.3 Local Coordination and Involvement

The continued success of Bremerton's SR2S programs hinges on buy-in from individuals and organizations throughout the community. While each school will have unique concerns and goals for improving the SR2S program, an organizational strategy promoting idea-sharing between schools can be more effective than several isolated school groups. The key components of an effective SR2S program include champions (individuals at each school who spearhead their school's organizing effort), stakeholders (a team of people from an individual school), and a task force made up of all stakeholder teams in the community.

The basic components of a SR2S program include the following:

Arcata, CA Jacoby Creek crossing guard

Education

Curriculum programs implemented in schools can teach children the basics regarding pedestrian and bicycle safety. Classroom educational materials should be presented in a variety of formats (safety videos, printed materials, and classroom activities), and should continually be updated to make use of the most recent educational tools available. Classroom education programs should also be expanded to promote the health and environmental benefits of bicycling and walking. Outside schools, educational materials should be developed for different audiences, including elected officials (describing the benefits of and need for a SR2S program), and parents (proper school drop-off procedures and safety for their children).

Educational programs should be linked with events and incentive programs, when appropriate, and students should be included in task force activities, such as mapping locations for improvements. Involving students can serve as an educational tool and can also provide the task force with meaningful data that is useful for prioritizing improvements. Educational programs, and especially on-bike training, should be expanded to more schools and for more hours per year.

Encouragement

School commute events and frequent commuter contests are used to encourage participation. Programs that may be implemented include a "Walking School Bus Program," which involves parents taking turns walking (or bicycling) with groups of children to school. A good opportunity to promote a SR2S program is during International Walk to School Day, held annually in early October. Organized Bike and Walk to School Days should be held monthly or weekly to keep the momentum going and encourage more children and their parents to walk or bike to school. Prizes or drawings for prizes offered to participants have been used in some schools as an incentive. Events related to bicycling and walking should be incorporated into existing curricula when practical. Involving local celebrities or publishing the names of student participants in events can be an effective means of encouraging student involvement. Another key to successful events is promotion. Ensuring that parents are aware of events (whether classroom-specific or district-wide) is crucial to gaining maximum student participation.

Other contests and event ideas to encourage bicycling and walking to school include competitions in which classrooms compete for the highest proportion of students walking or biking to school; themed or seasonal events; and keeping classroom logs of the number of miles biked and walked by children and plotting these distances on a map of Washington or the United States.

Classroom

Group Ride

Enforcement

Various techniques are employed to ensure traffic laws are obeyed. The SR2S task force and stakeholder teams should develop priority areas in need of enforcement by the Bremerton Police Department. One option to avoid the cost of providing physical police presence is to use innovative signage, such as in-roadway crosswalk signs or in-roadway warning lights, to alert motorists that children may be crossing, or speed feedback signs that indicate to motorists their current speed. Neighborhood speed watch programs—in which community members borrow a radar device and use it to record the license plate numbers of speeding vehicles—can also be effective.

Engineering

To provide safe access for children, school sites should have designated pedestrian access points that do not require students to cross in front of drop-off and pick-up traffic. Locations identified through the SR2S process should be considered for SR2S grant funding.

Streetscape improvements should ensure adequate sight distance on all access routes, crossings, and intersections. School zone designations for speed limits should be an element of a comprehensive circulation plan that also includes school-based student as well as Police Department crossing guard programs and identification of safe routes for bicycling and walking to school. With crossing guards posted at various locations near most schools, Bremerton is ahead of the curve with regard to improving pedestrian safety among school children.

Route to School Maps and Recommended Improvements

Most Bremerton schools provide maps illustrating suggested walking routes to school, with accompanying flyers noting problem areas such as difficult intersections or streets lacking sidewalks. The recommended improvements outlined in this Plan would enhance pedestrian safety and comfort by completing system gaps, enhancing system connectivity, and addressing other elements like street crossings.

This Plan provides detailed Route-to-School maps for two schools: Armin Jahr Elementary School in East Bremerton (Map 7), and Kitsap Lake Elementary School (Map 8) in West Bremerton. The maps are based on the process outlined in the 2003 MUTCD, Chapter 7. Section 7A.01 notes: "A school route plan for each school serving elementary to high school students should be prepared in order to develop uniformity in the use of school area traffic controls, and to serve as the basis for a school traffic control plan for each school. The school route plan, developed in a systematic manner by the school, law enforcement, and traffic officials responsible for school pedestrian safety, should consist of a map showing streets, the school, existing traffic controls, established school walk routes, and established school crossings."

Encompassing the designated walking catchment area for each school, the maps depict suggested walking routes along with recommended pedestrian infrastructure improvements.

For each school, staff conducted field visits to inventory the pedestrian infrastructure, intersection traffic controls, signage, crosswalks, and other physical conditions on streets surrounding the school. Staff also reviewed existing suggested walking routes to school, and considered factors including presence of traffic control, crosswalks, or crossing guards at key locations, and presence of sidewalks along street segments. In some cases, roadside paths or known off-street cut-throughs (such as a path leading to the back of a school) are noted as suggested routes.

The Route-to-School maps are intended to reflect a partnership between City and school officials. Each map should be reviewed and signed by both the School Principal and a City Engineer to ensure that they accurately reflect both the physical roadway conditions around the school and the walking patterns of students. It is recommended that the maps be reviewed and updated regularly to reflect changes in the roadway network, such as new sidewalks, crosswalks, or traffic control changes. School officials should also review the maps at the beginning of each school year to confirm that the suggested routes still reflect the best ways for children to walk and bicycle to school. Additional review and practice runs by parents are a key component to successful use of the maps.

The following sections discuss recommended improvements for Armin Jahr and Kitsap Lake Elementary Schools in greater detail. Although this Plan focuses on these two schools, the City and school district should develop safe walking routes for all schools in Bremerton and update their SR2S maps accordingly.

Armin Jahr Elementary School

Armin Jahr Elementary School's designated walking catchment area is generally bounded by SR 303/Wheaton Way, Lebo Boulevard, Appaloosa Way, Sylvan Way, and Hanford Avenue. A relatively well-connected street grid with sidewalks on both sides exists east of the school, while streets to the west are less connected and lack sidewalks on one or both sides. Several higher-volume streets are in the immediate vicinity, including Sheridan Road, Sylvan Way, and Pine Road. Sheridan Road has a relatively complete sidewalk network, while Sylvan Way and Pine Road lack sidewalks in several locations. Few marked crosswalks exist in the vicinity of the school, with most located on higher volume roads and at major intersections. Traffic calming devices (e.g., speed humps) exist on some residential streets immediately east of the school.

Motorists access the school in two locations: near the intersection of Stewart Avenue and Dibb Street, and near E 31st Street and McClain Avenue. Students walking or bicycling to school use these access points, while students traveling on foot also use an informal path near the Manette Villa Apartments west of the campus.

Map 7 depicts recommended improvements within the Armin Jahr Elementary School walking catchment area. The recommended improvements largely focus on completing the sidewalk network. This includes filling sidewalk gaps on local streets near the school and constructing sidewalks along major streets connecting outlying neighborhoods. The recommended improvements also include pedestrian crossing upgrades, such as high-visibility crosswalks on Lebo Boulevard, Pine Avenue, Rickey Road, and Sheridan Road. Further engineering studies may be necessary to ensure future crosswalks are sited at locations with sufficient visibility and stopping sight distances for approaching motorists. Intersection traffic control changes could also improve pedestrian crossings. Relatively long distances between stop signs and a lack of traffic calming devices encourage higher vehicle speeds on some streets, including Pine Road and Sheridan Road. Traffic calming devices and/or all-way stop control at some intersections along these corridors could reduce vehicle speeds thereby improving pedestrian safety and comfort.

The suggested walking routes noted on Map 7 largely reflect the suggested routes developed by school officials. The recommended infrastructure projects will strengthen these routes by providing safe and convenient walking facilities for students and other pedestrians alike. Combined with the other programmatic elements described above, these strategies could bolster walking as an attractive mode for the Armin Jahr Elementary School community.

Kitsap Lake Elementary School

Kitsap Lake Elementary School's designated walking catchment area is generally bounded by Kitsap Way, Price Road, and Kitsap Lake. In the vicinity of the school, streets with sidewalks include Osprey Circle and surrounding streets in the Dockside subdivision. A narrow paved path also exists on the east side of Harlow Drive north of Carr Boulevard. Most other streets lack sidewalks and have narrow or no shoulders for pedestrian travel. Steep topography also creates sight-distance problems for motorists on several streets like Wilmont Street. Marked crosswalks exist on Harlow Drive at Carr Boulevard, on Lyle Avenue at the northern school entrance, and on Carr Boulevard east of the school's east side. Crossing guards are posted at these locations for 20 minutes in the morning and 10 minutes in the afternoon. Traffic calming devices, including speed humps, exist on Carr Boulevard and Lyle Avenue near the school.

Motorists access the school in two locations: immediately east of Harlow Drive at the Carr Boulevard intersection, and north of Harlow Drive at the Lyle Avenue intersection. Students walking or bicycling to school use these access points in addition to a paved path connecting Carr Boulevard with the campus's northeast corner.

Map 8 depicts recommended improvements within the Kitsap Lake Elementary School walking catchment area. The recommended improvements largely focus on completing the sidewalk network. Where topographic or other physical constraints preclude sidewalk construction, the City should develop other strategies to safely accommodate pedestrians such as colored shoulders, pavement texturing, etc. The City could also enhance pedestrian system connectivity by improving two informal neighborhood accessways in the Dockside subdivision. Currently unpaved, the accessways connect Osprey Circle with neighborhoods and parks immediately north and south. Upgrading these facilities to paved shared use paths would facilitate easier travel for bicyclists and pedestrians with disabilities.

The recommended improvements also include pedestrian crossing upgrades. These upgrades include high-visibility crosswalks along commonly-traveled walking routes to school. Further engineering studies may be necessary to ensure future crosswalks are sited at locations with sufficient visibility and stopping sight distances for approaching motorists. Intersection traffic control changes could also improve the pedestrian crossing environment. Relatively long distances between stop signs and a lack of traffic calming devices encourage higher vehicle speeds on some streets such as Harlow Drive. Traffic calming devices and/or all-way stop control at some intersections along these corridors could reduce vehicle speeds, thereby improving pedestrian safety and comfort.

The limited street connectivity near Kitsap Lake Elementary School offers few walk-to-school route choices. Consequently, the suggested walking routes noted on Map 8 remain unchanged. The recommended infrastructure projects will strengthen these routes by completing the sidewalk and path system, offering students dedicated walking facilities. Combined with the other programmatic elements described above, these improvements could bolster walking as an attractive mode for the Kitsap Lake Elementary School community.

4.1.4 Funding

While much of the initial work involved in starting a SR2S program can be conducted by stakeholder team volunteers, eventually funding will be needed to plan and implement physical improvements, hold events, and develop and implement educational programs and materials.

Capital Funding

Capital funding for infrastructure improvements is available from a variety of sources, many of which are noted in Chapter 5 of this Plan. The SR2S task force should work with City staff to identify all potential funding sources and to provide support on funding requests. Bremerton may be able to pursue federal funds recently made available with the new SR2S Program established in the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFE TEA-LU). This section of the bill provides $612 million in funding with no state receiving less than $1 million per fiscal year. Other portions of SAFE TEA-LU, such as the Transportation Enhancements and the Congestion Mitigation and Air Quality (CMAQ) funds, may also provide funding opportunities for bicycle and pedestrian projects.

Program Funding

As Bremerton's SR2S program develops, funding will be needed to support the overall program, including coordination assistance, purchasing incentives, printing newsletters, staffing events, and developing educational materials. Both school-based and program-based funding will be essential for success. When program funding is pursued, it should be emphasized that a SR2S program improves the entire community by relieving traffic congestion, contributing to cleaner air, creating alternative transportation routes, and improving the health and safety of children and the entire community. In order to maintain and expand the program, new sources of funding need to be obtained. Other possible funding sources include:

- **Corporations and Businesses:** Local corporations and businesses could provide cash, prizes, and/or donations, such as printing services, through community giving or other programs. Parents or other members of stakeholder teams may be a good source for contacting companies.
- **Foundations:** There are institutions throughout the country that provide funding to non-profit organizations. The Foundation Center is a national organization dedicated to collecting and communicating information about philanthropy in the United States, and is an excellent source for researching potential foundation funding sources. Potential foundation funding sources can be searched by geographic region and by category. Some categories that may be applicable include transportation, health, environment, and community building.
- **Individuals:** Statistically, individuals give more money than corporations and foundations combined. A local fund drive can quickly reach a large number of people if outreach is conducted by stakeholder team members.

- **Events:** Many SR2S programs have raised funds by holding special events, often using a related themed event such as a walkathon or a bicycling event. More traditional fundraising efforts, such as bake sales, concerts, talent shows, etc., can also help raise funds.
- **Parent Teacher Associations (PTAs) and School Districts:** Many PTAs have funds to distribute to school programs, and often schools have their own safety funding sources. Stakeholder teams should work with local PTAs and school districts to see if there is a method for applying for a grant.
- **City and County Funds:** Some cities and counties allocate funds to support SR2S programs. Some also allocate a portion of their local Transportation Enhancement funds to SR2S educational programs.
- **State Funds:** Each state receives Federal Highway Safety Funds, also called 402 Funds. Although each state handles this program differently, most funding is available on a competitive basis for projects that increase road safety.

4.2 Bicycle Parking

Lack of secure, convenient bicycle parking is a deterrent to bicycle travel. Bicyclists need parking options that provide security against theft, vandalism, and weather. Like automobile parking, bicycle parking is most effective when located close to trip destinations, is easy to access, and is easy to find. Where quality bicycle parking facilities are not provided, determined bicyclists lock their bicycles to street signs, utility poles, or trees. These alternatives are undesirable because they are usually not secure, may interfere with pedestrian movement, and can create liability or damage street furniture or trees. Bicycle parking facilities that are conveniently located and adequate in both quantity and quality can help reduce bicycle theft and eliminate inappropriate parking, benefiting everyone. Bicycle parking is highly cost-effective compared with automobile parking.

4.2.1 Parking Requirements

Field visits and discussions with Bremerton residents indicate that more bicycle parking is needed in some areas, including downtown and at several schools. Chapter 20.48.180 of Bremerton's Municipal Code specifies minimum bicycle parking requirements, which pertain to all non-residential land uses as well as residential developments with six or more dwelling units. The Municipal Code requires one bicycle parking space for every ten required vehicle spaces. The following exceptions apply:

- Schools (except higher-education institutions) must provide one bicycle parking space per 20 students.

- Video game and amusement centers commonly frequented by children must provide one bicycle parking space for every three required vehicle spaces.
- The City may waive bicycle parking requirements for non-residential land uses "that would not normally have bicycle-riding clientele (such as self-service businesses, automobile services, gas stations)."

Although the Code's "blanket" requirements ensure a minimum number of bicycle parking spaces for most developments, the requirements may not fully address parking demand for some land uses. The City should revisit the current bicycle parking requirements and revise them to reflect the needs of individual land uses, especially those with traditionally higher demand such as commercial centers. The City should also eliminate the parking requirement waiver described above. Although some land uses may generate relatively low parking demand, a minimum number of spaces should be provided to meet the bicycle parking needs of employees and patrons.

Bremerton could also benefit from long-term bicycle parking and other end-of-trip facilities. The City should consider establishing long-term parking requirements for large employment centers such as business parks and government buildings. Long-term bicycle parking facilities include bicycle lockers, attended facilities, and/or other secure provisions, while end-of-trip facilities refer to showers and changing areas.

Municipal Code enforcement holds equal importance. The City should undertake a bicycle parking analysis to determine whether all of the bicycle parking required by the Code is provided, and if so, that it is sited in locations that are visible and free of obstacles. It should also be noted that the Code only establishes parking minimums, and new commercial establishments should be encouraged to exceed these standards.

4.2.2 Facility Design Requirements

Chapter 20.48.180 of the Municipal Code briefly specifies bicycle parking design requirements: "Bicycle facilities shall be firmly attached to the ground, located near the building entrance, and designed to allow both the frame and wheels to be securely locked to the structure." The City should establish more detailed parking design requirements to address rack height and dimensions, as well as bicyclist maneuvering space between racks and other obstacles. The City should also develop safety- and security-related requirements to address lighting as well as covering to protect bicycles from inclement weather.

4.3 Bicycle/Pedestrian Access to Transit

Tremendous opportunities exist for increasing pedestrian/bicycle-transit partnerships in Bremerton and throughout Kitsap Transit's service area. Pedestrian infrastructure improvements around transit stops and transit centers enhance pedestrian safety, comfort, and may generate more ridership because most passengers start and end their trips as pedestrians. Integrating bicycles with transit allows the bicyclist to overcome barriers such as hills, inclement weather, night riding, and breakdowns.

To improve the pedestrian/ bicycle-transit link, Bremerton and Kitsap Transit need to:

- Complete the sidewalk network on both sides of streets along Kitsap Transit bus routes to ensure connectivity and accessibility for all users when new development or redevelopment occurs, or as part of the City's Sidewalk Program
- Provide benches, shelters, lighting, and posted maps and schedules at transit stops
- Provide secure bicycle parking at or near transit stops
- Address the needs of bicycle and pedestrian circulation in the design of future transit centers
- Ensure that bicycles are always allowed on buses and other transit vehicles

4.3.1 Providing Good Sidewalks and Bikeways to Transit Stops

The presence and quality of sidewalks along Kitsap Transit routes in Bremerton depends on the street under focus, with some streets having sidewalks on both sides, on one side only, or no sidewalks altogether. Kitsap Transit's 2005-2011 Transit Development Plan includes a planned Bus Rapid Transit (BRT) project on the SR 303/Wheaton Way corridor in 2008. This project provides an excellent opportunity to integrate the pedestrian and bicycle facilities infrastructure improvements with the planned BRT stations. Potential improvements include intersection upgrades and filling sidewalk gaps on and near this corridor. Potential bicycle improvements include adding bicycle lanes and developing bicycle boulevards connecting SR 303/Wheaton Way with surrounding neighborhoods. This project also presents an opportunity to implement the recommended streetscape improvements outlined in the Wheaton-Riddell Sub-Area Plan.

4.3.2 Addressing Bicycle and Pedestrian Needs at Transit Centers

Pedestrian/bicycle access, internal circulation, and passenger facilities should be a high priority in the design of transit centers. Adjacent access points should include sidewalks and high-visibility crosswalks, and widths should be adequate to accommodate peak pedestrian flows. Internal circulation should be direct, well-signed, and meet ADA standards. Transit centers should also provide appropriate facilities such as shelters, benches, restrooms, and secure and convenient bicycle parking.

The Bremerton Transportation Center serves as the city's main intermodal transfer center, connecting Kitsap Transit buses with ferries serving Port Orchard and Seattle. The center provides indoor and outdoor passenger waiting areas, with good pedestrian/bicycle access to the Louis Mentor Boardwalk. A planned WSDOT project will reroute ferry egress auto traffic directly to SR 304/Burwell Street via a new tunnel. This will reduce traffic congestion on Washington Avenue, where bicyclists and pedestrians currently conflict with motorists leaving the ferry terminal. The planned project will also include a formalized "kiss and ride" area.

The pending WSDOT project will improve multi-modal circulation at and near the Transportation Center; however, challenges remain. Convenient bicycle access to and from the Puget Sound Naval Shipyard remains an issue due to the presence of one-way streets, and the new ferry auto ingress (under construction) limits opportunities for bicycle facilities on Pacific Avenue and 1st Street. Wayfinding represents another challenge facing bicyclists and pedestrians alike. The Bremerton Transportation Center lacks signage highlighting bicycle/pedestrian routes to nearby destinations. To address these challenges, the City should develop a sub-area plan specifically addressing bicycle/pedestrian circulation near the Bremerton Transportation Center, with specific infrastructure and wayfinding signage recommendations.

Located at 5th Street and Bruenn Avenue, the West Bremerton Transfer Center serves several Kitsap Transit bus routes. Fragmented sidewalks and bicycle lanes characterize the non-motorized environment in this area, but the City is currently filling sidewalk gaps on some nearby streets (e.g., Auto Center Way). Kitsap County's Transit Development Plan contains a project to upgrade the Transfer Center in 2009, though the Plan does not identify project specifics. This project provides an excellent opportunity for improving pedestrian/bicycle-transit connections. The City should closely monitor this project and work with Kitsap Transit to take advantage of non-motorized facility improvements.

4.3.3 Providing Secure Bicycle Parking

Long-term bicycle parking facilities (e.g., lockers) may be the most appropriate parking provision at transit centers and along bus routes. Neither the Bremerton Transportation Center nor the West Bremerton Transfer Center have long-term bicycle parking facilities. "Bike Stations" may be appropriate at these transit centers and in higher-activity areas like Olympic College and downtown Bremerton. Bike Stations are public/private community support facilities designed to encourage bicycling and transit use by providing:

- Secure, valet bicycle parking
- Transit amenities and services
- Close connections to transit

Bike Stations may also provide other services such as:

- Bicycle accessory retail sales
- Bicycle repairs
- Bicycle rentals
- Restrooms/changing facilities
- Electric bicycles
- Safety/education information

A more unique feature that a Bike Station may provide is access to Public Use Bicycles (PUBs). PUBs have been around since 1968, when the first "free bike" program was established in The Netherlands. Since that time, PUB providers have worked to improve the bicycling experience while reducing the rate of theft. Now in their third generation, many PUBs utilize "smartcard" technology to check out bicycles and ensure they are returned.

4.3.4 Allow Bicycles on Transit

Dozens of American cities currently allow bicycles on trains and buses in some form. All fixed-route Kitsap Transit buses have bicycle racks available to passengers for no additional charge. The agency also allows bicycles on the Bremerton-Port Orchard passenger ferry for free. Washington State Ferries allows bicycles on the Bremerton-Seattle auto/passenger ferry with variable fares. Bicycle accommodations on ferries and buses facilitate easy bicycle connections for passengers. The City should encourage Kitsap Transit and Washington State Ferries to continue providing these accommodations.

San Jose, CA Bike Station

Passenger loading a bicycle on Kitsap Transit

4.4 Alternative Transportation Coordinator/Advisory Committee

The City of Bremerton should consider creating an Alternative Transportation Coordinator position. This position would oversee implementation of various related plans, including the Non-Motorized Transportation Plan. The position would also coordinate with other City departments (e.g., Public Works and Planning) and other organizations (e.g., Kitsap Transit and Washington State Ferries) to ensure that the needs of bicyclists and pedestrians are being considered in all new projects and relevant programs.

Along with a coordinator, the City should encourage the formation of a full-time Bicycle and Pedestrian Advisory Committee that meets regularly to identify and discuss the needs of bicyclists and pedestrians within the City of Bremerton.

The recommended Tier 1 bicycle/ pedestrian projects laid out in Chapter 5 largely emphasize infrastructure improvements that could be implemented at relatively low cost with minimal physical construction. To expedite project implementation, the City of Bremerton could create a Bicycle/Pedestrian Technician position to physically oversee, assist, and/or lead project construction. Technician responsibilities could include installing and maintaining smaller-scale bicycle/pedestrian system components such as wayfinding and warning signage, bicycle boulevard and bicycle lane pavement markings, crosswalks, and detectable warning strips on curb ramps. Other responsibilities could include installing, repairing, and replacing public bike racks, bike lockers, and other facilities as needed. The technician could also oversee the update and implementation of Municipal Code bicycle parking requirements (discussed earlier).

Depending on responsibilities assigned to the Bicycle/Pedestrian Technician, the City could create this position within the Community Development or Public Works & Utilities Department (or designate the technician as a shared position among multiple departments). This position would require training in facility installation and maintenance (including proper materials and procedures), as well as familiarity with City, county, state, and federal standards and guidelines for bicycle/pedestrian project implementation. Close coordination with other City departments will be necessary for bicycle/pedestrian projects overlapping with concurrent street improvement projects.

4.5 Wayfinding/ Signing Program

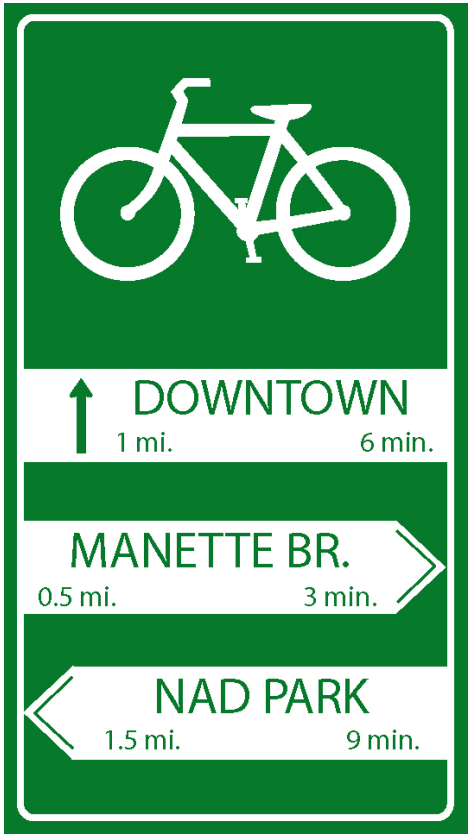
The ability to navigate through a town or city is informed by landmarks, natural features, and other visual cues. A signage system is a low-cost yet highly visible component of a navigable environment. Wayfinding signs would inform pedestrians, bicyclists, and motorists, while also enhancing Bremerton's identity. An effective wayfinding system communicates information clearly and concisely. Placing signs throughout the city indicating to bicyclists and pedestrians their direction of travel, location of destinations, and the time/distance to those destinations will increase users' comfort and accessibility to the bicycle and pedestrian system.

"Bike Route" signs currently exist throughout Bremerton, but their sporadic placement and lack of useful information diminish their effectiveness. Developing and implementing a Wayfinding Signage Plan represents an immediate yet low-cost opportunity to improve Bremerton's non-motorized system. Wayfinding signs would provide a highly visible means for demonstrating the City's commitment to improving bicycling and walking.

4.6 Capital Spot Improvement Program

Having the ability to respond quickly to the requests of bicyclists and pedestrians will enhance Bremerton's standing as a bicycle- and pedestrian-friendly community. The City could fund a Capital Spot Improvement Program once a year, with all funds dedicated to smaller spot improvements identified by City staff and residents. Such improvements might include:

- Striping and signing of a particular path to increase safety and path user compliance
- Adding bicycle parking to locations that currently lack appropriate facilities
- Providing sidewalk infill to safely connect vital pedestrian routes, especially in school areas
- Adding directional and informational signage along paths, sidewalks, and bicycle routes
- Re-striping bicycle lanes or crosswalks where the striping has worn away
- Providing ADA improvements in parks



Wayfinding signage concept

4.7 Becoming a Bicycle Friendly Community

The Bicycle Friendly Community (BFC) Campaign is a national awards program recognizing municipalities that actively support bicycling. A bicycle-friendly community provides safe accommodations for cycling and encourages its residents to bike for transportation and recreation. The BFC Campaign is administered by the League of American Bicyclists, an education and advocacy organization working to bring better cycling to communities around the country. The BFC designation is awarded at one of four levels (from lowest to highest): bronze, silver, gold, and platinum. In Washington, three communities have been designated BFCs: Bellingham (Silver), Redmond (Bronze), and Vancouver (Bronze).

4.7.1 What does it take?

Determining whether a community is bicycle friendly involves considering many factors and conditions. The application is an audit of a community's efforts to provide a more bicycle-friendly environment. The audit reviews engineering, education, encouragement, enforcement, and evaluation and planning efforts for bicycling. The entire application and feedback from cyclists in the community is sought to determine whether the League will award the BFC designation. Anyone can initiate the BFC campaign effort; however, the application process requires information that only Bremerton City staff would possess, and requires the enthusiastic support of City leaders.

Strategies

Bremerton could take a number of short- and long-term steps to become a BFC. The City should first commit to becoming a BFC. The League of American Bicyclists provides an "Action Plan for Bicycle Friendly Communities," which identifies ten specific steps that the community should take to improve bicycling conditions. The City should then adopt the Action Plan publicly with the full backing of the Mayor and City Council.

4.7.2 Action Plan for Bicycle Friendly Communities

The Action Plan comprises the following 10 steps:

1. Adopt a target level of bicycle use (e.g., percent of trips) and safety to be achieved within a specific timeframe, and improve data collection necessary to monitor progress.
2. Provide safe and convenient bicycle access to all parts of the community through a signed network of on- and off-street facilities, and secure parking. Local cyclists should be involved in identifying maintenance needs and ongoing improvements.

3. Establish information programs to promote bicycling for all purposes, and to communicate the many benefits of bicycling to residents and businesses (e.g., with bicycle maps, public relations campaigns, neighborhood rides, a ride with the Mayor).
4. Make the City a model employer by encouraging bicycle use among its employees (e.g., by providing parking, showers and lockers, and establishing a city bicycle fleet).
5. Ensure all city policies, plans, codes, and programs are updated and implemented to take advantage of every opportunity to create a more bicycle-friendly community. Staff in all departments should be offered training to better enable them to complete this task.
6. Educate all road users to share the road and interact safely. Road design and education programs should combine to increase the confidence of bicyclists.
7. Enforce traffic laws to improve safety and comfort for all road users, with a focus on behaviors and attitudes that cause vehicle/bicycle crashes. Bicyclists should be educated to always ride in the direction of vehicle traffic.
8. Develop special programs to encourage bicycle use in areas where significant segments of the population do not drive and where short trips are most common, such as the SR2S program discussed earlier in this chapter.
9. Promote intermodal travel between Kitsap Transit and bicycles (e.g., by improving parking at transit stops, and improving bicycle access to transit stops).
10. Establish a citywide, multi-disciplinary committee for non-motorized mobility to submit to the Mayor and City Council a regular evaluation and action plan for completing the items in this Action Plan.

The City of Bremerton should educate community members and City staff on how to become more bicycle-friendly. This could entail holding a workshop or other public forum to introduce community leaders to the basic elements of a BFC. The City should also work with local advocacy organizations (e.g., West Sound Cycling Club) and SR2S programs to further the education effort.

Finally, the City should implement the Action Plan. Once the Action Plan has been adopted, the City needs to ensure that the Plan is implemented, and prepare and submit its BFC application.

4.7.3 Sidewalk Infill Program

This Plan strongly recommends that the City continue its efforts of expanding the sidewalk system. The same qualities that make Bremerton unique and livable are inextricably linked to its pedestrian friendliness. The City also recognizes the intrinsic health, safety, economic, and environmental benefits of improving pedestrian facilities and promoting walking.

Completing some sidewalk links can be challenging, especially in older residential areas where residents have developed fencing and landscaping within the public right-of-way and may consider those areas to be part of their personal space. In addition, some residents may not want traditional sidewalks due to the rural look of their neighborhoods, and potential impacts to mature landscaping and trees. Regardless, the public right-of way that is generally located on either side of the paved driving and parking area is intended for walking, whether or not a sidewalk currently exists.

Bremerton should actively continue to implement its Sidewalk Program, where City staff periodically inventory the street network to identify sidewalk gaps, and develop strategies, project prioritization criteria, and funding for completing these gaps. Potential project prioritization criteria include filling gaps along key pedestrian routes, near major pedestrian trip generators such as schools, and along streets with high vehicle volumes.

Potential Implementation Process

To inform adjacent property owners of planned sidewalk construction in the public right-of-way, the Public Works Department could conduct extensive public outreach. The outreach could include the following steps.

At the beginning of design, City staff would send a notification letter to all residents on the block face (owner and resident) where sidewalk infill construction is planned. The letter would indicate that their location has been chosen for the Sidewalk Program, that design has started, and to contact the Public Works Department with any questions.

City staff would send a notification postcard to the residents at 50 percent design completion. This would allow design to be far enough along to answer location-specific questions, but still allow changes to the design as appropriate. City staff would meet with any residents who contact the City regarding design/construction details, and they would refer any questions about the general Sidewalk Program to the Public Works Department.

When design is complete and the project goes out to bid, City staff would send a third notification postcard to the residents indicating that the project is out to bid. The City Council would award the construction contract and

receive a map of all locations where sidewalks are to be constructed. When construction contracts are approved by the Council, City staff would send a fourth notification postcard to the residents informing them that the Council has approved the construction contract and construction schedule, and that residents would receive a door hanger notice at least 72 hours before construction begins at their particular location.

4.8 Accommodating People with Disabilities

With the advent of the ADA in 1990, the nation recognized the need to provide equal access to all residents. Since its inception, ADA has significantly changed design requirements for the construction of public space. However, much of the pedestrian environment built prior to the ADA's inception does not adequately accommodate people with disabilities. The City of Bremerton's approach is to gradually change this situation through land development project requirements, unrelated capital street improvement projects, and capital projects that specifically retrofit antiquated public pedestrian facilities.

It is important to note that a pedestrian environment strategically built to be accessible for people with disabilities is also more accessible for all. Curb ramps, for instance, can accommodate strollers, shopping carts, and dollies for the movement of goods. Accessible intersection crossings can increase safety for people regardless of ability. In recognition of this, the City's philosophical approach is to create pedestrian environments that are attractive, functional, and accessible to all people.

4.8.1 Developing an ADA Transition Plan

As a part of ADA implementation, the Justice Department requires that all municipal jurisdictions have an ADA Transition Plan intended to spell out the City's intentional retrofitting of its built environment to an accessible state. While the Non-Motorized Transportation Plan is purposely written to accommodate people with disabilities, a separate document with greater specificity is required.

The ADA Transition Plan should use all the relevant strategies of this document as well as other current practices that have merit. Monies set aside to implement the ADA Transition Plan should be focused to accomplish the priorities of the Plan, rather than diverting them to ADA compliance in an unrelated project.

To adequately plan the pedestrian environment for people with disabilities, the ADA Transition Plan must take into account each of the disabilities and the limitations they present. It is also important to be aware of how planning for people with one disability affects people with another.

For example, gradual ramps and smooth transitions to the street help people in wheelchairs, but present challenges for the sight-impaired if they cannot easily find the end of the sidewalk and beginning of the street. The ADA Transition Plan should also consider the needs of children and older adults.

The sections below describe populations whose needs must be taken into account in creating an accessible pedestrian environment.

People with Mobility Impairments

People with mobility impairments range from those who use wheelchairs, crutches, canes, orthotics, and prosthetic devices, to those who do not use such devices but face constraints for many reasons when walking long distances, on non-level surfaces, or on steep grades. Curb ramps are particularly important to people with mobility impairments. Prosthesis users often move slowly and often have difficulty with steep grades or cross slopes.

People with mobility impairments are affected by:

- Uneven surfaces that hinder movement or cause loss of balance
- Rough surfaces that make rolling difficult, cause a loss of balance, or cause pain (especially for people with back injuries)
- Steep uphill slopes that can make movement slow or impossible
- Steep downhill slopes that can cause a loss of control or are difficult to negotiate
- Cross slopes that cause instability or loss of balance
- Narrow sidewalks that impede users' ability to turn or to cross paths with others
- Devices that are hard to reach, such as push buttons for walk signals and doors
- Long distances
- Situations that require fast reaction time
- Signalized walk phases that are shorter than the time it takes for them to cross the street

People with Sensory Impairments

People with sensory impairments include those who are partially or fully blind or deaf. They also include people whose perception of touch or balance is not good, as well as those who are colorblind.

Visually-impaired people have the following characteristics:

- Limited or no perception of the path ahead
- Limited or no information about their surroundings, especially in a new place
- Changing environments in which they rely on memory
- Lack of non-visual information
- Inability to react quickly

- Unpredictable situations, such as complex intersections where streets do not intersect at a 90-degree angle
- Inability to distinguish the edge of the sidewalk from the street
- Compromised ability to detect the proper time to cross a street
- Compromised ability to cross a street along the correct path (especially when a curb ramp is oriented diagonally toward an intersection's center point)
- Need for more time to cross the street

Hearing-impaired people rely on visual information, which is often inadequate. They face most of their mobility difficulties in not being able to hear approaching vehicles and not being able to detect the time of their arrival. This is especially an issue in locations with limited sight distances, such as where streets curve or landscaping blocks the view.

People with Cognitive Impairments

People with cognitive impairments encounter difficulties in thinking, learning, responding, and performing coordinated motor skills. Cognitive disabilities can cause some people to become lost, or to have difficulty finding their way. They may also not understand standard street signage or not be able to read "benefit from" signs with symbols and colors.

Children and Other Adults

Children and many older adults do not fall under specific categories for disabilities, but must be taken into account in pedestrian planning. Children are less mentally and physically developed than adults. They have the following characteristics:

- Less peripheral vision
- Less ability to judge speed and distance
- Difficulty locating sounds
- Read less than adults or not at all, and may not understand text signs
- Sometimes act impulsively or unpredictably
- Lack familiarity with traffic
- Face difficulty carrying packages

Other adults often exhibit degrading sensory or physical capabilities. This can cause them to:

- Gradually lose vision, especially at night
- Have decreased ability to hear sounds and detect where they come from
- Have less endurance; have less strength to walk up hills
- Have less balance, especially on uneven or sloped sidewalks
- React slowly to dangerous situations
- Walk slowly

4.9 Education Programs

4.9.1 School-based Education Programs

A school-based bicycle and pedestrian education program educates students about the rules of the road, proper bicycle equipment use, bicycling skills, street crossing skills, and the benefits of bicycling and walking. These types of education programs are usually sponsored by a joint City/school district committee consisting of appointed parents, teachers, student representatives, administrators, police, active bicyclists, and engineering department staff. These programs can also be rolled into a SR2S Program.

Education need not be limited to younger school children. Adult bicycle education and safety programs can be developed from existing courses, such as League of American Bicyclists courses. Additionally, the Bremerton Police Department may want to use adult bicycle education programs as a "bicycle traffic school" in lieu of fines for bicycle-related traffic violations.

Safety Handbook

Safety handbooks are generally developed as part of a school-based bicycle and pedestrian safety program. Handbooks may include a circulation map of a district or neighborhood showing preferred circulation and parking patterns, suggested routes to school, locations of crosswalks, crossing guards and signalized intersections, instructions for bicycle maintenance and use, instructions for fitting and wearing a helmet, instructions for crossing the street, and lists of emergency and school numbers. A general handbook can be published by the City and used by each school in conjunction with the school-specific map.

Educate Motorists, City Staff, and Maintenance and Construction Crews

Motorist education on the rights of bicyclists and pedestrians is limited. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Education about the rights and responsibilities of pedestrians and cyclists can include:

- Incorporating bicycle and pedestrian safety into traffic school curriculum
- Producing a brochure on bicycle and pedestrian safety and laws for public distribution
- Enforcing traffic laws for cyclists
- Providing bicycle and pedestrian planning training for all City planners and engineers
- Working with contractors, subcontractors, and City maintenance and utility crews to ensure they understand the needs of bicyclists and pedestrians, and follow standard procedures when working on or adjacent to roadways and walkways

4.9.2 Bicycle Patrol Unit

The City of Bremerton may want to work with the Police Department, local businesses, and neighborhood groups to establish local bicycle patrol units. A bicycle patrol unit may be an official law enforcement unit, a private security guard patrol, or a volunteer network. Bicycles are an excellent community policing tool, because officers on bicycles are often viewed as more approachable, thus improving trust and relations between citizens and police. Bicycle patrol units can work closely with citizens to address concerns before they become problems. These units can have a direct effect on bicycle safety by enforcing bicycle traffic laws (e.g., wrong-way riding, sidewalk riding, obeying traffic controls, children wearing helmets), and providing bicycle safety education.

4.10 Encouragement Programs

Strategies for community involvement in bicycle/pedestrian improvements are important to ensure broad-based support, which translates into political support, to help secure financial resources. Private sector involvement in raising awareness of the benefits of bicycling can range from small incremental activities by non-profit groups to efforts by the largest employers in the City. Specific programs are described below.

4.10.1 Employer Incentive Programs

Employer incentive programs encouraging employees to walk and bike to work include strategies like providing bicycle lockers and shower facilities, offering more flexible arrival/departure times, and incentives such as monthly raffle contests. The City may offer incentives to employers to institute these programs through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means.

4.10.2 Community Bikeway/ Walkway Adoption

Community Bikeway/Walkway Adoption programs are similar to the widely instituted Adopt-a-Highway programs throughout the country. These programs identify local individuals, organizations, or businesses interested in "adopting" a bikeway or walkway. Adopting a facility means that a person or group would be responsible for the facility's maintenance either through direct action or as the source of funding for the City's maintenance of that facility. For example, members of a local recreation group might volunteer every other weekend to sweep a bikeway and identify and address larger maintenance needs. Or, a local bike shop might adopt a bikeway by providing funding for its maintenance costs. The managers of an adopted bikeway would be allowed to post their name on bikeway signs along the route to display their commitment to bicycling in Bremerton.

Bike pedestrian detour sign

Multi-Modal Access Guide

A multi-modal access guide provides concise customized information on how to reach specific destinations with an emphasis on bicycling, walking, and transit. Access guides can be as simple as a map printed on the back as a business card or as complex as a multi-page packet distributed to employees. Access guides commonly include:

- An area map depicting bus stops, recommended walking and bicycling routes, landmarks, facilities such as restrooms and drinking fountains, locations of bicycle and vehicle parking, and major roads
- Information on transit service, including frequency, fares, accepted payment methods, first and last runs, schedules, telephone numbers and websites of transit service providers and taxis
- "Walking times" or "riding times" between destinations
- Accessibility information for people with disabilities

Best practices include using graphics, providing specific step-by-step travel directions, providing parking location and pricing information, and providing information about the benefits of walking and bicycling.

High-quality access guides are concise and accurate, and should incorporate input from key stakeholders such as public transportation operators, public officials, employees, staff who will be distributing the access guide, and those with disabilities.

4.10.3 Business Incentives for Bicycling and Walking

Incentive programs encouraging bicycling and walking to local businesses can be developed in coordination with individual businesses, the Chamber of Commerce, and bicycle advocacy groups. Such efforts may include:

- Creating promotional events such as "Bicycle to the Grocery Store" days, when cyclists get vouchers for items, or discounts on items in the store, or "Bicycle to the Video Store" days, when cyclists receive free popcorn or a movie rental discount
- Holding an annual community event to encourage residents to replace one car trip a week with a bicycle trip, and integrating this type of event with current special events like the Bremerton Blackberry Festival
- Developing, promoting and publicizing bicycle commuter services, such as bike shops selling commute gear, bikes-on-transit policies, and regular escorted commute rides
- Creating an annual commuter challenge for area businesses

Walk- and Bike-to-School Days

The City and School District should encourage residents to participate in the annual international Walk-to-School Day held each October. The City and School District could also create a Bike-to-School day. These events raise the profile of bicycling and walking among children. Local Bike- and Walk-to-Work days can be held annually in conjunction with school-related events.

Bike Fairs, Organized Rides, and Races

Hosting bike fairs, organized rides, and races in Bremerton (such as Tour de Kitsap) can raise the profile of bicycling in the area and provide entertainment for all ages at the same time. Bike fairs and races provide opportunities to educate and encourage current and potential bicyclists. These events can also bring visitors to Bremerton that may also contribute to the local economy. These events could be sponsored and implemented through collaboration between the City and local employers.

TravelSmart Programs

TravelSmart is an innovative way to encourage environmentally friendly ways to travel. The concept, used in more than 300 communities around the world, identifies individuals who want to change the way they travel and uses personal, individualized contact to motivate them to think about their travel options.

TravelSmart provides customized information and training to help people take transit, bike, walk, or carpool. TravelSmart projects provide many benefits including individual health and financial improvements, and community-wide benefits such as reduced air pollution and enhanced community safety.

TravelSmart gives participants just the information they ask for to help them get started, or to keep on walking, bicycling, taking transit, or carpooling. Those who do not want information are left alone. Materials are delivered by a "Travel Ambassador" in the most efficient and cost-effective way—by bicycle. Travel Ambassadors are cross-trained to answer participants' questions concerning all alternative travel modes. Depending on the information requested by an individual participant, marketing materials could include maps identifying safe, convenient, and direct walking and bicycling routes in Bremerton, public bicycle parking locations, Kitsap Transit maps and schedules, and free bus or ferry passes. Travel Ambassadors would contact program participants periodically to answer questions about alternative transportation. The City could also periodically survey participants about their travel habits to evaluate the program's success.

4.11 Enforcement Programs

The best protection for pedestrians and bicyclists traveling along and across streets are motorists who are aware of and follow laws regarding bicycle/pedestrian right-of-way. Many people, however, are unaware of these laws.

Targeted enforcement action should be focused in areas with high bicycle and pedestrian volumes or where non-motorized travelers are especially vulnerable. Law enforcement efforts should be targeted during periods and at locations where motorists and the general public will become aware of bicycle/pedestrian laws and their penalties. These efforts should occur at least four times per year and last 1 week. Focused enforcement should also take place at the start of the school year. An effective form of targeted enforcement is the use of a Police Officer posing as a pedestrian crossing the street. Motorists who do not yield to the officer are ticketed by other Police Officers further down the street. Ticketing cars parked across the sidewalk or within striped bicycle lanes represents another effective enforcement tool.

All targeted enforcement actions should be coordinated with the Public Works Department. The Bremerton Police Department should also be surveyed for input on appropriate educational material, advisory and warning signs, and other tools to help them accomplish their mission.

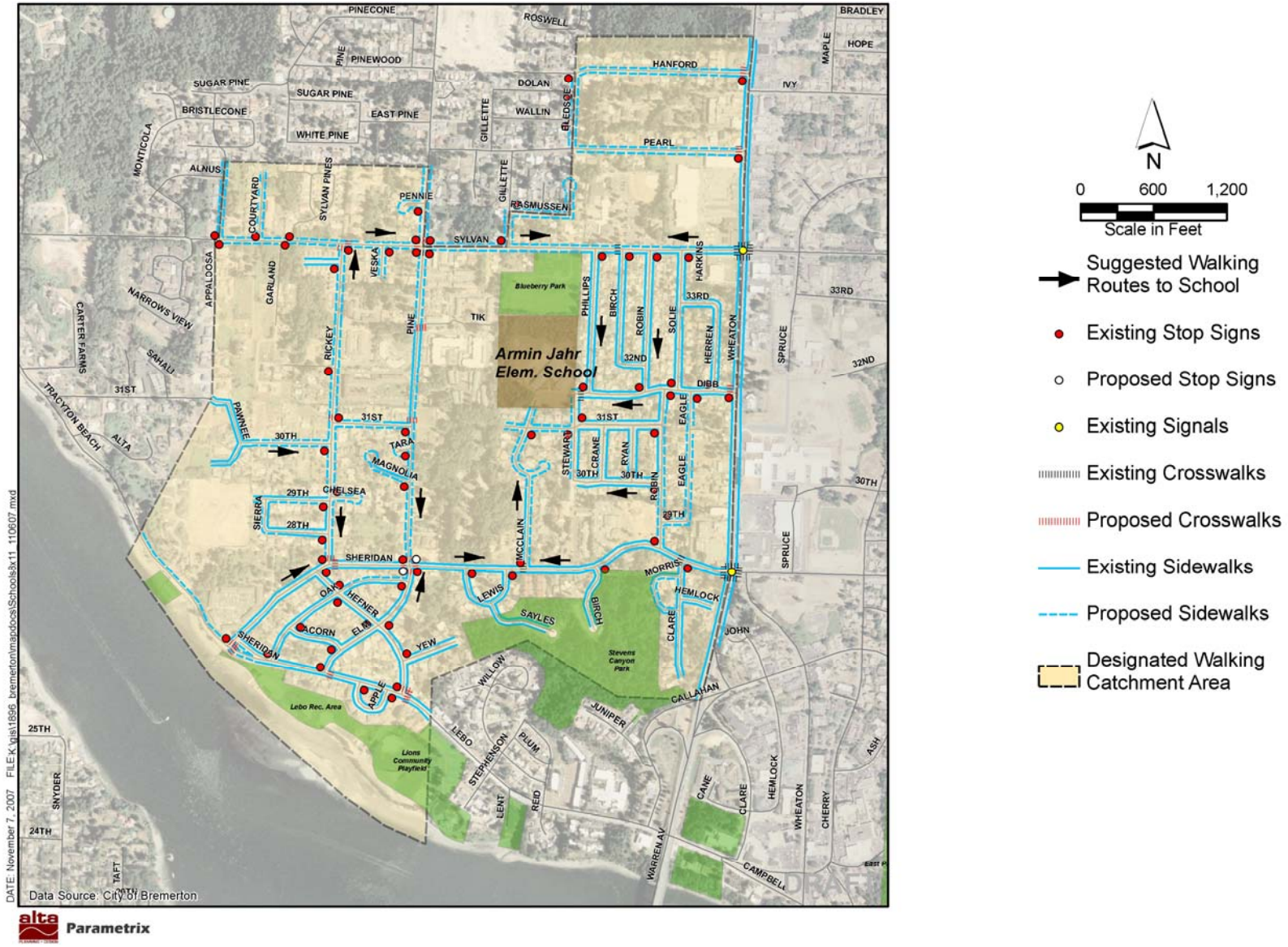
Finally, it is recommended that the Police Department vigorously pursue legal action against motorists who cause a bicycle/pedestrian injury or fatality.

4.12 The Programmatic Approach: Where to Start

The sections above describe numerous programmatic strategies for enhancing Bremerton's walking and bicycling environment, each fulfilling educational, encouragement, and/or enforcement objectives. Although some proposed strategies would yield results over the long term, the City could set into motion several programs today that would yield cost-effective, immediate, and highly visible results:

- Develop and Implement a Wayfinding Signage Plan: While serving the purpose of orienting bicyclists and walkers, wayfinding signage would encourage residents and visitors to get out and use the system. Lack of awareness of convenient and safe non-motorized routes represents a major barrier to walking and bicycling in Bremerton today. Encouraging more people to use the system, a wayfinding signage plan would maximize use of the City's bicycling and walking network.

- Implement Safe Routes to School Pilot Projects: Although the City should implement SR2S improvements for all elementary, middle, and high schools, this Plan identifies two schools that could be targeted for initial improvements. The City should work with the Bremerton School District to initiate infrastructure improvements near Armin Jahr Elementary School in East Bremerton, and Kitsap Lake Elementary School in West Bremerton. The City could supplement the tremendous programmatic work already underway at these schools by enhancing pedestrian and bicycle facilities in surrounding areas.
- Revisit and Update Municipal Code Bicycle Parking Requirements: Bremerton has an immediate low-cost opportunity to ensure future developments include adequate bicycle parking facilities. The City should evaluate its current bicycle parking requirements, and update the Municipal Code to include more detail regarding space requirements and facility design. The Code update should address both short- and long-term bicycle parking. This effort would allow the City to take advantage of new development and redevelopment projects.
- Create a Bicycle/Pedestrian Technician Position: A Bicycle/Pedestrian Technician dedicated exclusively to non-motorized project implementation could physically oversee, assist, and/or lead project construction. The technician could expedite smaller-scale project implementation such as signage and pavement markings, and monitor the condition of bicycle/pedestrian infrastructure to identify and address maintenance issues as needed. Other responsibilities could include installing, repairing, and replacing public bike racks, bike lockers, and other facilities as needed. The technician could also oversee the update and implementation of Municipal Code bicycle parking requirements.



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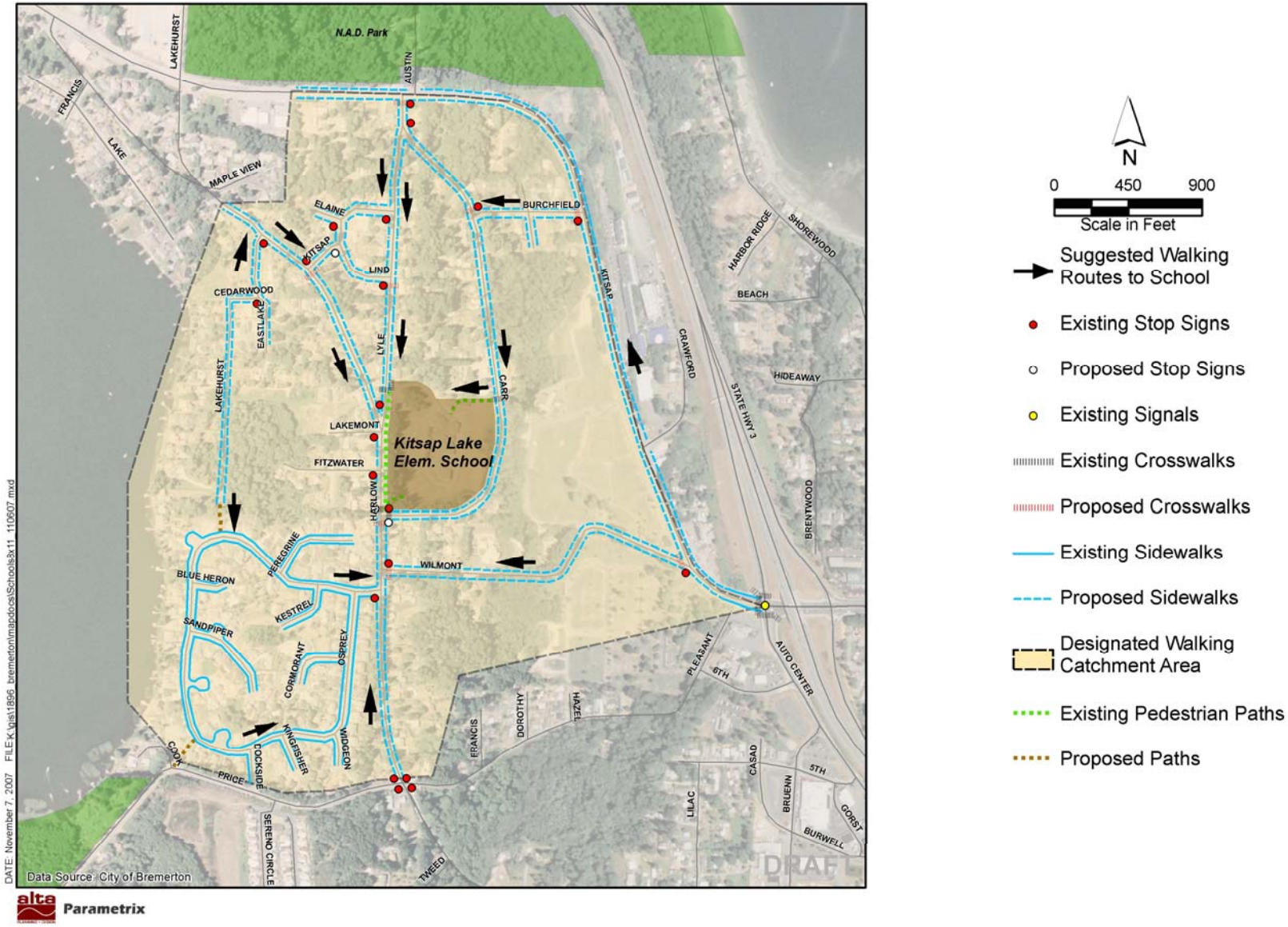
Map 7
Armin Jahr Safe Routes to School Map



Map 8
Kitsap Lake Safe Routes to School Map

5. Project Prioritization and Funding

5.1 Capital Improvement Projects

The recommendations presented here are ranked according to the degree to which each one meets the above criteria. Cost opinions were developed for many of the primary (Tier 1) recommendations. A phasing plan for implementing other projects would be recommended by City of Bremerton Public Works staff and approved by the Bremerton City Council through the annual budget process. The phasing plan would likely be based on some or all of the following considerations: (a) funding availability and requirements, (b) other programmed transportation improvements, (c) eliminating an immediate bottleneck or safety hazard, and (d) ensuring that the system grows rationally rather than as a series of disconnected pieces over time. The phasing plan recommends short-term, intermediate-term, and long-term tiers to complete a system over the next 10 to 20 years.

Major federal, state, regional, and local funding sources for the proposed bicycle, pedestrian, and SR2S project are listed. Cost estimates of the phased improvements are compared with funding needs, so that long-term programming for local matching funds can be accomplished. This will include estimates of operating and maintenance costs that are usually borne by local governments. A table identifying available funding sources and applicability to specific priority projects is provided in Appendix B.

The criteria used to develop the recommendations include:

Connectivity—provide connectivity between existing sidewalks, routes, lanes, or paths. Major gaps and barriers, including narrow roadway segments, should be targeted as high priority items.

Multi-Modal Coordination—take advantage of multi-modal connections including ferry and bus transfer stations, transit terminals, and shuttles to major destinations.

Accessibility—be accessible from residential neighborhoods and connect to major destinations within Bremerton, including parks, community centers, employment centers, schools, and commercial centers.

Convenience—provide reasonably direct routes from residential areas to major destinations.

Aesthetics—ensure, where possible, recreational and commuting users prefer to ride along streets and through areas that are shaded, have visual relief, or offer other visual amenities.

Usage—serve the greatest number of commuters and recreational users possible, focusing on major destinations.

Safety—provide the highest level of safety possible while mitigating major safety concerns such as narrow roadway segments.

Planned Roadway Improvement Projects—take advantage of planned roadway improvements that may accommodate bicycle facilities with relatively little additional cost.

Coordination with Existing Plans—identify and ensure consistency with other local, county, and regional plans.

5.2 Funding Sources

Federal, state, regional, and local funding sources are described below.

5.2.1 Federal Funding Sources

Federal funding is primarily distributed through several programs established by the Federal Transportation Act. The latest act, The Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) was enacted in 2005 as Public Law 109-59. SAFETEA-LU authorizes the federal surface transportation programs for highways, highway safety, and transit for the 2005—2009 period.

In Washington, federal funding is administered through state (WSDOT) and regional planning agencies. Most, but not all, of these funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

SAFETEA-LU

Described below, several SAFETEA-LU programs provide funding for bicycle and pedestrian projects.

Surface Transportation Program

The Surface Transportation Program (STP) provides states with flexible funds, which may be used for a wide 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 including on-street facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. SAFETEA-LU also specifically clarifies that the modification of sidewalks to comply with ADA requirements qualifies as 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 (e.g., maps, coordinator positions, encouragement programs) are eligible for STP funds.

Highway Safety Improvement Program

This program funds 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. This program replaces the Hazard Elimination Program from the Transportation Equity Act for the 21st Century (TEA-21).

Railway-Highway Crossing Program

Administered by WSDOT, this program is funded by a set-aside of STP funds and is designated for improvements to highway-rail at-grade crossings to eliminate safety hazards. Eligible projects include installation of new crossing protection devices, passive crossing protection devices, upgrades of existing signal devices, railroad crossing closures, and pedestrian crossing improvements. Funding for this program comes out of Highway Safety Improvement Program funds.

Transportation Enhancement Grants

WSDOT provides federal funding to transportation-related activities designed to strengthen the cultural, aesthetic, and environmental aspects of the intermodal transportation system. The program provides for the implementation of various non-traditional projects, including historic highway facility restoration, bicycle and pedestrian facilities, landscaping, and scenic beautification. Projects must relate to surface transportation.

Congestion Mitigation/Air Quality Improvement Program

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter, which reduce transportation-related emissions. In Washington, five Metropolitan Planning Organization areas (including the Puget Sound region) qualify as non-attainment or maintenance areas. These federal funds can be used to build bicycle and pedestrian facilities that reduce automobile reliance. Recreational facilities generally are not funded.

The state will receive at least one-half of 1 percent of all federal CMAQ funds, and this minimum will be distributed to the five non-attainment/maintenance areas based on their population share.

Recreational Trails Program

The Recreational Trails Program of the Federal Transportation Bill provides funding to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses.

An example of trail uses include hiking, bicycling, in-line skating, and equestrian use. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along the roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Trailhead construction
- Acquisition or easements of property for trails
- State administrative costs related to this program (limited to seven percent of a state's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to 5 percent of a state's funds)

Safe Routes to School

The purpose of the Safe Routes to Schools (SR2S) program is to provide children a safe, healthy alternative to riding the bus or being driven to school. The SR2S program is supported by both the federal government (through SAFETEA-LU) and Washington State through recent legislation. The Engrossed Substitute Senate Bill 6091 also includes a state funding commitment to support pedestrian and bicycle safety projects such as safe routes to school, transit, and pedestrian and bicycle paths.

WSDOT administers federal and state funds for the SR2S program. Eligible projects include engineering improvements, education projects, and enforcement efforts within 2 miles of primary and middle schools (K-8).

New Freedom Initiative

SAFETEA-LU creates a new formula grant program providing capital and operating costs to provide transportation services and facility improvements exceeding those required by the ADA.

Land and Water Conservation Fund

The Land and Water Conservation Fund provides funding to assist in preserving, developing, and assuring accessibility to outdoor recreation resources, including trails. Funds can be used for right-of-way acquisition and construction. These funds are administered by the Washington State Recreation and Conservation Office.

Community Development Block Grants

The Community Development Block Grants program provides money for streetscape revitalization, which may largely consist of pedestrian improvements.

Federal Community Development Block Grant 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."

Rivers, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance (RTCA) program is a National Parks Service program offering technical assistance (via direct staff involvement) to establish and restore greenways, rivers, trails, watersheds, and open space. The RTCA program funds planning efforts only (there are no implementation monies available). Projects are prioritized based on criteria that include conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments.

Transportation, Community and System Preservation Program

The Transportation, Community and System Preservation Program provides federal funding for transit-oriented development, traffic calming, and other projects that improve transportation system efficiency, reduce transportation's environmental impacts, and provide efficient access to jobs, services, and trade centers. The program is intended to provide communities with resources to integrate their transportation systems with community preservation and environmental activities. These funds require a 20 percent local match.

5.2.2 State Funding Sources

Statewide Transportation Improvement Program

The Statewide Transportation Improvement Program (STIP) represents the 4-year, fiscally constrained and prioritized program of transportation projects, compiled from

local and regional plans, along with the Washington Transportation Plan. The STIP contains federally funded projects plus state and local regionally significant projects programmed for calendar years 2007 through 2010. These projects have been identified through a planning process as the highest priority for the available funding to the state's transportation program.

Urban Sidewalk Program

The Washington State legislature established the Urban Sidewalk Program in 1995. The Washington Transportation Improvement Board distributes $1 million to $2 million annually to three designated regions based on lane miles and population. To be eligible for the program, projects must be located on a federally classified route, serve a transportation-related purpose, and meet ADA requirements. The Transportation Improvement Board evaluates project proposals based on several criteria including safety, proximity to pedestrian trip generators, and degree of local support. Applicants must provide a minimum 20 percent funding match.

Washington Wildlife and Recreation Program

In response to increased demand for outdoor recreation land and growing concerns about wildlife habitat loss, the Washington State legislature created the Washington Wildlife and Recreation Program (WWRP) in 1990. Administered by the Recreation and Conservation Board, the program's goal is "to acquire as soon as possible the most significant lands for wildlife conservation and outdoor recreation purposes before they are converted to other uses, and to develop existing public recreational land and facilities to meet the needs of present and future generations." Grants may be used to fund various park-related projects including trails (Bremerton received a $2.2 million WWRP grant in 2007 to extend the Louis Mentor Boardwalk). Applicants must submit a plan, including project goals and objectives, an existing conditions inventory, and an overview of public involvement efforts.

Traffic Safety Grants

The Washington State Traffic Safety Commission provides funding for programs, projects, services, and strategies to reduce the number of deaths and serious injuries that result from traffic crashes. Funds may be used for pedestrian and bicycle improvements, including "School Zone" flashing lights, and school zone police equipment costing more than $10,000.

Hazard Elimination Safety Grants – Intersection and Corridor Safety Program

In 2005, WSDOT developed the Intersection and Corridor Safety Program to fund projects that eliminate or reduce fatal or injury accidents at designated high accident intersections and within designated high accident corridors. Eligible projects include activities for resolving intersection-specific safety problems, and roadway elements that constitute a danger to motorists, pedestrians, and/or bicyclists.

5.2.3 Regional Funding Sources

Surface Transportation Program – Regional Funds

Metropolitan Planning Organizations provide federal funding for projects on any federal-aid highway, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. A portion of funds reserved for rural areas may be spent on rural minor collectors. Eligible projects include modifications of existing public sidewalks to comply with ADA requirements.

5.2.4 Local Funding Sources

Local Bond Measures

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.

Tax Increment Financing/Urban Renewal Funds

Tax Increment Financing is a tool that uses future gains in taxes to finance 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.

System Development Charges/Developer Impact Fees

System Development Charges (SDCs), also known as Developer Impact Fees, represent another potential local funding source. 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 off-site pedestrian

improvements encouraging residents to walk, bicycle, 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 to avoiding a potential lawsuit.

Street User Fees

The City of Bremerton could administer street user fees through residents' monthly water or other utility bills. The revenue generated by the fee could be used for operation and maintenance of the street system, with priorities established by the Public Works Department. Revenue from this fund could be used to maintain on-street bicycle and pedestrian facilities, including routine sweeping of bicycle lanes and other designated bicycle routes.

Local Improvement Districts

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 (with the City providing a predetermined match). The cost can be allocated based on property frontage or other methods such as traffic trip generation.

Business Improvement Districts

Pedestrian improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Districts collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers. These districts may include provisions for pedestrian and bicycle improvements, such as wider sidewalks, landscaping, and ADA compliance.

Other Local Sources

Residents and other community members are excellent resources for garnering support and enthusiasm for a bicycle and pedestrian facility, and the City should work with volunteers to substantially reduce implementation and maintenance costs. Local schools, community groups, or a group of dedicated neighbors may use the project as a project for the year, possibly working with a local designer or engineer. Work parties can be formed to help clear the right-of-way for a new trail or maintain existing facilities where needed. A local construction company could donate or discount services. Other opportunities for implementation will appear over time, such as grants and private funds. The City should look to its residents for additional funding ideas to expedite completion of the bicycle and pedestrian system.

5.3 Other Funding Sources

American Greenways Program

Administered by The Conservation Fund, the American Greenways Program provides funding for the planning and design of greenways. Grant applications can be submitted by local, regional, or statewide non-profit organizations and public agencies. The maximum award is $2,500, but most awards range from $500 to $1,500. American Greenways Program monies may be used to fund unpaved trail development.

Appendix A: Terminology and Technical Discussions

Appendix A: Terminology

Pedestrian and bicycle travel are accommodated and enhanced by sidewalks, shared use paths, neighborhood accessways, crosswalks, curb ramps, and other infrastructure. Bremerton has several different types of pedestrian facilities, the most basic of which are described below.

A.1 Shared Facilities

Shared Use Paths

Shared use paths (also referred to as "trails" and "multi use paths") are used by various non-motorized users, including pedestrians, bicyclists, in-skaters, and runners. Shared use paths are typically paved (asphalt or concrete) but may also consist of an unpaved smooth surface as long as it meets Americans with Disabilities Act (ADA) standards.

Accessways

Accessways provide direct pedestrian and bicycle connections to destinations that would otherwise require out-of-direction travel on the surrounding street system.

Roadway shoulders

Roadway shoulders often serve as pedestrian and bicycle routes in rural areas. On roadways with low traffic volumes (e.g., less than 3,000 Average Daily Traffic [ADT] volumes), roadway shoulders are often adequate for pedestrian and bicycle travel. Similar to "shoulder bikeways", these roadways should have shoulders wide enough to accommodate both pedestrians and bicyclists.

A.2 Pedestrian Facilities

Sidewalks

The most common type of walkway, sidewalks generally parallel roadways. Sidewalks have a hard, smooth surface (e.g., concrete), with separation from the roadway typically consisting of a curb and/or planter strip.

A.3 Bicycle Facilities

According to AASHTO's Guide for the Development of Bicycle Facilities there are several types of bikeways. Bikeways are pathways that preferentially accommodate bicycle travel in the form of bicycle route designation or bicycle lane striping.

Bicycle Lanes

Bicycle lanes are striped lanes between the outer vehicle travel lane and the roadway shoulder. They are designated as bicycle lanes by symbols in the lane and signage.

Shoulder Bikeways

Shoulder bikeways are shoulders along a paved roadway and are indicated by striping. Ideally, they are wide enough for bicycle travel and have signs that alert motorists to expect bicyclists on the shoulder.

Shared Roadways

Shared roadways accommodate vehicles and bicycles in the same travel lane. The most suitable roadways for shared vehicle/bicycle use are those with low posted speeds (25 miles per hour or less) or low traffic volumes (3,000 ADT or less). A common practice is to add signs along the road with way-finding information for cyclists and to indicate to motorists that the cyclists are permitted in the lane.

Technical Discussion: Pedestrian Facilities

Traffic Signal Timing

Pre-timed signals accommodate pedestrian crossings through automatic "phasing" concurrent with parallel vehicle traffic. At actuated signals, pedestrians usually push an activation button to trigger the walk signal. Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The Manual on Uniform Traffic Control Devices (MUTCD) recommends traffic signal timing to assume a pedestrian walking speed of 4-feet-per-second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street. It should be noted however that the 4-feet-per-second walking speed does not reflect the walking rates of many users. At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3-feet-per-second may be assumed.

Innovative Pedestrian Signals

Pedestrian Signal Heads

According to the MUTCD, "Pedestrian Signal Heads provide special types of traffic signal indications exclusively intended for controlling pedestrian traffic. These signal indications consist of the illuminated symbols of a WALKING PERSON (symbolizing WALK) and an UPRAISED HAND (symbolizing DON'T WALK)." An advanced type of pedestrian signal head contains a countdown signal, in addition to the WALK/DON'T WALK symbol. The countdown signal displays the number of seconds remaining for the individual to complete their crossing.

Leading Pedestrian Interval (LPI)

Including LPIs at signalized crossings provides pedestrians with a 3- to 4-second head start into the intersection before parallel traffic is released by the green light. LPIs ensure that pedestrians are well into the intersection and visible to turning vehicles prior to vehicles entering the crosswalk.

Accessible Pedestrian Signals

Accessible pedestrian signals supplement pedestrian signal indications with audible and/or vibrotactile information. These treatments include directly audible or transmitted tones, speech messages, Talking Signs, and vibrating surfaces. They are intended to make real-time pedestrian signal information accessible to visually-impaired pedestrians.

Audible signals can also provide directional guidance, which is particularly useful at non-perpendicular intersections and at wide multi-lane crossings. Many different technologies exist. Newer signal types have a quiet, slowly repeating locator tone indicating to approaching pedestrians that they must push a button to trigger a WALK signal. Directly audible or transmitted speech messages can identify the location of the intersection and the specific crosswalk controlled by that push button. A vibrating arrow at the push button can also supplement the audible signals. To be considered for audible signals, an intersection must first meet the following basic criteria:

- The intersection must already be signalized.
- The location must be suitable for audible signals in terms of safety, noise level, and neighborhood acceptance.

There must be a demonstrated need for an audible signal device (typically through a user request).

Technical Discussion: Bicycle Facilities

Uphill Bicycle Lanes

An uphill bike lane is used where the right-of-way or curb-to-curb width on a street is such that there is only room to stripe a bicycle lane on one side (assuming travel lanes and on-street parking are not removed). Under these conditions, bicycle lane striping should be added to the uphill side of the street. Bicyclists ascending hills tend to lose momentum, especially on longer street segments with continuous uphill grades. This speed reduction creates greater speed differentials between bicyclists and motorists, creating uncomfortable and potentially unsafe riding conditions. Separating vehicle and bicycle traffic, uphill bicycle lanes enable motorists to safely pass slower-speed bicyclists, thereby improving conditions for both travel modes. This measure often includes delineating on-street parking (if provided), slightly narrowing travel lanes, and/or shifting the centerline if necessary.

Contra-Flow Bicycle Lanes

Contra-flow bicycle lanes enable bicyclists to safely ride in the opposite direction of vehicle traffic on one-way streets. The facility is placed on the right-hand side of the road (to the motorists' left), and separated from traffic with a double yellow line. This informs motorists that bicyclists are riding legally in a dedicated lane. Contra-flow lanes work best in the following circumstances:

- When alternate routes require excessive out-of-direction travel;
- When alternate routes include unsafe or uncomfortable streets with high traffic volumes and/or no bicycle facilities;
- When the contra-flow lane provides direct access to bicyclist destinations on the street under focus;
- When few intersecting streets, alleys, or driveways exist on the side of the contra-flow lane; and
- When bicyclists can safely and conveniently re-enter the traffic stream where the contra-flow lane ends.

To ensure bicyclist safety on streets with contra-flow lanes:

- Signs should be posted at intersecting streets, alleys, and driveways informing motorists to expect two-way bicycle traffic.
- Intersection traffic controls along the street (e.g., stop signs and traffic signals) should also be installed and oriented toward bicyclists in the contra-flow lane.

On-street parking should be prohibited between the contra-flow lane and the curb to prevent motorists from crossing the bicycle travelway.

Bicycle Boulevards

Bicycle boulevards generally follow lower-order streets with lower traffic volumes and vehicle speeds, such as minor collector or local streets passing through residential neighborhoods. Traffic controls along a boulevard assign priority to through cyclists while encouraging through vehicle traffic to use alternate parallel routes. Traffic calming and other treatments along the corridor reduce vehicle speeds so that motorists and bicyclists generally travel at the same speed, creating a safer and more comfortable environment for all users. Boulevards also incorporate treatments to facilitate safe and convenient crossings where bicyclists cross other local access and arterial steets.

Bicycle boulevards are often established on street grids, where riders can follow reasonably direct and logical routes with few twists and turns. Boulevards work best when higher-order parallel streets exist to serve through vehicle traffic.

Why are bicycle boulevards used?

Communities develop bicycle boulevards for various reasons, as discussed below.

Parallel major streets lack dedicated bicycle facilities

Higher-order streets such as arterials and major collectors typically include major bicyclist destinations such as commercial, employment, and other activity centers. However, these corridors often lack bicycle lanes or other dedicated facilities thereby creating an uncomfortable, unattractive, and potentially unsafe riding environment. Bicycle boulevards serve as alternate parallel facilities allowing cyclists to avoid major streets for longer trip segments.

Parallel major streets with bicycle facilities that are uncomfortable for some users

Some users may not feel comfortable using bicycle lanes on major streets for various reasons including high traffic volumes and vehicle speeds, conflicts with motorists entering and leaving driveways, and/or conflicts with buses occupying the bicycle lane while loading and unloading passengers. Children and less experienced riders might find these environments especially challenging. Utilizing lower-order streets, bicycle boulevards provide alternate route choices for bicyclists who are uncomfortable using the major street network. For experienced cyclists, bicycle lanes on major streets provide important access to key land uses, and the major street network often provides the most direct routes between major destinations. For these reasons, bicycle boulevards should complement a bicycle lane network and not serve as a substitute.

Most local streets can be converted to bicycle boulevards fairly easily

Bicycle boulevards incorporate cost-effective and less physically intrusive treatments. Most streets could be provided with relatively inexpensive

treatments like new signage, pavement markings, striping and signal improvements to facilitate bicyclists' mobility and safety. Other potential treatments include curb extensions, medians, and other features that can be implemented at reasonable cost and are compatible with emergency vehicle accessibility.

Providing benefits beyond an improved bicycling environment

Residents living on bicycle boulevards benefit from reduced vehicle speeds and through traffic, creating a safer and more-attractive environment. Pedestrians and other users can also benefit from boulevard treatments (e.g., by improving the crossing environment where boulevards meet major streets).

Bicycle Boulevard Applications

This section describes various treatments commonly used for developing bicycle boulevards. The treatments have been divided into five main "application levels" based on their level of physical intensity, with Level 1 representing the least physically intensive treatments that could be implemented at relatively low cost. Identifying appropriate application levels for individual bicycle boulevard corridors provides a starting point for selecting appropriate site-specific improvements. The five bicycle boulevard application levels are:

Level 1: Signage

Level 2: Pavement markings

Level 3: Intersection treatments

Level 4: Traffic calming

Level 5: Traffic diversion

It should be noted that 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 also be noted that it may not be appropriate or necessary to implement all Level 2 applications on a Level 2 street. Furthermore, several treatments could fall within multiple categories as they achieve multiple goals. To identify and develop specific treatments for each bicycle boulevard, 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. Figure A-1 depicts an example of bicycle boulevard applications on a hypothetical street and Figure A-2 shows a sample bicycle boulevard treatment in plan view.

The following sections discuss the five bicycle boulevard application levels in greater detail.

Figure A-1
Bicycle boulevard application levels

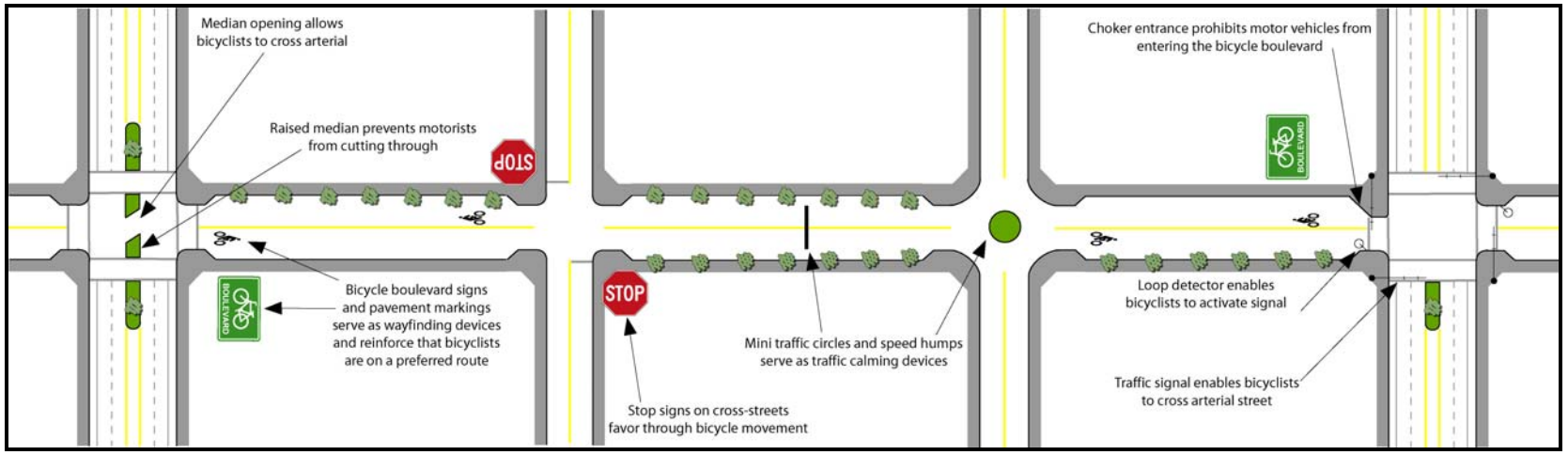


Figure A-2
Sample bicycle boulevard treatments

Level 1 – Signage

Bikeway signage is a cost-effective yet highly visible treatment that can improve the riding environment on Bremerton's bicycle boulevard network. Described below, signage can serve both wayfinding and safety purposes.

Wayfinding Signs

Bicycle wayfinding signage could be installed along Bremerton's bicycle boulevards and other cycling routes. Signs are typically placed at key locations leading to and along bicycle boulevards, including where multiple routes intersect and at key bicyclist "decision points." Wayfinding signs displaying destinations, distances and "riding time" can dispel common misperceptions about time and distance while increasing users' comfort and accessibility to the boulevard network. Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should correspondingly use caution. Note that 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.

Warning Signs

Warning signs advising motorists to "share the road" could also improve bicycling conditions on Bremerton's boulevard network. These signs would be especially effective near major bicycle trip generators such as schools, parks, and other activity centers. Warning signs should also be placed on major streets approaching bicycle boulevards to alert motorists of bicyclist crossings.

Level 2 – Pavement Markings

A variety of pavement marking techniques can effectively improve bicycling conditions along a boulevard network.

On-Street Parking Delineation

Delineating on-street parking spaces with paint or other materials clearly indicates where a vehicle should be parked, and can discourage motorists from parking their vehicles too far into the adjacent travel lane. This could help cyclists by maintaining a wide enough space to safely share a travel lane with moving vehicles while minimizing the need to swerve farther into the travel lane to maneuver around parked cars. In addition to benefiting cyclists, delineated parking spaces also promote the efficient use of on-street parking by maximizing the number of spaces in high-demand areas.

Bicycle Boulevard/Directional Pavement Markings

Directional pavement markings (also known as "Bicycle Boulevard markings") lead cyclists along a boulevard and reinforce that they are on a designated route. The markings

Wayfinding signage concept

can take a variety of forms, such as small bicycle symbols placed every 600 to 800 feet along a linear corridor. When a bicycle boulevard travels along several streets (with multiple turns at intersections), additional markings accompanied by directional arrows are provided to guide cyclists through turns and other complex routing areas. Directional pavement markings also visually cue motorists that they are traveling along a bicycle route and should exercise caution.

Shared Lane Markings

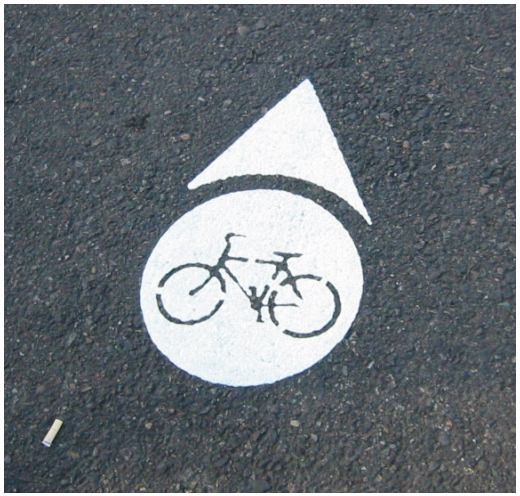
Some communities use high-visibility pavement markings to delineate specifically where bicyclists should operate within a shared vehicle/bicycle travel lane. These markings, known as shared lane markings (or "sharrows"), are often used on streets where dedicated bicycle lanes are desirable but are not possible due to physical or other constraints. The photos in the right margin show markings 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. Placed in a linear pattern along a corridor (typically every 100-200 feet), shared lane markings also encourage cyclists to ride in a straight line so their movements are predictable to motorists. Although these pavement markings are not yet a nationally adopted standard, they are successfully used in many communities throughout the United States. In Bremerton, shared lane markings could be used on bicycle boulevard segments with higher vehicle volumes, such as Arsenal Way and Washington Avenue.

Level 3 – Intersection Treatments

Intersection treatments represent a critical component of bicycle boulevards. Intersection traffic controls favoring through bicycle movement on the boulevard facilitate continuous and convenient bicycle travel. Intersection treatments also provide convenient and safe crossings where boulevards intersect major roads. The following sections discuss various intersection improvement tools.

Stop Sign Placement

Placing stop signs on cross-streets approaching a bicycle boulevard can facilitate convenient through bicycle travel. A reduced number of stop signs on a designated bicycle route enables riders to maintain their momentum while exerting less energy with fewer "stops and starts." This treatment should be used judiciously to minimize the potential for increasing vehicle speeds on the bicycle boulevard.



Bicycle boulevard marking

Shared lane marking

Curb Extensions

Curb extensions slow vehicle traffic by creating a visual "pinch point" for approaching motorists. Typically constructed within the on-street parking lane, these devices can calm vehicle traffic passing through or turning at an intersection. Where bicycle boulevards intersect major streets, curb extensions placed on the major streets reduce the bicycle/pedestrian crossing distance. Curb extensions should be designed with sufficient radii to accommodate the turning movements of emergency vehicles.

Medians/Refuge Islands

Medians are elevated or delineated islands that break up non-motorized street crossings into multiple segments. Where shared roadways intersect major streets at unsignalized intersections, medians can be used to simplify bicyclist and pedestrian crossings of the major street. Appropriate signage should be installed on the major street approach to warn motorists of bicyclist/pedestrian crossings. Additionally, vegetation within the median should be low to maintain adequate sight distances for both motorists and bicyclists/pedestrians. Medians can also be used along the bicycle boulevard to create a visual pinch point for motorists, as well as to accommodate mid-block bicycle and pedestrian crossings.

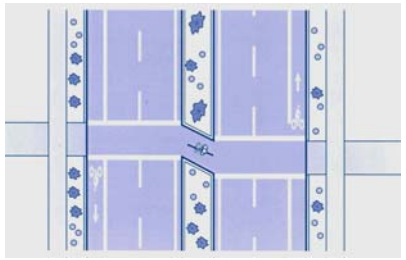
Bicycle Left Turn Lanes

Boulevards crossing major streets at offset intersections can incorporate "bicycle left turn lanes" to facilitate easier bicyclist crossings. Similar to medians/refuge islands, bicycle left turn lanes allow the crossing to be completed in two phases. A bicyclist on the boulevard could execute a right-hand turn onto the cross-street, then wait in a delineated left turn lane (if necessary to wait for a gap in oncoming traffic).

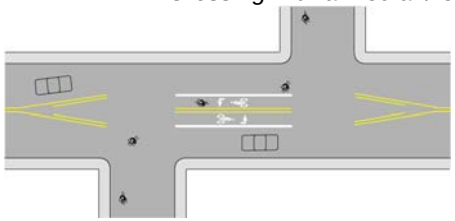
Bicycle Detection at Signalized Intersections

Several treatments can be used to streamline bicycle travel where bicycle boulevards approach intersections with actuated signals. In-pavement bicycle loop detectors can sense a bicyclist's presence (in the way that vehicle loop detectors sense automobiles) and trigger the signal to provide a "green" phase for the cyclist. Bicycle loop detectors should be placed within the bicyclist's expected travel path, (including left turn lanes and shoulders), and should be accompanied with a pavement marking indicating the optimal location for detection. Vehicle loop detectors can also be used for bicycle detection provided they are located within the bicycle travel path and their sensitivity levels are adjusted for bicycles.

Intersection with curb extensions



Crossing with a median/refuge island



Bicycle left turn lanes

Bicycle loop detector and marking

Similar to pedestrian activation buttons, bicyclist activation buttons can be used at signalized intersections as long as they do not require cyclists to dismount or make unsafe leaning movements. These devices should be placed as close to the street as possible in a location that is unobstructed by parked vehicles or motorists making right-hand turns.

Bike Boxes

As bicyclists and motorists on a boulevard approach a signalized intersection, bike boxes assign priority to bicyclists. Bike boxes incorporate treatments, including:

- A striped bicycle lane: Allows bicyclists to safely maneuver to the "head of the line" of stopped vehicles;
- An advanced vehicle stop bar located several feet upstream from the intersection: Provides a space for bicyclists to move directly in front of the vehicle at the head of the line;
- Bicycle pavement markings in the bike box: Advises motorists to stay out of the bike box; and
- Signage: Advises motorists to stay out of the bike box.

Bike boxes offer several advantages:

- Enabling cyclists to move to the head of the line, bike boxes reduce bicyclist waiting time and increase the likelihood that a cyclist would not have to wait more than one signal cycle for a green light;
- Cyclists at the head of the line can avoid breathing exhaust fumes from vehicles idling at the intersection; and
- Bicyclists making left turns can safely position themselves in the bike box in front of motor vehicle traffic, as opposed to merging with vehicle traffic as they approach the intersection.

Half Signals

Lower-order streets often provide minimal treatments to accommodate bicycle/pedestrian crossings when they approach major streets. In situations where there are few crossable gaps and where vehicles on the major street do not stop for pedestrians and cyclists waiting to cross, "half signals" could be installed to improve the crossing environment. Half signals include pedestrian and bicycle activation buttons and may also include bicycle loop detectors on the bicycle boulevard approach. Many of these models have been used successfully for years overseas, and their use in the United States has increased dramatically over the last decade. Discussed below, a variety of half signal applications could be used on Bremerton's bicycle boulevard network.

Bike box

Pelican Signals

A Pelican (Pedestrian Light Control Activated Crossing) signal incorporates a standard red-yellow-green signal on the major street approach that rests on green for vehicular traffic until a pedestrian or bicyclist wishes to cross and presses the button. The signal then changes to yellow, then red, while WALK is shown to the pedestrian/bicyclist on the bicycle boulevard approach. The signal can be installed as either a one-stage or two-stage signal, depending on the street's characteristics. In a two-stage crossing, the bicyclist/pedestrian crosses first to a median island and is then channelized along the median to a second signalized crossing point. At that point, the user then activates a second crossing button and another crossing signal changes to red for motorists while the pedestrian/bicyclist is given a WALK signal. The two crossings only delay the bicyclist/pedestrian minimally and allow the signal operation to fit into the arterial synchronization, thus reducing the potential for stops, delays, crashes, and air quality issues. A Pelican crossing is quite effective in providing a bicycle/pedestrian crossing at mid-block locations when the technique can be integrated into the roadway design.

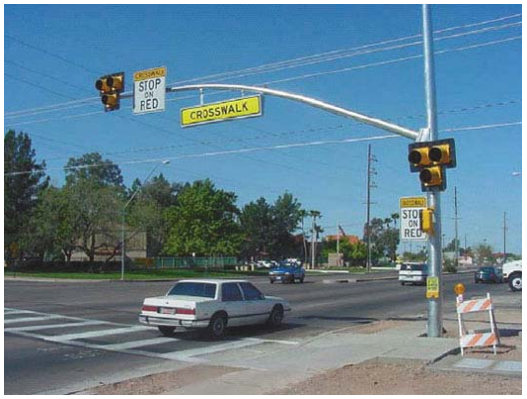
Puffin Signals

A Puffin (Pedestrian User Friendly Intelligent) crossing signal is an updated version of a Pelican crossing. The signal consists of a traditional signal for motorists, as well as activation buttons and infrared or pressure mat detectors. After a bicyclist or pedestrian pushes the button, a detector verifies the presence of the user at the curbside. This helps eliminate false signal calls associated with people who push the button and then decide not to cross. When the bicyclist/pedestrian is given the WALK signal, a separate motion detector extends the WALK interval (if needed) to ensure that slower pedestrians have time to cross safely. Conversely, the signal can also detect when the intersection is clear of pedestrians/bicyclists and return the green signal to vehicles, reducing vehicle delay at the light. Puffin signals are designed to be crossed in a single movement by the bicyclist or pedestrian, unlike the Pelican signal which can be designed to cross in either one or two stages.

Hawk Signals

A Hawk (High-Intensity Activated Crosswalk) signal is a combination of a beacon flasher and traffic control signaling technique for marked crossings. The beacon signal consists of a traffic signal head with a red-yellow-red lens. The unit is normally off until activated by a pedestrian or

Puffin signal



Hawk signal

bicyclist. When bicyclists/pedestrians wish to cross the street, they press a button and the signal begins with a flashing yellow indication to warn approaching motorists.

A solid yellow, advising motorists to prepare to stop, then follows the flashing yellow. The signal is then changed to a solid red, at which time the user is shown a WALK indicator. The beacon signal then converts to an alternating flashing red, allowing drivers to proceed after stopping at the crosswalk while the bicyclist/pedestrian is shown the flashing DON'T WALK signal.

Level 4 – Traffic Calming

Traffic calming treatments on bicycle boulevards improve the bicycling environment by reducing vehicle speeds to the point where they generally match cyclists' operating speeds, enabling all users to safely co-exist on the same facility. Specific traffic calming treatments are described below.

Chicanes

Chicanes are a series of raised or delineated curb extensions on alternating sides of a street forming an S-shaped curb, which reduce vehicle speeds through narrowed travel lanes. Chicanes can also be achieved by establishing on-street parking on alternate sides of the street. These treatments are most effective on streets with narrower cross-sections.

Mini Traffic Circles

Mini traffic circles are raised or delineated islands placed at intersections, reducing vehicle speeds through tighter turning radii and narrowed vehicle travel lanes. These devices can effectively slow vehicle traffic while accommodating all turning movements at an intersection. Mini traffic circles can also include a paved apron to accommodate the turning radii of larger vehicles like fire trucks or school buses.

Speed Humps/Speed Cushions

Speed humps are rounded raised areas of the pavement requiring approaching motor vehicles to reduce speed. These devices also discourage through vehicle travel on a street when a parallel through route exists. Speed cushions are similar to speed humps, but include narrow inlets enabling bicycles to pass through without riding over the hump. Spacing between inlets could be matched with the spacing of wheels on a fire truck to allow these vehicles to pass through without slowing.

Level 5 – Traffic Diversion

Traffic diversion treatments maintain through bicycle travel on a street while physically restricting through auto traffic. These treatments direct vehicle traffic onto parallel higher-order streets while accommodating

Chicanes

Mini traffic circle

Speed cushion

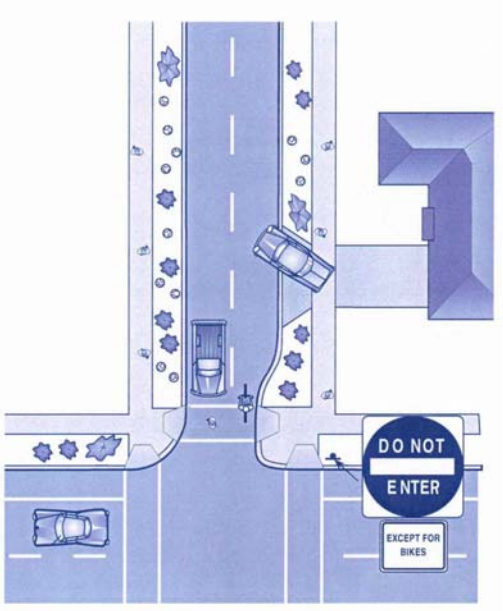
bicyclists and local vehicle traffic on the bicycle boulevard. Traffic diversion is most effective when higher-order streets can sufficiently accommodate the diverted traffic associated with these treatments.

Choker Entrances

Choker entrances are intersection curb extensions or raised islands allowing full bicycle passage while restricting vehicle access to and from a bicycle boulevard. When they approach a choker entrance at a cross-street, motorists on the bicycle boulevard must turn onto the cross-street while cyclists may continue forward. These devices can be designed to permit some vehicle turning movements from a cross-street onto the bicycle boulevard while restricting other movements.

Traffic Diverters

Similar to choker entrances, traffic diverters are raised features directing vehicle traffic off the bicycle boulevard while permitting through bicycle travel.



Choker entrance at entrance of two-way local street

Traffic diverter

Appendix B: Draft Projects List with Costs

Table B-1. Recommended Pedestrian and Bicycle Projects

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
11th St. at Callow Ave.	N/A	Intersection improvements	Bremerton		
Kitsap Way at Harlow Dr.	N/A	Intersection improvements	Bremerton	Tier 1	$125,000
Kitsap Way at North Lake Way	N/A	Intersection improvements	Bremerton		
Loxie Eagans Blvd. at National Ave.	N/A	Intersection improvements	Kitsap County		
Loxie Eagans Blvd. at SR 3 NB Ramps	N/A	Intersection improvements	WSDOT		
Loxie Eagans Blvd. at SR 3 SB Ramps	N/A	Intersection improvements	WSDOT		
Marion St. at Renaissance High School	N/A	Mid-block crossing improvements	Bremerton		
National Ave. at Preble St.	N/A	Intersection improvements	Kitsap County		
Old Wheaton Way north of Lebo Blvd.	N/A	Mid-block crossing improvements	Bremerton		
Old Wheaton Way at Harkins St.	N/A	Intersection improvements	Bremerton		
Old Wheaton Way at Lebo Blvd./ Cherry Ave.	N/A	Intersection improvements	Bremerton		
Perry Ave. at Holman St.	N/A	Intersection improvements	Bremerton		
Perry Ave. at Stone Way	N/A	Intersection improvements	Bremerton		
Sheridan Rd. at Pine Rd.	N/A	Intersection improvements	Bremerton		
SR 303/Warren Ave. at 4th St.	N/A	Intersection improvements	WSDOT		
SR 303/Warren Ave. at 5th St.	N/A	Intersection improvements	WSDOT		
SR 303/Warren Ave. at 11th St.	N/A	Intersection improvements	WSDOT		
SR 303/Warren Ave. at 13th St.	N/A	Intersection improvements	WSDOT		
SR 303/Warren Ave. at 16th St.	N/A	Intersection improvements	WSDOT		
SR 303/Wheaton Way at Riddell Rd.	N/A	Intersection improvements	WSDOT		
SR 303/Wheaton Way at Sheridan Rd.	N/A	Intersection improvements	WSDOT		
SR 303/Wheaton Way at Sylvan Way	N/A	Intersection improvements	WSDOT		
SR 304/Burwell St. at Callow Ave.	N/A	Intersection improvements	WSDOT		
SR 304/Burwell St. at Montgomery Ave.	N/A	Intersection improvements	WSDOT		
SR 304/Burwell St. at State Ave.	N/A	Intersection improvements	WSDOT	Tier 1	$487,000
SR 310/Kitsap Way between Forrest and Pershing	N/A	Mid-block crossing improvements	WSDOT		
SR 310/Kitsap Way at 11th St.	N/A	Intersection improvements	WSDOT		
SR 310/Kitsap Way at SR 3 NB Ramps	N/A	Intersection improvements	WSDOT		
SR 310/Kitsap Way at SR 3 SB Ramps	N/A	Intersection improvements	WSDOT		

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Sidewalks					
1st St.	Auto Center Blvd./Bruenn Ave. to Auto Center Way	Sidewalks	Bremerton		
1st St.	Marion Ave. to Callow Ave.	Complete sidewalk gaps	Bremerton		
6th St.	Price Rd. to Auto Center Way	Complete sidewalk gaps	Bremerton		
11th St.	SR 310/Kitsap Way to Callow Ave.	Complete sidewalk gaps	Bremerton		
15th St.	Corbet Dr. to Lafayette Ave.	Complete sidewalk gaps	Bremerton		
16th St.	Old Wheaton Way to Trenton Ave.	Sidewalks	Bremerton		
18th St.	Old Wheaton Way to Perry Ave.	Sidewalks	Bremerton		
25th St.	Wycoff Ave. to Snyder Ave.	Complete sidewalk gaps	Bremerton		
26th St.	Phinney Bay Dr. to Wycoff Ave.	Sidewalks	Bremerton		
Arsenal Way	Loxie Eagans Blvd. to Yantic Ave.	Complete sidewalk gaps[1, 2]	Bremerton	Tier 1	
Arsenal Way	Oyster Bay Ave. to Loxie Eagans Blvd.	Sidewalks	Kitsap County		
Corbet Dr.	SR 310/Kitsap Way to Phinney Bay Dr.	Sidewalks	Bremerton/ Kitsap County		
Harlow Dr.	Kitsap Way to Price Rd.	Sidewalks	Bremerton		
Harlow Dr.	Price Rd. to Bruenn Ave.	Sidewalks	Bremerton/ Kitsap County		
Hartford St.	Arsenal Way/Yantic Ave. to 1st St.	Sidewalks	Bremerton	Tier 1	
Magnusson Way/Stone Way	Schley Blvd.	Sidewalks	Bremerton/ Kitsap County		
Marine Dr.	Rocky Point Rd. to northern terminus	Sidewalks	Bremerton		
Marion Ave./Adele Ave.	Arsenal Way to SR 310/Kitsap Way	Complete sidewalk gaps	Bremerton		
Naval Ave.	13th St. to 15th St.	Complete sidewalk gaps	Bremerton		
Old Wheaton Way	Callahan Dr. to Sheridan Rd.	Sidewalks	Bremerton		
Old Wheaton Way	Harkins St. to Callahan Dr.	Complete sidewalk gaps	Bremerton		
Oyster Bay Ave.	"C" St. to Loxie Eagans Blvd.	Complete sidewalk gaps	Bremerton		
Oyster Bay Ave.	Arsenal Way to SR 310/Kitsap Way	Complete sidewalk gaps	Bremerton		
Petersville Rd.	Sheridan Rd. to Sylvan Way	Sidewalks	Bremerton/ Kitsap County		
Phinney Bay Dr.	Rocky Point Rd. to Corbet Dr.	Sidewalks	Kitsap County		

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Sidewalks (continued)					
Preble St.	National Ave. to Lafayette Ave.	Sidewalks	Bremerton/ Kitsap County		
Price Rd.	Harlow Dr. to 6th St.	Sidewalks	Bremerton/ Kitsap County		
Rocky Point Rd.	Marine Dr. to northern terminus	Sidewalks	Bremerton/ Kitsap County		
Roosevelt Blvd.	3rd Ave. to Oyster Bay Ave.	Sidewalks	Bremerton		
SR 310/Kitsap Way	SR 3 interchange to Callow Ave.	Complete sidewalk gaps	WSDOT		
Schley Blvd.	Old Wheaton Way to Sheridan Rd.	Sidewalks	Bremerton		
Shorewood Dr.	SR 310/Kitsap Way to NAD Park	Sidewalks	Bremerton		
Snyder Ave.	15th St. to 25th St.	Sidewalks	Bremerton		
Terrace St.	Perry Ave. to Trenton Ave.	Complete sidewalk gaps	Bremerton		
Tracyton Beach Rd.	Bremerton city limits to east of Sheridan Rd.	Sidewalks	Bremerton		
Trenton Ave.	Shore Dr. to Stone Way	Complete sidewalk gaps	Bremerton	Tier 1	
Wycoff Ave.	25th St. to 26th St.	Complete sidewalk gaps	Bremerton		
Sidewalks and Bicycle Lanes					
Almira Dr.	Sylvan Way to Riddell Rd.	Sidewalks and bicycle lanes	Bremerton		
Austin Dr.	Kitsap Way to SR 3 interchange	Sidewalks and bicycle lanes	Bremerton		
Austin Dr./SR 3 overcrossing	N/A	Widen existing overcrossing to provide sidewalks and bicycle lanes	WSDOT		
Auto Center Way	Loxie Eagans Blvd. to SR 310/Kitsap Way	Complete bicycle lane and sidewalk gaps	Bremerton		
Harlow Dr.	Kitsap Way to Price Rd.	Sidewalks and bicycle lanes	Bremerton		
Harlow Dr.	Price Rd. to Auto Center Blvd.	Sidewalks and bicycle lanes	Kitsap County		
Kitsap Way	North Lake Way to SR 3 interchange	Sidewalks and bicycle lanes	Bremerton		
Loxie Eagans Blvd.	National Ave. to Arsenal Way	Sidewalks and bicycle lanes	Kitsap County		
Manette Br.	Washington Ave. to Old Wheaton Way	Replace bridge to include bicycle lanes and sidewalks and/or a shared use path	WSDOT/ Bremerton	Tier 1	
Marine Dr.	SR 310/Kitsap Way to Rocky Point Rd.	Sidewalks and bicycle lanes	Bremerton		
National Ave.	Charleston Beach Rd. to SR 310/Kitsap Way	Sidewalks and bicycle lanes	Bremerton/ Kitsap County		
Olympus Dr.	Sheridan Rd. to Sylvan Way	Sidewalks and bicycle lanes	Bremerton/ Kitsap County		

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Sidewalks and Bicycle Lanes (continued)					
Perry Ave.	Magnusson Way/ Stone Way to Sylvan Way	Sidewalks and bicycle lanes	Kitsap County		
Pine Rd.	Sheridan Rd. to Riddell Rd.	Sidewalks and bicycle lanes[3]	Bremerton/ Kitsap County		
Riddell Rd.	Pine Rd. to Perry Ave.	Sidewalks and bicycle lanes	Bremerton/ Kitsap County		
SR 304/Navy Yard Hwy.	Charleston Beach Rd. (west junction) to Charleston Beach Rd. (east junction)	Sidewalks and bicycle lanes[3]	WSDOT	Tier 1	
Sheridan Rd.	SR 303/Wheaton Way to Perry Ave.	Sidewalks and bicycle lanes	Bremerton/ Kitsap County		
Sylvan Way	Monticola Dr. to SR 303/Wheaton Way	Sidewalks and bicycle lanes	Bremerton/ Kitsap County		
Sylvan Way	Olympus Dr. to Trenton Ave.	Sidewalks and bicycle lanes	Kitsap County		
Bicycle Lanes					
1st St.	Montgomery Ave. to Naval Ave.	Stripe eastbound contraflow bicycle lane; westbound bicycle travel accommodated in shared vehicle/bicycle lane	Bremerton	Tier 1	
6th St.	Callow Ave. to Park Ave.	Bicycle lanes	Bremerton	Tier 1	$81,000
6th St.	Park Ave. to Washington Ave.	Bicycle lanes	Bremerton		
11th St./Washington Ave.	Park Ave. to Manette Br.	Bicycle lanes	Bremerton		
Austin Dr.	SR 3 interchange to Erlands Point Rd.	Bicycle lanes	Bremerton		
Auto Center Blvd./Bruenn Ave.	Kean Blvd. to Auto Center Way (northern junction)	Bicycle lanes	Bremerton		
Lebo Blvd.	Bremerton city limits to Old Wheaton Way	Bicycle lanes	Bremerton		
Loxie Eagans Blvd.	Auto Center Way to National Ave.	Bicycle lanes[3, 4]	Bremerton/ Kitsap County/ WSDOT		
Naval Ave.	1st St. to 15th St.	Bicycle lanes[4]	Bremerton	Tier 1	$74,500
Old Wheaton Way	Manette Br. to Sheridan Rd.	Bicycle lanes	Bremerton	Tier 1	$215,000
SR 310/Kitsap Way	SR 3 interchange to Callow Ave.	Bicycle lanes	WSDOT	Tier 1	$34,000
Sheridan Rd.	Lebo Blvd. to SR 303/Wheaton Way	Bicycle lanes	Bremerton		
Sylvan Way	SR 303/Wheaton Way to Olympus Dr.	Bicycle lanes	Bremerton		

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Shoulder Bikeways					
Chico Way	SR 3 to North Lake Way	Shoulder bikeway	Kitsap County		
Erlands Point Rd.	Chico Way to Austin Dr.	Shoulder bikeway	Kitsap County		
Kitsap Lake Rd.	North Lake Way to Price Rd.	Shoulder bikeway	Bremerton/ Kitsap County		
North Lake Way	Kitsap Way to Kitsap Lake Rd.	Shoulder bikeway	Bremerton		
Perry Ave.	Sylvan Way to Riddell Rd.	Shoulder bikeway	Kitsap County		
Price Rd.	Kitsap Lake Rd. to Harlow Dr.	Shoulder bikeway	Bremerton		
Riddell Rd.	Tracyton Beach Rd. to Pine Rd.	Shoulder bikeway	Kitsap County		
SR 304/Navy Yard Hwy.	SR 3 to Charleston Beach Rd. (west junction)	Shoulder bikeway	WSDOT	Tier 1	
Tracyton Beach Rd.	Bremerton city limits to Riddell Rd.	Shoulder bikeway	Bremerton/ Kitsap County		
Trenton Ave.	Stone Way to Sylvan Way	Shoulder bikeway[3,4]	Kitsap County	Tier 1	
Union Ave./3rd Ave./Kent Ave./Sherman Heights Rd.	Loxie Eagans Blvd. to SR 3	Shoulder bikeway[4]	Bremerton/ Kitsap County		
Shared Roadways/Bicycle Boulevards					
1st St.	Auto Center Blvd./Bruenn Ave. to Auto Center Way	Level 1 bicycle boulevard applications (signage)	Bremerton		$1,500
1st St.	Hartford Ave. to Naval Ave.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton	Tier 1	$314,300
4th and 5th Sts.	Olympic Ave. to Washington Ave.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton	Tier 1	$360,000
11th St.	Winfield Ave. to Trenton Ave.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$5,900
13th St.	Naval Ave. to Park Ave.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$354,000
15th St.	Lafayette Ave. to High Ave.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$133,400

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Shared Roadways/Bicycle Boulevards (continued)					
16th St./Chester Ave.	SR 303/Warren Ave. to future Port Washington Narrows bike/pedestrian bridge	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$2,000
17th St.	SR 303/Warren Ave. to Park Ave.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton		$1,100
18th St./Terrace St.	Old Wheaton Way to Trenton Ave.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton		$33,000
Arsenal Way/Hartford Ave.	National Ave. to 1st St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County	Tier 1	$88,200
Baer Blvd./Russell Rd./Arsenal Way	SR 310/Kitsap Way to National Ave.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County	Tier 1	$67,400
Cherry Ave.	Old Wheaton Way to Sheridan Rd.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$72,000
Constitution Ave./Marion Ave./Adele Ave.	Preble St. to SR 310/Kitsap Way	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County		$197,000
Elm St.	Lebo Blvd. to Sheridan Rd.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$1,100
Eastlake Dr./Lakehurst Dr.	Harlow Dr. to Lakehurst Dr. southern terminus	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$1,500
Halverson Ave./Spruce Ave.	Sheridan Rd. to Almira Dr.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton		$70,500
High Ave.	5th St. to 15th St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$92,700

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Shared Roadways/Bicycle Boulevards (continued)					
Holman St.	Perry Ave. to Trenton Ave.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$1,200
Ironsides Ave./Nipsic Ave.	Shore Dr. to Holman St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton	Tier 1	$35,700
Magnusson Way/Stone Way	Schley Blvd. to Trenton Ave.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton/ Kitsap County		$2,400
Marine Dr.	Rocky Point Rd. to northern terminus	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$15,000
Montgomery Ave.	1st St. to 15th St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$101,300
Olding Rd./Shore Rd./Root Ct.	Austin Dr. to existing shared use path along Ostrich Bay	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$2,400
Olympic Ave./Whitney Ave.	4th St. to 15th St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$216,200
Osprey Cir.	Segment along Kitsap Lake	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton	Tier 1	$2,100
Oyster Bay Dr.	Arsenal Way to SR 310/Kitsap Way	Level 1 bicycle boulevard applications (signage)	Bremerton		$1,700
Pacific Ave.	1st St. to 13th St.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton		$51,200
Park Ave.	4th St. to 17th St.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$66,800

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Shared Roadways/Bicycle Boulevards (continued)					
Perry Ave.	Holman St. to Magnusson Way/ Stone Way	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$25,500
Pitt Ave.	10th St. to 11th St.	Level 1 bicycle boulevard applications (signage)	Bremerton	Tier 1	$800
Phinney Bay Dr.	Rocky Point Rd. to Lafayette Ave.	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County		$34,100
Robin Ave./Solie Ave.	Sheridan Rd. to Sylvan Way	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton		$3,200
Rocky Point Rd.	Marine Dr. to northern terminus	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County		$100,200
Searle St.	Auto Center Way to SR 3 bicycle/ pedestrian overcrossing	Level 1 bicycle boulevard applications (signage)	Bremerton		$800
Schley Blvd.	Old Wheaton Way to Sheridan Rd.	Level 1, 2 and 3 bicycle boulevard applications (signage, pavement markings, intersection treatments)	Bremerton		$34,100
Shore Dr.	10th St. to 11th St.	Level 1 bicycle boulevard applications (signage)	Bremerton	Tier 1	$800
Shorewood Dr.	SR 310/Kitsap Way to northern terminus	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$3,900
Trenton Ave.	Shore Dr. to Stone Way	Level 1, 2, 3 and 4 bicycle boulevard applications (signage, pavement markings, intersection treatments, traffic calming)	Bremerton/ Kitsap County	Tier 1	$89,900
Washington Ave.	1st St. to Manette Br.	Level 1 and 2 bicycle boulevard applications (signage, pavement markings)	Bremerton		$6,300

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Shared Use Paths					
Dockside subdivision accessways	N/A	Convert informal accessways to paved shared use paths linking Osprey Circle to Price Rd. and Lakehurst Dr.	Bremerton	Tier 1	$60,100
NAD Park-Jackson Park Naval Housing Area Shared Use Path	Shorewood Dr. northern terminus to existing path in Jackson Park Naval Housing Area	Shared use path	Bremerton		
SR 3 Shared Use Path	SR 16 to SR 304	Shared use path[3, 4]	WSDOT	Tier 1	
SR 3/Searle St. Bicycle/Pedestrian Overcrossing	Baer Blvd. to overcrossing's east end	Reconstruct and widen existing shared use path	Bremerton		
Shore Dr. Shared Use Path	10th St. to Vandalia Ave.	Convert upper portion of Shore Dr. to shared use path	Bremerton	Tier 1	$154,500
Port Washington Narrows Bicycle/Pedestrian Bridge	West of SR 303/Warren Ave. Bridge	New bicycle/pedestrian bridge connecting Olympic College with Lions Community Playfield	Bremerton	Tier 3	
SR 303/Warren Ave. Pedestrian/Bicycle Overcrossing	SR 303/Warren Ave. at 15th St.	Construct pedestrian/bicycle overcrossing over SR 303/Warren Ave. at 15th St.	Bremerton/ WSDOT	Tier 3	
West End Rail Corridor		Shared use path on former railroad corridor[5]			
Other Projects					
Citywide bicycle wayfinding signage plan	N/A	Develop a citywide bicycle wayfinding signage plan identifying: appropriate locations for signs, destinations to be highlighted on each sign, and approximate distance and riding time to each destination	Bremerton	Tier 1	$20,000-$40,000
Kitsap Lake Trail Feasibility Study	N/A	Conduct study to determine feasibility of developing a shared use path around Kitsap Lake	Bremerton/ Kitsap County		$20,000-$100,000
Bremerton Transportation Center Bicycle/Pedestrian Sub-Area Plan	N/A	Develop a sub-area plan addressing bicycle/pedestrian circulation needs in and around the Bremerton Transportation Center	Bremerton/ WSDOT	Tier 1	$20,000-$30,000
Municipal Code Bicycle Parking Requirements Update	N/A	Update Bremerton Municipal Code to establish bicycle parking requirements for individual land uses, and establish bicycle parking facility design requirements	Bremerton	Tier 1	$10,000

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Other Projects (continued)					
Armin Jahr Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Armin Jahr Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton	Tier 1	$1,383,000
Crown Hill Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Crown Hill Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000
Kitsap Lake Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Kitsap Lake Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton	Tier 1	$1,607,000

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Other Projects (continued)					
Naval Avenue Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Naval Avenue Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton		$1,000,000-$2,000,000
View Ridge Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the View Ridge Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000
West Hills Elem. School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the West Hills Elem. School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Other Projects (continued)					
Bremerton 8th Grade/Freshman Academy safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Bremerton 8th Grade/Freshman Academy walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000
Mountainview Middle School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Mountainview Middle School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000
Bremerton High School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Bremerton High School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000

Table B-1. Recommended Pedestrian and Bicycle Projects (continued)

Project	From – to	Description	Lead Agency	Priority Tier 1, 2, 3	Planning Level Cost Estimate*
Other Projects (continued)					
Renaissance High School safe routes to school Improvements	N/A	Inventory bicycle/pedestrian facilities in the Renaissance High School walking catchment area, and identify specific deficiencies that complicate bicyclist and pedestrian travel. Design and construct infrastructure improvements, including shared use paths, neighborhood accessways, bicycle lanes, sidewalks, curb ramps, crosswalks, and other intersection improvements where necessary. Assign higher prioritization to projects along major bike- and walk-to-school routes.	Bremerton/ Kitsap County		$1,000,000-$2,000,000

* Planning level cost estimates were prepared for a limited sample of Tier 1 Priority projects. Cost estimates do not include any allowance for property acquisition and easements.

1 This project (or elements of the project) is included in the Bremerton 2006-2011 Transportation Improvement Plan.
2 This project (or elements of the project) is included in the 2004 Bremerton Comprehensive Plan (Transportation Element).
3 This project (or elements of the project) is included in the 2001 Kitsap County Bikeways Plan.
4 This project (or elements of the project) is included in the 2001 Mosquito Fleet Trail Master Plan.
5 This project (or elements of the project) is included in the 1995 Kitsap County Greenways Master Plan.

Notes:

- Cost estimates for several intersection improvements illustrated on the bicycle and pedestrian network maps are included within the cost estimates for shared roadway/bicycle boulevard projects and/or Safe Routes to Schools projects.
- All cost estimates include a 25% contingency beyond the original project cost. The estimates were also increased by an additional 20% for engineering and design.

Appendix C: Proposed Project Descriptions

4th-5th Street Bicycle Boulevards

Description

This project would develop bicycle boulevards on 4th and 5th streets in West Bremerton. With relatively low traffic volumes, these streets provide excellent opportunities to create bicycle-friendly corridors for riders of all ages and skills. Potential treatments include intersection improvements to create safe and convenient crossings at major streets, traffic calming, streetscape enhancements, bicyclist wayfinding tools, and signage/pavement markings to increase bicyclists' visibility. The 4th-5th Street bicycle boulevards are part of the proposed Mosquito Fleet Trail route through Bremerton.

Project Elements

- Bicycle boulevard treatments on 4th and 5th Streets between Olympic and Washington Avenues
- Improvements include signage, pavement markings, intersection treatments, and traffic calming (further analysis needed to determine specific treatments and locations)

Issues

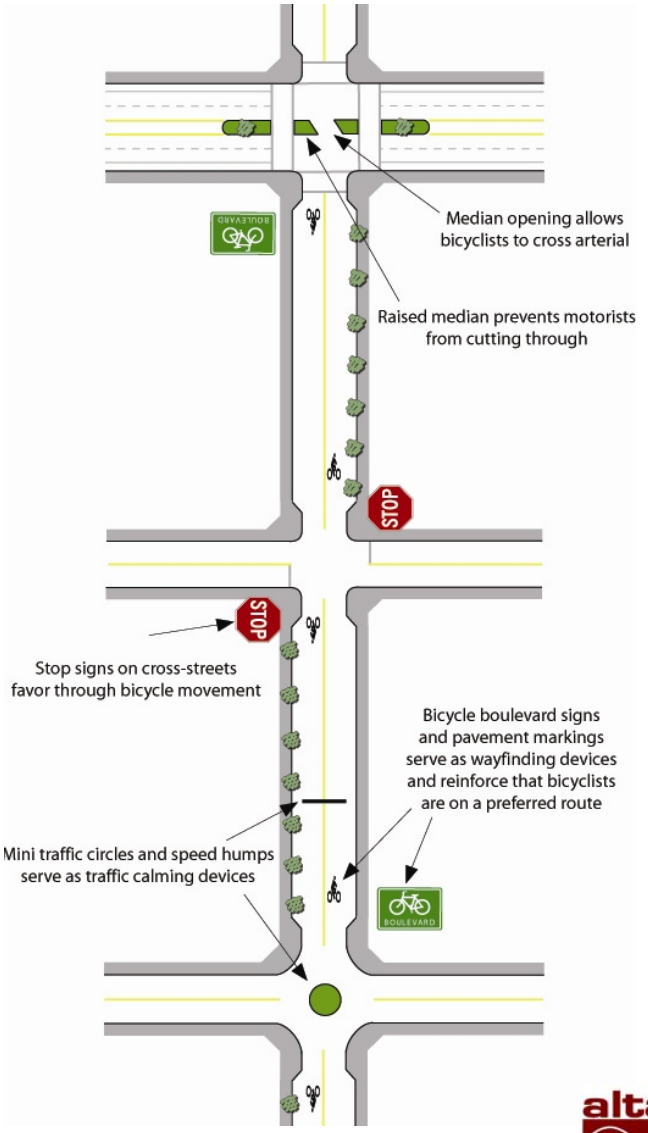
- One-way streets at east and west ends of corridor could complicate bicyclist connections to surrounding streets
- Crossing improvements at SR 303/Warren Ave. subject to WSDOT approval

Lead Agency

City of Bremerton

Planning Level Cost Estimate

$360,000



Sample Bicycle Boulevard Treatments

6th Street Road Diet

Description

This project would re-stripe 6th Street to provide bicycle lanes and center left turn pockets between Callow Avenue and Park Avenue. Center landscaped medians would also be constructed in some locations. Compared with parallel higher-order streets (e.g., Burwell, 4th, and 11th Streets), this street handles lower traffic volumes that could be accommodated with fewer travel lanes. Striped bicycle lanes would provide a convenient east-west through-route for bicyclists traveling between West Bremerton, downtown, and the Manette Bridge. Landscaped medians would also provide opportunities to enhance the corridor's visual character.

Project Elements

- Street re-striping to provide two travel lanes, center left turn pockets, and bicycle lanes
- Center landscaped medians at some locations
- Motorist advisory signs and bicyclist wayfinding signs

Issues

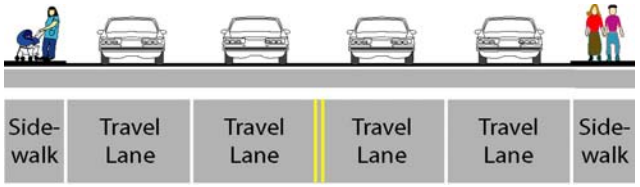
- Center landscaped medians could constrain driveway access in some locations

Lead Agency

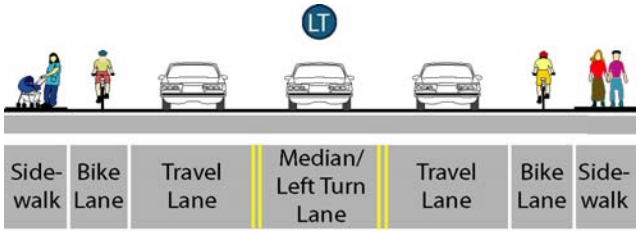
City of Bremerton

Planning Level Cost Estimate

$81,100



6th Street – Existing cross-section



6th Street – Proposed cross-section

SR 304/Burwell Street at State Avenue Intersection Improvements

Description

This project would improve the pedestrian crossing environment at the SR 304/Burwell Street at State Avenue intersection. This intersection handles high volumes of pedestrians entering and leaving the Puget Sound Naval Shipyard. A pedestrian-activated signal would replace the existing overhead "crosswalk" sign to provide a safe and comfortable means for crossing SR 304/Burwell Street. Other proposed treatments include additional curb extensions, curb ramps, and supplemental signage.

Project Elements

- Pedestrian-activated "half signal"
- Curb extension at intersection's northwest corner
- Supplemental warning signage for approaching motorists
- Curb ramps with detectable warning strips on all corners

Issues

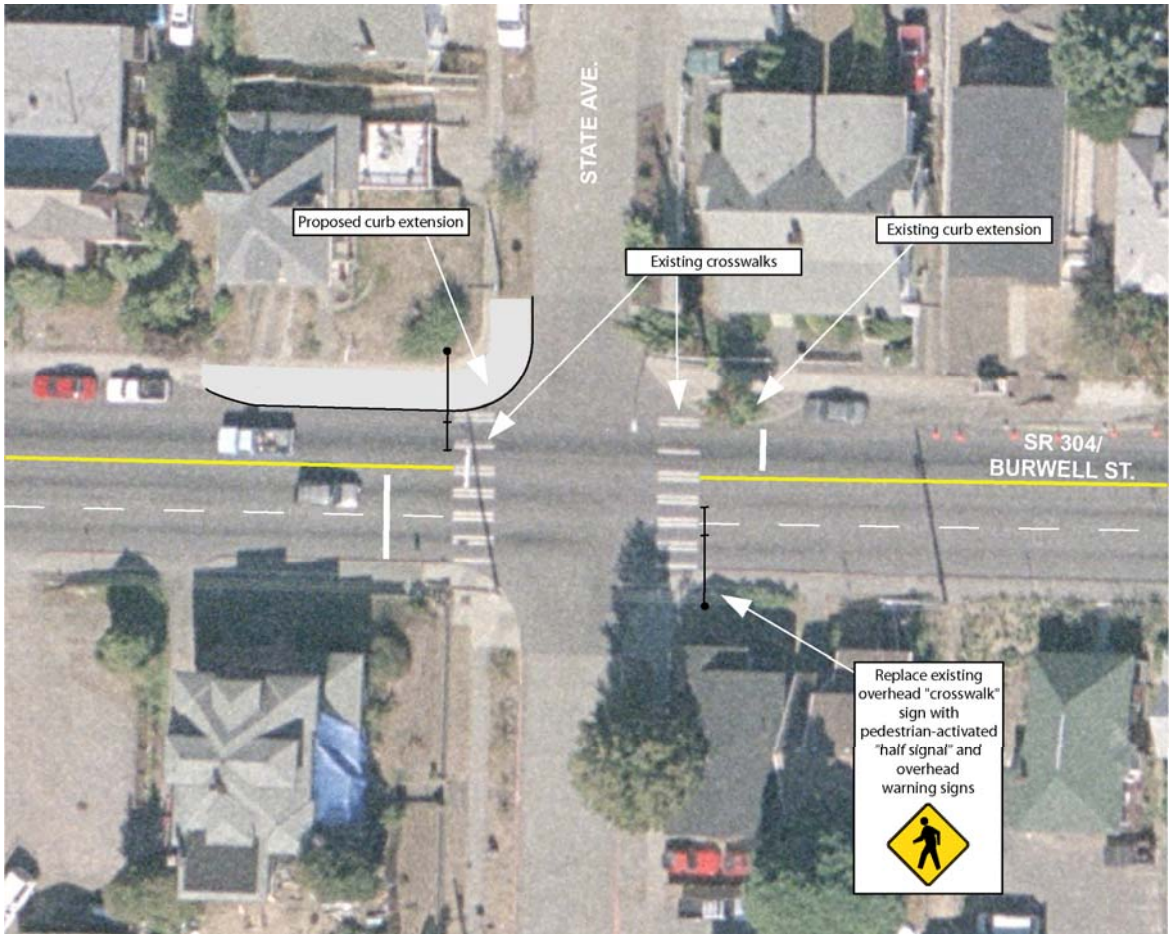
- Signal subject to WSDOT approval
- Curb extensions complicate bicycle travel by forcing bicyclists into the vehicle travel lane

Lead Agency

WSDOT/City of Bremerton

Planning Level Cost Estimate

$487,400



SR 304/Burwell Street at State Avenue
(proposed improvements)

Accessways in Dockside Subdivision

Description

This project would improve two accessways in West Bremerton's Dockside subdivision. The currently informal paths link Osprey Circle with Price Road to the south and Lakehurst Drive to the north. The accessways provide direct bicycle/pedestrian connections between adjacent neighborhoods as an alternative to surrounding circuitous streets. Students use these routes to reach Kitsap Lake Elementary School, while other bicyclists/pedestrians use the paths as a recreational route around Kitsap Lake. Developing the accessways into formal shared use paths would increase accessibility for bicyclists, mobility-impaired pedestrians, and improve convenience and connectivity for all users.

Project Elements

- Paved shared use paths linking Osprey Circle with Price Road and Lakehurst Drive
- Curb ramps to facilitate smooth transitions between the paths and streets
- Bicycle/pedestrian wayfinding signage

Issues

- Encroaching vegetation on the southern accessway
- Potential drainage issues on the northern accessway due to surrounding topography

Lead Agency

City of Bremerton

Planning Level Cost Estimate

$60,100 (combined cost estimate for both accessways)

Existing unimproved accessway

Proposed paved accessway

Kitsap Way at Harlow Drive Intersection Improvements

Description

This project would improve the pedestrian crossing environment at the Kitsap Way at Harlow Drive intersection. Kitsap Way's wide cross-section and the lack of formalized pedestrian facilities create an uncomfortable pedestrian environment in this area. Improvements include pedestrian-activated overhead warning lights, a pedestrian refuge island, formalizing driveway access points, and supplemental signage.

Project Elements

- Formalize nearby driveway access points
- Relocate existing crosswalk on Kitsap Way
- Pedestrian refuge island
- Pedestrian-activated overhead warning lights
- Crosswalk on Harlow Dr. approach
- Warning signs

Issues

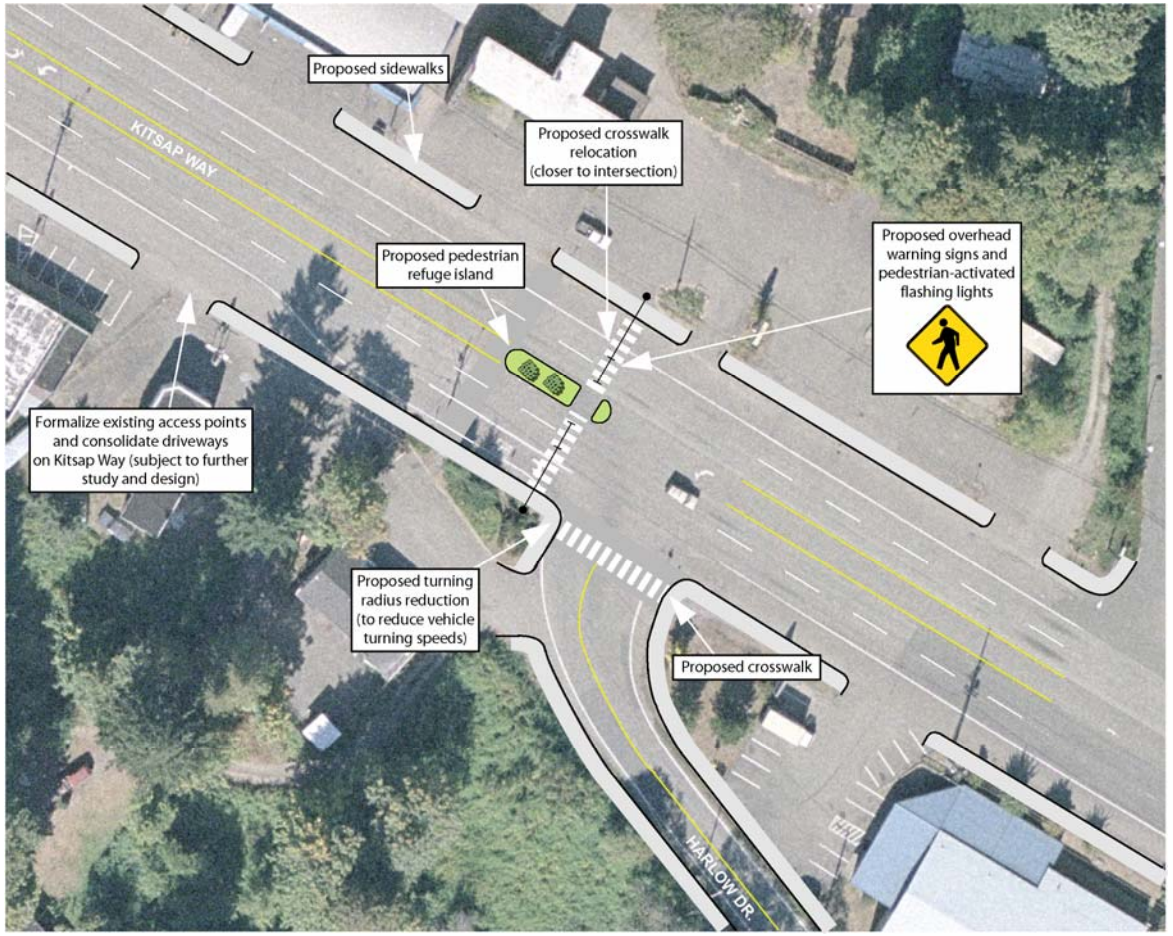
- Access management would require further study and design
- Private property encroachment could complicate sidewalk construction

Lead Agency

City of Bremerton

Planning Level Cost Estimate

$125,000



Kitsap Way at Harlow Drive
(proposed improvements)

SR 310/Kitsap Way Bicycle Lanes

Description

This project would add bicycle lanes to SR 310/Kitsap Way between SR 3 and Callow Avenue. In most locations, the roadway's existing wide shoulders could be converted to bicycle lanes without major road widening or reconstruction. The wide shoulders currently make SR 310/Kitsap Way a popular bicycle route, and formalizing the bicycle lanes through enhanced striping and pavement markings would increase motorists' awareness of non-motorized users.

Project Elements

- Striped bicycle lanes and pavement markings
- Minor shoulder widening between 11th and Wycoff
- Motorist advisory signs and bicyclist wayfinding signs

Issues

- WSDOT may convert existing shoulders to vehicle travel lanes as part of a future capacity expansion project
- Potential physical constraints between 11th and Wycoff

Lead Agency

WSDOT/City of Bremerton

Planning Level Cost Estimate

$33,900

SR 310/Kitsap Way near Wilbert Ave.
(existing conditions)

SR 310/Kitsap Way near Wilbert Ave.
(with bicycle lanes)

Naval Avenue Road Diet

Description

This project would re-stripe Naval Avenue to provide bicycle lanes between 1st and 15th Streets. The street could be retrofitted through various options (see concepts at right) to also include landscaped medians/pedestrian refuge islands and/or on-street parking. Striped bicycle lanes would provide a convenient north-south bicycle route connecting the Puget Sound Naval Shipyard with other West Bremerton destinations. Landscaped medians would also provide opportunities to enhance the corridor's visual character. A portion of this project serves as the proposed Mosquito Fleet Trail route through Bremerton.

Project Elements

- Street re-striping to provide bicycle lanes
- Center landscaped medians/pedestrian refuge islands and/or on-street parking (depending on the concept ultimately selected)
- Motorist advisory signs and bicyclist wayfinding signs

Issues

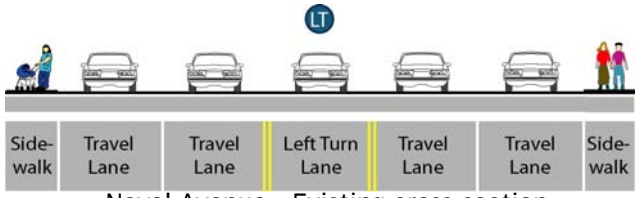
- Center landscaped medians could constrain driveway access in some locations
- Potential traffic impacts associated with reduced number of travel lanes

Lead Agency

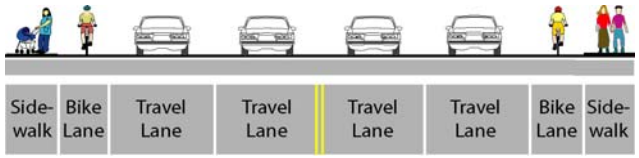
City of Bremerton

Planning Level Cost Estimate

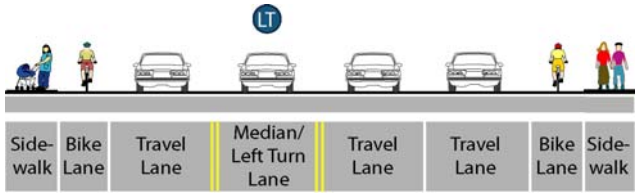
$74,500



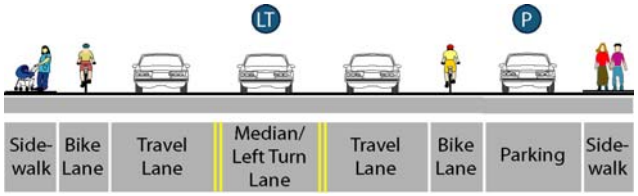
Naval Avenue – Existing cross-section



Naval Avenue – option with 4 travel lanes and bike lanes



Naval Avenue – option with 3 travel lanes, center turn lane, and bike lanes



Naval Avenue – option with 2 travel lanes, center turn lane, on-street parking, and bike lanes

Old Wheaton Way Bicycle Lanes

Description

This project would add bicycle lanes to Old Wheaton Way between Sheridan Road and the Manette Bridge. The street is characterized by steep grades in several locations, forcing slower-speed uphill bicyclists to share travel lanes with higher-speed motorists. Striped bicycle lanes would provide a dedicated space for bicyclists to safely operate at comfortable speeds. This project would also serve as an on-street segment of the proposed Port Washington Narrows Trail (also known as the Bridge-to-Bridge Trail). This project could be combined with a planned project to re-align Old Wheaton Way between Callahan Drive and Sheridan Road.

Project Elements

- Striped bicycle lanes and pavement markings
- Motorist advisory signs and bicyclist wayfinding signs

Issues

- Existing on-street parking and/or center turn lanes may need to be modified to accommodate bicycle lanes in some locations.
- Narrow curb-to-curb widths may preclude bicycle lanes on both sides of the street in some locations. In these locations, bicycle lanes should be provided in the uphill direction and shared lane markings should be provided in the downhill direction.

Lead Agency

City of Bremerton

Planning Level Cost Estimate

$214,600

Old Wheaton Way near Parkside Dr.
(existing conditions)

Old Wheaton Way near Parkside Dr.
(with uphill bicycle lane)

alta PLANNING + DESIGN

SR 304 at 1st Street Intersection Improvements

Description
This project would enhance pedestrian and bicyclist crossings at the SR 304/1st Street intersection. This project could be developed as part of a larger bicycle boulevard corridor on 1st Street, which is part of the proposed Mosquito Fleet Trail route through Bremerton.

Project Elements

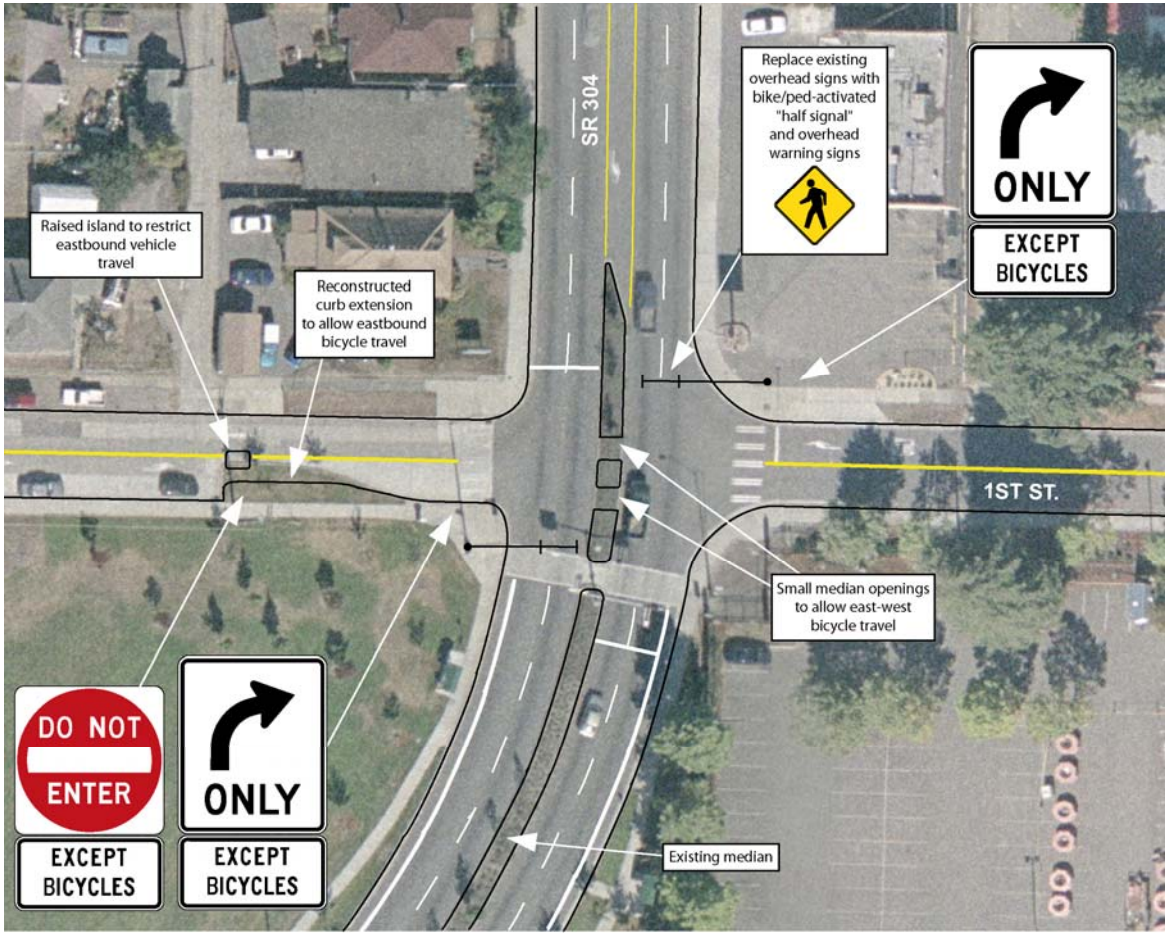
- Bike/pedestrian activated "half-signal"
- Median inlets on SR 304 to allow east-west bicycle travel through intersection
- Reconstruct curb extension on 1st Street to allow bicyclist passage
- Bicycle/pedestrian wayfinding signage
- Regulatory and warning signs for approaching motorists

Issues

- Intersection modifications and signal subject to WSDOT approval

Lead Agency
WSDOT/City of Bremerton

Planning Level Cost Estimate
$314,300 (part of a larger bicycle boulevard project on 1st Street between Hartford and Naval Avenues)



SR 304 at 1st Street
(proposed improvements)

Shore Drive Shared Use Path

Description
This project would convert the upper portion of Shore Drive into a shared use path exclusively for bicyclists and pedestrians. The lack of direct driveway accesses on this street creates low demand for vehicle use. A path would maximize the street's potential to serve recreational and utilitarian bicycle/pedestrian trips. This project also serves as part of the proposed Mosquito Fleet Trail route through Bremerton.

Project Elements
- Conversion of upper Shore Drive into a shared use path between 10th Street and Vandalia Avenue; lower Shore Drive remains open to vehicle traffic
- Intersection treatments to accommodate safe bicyclist/pedestrian crossings

Issues
- Potential out-of-direction travel to reach some residences in the immediate area

Lead Agency
City of Bremerton

Planning Level Cost Estimate
$154,500

In East Bremerton, upper Shore Drive (above right) could be developed into a shared use path