2014 Bellingham Bicycle Master Plan

Toole Design Group

CITY OF BELLINGHAM WASHINGTON

transpoGROUP

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Executive Summary

Bellingham is a very livable City and enjoys a non-motorized transportation mode share that is one of the highest in the State of Washington. Bellingham has implemented a multimodal approach to transportation planning for many years, which ensures that pedestrian and bicycle facilities are included in all City transportation projects. The Bellingham Bicycle Master Plan (the Plan) provides a comprehensive roadmap for increasing bicycle mode share while helping meet Bellingham's goals of reduced traffic congestion, improved air and water quality, enhanced public health and quality of life.

The Plan is ambitious, calling for development of over 134 miles of bicycle facilities, which when combined with existing facilities will result in an on-street, comprehensive citywide network of approximately 170 miles. It also calls for education, enforcement and encouragement programs that are important for developing a culture that supports bicycling.

The Plan vision and goals form the basis for the recommended network, infrastructure improvements, program and policy recommendations; and the implementation strategies. Ultimately, the Plan is structured around creating actions to implement the vision and goals.

Plan Vision

Bicyclists of all ages and abilities have access to a safe, well-connected network linking all areas of Bellingham.

Plan Goals

Safety: Improve safety of bicyclists by promoting safe bicycling, driving, and walking behaviors and building appropriate, well-designed facilities.

Connectivity: Complete a connected network of bikeways linking and providing access to all neighborhoods and key destinations.

Equity: Provide bicycling access for all through equity in public engagement, service delivery and capital investment.

Livability: Build a vibrant and healthy community by creating a welcoming environment for bicycle riding.

Public and Environmental Health: Develop a bicycle network that enables active, healthy lifestyles and sustains a healthy environment.

Choice: Develop infrastructure that creates viable transportation choices, and accommodates multimodal trips.

Education: Provide education on the rights and responsibilities of the users of all transportation modes.

Mode shift: Increase the number and percent of bicycle trips citywide.

Economy: Enhance economic vibrancy by creating a bicycle friendly community that is an attractive place to live and work.

Target Audience

According to the 2012 American Association of State Highway and Transportation Officials (AASHTO) Bike Guide, "skill level" is one of the most important factors to consider when developing a bicycle network. The AASHTO Bike Guide categorizes bicyclists as "experienced and confident" and "casual and less confident," with the majority of the population (estimated at 60 percent) falling into the latter category, including children, recreational riders and individuals who prefer off-street facilities or those on low-traffic streets. In keeping with the vision to provide a network that serves bicyclists of all ages and abilities, the Plan focuses on providing a positive riding environment for the "casual and less confident" riders, recommending over 50 miles of bicycle boulevards on non-arterial streets along with 45 miles of bicycle lanes.

Public Involvement

The public was involved in all phases of Plan development. The public engagement process was structured to involve novice and more experienced bicyclists from all areas of the City. A range of strategies were employed in order to maximize outreach efforts, including two open houses, an online survey and interactive map; and seven focus groups. The cumulative outcome of the public involvement is reflected in the Plan vision, goals and recommendations.

A Steering Committee was formed to provide guidance on plan development and to ensure that the Plan content reflected the values, needs and goals of the Bellingham community. The 8-member committee represented constituents from the following sectors: public health, major employers, schools, bicycle advocacy, homeless advocacy, and the City Transportation Commission. The committee met six times throughout the planning process, providing input and direction on all aspects of the Plan including vision, goals, facility recommendations and priorities.

Planning Process

The Plan was developed over a two-year period in 2013-2014. Initial steps included understanding the current state of bicycling in Bellingham, examining safety and access concerns, and identifying ideas for creating a more bikeable Bellingham. This understanding was established through focus groups, a public open house, interactive online tools, and a review of pertinent background documents. Information gathered was used to create a new, draft bicycle network using Geographic Information Systems (GIS) technology. The resulting study network was analyzed to assess connectivity and address any missing links. The project team conducted extensive field work to refine the study network and identify facility recommendations for each street segment identified as needing improvement. Bicycle destinations across the City were identified and scoring criteria were established and weighted according to relative importance to achieving the stated vision and goals. Projects were then scored and prioritized using a GIS-based, data-driven methodology.

Bicycle Network Recommendations

The recommended network is comprehensive, safety focused, convenient, and comfortable, and is designed to accommodate both experienced and less experienced bicyclists while promoting bicycling as a practical form of transportation throughout the City.

The network connects all neighborhoods and provides access to key destinations throughout the City using a variety of bicycle lanes, bicycle boulevards, shared lane markings and cycle tracks. The lower-stress bicycle boulevards use local streets that are already conducive to casual, lower speed bicycling. Arterial streets provide more direct routes, improving the connectivity of the overall network. They provide a convenient connection between destinations for many types of bicyclists, including commuters, recreational and casual/occasional riders. Additionally, as bicycling continues to increase in Bellingham, a growing number of novice riders will gain enough confidence to feel comfortable riding in bike lanes on busy, arterial streets.

The Interstate 5 (I-5) corridor is a significant physical and psychological barrier to intracity bicycle travel, literally dividing the City of Bellingham in half. Creating better crossing conditions along this nine mile segment of freeway is essential to implementing a complete and connected bicycle network. The BMP reviews existing I-5 crossing conditions, and recommends short-term and long-term improvements, including potential new crossing locations.

Prioritized Recommendations

The Plan utilized a data-driven methodology to evaluate and produce a prioritization score for each recommended project. Variables considered in the prioritization methodology are known to influence bicycling rates and included stress (speed, traffic volume, and grade), safety, connectivity, demand and equity, along with policy-based variables that emphasize network access for low-income and vulnerable populations. The analysis went through several iterations allowing opportunities for staff to calibrate individual data layers and metric weights as needed.

The prioritized list of projects will be used by the City to help determine where to target investments and should be reevaluated over time. Although this prioritization method provides a useful framework for implementation, the City should also look for opportunities to fund and implement all the projects in the recommended network, regardless of their priority level, if they can be accomplished as part of a larger road redesign, repaving, development project, or grant funding opportunity.

Short-Term Projects

Approximately 20 miles of short-term projects have been identified as the highest priority projects for the citywide network. They provide critical access to key destinations and improve the continuity of the existing network. Short-term projects are expected to provide a high return on investment in terms of ridership.

Medium- and Long-Term Projects

Approximately 33 miles of medium-term projects have been identified. These projects will help link key facilities identified as short-term projects and begin to complete a comprehensive network of bicycle

facilities that serve all ages and abilities. Current long-term projects envision an additional 75 miles of bicycle facilities being constructed. Long-term projects will fill remaining gaps and expand Bellingham's bicycle network into new development areas (particularly to the north and east of I-5).

Design Guidance

Street design in Bellingham is guided by the Public Works Development Guidelines and Improvements Standards, which were adopted in 2001. However, there are instances where additional guidance will be useful in implementing the Plan. The guidance in the Plan is presented for consideration and possible integration into the Bellingham Public Works Development Guidelines and Improvements Standards. Specific guidance is provided for facility types and intersection treatments that are new or uncommon in Bellingham such as bicycle boulevards, buffered bike lanes, climbing lanes, and cycle tracks.

Program Recommendations

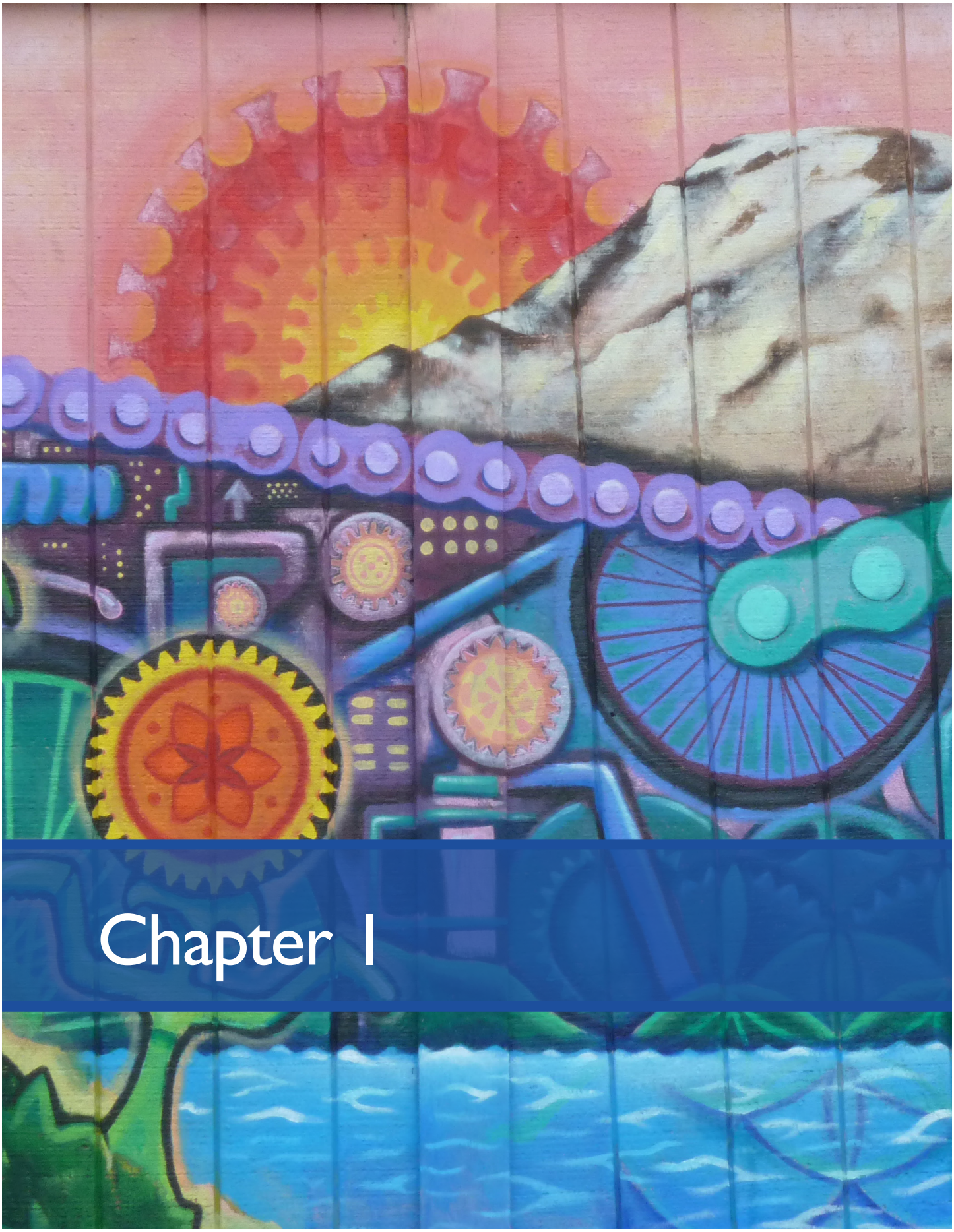
Program recommendations (strategies) are intended to support the Plan vision and goals. They are important for developing a community culture that is supportive of bicycling as a safe, viable and comfortable mode of transportation. Recommendations are organized around four categories: education, enforcement, engineering, and encouragement. Examples include: education for motorists and bicyclists, increasing Bellingham Police Bicycle Patrol efforts, training for City staff on best practices in bicycle facility design, and encouraging bicycling through partnerships with local businesses, colleges and bicycle organizations.

Implementation

The final chapter of the Plan provides a framework for implementation of the recommended bicycle facilities and programs. It discusses the level of investment required to complete the recommended network and identifies funding opportunities. Implementation strategies are presented and include: dedicating funding for facilities, studies and programs; routinely incorporating projects as part of roadway resurfacing or reconstruction; integrating plan recommendations into existing City policies, plans, and procedures; and identifying measures to track performance over time.

Performance Measures

Performance measures are activities and measurements used to track the Plan implementation progress. They are a means of gauging progress on implementation of the Plan and the effectiveness of the facilities and programs on achieving Plan goals. Performance measures must use data that can be collected with available resources and allow year-to-year comparisons. Examples of recommended performance measures include monitoring completion of the recommended bicycle network and bicycle mode share changes, and tracking education campaign offerings and Bicycle Friendly Community achievement level status.



Chapter 1

Chapter 1: Introduction

Bellingham is a city of distinct neighborhoods, revered institutions, innovative businesses, and passionate community members. It prides itself on supporting a diverse mix of transportation choices and considers the needs of all residents when making policy and planning decisions. The result of this commitment is a community that is abundantly livable with a non-motorized transportation mode-share rivaling all other cities in the State of Washington. As Bellingham continues to develop, the planning and implementation of bicycle infrastructure will be important in continuing to develop a livable and vibrant community. The incorporation of quality on-street bicycle facilities will connect neighborhoods, and link the City's economic, cultural, and natural resources. Development of the bicycle facilities recommended in the Bellingham Bicycle Master Plan (the Plan) will give community members and visitors alike a viable alternative to motor vehicle travel. Improvements to bicycling infrastructure will help meet Bellingham's goals of reduced congestion, improved air and water quality, enhanced public health and increased livability.

Bellingham aims to provide its residents and visitors with safe and well-connected bicycle facilities that enable bicycling by both experienced and less experienced bicyclists. The community has actively made decisions to support bicycling through investments in bicycling infrastructure. The Plan was developed to further this support through the provision of a recommended network of bicycle facilities, prioritization of recommended facilities, design guidance, and program recommendations. The Plan focuses primarily on the on-street bicycling network, while identifying off-street connections that provide key linkages in the overall system. The primary discussion of off-street facilities may be found in the Parks, Recreation and Open Space Chapter of the Bellingham Comprehensive Plan.

Ultimately, the implementation of the Plan will provide community members of all ages and abilities the means to safely access the entire city by bicycle. The recommendations in the Plan build on previous bicycle planning processes including the Comprehensive Plan and Urban Village Plans. Calling for over 134 miles of on-street facilities over the next 20 years, the Plan recommends over 50 miles of new bike boulevards and 45 miles of new bike lanes.

Plan Vision and Goals

The Plan vision and goals reflect input received from the public, focus groups, and the project Steering Committee. They also build on the Transportation Element of the Bellingham Comprehensive Plan, Urban Village Plans, Neighborhood Plans, and Subarea Plans. Each of the goals supports the vision.

Plan Vision

Bicyclists of all ages and abilities have access to a safe, well-connected network linking all areas of Bellingham.

Plan Goals

Safety: Improve safety of bicyclists by promoting safe bicycling, driving, and walking behaviors and building appropriate, well-designed facilities.

Connectivity: Complete a connected network of bikeways linking and providing access to all neighborhoods and key destinations.

Equity: Provide bicycling access for all through equity in public engagement, service delivery and capital investment.

Livability: Build a vibrant and healthy community by creating a welcoming environment for bicycle riding.

Public and Environmental Health: Develop a bicycle network that enables active, healthy lifestyles and sustains a healthy environment.

Choice: Develop infrastructure that creates viable transportation choices, and accommodates multimodal trips.

Education: Provide education on the rights and responsibilities of the users of all transportation modes.

Mode shift: Increase the number and percent of bicycle trips citywide.

Economy: Enhance economic vibrancy by creating a bicycle friendly community that is an attractive place to live and work.

Public Benefits of Bicycling

The City of Bellingham, like many U.S. cities, is faced with challenges related to economic development, repair and maintenance of infrastructure, local environmental issues, and equitable distribution of basic services. In addition, individuals and families are feeling the pressure of rising transportation costs.

The bicycle is increasingly seen as a key component of a multimodal transportation system and a means to achieving multiple objectives, including maximizing transportation investments, reducing maintenance costs, improving public health, promoting economic development, addressing transportation equity, and reducing environmental impacts. These trends, as well as growing public demand for more transportation choices, point to the need for implementing this Plan.

Maximizing Transportation Investments

Dollar for dollar, bicycling is one of the most cost-effective transportation modes to support. On-street bicycle facilities can maximize the use of existing roadway space, and typically require relatively low-cost pavement markings or signage once installed. A well-connected bicycle network provides opportunities for individuals to bicycle rather than drive, thereby optimizing roadway capacity and deferring or eliminating the need for costly new road construction projects.

Economic Development

In many industries, the competition for workers is on a national or global scale, and people are choosing employers not just based on salary and traditional benefits, but also on external criteria such as lifestyle and quality of life. Many employers have come to realize that their ability to recruit top employees depends significantly on local culture and amenities. Cities that are making investments to become more bicycle friendly are seeing dividends in the form of attracting new residents and employers.

Health

The Centers for Disease Control and Prevention recommends 150 minutes of moderate-intensity aerobic activity every week—which is equivalent to ten minutes of brisk walking, three times a day, five days a week. Providing opportunities for people to integrate biking into their daily routines can help them meet these guidelines and stay healthy. Community design that incorporates safe and convenient bicycle infrastructure makes it easy for people to make healthy transportation choices and develop positive lifelong habits.

Equity

Providing the community with viable and affordable transportation choices that include transit, bicycling and walking is a key component of an equitable transportation system. Bicycling is a low-cost transportation mode that can broaden opportunities for employment and education, increase access to services, and reduce household spending on transportation.

Environmental

Approximately eighteen percent of Bellingham residents commute to work by means other than driving. Eight percent walk, six percent ride transit, and four percent bicycle to work.[1] Many more residents

[1] U.S. Census American Community Survey, 2008-2012.

bicycle for utilitarian and recreational purposes. Each trip made by bicycle that would otherwise be made using a car has a positive environmental benefit.

Within the community of Bellingham, the largest contributor to carbon dioxide emissions is the combustion of gasoline and diesel by motor vehicles (48%).[2] Bellingham's Climate Action Plan identified a number of strategies to reduce its carbon footprint, including setting vehicle emission reduction targets and reducing vehicle miles traveled by promoting development of a multimodal transportation system. The City aims to reduce greenhouse gas emissions by 70 percent between 2000 and 2020. Reducing motor vehicle use and associated emissions is a major component of reaching this goal. Providing transportation choices that are safe and convenient, and offer other benefits (e.g. health, cost savings) is a key strategy for shifting people away from using their cars, consistent with the City's mode shift goals.

The City's Comprehensive Plan identifies roadway run-off containing heavy metals and oil from motor vehicles as a contributing factor to the diminished water quality of urban streams, Bellingham Bay and Lake Whatcom, the City's water source.

Considering that non-motorized transportation modes essentially have zero impact on air and water quality, promoting their use is an effective strategy for improving air and water quality.

Plan Components

This Plan includes the following components:

Chapter 1 Introduction: Presents the vision and goals for the plan and the benefits of bicycling. It also summarizes the planning process undertaken in the development of the Plan including a review of policies and programs, public input, and existing conditions.

Chapter 2 Policy Recommendations: Provides specific policy guidance for bicycle facilities and priorities.

Chapter 3 Bicycle Network Recommendations: Provides an analysis of network connectivity and needs. In addition, the chapter outlines the process of developing the recommended network and presents the network. Lastly, it breaks down the recommended network into projects that are prioritized based on a data-driven methodology.

Chapter 4 Design Guidelines/Toolbox: Reviews best practices for bicycle facility design and identifies resources to support the development of the recommended bicycle network.

Chapter 5 Program Recommendations: Provides recommended education, encouragement, and enforcement programs to support bicycling within Bellingham.

[2] Bellingham Comprehensive Plan, Exhibit 3. p. EE-15.

Chapter 6 Implementation: Includes performance measures, funding and resource opportunities, and a cost estimation tool to project the cost of implementing bicycle facilities in the recommended network.

The Planning Process

The Bellingham Bicycle Master Plan was developed over a two-year period in 2013-2014. Initial steps included developing an understanding of the current state of bicycling in Bellingham, ascertaining safety and access concerns, and identifying ideas for creating a more bicycle friendly Bellingham. This understanding was established through focus groups, a public open house, interactive online tools, and a review of pertinent background documents. Information gathered was used to create a draft bicycle network using Geographic Information Systems (GIS) technology. The resulting network was analyzed to assess connectivity and address any missing links. The project team conducted extensive field work to assess existing conditions, identify improvement needs and refine the network. Facility recommendations were developed for each street segment, and projects were prioritized using a GIS-based, data-driven methodology. Feedback from stakeholders and the community was solicited throughout the development of the Plan, and was used to guide the planning process.

Project Team

City of Bellingham staff worked to ensure the Plan is coordinated with existing transportation policies and reflects the infrastructure needs of the city. The project team ensured that all relevant city departments were kept abreast as the Plan developed and that their feedback was integrated.

Technical Advisory Committee

A Technical Advisory Committee (TAC) was created to review and assist in the development of the Plan. The TAC had representation from the Public Works, Parks and Recreation, and Planning departments. The TAC met twice with the project team; and individual members participated in weekly conference calls on an as-needed basis.

Trainings

The Plan consultant, Toole Design Group (TDG), provided city staff and other stakeholders a training session on the 2012 AASHTO (American Association of State Highway and Transportation Officials) and NACTO (National Association of City Transportation Officials) bike guides along with other best practices. Additionally, TDG facilitated a half-day “hands-on" training session on bicycle facility design for city engineers, operations staff, and planners as a follow-up to the best practices training. Examples of recommended facilities in the Plan were used as examples for the design exercises.

Public Engagement

The public was involved in all phases of Plan development. The public engagement process was structured to involve novice and more experienced bicyclists from all areas of the City. A range of strategies were employed in order to maximize outreach efforts, which are described below.

Steering Committee

A Steering Committee was formed to provide guidance on plan development and to ensure that the Plan content reflected the values, needs and goals of the Bellingham community. The 8-member committee represented constituents from the following sectors: bicycle advocacy, public health, major employers, schools, homeless advocacy, and the City Transportation Commission. The committee met six times throughout the planning process.

Public Meetings

Two open house public meetings were held during the project. The first open house provided an opportunity to present the draft vision and goals to the public, solicit comments, receive input on barriers and opportunities for bicycling in Bellingham, and garner broad public support for the project. Over 120 people attended the first open house and 418 comments were collected.

Information was presented on a series of maps and boards, as well as in a brief presentation. Data from the public meeting was used to develop the bicycle network, identify problem intersections, and to develop Plan goals, policies and actions.

The second open house was used to present the draft plan and solicit feedback, prioritize recommended actions, and confirm a roadmap for implementation. Information was presented on a series of maps and boards, as well as in a brief presentation. There were 98 attendees at the meeting.

Online Survey

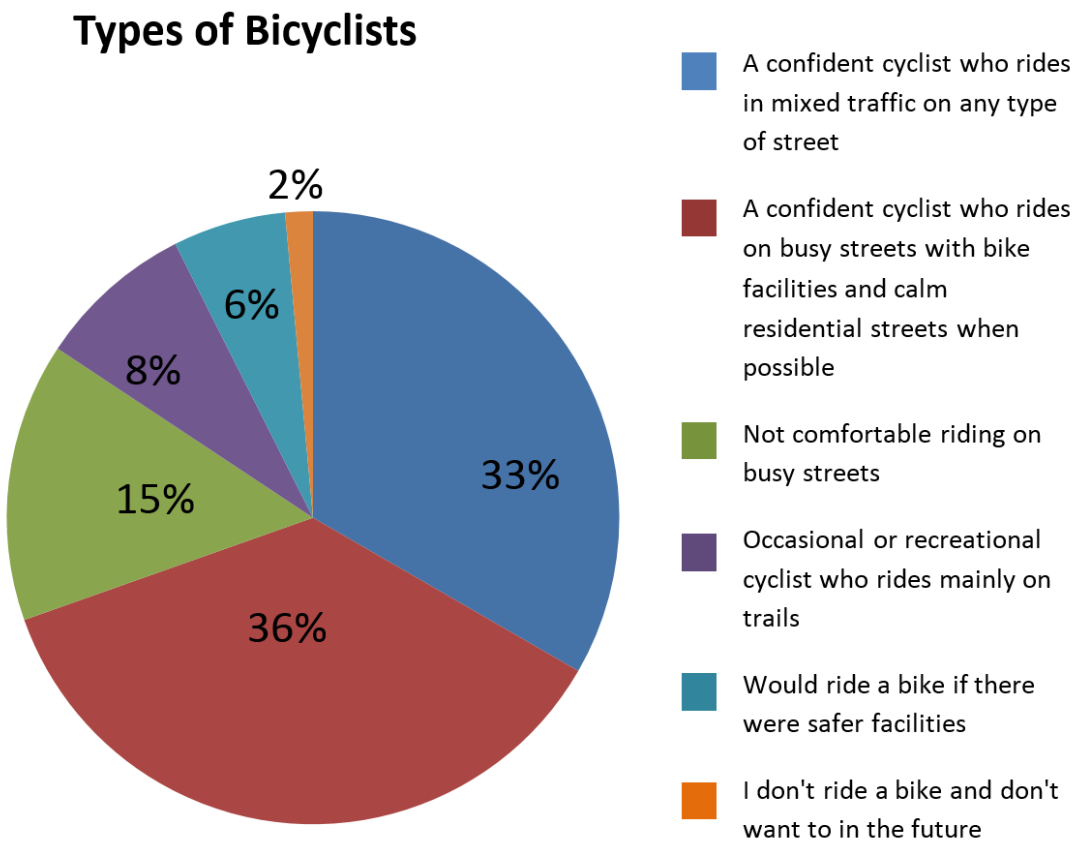
An online survey was employed to solicit further information from the public regarding bicycling in Bellingham. The survey was comprised of 30 questions and solicited 832 responses over a two month period (April-May 2013).

All respondents were asked to provide demographic information. Most respondents were between the ages of 25-64 (84.3%, 701). There were a balanced number of responses from females (50.8%, 413) and males (49.2%, 410). Geographically, the respondents were well dispersed across (as well as outside of) the City. For complete survey results, see Appendix A.

Key Findings

- While 33% (274) of respondents indicated that they were confident cyclists and would ride in mixed traffic, 51% (419) of respondents stated that they prefer calm residential streets over busier streets, or do not feel comfortable riding on busy streets.

Figure 1.1: Survey responses to the question regarding how survey participants would describe themselves as bicyclists.



- 6% (49) responded that they would bicycle if safer facilities existed.
- The top preferences for types of bicycle facilities were:
    - Designated striped bicycle lanes
    - Neighborhood streets with minimal traffic and slow speeds
    - Off-street, multiuse trails
- The following street or trail improvements were identified as being most likely to encourage respondents to bicycle more often:
    - Bike lanes on busy streets
    - On-street facilities that are separated from traffic
    - Improved accommodations for bicyclists at intersections

- The following support facilities were identified as being most likely to encourage respondents to bicycle more often:
    - Increased maintenance of roads, trails and paths
    - More on-road bike signage
    - Better bicycle parking/storage
- 11.6% (92) of respondents stated that they never or very rarely wear a helmet.
- 29.6% (234) reported having been involved in a crash while bicycling in Bellingham. Of those crashes, 43.8% (105) were reported to involve a motor vehicle.

Interactive Online Map

Using an interactive online map the public was invited to provide location-specific comments on informal connections, desirable routes, streets of concern, bikeway gaps, maintenance issues, and challenging crossings of major roadways. This approach helped draw participation from all areas of Bellingham. The mapping exercise was advertised through the City's website, blogs, newspaper articles, email list serves, and bicycle advocacy groups. The online map link was also promoted at libraries and other locations for individuals without internet access at home.

Over a two-month period (April-May 2013), 388 spot comments and 246 linear route comments were identified by the public. Information collected from the interactive map was used to develop a study network for field evaluation (see Study Network map, Chapter 3).

Focus Groups

Focus group sessions were conducted to develop a deeper understanding of bicycling needs and concerns within the Bellingham community. The project team worked with City staff to identify key community members and groups to interview. A summary of each focus group meeting is provided below.

Bellingham Parks and Recreation Department

The Parks Department expressed the need for a unified system of signage for both on- and off-road bike routes regardless of jurisdiction. "Use bell or voice when passing," "share the trail," and wayfinding signage were recommended to decrease bicycle-pedestrian conflicts. The Department stressed the need for quality connections between on-street facilities and off-road trails which may require the paving of some trail connections. Finally, the group brought attention to the need for a high quality, on-street connection along the waterfront for bicyclists, since the Whatcom Waterway Trail is expected to have heavy pedestrian use and may not fully connect through the site.

Western Washington University

Western Washington University (WWU) worked with the project team to identify key ingress/egress points to WWU, including 21st Street, 25th Street (to Arboretum then through Fairhaven College), Sehome Trail to East College Way, and Indian Street. Of particular concern was High Street, which is primarily a transit mall (no cars). While bicycles are allowed, there are conflicts due to bicyclists riding downhill at high speeds, particularly at the intersection of High and Oak streets. There was tentative interest in improving the bicycle route on the 21st Street extension and continuing it along the backside of Carver Gym to connect to High Street. Members of the Focus Group stated a preference for the use of Quick Response (QR) codes to provide route information on directory signs and suggested the practice be further considered for implementation by the City.

Bellingham Police Department

The Bellingham Police Department expressed concerns about prevailing bicyclist and motorist attitudes and behaviors. For bicyclists, this included wrong-way riding, sidewalk riding in downtown, and running stop signs and red lights. For motorists, concerns included failing to yield to bicyclists, inattention, speeding and unsafe passing. The Department suggested that the Plan include recommendations for education campaigns and "emphasis patrols" that target specific unsafe behaviors on the part of bicyclists and motorists.

Bellingham Fire Department

The Fire Department agreed that the implementation of traffic calming devices that fire trucks can drive over (i.e. traffic circle aprons) are acceptable as long they do not restrict access or divert traffic to other city streets. While the Department does not have designated fire routes, it does use arterial streets as much as possible and residential streets for local access.

The Opportunity Council

Homeless housing case managers noted that transportation is an issue for many clients and having a bicycle would enhance mobility and make it easier to access employment. Managers expressed concern that there is a lack of knowledge about safe riding skills and rules of the road, and that it is difficult for clients to maintain and secure bicycles. The group advocated that the Plan recommend extra resources for low-income residents to acquire bicycles, lights, and locks, and access low-cost bicycle repair and on-site bicycle safety classes.

Opportunity Council clients would like to see more bike lanes and trails, bicycle wayfinding signs, and additional Bellingham Police Department bicycle patrol officers. They recommend additional resources for low-income residents to purchase and maintain bikes and equipment, in addition to education about rules of the road for bicyclists and motorists.

Sterling Meadows Affordable Housing

Parents in this session indicated that they do not feel safe letting their children ride their bicycles due to children's lack of awareness of safe riding skills, high volumes of vehicular traffic, and a lack of bicycle facilities on key streets. They also noted that many children do not wear bicycle helmets. Several parents expressed the desire for more neighborhood parks where children could ride their bikes.

Washington State Department of Transportation (WSDOT)

Short and long term strategies to improve bicycle safety at I-5 crossings were identified and discussed with WSDOT. The Washington State Bicycle Facilities and Pedestrian Walkways Plan provide overall guidance for WSDOT participation in the development of local bicycle facilities. In the short term, WSDOT is open to improving wayfinding and regulatory signage, street sweeping, replacement of sidewalks and curb ramps, and striping. In the long term, the WSDOT Fairhaven to Slater I-5 Master Plan provides a broader vision for crossing improvements. A full description of recommended I-5 crossing improvements is in Chapter 3, pages 22-26.

Parent Teacher Association (PTA) and Classroom Surveys

PTA members were surveyed to gain an understanding of parent concerns and issues related to children riding bicycles. Students were surveyed about where they ride, what would make it safer/easier for them to ride, and what might help their parents feel more comfortable letting them ride bikes. Parents were concerned about children riding on streets with high traffic volumes and speeds, crossing busy streets, and not having an adult to ride with them. They would feel more comfortable if there were

more roadways with bicycle facilities, safer intersection crossings, low-volume/low-speed streets to ride on, and bicycle safety education classes in school. Students reported that they rode to school, friends' houses, the grocery store, and parks. They said their parents were most concerned about them riding alone, outside their neighborhood, and on busy streets. Students felt it would be safer and easier to ride if there were more routes on neighborhood streets, more trails and sidewalks, safer crossings, and bicycle racks at school.

Review of Background Documents

Bellingham is a community with a rich history of planning and significant public involvement. This history has established a vital starting point for the Plan. The City has adopted several planning documents that address multimodal transportation, infrastructure, and land use. Following is a brief summary of each of these relevant documents that highlights the goals, objectives, policies, development regulations and guidelines that inform this Plan.

While each document reviewed provides a different focus, all cite bicycling as an integral part of the future of the City. These planning documents emphasize the importance of increased bicycle use for improving the health, economic vitality, sustainability, and quality of life in Bellingham.

Bellingham Comprehensive Plan

The Bellingham Comprehensive Plan is a 20-year guide for how the City will accommodate projected population growth and development. The first Comprehensive Plan was adopted in 1995 after Washington State adopted the Growth Management Act (1990). The current version was adopted in 2006 and will be updated by 2016. While the Comprehensive Plan contains a number of elements, three are particularly relevant to the Bicycle Master Plan: Chapter 2 - Land Use, Chapter 3 - Transportation, and Chapter 7 - Parks, Recreation, and Open Space.

Chapter 2 - Land Use

The Land Use Chapter of the Comprehensive Plan establishes land use goals and policies, many of which relate to transportation. Included are the following strategies to help achieve the City's objective of connecting land uses with an efficient bicycle network:

- Encourage "infill" land use inside the City limits to prevent outward urban sprawl.
- Promote higher density, mixed-use "Urban Villages" where transportation infrastructure is already in place.
- Encourage the use of alternative modes of transportation.
- Maintain and extend a coordinated system of open space, parks and trails, and neighborhood parks within a short bicycle ride.
- Create street design standards that promote narrow, tree-lined streets with sidewalks to make walking, bicycling, and transit use appealing.

- Increase mobility by providing convenient bicycle routes to and from the city center.
- Where possible, establish bikeways and appropriate buffers between urban centers and adjacent neighborhoods.
- Encourage city center employees to use bicycles and other forms of alternative transportation that free-up parking spaces for customer parking.

Chapter 3 - Transportation

The Transportation Element of the Comprehensive Plan is the guiding transportation policy document for the City's transportation priorities, projects, and multimodal improvement requirements. It incorporates goals and polices that support the creation of a safe, well-connected, and convenient bicycle network throughout Bellingham. Included are the following strategies to help achieve the City's objective of developing bicycle infrastructure, facilities, and programs that will reduce automobile dependence while also accommodating future growth:

- Set target goals to increase the mode share of pedestrian, bicycle, and transit trips.
- Encourage public education and funding for bicycle safety enforcement.
- Encourage employers to provide incentives for their employees to use transit and non-motorized transportation.
- All new, reconstructed, or retrofitted arterial streets should provide walking and bicycling facilities.
- Develop bicycle and pedestrian facilities within urban growth areas.
- Provide safe, convenient, and protected bicycle parking at activity centers.
- Provide convenient auto and bicycle access to park-and-ride facilities on regional routes where warranted and cost effective.
- Provide development incentives when amenities for transit users, bicyclists and pedestrians are included and being implemented.
- Integrate public transit with other modes of transportation including auto, bicycle, and pedestrian travel.

Chapter 7 - Parks, Recreation, and Open Spaces

The Parks, Recreation, and Open Spaces Chapter includes goals, policies, and strategies that support the City's intent of providing a connected multimodal network of trails, paths, and other recreation facilities.

- Develop bicycle trails and paths. While not always appropriate, multiuse trails are preferred.
- Develop and improve trails that minimize conflicts between the various activities.
- Connect community members to greenways and trails: link residential neighborhoods to

community facilities, expand trail systems into growing neighborhoods, and promote links to neighboring communities.

- Expand multimodal transportation options: connect trails with transit stops, bike routes, and sidewalks to create a comprehensive network of non-motorized transportation throughout Bellingham.

- Provide trail amenities (e.g., bike racks, benches, and signage).

Urban Village Plans

Urban village planning furthers Bellingham's Comprehensive Plan goals of accommodating growth primarily in compact, mixed-use "urban centers" or "villages" that promote walking and biking. The current Urban Village Subarea Plans (City Center, Fairhaven, Fountain District, Old Town, Samish Way, and Waterfront District) include policy language and identify area-specific improvements to encourage and facilitate bicycling. The plans recommend expanding and enhancing bicycle infrastructure, improving safety and access to services, providing bicycle parking facilities, and installing wayfinding signage.

Bellingham Pedestrian Master Plan

The 2012 Bellingham Pedestrian Master Plan (PMP) provides recommendations to supplement and help achieve the Comprehensive Plan's vision of a pedestrian friendly community. The PMP seeks to develop 77 miles of sidewalks, 58 improved crossings, and an assortment of City programs to encourage and enhance Bellingham's pedestrian culture over the next 20 years. While the PMP was developed separately, a number of its policies help inform this Plan:

- Promote a diverse transportation system that provides equitable mobility and complete connectivity for all modes.

- Continue and expand Safe Routes to School programing, such as assemblies and in-classroom safety education, to all schools in the Bellingham School District.

- Increase the number of children walking and bicycling to school, and improve safety for children who walk and bicycle.

- Improve air and water quality and reduce energy consumption by encouraging non-motorized trips.

- Provide appropriate separation from motor vehicle traffic and design elements that reduce the speed differential between modes of transportation.

City Council Legacies and Strategic Commitments

In 2009, the Bellingham City Council adopted a set of 20 to 50 year goals or "Legacy" statements. The "Legacies" are supported by 6 to 20 year "Strategic Commitments", several of which relate to bicycling and other modes:

- Provide safe, well-connected mobility options for all users.

- Maintain and improve streets, trails, and other infrastructure.

- Limit sprawl.
- Increase infrastructure for bicycles, pedestrians, and non-single occupancy vehicle modes of transportation.
- Reduce dependence on single-occupancy vehicles.
- Ensure convenient access to, and availability of, parks and trails citywide.

Bellingham Transportation Commission Bicycle and Pedestrian Project List

When the City's Transportation Commission was formed in 2009, it inherited a project list from the former Bicycle and Pedestrian Advisory Committee. The list was developed from committee member and neighborhood association input to identify gaps in the bicycle and pedestrian network and recommend improvements. Transportation Commission members expanded the list and used it to make initial project recommendations to the Transportation Benefit District Board in 2011.

Greenstreets Committee

In August 2008, the Greenstreets Committee was formed to identify gaps in the City's existing street/trail network, make recommendations for a wayfinding and route signage system, and develop a list of recommended improvements to connect the bicycle and pedestrian street/trail network. The majority of projects identified are for improving or installing crosswalks and adding sidewalks. The Committee recommended wayfinding and route signage for four specific street/trail corridors as part of a citywide network. Greenstreets Committee project recommendations were incorporated in the Transportation Commission's Bicycle and Pedestrian Project List.

Transportation Improvement Program

Washington State law requires cities to submit a Transportation Improvement Program (TIP) annually that identifies costs and sources of funding for transportation improvement projects planned for the upcoming six-year period. Projects included on a TIP are primarily from the Transportation Element of the Comprehensive Plan and are eligible for state and federal grant funding. Bellingham's emphasis on constructing multimodal transportation facilities is reflected in the large number of bicycle and pedestrian improvement projects included in the TIP. In addition, bicycle and pedestrian projects have a dedicated funding source through 2020 via a 2010 voter approved Transportation Benefit District, which allocates specific funding for non-motorized improvements. Local funding allocated to TIP projects makes up an important part of the equation to establish the annual Transportation Impact Fee (TIF) base rate, as per BMC 19.06.

Bellingham Municipal Code

Chapter 11.48 of the City of Bellingham Municipal Code contains provisions for bicycles, including traffic regulations; riding on roadways and bicycle paths; bicycles on sidewalks; equipment; parking; and penalties for infractions. Section 11.48.070 subsection (a) states, "every person operating a bicycle upon a roadway shall ride as near to the right side of the roadway as practicable and may utilize the shoulder of the roadway or any specially designated bicycle lane if such exists." Subsection (c) states, "wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and

shall not use the roadway."[3]

Multimodal Transportation Concurrency Program

Bellingham's Multimodal Transportation Concurrency Program integrates transportation and land use to determine whether the transportation network is adequate to accommodate development allowed by zoning and regulations. The Program establishes citywide level of service standards and multimodal performance measures for sidewalks, bike lanes, transit, multiuse recreation trails, and automobiles. It is designed to aid in achieving the Comprehensive Plan's transportation and land use goals which include reducing reliance on the automobile and encouraging walking, biking and transit trips, while emphasizing compact, mixed-use Urban Villages. Transportation Goal 19 states "increase mode share of bicycle and pedestrian trips by providing a safe, well-connected and convenient bicycle and pedestrian circulation network throughout the City."

Washington State Bicycle Facilities and Pedestrian Walkways Plan

The Washington State Bicycle Facilities and Pedestrian Walkways Plan outlines policy recommendations and project implementation strategies to improve conditions for bicycling and walking statewide. The Plan identifies and prioritizes facility needs with a goal to increase bicycling and walking while reducing injuries and deaths. Funding opportunities for bicycle and pedestrian projects are also presented. The State reviewed local Transportation Improvement Program project lists to help identify needs. Bellingham's Bicycle Master Plan will be included in the appendix of the Washington State Plan.

WSDOT Safe and Complete Streets Policy

The State of Washington has adopted a Safe and Complete Streets Policy. The policy applies to a complete streets grant program that, if funded by the State legislature, may allocate transportation funding to support the goals of designing urban main streets for safe access for all users including bicyclists. The following are key goals of the policy:

- Promote healthy communities by encouraging walking, bicycling, and using public transportation.
- Improve safety by designing major arterials to include features such as wider sidewalks, dedicated bicycle facilities, medians and pedestrian streetscape features, including trees where appropriate.
- Eligible projects are those that retrofit a local street or state highway, make repairs to pedestrian, bicycle, transit facilities, or make streetscape improvements.

Bellingham Policy Approach to "Complete Streets"

Bellingham's multimodal transportation programs and policies have been implementing a "complete streets" approach to transportation planning since 2006. Information on how Bellingham's transportation policies meet the principles of the "Complete Streets" movement, are on the City's website.[4]

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[3] Note - The City should remove this provision as it is not in line with state law, conflicts with Section 11.48.140, and does not support the City's goal to develop a comprehensive bicycle network to accommodate all skill levels and trip purposes – see Chapter 2. Section 11.48.140 subsection (b) states, "a person may ride a bicycle on any other sidewalk or any roadway unless restricted or prohibited by traffic-control devices."

[4] http://www.cob.org/services/planning/transportation/long-range-planning.aspx

Public Works Development Guidelines and Improvement Standards

Section 4-13.30 of the Bellingham Public Works Development Guidelines and Improvements Standards contains provisions for development and improvement of bicycle facilities including standards for signs, signals, pavement markings, roadway facilities, bicycle lanes, and bicycle parking. It includes the following reference documents: the AASHTO Guide for the Development of Bicycle Facilities, the Manual on Uniform Traffic Control Devices (MUTCD), the Washington State Department of Transportation Design Manual and RCW 35.75.060.[5]

Section 4-2, Street Design Standards, and Section 4-3, Lane Widths, should be updated to reflect current national guidelines that facilitate the inclusion of bicycle facilities on a variety of roadway configurations. See Chapter 2, Policies and Actions, page 1.

WSDOT: Guidelines for City Streets as Part of State Highways

This document allocates maintenance responsibilities between the Washington State Department of Transportation and Washington cities for city streets that are located on state highways. Bicycle lane marking is the responsibility of the City of Bellingham, as are crosswalks, roadway striping, regulatory signs and signals, street sweeping, and sidewalks. The State is responsible for curb and gutter maintenance as well as most bridges and underpasses.

For interchanges such as arterials over and under I-5, the City and State have agreements in place for the maintenance of pedestrian and bicycle facilities that may be included in the interchange.

WSDOT Design Manual, Chapter 1520: Roadway Bicycle Facilities

The WSDOT Design Manual outlines design guidance for bicycle facilities on state highways. For local roadways, jurisdictions are to use the latest edition of the AASHTO Guide for the Development of Bicycle Facilities.

General Observations Regarding Background Documents

- The Transportation Element of the Bellingham Comprehensive Plan includes a list of future transportation projects that are incorporated into the recommended bicycle network.
- The goals, objectives, and policies in the plans described above inform Plan recommendations.
- Notable considerations in adopted plans, and incorporated into this Plan, include: bicycle comfort and safety, increased connectivity, recommendations for on and off-road facilities, acknowledgment of the importance of education and encouragement programs, promotion of bicycling downtown and in urban villages, and a commitment to multimodal transportation.
- As evidenced by public input and participation, the survey, and map exercises, there is significant community support for action to increase the comfort, convenience, and safety of bicycling in Bellingham.
- Plans call for, but do not define, a uniform guide for a wayfinding or signage route system.

[5] Note: These references and standards should be updated to reflect the most current guidance available.

- The City's Parks, Recreation and Open Space Plan proposes new multiuse trails, adding to the already robust citywide trail network that provides off-street options for bicyclists.

- Missing is a carefully considered strategy for prioritizing improvements to the bicycle network.

- There is a need to develop new lane width guidelines to provide more flexibility in accommodating bicycle facilities on arterial streets.

- Current plans call for on-street bicycle facilities but often stop short of specific treatment recommendations.

Existing Facilities

Bellingham has taken significant steps to increase the comfort and safety of bicycling. It is one of only 68 American communities to receive silver level status or higher in the League of American Bicyclists' Bicycle Friendly Communities program. There is strong support for bicycling within the City and a variety of programs have been developed to encourage further use (see Chapter 5 for descriptions of existing and recommended programs). Bicycle counts (Appendix H) indicate a significant presence of bicyclists throughout the City, with particularly high utilization of facilities in the City Center, the Fairhaven area and at Western Washington University. The City has an established off-street network and several robust bicycle facilities, particularly west of Interstate 5.

Bellingham currently has nearly 40 miles of on-street bicycle infrastructure, the majority of which are bike lanes. It is worth noting that many of Bellingham's neighborhood streets already serve as low stress connections and are good candidates for bicycle boulevards (assuming improvements are made at arterial street crossings). The table below depicts mileages of existing bicycle infrastructure.

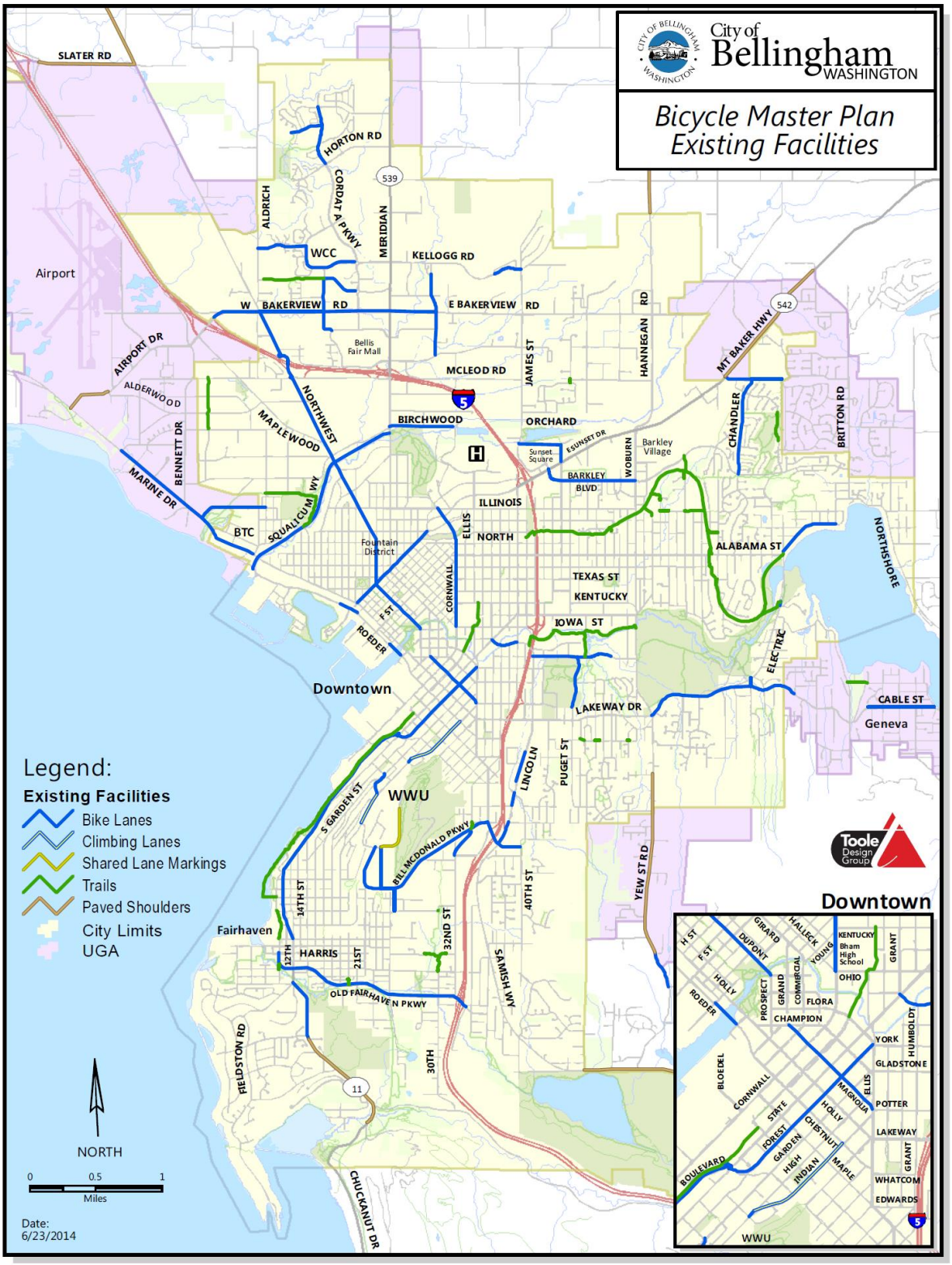
Figure 1.2 Existing On-Street Bicycle Facilities

2013 Bellingham Network Mileage		
	Miles	**Percent of On-Street Network**
Facility Type		
Bike Boulevards	0	0%
Bike Lanes	31.9	82%
Buffered Bike Lanes	0	0%
Climbing Lanes	0.7	2%
Cycle Tracks	0	0%
Paved Shoulders	5.7	15%
Shared Lane Markings	0.4	1%
Total	38.7	100%

Trail System

Bellingham has a comprehensive trail system that has been developed over the past 35 years. While off-street facilities are generally not covered in this Plan (they are part of the City's Parks, Recreation and Open Space Plan), a few of the shorter trails are included in this Plan where they provide important connections around barriers and between on-street facilities. Longer trail segments such as the Railroad Trail have been incorporated as an alternative to on-street facilities, or where there is a lack of on-street bicycle facilities.

Figure 1.3: Existing On-Street and Trails Map



Conclusion

Bellingham is in an excellent position to significantly improve the quality of bicycling for its residents and visitors. Past planning efforts have laid a solid foundation of support for the Bicycle Master Plan, as well as a policy framework from which to build. Through this Plan, the City has established a vision and goals for bicycling that will guide implementation of a wide variety of projects and programs that will support and encourage future cyclists of all ages and abilities.

Chapter 2

Chapter 2: Policies and Actions

The Bicycle Master Plan provides a road map for making bicycling in Bellingham a viable transportation option by providing specific guidance on institutionalizing bicycling in City plans, policies and programs. The following policies and actions are intended to support the Plan goals, which in turn, support the Plan vision. The Plan will be incorporated into the revised Comprehensive Plan as a mode-specific plan and will be the primary basis for citywide bicycle facility planning and implementation.

Plan policies and actions were developed through a review of existing City policies, an assessment of what steps are needed to develop a bicycle network for all ages and abilities, and public input.

Vision Statement:

Bicyclists of all ages and abilities have access to a safe, well-connected network linking all areas of Bellingham.

Goals: These are targets the community wants to work toward over time to support the vision. Each goal has specific policies and actions that are necessary for achieving the goal.

Policies: These are initiatives that when accomplished will lead to the realization of the goals and vision statement.

Actions: These are specific activities to implement Plan policies.

Policies and Actions

Goal 1: Safety

Improve safety of bicyclists by promoting safe bicycling, driving, and walking behaviors and building appropriate, well-designed facilities.

Policy 1.1: Use best practices when designing bicycle facilities

Action 1.1.1: Revise motor vehicle lane width guidelines to allow more flexibility in roadway design to accommodate bicycle facilities.

Action 1.1.2: Update the Public Works Development Guidelines and Improvement Standards to reflect guidance from the AASHTO Guide for the Development of Bicycle Facilities, interim guidance from the Federal Highway Administration (FHWA), NACTO Urban Bikeway Design Guide, and the design recommendations in Chapter 4 of this Plan.

Policy 1.2: Encourage motorists and bicyclists to follow traffic laws that promote safety

Action 1.2.1: Coordinate efforts between Public Works, Planning, and Police Departments to ensure consistent messaging and education for bicyclists and motorists when implementing new facilities.

Action 1.2.2: Work with the Bellingham Police Department to fund and conduct emphasis patrols that target specific unsafe bicycling and driving behaviors such as riding without lights and parking in bike lanes.

Action 1.2.3: Increase helmet use by promoting low cost bicycle helmet distribution and bicycle safety messaging.

Action 1.2.4: Enforce traffic laws equally, targeting behaviors of both cyclists and motorists that are known to cause crashes.

Action 1.2.5: Remove Section 11.48.140 of the Bellingham Municipal Code which requires bicyclists to ride on a sidepath when provided adjacent to a roadway.

Policy 1.3: Improve the environment for bicycling through high-quality roadway design and maintenance

Action 1.3.1: Evaluate roadway surface and make maintenance improvements to ensure potential hazards are addressed before bicycle facilities are installed.

Action 1.3.2: Install high-quality bicycle facilities that provide greater separation from motor vehicle traffic whenever feasible (e.g. 6 foot bike lanes, buffered bike lanes, cycle tracks).

Action 1.3.3: Maintain the City's street sweeping program to ensure that all shoulders, bicycle routes, and designated bike lanes are cleared of sand, glass, and debris at least once a month.

Action 1.3.4: Continue to monitor and address citizen maintenance requests (e.g. pothole repairs, debris clean-up, signal detection adjustments) to identify recurring problems and set maintenance priorities.

Action 1.3.5: Accommodate bicyclists through construction zones by providing appropriate warning and detour signage, and temporary facilities where needed for improved safety.

Goal 2: Connectivity

Complete a connected network of bikeways linking and providing access to all neighborhoods and key destinations.

Policy 2.1: Connect the city's neighborhoods and activity centers with high-quality bicycle facilities

Action 2.1.1: All new, reconstructed, or retrofitted arterial streets should provide walking and bicycling facilities.

Action 2.1.2: Plan and prioritize bicycle and pedestrian facilities within urban growth areas so that when annexation occurs, the City can address non-motorized transportation deficiencies.

Action 2.1.3: Develop a wayfinding system to reinforce routes between key destinations.

Policy 2.2: Promote bicycle access to all schools

Action 2.2.1: Seek Safe Routes to School (SRTS) funding to improve bicycle infrastructure around all schools; and to develop school safety and encouragement programs.

Policy 2.3: Improve routes across major barriers

Action 2.3.1 Work with WSDOT to fund, implement and maintain short- and long-term recommendations for improving I-5 crossings.

Policy 2.4: Provide route options that are both low stress and direct for bicyclists

Action 2.4.1: Enhance bicyclist comfort and safety at intersections where low-stress bicycle routes cross arterial streets.

Policy 2.5: Facilitate bicycling into downtown Bellingham

Action 2.5.1: Improve bicycle routes into downtown Bellingham.

Policy 2.6: Connect the City's trail network with on-street routes

Action 2.6.1: Improve key on-street bike facility connections that improve access to the trail network.

Goal 3: Equity

Provide bicycling access for all through equity in public engagement, service delivery and capital investment.

Policy 3.1: Provide access to bicycling infrastructure for all city residents

Action 3.1.1: Through a balanced prioritization process, invest in bicycle infrastructure in all Bellingham neighborhoods.

Policy 3.2: Provide opportunities for Bellingham residents regardless of age, gender, ethnicity or income to engage in bicycle related activities

Action 3.2.1: When communicating about bicycle related programs or projects, develop outreach materials that are accessible through various media to a wide range of constituents in multiple languages.

Goal 4: Livability

Build a vibrant and healthy community by creating a welcoming environment for bicycle riding.

Policy 4.1: Support encouragement programs for bicyclists of all abilities

Action 4.1.1 Partner with everybodyBIKE, local bicycle shops and bicycle-related organizations to disseminate education and encouragement information, and sponsor education and encouragement events.

Action 4.1.2: Partner with local organizations to facilitate access to free or low-cost bicycle repair equipment.

Action 4.1.3: Promote everybodyBIKE's mentor program to help interested bicycle commuters.

Action 4.1.4: Support bike repair, education, and "earn-a-bike“ programs for youth.

Action 4.1.5: Work with WWU, Whatcom Community College (WCC) and Bellingham Technical College (BTC) to provide incoming students with bicycle related information, maps, applicable laws etc. to promote and encourage safe student bicycling.

Action 4.1.6: Encourage WWU to become a Bicycle Friendly University through the League of American Bicyclists’ program.

Action 4.1.7: Encourage more Bellingham businesses to become "Bicycle Friendly Businesses" through the League of American Bicyclists’ program.

Figure 1.1: The League of American Bicyclists awards businesses bronze through platinum designation.

Policy 4.2: Increase participation in bicycling events

Action 4.2.1: Lend City support to community organizations involved in promoting bicycling. Support may include providing a venue for events, recruiting volunteers and posting events on the City's Public Meetings and Key Events calendar.

Action 4.2.2: Train event sponsors on how to obtain necessary permits for special events.

Goal 5: Public and Environmental Health

Develop a bicycle network that enables active, healthy lifestyles and sustains a healthy environment.

Policy 5.1: Improve access to active transportation opportunities

Action 5.1.1: Continue to include bicycle and pedestrian improvement recommendations when developing capital improvement program project lists.

Policy 5.2: Meet the City's goals to improve air quality per the City's Climate Action Plan

Action 5.2.1: Track progress toward the City's mode shift goals in the Climate Action Plan.

Policy 5.3: Improve the health of Bellingham residents

Action 5.3.1: Work with the Whatcom County Health Department to track progress toward objectives related to walking and bicycling in the Whatcom County Community Health Improvement Plan.

Action 5.3.2: Accommodate bicyclists primarily on lower-volume, lower-emission streets.

Goal 6: Choice

Develop infrastructure that creates viable transportation choices, and accommodates multimodal trips.

Policy 6.1: Make combined bicycle and transit trips an easy option

Action 6.1.1: Provide convenient auto and bicycle access to park-and-ride facilities on regional routes.

Action 6.1.2 Continue to provide development incentives when amenities for transit users, bicyclists and pedestrians are included in projects.

Policy 6.2: Invest in high-quality bicycle parking

Action 6.2.1: Using the Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guide as a model, develop and adopt protocols and best practices for prioritizing and installing bicycle parking throughout the City, including transit stops and stations.

Action 6.2.2: Provide safe, convenient and protected bicycle parking at activity centers such as commercial areas, institutions, parking garages, park-and-ride facilities and transit terminals.

Action 6.2.3 Develop a funding mechanism for the purchase and installation of bicycle parking. Solicit requests from local businesses and organizations for the installation of bicycle parking.

Policy 6.3: Provide bicycle access to transit stations

Action 6.3.1: Work with Whatcom Transit Authority to identify barriers to bicycling around transit stations and apply for joint funding to improve bicycle access to and at stations.

Action 6.3.2: Work with WWU to provide bicycle access to and through campus.

Goal 7: Education

Provide education on the rights and responsibilities of the users of all transportation modes.

Policy 7.1: Expand education campaigns to promote safe bicycling and driving, and respect for all roadway users

Action 7.1.1: Expand education campaigns through BTV10, WWU, everybodyBIKE, the City website and Facebook to promote safe bicycling and driving and respect for all roadway users.

Action 7.1.2: Promote everybodyBIKE bicycle education programs. Encourage class offerings for vulnerable riders and those new to bicycling (e.g. classes for different age groups at the Opportunity Council).

Action 7.1.3: Work with WTA to provide bike maps at bus stops and transit stations.

Action 7.1.4: Work with local driver education programs to encourage awareness of bicyclists' rights to use the roadway, and laws pertaining to bicyclists on the roadway.

Action 7.1.5: Address bicycle and pedestrian conflicts and promote mutual respect among users through signage (i.e. “Use bell or voice when passing”, “share the trail”).

Policy 7.2: Support efforts to obtain funding for bicycle education and enforcement programs

Action 7.2.1: Seek funding to continue the "See and Be Seen" safety campaign, a combined effort of the City, WWU and everybodyBIKE.

Action 7.2.2: Apply for Safe Routes to School grants from the State of Washington.

Action 7.2.3: Support local non-profits in developing and implementing bicycle education programs.

Policy 7.3: Encourage the Bellingham School District to incorporate bicycle safety training into the physical education curriculum

Action 7.3.1: Continue and expand SR2S programming, such as assemblies, bicycle rodeos and in-classroom safety education, to all schools in the Bellingham School District.

Action 7.3.2: Encourage the Bellingham School District to partner with the City in funding Safe Route to School sidewalk and bicycle facility improvements.

Goal 8: Transportation Mode Shift

Increase the number and percent of bicycle trips citywide.

Policy 8.1: Promote end-of-trip facilities for bicyclists

Action 8.1.1 Require short- and long-term bicycle parking for new and significantly renovated office or commercial development.

Action 8.1.2 Encourage and incentivize provision of end-of-trip facilities such as shower, changing room and storage locker facilities for new and significantly renovated office or commercial development.

Policy 8.2: Create a set of benchmarks that monitor bicycle use over time.

Action 8.2.1: Increase the number of female cyclists.
Baseline: Percentage female riders during the 2013 bicycle count

Action 8.2.2: Increase the number of children walking and bicycling to school, and improve safety for children who walk and bicycle.
Baseline: 2013 Bike to Work & School Day tallies

Action 8.2.3: Increase the number of Bellingham commuters bicycling to work.
Baseline: 2012 American Community Survey data, U.S. Census Bureau

Goal 9: Economy

Enhance economic vibrancy by creating a bicycle-friendly community that is an attractive place to live and work.

Policy 9.1: Engage local businesses and organizations in promoting bicycling in advertising and promotions

Action 9.1.1: Work with area businesses, WWU, and local colleges to engage them in the League of American Bicyclists' Bicycle Friendly Community programs.

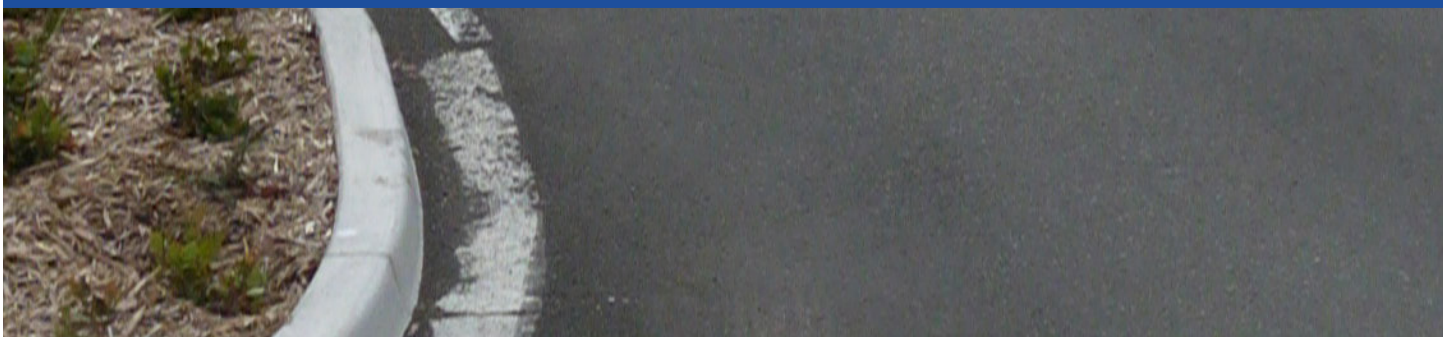
Policy 9.2: Encourage employers to provide incentives for their employees to use transit and non-motorized transportation

Action 9.2.1: Continue to offer developers and employers in mixed use Urban Villages trip reduction incentives available through Bellingham's Urban Village Transportation Impact Fee Reduction Program (BMC 19.06.040).

Action 9.2.2: Promote employer programs (e.g. Smart Trips Program) that encourage bicycling through strategies such as giveaways, special events, employee recognition, and incentives programs.

Action 9.2.3 Encourage employers to provide shower and locker facilities, indoor bicycle parking, and bicycles for employees to use for work trips and errands.

Chapter 3



Chapter 3: Bicycle Network Recommendations

Chapter 3 presents the recommended network of on-street bicycle facilities that will help Bellingham meet the goals of this Plan. It describes the methodology used to develop the proposed network and suggests facility types for each street segment in the network. This chapter also provides a prioritized list of recommendations to facilitate strategic and timely implementation of the Plan.

Network Opportunities and Constraints

The City of Bellingham street system presents both opportunities and constraints for developing an on-street, city-wide bicycle network that safely connects all major destinations for bicyclists of all skill levels. In areas of the City that have a traditional street grid pattern, such as Downtown, Fairhaven, and neighborhoods west of Interstate 5 (I-5), there are strong opportunities on local and arterial streets to develop a system of well-connected bicycle facilities. In newer sections of the City, particularly to the east and north of I-5, there are more dead-end streets and larger blocks, making it harder to develop an extensive network of bicycle facilities in these areas. Many of these areas with limited connectivity were built under the current land use and local, State, and federal environmental regulations, which are much more restrictive than in the past and can make street and trail construction - and associated environmental impact mitigation - very expensive.

One of the most significant challenges for creating a connected bicycle network is I-5. There are currently eleven arterial streets that cross I-5 over a nine-mile stretch and many of these are intimidating to novice and intermediate bicyclists. There are also currently two bicycle and pedestrian-only bridges across I-5. A new grade-separated arterial street with on-street bicycle lanes and an adjacent off-street multiuse trail are both currently under design in the central portion of Bellingham. The interstate severely limits east/west and north/south bicycle travel options and isolates many destinations in the City. Addressing major barriers such as I-5 through improved connectivity is central to the goals and objectives of this Plan.

Another challenge is determining how to proceed with planning for bicycle facilities within the Urban Growth Area (UGA). In more developed areas where streets have been platted, on-street bicycle facilities that tie into the larger network can be identified and recommended. However, in less developed areas of the UGA, planning for bicycle facilities will need to be incorporated into the platting and design of new streets. Under modern land use and environmental regulations and mitigation requirements, street connectivity in the Bellingham UGA will be very challenging to accomplish due to the presence of significant environmental features, including streams, wetlands, steep slopes, and wildlife habitat.

Off-street facilities such as trails, side paths, and widened sidewalks, while not evaluated in this Plan, help to complete the on-street bicycle network by providing parallel routes or short, critical connections

where there is not an on-street option. For example, The Railroad Trail serves as an off-street alternative to help address the lack of on-street bicycle facilities on the north side of Alabama Hill. In cases where off-street facilities cross major arterials, additional improvements may be needed to help trail-users safely cross the street.

Network Development

The bicycle facility network was developed in three phases: 1) a study network was developed using existing plans and input from public and agency stakeholders; 2) a technical demand analysis was completed to identify key destinations, and; 3) a field review and calibration procedure was completed to refine the network. From the beginning, it was recognized that there was a need for a network that would accommodate both experienced and less experienced bicyclists. This emphasis is based on previous work completed in conjunction with the Transportation Element of the Comprehensive Plan, input received from the public, and guidance in the new 2012 AASHTO Guide for the Development of Bicycle Facilities (AASHTO Bike Guide).

The 2012 AASHTO Bike Guide discusses the different ways in which bicyclists can be classified, according to *skill level*, *comfort level*, *physical ability*, and *trip purpose*. It recommends *skill level* as one of the most important factors to consider when developing a bicycle network. The AASHTO Bike Guide categorizes bicyclists by *skill level* as "experienced and confident" and "casual and less confident." The majority of the population will fall into the latter category, including children, recreational riders and individuals who prefer off-street facilities or those on low-traffic streets. Table 3.1, taken from the AASHTO Bike Guide, summarizes the common characteristics of experienced versus casual bicyclists.

Table 3.1: Bicyclists of Different Skill Levels Use of On- and Off-Street Bicycle Facilities

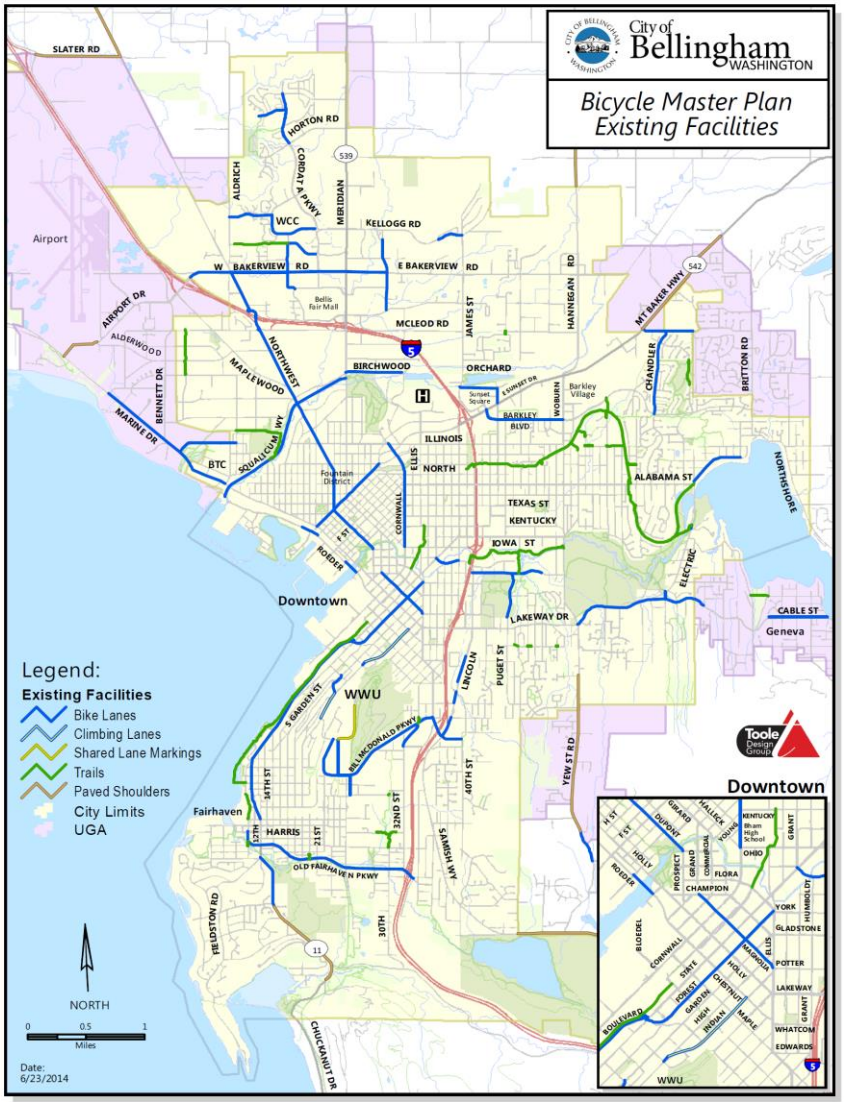
Experienced/Confident Riders	**Casual/Less Confident Riders**
Most are comfortable riding with vehicles on streets, and are able to negotiate streets like a motor vehicle, including using the full width of a narrow travel lane when appropriate and using left turn lanes.	Prefer shared use paths, bike boulevards, or bike lanes along low-volume, low-speed streets.
While comfortable on most streets, some prefer on-street bike lanes, paved shoulders or shared use paths when available.	May have difficulty gauging traffic and may be unfamiliar with rules of the road as they pertain to bicyclists; may walk bike across intersections.
Prefer a more direct route.	May use less direct route to avoid arterials with heavy traffic volume.
Avoid riding on sidewalks. Ride with the flow of traffic on streets.	If no on-street facility is available, may ride on sidewalks.
May ride at speeds up to 20 mph on flat ground, up to 45 mph on steep descents.	May ride at speeds around 8 to 12 mph.
May cycle longer distances.	Cycle shorter distances: 2 to 5 miles is a typical trip distance.

Another way to categorize bicyclists was developed by the Portland Department of Transportation. The following figure (3.2) illustrates categories of bicyclists and also estimates the percent of the total population who fall into each category. The "interested but concerned" group is estimated to represent 60 percent of the population and, because they have a desire to bicycle more if certain barriers were removed, they are often viewed as the target audience for bicycle improvements like those recommended in this Plan.

Figure 3.2: Four Types of Cyclists by Proportion of Population

Development of the Study Network

Figure 3.3: Bicycle Master Plan Existing Facilities

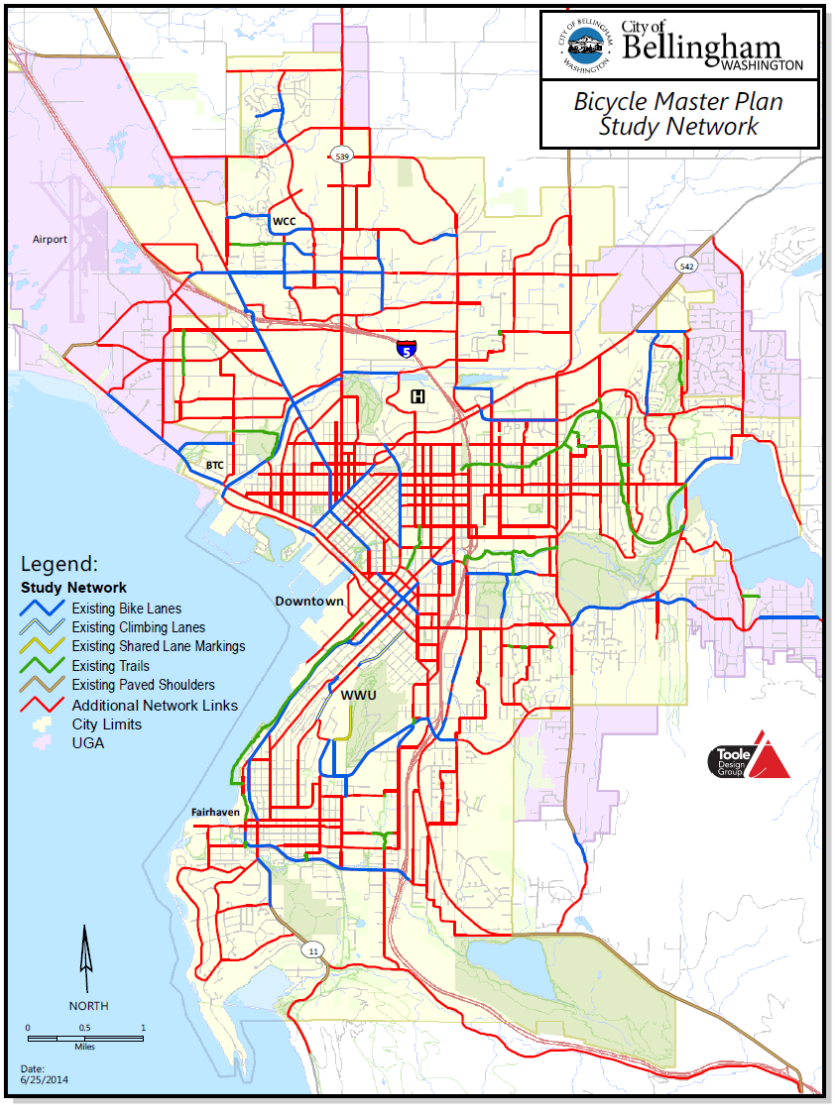


The study network served as the basis for subsequent field work and the development of a final recommended network. Network development followed a logical progression of data gathering, public input, analysis, evaluation, verification, adjustment, and final recommendations. The process included input from the public, the steering committee, staff, and consultants. The modeling effort made use of a hybrid approach using current cutting-edge GIS geo-processing techniques, supplemented with oversight and manual adjustment from staff and consultant experts. The map of the study network shown in Figure 3.4 was developed using the following sources:

- Existing bicycle facilities (shown in Figure 3.3)
- Planned bicycle facilities as identified in the Transportation Element of the Bellingham Comprehensive Plan
- Projects identified in the City's 2014-2019 6-Year Transportation Improvement Plan
- Projects identified on the Bellingham Transportation Commission project list
- Projects identified in the Greenstreets Committee report
- Recommendations received at the public open house, through the on-line survey and interactive map, and focus group discussions
- Recommendations received from the project Steering Committee
- Recommendations received from the Plan project team; Public Works, Planning and Community Development, and Parks and Recreation departments

Completion of Demand Analysis

Figure 3.4: Bicycle Master Plan Study Network

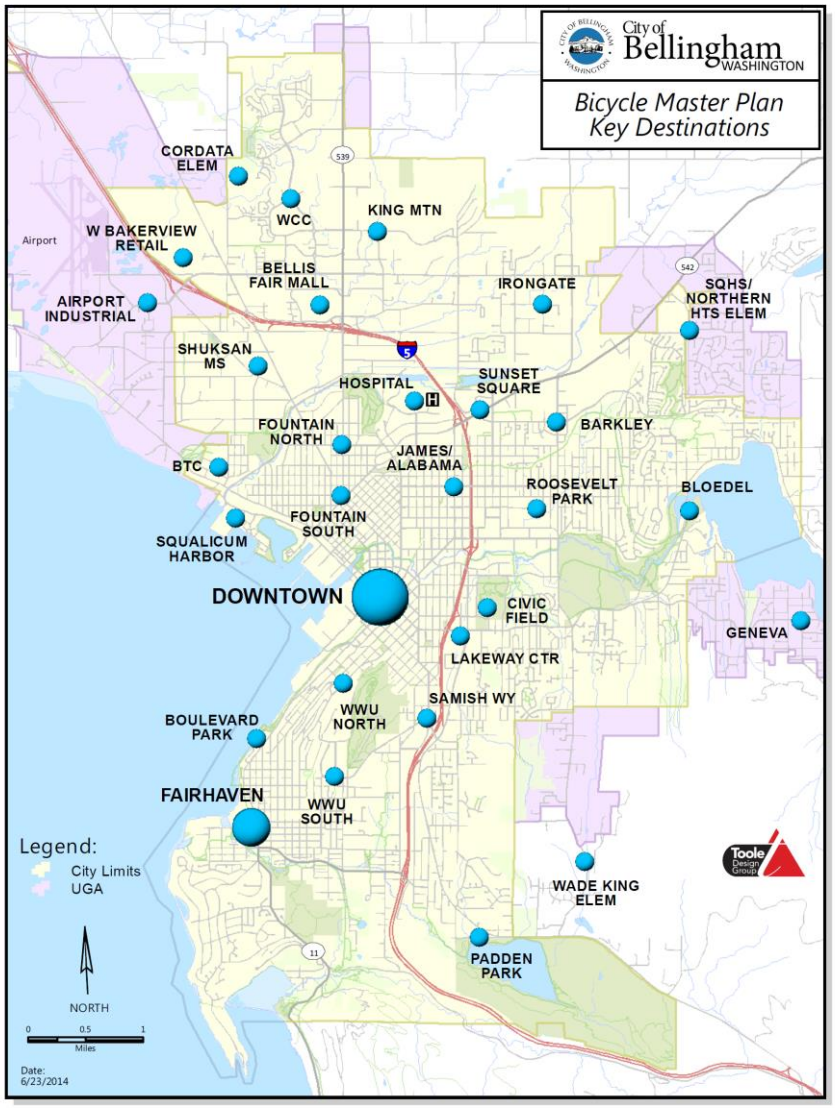


To evaluate the effectiveness of the network a demand analysis was conducted identifying key destinations across the city. The analysis made use of ViaCity[1], a proprietary GIS-based tool developed by Transpo Group, Inc. ViaCity uses traffic data along with parcel-based land use and demographic data to determine likely destinations for bicyclists. Destinations are typically areas with high concentrations of housing, jobs, or services. GIS data used in the ViaCity model included a population density layer created using the City's 2013 housing unit inventory with occupancy rates from the latest US Census Bureau data; an employment density layer derived from the City's address-based 2010 InfoUSA employment database; and a common destinations layer including all public K-12 and higher education schools, most private or alternative schools, grocery stores, public assistance providers, major parks and recreation facilities, government offices, health care providers, community centers, museums, libraries, theaters, churches, transportation centers, and other public institutions. Additional destinations identified by the public at the Open House, the online Interactive Map, and the online Survey were also included. The two density layers, the common destinations, and network traffic data were combined and evaluated to derive 30 key destinations for evaluating network connectivity. These destinations cover a range of locations like Downtown, the urban villages, St Joseph's Hospital, WWU, WCC, BTC, the larger K-12 schools, larger retail/shopping areas, and major employers. It is important to note that these destinations were selected based on a balance of relative

[1] http://www.viacity.info/

importance and spatial distribution. Some key destinations were not selected for the demand analysis due to their adjacency with other key destinations. The intensive nature of the data-processing required for network modeling necessitated a limited selection of locations and a broad distribution of destinations across the city rather than modeling trips to every destination of significance. Because of these factors the destinations depicted in the demand model should not be viewed in light of their value from a policy perspective, but rather as being spatially representative of locations spanning the entire network. If development of a ranked list of network destinations becomes a priority, then that effort could make use of the initial common destinations data, but should be conducted separately from the network demand analysis. The thirty destinations identified using the ViaCity tool were placed on the draft network map (depicted as blue circles in Figure 3.5 below). The study network was then adjusted to ensure it served all of the identified destinations.

Figure 3.5: Bicycle Master Plan Key Destinations



The final step in the demand analysis involved running the ViaCity model to establish baseline connectivity values for each portion of the study network. These values, expressed as a route directness index (RDI), quantify the relative value of each portion of the network when modeling cyclist trips between each of the thirty identified destinations. Before the model could be run, individual network segments were grouped into logical projects. These groupings fell into two general classes. Citywide projects were longer corridors spanning multiple neighborhoods and serving a broader connectivity function. Neighborhood projects were shorter corridors typically within a neighborhood and serving local connectivity, or feeding into citywide projects.

The ViaCity model was designed so that the network function of each project was weighted with factors relevant to bicycle travel. These factors included a vehicle presence score comprised of each street's traffic volume and posted speed; a

multiplier for segments with moderate or steep slopes; and factors for existing facility types with priority weighting given to lower-stress facilities that keep cyclists separated from vehicle traffic. The practice of incorporating cycling stress level as a factor in bicycle network planning has emerged in recent years as a useful modeling tool. This technique, developed most notably by the Mineta Transportation Institute, is predicated on the assumption that "for a bicycling network to attract the widest possible segment of the population, its most fundamental attribute should be low-stress connectivity, that is providing routes between people's origins and destinations that do not require cyclists to use links that exceed their tolerance for traffic stress, and that do not involve an undue level of detour."[2] The resulting model operates on the logic that between any two destinations, routes of roughly equal linear distance can have different relative values based on their stress level for cyclists. Lower stress routes (lower vehicle presence, and flatter terrain) are effectively shortened, and higher stress routes (higher vehicle presence, and steeper terrain) are effectively lengthened. This initial baseline connectivity model run measured the study network under existing conditions.

Field Review and Network Refinement

The study network with the baseline connectivity scores was then reviewed, and evaluated by the BMP consultant, the Steering Committee, and City staff. The consultant team conducted a field review in order to address gaps in the study network, especially in areas with low street connectivity where there are fewer roads that have potential for bicycle improvements. Duplicative facilities were eliminated and others were added. The team also identified off-street trail segments that were needed to serve key destinations. Guiding these actions were the policy priorities set in place by the BMP Steering Committee. Two of the highest policy priorities were providing facilities that create safe, comfortable routes for the large segment of the population that is willing to try cycling, but reluctant to do so in areas with high vehicle traffic; and providing network elements that cross the Interstate 5 barrier.

The initial draft recommended network was then subjected to an iterative QA/QC calibration process where City staff and the BMP consultant examined each network segment and recommended facility types. The goal of this process was to ensure recommended facilities either fit the existing street profile, or that choices for lane re-channelization, lane or road diets, or parking removal were reasonable, achievable, and provided a benefit to the overall network. As a result, adjustments were made where appropriate, and a final recommended network was developed.

Recommended Network

The recommended network is a comprehensive, safety-focused, convenient, and comfortable network designed to accommodate both experienced and less experienced bicyclists while promoting bicycling as a practical form of transportation throughout the City. The recommended network includes 134 miles of on-street bicycle lanes, bicycle boulevards, shared lane markings, and a cycle track in addition to the 39

[2] Mineta Transportation Institute. Low-Stress Bicycling and Network Connectivity - MTI Report 11-19.

miles of existing on-street bicycle facilities for a total of 169 miles (see note in Table 3.6). The mileage for each type of facility is summarized in Table 3.6.

Table 3.6: Existing and Recommended Facility Types for the Full Bicycle Network

	Existing Network Miles	Percent	Total New Recommended Miles	Percent	Complete Network (Existing + New Recommended)	Percent
On-Street Facilities						
Bike Lanes	31.9*	82%	45.7*	34%	73.7*	44%
Buffered Bike Lanes	0	0%	4.0*	3%	4.0*	2%
Shared Lane Markings	0.4	1%	6.9	5%	7.3	4%
Climbing Lane	0.7	2%	7.9	6%	8.6	5%
Bicycle Boulevard	0	0%	52.1	39%	52.1	31%
Paved Shoulder	5.7	15%	0	0%	5.7	3%
Cycle Track	0	0%	0.8	<1%	0.8	<1%
Further Study	0	0%	9.4	7%	9.4	6%
Marked Route	0		7.8	6%	7.8	5%
TOTAL	**38.7**	**100%**	**134.6***	**100%**	**169.4***	**100%**

**Note: There are 3.9 miles of existing bike lanes on streets with curb-to-curb profiles able to accommodate buffered bike lanes. The mileage for these facilities is expressed in both the existing and recommended columns, but is only counted once in the complete network column.*

The recommended bicycle network is designed to connect all neighborhoods and to provide access to the key destinations identified by the Steering Committee, through public input and using the GIS-based ViaCity analysis. Consistent with the vision of the Plan to provide a well-connected network for bicyclists of all ages and abilities, the recommended network includes a variety of facility types. The lower-stress bicycle boulevards use local streets that are already conducive to casual, lower speed bicycling. Traffic calming, wayfinding and crossing improvements at intersections with arterial streets can help to create a more comfortable riding environment on bicycle boulevards.

At the same time, it is equally important to continue to develop facilities that appeal to more experienced bicyclists, for example by providing bike lanes on arterial streets. Arterial streets provide more direct routes, improving the connectivity of the overall network. They can provide a convenient connection between destinations for many types of bicyclists, including commuters, recreational and casual/occasional riders. Additionally, as bicycling continues to increase in Bellingham, a growing number of novice riders will gain enough confidence to feel comfortable riding in bike lanes on busy, arterial streets. Table 3.7 describes the different facility types recommended for the citywide bicycle network.

Table 3.7: Definitions of the bicycle facility types that make up the existing and recommended network

Facility Type	Definition
 Bike Lane	Marked space along a length of roadway designated for use by bicyclists
 Buffered Bike Lane	A bike lane with additional buffer space between the bike lane and the auto lane or parked cars, used on high-volume or high-speed roads, or roadways with high parking turnover.
 Shared Lane Marking	A pavement marking symbol that indicates appropriate bicycle positioning in a shared lane (typically on downhill or connector areas).
 Climbing Lane	On a sloped roadway: a bicycle lane on the up-hill side to provide space for slow climbing bicycles and shared lane marking on the downhill side.
 Bicycle Boulevard	A low-volume and low-speed street or series of streets that have been optimized for bicycle travel while discouraging or calming through automobile travel. Local access is maintained.
 Paved Shoulder	The portion of the roadway between the travel way and the edge of pavement, for accommodation of stopped vehicles, emergency use and often used by cyclists where paved.
 Cycle Track	A portion of a right-of-way which has been designated by pavement markings, curb, cross-hatched paint, planting strip or parked cars for the exclusive use of bicyclists. Cycle tracks are typically one-way (not always). Cycle tracks can be adjacent to the sidewalk.

Recommended Network Maps

The recommended network is shown in Figures 3.8 through 3.13. The incorporated areas within Bellingham have a yellow background, and the current Urban Growth Areas are shown with a lavender background. The maps show recommended facilities for each on-street section of the bicycle network. Twenty-one on-street network links and twenty-six intersections require further analysis before a specific facility type can be identified. They are identified on the maps as "further study needed" projects. Figure 3.8 shows the entire City and the subsequent five maps zoom in on the northeast, northwest, southeast and southwest quadrants of Bellingham, as well as downtown.

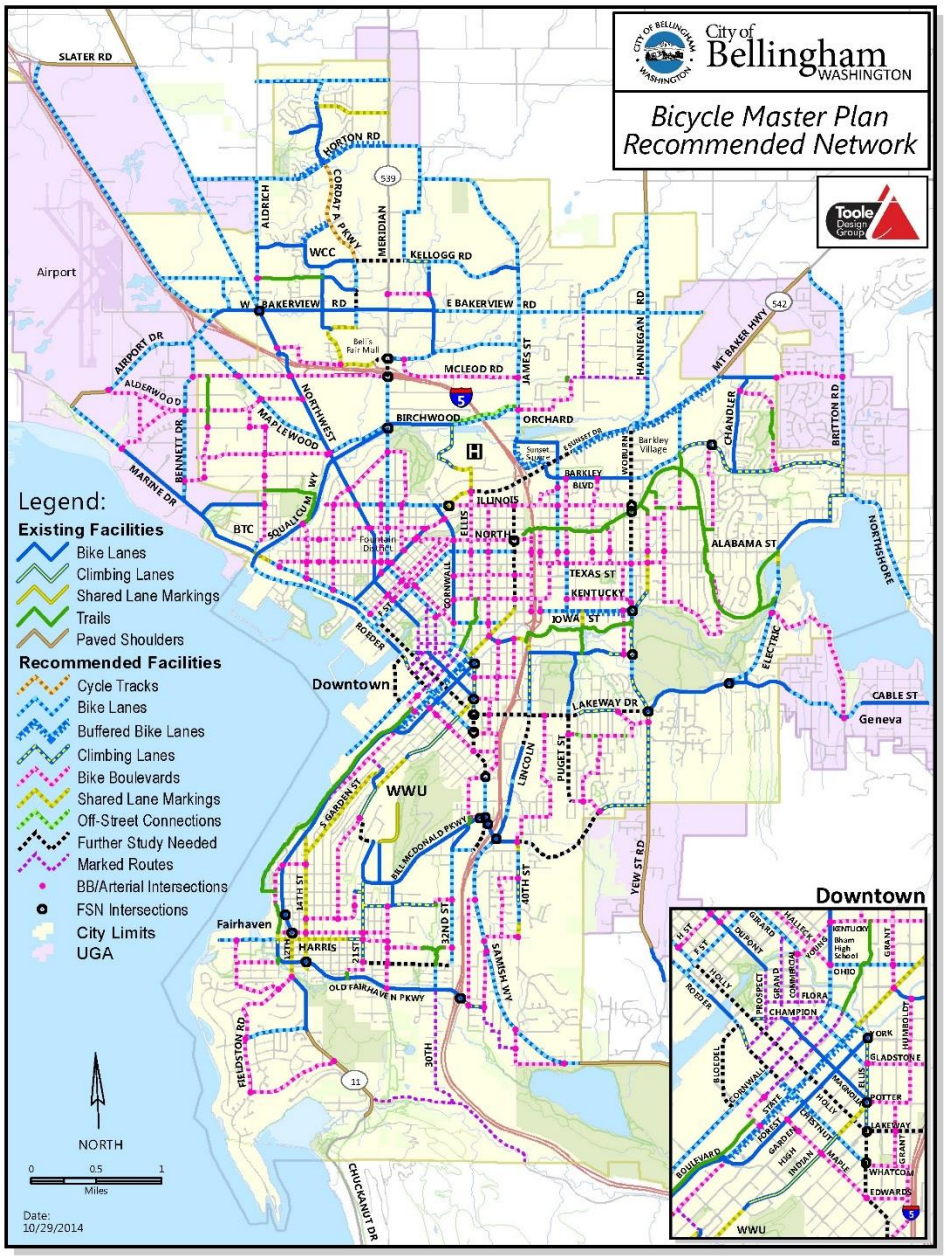


Figure 3.9: Bicycle Master Plan Recommended Network NW Quadrant

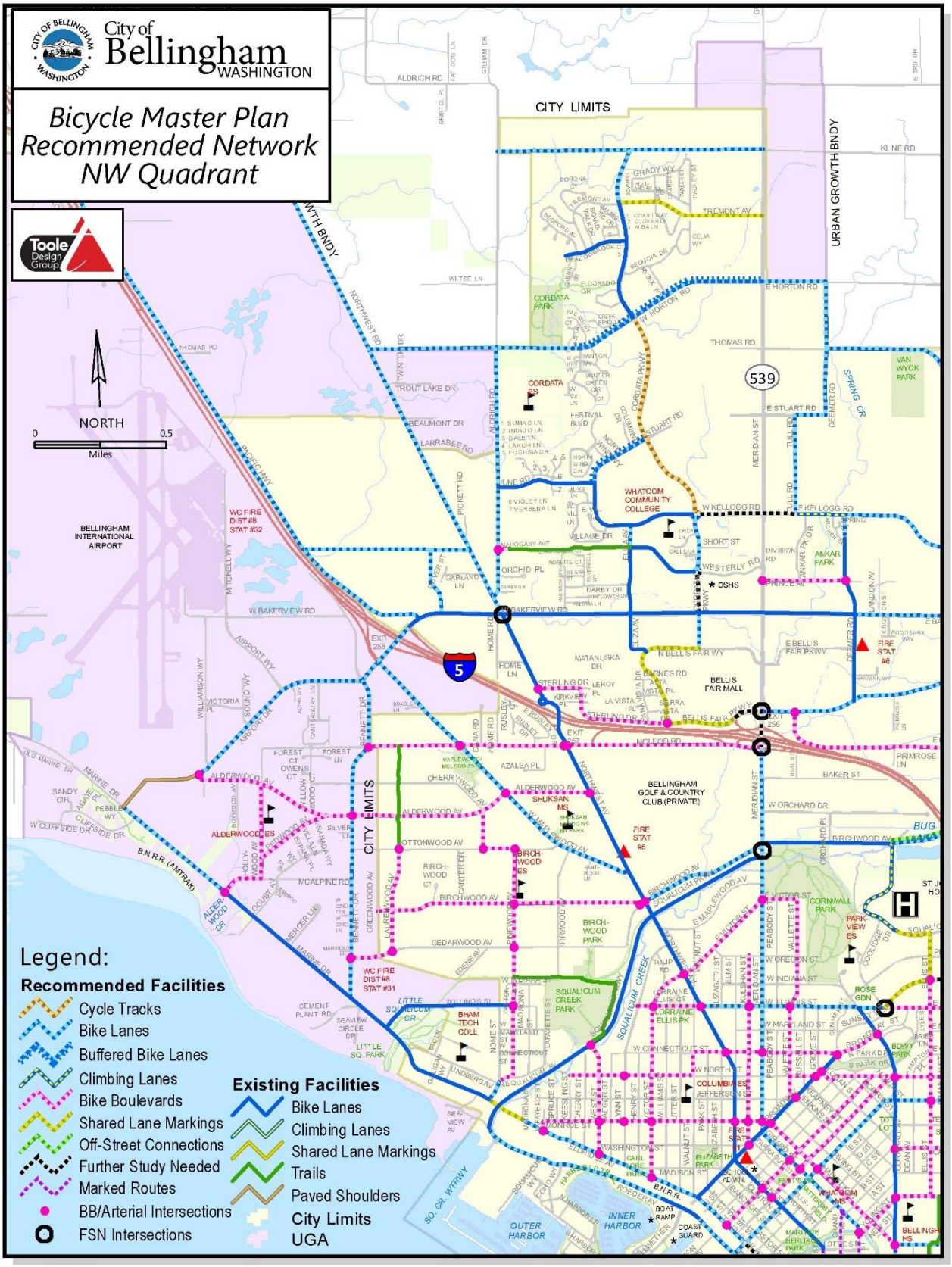


Figure 3.10: Bicycle Master Plan Recommended Network NE Quadrant

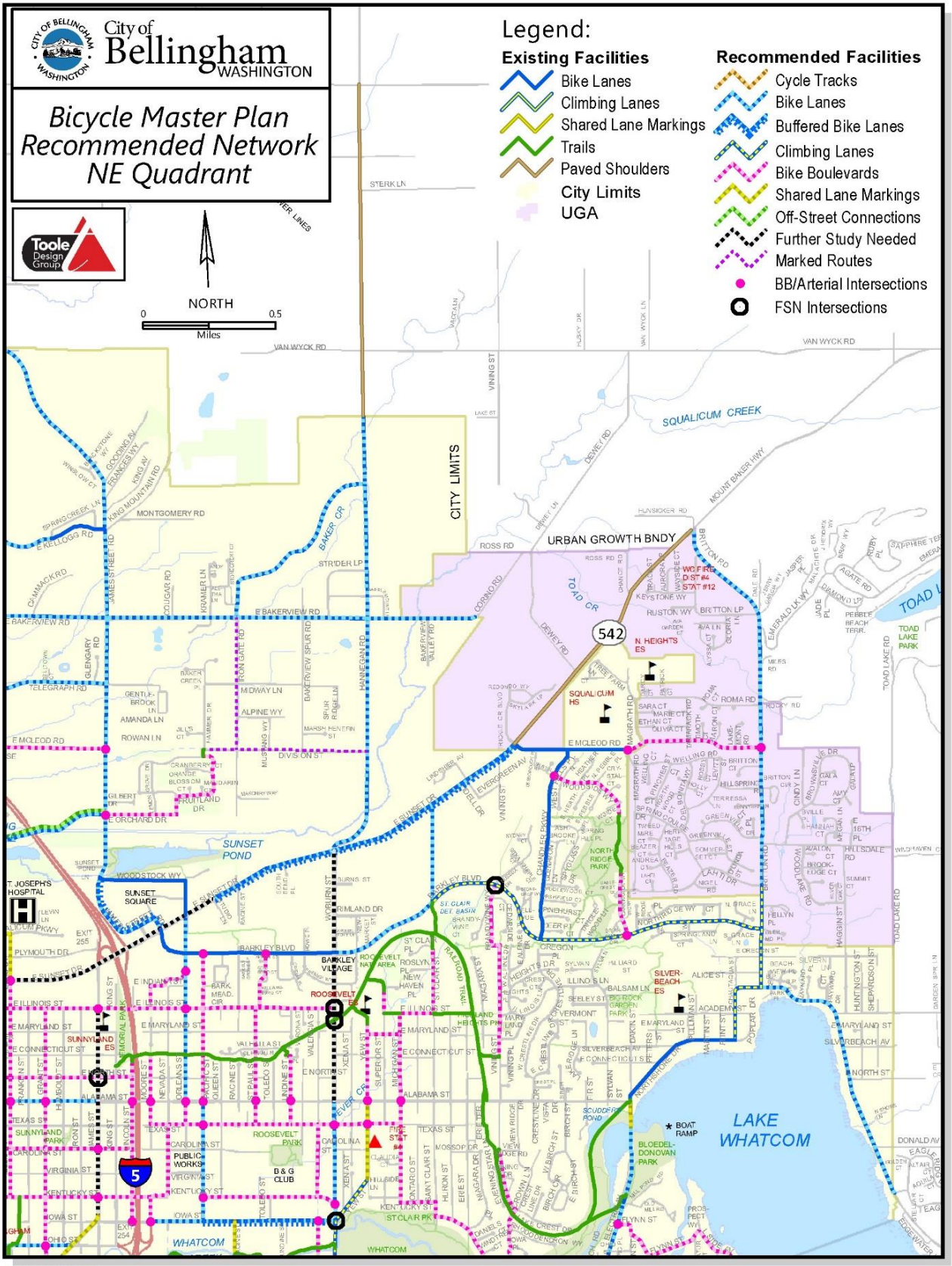


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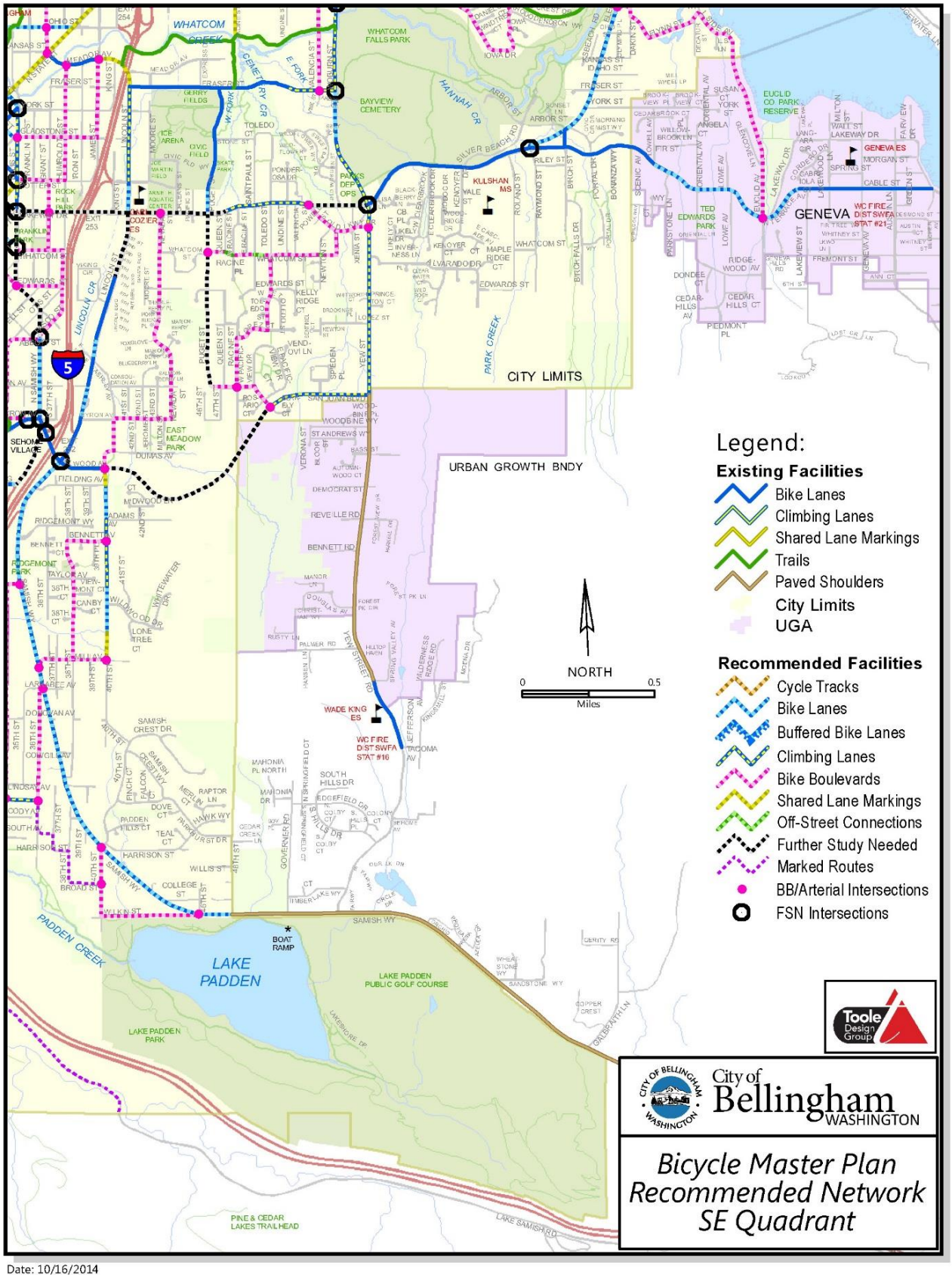
Figure 3.11: Bicycle Master Plan Recommended Network SE Quadrant



Date: 10/16/2014

Figure 3.12: Bicycle Master Plan Recommended Network SW Quadrant

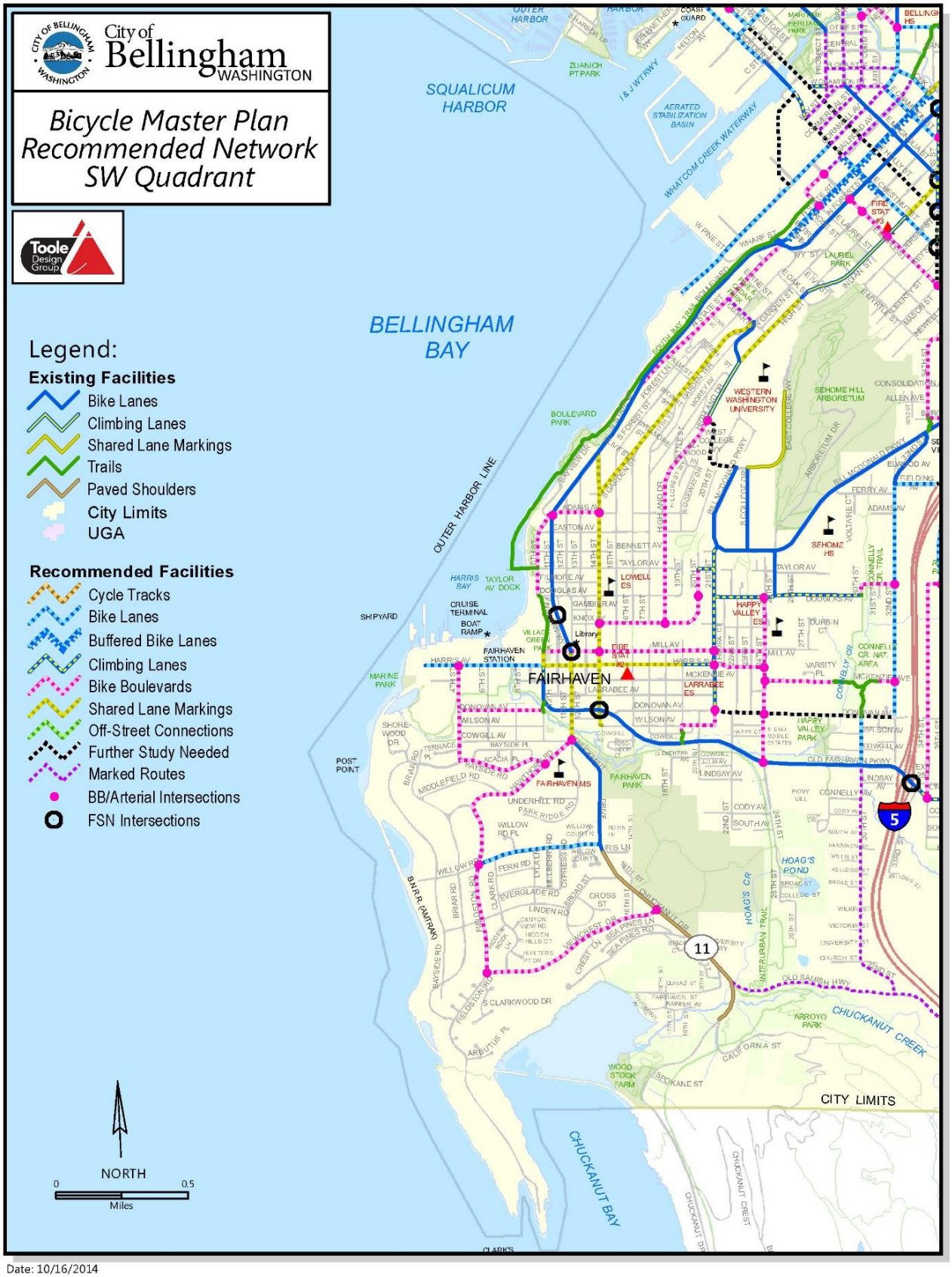
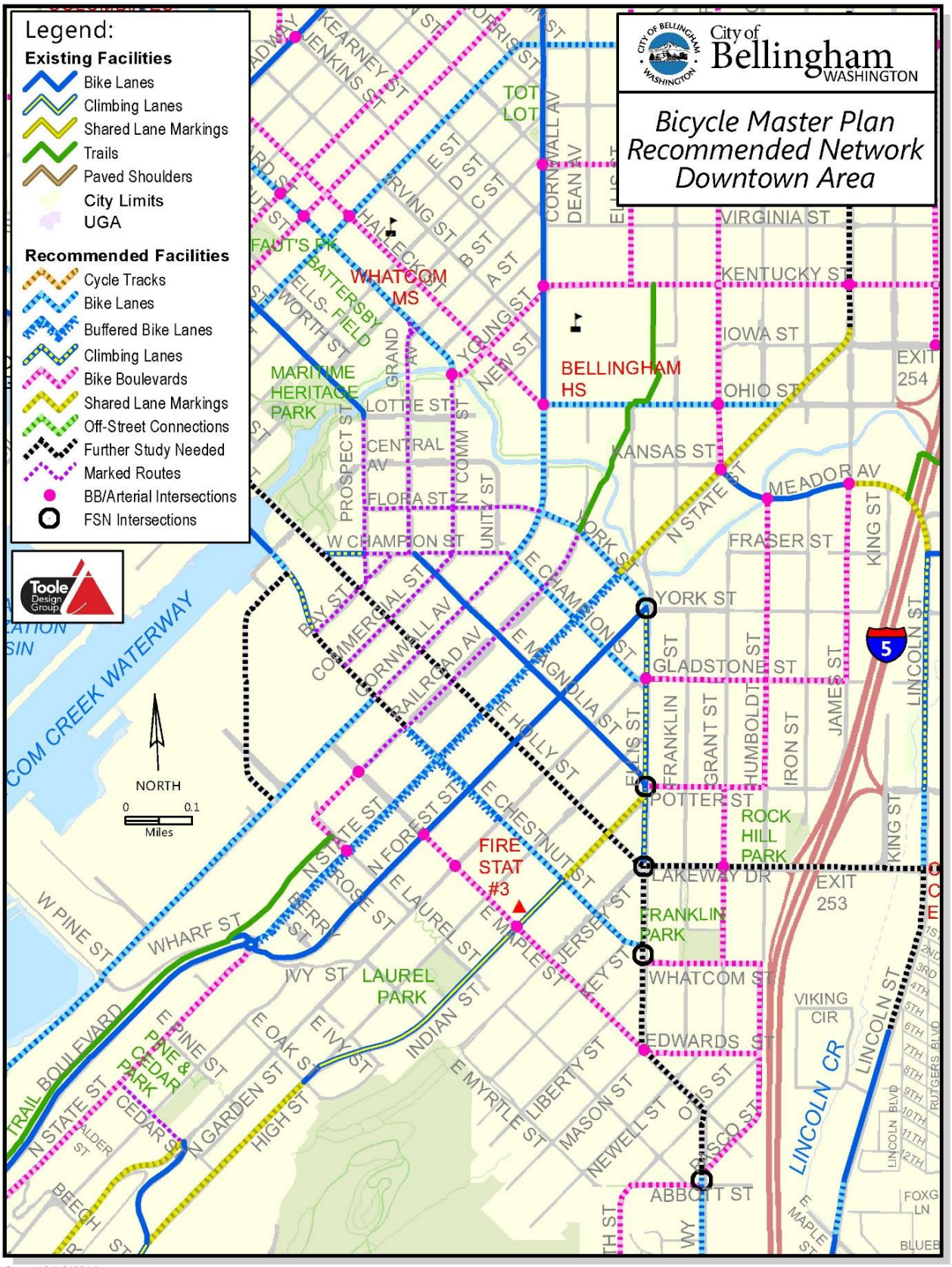


Figure 3.13: Bicycle Master Plan Recommended Network Downtown Area



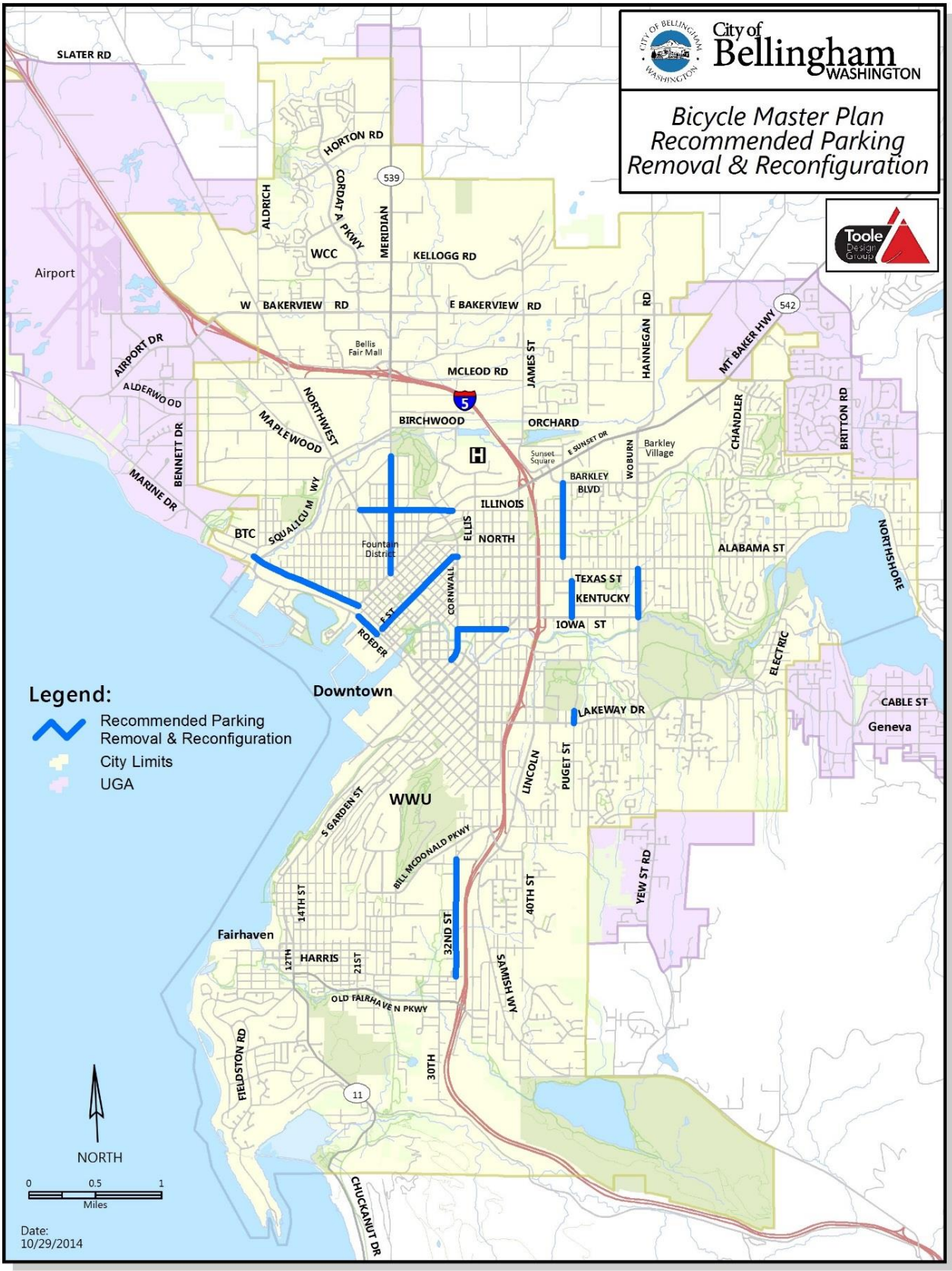
On-Street Parking Removal and Reconfiguration

In order to fully implement the recommended citywide bicycle network, there are some network links that will require on-street parking to be reconfigured or removed from one or both sides of the street in order to accommodate the recommended bicycle facility. Table 3.14 and Figure 3.15 illustrate the network links that will require on-street parking removal to allow implementation of the recommended bicycle facility. Any proposal for on-street parking removal on arterial streets can be controversial and will require a parking use analysis as well as City Council legislative action to remove the on-street parking to accommodate bicycle facilities.

Table 3.14: Recommendations for Parking Removal & Reconfiguration to Accommodate Bike Lanes

Recommendations for Arterial Street Parking Removal & Reconfiguration					
Arterial Street	**From**	**To**	**Asphalt Curb to Curb**	**Recommended Change to On-Street Parking**	**Recommended Cross-section**
Roeder	F	400' NW Hilton	44 feet	Remove parking on west side	5_11.5_11_11.5_5 = 44
32nd	Fielding	Taylor	40 feet	Remove east side; 7' parking west side	7_6_11_11_5 = 40
32nd	Taylor	Donovan	34 Feet	Remove parking both sides	5_12_12_5 = 34
Puget	Lakeway	500' N Lakeway	40 feet	Delineate 7' parking west side	7_6_11_11_5 = 40
Woburn	Iowa	Texas	40 feet	Remove west side; 7' parking east side	5_11_11_6_7 = 40
Illinois	Cornwall	Sunset	40 feet	Remove south side; 7' parking north side	7_6_11_11_5 = 40
Pacific	Iowa	Texas	40 feet	Remove east side; 7' parking west side	7_6_11_11_5 = 40
Illinois	Northwest	Cornwall	40 feet	Remove south side; 7' parking north side	7_6_11_11_5 = 40
Ohio	Cornwall	State	40 feet	Remove parking from one or both sides	7_6_11_11_5 = 40
Meridian	Broadway	East Victor	44 feet	Delineate 7' parking both sides	7_5_10_10_5_7 = 44
Orleans	Alabama	Barkley	40 feet	Remove parking east side	7_6_11_11_5 = 40
Cornwall	Ohio	Champion	50 feet	Remove west side from Ohio to York, and east side from York to Champion, 7' parking	5_10.5_10.5_10.5_6_7 = 49.5
F	Holly	Cornwall	40-42 feet	Remove NW side; 7' parking SE side	5_11_11_6_7 = 40
Eldridge	Broadway	Squalicum	34-36 feet	Remove parking from both sides	6_12_12_6 = 36

Figure 3.15: Bicycle Master Plan Recommended Parking Removal



Further Study Needed

Network Links

Over 9 miles, or 7%, of the Recommended Bicycle Network is listed as "Further Study Needed," which means that a specific facility type cannot be identified until further analysis of the link is conducted by City staff. These projects are listed below in Table 3.16. Some of these links score very high when compared to other links in the recommended network due to benefits in bicycle connectivity, safety, and mobility. In light of this, the City should commit annual funding to complete the additional studies necessary to identify viable improvement options. Descriptions for each of the network links requiring further study are listed in Appendix C.

Table 3.16: Recommended Bicycle Network Links Needing Further Study

Bellingham Bicycle Network Link	Bicycle Master Plan Prioritization Score	Priority Rank (Out of 186)
Lakeway Drive (Queen to Ellis)	57.312	2
Holly (Ellis to Bay)	46.140	5
Chestnut (Bay to Railroad)	46.140	6
James Street (E. Illinois to Iowa)	42.037	8
Meridian Street *[SR 539]* (McLeod to Telegraph)	34.868	17
Lincoln Street (Lakeway to S Fred Meyer driveway)	28.623	28
Donovan Avenue (32nd to 21st)	23.947	45
West Holly Street (Bay to F)	23.760	48
Lakeway Drive (Old Lakeway to Woburn)	22.131	62
Ellis/Maple/N. Samish (Lakeway to Pasco)	21.671	65
Sunset Drive *[SR 542]* (James to Studio Ln)	19.078	88
Puget Street (Lakeway to Consolidation)	18.671	90
West College Way (Highland to Bill McDonald)	17.993	97
W Telegraph (SR 539 to I-5 northbound off-ramp)	17.326	101
Woburn Street (Sunset to Alabama)	17.218	104
36th (Fielding to Samish)	16.454	110
Kellogg Road (Tull to Cordata)	16.019	115
San Juan Boulevard (40th to Pacificview)	15.520	119
Cordata Parkway (Westerly to Bakerview)	14.573	126
Sunset Drive (Ellis to James)	13.631	139
Granary-Bloedel Avenue (through the Waterfront)	10.661	163

Intersections

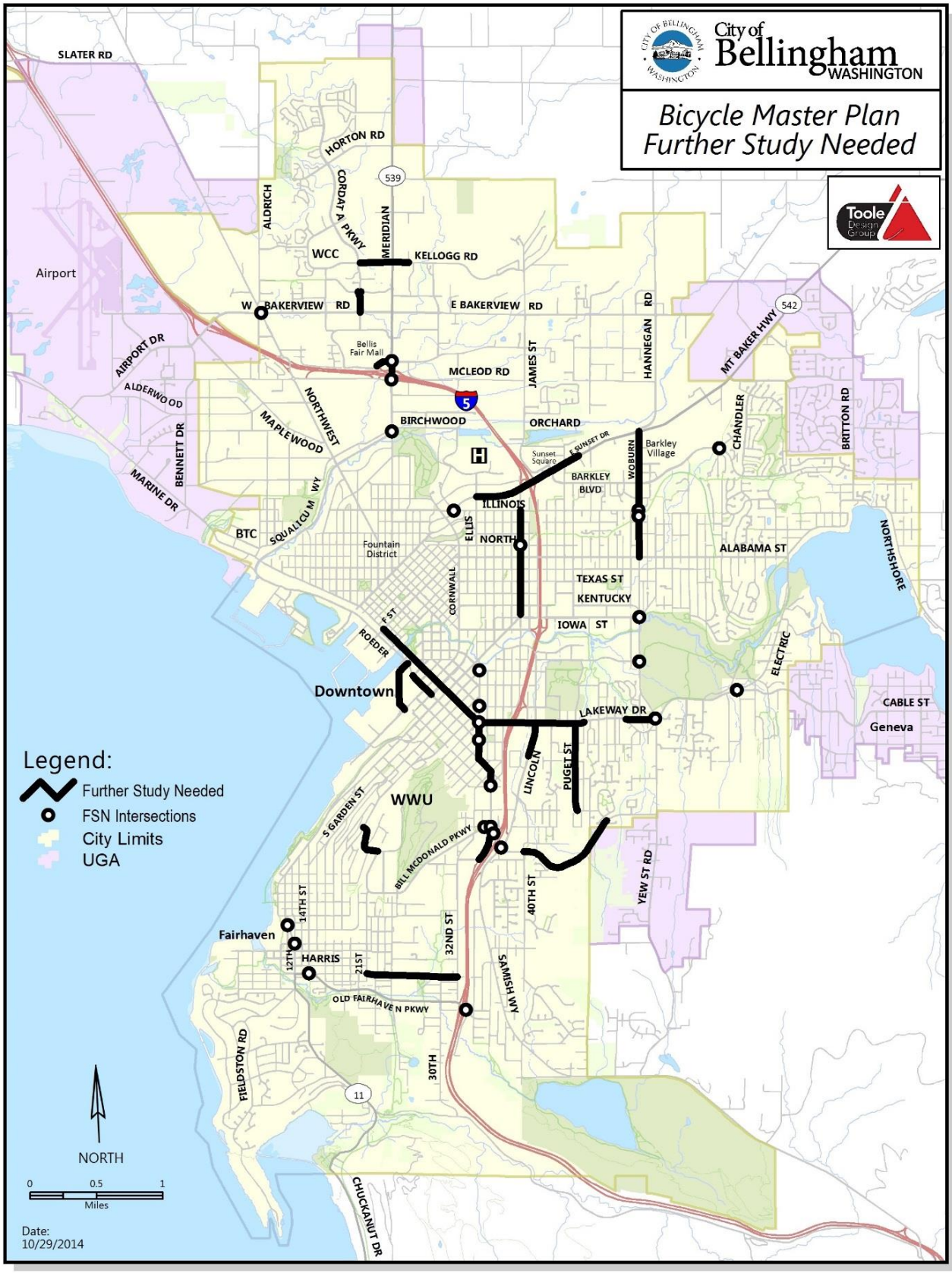
The Plan identifies twenty-six intersections where further study is needed to assess the need for crossing improvements (black circles on the network maps). Many are locations where bicycle boulevards or trails cross busy arterial streets. Possible crossing improvements include marked crosswalks, warning and regulatory signs, bulb-outs, green bike lanes, crossing islands, rapid-flash beacons, high-intensity activated crosswalk (HAWK) signals, and full signalization. Determination of the

appropriate crossing treatment should be consistent with Bellingham's Crossing Treatment Guidelines, which consider traffic volumes, speed, number of travel lanes, lines of sight, proximity of other crossing treatments (e.g. signals) and on-street parking. Table 3.17 lists the intersections identified for futher study.

Table 3.17: Intersections Recommended for Further Study

11th St/Finnegan Wy/Knox Av
12th St/Hawthorn Rd/Chuckanut Dr
12th St/Mill Av
14th St/Old Fairhaven Pkwy
Abbott St/Samish Wy
Barkley Blvd/Sussex Dr/Brandywine Wy
Bill McDonald Pkwy/34th-35th St
Chestnut St/Ellis St
Connelly Ave/I-5
Ellis St/York St/Forest St
Holly St/Lakeway Dr/Ellis St
Lakeway Dr/Electric Av
Magnolia St/Ellis St/Potter St
Meridian St/Mcleod Rd
Meridian St/Telegraph Rd
North St/James St
Northwest Ave/W Bakerview Rd
Samish Wy/36th St
Samish Wy/Bill McDonald Pkwy/Byron Av
Squalicum Wy/Birchwood Ave/Meridan St
Sunset Drive/Illinois St
Woburn St/Illinois St
Woburn St/Lakeway Dr/Yew St
Woburn St/Railroad Trail
Woburn St/Fraser St
Woburn St/Iowa St/Yew St

Figure 3.18: Bicycle Master Plan Further Study Needed



I-5 Corridor

The Interstate 5 (I-5) corridor is a significant physical and psychological barrier to intracity bicycle travel, literally dividing the City of Bellingham in half (see map). Creating better crossing conditions along this nine mile segment of freeway is absolutely essential to implementing a complete and connected bicycle network.

There are currently only eleven arterial streets that cross I-5 over a nine-mile stretch. Many of these are intimidating to novice and intermediate bicyclists due to high vehicle speeds, heavy automobile and truck traffic congestion, and a lack of dedicated bicycle facilities. There are also currently two bicycle and pedestrian-only bridges across I-5 between Alabama and Sunset. Bellingham is currently designing a new grade-separated Orchard Drive arterial street with on-street bicycle lanes and an adjacent off-street Bay to Baker multiuse trail in the central portion of Bellingham between Sunset and Meridian.

The following section provides a brief description of each of the existing and proposed bicycle crossings of I-5. In the short-term, wayfinding signage and roadway markings should be utilized to direct cyclists to the safest crossings, and to legitimize bicyclists' presence in an automobile dominated environment. In the long-term, the addition of new I-5 crossings, improvements to access ramps, and the installation of on- and off-street infrastructure will better connect the east and west sides of Bellingham.

It is important to note that I-5 and the associated interchanges are federal highway facilities, operated by WSDOT. This presents both opportunities and constraints for the City as it moves toward the implementation of these recommendations. In 2008 WSDOT published an analysis of current and future traffic conditions on I-5 from Fairhaven Parkway to Slater Road (north of the City).[3] The report is out of date and some of the recommendations have been acknowledged as not constructible. However, it does provide recommendations for upgrading interchanges and surrounding streets, some of which serve as the foundation for the proposed improvements described below.

I-5 Intersections

Existing and proposed bicycle crossings of I-5 are presented here in order from north to south.

Bakerview Road

WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million. Currently, there is no funding for this level of improvement, but several lower cost improvement options were identified in WSDOT's 2011 Bakerview/I-5 Value Planning Study Technical Report[4]. As a result of this study, Bellingham formed a

[3] http://www.wsdot.wa.gov/projects/i5/fairhaventoslater/

[4] http://www.wsdot.wa.gov/NR/rdonlyres/8E708C78-5AD3-445A-A206-7D006F4588DA/0/I5BakerviewPlanningStudyApril_25_11.pdf

public-private partnership and made $3.2 million in improvements to the West Bakerview/I-5 overpass in 2013, which added a new westbound lane to reduce traffic back-ups across the bridge, as well as a 6-foot wide sidewalk on the north side of the bridge. Further improvements include constructing a new northbound on-ramp on the east side of I-5 (est. $8 - 10 million), as well as reconstruction of the overpass bridge (est. $8-10 million) to include dedicated bicycle facilities.

Northwest Avenue

The City constructed two roundabouts on Northwest Avenue at I-5, accommodating bicyclists through a combination of bike lanes, side paths, and marked crossings. Bicyclists have the option of taking the lane and riding through the roundabout or riding onto the sidewalk and using the crosswalks as a pedestrian. Some bicyclists prefer to use the roadway while others are more comfortable using the sidewalk. A combination of roundabout bicycle facility education and the installation of shared lane markings at the entrance to the roundabouts should be considered for these locations.

Meridian Street

Meridian is Bellingham's busiest I-5 crossing and requires a long-term approach to integrate bicycles into an already heavily trafficked route. In the long term, all I-5 ramps should be upgraded to accommodate pedestrians and bicycles. Upgrades should include high visibility markings at all crossings, and the striping of bike lanes through the intersections. The Orchard Drive Extension (below) will relieve some traffic congestion at I-5/Meridian. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million.

Orchard Drive

The Orchard Drive Extension is currently being designed and right-of-way is being purchased to accommodate a new east-west arterial street between Meridian Street and James Street. This is the last opportunity within the city limits of Bellingham to create a multimodal grade-separated crossing of Interstate 5. The arterial street will have marked bicycle lanes and the associated "Bay to Baker" multi-use trail will offer an off-street pathway for bicyclists. Both the street and the trail will be constructed along the north side of a re-routed Squalicum Creek flowing between Sunset Pond Park and Bug Lake. When completed, the Orchard Drive Extension and the Bay to Baker Trail will allow bicyclists, pedestrians, future transit busses, and vehicles to avoid the congested interchanges at both I-5/Sunset and I-5/Meridian, while also providing transportation benefit to I-5, SR 539 (Guide-Meridian), and SR 542 (Sunset Drive-Mt. Baker Highway).

Sunset Drive

Sunset Drive is the second most heavily trafficked I-5 intersection in Bellingham. It is also a vital connection for bicyclists due to the limited number of crossings to the north and the access it provides between neighborhoods, the hospital and Sunset Square. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million. In the short-term, shoulders on the overpass should be studied for upgrade to bike lanes, connecting to the dedicated bicycle facilities that already exists to the east. Additionally, I-5

access ramps should be improved for pedestrians and bicyclists, including high visibility markings at all crossings, possible reductions to the curb radii, and the striping of bike lanes through the interchange.

Illinois Street

The bicycle and pedestrian bridge over I-5 at Illinois Street provides a high-quality, low-stress, and grade-separated travel connection for bicyclists. To increase awareness of this crossing, wayfinding signs should be installed that direct bicyclists from the proposed Illinois bicycle boulevard to the Barkley Trail via Moore Street; and to Barkley Boulevard and Sunset Drive.

Railroad Trail

The multiuse Railroad Trail is a very heavily used east-west gravel trail, which takes advantage of an old grade separated railroad bridge spanning I-5 to provide bicyclists and pedestrians with a low stress travel option across I-5 along the Connecticut Street alignment between Illinois and Alabama. This crossing ties into both the Lincoln Street and the Moore Street bicycle boulevards identified in this plan.

Alabama Street

The Alabama Street crossing of I-5 is not a freeway access point. Unfortunately, without implementation of a 4-to-3-lane "road diet" of the Alabama corridor, it is not possible to install bike lanes on this bridge across I-5. Crossing enhancements are recommended at the intersection of Alabama and Moore on the east side of the bridge, to allow bicyclists on the Texas Street bicycle boulevard to safely cross Alabama and proceed two blocks north to the Railroad Trail crossing of I-5 (above).

Texas Street

The Bellingham Pedestrian Master Plan recommends a new bicycle-pedestrian crossing of Interstate 5 along the Texas Street alignment. This would support the recommended bicycle boulevard improvements to Texas Street and provide an alternative to crossing I-5 at Alabama Street.

Kentucky Street

Kentucky Street passes beneath an I-5 bridge from Lincoln Street to Moore Street where it connects to a very short section of multiuse trail to Nevada Street. Wayfinding and sight distance improvements are recommended for Kentucky to enhance safety and comfort for bicyclists.

Iowa Street

Iowa Street is an important east-west arterial street, but presents a challenge for cyclists due to significant volumes of traffic entering and exiting I-5. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange and associated I-5 bridges over Kentucky and Moore Streets be reconstructed at an estimated cost of $135 million. The installation of wayfinding signage to the Kentucky Street underpass, one block to the north, would allow cyclists to safely bypass the Iowa Street interchange. Additionally, by following this route, bicyclists can access the Kentucky Trail, which provides access to Nevada Street.

Meador Avenue

Meador Avenue is an important east-west bicycle connection that passes beneath I-5 from James Street to Fraser Street, but does not have enough curb-to-curb width to install bicycle lanes. If curb ramps were installed, the wide sidewalks that exist on Meador could function as shared use sidepaths, which would tie into the dedicated bicycle lanes on both Meador west of James and on Fraser Street, as well as the recommended uphill climbing lane/downhill shared lane on Lincoln Street, thus improving bicycle accessibility in this area. There is also a need for improved connections between Meador Avenue and the Whatcom Creek Trail. Making the side paths and trail accessible to cyclists will provide additional connectivity to Lakeway Drive, Fraser Street, and Woburn Drive.

Lakeway Drive

Lakeway Drive is the third busiest I-5 crossing in Bellingham (25,000 vehicles per day), but is also a critical connection for residents to access downtown services and other popular cultural destinations, including Civic Field, Whatcom Falls Park, and Lake Whatcom to the east. Due to the lack of an on-street bicycle facility, many cyclists currently utilize the narrow sidewalk, generating discomfort for pedestrians as well as cyclists. WSDOT's 2008 I-5 Master Plan recommends that access to I-5 at Lakeway be eliminated to meet the FHWA interchange spacing guidelines in conjunction with the construction of a set of parallel "collector-distributor" streets on either side of I-5 leading to a reconstructed Iowa/I-5 interchange and a newly constructed interchange at Maple/I-5 to replace the existing Samish/I-5 interchange. It is extremely unlikely that WSDOT's I-5 plan will be implemented and in the short-term, Bellingham should allocate transportation funds to study and determine feasible options to install dedicated bicycle facilities through the I-5 underpass on Lakeway Drive.

Maple Street/Consolidation Avenue

A relatively low section of Interstate 5 may offer an opportunity for a new bicycle and pedestrian overpass at either Maple Street or Consolidation Avenue, which would provide an alternative to the busy I-5 crossings at Lakeway Drive and Samish Way. While this could be an expensive option, a bicycle-pedestrian overpass in this location would complement the existing WWU Lincoln Street Park-N-Ride facility, which is served by high-frequency WTA transit busses, as well as several hundred student apartments that are currently being constructed at Lincoln/Maple. Bellingham will be constructing sidewalk along the WWU Park-N-Ride facility in 2015 and is working with private developers to ensure that the Lincoln/Maple intersection is improved with ADA crosswalks and preparation for future signalization. Bellingham should allocate transportation funds to work with WSDOT to study the feasibility of constructing a bicycle-pedestrian overpass in this location.

Samish Way

Samish Way is a key crossing from Lincoln Street into the Samish Way Urban Village and the main access to Western Washington University along Bill McDonald Parkway. The nearby WWU Lincoln Street Park and Ride, Sehome Village, and Lakeway commercial area are important destinations for University students and other local residents. In order to improve bicycle access in this area, the existing bike lanes on Samish Way should be upgraded to buffered bike lanes and pavement markings should extend through the intersections. Green bike lanes should be considered between travel lanes on the west side of the interchange to denote a vehicle-bicycle mixing zone and to enhance bicyclists' safety.

Old Fairhaven Parkway

The southernmost I-5 crossing connects the Samish neighborhood on the east to western destinations including Happy Valley, Fairhaven, and the Interurban Trail. This crossing is also significant due to its proximity to the heavily utilized Lake Padden Park. While bike lanes already exist on Old Fairhaven Parkway, they should be expanded from 4 to 5 feet wide. The crossing would be further improved by adding a climbing lane eastbound on Connelly Avenue, striping bike lanes through intersections, adding green bike lanes should be considered between travel lanes on the west side of the interchange to denote a vehicle-bicycle mixing zone and to enhance bicyclists' safety, and constructing a traffic signal at the currently off-set Connelly intersections for the northbound I-5 on-/off-ramps.

Project Prioritization

The BMP prioritization methodology was developed to evaluate the recommended network as a series of corridor projects to be scored on a set of criteria matching the BMP policy goals. These goals were defined through the public input process (open house, focus groups, and online survey), through existing City policy documents, and with guidance from the BMP Steering Committee. The goals were represented by four weighted variables: safety, connectivity, demand, and equity. The variable weighting and metrics that comprise each variable are summarized in Table 3.19 below.

The GIS methodology for applying these variables to each project was a two-step hybrid process involving a second run of the ViaCity model to establish new, post-construction network connectivity values; and a geo-processing technique called "heat-mapping" which summarized the safety, demand, and equity variables.

Table 3.19: Project Prioritization Methodology

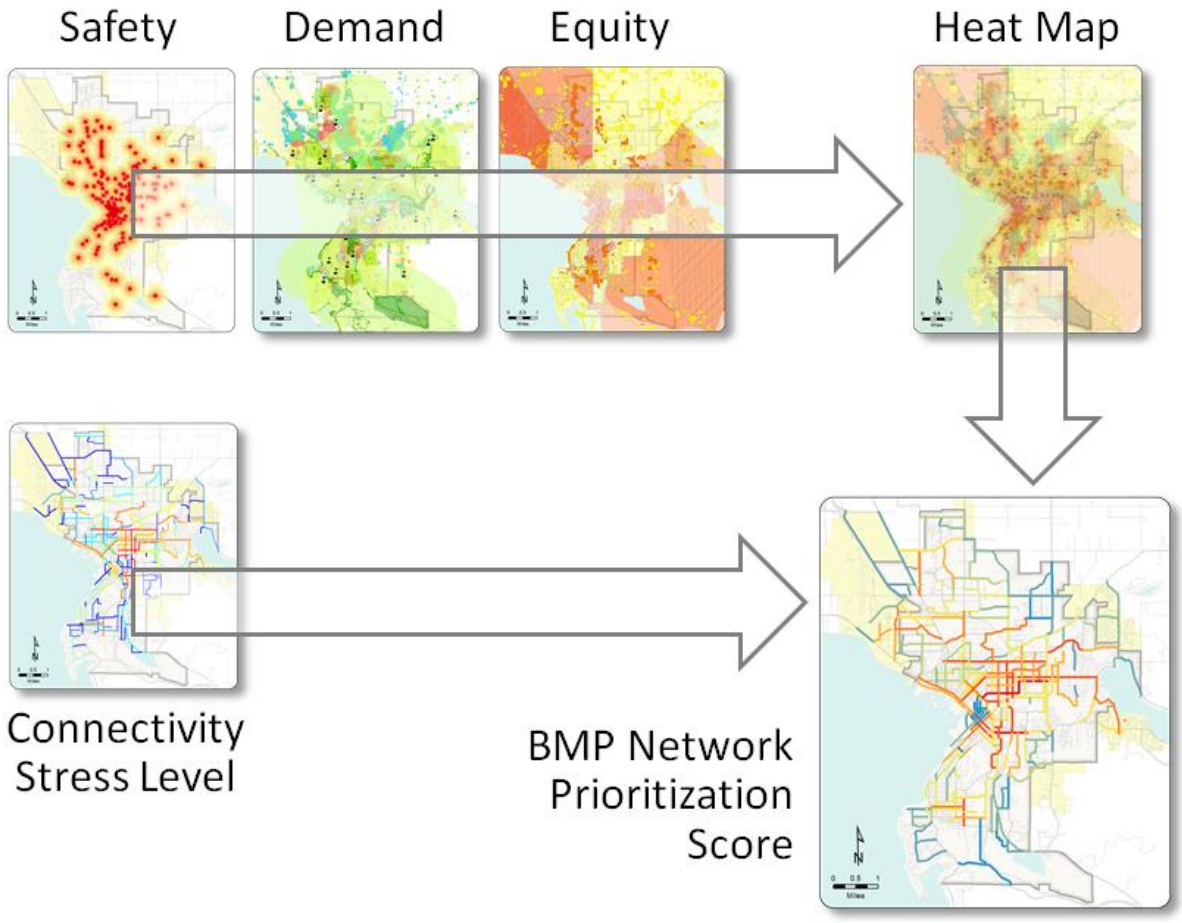
Variables	Metric
Safety - 15%	• Bike Crashes 2006-2010
Connectivity - 45%	• Route Level of Stress and Directness • I-5 Barriers
Demand - 25%	• Density of Employment • Density of Population • Locations Near Schools • Bike Count Volumes • Locations Near Trail Access Points • Locations Near Parks
Equity - 15%	• High Concentration of Population Under 18 • High Concentration of Low income Population

The second run of the ViaCity model determined the relative difference each new bicycle infrastructure project would make on connectivity across the entire network. For instance, in the initial "baseline" run of ViaCity, a street corridor with no bicycle facilities would have been identified as a bicycle network segment connecting important destinations or parts of the network. It would have received a connectivity score based on the combination of the directness of the route between those destinations, and the likelihood that cyclists would use that street segment. That likelihood would have been influenced by the vehicle presence and terrain weighting scores (the cycling "stress level"). In the second run of the ViaCity model, the weighting of that street segment would have been modified based on the type of bicycle network facility that had been recommended and how it served to provide a more comfortable and lower-stress experience for cyclists, thereby increasing the relative connectivity value to the entire network. The difference between these two model runs is the change in RDI (route

directness index) for each project. As seen in the prioritization matrix above, this value was weighted as 45% of the overall prioritization score for each project (the single largest scoring component).

The "heat-mapping" technique employed to summarize the safety, demand, and equity variables used a common GIS procedure of taking geographically co-incident layers of statistical data for different topics, converting them to raster layers showing relative density at a common resolution (i.e. 100 x 100 foot cells), standardizing the range of values for each layer (i.e. 1-10), and then adding the layers together using a map algebra expression (i.e. Layer A + Layer B + Layer C) to derive a composite value or score for each location across the landscape. For the BMP prioritization process the layers referenced in the column of metrics in Table 3.19 were converted to raster density layers, ranked on a common scale, aggregated together to represent each policy variable, and then given the relative percentage weight shown in the table. The final safety, demand, and equity layers were then added together to derive a final "heat map" score. The street segments for each project were then sampled at regular intervals along each street (i.e. every 100 ft) to translate the "heat map" score from a raster surface back to a linear street segment-based project. This safety/demand/equity score was then added together with the connectivity difference score from the two runs of the ViaCity model to determine the overall project prioritization score. Figure 3.20 below illustrates the prioritization process.

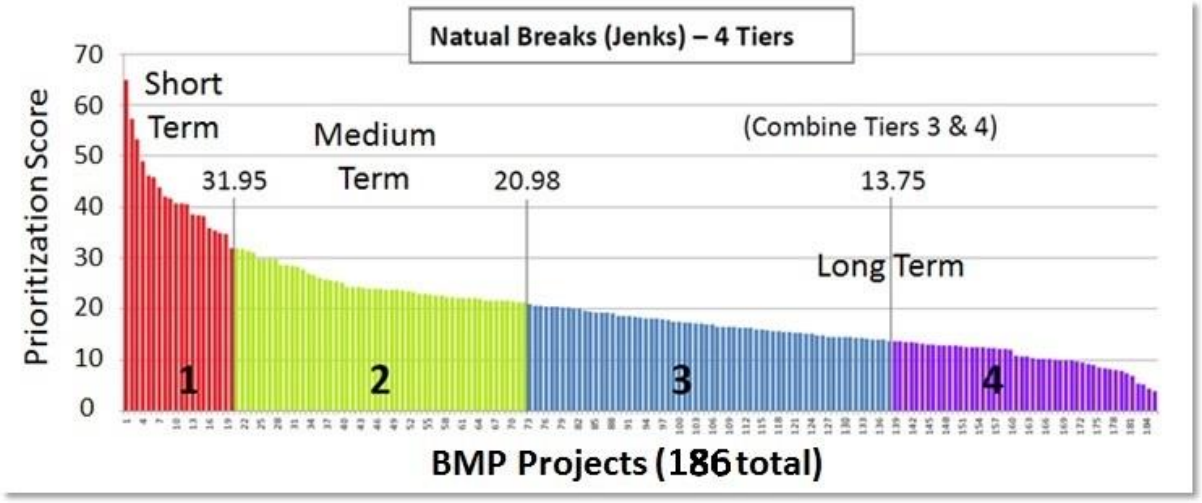
Figure 3.20: Project Prioritization Process



Following the initial scoring process, the project prioritization list went through a calibration process where City staff evaluated the priority assigned each recommended facility; confirmed the ranking criteria fit the geography of the facility corridor; and if necessary, made appropriate adjustments to baseline ranking criteria layers before re-running the prioritization model. Typical examples of adjustments made were to add weight to the equity layer where concentrations of subsidized housing have been built since Census Data was collected, or where facilities serving low-income populations are located (Food Bank, Opportunity Council, homeless shelters, etc.); and to adjust the resolution and completeness of the safety layer where bicycle-related accidents were under-represented on WA State DOT layers, by adding data from City Police Department records.

The final step for project prioritization was to sort the entire 186 project list by descending order of priority and to group projects into short, medium, and long-term classes. The class breaks were determined using a Jenks "natural breaks" classification with an initial 4-class breakout. This standard statistical method seeks to minimize each class' average deviation from the class mean, while maximizing each class' deviation from the means of the other groups (creating the most distinction between classes, and the most commonality within classes). The 1st and 2nd classes became the short and medium term lists, and the 3rd and 4th classes were aggregated to become the long term list. Figure 3.21 below illustrates the distribution of prioritization values and the resulting class structure.

Figure 3.21: Distribution of Project Prioritization Results



Prioritized Recommendations

The full prioritized list of projects can be found in Appendix B. The list should be used by the City to help determine where to target investments and should be reevaluated over time. Although this prioritization method provides a useful framework for implementation, the City should also look for opportunities to implement all the projects in the recommended network, regardless of their priority level, if they can be accomplished as part of a larger road redesign, repaving, construction or development project.

Short-Term Projects

Approximately 20 miles of short-term projects have been identified and are listed below in Table 3.22. Short-term projects are those that provide critical access to key destinations and improve the continuity of the existing network. Short-term projects are expected to provide a high return on investment in terms of ridership.

Table 3.22: Proposed Short-Term Bicycle Projects

Street	From	To	Improvement
Young/Kentucky / Nevada / Texas	Halleck	Woburn	Bicycle Boulevard
Lakeway	Queen	Ellis	Further Study Needed
Lincoln St/Meador/Grant/Ohio	Lakeway	Cornwall	Mixed*
Illinois	Woburn	Lynn	Mixed*
Holly	Ellis	Bay	Further Study Needed
Chestnut	Ellis	Bay	Mixed*
24th	Old Fairhaven Parkway	Douglas	Bicycle Boulevard
James	Illinois	Ohio	Further Study Needed
Byron/34th/Abbott/Pasco/Humboldt/ Whatcom/Grant/Potter/Humboldt	Bill McDonald	Gladstone	Bicycle Boulevard
Barkley/Chandler/Mcleod	Woburn	Magrath	Upgrade Existing Bike Lane
Lincoln	North	Iowa	Bicycle Boulevard
F	Roeder	Cornwall	Bike Lane
Mill	12th	24th	Bicycle Boulevard
Maplewood/Alderwood/Bennett	Northwest	Airport	Mixed*
Holly/Eldridge/Nequalicum	F	Nome	Mixed*
Aldrich/Northwest	Horton	Bakerview	Bike Lane
Meridian	McLeod	Telegraph	Further Study Needed
Fruitland/Orchard/Squalicum/Ellis	Fruitland/Division Trail Connection	Illinois	Mixed*
Meridian	McLeod	Squalicum	Bike Lane

*Mixed projects combine more than one facility type (e.g. bike lane, bike boulevard, shared lane marking)

Medium- and Long-Term Projects

Approximately 33 miles of medium-term projects have been identified. These projects will help link key facilities identified as short-term projects and begin to complete a comprehensive network of bicycle facilities that serve all ages and abilities. Current long-term projects envision an additional 74 miles of bicycle facilities being constructed. Long-term projects will fill remaining gaps and expand Bellingham's bicycle network into new developments within the City (particularly to the north and east of I-5). A full list of medium- and long-term projects can be found in Appendix B.

Updates to Project Lists

It is expected that as the bicycle network is implemented and as new development occurs in the City, additional bicycle projects will be identified and project prioritization will need to be reevaluated. It is recommended that this list be reassessed and updated as part of the Comprehensive Plan update cycle (every ten years), using similar criteria and revising the results based on current conditions.


MT.
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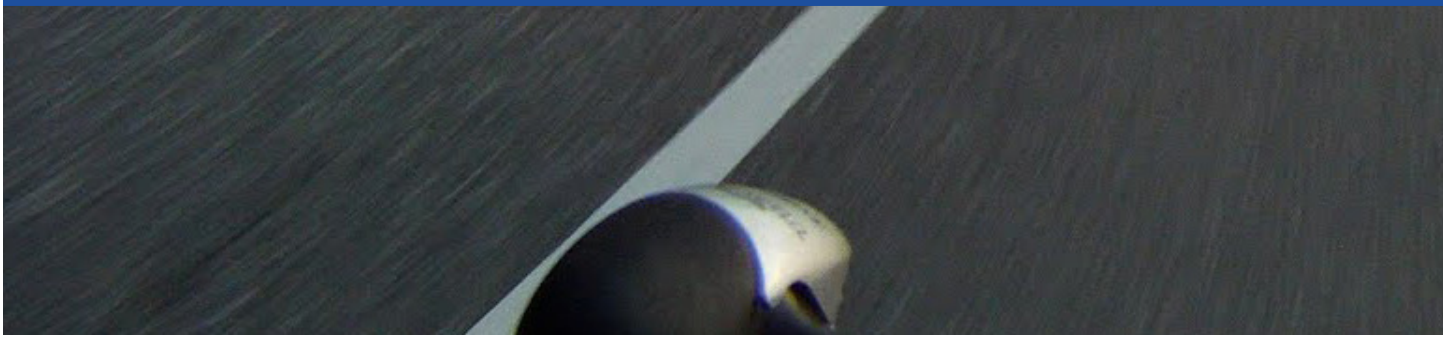
Chapter 4



Chapter 4: Design and Maintenance Guidance

Chapter 4 provides recommended guidance on bicycle facility design and maintenance practices. It includes a discussion of the existing standards that guide street design in Bellingham followed by descriptions of bicycle facility types and intersection treatments that are new or uncommon in the City. Detailed design considerations including design guidance for travel lane widths, corner curb radii and wayfinding are presented in Appendix E.

Public Works Development Guidelines and Improvement Standards

Currently, street design in Bellingham is guided by the *Public Works Development Guidelines and Improvements Standards*, which were adopted in 2001[1]. The guidelines contain provisions for development and improvement of bicycle facilities, including:

- standards
- signs, signals, and markings
- roadway facilities
- bicycle lanes
- bicycle parking

These design guidelines were developed based on the AASHTO Guide for the Development of Bicycle Facilities, the Manual on Uniform Traffic Control Devices (MUTCD), and the Washington State Department of Transportation Design Manual. For local roadways, WSDOT instructs local jurisdictions to use the latest addition of the AASHTO Guide for the Development of Bicycle Facilities.

It is recommended that the existing guidelines and the AASHTO Guide for the Development of Bicycle Facilities should continue to be used in the development of bicycle facilities. Additionally, the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide provides guidance based on current best practices used in municipalities. The Federal Highway Administration (FHWA) issued a memorandum in 2013 officially supporting its use. Those documents are not intended to be replaced by the guidance presented here; however, there are instances where additional guidance will be useful in implementing this Plan. This guidance is presented for consideration and possible integration into the Bellingham Public Works Development Guidelines and Improvements Standards. In all cases, the recommendations in this chapter are consistent with current Federal Highway Administration (FHWA) guidance and recommendations.

[1] Bellingham Public Works Development Guidelines and Improvement Standards, Section 4-13.30.

Bicycle Facility Types

Bicycle Boulevards

Definition

A bicycle boulevard is a local street or a series of contiguous street segments that has been designed to function as a through street for bicyclists, while discouraging automobile through-trips. Local access for motor vehicles is maintained. Bicycle boulevards create favorable conditions for bicycling by taking advantage of neighborhood streets and their inherently bicycle- friendly characteristics, including low traffic volumes and vehicle speeds. In addition to traffic calming improvements that discourage automobile trips along bicycle boulevards, it is often necessary to make physical and operational improvements to intersections where bicycle boulevards meet arterial streets.

Applicability and Use

- Bicycle boulevards are typically developed along neighborhood streets and may serve as cross-city routes or as a segment of a bike route that includes other protected facility types (e.g., off-street trails or separated on-street facilities).
- A bicycle boulevard may also be developed as a parallel, alternative to a busier street within the same district, but should generally not be provided in lieu of facilities on the busier street if that street is a more direct route to important destinations.
- Bicycle boulevards can also be used to provide a short connection between a neighborhood and a key destination, such as a school.
- Traffic calming on bicycle boulevards only applies to residential streets; on arterial streets, bicycle boulevards are designated by wayfinding signs or shared lane markings.

Buffered Bike Lanes

Definition

Similar to bike lanes, buffered bike lanes provide an exclusive space for bicyclists, with the addition of a buffer space separating the bicycle lane from the adjacent motor vehicle travel or parking lane.

Applicability and Use

- Provides greater shy distance between motor vehicles and bicyclists.
- Provides space for bicyclists to pass one another without encroaching into the adjacent motor vehicle travel lane.
- Encourages bicyclists to ride outside of the door zone when the buffer is between parked cars and the bike lane.
- Provides a greater space for bicycling without making the bike lane appear so wide that it might be mistaken for a travel lane or a parking lane.
- Appeals to a wider cross-section of existing and potential bicycle users.

Climbing Lanes

Definition

Climbing lanes are bike lanes that are provided only on the uphill side of streets. Bicyclists travelling uphill move significantly slower than adjacent traffic, and therefore benefit from the presence of a separated lane.

Applicability and Use

Climbing lanes may be used on any street with an appreciable grade and insufficient space for bicycle lanes on both sides of the street. Climbing lanes should be strongly considered where the grade is greater than 7.5% or sustained for a length more than 1,000 feet. Climbing lanes are not appropriate on streets where there are short, rolling hills because the lanes would stop and start too often, possibly confusing bicyclists and motorists with the associated lane shifts and transitions. Climbing lanes are beneficial to bicyclists and motorists for the following reasons:

- Allow motorists to safely pass uphill riding bicyclists.
- Provide a dedicated space in the street for bicyclists who may tend towards weaving behavior as they negotiate the hill.
- Improves motorists' line of sight at pedestrian crossings located on the hilltop.

Shared Lane Markings

Definition

From a practical point of view all vehicle travel lanes within a street may be considered shared lanes except where bicycles are prohibited (e.g. limited access freeways). Shared lanes may be unmarked or marked using shared lane markings (sometimes referred to as sharrows).

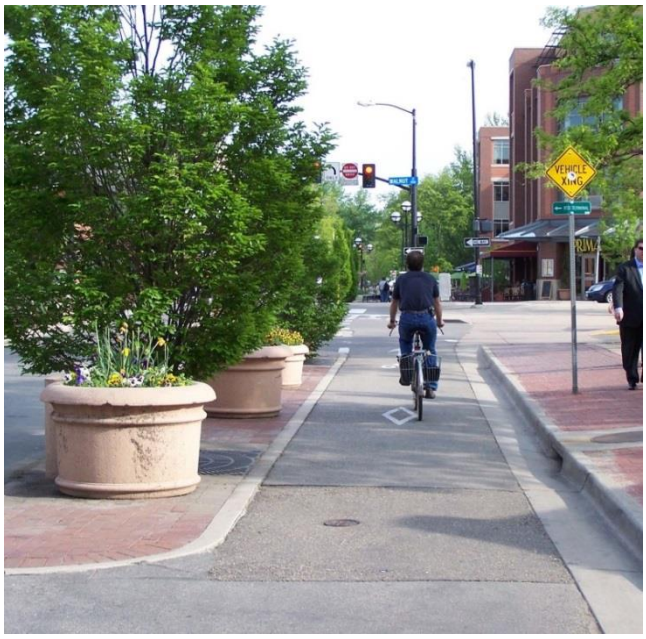
Applicability and Use

Shared lane markings alert motorists of the likely presence and positioning of bicyclists within the travel lane, encourage safe passing of bicyclists, and indicate to bicyclists where to position themselves within the travel lane. Shared lane markings may also be used as a wayfinding tool.

Shared lane markings may be considered in the following situations:

- On arterial streets where space constraints and operations make it unfeasible to provide a dedicated bike facility such as a bike lane or cycle track.
- On arterial street sections where gaps exist between two other bicycle facility types to create an on-street bike network connection.
- On bicycle boulevards as a form of on-street wayfinding.
- On arterial streets with on-street parking, to help position bicyclists to avoid collisions with car doors opening into the travel lane.
- On arterial streets with downhill grades paired with a dedicated uphill climbing lane.

Cycle Tracks



Definition

Cycle tracks have several different forms but share common elements—they provide space that is intended to be exclusively or primarily used for bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. Cycle tracks may be one-way or two-way facilities. One-way facilities are also known as Protected Bike Lanes. Cycle tracks are generally located in the roadway, separated from adjacent travel lanes by a buffer, a median, a vertical element such as flexible posts, or a parking lane.

Applicability and Use

By separating bicyclists from motor traffic, cycle tracks can offer a higher level of security than bike lanes and are thus attractive to bicyclists with a wider range of abilities and preferences. Typical applications for cycle tracks include:

- Streets with high bicycle volumes.
- Streets on which bike lanes would cause all but the most skilled bicyclists to feel stress because of factors such as multiple lanes, high traffic volumes, higher speed traffic, high incidence of illegal parking in the bike lane, and high parking turnover.
- Recreational corridors, scenic corridors, or parkways that are part of a regional trail system.

Cycle tracks may be one-way or two-way. In general, one-way cycle tracks should be provided on both sides of a two-way street unless there is a parallel route nearby. Two-way cycle tracks may be appropriate for the following situations:

- Streets with fewer conflicts such as driveways or cross- streets on one side of the street.
- Streets where there is not enough room for a one-way cycle track on both sides of the street.
- One-way streets where contra-flow bicycle travel is desired for connectivity purposes.
- Streets where more destinations are on one side thereby reducing the need to cross the street.
- Streets that intersect with another bicycle facility, such as a cycle track or multi-use trail.

Crossing Treatments

Bike Lanes at Intersections

Definition

Intersections are where most conflicts between bicyclists and motorists occur. Complicated or busy intersections can act as barriers to less confident bicyclists, especially if they are not designed in a way that makes it clear how and where bicyclists and motorists are intended to travel. Design innovations such as green bike lanes, bike boxes, and bicycle signals can make traveling through an intersection more comfortable for all modes.

Applicability and Use

On streets with existing or planned bike lanes, the bike lane pavement markings should continue all the way to the intersection. At intersections without bike lanes, shared lane markings may be used to indicate proper positioning for bicyclists waiting for a green light or passing through the intersection. Green bike lanes are bike lanes that use color to define an area where there is an increased risk of crash between a bicyclists and a motorist. The color helps to improve visibility of the conflict zone. Green bike lanes or a dashed stripe may also be used to direct bicyclists through the intersection. Bike boxes (described in more detail in Appendix D) allow bicyclists to move to the front of the queue, making them more visible and improving their ability to safely execute a left turn or clear an intersection during the green phase.

Right Turns

Right turns are relatively easy for bicyclists, since they typically ride on the right side of the street. Where there is a right-turn only lane, right-turning bicyclists are typically encouraged to merge with right-turning motor vehicles.

Through Movements

Through-moving bicyclists may be vulnerable to right-turning motor vehicles crossing over the bike lane (often referred to as a “right hook” conflict). Where there is no designated right-turn only lane, the bike lane marking should extend to the intersection. Where there is a right-turn-only lane, there are several considerations:

- Where there is adequate width to continue the bike lane marking up to the intersection, the bike lane should be marked to the left of the right-turn only lane. This will enable right-turning motorists to enter the turn lane in advance of the intersection, avoiding last-moment conflicts.

- Where there is not adequate width to continue the bike lane marking up to the intersection, shared lane markings may be incorporated at the left edge of the right-turn lane or in the through lane.

Additional treatments such as green bike lanes and signage may be used to raise both motorists' and bicyclists' awareness of potential conflict points.

Left Turns

A separate bicycle left-turn lane should be provided where there are considerable volumes of left-turning bicyclists, or where a designated or preferred bicycle route turns left. Left-turn lanes may also be appropriate at locations where left turns are allowed for bicyclists but not motorists (e.g. onto a bicycle boulevard or shared use path). A green bike box may be used at a signalized intersection to facilitate bicyclists making left turns, to create space for multiple bicycles to cue (in places where bicycle volumes are high), and to raise awareness that bicyclists may be present.

Roundabouts

Roundabouts provide non-signalized traffic control at intersections. They typically include a one- or two-lane roadway that encircles a central island around which vehicles travel counterclockwise. Continuing bicycle lanes through roundabouts has not been shown to improve safety. Rather, bicycle lanes should terminate in advance of crosswalks at roundabouts, providing sufficient space for bicyclists to merge with motor vehicles. The installation of shared lane markings at the entrance to roundabouts informs bicyclists of proper lane positioning while riding through the roundabout and alerts motorists to expect merging bicyclists. Providing ramps up to the sidewalk allows bicyclists the option of navigating the roundabout as a pedestrian.

Intersection Median Barrier

Definition

Intersection median barriers are raised curbs or islands that extend along a street, preventing vehicles from making U-turns or left turns from cross streets. Intersection median barriers are primarily used as a traffic management technique in places with significant cut-through traffic on neighborhood streets. They are also used in cases where left-turn movements create a safety concern. The median barrier is typically placed on the street with higher traffic volumes. Median barriers can improve safety and convenience for bicyclists and pedestrians when crossing refuges are installed, and are often used in conjunction with bicycle boulevards.

Applicability and Use

Intersection median barriers are a type of traffic diversion and should be used only after a complete traffic analysis. This treatment may be considered in the following locations:

- Where cut-through traffic on a neighborhood street has been observed to be a problem.
- Where analysis of traffic patterns in the area shows that cut-through traffic would not be diverted to a nearby street.
- Where local residents would not have to drive excessive distances to access their homes. Excessive distance may be defined during the planning process, but generally residents should not have to drive more than a quarter mile (total distance) beyond the direct route.
- Where there are bicycle/pedestrian priority routes (i.e. Bicycle Boulevards). Intersection median barriers not only reduce motor vehicle volumes on residential streets, making these streets safer and more comfortable for biking and walking, but also provide an opportunity to enhance crossings of higher volume and speed roadways.
- Where emergency response times are not negatively impacted (see Appendix E).

Rectangular Rapid Flashing Beacons

Definition

A Rectangular Rapid Flashing Beacons (RRFB) is a pedestrian warning signal consisting of yellow LED lights in two rectangular clusters, or beacons, that employ a stutter-flash pattern similar to that used on emergency vehicles. The beacons are often mounted below a standard pedestrian crossing warning sign and above the arrow plaque used to indicate the crossing location. RRFBs are actuated either by a push-button or passive detection.

Applicability and Use

- RRFBs may be used at uncontrolled intersections and mid-block crossings.
- RRFBs should be considered at uncontrolled intersections or at mid-block crossings where additional measures are needed due to high volumes and speeds.
- They should be considered where there are high volumes of pedestrians or bicyclists, a high number of vulnerable pedestrians (e.g. near schools, senior centers), or at off-street path crossings.

HAWK Signal

Definition

"HAWK" stands for High-intensity Activated crossWalK and is also referred to as a pedestrian hybrid beacon. A HAWK signal is a push button-activated pedestrian and bicycle signal that increases pedestrian and bicycle safety at crossings while stopping vehicle traffic only as needed. The following describes how a HAWK signal works:

- The signal will remain dark until a pedestrian activates the walk indication by pushing a button.
- The signal will then turn to a flashing yellow to warn drivers that a pedestrian or bicyclist will begin using the crosswalk.
- The signal will then turn to a steady yellow advising drivers the signal is about to turn red.
- The signal will then turn to a solid red, requiring vehicles to stop at the stop line. The pedestrian or bicyclist will see the walk indication and proceed into the crosswalk.
- Once the walk time is completed, the signal will flash red. This lets the driver know that once they come to a complete stop they may proceed through the intersection if there are no pedestrians or bicyclists in the crosswalk.

Once the walk indication has returned to "Don't Walk", the signal will return to the dark or "off" position until the push button is activated again.

Applicability and Use

HAWK signals may be used at mid-block crossings (including off-street path crossings) and should be considered at crossings where high traffic volumes and speeds make it difficult for pedestrians and bicyclists to cross the street, and where 'warrants' for a conventional signal are not met. HAWK signals provide a protected crossing while allowing vehicles to proceed through a pedestrian/bicycle crossing as soon as it is clear, thus minimizing vehicle delay. HAWK signals may also provide audible information for visually impaired pedestrians.

Bicycle-Activated Signal Push Button

Signals specifically intended for pedestrian and bicycle street crossings such as midblock or HAWK signals may require special activation. Bicycle-activated push buttons are a separate push button located along the curb or location easily accessed by bicyclists. Bicycle activated push buttons allow bicyclists to activate the signal without having to change their course of travel, dismount or detour onto the sidewalk to use a pedestrian pushbutton. This improves convenience, compliance and efficacy of the signal. The disadvantage of push buttons is that they are challenging for bicyclists wanting to make a left turn. The following design considerations should be taken into account:

- Place push button within reach of the curb but with appropriate setbacks to avoid being hit by passing motor vehicles.
- Push buttons work well on streets without parking or where there are parking restrictions at the approach to the intersection.
- Use a large button for easy actuation by bicyclists.
- Placement of the push button assembly and bicycle queuing should take right-turning motor vehicles into consideration.

Bicycle Detection Pavement Markings

Definition

Bicycle detection is used at actuated signals (signals that are user-activated by pavement sensor/loops, video, or push buttons) to alert the signal controller of bicycle crossing demand on a particular approach. Bicycle pavement markings may be used to show where a bicyclist should stop to trigger a demand-actuated signal.

Applicability and Use

For installation of signal detection markings, signal equipment should be investigated first to ensure that it can detect bicycles. When installing roadway markings, consider the following priorities:

- Place detector markings at all new and upgraded signals with loop detectors.
- Systematically adjust sensitivity and add pavement markings at all signals along existing and new bicycle routes.
- Investigate and adjust (if possible) signal sensitivity and add markings at locations requested by the public.

Placement of bicycle detector markings should consider the following:

- The bicycle detector symbol should be placed in the optimum location for the bicycle to actuate the signal.
- The detection zones and markings should be placed within the pathway of bicycles so that they do not have to maneuver into a different position within the lane in order to be detected.
- If bicyclists are expected to use multiple lanes of a roadway (e.g. right and left turn lanes) provide detection and markings in multiple lanes.

Bicycle Parking

Definition

Conveniently located bicycle parking is an important element of a multimodal transportation system because it allows bicyclists to secure their bicycles at their intended destination, whether that is their place of work, a local business or attraction, or a transit station. Bicycle parking may be provided in a variety of forms depending on whether it is for short-term or long-term use (e.g. a brief shopping stop, or an all-day event). Short-term parking may consist of individual or multiple bike racks placed within the furniture or building frontage zones on a sidewalk or, in high-capacity corrals placed within the street itself (where there is a defined motor vehicle parking lane). Long- term parking may consist of racks or an array of racks that may be sheltered and placed in off-street locations such as parking garages/lots or transit station entrances (e.g. cages, sheltered corrals). Long-term parking may be access controlled.

Applicability and Use

- Well-designed and placed bicycle parking promotes a more orderly streetscape, preserves the pedestrian right-of-way and prevents damage to trees and street furniture.
- Bicycle parking should be conveniently placed within close proximity to destinations such as businesses, parks, schools and other community facilities, and major transit stops and stations.
- In general, placing one or two racks at multiple locations along a block face is preferred to grouping all the racks at one location. In order to ensure that there is adequate parking to meet demand, parking utilization should be periodically assessed, and additional parking should be provided where demand is high.
- In areas with high bicycle parking demand and limited sidewalk space, in-street corrals or other high capacity bike rack designs may be considered. This treatment will require a right-of-way permit. Curb extensions may present an opportunity for bicycle rack installation.

Maintenance of Bicycle Facilities

In every context, roadway surfaces deteriorate and debris accumulates over time. If these conditions are not addressed in a timely manner, a high-quality facility may become unusable for bicyclists. Furthermore, surface conditions that are satisfactory for motorists may be hazards for bicyclists. These issues can be easily managed through an effective maintenance program. While the safety of all roadway users is a top priority, a good maintenance program will also help conserve public resources since facilities may need to be replaced or renovated less often.

Funds should be budgeted appropriately so that facilities are sufficiently maintained. The City should seek to establish standards and a regular schedule for inspection and maintenance of facilities. Environmentally-friendly maintenance practices, including removing debris in a timely manner, should be implemented with consideration for stormwater runoff. As bicyclists are often the first to observe facilities that need attention, the City should continue to respond to and document public input regarding maintenance issues. This will help in identifying recurring problems and setting maintenance priorities. Further guidance on roadway maintenance can be found in the AASHTO Guide for Development of Bicycle Facilities.

Pavement Overlays

Overlays provide an excellent opportunity to improve bikeway conditions if executed appropriately. Special caution should be taken to ensure that no seam is left in the roadway space designated for bicyclists (or in areas where bicyclists are expected to ride in the case of shared roads). In addition to ensuring an even and well-marked surface for cyclists, overlays are a practical occasion to consider widening the roadway, especially in areas with planned paved shoulders, such as sections of the Urban Growth Area. Pavement overlays present the opportunity to:

- Create bike lanes and other bicycle facilities
- Install signal sensors that can detect the presence of bicycles
- Consider bigger projects such as road diets

Pavement Marking Maintenance

All markings should be maintained in a legible condition so they can be easily interpreted by all roadway users, including motorists. While newly installed markings are highly visible, they may fade over time, greatly reducing their perceptibility, especially at night. The following strategies apply to pavement marking maintenance:

- Establish routine marking inspections, including assessing visibility at night.
- Markings should be replaced on an as needed basis, with substandard markings being replaced as soon as possible. Markings in high-use areas may need restriping more than once a year.
- Roadways where markings don't follow City design guidelines should be updated to current standards as part of regular maintenance.
- Transitions to county roadways should be evaluated, especially at frequently traveled routes in and out of the city. Coordination with the County may be necessary.
- Consider the cost of using more durable materials such as thermoplastic versus more frequent maintenance of less durable materials such as paint.

Street Sweeping

Streets may feature high-quality bicycle facilities; however, if these facilities are strewn with gravel, sand, or other debris, they become far less safe and attractive to users. As a part of routine maintenance, roadways should be swept to remove any litter. When sweeping vehicle lanes, bicycle lanes or sidewalks, debris should not be swept from one facility to the other. Debris can be removed from roadways with curbs through the use of vehicles that vacuum the debris, while uncurbed roads can be swept. The following recommendations apply to street sweeping:

- All bicycle facilities should be swept routinely. Identifying routes of particular importance will help ensure greater rider comfort. Facilities that may require more frequent sweeping include popular commuter or recreational corridors and roadways that regularly build up debris.
- Establish a sweeping schedule for facilities that anticipates both routine and irregular sweeping needs. Routine sweeping schedules may occur at regular intervals, with greater frequency seasonally. Strategies for inspection and sweeping after unanticipated events should also be established. These events may include flooding, storm events, or vandalism.
- Sweep project area after roadway repairs.
- Continue to update priority routes for street sweeping as new facilities are constructed.
- Reduce the volume of debris on roadways through ordinances that require parties responsible for debris to contain it. Possible requirements include paving gravel and dirt driveway approaches, tarps on trucks loaded with gravel or sand, or clean up after construction operations that leave gravel and dirt on the roadway.

Surface Repairs

Pavement surface condition significantly affects the quality of a bicycle facility, and poor surfaces can deter riders. Defects such as longitudinal cracks or joints, potholes, and root heaves among others can degrade riding conditions considerably. The following recommendations apply to maintaining the surfaces of bicycle facilities:

- Perform routine assessments of roadway surfaces for abnormalities. Make the necessary repairs in a timely manner after observing or receiving comment of any abnormality.

- Correct any pavement edges, seams, or potholes. Keep in mind that bicyclists have a higher level of sensitivity to these surface irregularities during the overlay process.
- In order to avoid leaving an edge or seam on the surface of a bicycle facility, have the overlay encompass the whole roadway surface when possible.
- As funding allows, replace parallel-slatted drain grates with bicycle-safe grates. Prioritize replacements on routes with bicycle facilities. Install bicycle-safe grates on all new projects.
- Use overlays as an opportunity to complete multiple projects at once. Projects that might be completed in conjunction with an overlay include road widening or paving approaches to unimproved road and driveway connections.
- Ensure that surface repairs do not result in seams running longitudinally through bicycle facilities or areas which are anticipated to have high ridership.
- In order to lessen inconvenience to bicyclists and extend the lifecycle of bicycle facilities, carry out preventative maintenance on a consistent basis. Preventative maintenance may include eliminating intrusive tree roots, placing root barriers, selecting paving materials with longer lifecycles, and removing debris from storm drains.

Additional Street Design Resources

The following list provides information on where to find additional bicycle facility and street design guidance. Important design guidance not included above includes bike lanes which can be found in Appendix E, and wayfinding, in Appendix F. Information regarding traffic calming, can be found in PEDSAFE (see below).

- **PEDSAFE** (http://www.walkinginfo.org/pedsafe/)
- **BIKESAFE** (http://www.bicyclinginfo.org/bikesafe/)
- **NACTO Bikeway Design Guide** (http://nacto.org/cities-for-cycling/design-guide/)
- **MUTCD** (http://mutcd.fhwa.dot.gov/)
- **APBP Bicycle Parking Guide** (http://www.apbp.org/?page=publications)
- **AASHTO Guide for the Development of Bicycle Facilities** (https://bookstore.transportation.org/item_details.aspx?ID=1943)

Chapter 5

Chapter 5: Program Recommendations

Program recommendations (strategies) are intended to support Plan goals, policies and actions. They are important for developing a community culture that is supportive of bicycling as a safe, viable and comfortable mode of transportation. Recommendations are organized by the "5 Es": education, enforcement, engineering and encouragement, which are covered in this chapter; and evaluation, which is covered in Chapter 6. While organized into the "5 Es," it should be recognized that some programs address more than one "E" and have multiple benefits.

Education

The bicycle network is designed to provide safe and convenient access for bicyclists throughout Bellingham. Like facilities for other transportation modes, the network of bicycle facilities must be used appropriately to be safe and effective. For example, bicycle facilities are designed under the assumption that bicyclists ride the correct direction on streets and stop at red traffic signals and stop signs. Motorist education and awareness is also critical to ensure bicycle safety. Motorists should yield to bicyclists when turning, provide sufficient space when passing, and should not drive or park in designated bicycle lanes. Education for bicyclists and motorists on how to use and interact with bicycle facilities and how to follow the rules of the road is essential for the safety of all users.

Strategy 1: Expand bicycle education opportunities.

Purpose: Increase safety and comfort of roadway users of all ages and abilities.
Audience: Bellingham and Whatcom County residents
Potential Partners: Bellingham Police Department, Bellingham Parks and Recreation Department, Whatcom County Health Department, everybodyBIKE, Bellingham School District, Western Washington University, Whatcom Community College, Bellingham Technical College, and local bicycle clubs
Program Description: Offering and effectively publicizing bicycle skills courses to community members of all ages can help encourage safe biking habits. Strategies for increasing participation in courses may include offering courses through employers, and offering a variety of course formats (e.g. full-day, half-day, or weekly for several consecutive weeks). A clear, centralized information source such as a page on the City website can help increase awareness of these events. Courses should be planned for a wide

range of abilities and ages. In addition, the City should consider working with colleges in Bellingham to integrate bicycle safety courses into the orientation programs held at the beginning of each school year.

Strategy 2: Provide education for motorists.

Purpose: Increase safety and comfort for vulnerable roadway users by educating motor vehicle drivers about rules of the road, specifically laws pertinent to bicyclists and pedestrians.
Audience: Bellingham residents
Potential Partners: Bellingham Police Department, Bellingham Public Works Department, Western Washington University, and everybodyBIKE
Program Description: Develop an informational campaign aimed at motorists. Utilize local driver training schools, public service announcements, and the City of Bellingham Website to disseminate information about the laws related to sharing the roadways with all users including laws related to motor vehicle behavior around pedestrians and bicyclists. Announcements can focus on laws such as the three feet law (if passed locally) and state law requiring motor vehicles to stop for pedestrians in unmarked crosswalks.

Strategy 3: Provide bicycle education through the Safe Routes to School Program (SRTS).

Purpose: Encourage children to bike and walk to school through education and safety improvements.
Audience: Parents, children, school faculty and staff, bus drivers, and school neighbors
Potential Partners: Bellingham School District, Bellingham Police Department, Bellingham Public Works Department, Whatcom County Health Department, everybodyBIKE
Program Description: Bellingham has implemented Safe Routes to School (SRTS) programs at a small number of schools funded by WSDOT SRTS grants. The program encourages students to bike and walk to school where they are not currently doing so, while making it safer for students who are already biking and walking. A key component of the program is educating students on safe bicycling (and walking) behavior. Safety messages need to be reinforced over time, especially as adolescents near driving age.

In order to facilitate a district-wide SRTS program, a full- or part-time SRTS Coordinator should be assigned to work with the Bellingham School District. The SRTS Coordinator should facilitate an oversight committee composed of key stakeholders. A district-wide plan should provide a strategy for extending the SRTS program to all of Bellingham's schools, to update school walking routes and educate students of all ages about bicycle and pedestrian safety. The SRTS Coordinator could also help to match certified bicycle instructors with the School District and investigate funding opportunities to compensate the

instructors. Institutionalizing the SRTS program in all schools would complement current everybodyBIKE program offerings such as bicycle skills courses and bicycle safety assemblies for elementary students.

Strategy 4: Distribute information on proper use of bicycle facilities.

Purpose: Encourage safe and predictable riding behaviors.
Audience: Bellingham residents
Potential Partners: Bellingham Police Department, Bellingham Public Works Department, Bellingham Parks and Recreation Department, Whatcom Transportation Authority, Whatcom County Health Department, everybodyBIKE, Western Washington University, Whatcom Community College, Bellingham Technical College, local bicycle clubs and shops, and the Washington Department of Motor Vehicles
Program Description: As Bellingham continues to improve its bicycle network, information should be provided to encourage the correct use of more familiar facilities (e.g. bike lanes, shared lane markings) as well as facilities that are new to Bellingham (e.g. bike boulevards, cycle tracks). Information on bicycle facilities should be distributed in multiple mediums so it is accessible to as many users as possible. This information should be posted on the City's website and at popular recreation and transportation centers (e.g. bus stations, signs at popular bike trails). Another distribution method the City should consider is the use of quick response (QR) codes that direct users to resources on the internet. Temporary signs should be used alongside new facilities in order to educate users about proper use.

Enforcement

Enforcement is an important component of improving roadway safety for all users. Enforcement efforts should complement, and in most cases, be preceded by educational efforts. In fact, law enforcement has an important role to play in educating roadway users about behaviors that improve or diminish roadway safety. Enforcement efforts should be balanced (i.e. target all roadway users, not one group) and focused on those behaviors that are known to cause crashes. For bicyclists, riding at night without lights, riding the wrong way (against traffic), and failure to follow traffic controls are among the behaviors that should be targeted. For motorists, not providing adequate space when passing bicyclists, not yielding to bicyclists, and parking or driving where there are dedicated bicycle facilities are among the behaviors that should be targeted.

Strategy 5: Promote safety through City of Bellingham Municipal Code.

Purpose: Increase safety through revisions/additions to the Bellingham Municipal Code.
Audience: All roadway users
Potential Partners: Bellingham Police Department and Bellingham Public Works Department
Program Description: The Bellingham Municipal Code should be reviewed to ensure it promotes safety and comfort for bicyclists, pedestrians, and motorists alike. For example, laws regarding helmet use should be revisited; a "go on red" law, which permits bicyclists to proceed through a red light after not

being detected for two light cycles should be considered, as well as a law establishing a minimum passing distance between motor vehicles and bicycles (e.g. a "3-foot law").

Strategy 6: Enhance and increase the Bellingham Police Bicycle Patrol.

Purpose: Encourage strong community relationships between officers and bicycle users to increase safety and compliance.
Audience: Bellingham residents
Potential Partners: Bellingham Police Department
Program Description: Police officers regularly use bicycles to patrol areas in downtown Bellingham and nearby neighborhoods. This practice should be continued and expanded. Officers on bicycles become familiar with the bicycling environment and can help to develop respect and understanding of bicyclists' operating characteristics and needs within the Police Department. Furthermore, ensuring the safety of trail users is a task uniquely suited to bicycle patrols. While there are likely to be fewer warnings issued on off-road facilities, such an environment provides officers with a venue to distribute educational materials and encourage safe riding habits.

Engineering

The quality of bicycle facilities has a direct impact on the experience of bicyclists, and will therefore have a significant influence on the ability of the facility to attract and sustain use. Well maintained, high-quality facilities have been demonstrated to attract higher levels of users than poorly designed and maintained bikeways that offer inadequate separation from high speed traffic. Likewise, interconnected systems with minimal gaps are essential.

Strategy 7: Educate staff on best practices in bicycle facility planning, design and implementation.

Purpose: Provide planning and engineering staff with the best current practices in bicycle facility planning, design and implementation.
Audience: Public and private sector professionals who work on transportation projects
Potential Partners: Bellingham Public Works Department, Bellingham Planning and Community Development Department, Bellingham Parks and Recreation Department, and Whatcom County
Program Description: Policies and standards related to the planning, design and implementation of bicycle facilities should be communicated to staff in appropriate departments to ensure they are effective. Agency staff and consultants should have opportunities to attend training sessions on bicycle planning, design and implementation. These training sessions should occur on an annual or semiannual

basis in order to ensure that all new staff is properly trained, principles are reinforced, and new practices are disseminated.

Encouragement

Bellingham benefits from an enthusiastic bicycling community. There are several bicycling clubs and organizations that promote bicycling and organize group rides in and around the city. The presence of these groups increases awareness and encourages new users. In addition to promoting recreational cycling, the City and its partners have implemented a variety of programs that incentivize bicycling for transportation needs, specifically targeting the reduction of single occupancy vehicle trips.

Strategy 8: Partner with local businesses, colleges and bicycle organizations to encourage bicycling.

Purpose: Provide resources to local businesses and organizations to encourage bicycling.
Audience: Bellingham businesses, organizations, and colleges
Potential Partners: Whatcom Smart Trips, Whatcom Transportation Authority, Western Washington University, Whatcom Community College, Bellingham Technical College, local bicycle clubs, and local businesses
Program Description: Bellingham already has several programs and organizations that encourage bicycling, such as Whatcom Smart Trips, everybodyBIKE, and local bicycle clubs. Whatcom Smart Trips should continue its efforts to reach the general public and employers. This should include education of employers on the Bicycle Commuter Tax Reimbursement, information and local examples of employers who offer incentives to encourage employees to bike to work, and special awards/recognition for local employers with successful bike commute programs. Whatcom Smart Trips may also play a role informing businesses about the League of American Bicyclists "Bicycle Friendly Business" recognition program. Local bicycle clubs and colleges could coordinate efforts to promote student bicycling through events and campaigns.

Strategy 9: Update routes and add interactive features to the City's bike route map.

Purpose: Increase awareness and promote use of the City's bicycle network.
Audience: Bellingham residents and visitors
Potential Partners: Bellingham Public Works Department, Bellingham Parks and Recreation Department, Whatcom Transportation Authority, Whatcom County Health Department, Whatcom Smart Trips,

Western Washington University, Whatcom Community College, Bellingham Technical College, and local bicycle clubs and shops

Program Description: As the recommended bicycle network is implemented, updates to the City's bicycle map will be important to ensure residents and visitors are aware of the extent of the network. The map should be available in a variety of formats including PDF, and online web map. Web map applications could include route planning (origin/destination), and a route difficulty rating system based on distance, traffic, and terrain. Additionally, the City could consider partnerships with local organizations or colleges (e.g. WWU) to develop mapping resources that would provide a more in-depth understanding of Bellingham's bicycle network.

Strategy 10: Pursue the League of American Bicyclists' Bicycle Friendly Community Gold, then Platinum status.

Purpose: Encourage a culture that recognizes bicycling as a viable mode of transportation.

Audience: Bellingham residents and visitors

Potential Partners: Bellingham Public Works Department, Bellingham Planning and Community Development Department, Bellingham Parks and Recreation Department, WCOG programs

Program Description: The League of American Bicyclists' Bicycle Friendly Community Program (BFC) provides incentives, hands-on assistance, and award recognition for communities that actively support bicycling. A Bicycle Friendly Community welcomes bicyclists by providing safe accommodation for bicycling and encouraging people to bike for transportation and recreation. Bellingham achieved silver level status under this Program in 2007 and will continue to improve upon this designation through the implementation of recommendations in this Plan.

Strategy 11: Create an Open Streets Event.

Purpose: Encourage biking, walking, and physical activity by providing a car-free street event.

Audience: General public, generally within a particular community but can be promoted citywide

Potential Partners: Bellingham Public Works Department, Bellingham Police Department, Bellingham Planning and Community Development Department, Bellingham Parks and Recreation Department, Parks and Recreation Advisory Board, Whatcom Smart Trips, Whatcom County YMCA, Bellingham Whatcom County Tourism Board, PeaceHealth, active living retailers (e.g. running, walking, recreational equipment stores), Bellingham Farmer's Market, Whatcom Community Foundation, Whatcom County Health Department

Program Description: Open Streets programs temporarily close streets to automobile traffic so that people may use them for walking, bicycling, dancing, playing, roller skating, and more. They provide a safe space for people to ride and to learn just how easy it can be to get around on two wheels. While leisurely riding, participants can discover buildings, neighborhoods, and places they've never noticed

before. Open Streets events encourage physical activity and social interaction, and boost local businesses. They can be one-time events, weekly, or monthly, and are generally very popular and well-attended. The City should partner with other community agencies to develop a pilot event, using information and resources provided by the Open Streets Project initiative (http://openstreetsproject.org/).

Chapter 6

Chapter 6: Implementation

This chapter describes practical and feasible strategies for implementing the Bellingham Bicycle Master Plan. In order for bicycling to become an attractive mode of transportation that is accessible to more Bellingham residents, it is essential to institute practices to ensure the proper construction and maintenance of the physical network, and to provide programs for the encouragement of bicycle use. It will also be important to establish complementary laws and regulations, and to expand the planning and support functions of the City to ensure this work can be accomplished. This chapter provides a framework for plan implementation, and also addresses funding opportunities and performance measures to gauge progress in future years.

Investment

The level of investment that will be required to implement this Plan is modest in comparison to other transportation facilities. The planning level cost estimate to implement the on-street elements of the 134 mile network is $20,531,162. The bicycle network includes approximately 45 miles of bicycle lanes, 7 miles of shared lane markings, and 52 miles of bicycle boulevards, 0.8 miles of cycle track, and 4 miles of buffered bike lanes. Table 6.1 outlines the costs per facility type for the full bicycle network.

Table 6.1: Planning level cost estimates for the total number of recommended miles per facility.

On-Street Facilities	Total New Recommended Miles	Network Costs (No costs yet for Further Study Needed)				Complete Network (Existing + New) Recommended Miles
		Near-Term	Mid-Term	Long-Term	TOTAL	
Bike Lanes *	45.7	$527,754	$544,314	$11,610,707	$12,682,775	73.7
Buffered Bike Lanes *	4	$23,491	$151,639	$670,284	$845,414	4
Shared Lane Markings *	6.9	$31,553	$44,379	$222,518	$298,450	7.3
Climbing Lanes*	7.9	$76,692	$746,967	$220,165	$1,043,824	8.6
Bicycle Boulevards	52.1	$939,990	$1,876,232	$1,444,267	$4,260,489	52.1
Paved Shoulders	0	$0	$0	$0	$0	5.7
Cycle Tracks	0.8	$0	$1,361,297	$0	$1,361,297	0.8
Marked Routes **	7.8	$0	$0	$0	$37,426	7.8
Further Study Needed ***	9.4	$0	$0	$0	$0	9.4
TOTAL	134.6	$1,599,480	$4,724,828	$14,167,941	$20,492,249	169.4

** Cost calculation assumes on-street parking lane striping. Costs will be slightly lower where there is no striped parking lane.*

*** Marked Routes were not prioritized, but are included in total network costs.*

**** Streets where a design solution is not immediately apparent. Costs for study, design, and implementation will likely be high.*

Bicycle Project Cost Calculations and Assumptions

Cost calculations assume that bicycle facility improvements are provided on both sides of the street. Any pavement costs are independent of bicycle facility costs. For example, if paved shoulders are added or widened, then the presumption is that this would be done as a general safety and roadway preservation project rather than a bicycle project even though it would benefit bicyclists. Cost estimates do not include design unless specifically stated in the assumptions. Design costs, which include construction planning, public process, facility design, and other background work required to implement the project, can generally be estimated at 20% of the facility construction cost. Projects requiring a higher level of public process, such as proposals to remove on-street parking, may have higher design costs. Lastly, cost estimates involving major construction do not include contingency costs, which typically are estimated at 25% of the construction costs. Appendix B shows the calculations and assumptions for each type of recommended bicycle facility. Costs are based on local cost bid information and industry standards. Maintenance costs have not been included in project cost calculations and are separately presented in Appendix D. Maintenance costs include routine sweeping of bike lanes, replacement of signs when damaged or no longer retro-reflective (typically signs are replaced every 10 years), restriping pavement markings, and replacing bike lane and shared lane marking symbols. Because striping is typically done using thermoplastic, it is expected to have a 10 to 15 year life span. Thermoplastic symbols are expected to have a life span of 3 to 10 years depending on whether or not they are placed within the path of motor vehicle tires.

Institutionalization

Integrating bicycle considerations into policies and processes is referred to as "institutionalization." Institutionalization is accomplished by incorporating bicycle needs into the City's transportation mission and corporate culture. It requires internal work by staff and coordination among departments to ensure policies, plans, programs and processes address the needs of bicyclists.

Project design, prioritization, budgeting, and maintenance of the bicycle network are responsibilities that cross departmental lines. Coordination among departments is critical for ensuring that there are no missed opportunities as street and trail projects are planned, designed and implemented. Key departments and divisions within departments that should be involved in project coordination include:

- Public Works
    - Development Review and Engineering
    - Operations and Maintenance
- Planning & Community Development
- Parks & Recreation

Other City departments that may need to be involved on a project-by-project or program basis include:

- Public Works Water Utility
- Bellingham Fire Department
- Bellingham Police Department

The Master Plan envisions a citywide bicycle network that will be developed over the next 20 years. The implementation of this network will occur annually with the dedication of City resources for street improvements and maintenance. Public Works Development Review staff will recommend projects based on citywide priorities and opportunities and will work with the Transportation Commission to make recommendations for funding bicycle network improvements as part of the annual Six-Year Transportation Improvement Program (TIP). Whether it is a relatively simple striping plan or a more complex intersection design, funded bicycle improvement projects will be engineered and designed with input from staff representing multiple City departments, including Planning and Community Development and Parks & Recreation.

Implementation Strategies

The City should identify annual funding for Plan implementation, as well as routine and unexpected maintenance. Funding will come from a variety of sources, including local, regional, state, and federal sources. The following strategies reflect the community's desire to complete the recommended bicycle network as rapidly as possible, with the goal of completion in 15-20 years.

Strategy 1: Continue to accommodate bicycle facilities during roadway construction, reconstruction, and overlays when possible.

Many of the facilities within the recommended network will be implemented as part of larger roadway projects, including the development of bicycle facilities when new streets are constructed or when existing streets are scheduled for resurfacing. Implementation or improvement of bicycle facilities should be considered during all major roadway projects in an effort to reduce costs.

Strategy 2: Dedicate funding for high-priority bicycle facilities and studies, while planning for unforeseen costs.

It is important that funding be set aside for both the initial planning and eventual construction of high priority projects, including locations listed as "Needs Further Study," while also maintaining funds for unexpected costs to facilities (e.g. street sweeping after large storms or unexpected maintenance). In order to expand and improve Bellingham's citywide bicycle network to serve all users, the annual budget should incorporate these independent, high priority projects that are not likely to be implemented through other means.

Strategy 3: Identify funding for programs and facility improvements in support of the bicycle network.

Dedicated funds are needed for supporting elements such as education programs, wayfinding, and expanding the City's bicycle rack and bicycle count programs. A portion of the Public Works budget will need to be reallocated to these efforts.

Strategy 4: Pursue a variety of mechanisms for funding infrastructure projects.

Bicycling infrastructure attracts users of all ages and abilities and offers a high return on investment. Most bicycle improvements are low cost when compared to new street construction projects. At the same time, such improvements offer numerous benefits, from optimizing the roadway's ability to move people and goods, to providing low cost transportation choices for households. Perhaps most importantly, bicycle facilities contribute to community livability, which helps to attract and retain residents and employers.

The majority of the recommended bicycle network will be implemented by routinely incorporating bicycle facilities when streets are initially constructed, resurfaced, or substantially reconstructed. Other methods for funding and implementing recommended improvements may include:

- Arterial street frontage improvements for marked bicycle lanes, curb, gutter, and sidewalk constructed by private developers, as required by Bellingham development code.
- Local, regional, state, and federal grant funds for transportation and non-transportation programs.
- Dedicated local funding sources, such as TBD funds specifically allocated for non-motorized transportation infrastructure.

Partnerships with agencies, organizations, and private interests such as WTA, Bellingham School District, local colleges and universities (WWU, WCC, and BTC), the Port of Bellingham, the Downtown Bellingham Partnership, Whatcom County, private companies, developers, and others will be needed throughout the implementation of this Plan. Partners may support plan implementation in a number of ways such as providing direct financial support, dedicating rights-of-way, contributing mitigation or transportation impact fees, pursuing grant opportunities, sponsoring events, conducting media and public education campaigns, etc.

Strategy 5: Incorporate funding for maintenance of bicycle facilities into the annual maintenance budget.

Dedicated funds are needed to cover periodic, annual and long term maintenance of the existing and future bicycle network. Maintenance activities may include replacing pavement markings, fixing potholes, filling concrete joints, changing out drain grates, replacing and repairing signs, etc. A portion of the Public Works Street Fund should be allocated to bicycle facility maintenance. (See Appendix D for planning level maintenance costs).

Strategy 6: Pursue grant funding.

In addition to making internal budget adjustments in order to maximize investments, the City should continue to pursue a robust mixture of outside funding including other local, regional, state, and federal sources. Obtaining outside funding can be challenging due to increasing competition for limited amounts of transportation grant funds. However, being the largest urban area within Whatcom County, Bellingham is in a good position to receive funding from outside grant funding sources.

Having good data is critical to being able to win grants. Bellingham's bicycle count program should continue and be expanded as feasible. In addition, having good crash data and tracking safety issues can help the City pursue WSDOT funding, much of which is safety-focused.

Strategy 7: Establish a grant match reserve fund (or similar system) in order to take full advantage of state and federal grants.

State and federal grants typically require between 13.5% and 20% of the total project cost to be provided from local funding sources and grant applications with higher local funds are far more competitive than applications that provide the minimum local funds. Local transportation funding can include dollars derived from the local Street Fund, Real Estate Excise Taxes (REET), special sales taxes, such as Bellingham's Transportation Benefit District (TBD), and funding contributions from other agencies, such as WWU or WTA. In addition, grant funding agencies look very favorably on projects that include mitigation funds derived from private development, such as transportation impact fees. In order to maximize outside grant funding the City should establish an annual grant matching fund for both bicycle and pedestrian infrastructure. Such a program could be implemented by setting aside a specified portion of the dedicated TBD non-motorized funding annually (e.g. 10% ~ $150,000). Any interest generated from the program could be utilized for further bicycle network development, additional fund matching, or maintenance needs.

Strategy 8: Institutionalize the Bellingham Bicycle Master Plan into plans and policies of the City.

Integrating Plan recommendations into existing City policies, plans and procedures is essential to ensure the Plan is implemented in a cost efficient way. Routine consideration of bicycle facilities in the City's project planning and review process will help to ensure they are incorporated into projects where recommended by this Plan. Bicycle Master Plan recommendations should be integrated into all Plans as they are updated, including the Comprehensive Plan, as well as Neighborhood and Urban Village plans.

The City currently has interdepartmental coordination meetings consisting of representatives from key departments (e.g. planning, public works, parks and recreation). These meetings are important for Plan implementation and should be held on an as-needed basis to:

- Review upcoming capital projects and street overlay projects to ensure integration of bicycle improvement recommendations included in the Plan.

- Adjust the schedule of when projects are implemented based on achieving multiple objectives, including implementation of high priority bicycle improvements and safety improvements for other roadway users.
- Identify funding needs (based on sound cost estimates) for incorporating recommended bicycle improvements into capital projects and annual programs, including maintenance.

Strategy 9: Enhance transportation policies that facilitate Complete Street design.

Implementation of bicycle facilities will be most efficient if they continue to be integrated into a comprehensive vision of multimodal transportation improvements. This can be further achieved through the enhancement of the City's existing Complete Streets policy approach as defined in Transportation Element. For example, currently, the Transportation Element states: “All new, reconstructed, or retrofitted arterial streets should provide walking and bicycling facilities.”

Strategy 10: Benchmark progress towards Plan implementation.

Performance measures are used to determine progress made in Plan implementation. The most useful performance measures are quantifiable and can be tracked over time. Performance measures should be evaluated on an annual basis to ensure that they are the most appropriate, cost-effective measures for assessing progress towards the Plan goals. Performance monitoring will be led by the City of Bellingham Public Works Department with aid from other relevant departments and agencies. Figure 6.2 outlines the performance measures for each Plan goal:

Figure 6.2: Performance measures, activities, and measurements used to track plan implementation progress.

Goal 1. Safety: Improve safety of bicyclists by promoting safe bicycling and driving behaviors and building appropriate, well-designed facilities.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Percentage of bicycle facility network completed	100% of bicycle network completed by 2035	2013	Annually	COB Public Works
Number of targeted educational campaigns	1 targeted educational campaign each year	2013	Annually	COB Police Department

Goal 2. Connectivity: Complete a connected network of bikeways linking and providing access to all neighborhoods and key destinations.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Percentage of bicycle facility network completed	100% of bicycle network completed by 2035	2013	Annually	COB Public Works
Ease of bicycle travel between households and urban villages	Increasing RDI score (ViaCity)	2013	Annually	COB Public Works

Goal 3. Equity: Provide bicycling access for all through equity in public engagement, service delivery and capital investment.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Number of households within ¼ mile of a bicycle facility	100% of households in Bellingham within ¼ mile of a bicycle facility by 2035	2013	Annually	COB Public Works
Develop culturally and age-appropriate program and promotional materials	Increase the number of culturally and age-appropriate program and promotional materials	2013	On-going	COB Public Works

Goal 4. Livability: Build a vibrant and healthy community by creating a welcoming environment for bicycle riding.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Achieve Gold, Platinum BFC status	Gold by 2020, Platinum by 2035	2013	N/A	COB Public Works
Number of bicycle racks and on-street bicycle corrals	Increase annually	2013	Annually	COB Public Works

Goal 5. Public and Environmental Health: Develop a bicycle network that enables active, healthy lifestyles and sustains a healthy environment.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Bicycle Mode Share	Increasing Bicycle Mode Share	2013	Annually (using 5-yr average)	U.S. Census Bureau (ACS)
Self-reported physical activity	Increase in self-reported physical activity	2015	Annually (using 4-yr average)	Whatcom County Health Department (Behavioral Risk Factor Surveillance System - BRFSS)
Number of households within ¼ mile of a bicycle facility	100% of households within ¼ mile of a bicycle facility by 2035	2013	Annually	COB Public Works

Goal 6. Choice: Develop infrastructure that creates viable transportation choices, and accommodates multimodal trips.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Number of bike racks installed at transit stations	Bike racks adequate to meet demand	2016	WTA Community Survey schedule	COB Public Works; WTA
Number of households within ¼ mile of a bicycle facility	100% households within ¼ mile of a bicycle facility by 2035	2013	Annually	COB Public Works

Goal 7. Education: Provide education on the rights and responsibilities of the users of all transportation modes.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Number of targeted educational campaigns	1 targeted educational campaign each year	2013	Annually	COB Public Works
Number of schools participating in Safe Routes to School programs	Develop a District-wide Safe Routes to School Program	2013	N/A	Bellingham School District, COB, Whatcom County Health Department, everybodyBIKE

Goal 8. Mode Shift: Create a set of benchmarks that monitor bicycle use over time.				
Performance Measure	**Performance Target**	**Baseline Measurement**	**Data Collection Frequency**	**Data Responsibility**
Bicycle mode share	Increasing bicycle mode share	2008-2012	Annually (using 5-yr average)	U.S Census Bureau (ACS)
Self-reported bicycling to school	Increase in self-reported bicycling to school	2012	Biennially	Bellingham School District (WA Healthy Youth Survey)
Bicycle Count	Increasing number of cyclists over time	2009-2013	Annually (using 5-yr average)	COB Public Works

Goal 9. Economy: Enhance economic vibrancy by creating a bicycle friendly community that is an attractive place to live and work.				
Performance Measure	**Performance Target**	**Baseline Measure**	**Data Collection Frequency**	**Data Responsibility**
Achieve Gold, Platinum BFC status	Gold by 2018, Platinum by 2025	2013	N/A	COB Public Works

Performance Measure Evaluation and Reporting

Performance measures will be used to track implementation of Plan goals as well as project development. The City already communicates progress toward "percentage of pedestrian and bicycle network completeness" through the Transportation Report on Annual Concurrency (TRAC). This report will be broadened to incorporate other performance measures outlined in the Bicycle and Pedestrian Master Plans and will be titled the Transportation Report on Annual Mobility (TRAM). The bicycle and pedestrian sections will establish recommendations and report year-to-year progress through "Implementation Report Cards". The report cards create accountability and focus attention on looking for opportunities to take advantage of public and private projects. They also provide an annual opportunity to step back and reflect on when, where and how resources are being allocated.

The first year's goal is for the adoption of the Plan by the City of Bellingham. Thereafter, the City will integrate the Bicycle and Pedestrian Master Plans with the annual TRAM and Transportation Improvement Program (TIP). This work will be developed by Public Works and reviewed by the Transportation Commission. Project recommendations should be related to the implementation strategies and performance measures in the Plan. For example, a recommendation might be to identify, fund, and study a high crash corridor for possible improvements. The Transportation Commission should consider the annual recommendations and implementation report cards as they review the annual 6-Year TIP.

Since the Bicycle Master Plan is based on current concepts it should be thoroughly reviewed every ten years for content and updates, consistent with the State-mandated Growth Management Act Comprehensive Plan update cycle.

Funding Sources and Opportunities

The Bellingham Bicycle Master Plan lays the groundwork for the planning, prioritization, funding, and installation of bicycle facilities as well as programs that will require a comprehensive funding strategy. Bellingham has been very successful in using local funds to leverage regional, state, and federal grant funds. Future funding should continue to be a combination of federal, state, regional, and local monies. The following sections outline funding opportunities that the City of Bellingham should consider for resources toward Plan implementation. While the Transportation Benefit District #1, approved by voters in 2010, provides dedicated local funds for non-motorized projects, additional local funds could be sought through public-private partnerships which may also be instrumental in implementing certain segments of the network.

Federal Funding Opportunities

Federal funding available for bicycle related projects is in a state of flux until a new federal transportation bill is updated. Currently the two-year, Federal Transportation Bill passed in 2012—known as *Moving Ahead for People in the 21st Century* (MAP-21)—restructured and redefined eligibility for federal funding of bicycle and pedestrian projects. The bill will expire on September 30, 2014, however its basic structure is likely to be carried forward. With the advent of MAP-21, there is more local control of transportation dollars related to walking and biking as 50% of funds are allocated to the discretion of Metropolitan Planning Organizations (MPO). Another trend in the new transportation legislation is less funding specifically ear-marked for programs such as Safe Route to School. As any new state or federal transportation legislation is adopted, the City of Bellingham should work closely with WCOG through the Transportation Technical Advisory Group (TTAG) to monitor and respond to the new legislation.

Transportation Alternatives Program (TAP)

MAP-21 combines previous programs: Recreational Trails, Safe Routes to School and Transportation Enhancements into one: the Transportation Alternatives Program (TAP). TAP funds are split 50/50 between a competitive state grant program and statewide distribution according to population.

Washington State has set aside $1.9 million for recreational trails and $2.4 million annually for Safe Routes to School. The remaining funds are distributed to MPOs and Regional Transportation Planning Organizations. These organizations are responsible for prioritizing and selecting projects. In 2013, the Whatcom MPO had a total of $600,000 in Transportation Alternative Program funds to allocate among all jurisdictions in Whatcom County, including the Port of Bellingham, Lummi Nation, and Nooksack Tribe.

Surface Transportation Program (STP)

The Surface Transportation Program (STP) provides flexible funding that can be used by local jurisdictions or states for roadway, bridge and transit projects. Because Bellingham falls within the jurisdiction of an MPO, the funds are distributed through the Whatcom Council of Governments (WCOG) for prioritizing and selecting projects. Bicycle infrastructure and programming such as maps, educational materials etc. may be supported using these funds. Washington State allocates funds to MPOs. Bellingham has been very successful in securing STP federal funds for multimodal transportation projects that include bicycle and pedestrian facilities.

Highway Safety Improvement Program (HSIP)

This program funds safety related projects that aim to reduce serious traffic injuries and deaths. Bicycle safety projects are eligible for this funding for all roadway types including state highways and residential streets. Eligible improvement projects include bike facilities, intersections, pedestrian crossings, etc. A percentage of this funding ($1.2 million annually) is set aside for Safe Routes to School projects.

The State of Washington administers these federal funds and has distributed HSIP into four invitation-only competitive grants: City Safety Program, County Safety Program, Quick Response Safety Program and the City/County Corridor Safety Program. All of these grants can be used to fund engineering, enforcement, education and encouragement improvements. Like the Traffic Safety Grants, the highway and local program grants are directed by the state Strategic Highway Safety Plan called Target Zero. The Alabama Corridor multimodal safety improvements and the State/Laurel pedestrian safety improvement projects are both funded by HSIP. More information can be found at:
http://www.wsdot.wa.gov/LocalPrograms/Traffic/FedSafety.htm

Federal Transit Program
These federal funds can be used for establishing bicycle and pedestrian access to mass transit, including parking and storage.

Funding for the improvement of mobility for seniors and people with disabilities is expanded under MAP-21. The 'New Freedom' activities have been revised into Section 5310 revenue stream. All Section 5310 projects must be initiated from locally developed, coordinated public transit-human services transportation plans. Additionally there are potential multimodal projects that may be eligible for this funding that would improve bicycle access, especially for older adults and people with mobility limitations.

State and Regional Funding
The Whatcom Council of Governments (WCOG) is the Metropolitan Planning Organization/ Regional Transportation Planning Organization (RTPO) serving Bellingham and other cities, Port of Bellingham, Lummi Nation, and Nooksack Tribe within Whatcom County. It distributes both state and federal funds through a variety of programs. Federal transportation dollars are allocated throughout the region and the WCOG Transportation Improvement Program (TIP) includes projects that are important to the region and included in local plans.

Of the $25 million allocated to the Transportation Alternatives fund for Washington State, approximately $13 million was allocated by population to state MPOs, with the WCOG region receiving $600,000. The WCOG's regional TIP documents the distribution of state and federal funds for projects that include bicycle facilities.

Safe Routes to Schools (SRTS)
Safe Routes to School funding comes to the state from the Highway Safety Improvement Program and Transportation Alternatives Program. It is available to local governments through a competitive grant program and via a data-driven approach to identify the top infrastructure priorities based on Washington's Strategic Highway Safety Plan. The goal of SRTS funding is to increase the number of children walking and biking to school and to decrease the number of collisions involving children on foot or bike. WSDOT distributes these funds on a State-wide basis.

Traffic Safety Grants
The Washington Traffic Safety Commission (WTSC) offers annual state grants to projects that help reach "Target Zero" goals of reducing roadway injury and fatalities. The grants range from $5,000.00 to $150,000.00.

Pedestrian and Bicycle Safety Grants
These competitive grants are offered by the State through gas taxes to address areas with high collision and injury rates for pedestrians and bicyclists. The City of Bellingham has been successful in receiving safety grants for past projects including improvements to Indian Street, Fraser Street, and Samish Way.

WSDOT Biennium Budget
Washington State Department of Transportation (WSDOT) has a biennium budget approved by the State legislature every two years. These funds are typically earmarked for specific high-profile transportation improvements projects, such as State Highways, but may someday contribute to local non-motorized funding efforts. Unfortunately, WSDOT does not currently have any funding programmed for the Whatcom region and is not likely to have any funding for the foreseeable future.

Washington State Transportation Improvement Board (TIB)

The Washington State Transportation Improvement Board (TIB) funds high priority transportation projects in communities throughout Washington to enhance the movement of people, goods, and services. TIB is an independent state agency, created by the Washington State legislature, which distributes and manages street construction and maintenance grants to 320 cities and urban counties throughout Washington State. Funding for TIB's grant programs comes from revenue generated by three cents of the statewide gas tax. Bellingham has been very successful in securing TIB funds for multimodal arterial streets, such as the James Street corridor, the Northwest/McLeod Roundabout, the West Bakerview Overpass, and the Mahogany Avenue corridor. Bellingham has also secured TIB funding for specific non-motorized projects, such as the Northshore Drive sidewalk/bike lane, the Meador Avenue pedestrian-bicycle bridge, and the Lincoln Street Park-N-Ride sidewalks.

State Institutions

State administered institutions such as Western Washington University (WWU), Whatcom Community College (WCC), and Bellingham Technical College (BTC) can serve as valuable funding partners for multimodal transportation improvements. Bellingham has successfully partnered with WWU to construct the Bill McDonald Parkway/25th Street traffic signal and the Lincoln Street Park-N-Ride sidewalks; with WCC to construct the Cordata/Kellogg Roundabout; and with BTC to construct West Illinois Street.

Local Funds

Street Fund

The Public Works Street Fund is a significant source of funding for the Public Works Department. It is generated by both the gas tax for motor vehicles and a percentage of sales tax (42.5%) generated within the City of Bellingham. The fund is used for implementation of capital projects and some maintenance.

Where applicable, capital projects that involve roadway resurfacing or paving should incorporate bicycle improvements.

Transportation Benefit District (TBD)

Funding for the Bellingham Transportation Benefit District (TBD) is generated by a percentage of sales taxes collected (2/10 of 1%) within the city limits. The TBD Board of Directors (City Council serves as TBD Board) has directed that TBD funds be divided evenly to support arterial resurfacing (1/3), WTA bus operations (1/3), and pedestrian and bicycle infrastructure (1/3). The TBD, approved by voters in 2010 will expire at the end of 2020. Since 2010, Bellingham has successfully used TBD funds to incorporate bicycle infrastructure into arterial resurfacing and rechannelization projects. Project examples are the Lakeway Drive bike lanes, Birchwood Avenue bike lanes, and Northwest Avenue bike Lanes. TBD funds have been the primary local funding source for sidewalk and intersection improvements prioritized in the Pedestrian Master Plan and will also be one of the primary funding sources for implementation of the Bicycle Master Plan.

Bellingham Real Estate Excise Tax (REET)

Comprised of 1/2 of 1% of the total real estate revenue within city limits for a given year, REET funding is divided into first ¼ and second ¼ and can be used for limited types of transportation projects. Availability of these funds may fluctuate, as they did during the recession, in a given year.

Local Improvement Districts (LID)

Local Improvement Districts (LID) are established areas where local property owners, through self-imposed taxation, fund local improvements within the district. LID's have been used in Bellingham to fund roadway improvements. Bellingham City Council or local property owners may establish an LID for bicycle related improvements as long as the majority of business or property owners within the district agree to the property tax increase. Properties adjacent to the improvement must pay a portion of the overall cost of the improvement project until the full cost of the improvement is paid.

Bellingham Transportation Impact Fees (TIF)

TIFs ensure that new development and redevelopment pay a proportional fair share contribution for the cost of new transportation infrastructure that is deemed necessary and reasonably related to accommodating the impact of new development within the City limits of Bellingham. TIF revenue currently covers about 20% of annual City transportation improvements. TIF revenue is reinvested throughout the city to provide multimodal transportation facilities including sidewalks and bicycle facilities. TIF is also used as an important contribution to local, state, and federal grant funding applications to demonstrate a public-private partnership, which makes projects more competitive.

Economic Development Investment Program (EDI)

In order to improve the economy of rural counties such as Whatcom County, the EDI Program was initiated to promote and attract business. The funds may be used for public transportation improvements, including bicycle facilities. This Whatcom County funding source, provided in the form of both low interest loans and grants, has been successfully used by Bellingham to construct major multimodal transportation projects, such as the West Bakerview/I-5 Overpass, which included a new 6-foot wide sidewalk. These funds may continue to help Bellingham provide bicycle facilities as part of larger multimodal transportation projects. Projects must be in the planning and construction phases, larger than $250,000 to be eligible for funds, and specifically focused on contributing to economic development.

Greenways Trail Levy

Since the 1990's, Bellingham voters have continually supported self-imposed Greenways Levies assessed on the valuation of private property and used to fund the development of parks, open spaces and trail linkages throughout the city. This has resulted in a first class, non-motorized trail system including highly valued places such as the Railroad Trail, Interurban Trail, and South Bay Trail. Most Greenways trails are primarily for recreational use, but some provide significant transportation function as well. The on-street bicycle network has been planned to integrate with the off-street Greenways trail network. Greenways trail funds can supplement local Street, TBD, and TIF funds for improvements that link the bicycle network and the trail network.

Other Agencies, Corporate Funding, and Private Foundations

There is a broad range of private funding available for bicycle related improvements. Bicycle projects can be supported by funding aimed at a variety of areas including economic development, community health and fitness, transportation, transit mobility and access, and public infrastructure. Creative use of private grants can bolster public funds to implement the Bellingham Bicycle Master Plan, keeping in mind that grants are not a reliable or consistent source of revenue. The following organizations provide grants of different sizes for bicycle infrastructure and programmatic activities.

People for Bikes

The Green Lane Project provides funding for the implementation of innovative, low-stress bicycle facilities such as cycle tracks. The Community Grants Program offers small amounts of funding for bicycle related projects to leverage federal funds and promote bicycling at the local level. Local governments and non-profits are eligible to apply. Within Whatcom County, this program funded the Coast Millennium Trail.[1]

Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation is dedicated to improve "health and health care of all Americans," including public education, prevention, communications activities, and investing in vulnerable populations. Municipalities are eligible for these funds and many bicycle and pedestrian related projects may be eligible.

ORAM Fund for the Environment and Urban Life

This fund supports programs that impact sustainable urban development and environmental quality. Funding is available for public transportation, bicycling and walking, education, and transportation planning. Projects are prioritized over programing needs.

The Port of Bellingham

The Port of Bellingham is eligible to receive state and federal funding through several grant programs that could be used for non-motorized improvement on Port or other public lands. The Community Economic Revitalization Board is a state program that occasionally provides grants for public facility improvements to encourage private development. The Economic Development Investment (EDI) Program, described above, is a program through which the Port is eligible for receiving grants related to public infrastructure. The City of Bellingham and the Port of Bellingham should seek partnership and funding opportunities for implementing bicycle related infrastructure on or to Port properties, particularly as the Bellingham Waterfront is further developed.

[1] http://www.peopleforbikes.org/pages/community-grants

Other Funding Partners

Whatcom Transportation Authority has been an excellent partner agency for Bellingham and has helped to fund the Bill McDonald Parkway/25th Street traffic signal, the Alabama Corridor multimodal safety improvements study, and the Lincoln Street Park-N-Ride sidewalks.

Bellingham has had contributions from several private businesses, both as investments (Morse Steel for West Illinois Street) and as private mitigation for transportation impacts (Trillium Corporation for West Horton Road).

Appendix A: Public Engagement

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Public Meeting #1: Open House

Open House Flyer

BICYCLE MASTER PLAN OPEN HOUSE

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Help make bicycling safer, easier, and more comfortable for all people and skill levels - come and **share your ideas** and priorities for the new Bellingham Bicycle Master Plan. The open house will include a **presentation at 6:30 PM** and a set of stations where you can:

- Rank goals and objectives
- Provide ideas on maps for existing and future bike routes
- Identify important locations to bicycle to in Bellingham
- Learn about bicycle facility types (e.g. – bike lanes, bicycle boulevards, shared-use pathways etc.)

BICYCLE PARKING:

- Free valet bike parking provided by everybodyBIKE. Look for the everybodyBIKE tent, across Halleck Street from the school front entrance.

AUTOMOBILE PARKING:

- On Halleck Street in front of the school
- On D Street between Halleck Street and Irving Street
- In the Municipal Court parking lot off C Street

Tuesday, April 23, 2013
Whatcom Middle School
Auditorium, 2nd Floor
810 Halleck Street
5:30 – 8:30 PM

PROJECT WEBSITE:

www.cob.org/bike

SURVEY:

www.surveygizmo.com/s3/1211291/Bellingham-Bike-Master-Plan-Survey

INTERACTIVE MAP:

http://wikimapping.net/wikimap/project124.htm#UUyFYKj3GNR

Open House Presentation Boards

BICYCLE FACILITY TYPES

SHARED LANE MARKINGS (also called sharrows)

A pavement marking symbol that indicates appropriate bicycle positioning in a shared lane (typically on downhill or connector areas).

STRIPED PAVED SHOULDER

The portion of the roadway between the travel way and the edge of pavement, for accommodation of stopped vehicles, emergency use and often used by cyclists where paved.

BICYCLE LANE

Marked space along a length of roadway designated for use by bicyclists.

BICYCLE CLIMBING LANE

On a sloped roadway: a bicycle lane on the up-hill to provide space for slow climbing bicycles and shared lane marking on the downhill.

BUFFERED BICYCLE LANE

A bike lane with additional buffer space between the bike lane and the auto lane or parked cares, used on high-volume or high-speed roads, or roadways with high parking turnover.

CONTRA FLOW BICYCLE LANE

Bicycle lane separated by a yellow centerline marking on a street with one-way motor vehicle traffic, to allow contra-flow bicycle traffic.

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BICYCLE FACILITY TYPES

MULTI-USE TRAIL

A gravel pathway that is not adjacent to a roadway that accommodates both pedestrians and bicycles, dog walkers, joggers etc. through open space and/or parks.

WAYFINDING SIGNS AND PAVEMENT MARKINGS

Signs and pavement markings that help bicyclists find important destinations and routes within the bicycle facility network.

GREEN BIKE LANE

Part of a bike lane that demarcates a conflict zone or an area where motor vehicles may be merging across the bicycle lane.

BICYCLE DETECTION AT INTERSECTION

A pavement marking symbol that indicates an appropriate bicycle position to trigger a traffic signal.

BIKE PARKING

Bicycle racks should be designed so that they:

- Support the bicycle at two points above its center of gravity.
- Accommodate high security U-shaped bike locks.
- Accommodate locks securing the frame and one or both wheels (preferably without removing the front wheel from the bicycle.)
- Provide adequate distance [minimum 36" (91cm)] between spaces so that bicycles do not interfere with each other
- Do not contain protruding elements or sharp edges.
- Do not bend wheels or damage other bicycle parts.
- Do not require the user to lift the bicycle off the ground.

LOCATIONS PRIORITIZATION

The Bellingham Bicycle Network that will be defined in the Master Plan will be implemented incrementally over time as funding becomes available and the city makes improvements to the roadway network. It is necessary to prioritize bicycle infrastructure improvements to ensure that the most critical needs, e.g. safety, high demand, are met first. The following are destinations suggested by the Plan Steering Committee.

Do you have suggestions for additional destinations? Please write down your ideas and/or place a dot next to the destinations you believe are most important for bicyclists in Bellingham.

DESTINATIONS	

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Please put a dot next to the destinations you believe are most important for bicyclists in Bellingham.

DESTINATIONS	
Downtown	
City of Bellingham for bicyclists coming from outside City limits	
K-12 schools (safe biking routes to school)	
Recreation destination (e.g. Lake Padden, Cornwall Park, Lake Whatcom)	
Urban Villages	
Major places of employment (over 100 employees, e.g. the hospital)	
Higher education institutions (e.g. WWU, NW Indian College, WCC, BTC)	
Northern Bellingham areas (areas with few bicycle facilities)	
Frequently visited destinations (e.g. Post Office, DMV, library, courthouse)	
Connections to transportation centers (downtown and Cordata transit stations, Amtrak, Alaska ferry)	
Shopping (e.g. Bellis Fair Mall, Sunset Square, Farmer's Market)	
Airport and surrounding area	
Civic Field	

DRAFT GOALS AND OBJECTIVES

VISION: A complete, well-connected bicycle network using a range of high-quality bicycle facilities that is attractive to bicyclists of all ages and experience levels.

The following Goals and Objectives for the Bellingham Bicycle Master Plan have been derived from the Plan Steering Committee. The Goals and Objectives will be used to frame the Plan document in terms of programs and policies, project prioritization, implementation and evaluation. Do you have suggestions for other goals and objectives? Please write down your ideas and/or place a dot next to the Goals and Objectives you believe should be recommended in the Bellingham Bicycle Master Plan.

GOALS AND OBJECTIVES	

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GOALS AND OBJECTIVES	
Double the number of bicyclists in 10 years	
Reduce the number of crashes involving bicyclists (also focus on bicyclists feeling safe)	
Promote broad and equitable access to bicycling (for all ages and user groups)	
Improve intersections for bicycles and cars	
Better, secure bicycle parking and gear storage	
Improve routes across major barriers to bicycling (e.g. I-5)	
Create easy routes between key destinations (with wayfinding signs)	
Education: young, old, new to bicycling, drivers	
Mentor program to help newly interested commuters	
Bike Share (employer supported or community program)	
Public bike repair/access to repair equipment	
Fix streets like Railroad Ave that don't accommodate bikes	
Provide education on how to fix bicycles	
Promote senior biking	
Provide accessible bike parking	
Stop cars from parking in bike lanes	
Enforcement for riding without lights	
Develop better organizations and programs	

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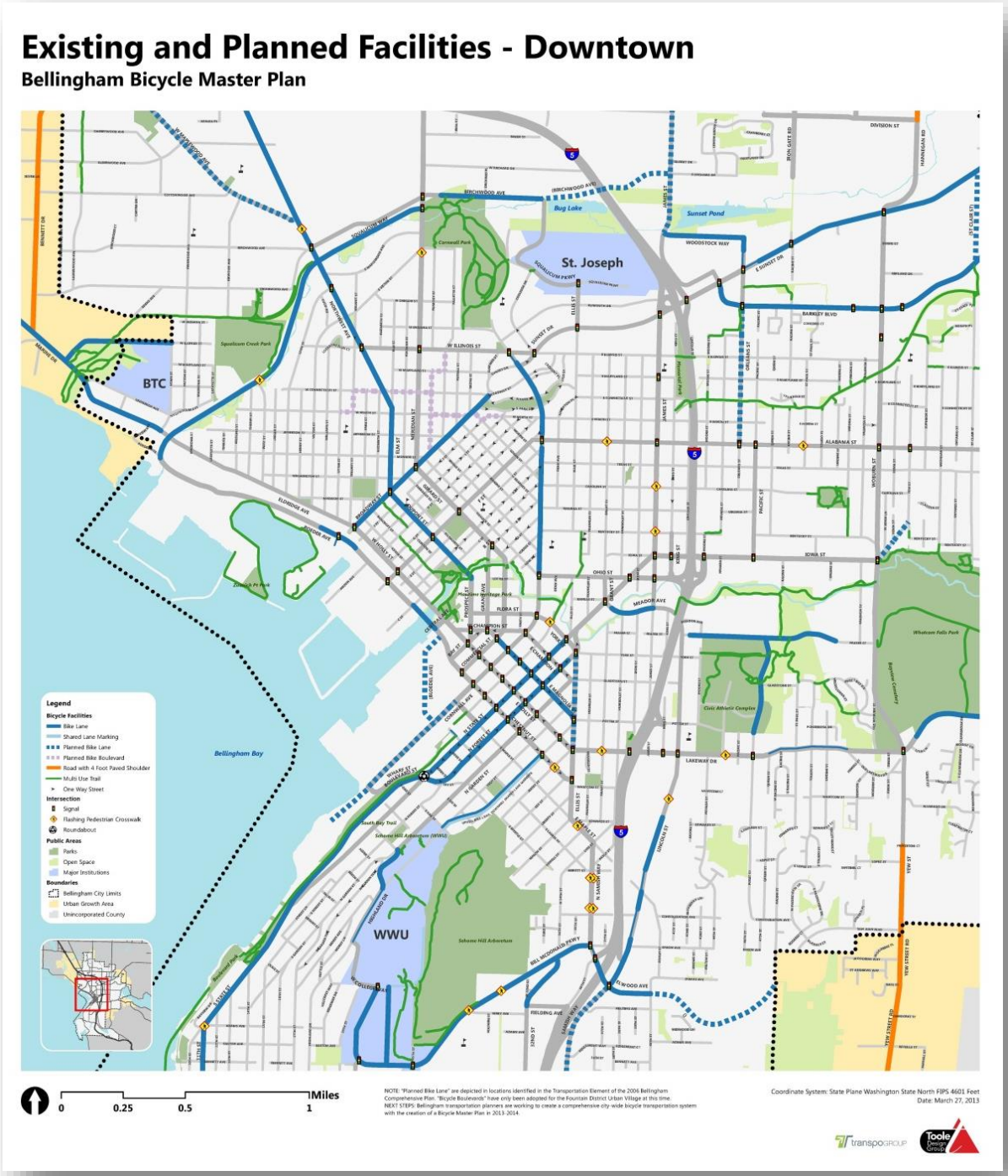
Bellingham BMP Public Open House #1 Comment Forms

Name	Affiliation	Comments
Kirsten Wert	Smart Trips	In very random order * Bike parking at all schools plus classes about safe cycling for all students in each school, ES, MS and HS courses * Good Signage at urban village areas clearly stating how many minutes it takes to get to/from there by bike. Ex. New Movie theatre to downtown around 15 min by bike. Great signs to follow the whole way to downtown that a kid could do it. * Bridge over I-5 on E Illinois at Sunny land is pretty blind on the approach from either side. Hard to see an oncoming cyclist * From the trail over Whatcom creek crossing 4 lanes of traffic on York street can be tough. Cars really fly there. Road diet anyone? (Cornwall to Forest) * Work to increase bike use East of I-5 *All improvements should be accompanied by education along the corridor. Small additional cost to ensure facilities get used * Contra flow bike lane on E Champion bus station to housing project - lots of wrong way cycling here * Change Streetscape along Samish Way * Left turn pocket coming out of Trader Joes parking lot heading north and crossing Alabama * Better bike parking (covered) all around town at bus stations and urban villages
Evan Derickson	Student WWU	It would be great if the city could work with businesses and developers to offer incentives for them to locate near existing facilities. As a negative example, Sportsman Chalet moved from downtown to James Street a few years ago, citing parking needs. Someone should remind businesses like this that many potential customers bike, and find out how business fulfill its role in creating a more bike friendly city. Private land is an important part of bikeability. Since not all businesses will be persuaded to move into denser parts of the city, we could also use cycle expressways to the north and east parts of the city. Separated routes that parallel James St. and Lakeway DR would be a good first step. I don't see the current problems (Traffic and Width) with these streets being mitigated by any sort of ones-street improvements
Mary Jensen	Resident and Tax Payer	Please include NE Bellingham. We need safe bike/multiuse trails that go to town. Barkley Blvd - No! Too steep, too fast, too many blind curves. Trail that is parallel to Barkley has 3 sets of stairs. NE Bellingham includes Barkley Village, Squalicum HS, an elementary school, library, Haggens, etc.! Once I get to Woburn the rest is easy. But from Squalicum HS, i's very dangerous (already 1 death)

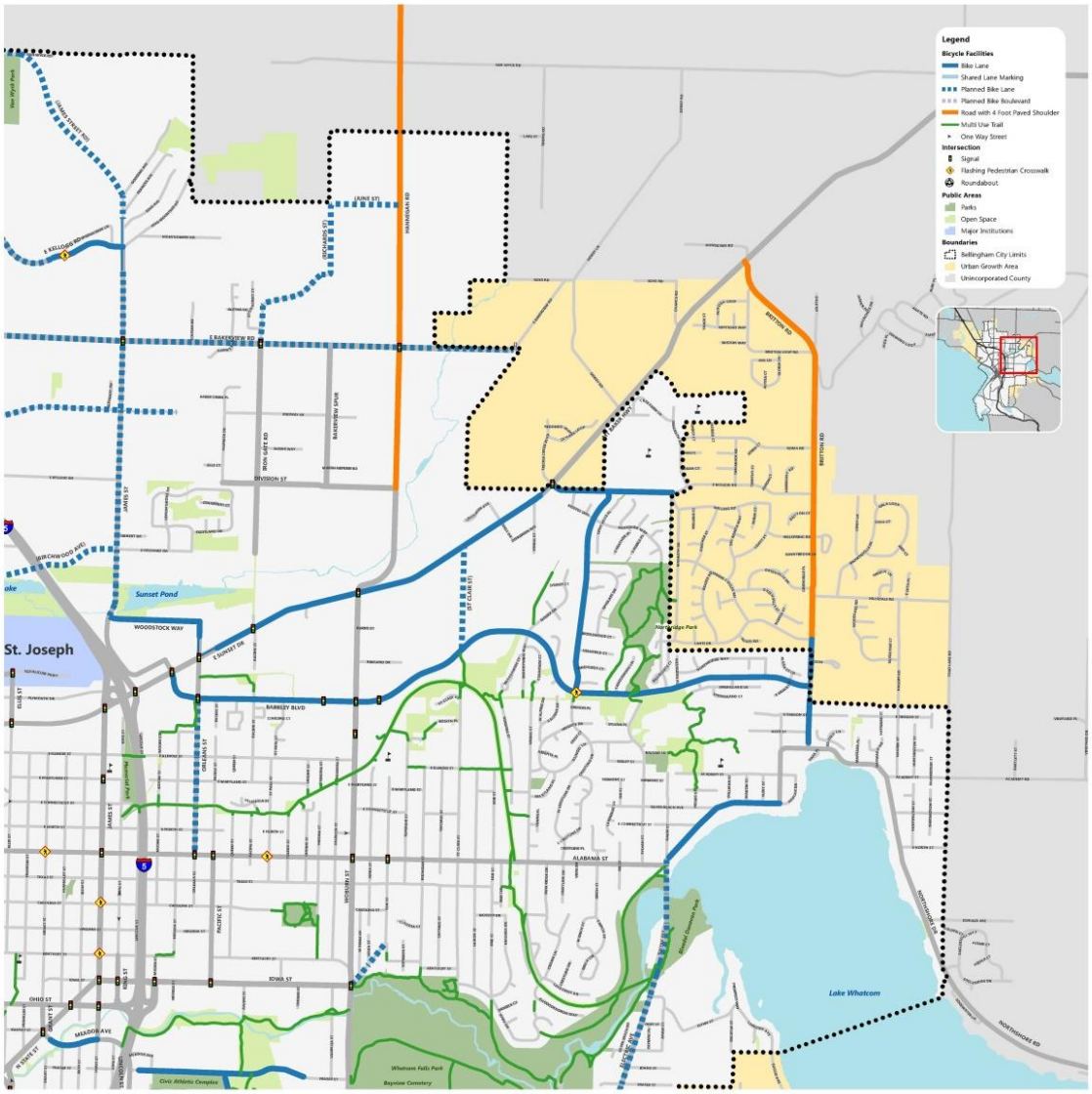
Kath Salisbury		Please consider the transitions from the roads to the city trails. For example, traveling on Woburn North past the cemetery, the left turn just past the creek is very challenging. This needs a rolled curb. Currently I ride on the sidewalk for a short stretch. Also traveling south on Hannegan is very hazardous.
Evan Derickson	Student WWU	If such an ordinance could be adopted at the city level, an Idaho-stop-sign-law would make cycling easier without reducing safety. Idaho's statewide law has been in place for over 20 years. It allows cyclists to treat stop signs as yield signs. This would only apply when a cyclist approaches a stop sign with clear visibility and no cross traffic. If this cannot be achieved at the municipal level, the City should join with other cities in asking for a State law
Kelsey		Goal: Increase number of women and underserved populations cyclists (only 26% of trips by bike made by women nationally (LAB). Encourage biking as an affordable and healthy. Increase info in Spanish. Research on active transportation shows number one factor encouraging women to bicycle is perceived safety. Things like protected/separated bike lanes, bike boxes at lights (esp. for L Turns) and driver education regarding cyclists would make Bellingham an even better place to ride a bike! Thank you for all the improvements in recent years like Cornwall Ave and Northwest ave bike lanes
Jeff Stamey		I love downtown biking and I think that you have done a wonderful job with the lettered street and NW area. However, we just moved to the Alabama area and have been frustrated by the lack of bike lanes. Kentucky Street works as a boulevard but the path behind PSE on Nevada is really rough. Also on that Boulevard, James Street and Woburn are quite difficult to cross. I liked the ideas around bridges. Bikes need more ways to get over I-5
Javon Smith		Connecting existing trails and allowing more off-road access to recreation ((No Suggestions), Whatcom, falls, & Cornwall Park
Therese Kelliher		RE: Locations Prioritization The item notes Northern Belling ham and locations with less facilities I would include all areas within the city limits and the area east of I-5. Bike facilities provide a better alternative for getting to those denser areas west of I-5
Sherri Daymon	BTC - Employme	* Need lights, signage and or crossing on James and Illinois intersection (very busy bike and pedestrian crossing with the Illinois bridge over interstate * Cars backing out downtown off-street facilities downtown especially for elderly and new or inexperienced or slow riders * Open bike map

Base Maps of Existing Bicycle Facilities Presented at the Open House for Public Comment



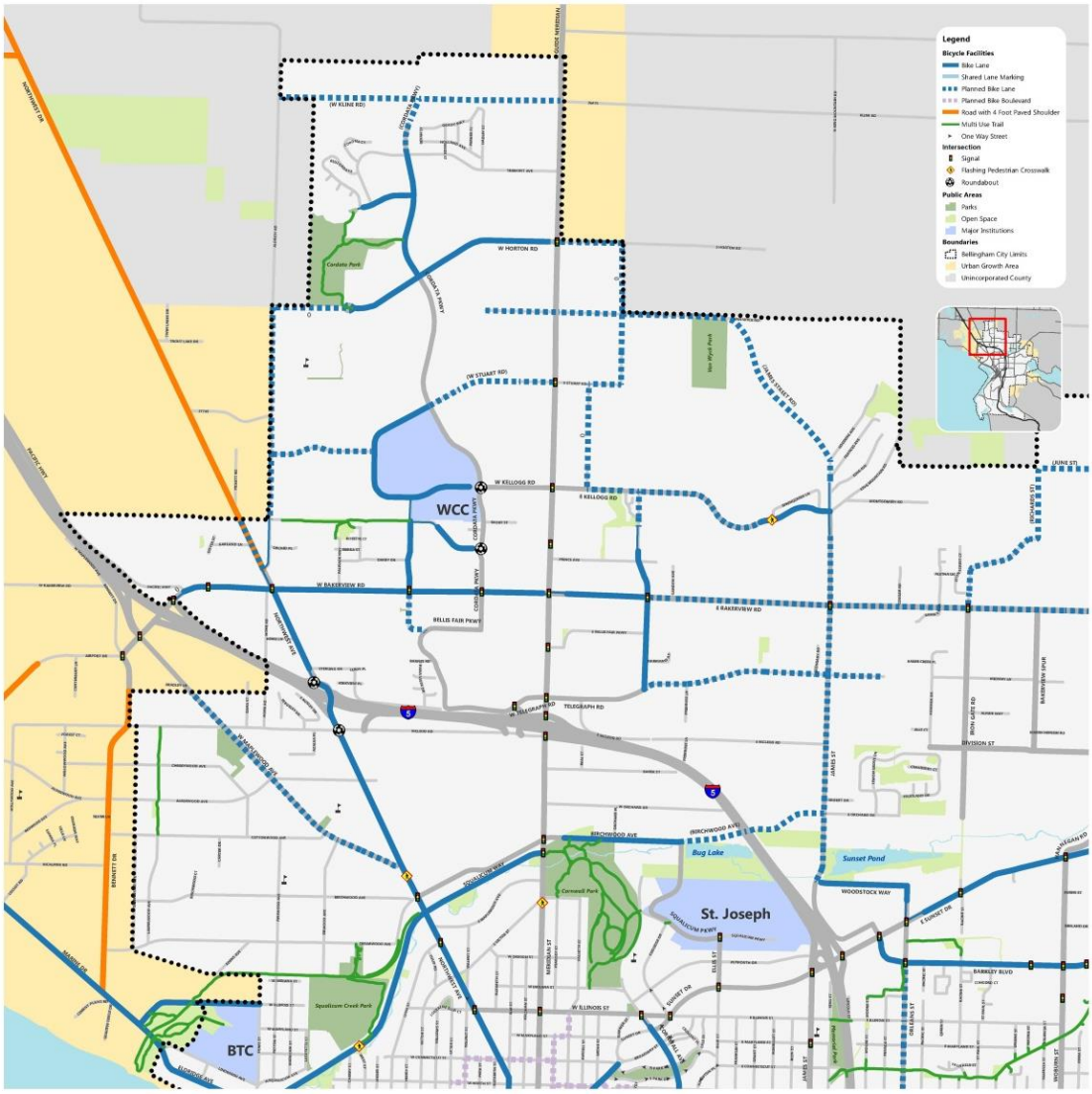
Existing and Planned Facilities - Northeast

Bellingham Bicycle Master Plan



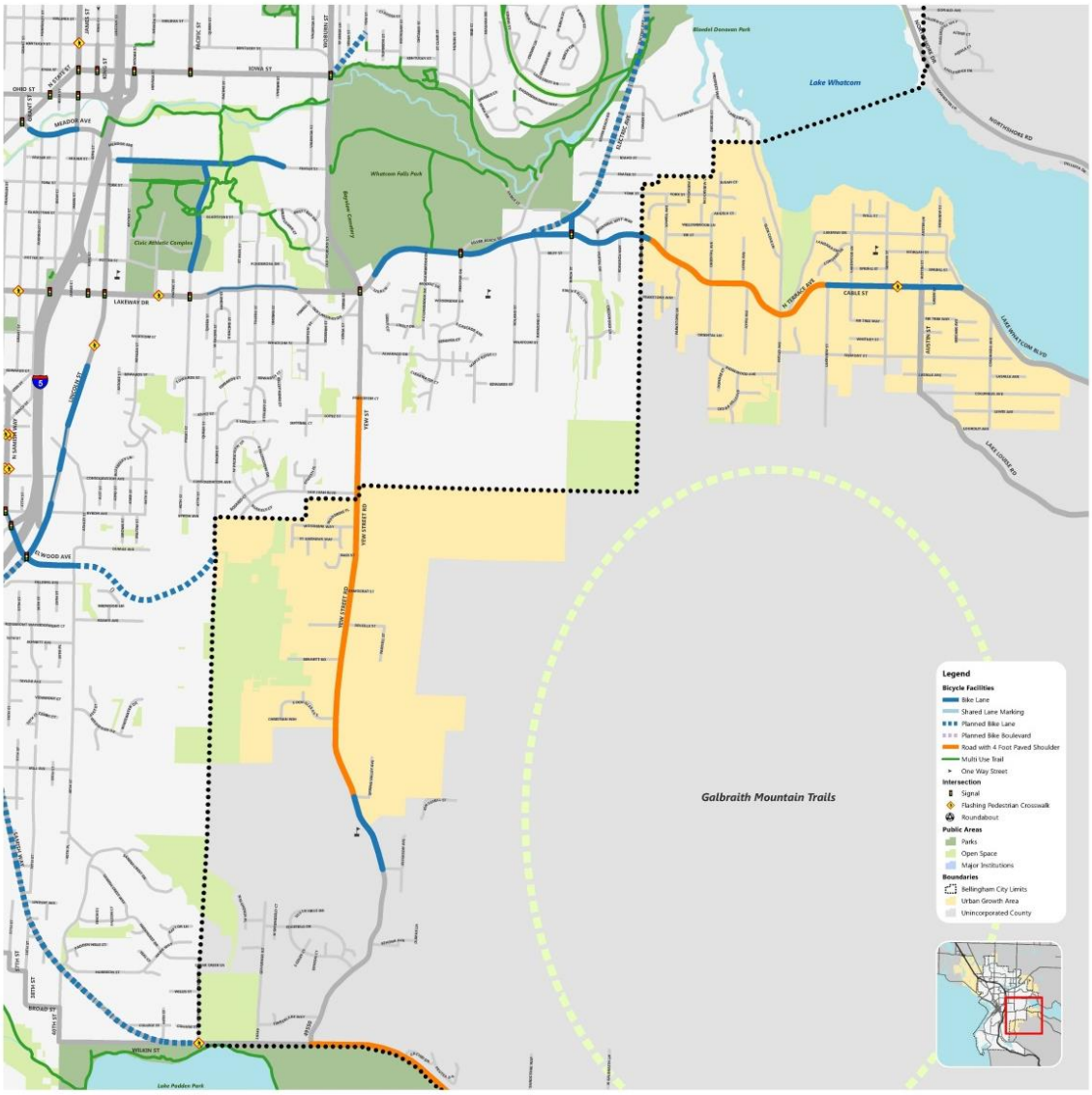
Existing and Planned Facilities - Northwest

Bellingham Bicycle Master Plan



Existing and Planned Facilities - Southeast

Bellingham Bicycle Master Plan

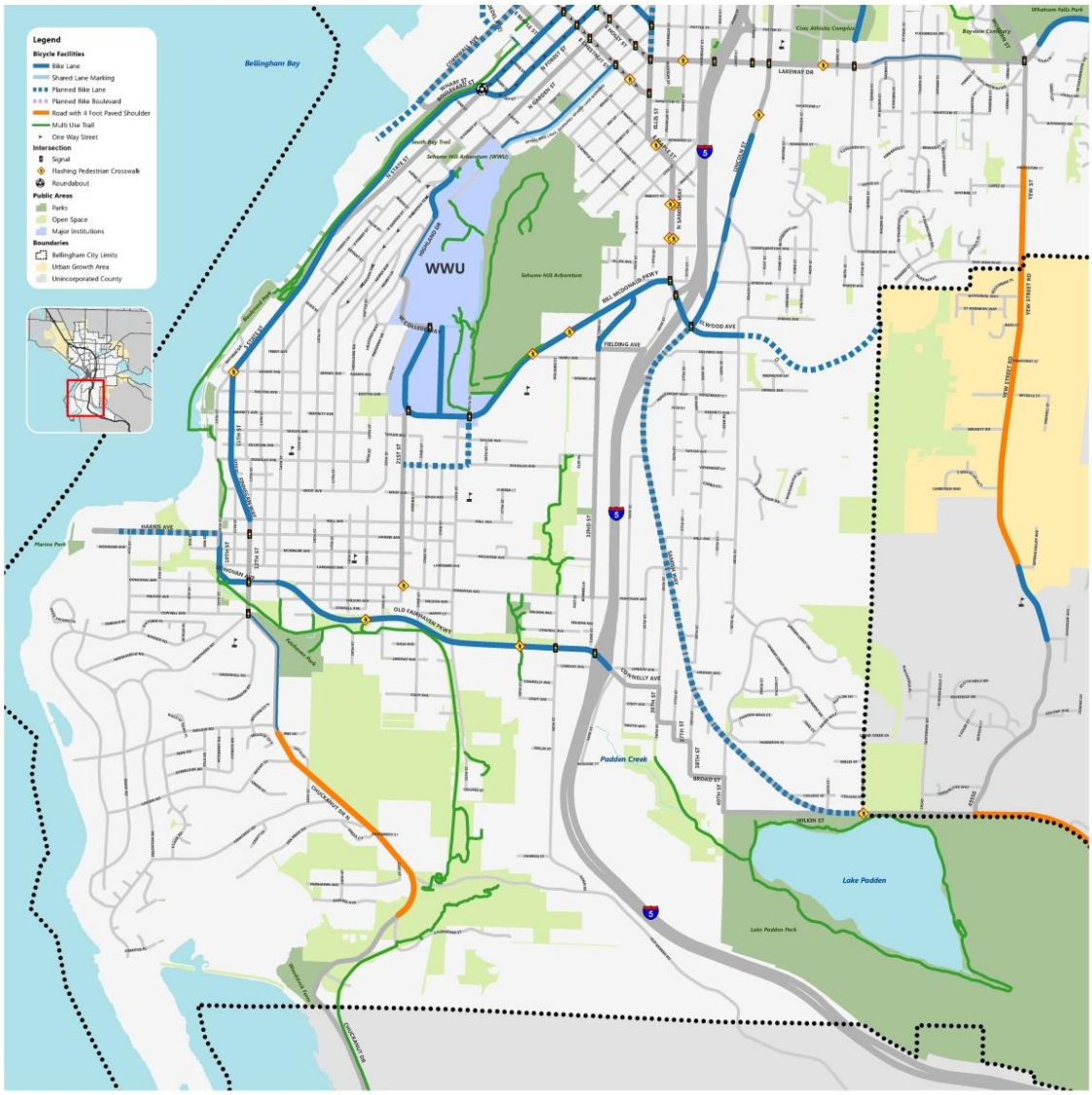


NOTE: "Planned Bike Lane" are depicted in locations identified in the Transportation Element of the 2006 Bellingham Comprehensive Plan. "Bicycle Boulevards" have only been adopted for the Fountain District Urban Village at this time. NEXT STEPS: Bellingham transportation planners are working to create a comprehensive city-wide bicycle transportation system with the creation of a Bicycle Master Plan in 2013-2014.

Coordinate System: State Plane Washington State North FIPS 4601 Feet
Date: March 27, 2013

Existing and Planned Facilities - Southwest

Bellingham Bicycle Master Plan



Public Open House #1, Comments from Maps

Map	**Location** (street or intersection)	**From**	**To**	**Comment**
Downtown (DT)				
DT 1	Kulshan St	Elm St	Meridian	Heavy bike traffic on Kulshan
DT 1	Elm & Broadway			Need signal sensors at intersection, Bike sensor for signal
DT 1	Dupont & F St			Need signal sensors at intersection
DT 1	Eldridge Ave	Spruce St	Keesling St	This chicane is dangerous- remove parking on the one side and install lanes. Not an issue for neighborhood
DT 1	Eldridge Ave	Squalicum Way	Broadway	repave
DT 1	W Maplewood Ave	Cherrywood Ave	Alderwood Ave	No Sidewalks
DT 1	W Maplewood Ave	Alderwood Ave	Cottonwood Ave	Not much traffic: does it need a bike lane? Concrete road slows traffic with bad joints.
DT 1	Roeder Ave	Squalicum Way	Broadway	need bike lanes
DT 1	Roeder Ave	Broadway St	C St	need bike lanes
DT 1	Waterfront	Zuanich Pt. Park	Boulevard Park	Continuous biking path along the new waterfront redevelopment area (as originally proposed in the plans)
DT 1	W North St	Keesling St	Pacific St	Make North St (or Illinois) into a cross city route bike boulevard
DT 1	W Illinois St	Meridian St	Sunset Dr	Needs bike lanes. Yes!
DT 1	Meridian St & W Orchard Dr			Hit by car at intersection
DT 1	Northwest Ave	W Maplewood Ave		busy ped xing
DT 1	W Connecticut St & Kulshan St			Add stop signs on North and South
DT 1	Ellis St	Squalicum Way	Sunset Dr	Tough road
DT 1	Sunset Dr	Summer St	Orleans St	Needs bike lanes
DT 1	James St	Woodstock Way	north	Need bike lanes. Yes! Yes!-up to Kellogg or Stuart & King Mtn
DT 1	Birchwood Ave	Squalicum Pkwy	James St	Good improvement! Needs awareness that it exists
DT 1	W Orchard & I-5			This bridge is scary, important
DT 1	W Orchard	I-5	James St	Important trail

DT 1	Meridian & Broadway St			Improve sensor/ switch to time
DT 1	Dupont St & F St			bike sensor
DT 1	Downtown			Ped/Bike only 3rd phase for crossing roads downtown
DT 1	Downtown			sharrows
DT 1	Hannegan Rd			Bay to Baker Trail
DT 1	Connecticut & Kulshan St			4 way stop (Planned Bike boulevard needs protection from N/S drivers)
DT 1	Alabama St	Cornwall	east	Needs bike lanes
DT 1	Texas St	Cornwall	James St	bike blvd
DT 1	Texas St	James St	Nevada St	bike lane
DT 1	Grant St	E Illinois St	Kentucky St	Bike blvd
DT 1	James St	Ellis St	Alabama St	Bike lanes, many businesses I want to go to but traffic and no shoulder makes it frustrating.
DT 1	Ellis St & Flora St & York St	Whatcom Creek		Connect trails
DT 1	York &Ellis & Forest			Pinch point at intersection for cars pulling 45 degrees onto state St.
DT 1	Carolina St & I-5			bridge
DT 1	Nevada St	Virginia St	Kentucky St	please pave this, pave this
DT 1		Kentucky & Franklin	King	
DT 1	Woburn St & Alabama			Look at xing
DT 1	Texas St			Better route than Alabama
DT 1	Magnolia & Ellis St & Potter			Needs better bike connection to Potter
DT 1	Chestnut St			Three lanes each + hills = :(Contraflow lanes?
DT 1	Chestnut St	Central Ave	Ellis	needs bike lane
DT 1	Holly St			Three lanes each + hills = :(Contraflow lanes?
DT 1	Railroad Ave Trail	York St	E Laurel St	needs signage to connect to trails
DT 1	Railroad Ave Trail	York St	E Laurel St	signage to indicate bike crossing
DT 1	Railroad Ave Trail	southern end of trail	E Laurel St	needs bike lane
DT 1	N State Street	Boulevard St	?	Needs contraflow cycle track
DT 1	H St	Bancroft St	Clinton St	Connect trails
DT 1	State St & York St			Cars turn right on red NW onto York from SW on State St when biker on sidewalk facing SE has

				Walk light, driver is only looking to her left to see who's coming, and pedestrian and biker cannot step off of the curb.
DT 1	N/A			Keep trails safe for Pedestrians
DT 1	Prospect St & Dupont			No passing of bikes signage on this corner
DT 1	w Holly St	NE Squalicum Ave	Indian St	bike lane
DT 1	Indian St	Holly St	Chestnut St	bike lane
DT 1	Lakeway Dr	Ellis St	?	needs bike lane
DT 1	Lakeway Dr & civic field ped xing			bridge
DT 1	Lincoln St	Lakeway Dr	Meador Ave	bike lanes
DT 1	Ellis St	Lakeway Dr	Edwards St	bike lanes
DT 1	E Maple St	Edwards St	Otis St	bike lanes
DT 1	Samish Way	Otis St	Bill McDonald Pkway	bike lanes
DT 1	Bill McDonald Pkway	Samish Way	?	two way please, connect to Humboldt
DT 1	Bill McDonald Pkway	32nd St	Ferry Ave	high density area
DT 1	Elwood Ave	Bill McDonald Pkway	Lincoln St	lots of traffic and lanes to cross, worst part of my route to Whatcom Falls
DT 1	Elwood Ave	Bill McDonald Pkway	Lincoln St	very difficult to cross on bike
DT 1	32nd St	Fielding St	?	bike lane on 32nd
DT 1	Jersey St	Myrtle St street end		create a bike path here (to connect to paths into the Arboretum)
DT 1	Huntoon Trail (Sehome Hill Arboretum	Highland Dr	S College Dr	this route is important (avoids the hill)
DT 1	W College Way	Highland Dr	Bill McDonald Pkway	Needs bike lane, Yes lanes create squeeze for bikes. Yes
DT 1	Garden St	Olive St	?	Pave Garden
DT 1	Waterfront	Boulevard Park	GP site	Overwater walkway
DT 1	Halleck St	Peabody & Broadway	Ohio & Cornwall	Make bike boulevard. This will provide corridor to Whatcom Middle School.
DT 1	Trail	Northwest Ave & Squalicum Way	Squalicum Creek Park	Wonderful trail but muddy
DT 2	Marine Dr.			Overpass over marine Dr (over Railroad)!!

DT 2	Marine Dr.			Bike lane. Need to extend out to Lummi Island ferry along Kwina/Cagey. Also up to Ferndale /crossing Slater Rd.
DT 2	Marine Dr. & Seaview Ave			Very dangerous, people driving fast taking a right turn over bike lane
DT 2	Monroe St	Lafayette St	Meridian	Great option for bike boulevard
DT 2	Downtown			Seniors shopping downtown thrift shops, book stores, antiques, Library, Farmer's Market . . . Cars backing out at me. Holly hill to dangerous. Few people on sidewalks. How about speed limits for one-speed bikes. Seniors on sidewalks, avoiding chaos that is downtown.
DT 2	Bay St and Holly St			I was hit by a car.
DT 2	Northwest Ave	?	?	Commute Route
DT 2	Northwest Ave & Birchwood			Hard to get L Arrow
DT 2	Northwest Ave & Birchwood			Bike lane ends here. +1.
DT 2	Birchwood Ave	Northwest Ave	Cedarwood Ave	Gaps in bike lane and sidewalk
DT 2	Birchwood Ave & Meridian			Hit by car at intersection
DT 2	Meridian St	Squalicum Way	Broadway St	bike lanes
DT 2	Kulshan St	W Indiana St	Broadway St	Bike boulevard
DT 2	Northwest Ave & Illinois St			Bike detector at signal
DT 2	Monroe St	Lafayette St	Meridian	Safe route to School
DT 2	Broadway St/Elm St/ Dupont St			Bike detector at signal
DT 2	Madison St	Eldridge Ave	Broadway St	Bike boulevard
DT 2	Broadway St & Madison St			Need a bike box here for left turn (+1)
DT 2	New connection	Victor St & Eldridge Ave	Zuanich Pt Park Trail	Would be an awesome spot for a bridge! Tons of people will walk and bike to restaurants (+1)
DT 2	w Illinois St & Meridian St			Light does not trigger for bikes
DT 2	w Illinois St	Russell St	?	No sidewalk so competing with pedestrians
DT 2	Cornwall & Illinois St			Signal does not detect bikes

DT 2	W Illinois St & Sunset Dr			Light can be unresponsive
DT 2	Broadway St & Monroe St			1-way conflict
DT 2	H St	W Holly St	W North St	Bike Lane
DT 2	Dupont St & F St			bike detector
DT 2	Dupont St & F St			Gap on SW corner (bike lane??)
DT 2	W North St	King St	Keesling St	bike boulevard
DT 2	Cornwall St & Alabama			bike lane disappears through intersection
DT 2	Cornwall	Alabama St	Ohio St	Dooring danger
DT 2	Dean Ave/Virginia Ave (?)			bike lane
DT 2	Franklin St	Kentucky St	E Illinois St	bike boulevard
DT 2	Ellis St & Sunset Dr			help turning to hospital at signal
DT 2	St Joseph's Hospital			No facilities to the hospital
DT 2	E Illinois St & James St			Need signal lights and/or xing
DT 2	James St & Woodstock Way			Lots of potholes. Dangerous!
DT 2	Sunset Dr	Cornwall	Orleans St	bike lanes
DT 2	E Illinois St	I-5	Woburn St	Bike boulevard
DT 2	Texas St	Cornwall St	St Clair St	Bike boulevard
DT 2	Alabama St			No bike lanes on Alabama, there are enough other close routes for bikes let's not make the bikers look needy and leave that one for the cars. I agree, no bike lanes on Alabama! Make blvds.
DT 2	new trail segment	Kentucky St & Virginia	King St & Connecticut	Connect the trails, or create bike blvd connector
DT 2	Ellis St	Sunset	Kentucky St	Suggested route (for bike boulevard connecting between trail segments)
DT 2	Kentucky St	Ellis St	Lincoln St	
DT 2	Lincoln St	Kentucky St	Connecticut St	
DT 2	Lincoln St & Texas St			Good crossing, bike crossing
DT 2	Ohio St & Ellis			trail crossing: flashing walk
DT 2	Cornwall St & Ohio St			Light does not trigger for bikes
DT 2	Nevada St alignment	Kentucky St	Whatcom Creek Trail	bike ped (trail) connection on Nevada
DT 2	Woburn St & Trail south of Iowa St			Ramp to trail from street. Yes!!
DT 2	Barkley Blvd	e Sunset Dr	Woodstock Way	Bike lane

DT 2	James St	Woodstock Way	?	Bike lanes needed! No shoulder, lots of traffic and potholes.
DT 2	Whatcom Creek Trail (Cornwall	Flora St	Ohio St	trail intersection signs are missing
DT 2	Flora St	Cornwall St	N State St	Road diet, seam in road dangerous
DT 2	Commercial St	Holly St	E Magnolia St	pothole in turn lane, buzzer sign
DT 2	Champion St	Cornwall St	Ellis St	Parking on east side of roadway: area to watch for bikes when parking
DT 2	Lakeway Dr	Ellis St	I-5	Tough to get across this intersection onto Lakeway. Some way to get onto Lakeway eastbound when coming up Humboldt/Grant/Franklin
DT 2	Lakeway Dr	I-5	Racine St	Need bike lanes very dangerous!!! Yes! Better to reroute instead.
DT 2	Meador Ave/Lincoln St	James St	Fraser St	Very dangerous!
DT 2	Fraser St	Lincoln St	1/2 block east	Connect this (bike lane)
DT 2	Fraser St, Puget St, Lakeway Dr			reroute for Lakeway
DT 2	Chestnut St	Cornwall	Ellis St	Separated bike lane on Chestnut St, reduce to 2 car lanes.
DT 2	Railroad & E Maple (Trail intersection)			fix this
DT 2	Railroad & E Maple (Trail intersection)			permanent bike pump, + repair equipment / tools @ Market Square
DT 2	Holly St & Forest St			bike box
DT 2	N Forest St & N State St			This is a total mess for bikes. Connect north bound to trail.
DT 2	Waterfront	Boulevard Park	Zuanich Pt Park	(Waterfront trail). This was the proposed bike/walking path in the new waterfront area. Please reconsider putting this back into the plan (S.P). Yes this would be a great trail.
DT 2	Prospect St & Holly St			Hit by car at intersection
DT 2	Prospect St	Dupont St	Bay St	bike lanes
DT 2	E Holly St	Bay St	Indian St	bike lanes
DT 2	N Samish Way	E Maple St	Bill McDonald Pkway	Add bike lanes or N Samish with 1 car lane in each direction and

				turning bays (road diet)
DT 2	Trail	Ellis St	York St	Please fix bridge between Ellis & York. Main route for many uses. This missing bridge is causing cyclists to go over the railroad trestle bridge (@ the bank on State and York). This is very dangerous b/c the raised bridge. We need the bridge back for overall connectivity and safety. Yes it would be great to have this bridge back. The bump on the alternative bridge by the bank is dangerous.
DT 2	Holly St	Indian St	Bay St	Should be reduced to 2 lanes for cars and the third lane made as bike lane.
DT 2	Waterfront Area	Pine St	Palm St	New Park
Northwest (NW)				
NW 1	Northwest Dr	Smith Fields	W Bakerview Rd	2-way cycle track to smith fields. Not a bike lane-needs to serve kids and moms, so separate from traffic.
NW 1	Aldrich Rd	Cordata	Northwest Ave	Add bike lanes to Cordata along Aldrich,
NW 1	June Rd (planned)	Aldrich Rd	W Kellogg Rd	Add wayfinding for this route
NW 1	W Bakerview Rd & Northwest Ave			Difficult intersection for bikes to get in the left turn lane. Yes. Yes. Yes. Yes!
NW 1	Informal connection through parking lot	Eliza Ave	Pana Vista Dr.	formalize this connector
NW 1	Eliza Ave	Eliza Ave	Spring Dr	Route needs signs, yes! Yes! Fire lane but is not kept clear.
NW 1	Sterling Dr & Bellis Fair Pkway			formalize this connector
NW 1	Bellis Fair Mall			How do bicyclist get to the mall? Very difficult!
NW 1	Guide Meridian & Kellogg Rd			bike box
NW 1	Guide Meridian & E Bakerview Rd			bike box
NW 1	Guide Meridian			Meridian is very scary for biking. No room for bikes in traffic.
NW 1	Guide Meridian &			intersection very scary

	Telegraph Rd			
NW 1	Guide Meridian	Birchwood Ave	W Bakerview Rd	bike lane
NW 1	Guide Meridian	Birchwood Ave	W Bakerview Rd	Can meridian be made Safer?
NW 1	E McLeod Rd	Telegraph Rd	James St	good connection, good route
NW 1	Guide Meridian	W Stuart St	north	Sweep
NW 1	James St	Woodstock Way	E Bakerview Rd	Bike lanes. Yes, Please, Yes! Yes, Bike lanes Yes! Add bike lanes.
NW 1	Birchwood Ave	Squalicum Pkwy	Meridian St	Add bike lanes
NW 1	Telegraph Rd	dead-end east of James St	Midway Ln & Hammer Dr	gap
NW 1	Division St & Hammer Dr	Fruitland Dr		gap
NW 1	Hannegan Rd	north of sunset intersection		Lane between guard rail and multiple lanes going SE. Yes! Yes!
NW 1	Squalicum Pkway	Birchwood Ave	Ellis St	Add bike lanes. Yes!
NW 1	W Illinois St	Northwest Ave	Woburn St	Bike Blvd. Yes! Yes!
NW 1	Cornwall & W Illinois St			doesn't detect bikes
NW 1	W North St	Cherry St	Cornwall St	
NW 1	E Illinois St & Lincoln/I-5			This bridge is really narrow and is a bit of a blind spot.
NW 1	Squalicum Way	Northwest Ave	Meridian St	Improve Open Old Rail Trail, there are homeless and wild dogs
NW 1	Cedarwood Ave	Birchwood Ave	Cedarwood Ave	Gaps in bike lane
NW 1	Cedarwood Ave	Firwood Ave	Cedarwood Ave	Needs sidewalk
NW 1	Marine Dr Bridge	Lindbergh Ave	W Illinois St	Separated trail along road west of the bridge, over bridge or around bridge. Trail could go on greenways land to Wynn Rd. Fix this bridge. Very dangerous but hugely traveled.
NW 1	Waterfront Rail			Change BSNF Rail-line into a bicycle trail
NW 1	Sunset Pond	James St	east	Improve Bay to Baker Trail
NW 2	Northwest Dr	north	City Limits	Needs bike lane, Yes! Frightful bike ride down this hill (North of Trout Lake Rd)
NW 2	Bellingham Airport			Covered bike parking at the airport would be super!
NW 2	Aldrich Rd	W Horton Rd	Mahogany Ave	Marine Drive would be better than this (for proposed bike lanes).
NW 2	Whatcom community College			Make students safe. Yes!

NW 2	Cordata Pkway	W Horton Rd	W Bakerview Rd	Needs bike lane. This is the second scariest St in B'ham. A bike lane would help.
NW 2	Stewart Rd & Cordata Pkwy			signal needed
NW 2	Mahogany Rd	Aldrich Rd	trail entrance	Connects now. Fix drainage
NW 2	W Kellogg Rd	Cordata Pkwy	Tull Rd	Bike lane
NW 2	Guide Meridian	Kellogg Rd	Telegraph Rd	Horrible (+2) just smoothing the pavement through here would be a huge improvement. I ride through here and up to Lynden on the Guide several days per week. Make this work.
NW 2	Bellis Fair Mall			Bike boulevard through paring area to bypass meridian.
NW 2	Guide Meridian	E Bakerview Rd	? south	Connect mall to south. All of the guide needs work.
NW 2	Westerly Rd			add to map
NW 2	W Bakerview Rd	Northwest Ave	Cordata Pkwy	Bike lane ends at Northwest Dr. A protected lane would feel safe. Currently doesn't due to traffic speed.
NW 2	new trail segment	Sterling Dr. /Leroy Pl	Eliza Ave/Bellis Fair Pkwy	trail here
NW 2				
NW 2	McLeod Rd & Northwest Ave			round about in construction
NW 2	James St	E Kellogg Rd	Woodstock Way	Bike lane!!!, need bike lane. Make wide bike lane on hills.
NW 2	James St & Bakerview Rd			Bad intersection. Roundabout!
NW 2	Maplewood Ave	Alderwood Rd	Cottonwood Rd	Remove extruded curb
NW 2	Birchwood Ave	Laurelwood Rd	Northwest Ave	These roads are not bike friendly. Fix.
NW 2	Cedarwood	Laurelwood Rd	Northwest Ave	These roads are not bike friendly. Fix. Repaving Cedarwood would make it fine.
NW 2	Squalicum Way	Norwest Ave	Guide Meridian	Connect parks. Old Rail trail now home to campers, dogs at large.
NW 2	Cornwall			wayfinding in park
NW 2	new trail (connecting Gilbert Dr to W Orchard Dr)	I-5	James St	surface rail bed

NW 2	Birchwood Ave	Squalicum Pkway	James St	Bay to Baker/bike lane connector. 2nd that bike lane idea. 3rd that: connect to Hannegan road to west from E Orchard Dr.
NW 2	Barkley Blvd	Orleans St	Woburn St	Bike lane has grooves. Also too narrow.
NW 2	E Illinois St	Orleans St	Woburn St	Illinois is a bike blvd candidate
NW 2	Ellis St	Sunset Dr	Squalicum Pkway	need bike lanes to hospital
NW 2	Guide Meridian			All the Guide needs work
NW 2	Prince Ave			Prince Ave car facing west: driver is only looking left. Is oblivious to anything in her path. Officer offers victim a ticket, just old & in the way, was on sidewalk.
NW 2	North Bellingham			Make a corridor from East Bellingham to WCC (without using Meridian)
NW 2	NW of Bellingham City Limits			Kwina to Cagey Rd is narrow and dangerous! Many bikers follow Marine Dr out to Lummi View Dr. Very sketchy ride in sections. (+1)
NW 2	NW of Bellingham City Limits			Please continue out to Lummi Ferry
NW 2	Marine Dr			Please continue bike lanes to Slater Rd Fix RR Bridge. Yes! Yes! Overpass by rail road (before Wynn Rd/Marine Dr is dangerous.
Southwest (SW)				
SW 1	General			Keep trails safe for Pedestrians
SW 1	General			Make sure signals esp. for left turns pick-up cyclists. Mark loops w/ T.
SW 1	Forest & State & Boulevard			Very bad intersection for bicyclists and walkers. Do something to make the clearer for cyclists connecting from State St to the bike trail. Agree. Transition from sidewalk to trail.
SW 1	State St	Boulevard	North	Allow bikes to go the wrong way on State.
SW 1	Holly St			Sharrows/lanes on Holly

SW 1	N Samish Way	Bill McDonald Pkway	north	Shared lane marking? Not heavy traffic could make a bike/bus lane need bike lanes here! (x2) Yes! Samish is bad for biking.
SW 1	N Samish Way & Abbott St	under I-5		Cool spot for underpass shortcut
SW 1	Samish Way	48th St	Elwood Ave	Need bike lanes. Ditto. No shoulder, very scary. Yes. Ditto that! Need space to walk too. Yes! Would like to see bike and ped lanes separated from traffic so that old ladies and families with children feel comfortable to use them.
SW 1	36th St	Fielding Ave	Bill McDonald Pkway	Gap no shoulder and very scary
SW 1	Edwards St and Grant St			Create a cut-out in curb
SW 1	Lakeway Dr	Ellis St	Queen St	Sharrows, lanes. Indicator for drivers bicycle presence. Lakeway not safe for biking.
SW 1	Whatcom St alignment gaps	Toledo St	Nevada St	Need a back door to the shopping center.
SW 1	Fraser St/Woburn St	Lakeway Dr		Send bicycle boulevard to downtown via Frasier St
SW 1	Toledo Hill Climb	Lakeway Dr	Consolidation Ave	Newton St, Whatcom St, Undine St, Edwards St, Toledo St, E Lopez St, Racine St
SW 1	Lincoln St	Elwood Ave	Byron Ave	Review Data (presence of bike lane?)
SW 1				
SW 1	Elwood Ave	40th St	city limits (Racine St alignment)	sweet!
SW 1	40th St	Adams Ave	Donovan Ave	good route.
SW 1	Connelly Ave	I-5	36th Ave	Kids use this to go to school. Bike and ped lanes please.
SW 1	36th Ave	Connelly Ave	Samish Way	Kids use this to go to school. Bike and ped lanes please.
SW 1	Yew St	Wilkins St	Jefferson St	No shoulder very scary with traffic. Dangerous!!! Ditto!!
SW 1	I-5 & Kellogg St			Bike/Ped Bridge @ cliff. (connect gateway)

SW 1	California St/Chuckanut Dr/Old Samish Rd			better connection avoiding Arroyo Park. Very hard to ride. Intersection throws bikes into road here.
SW 1	Chuckanut Dr	Fairhaven Park	south	Sharrow on road. Good idea! Or something like it. Agreed! Need more enforcement of speed limits.
SW 1	Chuckanut Dr & 16th St			Separate bike lane
SW 1	Donovan Ave & 10th St			Need better access to trail narrow steep.
SW 1	Waterfront Trail (10th St alignment)	Mill St	Douglas St	widen trail
SW 1	S State St			Works great for bikes (rec/fitness/ commute)!
SW 1	Bill McDonald Pkway	21st St`	W College Way	debris problem
SW 1	General			leash laws
SW 2	State St & Forest St & Boulevard St			the roundabout (proposed?) shown here does address one of my personal concerns: going north by bike on Boulevard from Fairhaven, getting across the Wharf St to use the foot bridge to the alley below state (behind Morse Hardware/Herald Bldg) (even with the recent change, going N using Forest would be ridiculous) - But the solution I have long advocated is a through alley - graded ramp down to the trail. Somewhere between 14th St and the turn off up from Boulevard up to the Armory (this would avoid 2 minor hills-an extra discouragement to trailer use. This would ideally include aped/bike crossing and discontinuing the bike lane from there Northbound.
SW 2	Oak St & Indian St			Bike lane and road narrow here. Remove bump out please
SW 2	Indian St	E Maple St	E Laurel St	Parking on downhill should switch to uphill.
SW 2	Ivy St	N Forest St	N Garden St	Bad curb, eliminates access

				between 'hoods.
SW 2	N State Street & E Maple St			bad intersection
SW 2	E Maple St & Railroad			Improve intersection on Maple. Can't see traffic on Maple
SW 2	E Laurel & Railroad			better trail connection
SW 2	E Chestnut	Cornwall Ave	Ellis St	Add bike lane (preferably separated_ on Chestnut between Railroad and Ellis. Reduce car lanes to 2 (seems to be all that's needed)
SW 2	E Holly St	Cornwall Ave	Lincoln St	add bike lanes
SW 2	Potter St & Ellis St			bike trigger for signal
SW 2	Lakeway Dr			Needs bike lanes!
SW 2	Lincoln St	Lakeway Dr	north	connect bike lanes
SW 2	Lakeway Dr	Lincoln St	Queen St	Need bike lanes! Yes!!! Ditto! IBID! Please?! X1,000,000 Yes! Agreed!
SW 2	Lakeway Dr & Puget St			Need trigger light.
SW 2	East side of I-5	freeway onramp near Elwood Ave	Lakeway Dr	Multi-use trail here. Fix deadly drop off.
SW 2	Lincoln St	Ashley St	North	100' gap in bike lane
SW 2	I-5 & Edwards			bridge or underpass to cross I-5
SW 2	Consolidation St	45th St	47th St	Connect with development?
SW 2	N Samish Way	Otis St	Bill McDonald Pkway	Make N Samish 1 car lane in each direction with turning bays allowing room for bike lanes in each direction. +2
SW 2	Sehome High School			Needs safe way to bike to school
SW 2	32nd St	Fielding Ave	Donovan Ave	Heavy use of bikes on 32nd St
SW 2	S Garden St	Ferry	Beech	repave Garden
SW 2	General			Bike lanes need to be kept clear more often
SW 2	S State St			Swept more often
SW 2	Finnegan Way & 11th St			Vehicles speed should be under 25 (angle parking + bikes/peds=trouble. Difficult to cross 11th as a ped and as a cyclist.
SW 2	Mill Ave & 10th St & Trail			Needs calming device to slow/alert entry onto multipurpose roadway at 10th and Mill.

SW 2	10th St	Douglas St	north trail entrance	needs signage to connect
SW 2	Boulevard overwater trail			snow bikes so pedestrians are safer
SW 2	Harris Ave	Marine Pk	10th St	Needs maintenance
SW 2	2oth St alignment	Bennett Ave	Easton Ave	a better trail here on the short section (through park)
SW 2	Mills Ave	Finnegan Way	21st St	Bike blvd +3 (or Harris?)
SW 2	Interurban Trail	North of 14th St alignment		Improve trail drainage here
SW 2	Interurban Trail (along Chuckanut Dr)	Old Samish	California	Difficult connection (+1)
SW 2	30th St	Old Samish	Connelly Ave	Needs a bike lane on uphill side.
SW 2	I-5 & (south of) Connelly Ave			bridge or underpass to cross I-5 (along Cody St alignment) +1
SW 2	New Trail	36th St	Connelly Ave across I-5	Connect Padden creek trail with interurban trail (between
SW 2	Padden Creek Trail	36th St	34th St	great trail extended down to 34th St
SW 2	Samish Way	48th St		Too rough
SW 2	24th St	Old Fairhaven Pkwy	Mill Ave/school	Eliminate ditch, road needs to be widened
SW 2	I-5 at Donovan Ave			Under/overpass suggested
SW 2	Samish Way	Ridgemont Way	College St	Repave, too rough, bad pavement on shoulders, needs better shoulders esp. northbound
SW 2	Samish Way & 40th St			Fix deadly curbs and potholes
SW 2	Yew Street Rd	Samish Way	Tacoma Ave	No shoulder, very scary add bike lanes
Northeast (NE)				
NE1	Northshore Dr	Britton Rd	City Limits	Needs bike lane
NE1	Lake Whatcom/Electric Ave			Need a way to get from here to downtown on street, not on Alabama
NE1	Electric Ave	City Limits	Alabama St	Sidewalk and shoulder
NE1	Woburn St	City Limits	Iowa St	Climbing hill need
NE1	Woburn St & Trail south of Iowa St			Delete curbs
NE1	Meador Ave	N State St	I-5/Lincoln St	Why this gap?
NE1	Meador Ave	I-5	Trail entrance	Suggest light
NE1	Meador Ave	I-5	Trail entrance	Dangerous curve, fast traffic
NE1	Trail entrance	Meador Ave	I-5	Common homeless campsite,

				debris in trail often
NE1	James ST & Kentucky St			Bike crossing
NE1	Trail along Kentucky St	Moore St	Nevada St	Bumpy, needs to be paved
NE1	James St	Alabama St	Iowa St	Suggest bike lane to connect trails
NE1	Trail entrance south of Memorial Park	James St	E North St	Signage on route to continue west - E North? Connecticut?
NE1	Michigan St	Alabama St	Texas St	Circle of death, two both intersections along Michigan
NE1	James St and Connecticut			Signal crossing
NE1	E Connecticut and Orleans St			Signal crossing
NE1	E Illinois St	Ellis St	Woburn St	This is almost a bike boulevard now. Improving crossings at James, Orleans, and Woburn would be cool.
NE1	Memorial Park	E Illinois St	E Maryland St	Add path with gravel compatible with road tires
NE1	Trail from St. Clair - east/south			Nice!
NE1				
NE1	Orleans St & Barkley Blvd			Dangerous intersection, sooo dangerous!!
NE1	Orleans St & E Sunset Dr			Dangerous intersection, sooo dangerous!!
NE1	Woodstock Way, north side	James St	Orleans St	Bike lane contain bumps (roots) and often have twigs and debris
NE1	James St	Woodstock Way	Birchwood Ave	Lots of potholes and no shoulder = dangerous connector!
NE1	James St		City Limits	Improve the Bay to Baker Trail
NE1	James St		City Limits	Finish Bay to Baker Trail
NE1	James St		City Limits	Sea to Ski Trail
NE1	Woburn St/Hannegan Rd	E Sunset Dr	Division St	Bike Lane and sidewalk needed (even more because it's a trucking route) X3
NE1	James St	E Orchard Dr	Fruitland Dr	Suggest bike blvd or trail
NE1	Division St & Hammer Dr			Suggest tail
NE1	James St	Woodstock Way	Kellogg Rd	Busy - no room for bikes
NE1	James St	Woodstock Way	Kellogg Rd	Rough road

NE1	James St	Woodstock Way	Kellogg Rd	Bad road surface, no room for bikes or peds x 2
NE1	James St Rd	Gooding Ave	North	King Mtn needs a trail to access points north (BMS Park!)
NE1	Woburn St & Barkley Blvd			Suggest trail north/east to high school off Baker Hwy/Tree Farm Ln
NE2	Northshore Dr			Bike lanes-bike route to "Y" Road
NE2	Fraser St	Meador Ave	Woburn St	Use as a signed alternative to Lakeway + 1
NE2	Meador Ave	James St	Fraser St	Need bike lane
NE2	State St	York St	Iowa St	Bike lane
NE2	Bellingham St	Valencia	Woburn St	Curb
NE2	Texas St	Ellis St	St. Clair St	Bike Boulevard
NE2	St. Claire St	Texas St, Iowa Dr, Crown Ln, View Ridge Dr	Alabama St	Needs Signs for climbing route +1
NE2	St. Claire St	Texas St, Iowa Dr, Crown Ln, View Ridge Dr	Alabama St	Agree! [need signs for climbing route] Especially trying to connect downtown and Barkley/Silver beach/Alabama
NE2	St. Claire St	Texas St, Iowa Dr, Crown Ln, View Ridge Dr	Alabama St	Good route up avoiding Lakeway and Alabama
NE2	St. Claire St	Texas St, Iowa Dr, Crown Ln, View Ridge Dr, W Crestline Dr	Barkley Blvd	Needs Signs for climbing route
NE2	Franklin St	Kentucky St	E Illinois St	Bike Blvd +1
NE2	E North St	Columbia Neighborhood	I-5	Bike Blvd
NE2	Alabama St & I-5			Improve crossing
NE2	Texas St & I-5			Suggest crossing
NE2	Kentucky St & I-5			Good underpass for bikes
NE2	E North St & James St			Suggest bike crossing
NE2	E Illinois St	West of Ellis St	Woburn St	Bike boulevard + 1
NE2	Barkley Blvd & Chandler Pkwy			Button for flashing light is bad for bikes
NE2	Trail off Sussex Dr			Safety issue for school kids on this low-visibility trail
NE2	Squalicum Creek	Hannegan Rd	E Sunset Dr	Connect here as climbing route (DNR owns it)
NE2	Woburn St/Hannegan Rd	E Sunset Dr	E Bakerview Rd	Add bike lanes

NE2	Squalicum Creek	Hannegan Rd	Birchwood Ave	Connect Hannegan to St. Joseph's using old rail
NE2	James St	Woodstock Way	E Bakerview Rd	Bike lane!
NE2	James St & Woodstock Way			Fix road/this corner
NE2	Alabama St	West of Ellis St	Electric Ave	No bike lanes on Alabama, leave for cars and safer bike routes nearby
NE2	I-5	James St	Lincoln St	Get across
NE2	Hannegan Rd	City Limits	north	Please continue bike lane her and take down sign that says "End Bike Lane"
NE2	Mt. Baker Hwy	City Limits	north/east	No safe way to Squalicum High
Southeast (SE)				
SE1	Lake Louise Rd			Sweep shoulder (and bike "lanes") frequently (it's getting better I think)
SE1	Yew St Rd	City Limits/Samish Way	Tacoma Ave	Very dangerous
SE1	Yew St Rd	City Limits/Samish Way	Tacoma Ave	Wade King Elem. - lots of kids want to ride to school from development to SW
SE1	Yew St Rd	Kingsmill St	San Juan Blvd	Separated trail, not widened road +1
SE1	Samish Way	Larrabee Ave	48th St	More sweeping +1
SE1	Samish Way	Larrabee Ave	48th St	Not safe
SE1	Samish Way	Larrabee Ave	48th St	Narrow lane
SE1	Samish Crest Trail	48th St/Samish Way	north	Future trail. This would be great bike trail to connect to Lake Padden
SE1	Iowa St	Monroe St	Woburn St	Need break in fence to bike this (arrows pointing north to Kentucky)
SE1	Iowa St	Monroe St	Woburn St	Need bike lanes +1
SE1	Iowa St	Monroe St	Woburn St	Cycle track
SE1	Iowa St & Woburn St			Difficult to bike this intersection
SE1	Fraser Street	end of ex. Bike lanes	Old Woburn St	Better connection +1
SE1	Fraser St & Woburn St			Awkward crossing
SE1	Fraser St & Woburn St			Remove curb or curb cut on east side of Woburn and crossing X2
SE1	Meador Ave	James St	Lincoln St	Difficult to cross here, poor sight

				distance
SE1	Meador Ave	James St	Lincoln St	Need signage or bike lanes
SE1	East side of I-5	Byron Ave/Lincoln St	North of Iowa St	Trail along I-5 (like in Olympia) to take the 60% of 1-5 trips that are less than 5 miles, also to forestall the excessive widening of 1-5 that is planned
SE1	Lakeway Dr	I-5	Puget St	Need bike lanes x 4
SE1	Lakeway Dr	I-5	Puget St	Cycle track +1
SE1	Lakeway Dr	I-5	Puget St	Need bike lanes or parallel route downtown to lake x 2
SE1	Lakeway Dr	Grant St	Puget St	Need bike lanes here too
SE1	Nevada St/44th St			Speed control roundabout
SE1	Lakeway Dr	Queen St	Old Lakeway Dr	Lower speed limit
SE1	Lakeway Dr & I-5			Need tunnel like on Binkley (sp?)
SE1	Trail between Iowa Dr/Iowa Place & Rhododendron Way			Wider and patch hole for bikes
SE1	General comments for SE			A. Re-gravel existing paths more often. B. Clean shoulders more.
SE1	Birch St	Lakeway Dr	south	This area needs bike and jogging lanes very badly. Extremely high use are and dangerous for all.
SE1	Electric Ave	Lakeway Dr	north	Sweep shoulders/lanes
SE1	Electric Ave	Lakeway Dr	north	Better shoulders
SE1	General comments for SE			Leash laws on trails
SE2	Lake Whatcom Blvd	Cable St	east	Access to and from Sudden Valley
SE2	Flynn St/Lakeside Ave	Electric Ave	N Terrace Ave	No good access to downtown from Gereca (sp?) +1
SE2	Flynn St/Lakeside Ave	Electric Ave	N Terrace Ave	Signage needed for wayfinding
SE2	Iowa St	I-5	Woburn St	Really unpleasant
SE2	Woburn St	Iowa ST	Lakeway Dr	Bike lane needed
SE2	Woburn St & Fraser St			Improve crossing to trail into Whatcom Falls Park
SE2	Woburn St & Fraser St			Needs curb cut
SE2	Yew St/Woburn St	Lakeway Drive	Iowa St	Climbing lane
SE2	Lakeway Dr & Kenoyer Dr			Gap
SE2	Lakeway Dr/ north side	Woburn St	Kenoyer Dr/Silver Beach St	Connect trail& repave

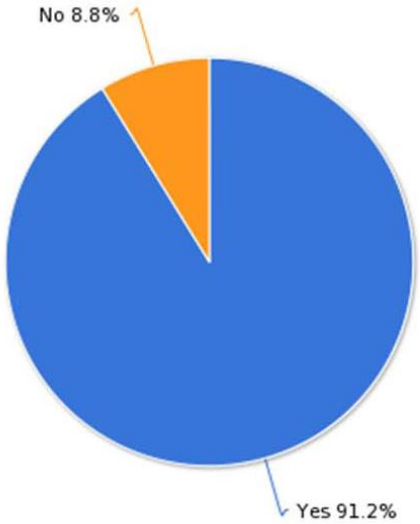
SE2	Birch St	Lakeway Dr	south	Most in need of bike/jogging lane entire city. Short length, high priority
SE2	Iowa St, north side	Moore St	Pacific St	Wayfinding markers here (at trails)
SE2	James St & Ohio St			This whole intersection is dangerous
SE2	James St & Ohio St			Allow bikes to go north?
SE2	N State St			Need bike lane on State
SE2	Fraser ST bike lanes			Great for bikes!
SE2	Lakeway Dr	I-5	Puget St	Horrible for cyclists + Amen + I agree! Lakeway is the worst x 2
SE2	Lakeway Dr	I-5	Puget St	Need bike lane +1
SE2	Lakeway Dr	King St	Nevada St	Bike and ped bridge somewhere in here
SE2	Whatcom St alignment gaps	St. Paul St	Toledo St	Connect +1
SE2	Yew St	Spring Valley Ave	San Juan Blvd	More sweeping +1
SE2	Yew St	Samish Way	Tacoma Ave	Add bike lane + 1 (yes!)
SE2	Yew St	Samish Way	Tacoma Ave	Very dangerous
SE2	Samish Way	Larrabee Ave	48th St	Add bike lanes +1
SE2	Samish Way			Rough road, no shoulder
SE2	General comments for SE			Many "Dead End" signs on roads that lead to trails, "Except for bike/peds" added to bottom?
SE2	Galbraith Mountain Trails, SE corner			Connect to Lookout Mtn
SE2	General comments for SE			Leash laws on trails

Online Survey

The following pages provide full results from an online survey that was conducted over a two-month period (April-May 2013) during the development of the Bellingham Bicycle Master Plan. The survey is comprised of 30 questions regarding perceptions of bicycling and transportation habits of Bellingham community members and was made available online at the City's website. The survey gathered information on existing bicycle behavior, favored bicycle facility types, barriers to bicycling in Bellingham, and attitudes toward bicycling for transportation and recreation.

The 832 responses received from participants offer a look into the perceptions regarding bicycling in Bellingham. Most respondents were between the ages of 25-64 (84.3%, 701 respondents). There were a balanced number of responses from females (50.8%, 413) and males (49.2%, 410). Geographically, the respondents were dispersed across (as well as outside of) the City. Participants in this survey were not chosen at random and are not a statistically valid sample.

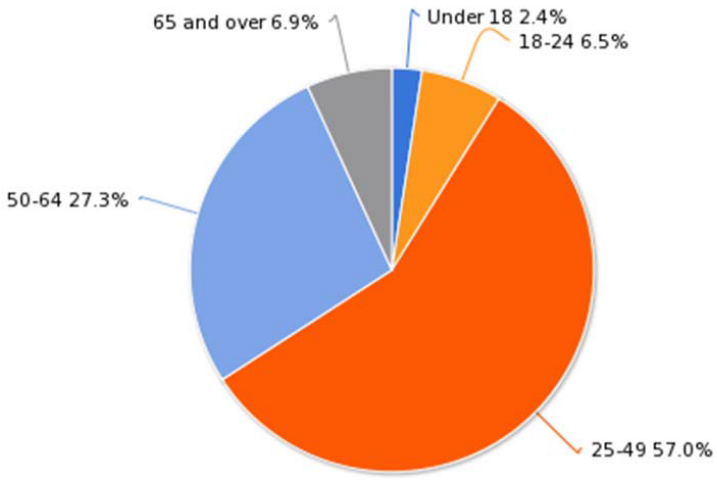
1. Have you bicycled in Bellingham in the last year?



Value	Count	Percent
Yes	756	91.2%
No	73	8.8%

Statistics	
Total Responses	829

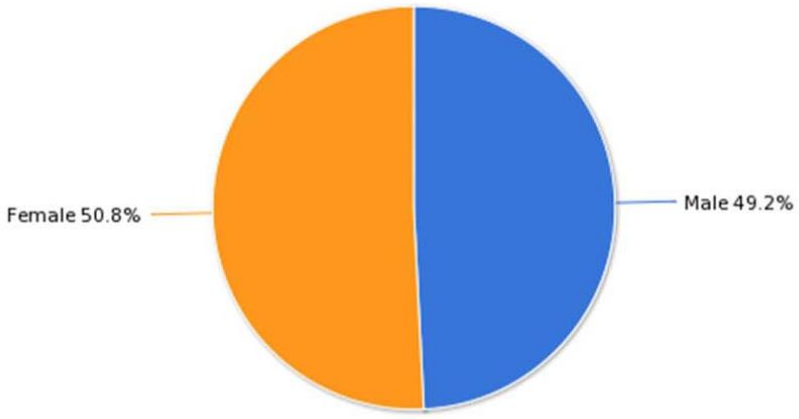
2. Your age?



Value	Count	Percent
Under 18	20	2.4%
18-24	54	6.5%
25-49	474	57.0%
50-64	227	27.3%
65 and over	57	6.9%

Statistics	
Total Responses	832
Sum	27,877.0
Avg.	34.3
StdDev	14.3
Max	65.0

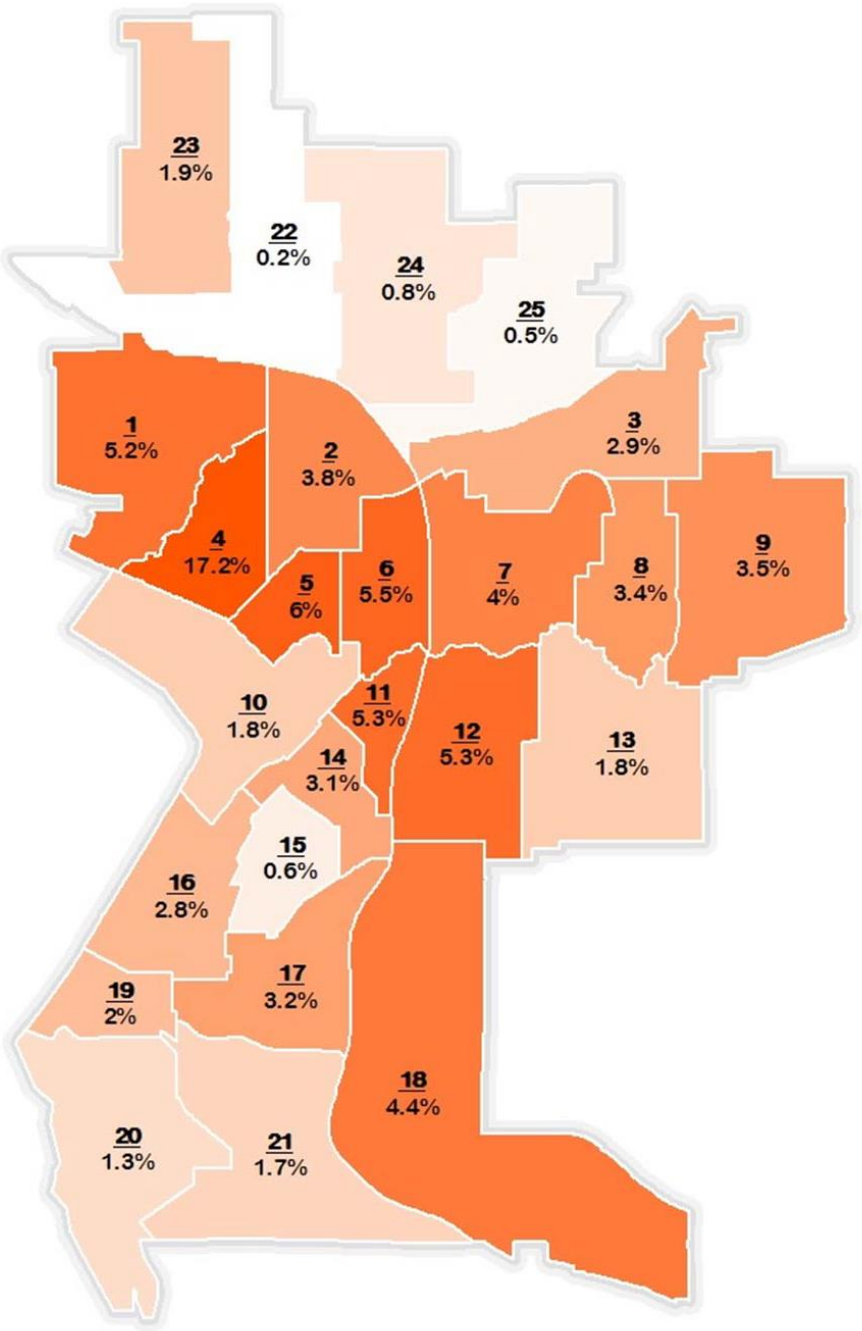
3. Your gender?



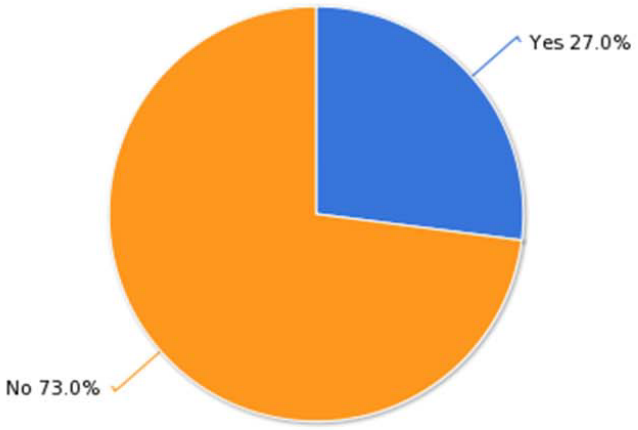
Value	Count	Percent
Male	400	49.2%
Female	413	50.8%

Statistics	
Total Responses	813

4. What neighborhood do you live in?



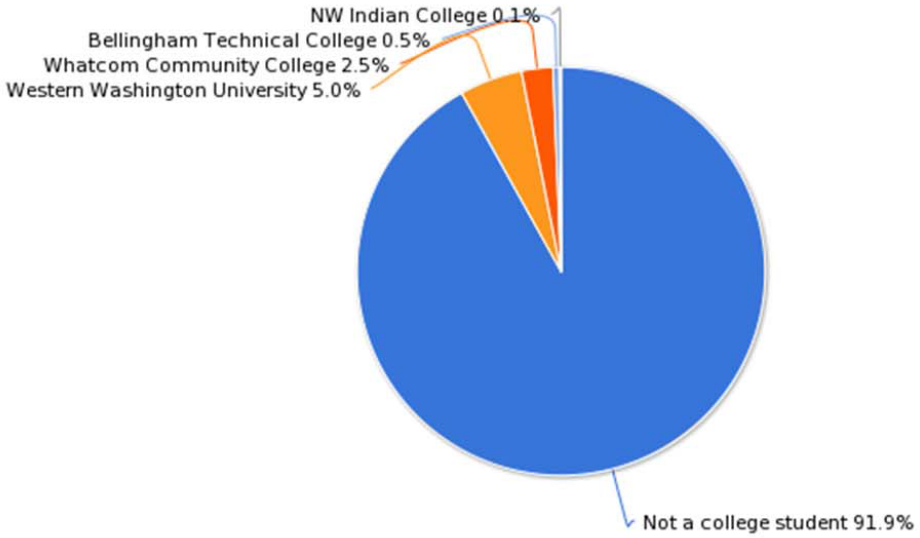
5. Do you bicycle with children?



Value	Count	Percent
Yes	224	27.0%
No	605	73.0%

Statistics	
Total Responses	829

6. Are you a college student, if so where?



Value	Count	Percent
Not a college student	738	91.9%
Western Washington University	40	5.0%
Whatcom Community College	20	2.5%
Bellingham Technical College	4	0.5%
NW Indian College	1	0.1%

Statistics	
Total Responses	803

7. Do any of the following factors prevent you from bicycling in Bellingham? Please select up to 4 choices, in order of importance to you, 1 being most important. Note: "bicycle facilities" include bike lanes, shared lane markings, paved shoulders, multi-use trails.

Item	Total Score[1]	Overall Rank
Continuous bicycle facilities do not exist for the trips I would like to take	1156	1
Bicycle facilities are too few, and are not interconnected	1106	2
There are too many barriers to bicycling (freeways, hills, lack of street connectivity)	956	3
Road surfaces are poor (potholes, cracks, debris, etc.)	699	4
I don't know a safe bicycle route to my destination	523	5
Other (please specify below under Comments)	494	6
There are not enough muiti-use trails	474	7
Distances are too great	269	8
Trail surfaces are poor (gravel, puddles, debris, etc.)	267	9

Total Respondents:

[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

8. Do any of these additional factors prevent you from bicycling in Bellingham? Please select up to four choices in order of importance to you, 1 being the most important.

Item	Total Score[1]	Overall Rank
Weather	1296	1
I don't feel safe riding a bicycle around cars and trucks	1096	2
Time constraints due to schedule demands	918	3
I have too much to carry	667	4
I'm concerned for my personal safety (e.g. riding alone on trails)	422	5
I have small children	321	6
Other (please specify below under Comments)	267	7
I don't have a bicycle I can ride	105	8
I am physically limited from riding a bicycle	61	9
I don't feel like I am the kind of person who rides a bike	55	10

Total Respondents:

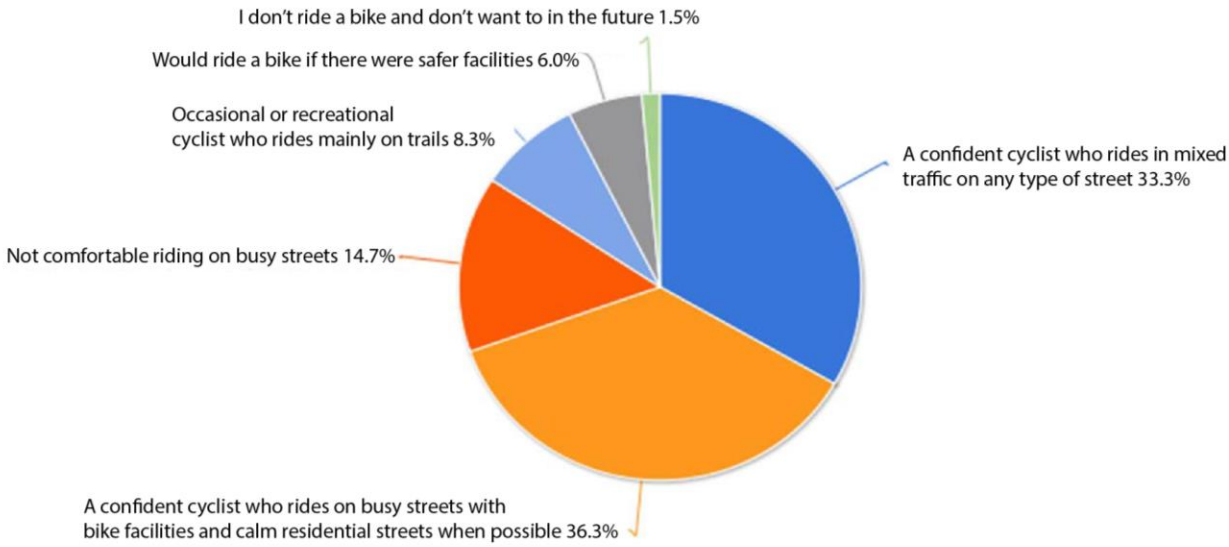
[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

9. What do you like most about bicycling in Bellingham? Please select up to three choices in order of importance to you, 1 being most important.

Item	Total Score[1]	Overall Rank
I live within bicycling distance of many important destinations	1163	1
I feel like I am helping the environment	936	2
The network of off-street multi-use trails	742	3
It is a quick way to get around	597	4
The network of on-street bicycle facilities (e.g. bike lanes, shared lane markings, paved shoulders)	459	5
Other (please specify below under Comments)	279	6
Motorists respect bicyclists on the roadways	135	7
Road surfaces are well maintained	79	8
Crossing roadways is safe and easy	42	9
Total Respondents:		

[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

10. Which of the following best describes you?



Value	Count	Percent
A confident cyclist who rides in mixed traffic on any type of street	274	33.3%
A confident cyclist who rides on busy streets with bike facilities and calm residential streets when possible	298	36.3%
Not comfortable riding on busy streets	121	14.7%
Occasional or recreational cyclist who rides mainly on trails	68	8.3%
Would ride a bike if there were safer facilities	49	6.0%
I don't ride a bike and don't want to in the future	12	1.5%

Statistics	
Total Responses	822

11. How many days per week do you bike when the weather is good (May to October)?

	0 days/ week	1 days/ week	2 days/ week	3 days/ week	4 days/ week	5 days/ week	6 days/ week	7 days/ week	Responses
Commute to school or work	32.0% 234	7.8% 57	9.7% 71	10.4% 76	12.0% 88	23.4% 171	1.4% 10	3.4% 25	732
Shopping or errands	25.1% 186	25.4% 188	19.7% 146	11.6% 86	5.4% 40	4.7% 35	2.3% 17	5.8% 43	741
Recreation, health or exercise	11.9% 91	29.3% 224	19.2% 147	16.4% 125	7.7% 59	6.9% 53	2.9% 22	5.6% 43	764
Social or entertainment	25.0% 176	28.6% 201	18.9% 133	10.8% 76	5.7% 40	3.7% 26	1.8% 13	5.4% 38	703

12. How many days per week do you bike if the weather is bad (November to April)?

	0 days/ week	1 day/ week	2 days/ week	3 days/ week	4 days/ week	5 days/ week	6 days/ week	7 days/ week	Responses
Commute to school or work	50.8% 371	9.7% 71	7.5% 55	7.7% 56	7.1% 52	14.4% 105	0.4% 3	2.3% 17	730
Shopping or errands	53.3% 382	20.8% 149	10.5% 75	6.1% 44	3.2% 23	1.8% 13	0.7% 5	3.6% 26	717
Recreation, health or exercise	45.8% 331	25.0% 181	13.0% 94	7.5% 54	3.2% 23	2.4% 17	0.6% 4	2.6% 19	723
Social or entertainment	55.0% 374	23.8% 162	7.5% 51	5.9% 40	2.1% 14	1.8% 12	0.6% 4	3.4% 23	680

13. What distance do you bicycle one-way for the following trips?

	0 miles	Less than 2 miles	2-5 miles	5-10 miles	10+ miles	Doesn't apply to me	Responses
Commute to school or work	24.2% 173	21.8% 156	36.0% 258	12.7% 91	5.3% 38	0.0% 0	716
Shopping or errands	15.9% 116	42.3% 308	34.1% 248	5.9% 43	1.8% 13	0.0% 0	728
Recreation, health or exercise	9.3% 70	8.5% 64	25.8% 194	22.9% 172	33.4% 251	0.0% 0	751
Social or entertainment	19.7% 138	25.1% 176	36.2% 254	11.7% 82	7.3% 51	0.0% 0	701

14. What is the main type of bicycle facility you use for the trip? Check as many as apply.

	Busy streets with bike facilities (e.g. State St, Northwest Ave)	Busy streets, no bike facilities (e.g. Woburn St)	Calm streets (e.g. North St, Mill Ave)	Multi-use trail e.g. Railroad Trail)	Sidewalk	Don't bike for this trip type	Responses
Commute to school or work	47.5% 345	31.4% 228	33.3% 242	19.7% 143	8.7% 63	24.4% 177	726
Shopping or errands	45.1% 333	34.1% 252	42.8% 316	23.1% 171	9.6% 71	17.9% 132	739
Recreation, health or exercise	35.1% 258	24.7% 182	44.3% 326	61.8% 455	7.6% 56	8.6% 63	736
Social or entertainment	38.7% 271	24.9% 174	50.0% 350	40.7% 285	8.4% 59	19.3% 135	700

15. What would you like to see the City spend money on to improve bicycling in Bellingham? Please select up to 3 choices in order of importance to you, 1 being most important.

Item	Total Score[1]	Overall Rank
More bike facilities on busy streets	1315	1
Filling gaps in bicycle facilities	641	2
Off-street multi-use trails	542	3
Road surface maintenance (filling potholes, pavement cracks)	434	4
Multi-use trail and roadway crossings	378	5
Barrier crossings (e.g. bridges, tunnels)	331	6
More bike facilities on calm streets	233	7
Signals and intersections	227	8
Street sweeping	196	9
Bicycle parking	189	10
Other (please specify below under Comments)	147	11
Trimming vegetation	52	12

Total Respondents:

[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

16. When making a bicycle trip, which of the following facilities do you most prefer to use? Please select up to three choices in order of importance to you, 1 being most important.

Item	Total Score[1]	Overall Rank
Designated striped bicycle lanes	1414	1
Neighborhood streets with minimal traffic and low speeds	1039	2
Off-street, multi-use trails	1034	3
Wide travel lanes that allow motorists to safely pass bicycles on the left.	521	4
Any roadways where bicycles are allowed	301	5
Shared lane markings (e.g. Indian Street)	132	6
Sidewalks	111	7
Other (please specific below in Comments)	45	8

Total Respondents:

[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

17. Which of the following street or trail improvements would encourage you to bike more often? Select all that apply in order of priority, 1 being most important.

Item	Total Score[1]	Overall Rank
Bike lanes on busy streets	8589	1
On-street bike facilities that are separate from traffic (e.g. cycle tracks, buffered bike lanes)	7604	2
Accommodations for bicyclists at intersections (signal triggers, bike lane markings, etc.)	7459	3
Paved shoulders on narrow roads	7009	4
Off-street, multi-use trails	6723	5
Residential streets that are calmed for bike travel (bicycle boulevards)	6625	6
Better on-street connections between trails	6532	7
More wide outside lanes (easier to share lane with cars)	5808	8
Other (please specify below under Comments)	972	9
More on-road bike signage (signs that help you follow bike routes)	55	10
Increased enforcement of traffic laws	43	11
Increased maintenance (street sweeping/ repair of roads)	27	12
Showers and lockers at work	22	13
Better bicycle parking/storage	21	14
Better bicycle access to bus stops/transit stations	17	15

Total Respondents:

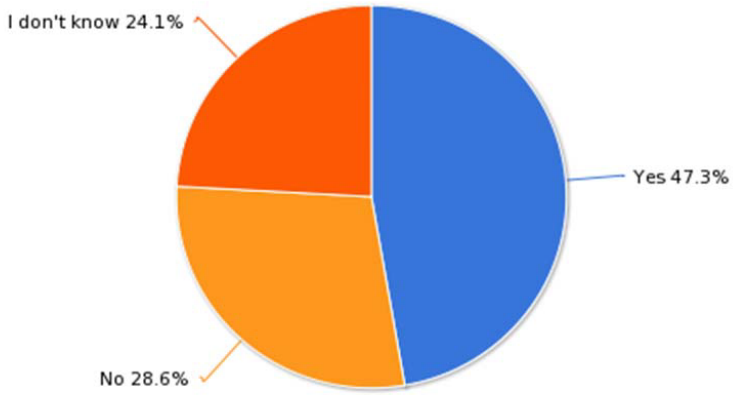
[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

18. Which of the following support facilities and maintenance improvements would encourage you to bike more often? Select all that apply in order of priority, 1 being most important.

Item	Total Score[1]	Overall Rank
Increased maintenance (street sweeping/ repair of roads)	2909	1
More on-road bike signage (signs that help you follow bike routes)	2745	2
Better bicycle parking/storage	2393	3
Increased enforcement of traffic laws	2051	4
Better bicycle access to bus stops/transit stations	1614	5
Showers and lockers at work	1227	6
Other (please specify below under Comments)	307	7
Total Respondents:		

[1] Score is a weighted calculation. Items ranked first are valued higher than the following ranks, the score is the sum of all weighted rank counts.

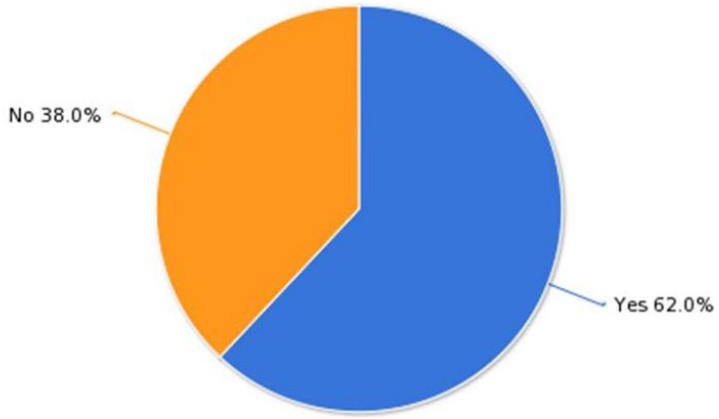
19. Do you live within 4 blocks of a bicycle facility?



Value	Count	Percent
Yes	380	47.3%
No	230	28.6%
I don't know	194	24.1%

Statistics	
Total Responses	804

20. Would you like a bicycle facility closer to your home?



Value	Count	Percent
Yes	447	62.0%
No	274	38.0%

Statistics	
Total Responses	721

21. Sometimes when the City makes changes to the streets to better accommodate more modes of travel such as walking, transit and bicycling, there can be compromises. If installing bicycle facilities requires trade-offs with other transportation modes, then what trade-offs are acceptable to you to encourage more bicycling? Imagine the following example taking place in front of your home or along your route to work, school or other important activities, and note your opinion about the trade-off.

EXAMPLE A: Change on a slow, residential street: A bicycle boulevard is installed with traffic circles and slow speed zone signs. The trade-offs could be (check one box per trade-off):

	Like	Neutral	Don't like	Responses
More bicycle traffic	84.3% 672	12.8% 102	2.9% 23	797
Slower traffic speeds	69.1% 548	24.0% 190	6.9% 55	793
Some parking removal	35.6% 282	47.6% 377	16.8% 133	792

EXAMPLE B: Change on an arterial or busy street: A bike facility is installed and requires the removal or reduction of on-street parking. The trade-offs could be (check one box per trade-off):

	Like	Neutral	Don't like	Responses
Physical separation between cars and bicycles	85.6% 677	11.5% 91	2.9% 23	791
Safety improvements for pedestrians	86.0% 671	12.4% 97	1.5% 12	780
Some parking removal	37.2% 291	49.4% 386	13.4% 105	782

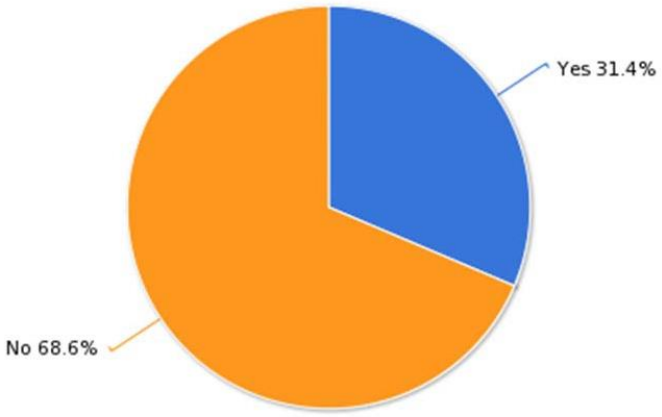
EXAMPLE C: Change on an arterial street:A four-lane street is reduced to three lanes (two through travel lanes and one center turn lane). The trade-offs could be (check one box per trade-off):

	Like	Neutral	Don't like	Responses
Increased safety for all users	0.0% 0	0.0% 0	0.0% 0	0
Fewer collisions	92.7% 700	6.4% 48	0.9% 7	755
Safer pedestrian crossings	90.9% 688	8.5% 64	0.7% 5	757
Addition of a bicycle facility	86.5% 659	10.4% 79	3.1% 24	762
Slightly slower motor vehicle speeds	68.6% 523	24.7% 188	6.7% 51	762
Possible increased congestion at rush hours	12.5% 95	52.8% 403	34.7% 265	763

EXAMPLE D: Change on an arterial street: A bike lane is installed and traffic lanes are narrowed. The trade-offs could be (check one box per trade-off):

	Like	Neutral	Don't like	Responses
More bicycles on the street	85.8% 659	10.9% 84	3.3% 25	768
Slightly slower motor vehicle speeds	70.2% 537	24.1% 184	5.8% 44	765
Addition of a bicycle facility	83.2% 626	13.7% 103	3.1% 23	752

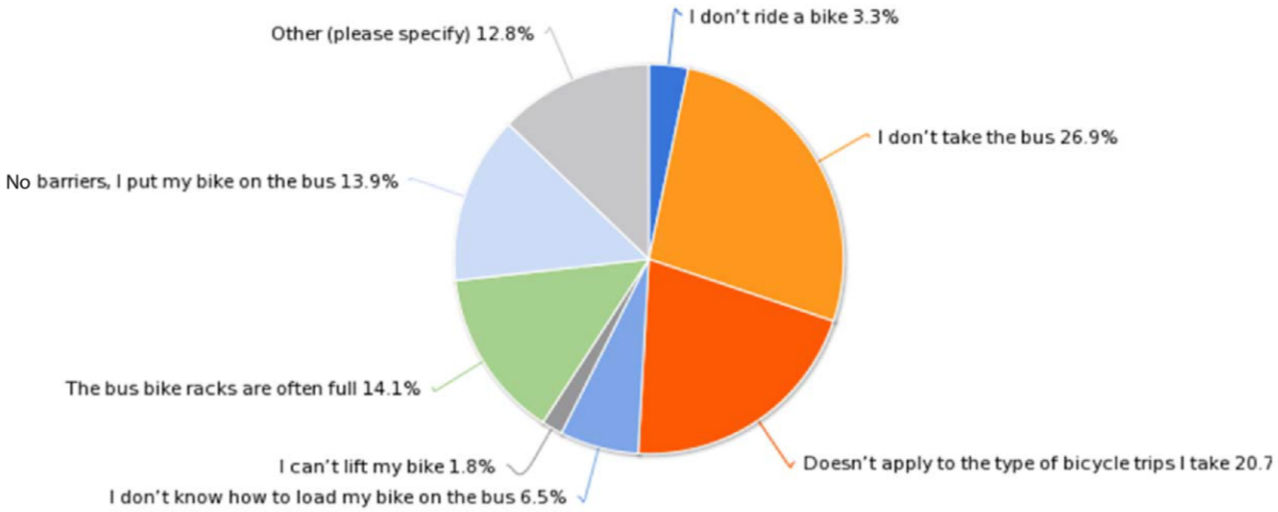
22. In the last year, did you take your bike on the bus?



Value	Count	Percent
Yes	252	31.4%
No	551	68.6%

Statistics	
Total Responses	803

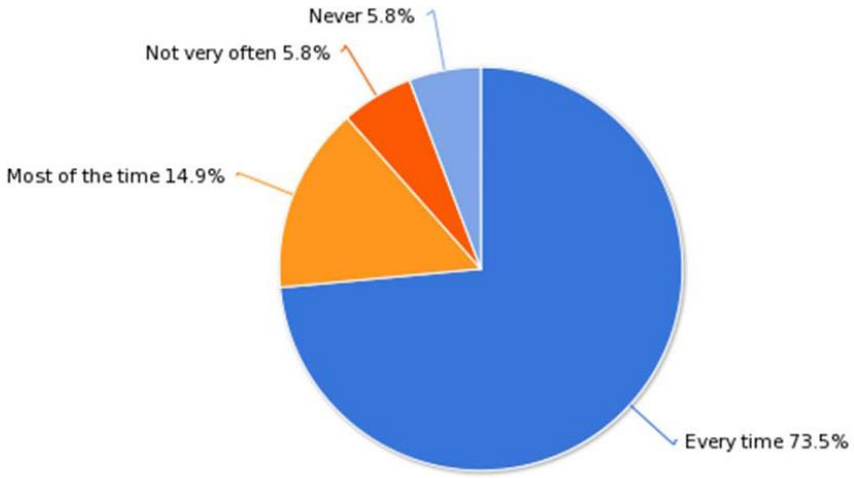
23. What are the barriers to taking your bike on the bus?



Value	Count	Percent
I don't ride a bike	26	3.3%
I don't take the bus	214	26.9%
Doesn't apply to the type of bicycle trips I take	165	20.7%
I don't know how to load my bike on the bus	52	6.5%
I can't lift my bike	14	1.8%
The bus bike racks are often full	112	14.1%
No barriers, I put my bike on the bus	111	13.9%
Other (please specify)	102	12.8%

Statistics	
Total Responses	796

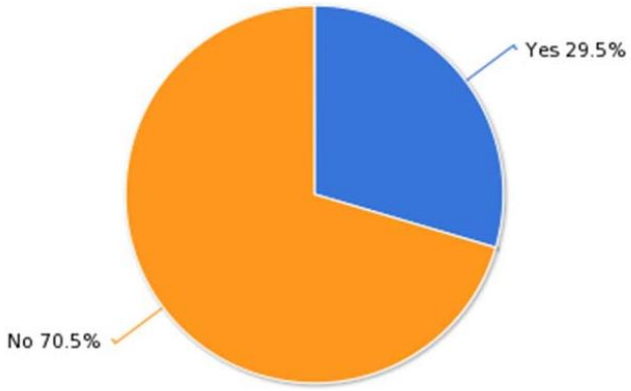
24. How often do you wear a helmet when you bicycle?



Value	Count	Percent
Every time	586	73.5%
Most of the time	119	14.9%
Not very often	46	5.8%
Never	46	5.8%

Statistics	
Total Responses	797

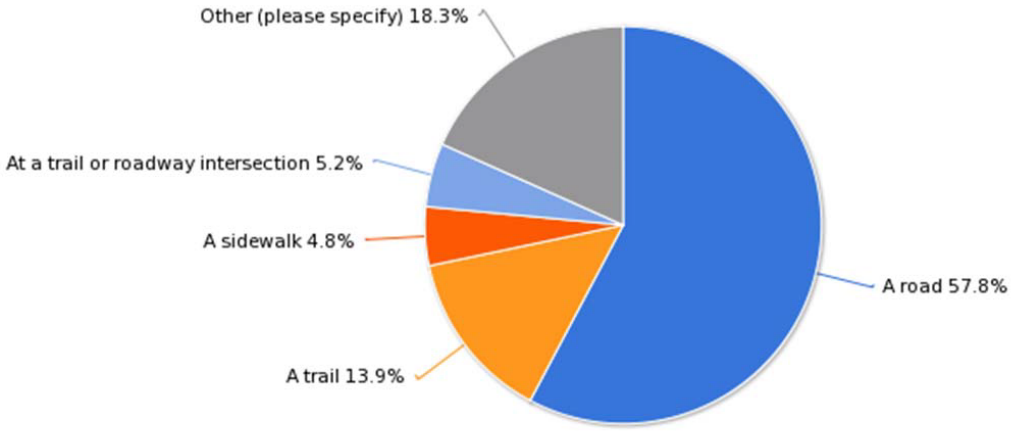
25. Have you ever been involved in a crash while bicycling in Bellingham? (If no, skip to Question 28)



Value	Count	Percent
Yes	234	29.6%
No	558	70.5%

Statistics	
Total Responses	792

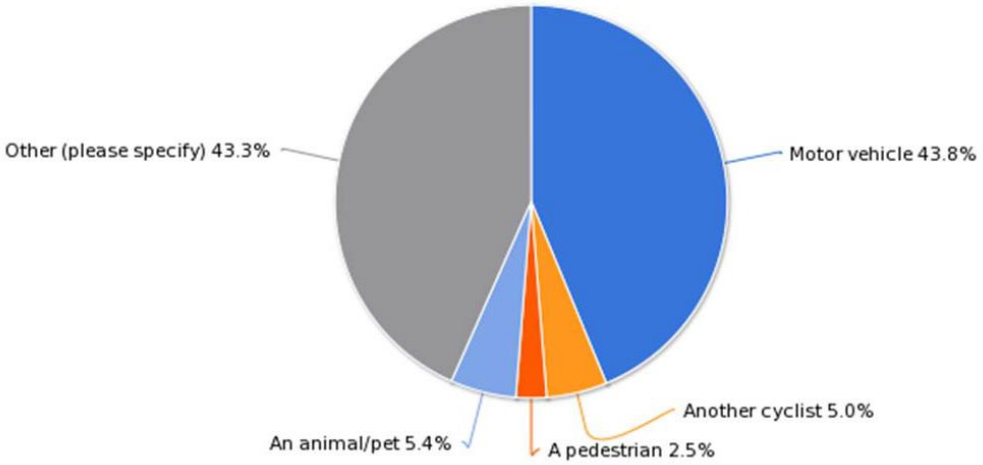
26. The crash occurred on:



Value	Count	Percent
A road	145	57.8%
A trail	35	13.9%
A sidewalk	12	4.8%
At a trail or roadway intersection	13	5.2%
Other (please specify)	46	18.3%

Statistics	
Total Responses	251

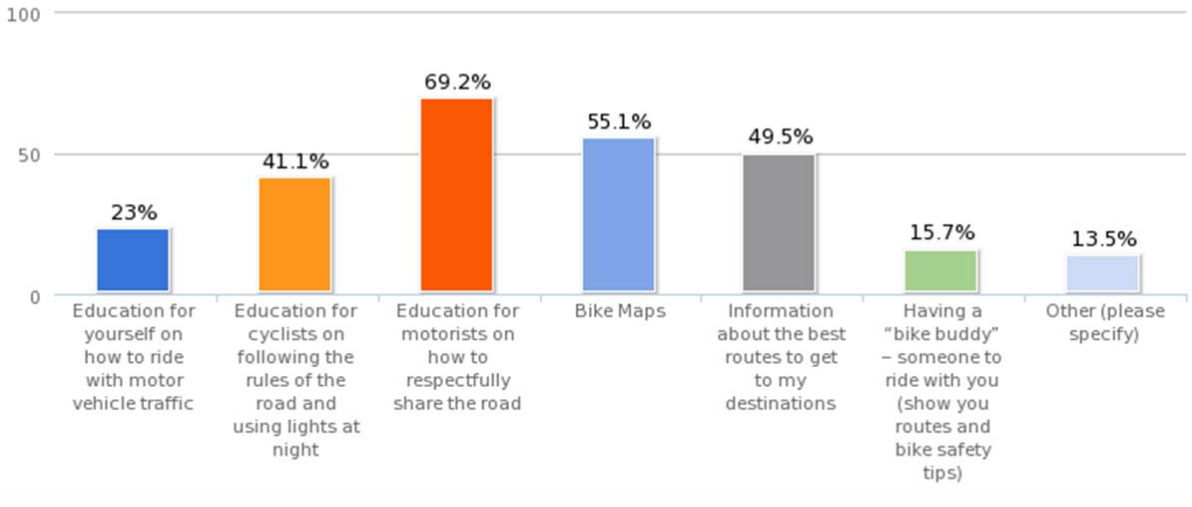
27. Who (or what) else was involved in the crash?



Value	Count	Percent
Motor vehicle	105	43.8%
Another cyclist	12	5.0%
A pedestrian	6	2.5%
An animal/pet	13	5.4%
Other (please specify)	104	43.3%

Statistics	
Total Responses	240

28. Which of the following programs or information would encourage you to bike more often? Select all that apply.



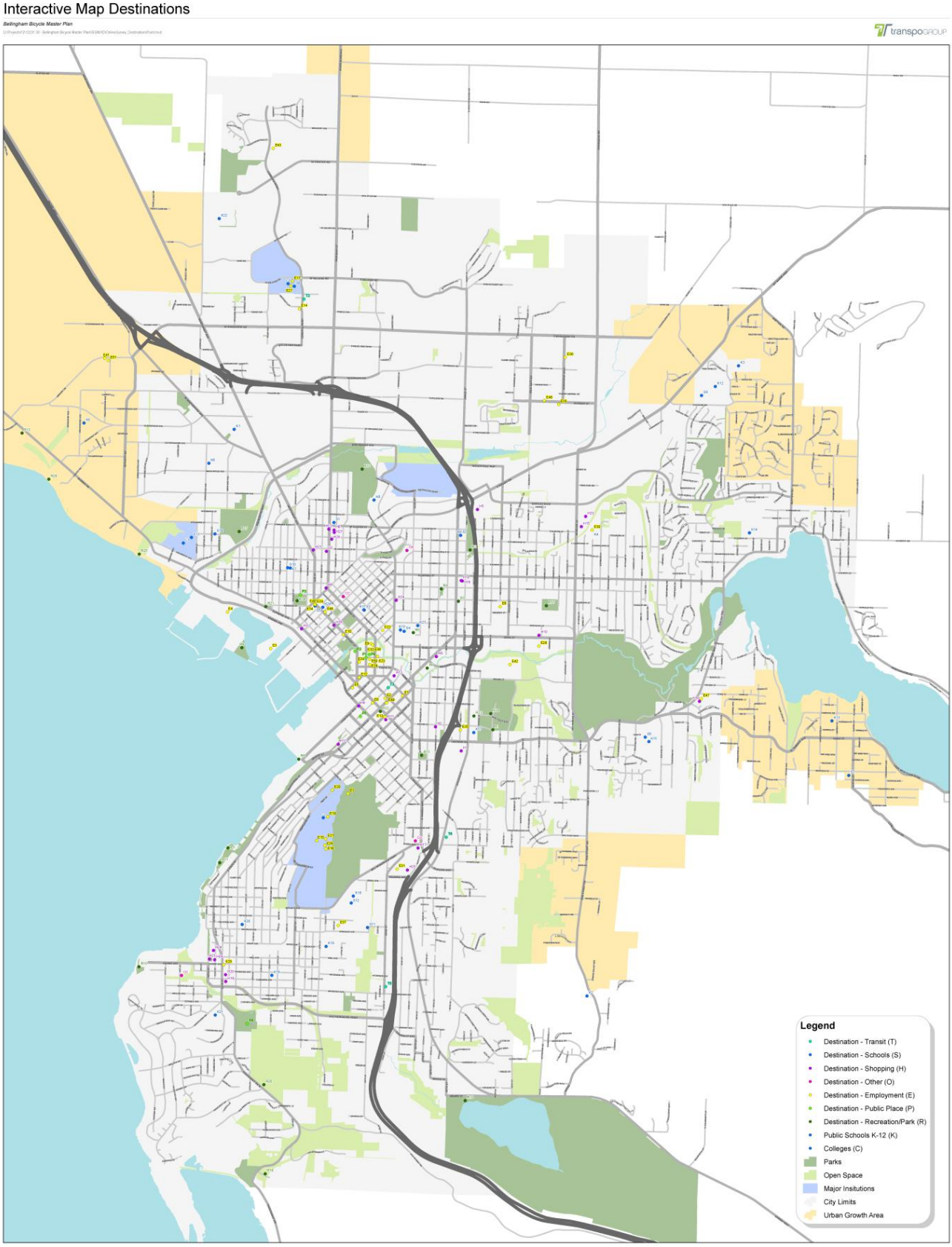
Value	Count	Percent
Education for yourself on how to ride with motor vehicle traffic	170	23.0%
Education for cyclists on following the rules of the road and using lights at night	304	41.1%
Education for motorists on how to respectfully share the road	512	69.2%
Bike Maps	408	55.1%
Information about the best routes to get to my destinations	366	49.5%
Having a "bike buddy" – someone to ride with you (show you routes and bike safety tips)	116	15.7%
Other (please specify)	100	13.5%

Statistics	
Total Responses	740

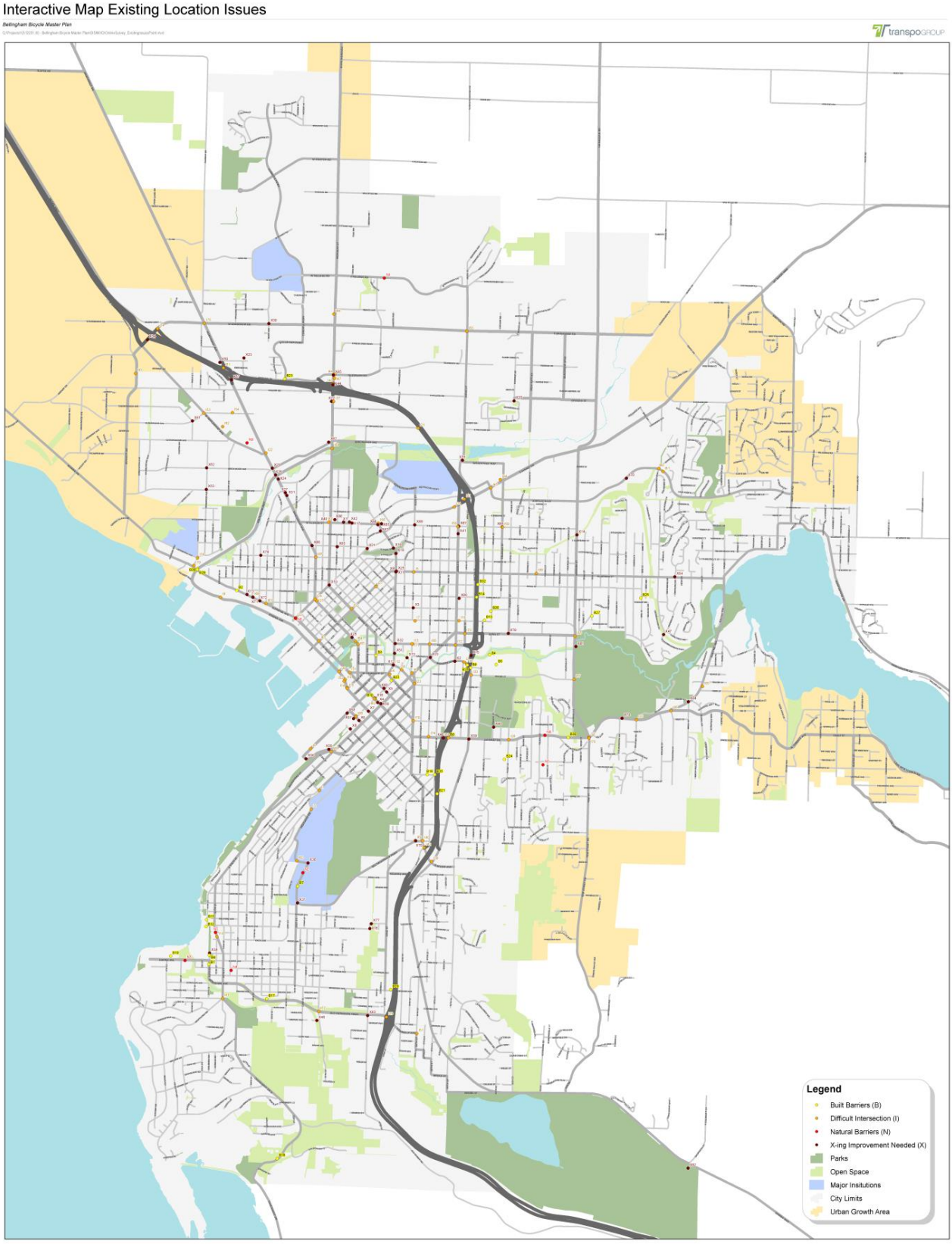
Interactive Map

Using an interactive online map, the public was invited to provide location-specific comments on informal connections, desirable routes, streets of concern, bikeway gaps, maintenance issues and challenging crossings of major roadways. This approach helped draw participation from all areas of Bellingham. The mapping exercise was advertised through a variety of on- and off-line mediums. The online map link was also promoted at libraries and other locations for individuals without internet access at home. Over a two-month period (April-May 2013), 388 point and 246 linear route comments were identified by the public. Information collected from the interactive map was considered in the development of a study network for field evaluation (see Study Network map, Chapter 3). The following pages provide full results for destination (point) and route (linear) comments. Maps for both destination and route comments are provided, followed by lists of respondent comments. Each comment has a unique identifier (ID#) that appears on the corresponding point or route on the maps.

Interactive Map Destinations



Interactive Map Existing Location Issues



Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to DOTS on the 'Destinations' and 'Existing Location Issues' maps)

ID #	Name	Comment
B01	Built Barriers	Indentation in pavement southbound on 10th St in line of where a bike would travel. Hit it enough times that I stay right or left of it. Hard to see it and catches riders off-guard.
B02	Built Barriers	Indentation in pavement eastbound on Eldridge Ave in line of where a bike would travel. Hit it enough times that I stay right or left of it. Hard to see it and catches riders off-guard.
B03	Built Barriers	Indentation in pavement southbound on Commercial St in line of where a bike would travel. Hit it enough times that I stay right or left of it. Hard to see it and catches riders off-guard.
B04	Built Barriers	Railings on trail bridge are tall. Approach angle makes it difficult to see trail users approaching from opposite direction. Can the bridge railings be lower to improve view of approaching trail users
B05	Built Barriers	Roadway was trenched last year and closed, forcing bike route through busy parking lot. Will this roadway be reopened eventually?
B06	Built Barriers	Angle parking on west side of 10th forces riders to sidewalk or into traffic on 10th
B07	Built Barriers	Striping on bike lane often wears off here from cars cutting corner into bike lane. Reducing the width of the median to allow a wider lane for all northbound traffic would improve this.
B08	Built Barriers	
B09	Built Barriers	
B10	Built Barriers	when taking a right onto Railroad from Holly there is a hole between the asphalt of the street and the cement of the sidewalk... just the dimensions of a bike tire and in the rain it fills with rain and is hidden ... and a barrier. Looking at the
B11	Built Barriers	Overflow trail use parking can conflict with bike users on this section of 10th as cars navigate unmarked parking at Reid Boilerworks site. Marked parking or signs would improve this.
B12	Built Barriers	Formal arrangements with the port should formalize access to and through Port property allowing access to shoreline and padden creek estuary.
B13	Built Barriers	I 5!!
B14	Built Barriers	Carolina is another potential connector between downtown and Roosevelt/Alabama hill, if only...
B15	Built Barriers	a straight cut through the curb here would be much more convenient for bicyclists
B16	Built Barriers	a straight cut through the curb here would be much more convenient for bicyclists
B17	Built Barriers	Fairhaven parkway is built too wide and consequently cars exceed the speed limit. This is a route that would benefit from planted medians and/or a European-style cycle track. The bike lane isn't welcoming to children due to proximity of fast cars
B18	Built Barriers	even with the interurban trail, bicycle access to Woodstock farm is problem due to poor sight distance at Spokane Steet corner. Traffic should be slower and a crossing warning light facility would help.
B19	Built Barriers	Secure bicycle parking, managed bike lockers and/or bike cage needed at this regional and international transportation hub. Port should be more engaged in bicycle transport.
B20	Built Barriers	more trail crossings under I-5 needed - various locations. Re-place Donovan Rock! (destroyed during I-5 construction)
B21	Built Barriers	There aren't any bike/ped crossings of I-5 south of Meador. (I don't really count the Samish Way overpass because it's unconnected to safe infrastructure on either side of the overpass and it's unappealing to beginner cyclists.) There are a lot
B22	Built Barriers	Secure bicycle lockers or storage (cage) or ideally a bike station should be co-located with the WTA station. Bike racks are over full all the time, poor security.
B23	Built Barriers	This could be a much better connection from Sterling to BFMall Pkway, but it's a dirt path ending in a curb.
B24	Built Barriers	Whatcom St is gated at Puget with a No tresspassing sign -- not a through street
B25	Built Barriers	This could be a small improvement to make it easier for bikes to get through on the short unbuilt road portion.
B26	Built Barriers	How about a strip of better pavement to ride on & directions so people know that it leads to a great connection under i-5
B27	Built Barriers	This could be a better connection from Yew into Whatcom Falls park, but the combination of No Trespassing signs & a dirt path make it difficult. It's a little scary because I need to walk this section -- the path isn't too good.
B28	Built Barriers	This narrow bridge has a high sidewalk. The sidewalk is inappropriate for bikes (pedestrian interactions and turns onto Nequalicum). Cars often pass on double yellow and squeeze cyclists. I often have to take the lane for safety.
B29	Built Barriers	This bridge is a tight squeeze on a bike. I ride on the sidewalk, but the access on either end is not designed for bikes.

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

B30	Built Barriers	Very dangerous water drain, to avoid it one must swerve into traffic.
B31	Built Barriers	Dangerous bumps in road surface caused by tree roots. To avoid them one must swerve into traffic.
B32	Built Barriers	Need to connect Texas St. with Sunnyland Neighborhood.
C01	Bellingham Technical College	
C02	Western Washington University	
C03	Whatcom Community College	
E01	Destination - Employment	Whatcom Council of Governments
E02	Destination - Employment	
E03	Destination - Employment	
E04	Destination - Employment	
E05	Destination - Employment	
E06	Destination - Employment	
E07	Destination - Employment	Western Washington University
E08	Destination - Employment	
E09	Destination - Employment	
E10	Destination - Employment	Wilson Engineering
E11	Destination - Employment	Candela Technologies
E12	Destination - Employment	Logos Bible Software - Building 3
E13	Destination - Employment	
E14	Destination - Employment	
E15	Destination - Employment	
E16	Destination - Employment	
E17	Destination - Employment	Whatcom Community College
E18	Destination - Employment	Bell Aire HVAC
E19	Destination - Employment	
E20	Destination - Employment	
E21	Destination - Employment	
E22	Destination - Employment	1903 D Street, Bham 98225
E23	Destination - Employment	Only bike rack is in the alley where bikes are vulnerable.
E24	Destination - Employment	
E25	Destination - Employment	
E26	Destination - Employment	
E27	Destination - Employment	
E28	Destination - Employment	Lack of bike lane on this side of street
E29	Destination - Employment	
E30	Destination - Employment	
E31	Destination - Employment	
E32	Destination - Employment	
E33	Destination - Employment	
E34	Destination - Employment	
E35	Destination - Employment	Work
E36	Destination - Employment	WTA
E37	Destination - Employment	WWU Facilities
E38	Destination - Employment	
E39	Destination - Employment	

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

E40	Destination - Employment	
E41	Destination - Employment	Alpha Technologies
E42	Destination - Employment	I bike to here every weekday.
E43	Destination - Employment	Comcast/Premier
E44	Destination - Employment	
E45	Destination - Employment	
E46	Destination - Employment	no bicycle parking available
E47	Destination - Employment	
E48	Destination - Employment	NW Cheer
E49	Destination - Employment	
E50	Destination - Employment	
E51	Destination - Employment	
H01	Destination - Shopping	I can't imagine ever biking to Fred Meyer.
H02	Destination - Shopping	
H03	Destination - Shopping	Elizabeth Station
H04	Destination - Shopping	Restore.
H05	Destination - Shopping	Surprisingly easy to get to Lowes from memorial park trails. Except dreaded Alabama crossing.
H06	Destination - Shopping	
H07	Destination - Shopping	WECU, I think.
H08	Destination - Shopping	Fanatik bikes requires some sidewalk riding.
H09	Destination - Shopping	Kulshan Bikes
H10	Destination - Shopping	Jacks bikes in hard to get to.
H11	Destination - Shopping	Co-op from downtown involves long detour from 1-way streets. And Hills.
H12	Destination - Shopping	Hub is perfectly located!
H13	Destination - Shopping	Public Market has good trail access from behind store.
H14	Destination - Shopping	Corner Store!
H15	Destination - Shopping	Nice access from trail here.
H16	Destination - Shopping	TJs is a nightmare to get to. James at Texas is very hard to cross. Alabama is a suicide mission.
H17	Destination - Shopping	Sehome Shopping Center (REI, Haggen etc.). Needs bike access from the north along Samish Way.
H18	Destination - Shopping	Trader Joe's - bike parking is on a slope and is usually full, wave style rack tends to mar paint jobs.
H19	Destination - Shopping	Pizzazza
H20	Destination - Shopping	Haggen Groceries
H21	Destination - Shopping	Farmers Market
H22	Destination - Shopping	Earl's!
H23	Destination - Shopping	
H24	Destination - Shopping	Fairhaven Bike and Mountain Sports
H25	Destination - Shopping	REI
H26	Destination - Shopping	Village Books, Colophon Caffe
H27	Destination - Shopping	
H28	Destination - Shopping	Taco truck!
H29	Destination - Shopping	Lettered Streets. Tight sidewalks.
H30	Destination - Shopping	
H31	Destination - Shopping	Goods' has become a very community centred part of the Columbia Neighbourhood
I01	Difficult Intersection	Northbound on W Campus Way, turning left on Cedar, then immediate left on N Garden. Even though cars on Cedar and N. Garden have Stop signs, they don't expect a bike (which has right of way) to turn in front of them without stopping.

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

I02	Difficult Intersection	Southbound on W. Campus Way (uphill), turning left onto High St. is very difficult because of limited sight distance in all directions and congestion.
I03	Difficult Intersection	Gotta ride in the road, then cut across on a curve to get to the trail behind Ford dealer.
I04	Difficult Intersection	SW corner of Public Market parking ramp entrance is extremely bumpy and hard for bikes.
I05	Difficult Intersection	Existing traffic calming on Ellis N of alabama leads to a nice street to ride into downtown on. Except for dreaded Alabama st crossing.
I06	Difficult Intersection	Rail line near parallel with the road, only safe way for cyclists to cross is to drift to the center line then cut back to the shoulder, making the crossing more perpendicular.
I07	Difficult Intersection	Bikes make quick zigzag from Ellis to trail. Parked cars here sometimes obscure view of kentucky (and probably drivers view of Ellis)
I08	Difficult Intersection	While bridge is out :-(this is the alternative to getting on state st bike lines. But first you have to occupy the right turn lane by Bank and go straight to connect with bike lanes by walden place.
I09	Difficult Intersection	Rail line is near parallel to the road, remarkably dangerous for cyclists if they ride on the shoulder. Have to drift to the middle and cut back to the shoulder to maintain a more perpendicular crossing.
I10	Difficult Intersection	Bikers choose between sidewalk, and getting squished in the road when T intersection forms. Too narrow for car and bike when heading West.
I11	Difficult Intersection	There's a crosswalk here but cars don't care if you want to cross. I'd say there's a 3% chance of a car stopping to let a pedestrian cross. Parked cars make it difficult to judge cross traffic as well.
I12	Difficult Intersection	Intersection uses pad sensors that don't pick up cyclists. If you obey the law you could end up sitting there until a car pulls up behind you.
I13	Difficult Intersection	Hard to cross between trail segments. At sunset, westbound cars can't see well.
I14	Difficult Intersection	Splitter island at intersection of Chestnut and Bay forces cyclist to abruptly block vehicles when traveling in SE direction. Alternative is to ride on sidewalk illegally or just take your chances on the road.
I15	Difficult Intersection	Traveling SE on Chestnut, the splitter island at Bay St intersection pinches cyclists into the traffic lane suddenly blocking cars. Have to admit that I ride the sidewalk through here to avoid conflict with vehicles during peak traffic periods.
I16	Difficult Intersection	One of the few reasonable routes between Ferndale and Bham include cycling on Marine Dr. but the old bridge over the RR tracks is narrow with poor shoulders on either side of the bridge, forcing cyclists into the lane with traffic. Somewhat risky
I17	Difficult Intersection	Limited sight distance, lots of traffic, sometimes risky eastbound left turn to trail or to Haskell Business Park driveway.
I18	Difficult Intersection	Difficult to turn left for bikes and very difficult to cross for pedestrians.
I19	Difficult Intersection	It is almost impossible to cross James on Kentucky (@ Hardware Sales) without dismounting the bike and using the pedestrian crossing signal. Vehicles using Kentucky and turning right onto James often pass bikes waiting at the intersection and make
I20	Difficult Intersection	Heading southbound, it is difficult to see cars heading east on Maple. The cars parked along Maple make it next to impossible to see traffic. A 4-way intersection could make it safer for cyclists and pedestrians alike.
I21	Difficult Intersection	Ornery homeless camp.
I22	Difficult Intersection	Half the cyclists I see turn left to go west on Maplewood here. Going south on Northwest Ave, I have almost been hammered by impatient left-turn drivers unable to judge my oncoming speed. A maplewood lane divider plus a northbound NW Ave left hand
I23	Difficult Intersection	Five way intersection. Designed for automotive traffic, awful for cyclists.
I24	Difficult Intersection	No bike lane for westbound, merging traffic after busy intersection, and onstreet parking can be hazardous for cycles
I25	Difficult Intersection	bike lane evaporates, narrow merge, would like to see cycle signage notifying route via Farragut or improvement thru BFD parking lot. Freaky merge area if you're not used to taking the lane when you have a kid trailer.
I26	Difficult Intersection	Seems to have constant traffic. In fact, turning left from I or J st going north on Dupont can take quite a wait.
I27	Difficult Intersection	Cars do not slow down for pedestrians, cars often too fast, cars won't even stop if police car with lights flashing is trying to help signal presence of pedestrians.
I28	Difficult Intersection	Left turn from southbound Puget to Eastbound Lakeway does not trip for bikes. I line it up on the detector. Usually have to wait for a car to come behind me or take the left turn when it is safe to do so (I have been informed this is legal when th
I29	Difficult Intersection	Coming West from Connelly to Old Fairhaven is difficult since you are going under the freeway and cannot see the light until you are almost on top of it. This causes you to lose any momentum that you had built up from the descent. Also, the fre

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

I30	Difficult Intersection	Traveling SW on Central, turning left on to W Chestnut, it is hard to see traffic over the guard "wall" on Roeder and Chestnut. Definitely have to roll forward over railroad tracks to see around the walls/fences/ whatever they are.
I31	Difficult Intersection	Riding NW on holly, When the light at Bay turns green, vehicles traveling NW are faster to the intersection with W Champion than bikes. Frequently there is a vehicle waiting to turn left from SE on Holly to W Champion. I always try to keep up wi
I32	Difficult Intersection	Riding SE on Eldridge onto Holly, parked cars on the right and moving traffic on the left really squeeze bikes at this corner. I've seen cars cross all the way over the yellow line into oncoming traffic to pass a bike at the narrow spot where the
I33	Difficult Intersection	Turning from southbound Lincoln onto Fraser is difficult -- traffic on Lincoln is FAST around the limited-sight-distance corner.
I34	Difficult Intersection	Hard to get left here to go north on Bakerview to Pacific
I35	Difficult Intersection	The bike lane disappears before Lakeway hits Kenoyer. It just merges with the right lane with no warning. Very dangerous considering the bike route leads to a middle school.
I36	Difficult Intersection	
I37	Difficult Intersection	
I38	Difficult Intersection	It seems crazy to have 4 lanes of traffic here. Cars go very fast and as a cyclist coming off the trail the blinking crosswalk is not a good option.
I39	Difficult Intersection	
I40	Difficult Intersection	
I41	Difficult Intersection	Bike sensors in pavement (Hawthorne) may improve intersection. Visibility is good but still difficult to know when cars will take 'free right turns on red' without looking.
I42	Difficult Intersection	The lights at this intersection and the one at Bill McDonald and Samish Way seem poorly synchronized to me. No matter which way I'm going, I almost always have to stop at both lights.
I43	Difficult Intersection	
I44	Difficult Intersection	
I45	Difficult Intersection	Cycling here is plain madness.
I46	Difficult Intersection	Meridian needs a bike lane!
I47	Difficult Intersection	I feel like I'm going to hit here every time headed south
I48	Difficult Intersection	Cars heading south on Northwest come around this corner really fast, there is also limited visibility as a biker from W North trying to cross Elm/Northwest.
I49	Difficult Intersection	Especially in the summer months, heading from Fairhaven to downtown, the best route is along Boulevard. Getting back onto the trail to downtown is difficult. Crossing Boulevard to Wharf street is always dicey. Cars come along Boulevard fast and in
I50	Difficult Intersection	Heading south towards downtown, it seems I always have to wait for a car to pull up and trip the light.
I51	Difficult Intersection	Cars and bikers trying to be polite to each other all stop for no reason. Help us.
I52	Difficult Intersection	Choosing the road, you get squeezed at Bay St. Choosing the sidewalk, you have to stop to yeild to pedestrians. Difficult choice. Fix needed.
I53	Difficult Intersection	poor lane definition makes for interesting ad hoc traffic patterns
I54	Difficult Intersection	If the pothole at Alderwood Care center and in the street could be fixed to drain to the nearby catch basin, it would keep bikers from going into the drive lane in this high traffic volume (school related) spot.
I55	Difficult Intersection	Need better way to connect between trails
I56	Difficult Intersection	This 5-way intersection is impossible because the light will not change for bikes, and it is really dangerous to turn without a light. It is also dangerous to get up on the sidewalk and hit the crosswalk button since cars can come from 5 different
I57	Difficult Intersection	Busy intersection on a curve. No signal.
I58	Difficult Intersection	
I59	Difficult Intersection	
I60	Difficult Intersection	high cross traffic collision risk for WB cyclists
I61	Difficult Intersection	EB bike lane constricts at the apex of the turn. could be much safer
I62	Difficult Intersection	fix intersection for crossing from 20th across W College.

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

I63	Difficult Intersection	Intersection is not bicycle friendly at this time.
I64	Difficult Intersection	Bump out is not bicycle friendly.
I65	Difficult Intersection	Right turn lane into Post Office is confusing to motorist interacting with bicyclists going straight. Needs better road markings.
I66	Difficult Intersection	Please consider stop sign for motorists on Maple St. when crossing RR.
I67	Difficult Intersection	Turn off Eldridge to Madison to connect to bike paths at Elm and Broadway.
I68	Difficult Intersection	Vehicles do not slow down for pedestrian and children to cross Eldridge. Eldridge is too wide along this stretch. Calm traffic
I69	Difficult Intersection	
I70	Difficult Intersection	very hard to get from Magnolia bike lane to Potter because of drive lanes & stoplight orientation.
I71	Difficult Intersection	Turning south from Lakeway westbound--hard to get the signal to trip & there you are out in the middle of 4 lanes of speeding traffic.
I72	Difficult Intersection	James would be a good connector from the south to areas north of Iowa & west of I-5, but there are no good choices for which way to go here.
I73	Difficult Intersection	hard to trigger stoplight from southbound King crossing Iowa
I74	Difficult Intersection	have to get off bike to use ped signal & curb prevents bike through access -- need to use crosswalk.
I75	Difficult Intersection	Very wide intersection with lots of cars. Not family friendly area. It doesn't even feel safe for cars, let alone people on bikes.
I76	Difficult Intersection	With bike lanes ending before the intersection, it's too much for a lonely cyclist.
I77	Difficult Intersection	Bike lane doesn't start at intersection.
I78	Difficult Intersection	This is a challenging intersection for cars, bikes and especially pedestrians. Tons of folks coming daily to school and no crosswalk! Sidewalk doesn't connect with street, un-marked shoulder.
I79	Difficult Intersection	poor visibility when turning left onto Eldridge. Cars often creep out and block bike path.
I80	Difficult Intersection	Headed eastbound on Illinois, there's little space a the light. Often get pinched by cars if I don't take the lane.
I81	Difficult Intersection	The bike path is force up on to the sidewalk causing difficult pedestrian interactions and unpredictably of bike for cars. Bikes on sidewalks = yikes.
I82	Difficult Intersection	Cars turning behind you and in front of you make this a challenging intersection, especially when riding with kids.
I83	Difficult Intersection	There is a lot of traffic turning left at this intersection. very dangerous for both cars and bikes. a roundabout would be great here.
I84	Difficult Intersection	This light cycle is way too long, and there is part of the cycle where no one is moving which I think is related to the adjacent light at Birchwood and Meridian. This seems unnecessary. Also, it's difficult to trip the light on a bike.
I85	Difficult Intersection	Fix Electric Ave!!! Giant uprisings in pavement catch bike and CAR tires on them
I86	Difficult Intersection	I think this awkward intersection would be greatly improved by converting it into a roundabout.
I87	Difficult Intersection	If you are coming from Fraser St it is difficult to use the cross walk crossing Woburn St. Being able to ride on the north side of Fraser St would help. Cars queuing up to turn right at the top of hill don't want to let you turn left.
I88	Difficult Intersection	Tough to cross here in afternoon and morning because of High School or other traffic.
I89	Difficult Intersection	Scary to go under I5
I90	Difficult Intersection	Need traffic light at Alabama and St.Paul Sts.
I91	Difficult Intersection	Look out for cars getting on the freeway.
I92	Difficult Intersection	Lookout for glass
I93	Difficult Intersection	Cars on the side of road
I94	Difficult Intersection	Somebody will die here if the city doesn't address the bike problem.
K01	Public Schools (K-12)	
K02	Public Schools (K-12)	
K03	Public Schools (K-12)	
K04	Public Schools (K-12)	
K05	Public Schools (K-12)	
K06	Public Schools (K-12)	
K07	Public Schools (K-12)	
K08	Public Schools (K-12)	

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to DOTS on the 'Destinations' and 'Existing Location Issues' maps)

K09	Public Schools (K-12)	
K10	Public Schools (K-12)	
K11	Public Schools (K-12)	
K12	Public Schools (K-12)	
K13	Public Schools (K-12)	
K14	Public Schools (K-12)	
K15	Public Schools (K-12)	
K16	Public Schools (K-12)	
K17	Public Schools (K-12)	
K18	Public Schools (K-12)	
K19	Public Schools (K-12)	
K20	Public Schools (K-12)	
K21	Public Schools (K-12)	
K22	Public Schools (K-12)	
K23	Public Schools (K-12)	
K24	Public Schools (K-12)	
N01	Natural Barriers	Steep hill eastward
N03	Natural Barriers	Large mud puddles on South side of Harris due to un-surfaced bus stop.
N04	Natural Barriers	Large standing water puddles on 13th street due to home and landscaping clearing on lot behind Haggen and no runoff controls. Also heavy use by Haggen delivery trucks bring excessive mud onto roadway. Between McKenzie and Larrabee.
N05	Natural Barriers	the steep hill makes this a difficult area for cycling. A zig-zag trail with gradual grade could help.
N06	Natural Barriers	Please consider Bicycle / Pedestrian bridge from the end of Broadway to the waterfront.
N07	Natural Barriers	standing puddles northbound just N. of 11th & Gambier- riders get soaked by passing cars, or must veer towards center of lane.
N08	Natural Barriers	We need a cross walk with lights somewhere here across Lakeway. Between the line of sight problems and the speeders heading home to the east, this can be daunting to cross, and I'm still in good shape.
N09	Natural Barriers	Poor bike lane. riding on the road not much better
N20	Natural Barriers	Large amounts of Gravel from gravel lots enter roadway. Street sweeping improves this but a cattle guard type of drain that captures all gravel from runoff and tires leaving the gravel lots would be an inexpensive long term solution.
O01	Destination - Other	The Bellingham Circus Guild
O02	Destination - Other	Bellingham Unitarian Fellowshijp
O03	Destination - Other	restaurants
O04	Destination - Other	I bike every day from here to Haskell Business Park. Nice ride except for Meador and James,
P01	Destination - Public Place	
P02	Destination - Public Place	Post office bike parking inadequite and interacts poorly with limited pedestrian path in front of cars. Bikes with trailers have difficulty turning around or locking up. Needs a dedicated parking space rack and guide arrows coaching cyclists to en
P03	Destination - Public Place	Start here for Candela Technologies
P04	Destination - Public Place	
P05	Destination - Public Place	Common Rec Ride Gather Point
P06	Destination - Public Place	Public Library
R01	Destination - Recreation/Park	Lots of stuff to do here!
R02	Destination - Recreation/Park	
R03	Destination - Recreation/Park	Important brewery! Crosswalk does help here.
R04	Destination - Recreation/Park	
R05	Destination - Recreation/Park	
R06	Destination - Recreation/Park	

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

R07	Destination - Recreation/Park	
R08	Destination - Recreation/Park	Bellingham Fitness
R09	Destination - Recreation/Park	
R10	Destination - Recreation/Park	
R11	Destination - Recreation/Park	Boulevard Park
R12	Destination - Recreation/Park	great park that is lacking bike parking, good crosswalks, sidewalks outside the park - basically a dropped ball
R13	Destination - Recreation/Park	No bike lane or sidewalk on Marine Dr
R14	Destination - Recreation/Park	
R15	Destination - Recreation/Park	Franklin Park
R16	Destination - Recreation/Park	Good location for a restroom!
R17	Destination - Recreation/Park	
R18	Destination - Recreation/Park	
R19	Destination - Recreation/Park	
R20	Destination - Recreation/Park	Good spot for trailhead parking
R21	Destination - Recreation/Park	Need safe route at this intersection. Vehicles turn fast off Eldridge at this park.
R22	Destination - Recreation/Park	YMCA - free showers if request
R23	Destination - Recreation/Park	Sportsplex - Needs more bike racks.
R24	Destination - Recreation/Park	Sportsplex
R25	Destination - Recreation/Park	
R26	Destination - Recreation/Park	
R27	Destination - Recreation/Park	Great park to visit
S01	Destination - Schools	Little Darling School
S02	Destination - Schools	
S03	Destination - Schools	
S04	Destination - Schools	
S05	Destination - Schools	Gabriel's Art Kids
S06	Destination - Schools	Whatcom Community College
S07	Destination - Schools	Whatcom Hills Waldorf School (K-8 school)
S08	Destination - Schools	Kulshan Middle School
S09	Destination - Schools	Squalicum HS, and nearby elementary school
S10	Destination - Schools	
S11	Destination - Schools	Blossom Day Care
S12	Destination - Schools	Sehome. Lots of auto traffic to "drop off" Students.
S13	Destination - Schools	Has anyone contacted BTC to get them involved? I bicycle by the the campus often and they appear to have parking challenges.
S14	Destination - Schools	Madrona Preschool
T01	Destination - Transit	Ferndale Park and Ride
T02	Destination - Transit	WTA Cordata Station
T03	Destination - Transit	We need safe, covered bike shelters close to the Bellingham Transit Station.
T04	Destination - Transit	Lummi Ferry Terminal and Lummi Island.
T05	Destination - Transit	This is the closest bus stop if you stay at Lake Padden Park past 6pm. Enhance service in p.m. including during non-school hours.
T06	Destination - Transit	Needs bike racks/lockers better sidewalks to and from. Strange layout for bus and car, folks get mixed up trying to get into parking lot
X01	X-ing Improvement needed	crossing near haggens
X02	X-ing Improvement needed	Bike lane not obvious thru this trail-connecting intersection.
X03	X-ing Improvement needed	Ellis St is almost a bike boulevard! N-S stops signs here prevent easy flow for bikes. Traffic calming circle would help instead of stop signs.

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

X04	X-ing Improvement needed	Bikes travel down alley and sometimes cars aren't prepared.
X05	X-ing Improvement needed	Bikes travel down alley and sometimes cars aren't prepared.
X06	X-ing Improvement needed	Bikes travel down alley and sometimes cars aren't prepared.
X07	X-ing Improvement needed	Bikes travel down alley and sometimes cars aren't prepared.
X08	X-ing Improvement needed	Bikes travel down alley and sometimes cars aren't prepared.
X09	X-ing Improvement needed	Bike lane disappears through intersection. Awkward to travel north straight thru light.
X10	X-ing Improvement needed	Intersection uses a pad instead of a timer. Doesn't recognize cyclists. Can end up stuck at the intersection until cars pull up.
X11	X-ing Improvement needed	Signal uses pads instead of a timer. Pads aren't sensitive enough to pick up cyclists at intersections. Could end up sitting for an inordinate amount of time waiting for a car to pull up.
X12	X-ing Improvement needed	Signal never changes for bikes. Frustrating.
X13	X-ing Improvement needed	CRUCIAL bridge linking downtown and sunnyland neighborhood. Urgently needs fixing.
X14	X-ing Improvement needed	At times a scary crosswalk for this popular trail. I have had numerous near misses with cars who either do not see me in sidewalk, or refuse to yield when I'm crossing. Many cars exceed speed limit southbound on Woburn as they race to beat the dr
X15	X-ing Improvement needed	Dark and secluded trail section at night. Illumination would help in spots.
X16	X-ing Improvement needed	not great for peds, bikes or cars, this whole railroad street should be a ped/bike mall with parking either at parkade or parking center near lakeway offramp
X17	X-ing Improvement needed	going w on Illinois starts a quick downhill and wants bike lanes. Turning left into Haggen can be scary. Suggest signage to get bicycles to use Grove to W Maryland.
X18	X-ing Improvement needed	limited visibility when trying to cross north east across cornwall continuing on S Park. Limited visibility to left and traffic is too fast.
X19	X-ing Improvement needed	commuters drive too fast on cornwall, long waits.
X20	X-ing Improvement needed	Path does not permit bicycle trailers or cargo bikes.
X21	X-ing Improvement needed	good that there's little traffic here but not obvious if the island should be a roundabout or if you should go directly nw thru to w conneticut.
X22	X-ing Improvement needed	Scary entrance to Country Club here. Biked to by moms with kids in trailer to get to swim class. Often just once, because the left turn from northbound Meridian is completely unprotected. Not even walking up the west side of Merid is safe here.
X23	X-ing Improvement needed	Gap in fence is impassible by wide kid trailers. Route is only obvious going northbound. Needs southbound signage from Eliza.
X24	X-ing Improvement needed	Going up this bridge is scary for beginners and they are always confused if they should land in right turn lane or middle lane. Also, common left-turn for cyclists here. Could there be a better detour of this intersection?
X25	X-ing Improvement needed	Bike lanes for northbound cyclists on Cornwall stop before Alabama (right-turn-only lane). Need dashed lines to guide cyclists and inform motorists).
X26	X-ing Improvement needed	South bound lane seems to have a badly adjusted mag coil, I can never turn this light in middle of right lane in evenings. Common red-light-runs by cyclists here.
X27	X-ing Improvement needed	great spot for cycle signage to start coasting because the light applies to cyclists, too.
X28	X-ing Improvement needed	The bulb-out here confuses cyclists and forces a merge. There should be traffic impediment or a carve-out in the bulb for bikes with trailers. Cars try to pass on left when bicycle has merged into lane.
X29	X-ing Improvement needed	Southbound Northwest, I can't get this signal to trip.
X30	X-ing Improvement needed	Southbound Eliza, I can't get the signal to trip.
X31	X-ing Improvement needed	Two rough spots here at the south driveway and the manhole immediately south of that, heading north. They inpact whole bike lane. I either ride in the gutter, or the auto lane, to avoid them.
X32	X-ing Improvement needed	West-bound on Ohio, signal won't trip for bikes most of the time, regardless of bike placement.
X33	X-ing Improvement needed	Going NW on Meador, the signal won't trip unless your bike is in the center lane (for turning left); but the bike route continues straight, from the right lane.
X34	X-ing Improvement needed	would be great to have bike lane in middle between lanes because on-ramp traffic is racing to freeway
X35	X-ing Improvement needed	Going south, this is a really steep and busy intersection to turn left up woodstock. Would like northward multi-use
X36	X-ing Improvement needed	The sign says "bicycle detector in pavement", but it rarely works with my bicycle.

Bellingham Bicycle Master Plan Interactive Map Location Comments

(ID # corresponds to **DOTS** on the 'Destinations' and 'Existing Location Issues' maps)

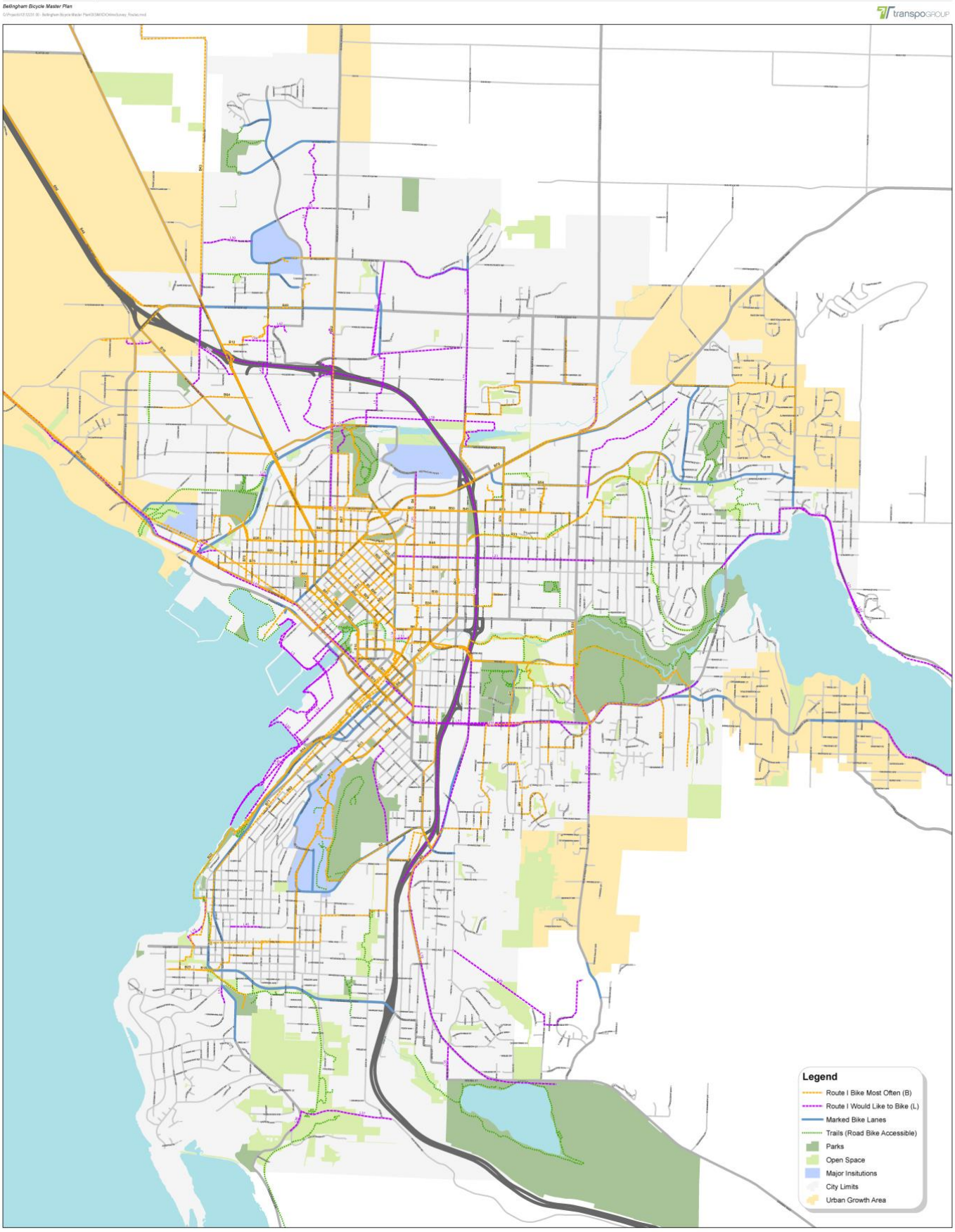
X37	X-ing Improvement needed	The sign says "bicycle detector in pavement" but it rarely works with my bicycle.
X38	X-ing Improvement needed	Car traffic on Mill may not slow for bikes crossing from trail to 10th.
X39	X-ing Improvement needed	
X40	X-ing Improvement needed	Should be a four way stop sign. Lots of bike, foot and car traffic due to the school.
X41	X-ing Improvement needed	the intersection at Alabama and James is all that is wrong with crossings. wide, people speeding to get to Trader Joes (think lost Canadians) hurried soccer moms, and well your taking your life into your hands
X42	X-ing Improvement needed	There is NO crosswalk on W. Illinois between the lights at Cornwall and Meridian. Those wanting to access Cornwall Park are destined to play frogger! Sad, sad, sad that our cities oldest park is so cut off from surrounding neighborhoods. LINK I
X43	X-ing Improvement needed	The crosswalks that connect Broadway park are poor. They need lights, they need to be bulbed! Make them stand out! It's a park. S(*# if we can't get it right at park crossings...
X44	X-ing Improvement needed	
X45	X-ing Improvement needed	
X46	X-ing Improvement needed	No shoulder and narrow lanes, sidewalks make it difficult to ride through this section of Lakeway (under I-5) especially during heavy traffic.
X47	X-ing Improvement needed	Blind corner. Difficult for bikes on trails to see traffic coming from Vining Street and difficult for cars to see bikes crossing the road.
X48	X-ing Improvement needed	stop signs along trails are in the wrong direction for heaviest traffic flow.
X49	X-ing Improvement needed	Intersection needs a dedicated east / west bike lane (dotted bike lane through intersection), maybe similar to Samish Way heading up overpass.
X50	X-ing Improvement needed	This roundabout is terrible for bikers, very confusing where bikers should go. How about dedicated bike lanes through the roundabout.
X51	X-ing Improvement needed	Improved trail crossing needed
X52	X-ing Improvement needed	Terrible pavement needs repair at this intersection
X53	X-ing Improvement needed	I meant terrible pavement needs repair here. not at Birchwood.
X54	X-ing Improvement needed	Easier to cross at top of Alabama hill instead of bridge.
X55	X-ing Improvement needed	difficult to turn right from wharf when trying to get downtown.
X56	X-ing Improvement needed	Dangerous tracks
X57	X-ing Improvement needed	please get rid of the fold down bollards.
X58	X-ing Improvement needed	Bridge has hazardous joints. Dangerous even when going slow uphill.
X59	X-ing Improvement needed	bikes forced to ride in road lane. If cars don't understand, there is a quick squeeze danger here. and at other curb bulbs on Holly.
X60	X-ing Improvement needed	a clock at the intersection would help. otherwise you have to cross two slow to change crosswalks to get over to bus stop to see what the time is.
X61	X-ing Improvement needed	Stop sign at middle of steep hill is cruel. Cars will wave bikers through out of sympathy! amazing.
X62	X-ing Improvement needed	add a bike lane west bound from Meridian and add lighting. Improve drainage.
X63	X-ing Improvement needed	Need a bike sensor or a cross walk button that is easy to access from the road.
X64	X-ing Improvement needed	
X65	X-ing Improvement needed	
X66	X-ing Improvement needed	
X67	X-ing Improvement needed	
X68	X-ing Improvement needed	
X69	X-ing Improvement needed	
X70	X-ing Improvement needed	there is no curb cut here to enter the bike lane from the trail
X71	X-ing Improvement needed	
X72	X-ing Improvement needed	Vehicles turn quickly off going West Eldridge onto Lynn going North. Not the best visibility
X73	X-ing Improvement needed	Cross Eldridge, Connects to park at Squalicum Parkway. Popular destination
X74	X-ing Improvement needed	Vehicles do not stop at stop sign. Perhaps install 4 way. Popular route through Neighborhood to West, Lynn and Elm.

Bellingham Bicycle Master Plan Interactive Map Location Comments

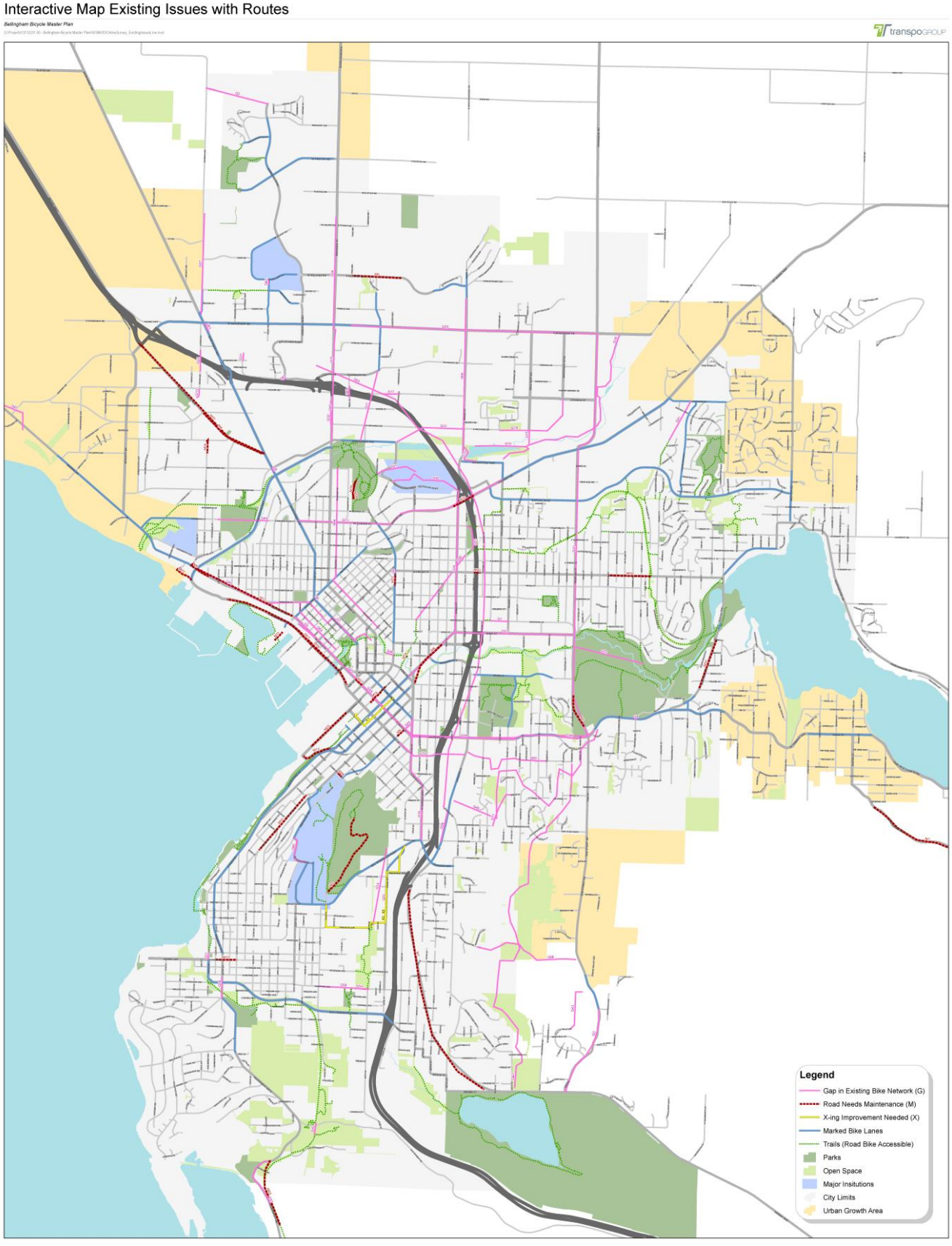
(ID # corresponds to DOTS on the 'Destinations' and 'Existing Location Issues' maps)

X75	X-ing Improvement needed	popular pedestrian crossing site, no crosswalk. Lots of people run across to catch the bus!
X76	X-ing Improvement needed	Cross over to Daycare
X77	X-ing Improvement needed	Attempt to cross to trail.
X78	X-ing Improvement needed	to access trail
X79	X-ing Improvement needed	hard to trigger stoplight from Pacific to Iowa
X80	X-ing Improvement needed	Need to get off bike to activate the ped signal-- very busy area
X81	X-ing Improvement needed	Bicycle access to the trail head is difficult at best and downright dangerous if hauling a trailer or tagalong. There is no good access from the trailhead at Fraser and Woburn without either hurtling down the steep slope of Fraser or squeezing bet
X82	X-ing Improvement needed	The speed limit crossing Samish way needs reduced and or a x-ing to improve safety.
X83	X-ing Improvement needed	
X84	X-ing Improvement needed	No crosswalk, no light, heavy vehicle traffic, difficult to cross
X85	X-ing Improvement needed	Light doesn't trigger for bike riders
X86	X-ing Improvement needed	light
X87	X-ing Improvement needed	Almost been hit here a couple of times by motorists exiting S.B. I-5 and disregarding the yield sign when merging onto Northwest. The end of the exit ramp should be modified and a stop sign should be added like was done to the N.B. exit.

Interactive Map Routes



Interactive Map Existing Issues with Routes



Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

ID #	Name	Comment
B01	Route I bike most often	I like going out Eldridge, Marine to Bennett and north to Bakerview and then to Eliza as an alternative. Not that much Farther than Northwest and less intersections.
B02	Route I bike most often	
B03	Route I bike most often	I use this route a lot to go to and from work. It's a busy, narrow road with inconsistent and poorly maintained shoulders and traffic that often seems to exceed the speed limit.
B04	Route I bike most often	Daily commute
B05	Route I bike most often	YMCA
B06	Route I bike most often	short ride
B07	Route I bike most often	Good for bikes most of way. Would be good to have bike lanes on Ohio
B08	Route I bike most often	
B09	Route I bike most often	Uphill on the sidewalk, against traffic.
B10	Route I bike most often	
B11	Route I bike most often	
B12	Route I bike most often	
B13	Route I bike most often	
B14	Route I bike most often	Ride MTB to Galby
B15	Route I bike most often	Return from work. This one way street works very well for me. I ride in traffic and feel safe. EXCEPT the pavement cracks in the middle of the middle lane. They are so dangerous, just the right size for my tire.
B16	Route I bike most often	Route avoids construction on Northwest.
B17	Route I bike most often	route to BTC parenting classes for moms, kids is bumpy and forces people onto sidewalk, bridge crossing is uncomfortably narrow
B18	Route I bike most often	
B19	Route I bike most often	
B20	Route I bike most often	It would be great if Illinois was better marked as a bike route. It's a quick way to get across town
B21	Route I bike most often	
B22	Route I bike most often	Fairhaven to Downtown Mallards
B23	Route I bike most often	
B24	Route I bike most often	
B25	Route I bike most often	Always end up taking some different combination of slow streets to Haggen from Sunnyland.
B26	Route I bike most often	I can never remember what streets to take to get to WECU. Merridian can be hard to cross.
B27	Route I bike most often	Fun trail. Great alternative to Iowa mess.
B28	Route I bike most often	Through NH route. Connect to Squalicum Way
B29	Route I bike most often	This is my commute to work
B30	Route I bike most often	Would love to see a bike lane, southbound only, on Woburn from Iowa up the hill.
B31	Route I bike most often	Route to work, trying to avoid F st.
B32	Route I bike most often	Return from bellwether thru middle school parking lot and on Dst better than trip to work.
B33	Route I bike most often	Love it!
B34	Route I bike most often	Love it! Except downtown alley part of trail gets tricky.
B35	Route I bike most often	Route to Brewery!
B36	Route I bike most often	Work commute.
B37	Route I bike most often	Main route to downtown from sunnyland
B38	Route I bike most often	
B39	Route I bike most often	
B40	Route I bike most often	Great east-west connection

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

B41	Route I bike most often	Columbia to Family Health
B42	Route I bike most often	route from Great Harvest to Farmers Market
B43	Route I bike most often	Sunny day route to work
B44	Route I bike most often	typical route to get to railroad trail, but not obvious by looking at map, needs signage.
B45	Route I bike most often	route to Lowes
B46	Route I bike most often	route to haggen
B47	Route I bike most often	route to family health assoc. Trails thru Cornwall need improvement. Commonly traveled southbound in dark for evening winter visits. Lights manditory.
B48	Route I bike most often	Family Health to work route.
B49	Route I bike most often	Route to DOL or Coop.
B50	Route I bike most often	route to Division industrial park
B51	Route I bike most often	
B52	Route I bike most often	Typical return from Great Harvest route
B53	Route I bike most often	Chores Route includes Bank, Public Market and Great Harvest
B54	Route I bike most often	Route to Bellingham Unitarian
B55	Route I bike most often	My commute route
B56	Route I bike most often	includes weird double-back to cross main st. I see three or four other Ferndale commuters on this track five days a week going opposite direction.
B57	Route I bike most often	To Gabriels Art Kids
B58	Route I bike most often	Route to and from work on road bike. Lanes on Barkley are very narrow!
B59	Route I bike most often	work commute. Samish way needs traffic calming as there are no convenient alternative routes.
B60	Route I bike most often	My bicycle route year around. At times a nice shoulder, at times no shoulder.
B61	Route I bike most often	I used to take a safer route but the bridge is closed over Whatcom Creek
B62	Route I bike most often	
B63	Route I bike most often	Route to Farmers Market
B64	Route I bike most often	Great slow road, if you keep away from the extruded curb.
B65	Route I bike most often	A separated trail along the north side of Marine Drive is the better solution - not a bike lane. Widening (i.e., bike lane) will increase truck speeds and women and children won't bike it. This is a key school access route for Alderwood and Shuksa
B66	Route I bike most often	
B67	Route I bike most often	
B68	Route I bike most often	
B69	Route I bike most often	Bike to/from school every week day morning/afternoon.
B70	Route I bike most often	Like the improvement on West- even though it is steep - it is fun!
B71	Route I bike most often	an indirect route for errands & avoiding Lakeway
B72	Route I bike most often	Tough to get out onto Lakeway except at signals during the morning and evening commute. I have found that the bike lane along Lakeway, though intermittent at times, is safer than navigating the painted tree root speed bumps along the multipurpose
B73	Route I bike most often	My Route to Whatcom Middle School
B74	Route I bike most often	
B75	Route I bike most often	
B76	Route I bike most often	
B77	Route I bike most often	
B78	Route I bike most often	I bike this Monday through Friday. I'd like to see Hannegan have a bike lane North of Sunset on both sides as far as Division or Bakerview.
B79	Route I bike most often	Work
B80	Route I bike most often	State Street to Ferndale for work.
G01	Gap in existing bike network	A connector here, or nearby, would offer an alternative to a sometimes sketchy trail south of Iowa where denizens and off leash dogs are often an issue.
G02	Gap in existing bike network	It would be so nice to skip the skinny scary segment of Aldrich and be able to get to Cordata across here.

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

G03	Gap in existing bike network	Dangerous on section of Yew St Rd between Wade King School and Samish Way (tho not in city)
G04	Gap in existing bike network	The bike lane doesn't continue through the intersection.
G05	Gap in existing bike network	Bike lane disappears, replaced by right-turn lane. Where are the cyclists supposed to go?
G06	Gap in existing bike network	Bike lane disappears to make room for left turn lane. Conflict with right-turning autos.
G07	Gap in existing bike network	Southbound bike lane disappears to make room for left turn lane.
G08	Gap in existing bike network	N. bound bike lane disappears for turn lane.
G09	Gap in existing bike network	Difficult section due to under-used street parking. There is a lot of traffic on this street, and not enough width for bikes, cars, and parked cars. A bike lane on the uphill side would improve this section dramatically. At this point I bike on
G10	Gap in existing bike network	could be a nicer scenic way to merge onto woodstock
G11	Gap in existing bike network	would be useful
G12	Gap in existing bike network	would save ~2mi getting to fred meyer
G13	Gap in existing bike network	would save distance to fred meyer
G14	Gap in existing bike network	This would connect Joe's Garden to downtown without needing to go thru downtown Fairhaven
G15	Gap in existing bike network	would help get to Division
G16	Gap in existing bike network	Scenic multi-use would skip Hannegan to get to Sunset
G17	Gap in existing bike network	Would help get from Sunset mall to Bellis Fair
G18	Gap in existing bike network	would avoid Hannegan drop and twist
G19	Gap in existing bike network	Would be pretty spur to get towards division
G20	Gap in existing bike network	
G21	Gap in existing bike network	Angle parking along 10th st makes bike use dangerous here. West side of 10th should be parallel parking with striped bike lane due to volume of bike and pedestrian users on this section.
G22	Gap in existing bike network	
G23	Gap in existing bike network	Lakeway Drive to Holly Street. There are two schools on Lakeway, two grocery stores, and hundreds of houses located off Lakeway. It could be improved with bike lanes or separated bike lanes.
G24	Gap in existing bike network	Dangerous to get from Girard to Meridian past Walmart.
G25	Gap in existing bike network	Gap in bike lanes on route from downtown to WWU
G26	Gap in existing bike network	Hard to connect these 2 wonderful trails.
G27	Gap in existing bike network	Narrow lanes with no sidewalks, bike lanes, or shoulder make it impossible to safely bike (or walk) to Cordata Elementary.
G28	Gap in existing bike network	I would like to be able to bike to the park and ride. I ride the bus into Bellingham for my commute, but Barrett Avenue has no shoulder. Traffic speed is high on this road, so I don't feel safe biking here. As a result, if I am to ride the bus,
G29	Gap in existing bike network	I would like to bike from my home to Haggen and other locations in Ferndale. However, LaBounty has no shoulder and traffic speed is high. As a result, I drive to get to town.
G30	Gap in existing bike network	a gravel trail thru the park would make passage by bikes with kid trailers or cargo bikes much easier, this gets swampy. This would be a better route than going south a block and going up king to make a left on E Illinois.
G31	Gap in existing bike network	great way to save effort from going up NW Ave to get to WCC. Impassible by large cargo bikes or wide cargo trailers.
G32	Gap in existing bike network	west side of Meridian sidewalk evaporates on route to Country Club. Needs signage at least. Moms and kids going to swim class should not have to drive to this typically overcrowded parking lot.
G33	Gap in existing bike network	This segment is used to get closer to IronGate. However it goes thru a homeless camp.
G34	Gap in existing bike network	
G35	Gap in existing bike network	Generally this route is not too bad as the motorist are a slower speeds and it is flatter terrain. However, some areas are narrow and negotiating the complex channeling near Iowa can be tricky in traffic.
G36	Gap in existing bike network	Very busy arterial route.
G37	Gap in existing bike network	Need a safer, more direct (NW Avenue is a big detour) way to get to shopping.

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

G38	Gap in existing bike network	Important to provide bike access to Sehome Shopping Center from Downtown and York Neighborhood. No other practical route avai able.
G39	Gap in existing bike network	Needs a bike lane. Bicyclists are forbidden to use sidewalk.
G40	Gap in existing bike network	wide shoulders in southbound that look like bike land turn into sidewalk and narrow shoulder forcing cyclist into vehicle lane abruptly.
G41	Gap in existing bike network	trail should be completed and a connection should be made between bristol st and mcleod
G42	Gap in existing bike network	replace original trestle. (a guy can dream, can't he?)
G43	Gap in existing bike network	There needs to be access to Wade King from local neighborhoods.
G44	Gap in existing bike network	It would be great if there was an easy way to get across town in an east west direction.
G45	Gap in existing bike network	I think we need a facility comparable to the Railroad Trail (which allows everyone to avoid the steep grade and car traffic on Alabama Street but still trave in the same corridor) for Lakeway Drive. I know that this would be expensive and compli
G46	Gap in existing bike network	trail doesn't easily allow people to cross Cornwall, as currently designed
G47	Gap in existing bike network	trail connection across BNSF/Marine Drive bridge and connecting to the Marine Park trail missing
G48	Gap in existing bike network	trail connection from neighborhood to Mall - current informal stairs are not bike friendly. This route helps cyclists avoid Meridian
G49	Gap in existing bike network	trail connections under I-5 needed - various locations, but this one could be priority.
G50	Gap in existing bike network	cycling trails and cycle-paths within and around hospital campus needed
G51	Gap in existing bike network	cycling trails to and within hospital campus could reduce parking problems
G52	Gap in existing bike network	build a trail along side I-5 instead of the planned widening. 60% of trips on I-5 are within the city of Bellingham - less than 7 miles. These trips could become bike trips instead
G53	Gap in existing bike network	Bike and pedestrian route well used, but no sidewalks! Cars pass on the steep uphill at Douglas blindly. Connects South end of WWU to shopping and restaurants
G54	Gap in existing bike network	Poor sidewalks / street. Need connection between trails.
G55	Gap in existing bike network	
G56	Gap in existing bike network	The Bike lane on the Southbound Side does not exist and there is no shoulder here.
G57	Gap in existing bike network	This road segment would be great closed and made into a trail/parking lot.
G58	Gap in existing bike network	Road needs bike lanes.
G59	Gap in existing bike network	bridge needs a bike lane
G60	Gap in existing bike network	Downhill is deadly on a rainy day. Engineer should try it to evaluate. Uphill, the lane narrows excessively after 21st. widen
G61	Gap in existing bike network	Northbound bike lane disappears after the pedestrian crossing, up to Bakerview.
G62	Gap in existing bike network	Southbound, no bike lane or sidewalk between W. Kellogg and Westerly Rd.
G63	Gap in existing bike network	Safe route to bik to Library
G64	Gap in existing bike network	Please consider making Halleck & Peabody Streets a Bike Boulevard.
G65	Gap in existing bike network	Please consider making Astor Street a Bike Boulevard. Many bicyclists already use is as an alternative to Holly.
G66	Gap in existing bike network	James could be a great way for bicyclists to get to areas North of I-5 but it is WAY too dangerous now.
G67	Gap in existing bike network	Lakeway to Lake Padden across Samish hill is a key unfinished route that is only missing ownership of one major segment before it s ready to develop. Development of a section by San Juan Blvd is in the works. The segment north of Governor Street
G68	Gap in existing bike network	Once we get a trail across Samish hill, people on all sides of it will be able to access this wonder setting right in our own backyard. Samish hill looms over our cityscape, the big sister of Sehome hill and a wonderful complement to Galbraith Mo
G69	Gap in existing bike network	This could be developed by Public Works as a quiet street alternative to a very scary ride on Lakeway.
G70	Gap in existing bike network	To really solve the Lakeway/Freeway gauntlet, we need a tunnel under the Freeway and development of quiet street routes to the east and west. Save me from automobile accidents, please.
G71	Gap in existing bike network	Most of this is public land and picks a grade that would be the best case scenario for biking. Some of the route also crosses a site proposed for student housing, and providing access for this path on the steep slopes above that housing should be
G72	Gap in existing bike network	
G73	Gap in existing bike network	no bike lanes cars on side of road

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

L01	Route I would like to Bike	
L02	Route I would like to Bike	Would be nice to have a bikeable route between downtown and Whatcom Community College!
L03	Route I would like to Bike	Scenic warf route to get to Fairhaven
L04	Route I would like to Bike	reasonable way to get to east Bellis by avoiding Merridian
L05	Route I would like to Bike	useful access towards to wallmart area
L06	Route I would like to Bike	would this be a good scenic route north?
L07	Route I would like to Bike	would save time going north
L08	Route I would like to Bike	Scenic shortcut that could get to Sechome and avoid Ellis
L09	Route I would like to Bike	would be great way to skip this busy intersection, would allow a family friendly route to loop from Columbia to Airport and back.
L10	Route I would like to Bike	Route would chop ~1.5 miles off getting to WCC
L11	Route I would like to Bike	would shorten route to Bellis Fair
L12	Route I would like to Bike	Would be a more peacefull route to get to BTC by bike
L13	Route I would like to Bike	This route would chop ~2 miles off the route to Bellis Fair and avoid Meridian.
L14	Route I would like to Bike	This route would be an AWESOME way to skip downtown and Roeder to get to Fairhaven.
L15	Route I would like to Bike	Use agreements with port over property access should be formalized. Port agreed to public trail access along East shore of Padden estuary when ferry terminal was built.
L16	Route I would like to Bike	James needs wider shoulders and sidewalks. It's crummy for cycling.
L17	Route I would like to Bike	Much of Lk Whatcom Blvd (from the foot of Cable for a mile or so) can be harrowing to ride, with speeding cars and no shoulder (and much of the edge of the road is is poor condition). A shared bike/car lane in both directions would be appreciated.
L18	Route I would like to Bike	This section of I-5 is currently off limits to bikes despite being legal on either side. The lack of this route making it much hard to bike around between some destinations than if you were in a car.
L19	Route I would like to Bike	Bellingham to Lake Padden. I like taking this route to Alger as well but that seems out of scope for this plan.
L20	Route I would like to Bike	
L21	Route I would like to Bike	
L22	Route I would like to Bike	I'd like to ride this route but it's too dangerous due to vehicle traffic and narrow road
L23	Route I would like to Bike	Alabama may as well not exist for cyclists. Needs bike lanes. Like NOW.
L24	Route I would like to Bike	I would like to be able to bike from my home to the park and ride, or downtown Ferndale.
L25	Route I would like to Bike	I would like to bike from my home to downtown Ferndale.
L26	Route I would like to Bike	This route is planned, is advertised (sign at Boulevard Park), but delayed. Would really like to see it happen.
L27	Route I would like to Bike	This route would save a lot of effort in avoiding the peak at W. Bakerview and NW Ave. Like, drive right thru the center of the hill. Only some one in a car would think this is of no consequence.
L28	Route I would like to Bike	A connection that a bike could traverse would be nice here
L29	Route I would like to Bike	Wade King needs better access
L30	Route I would like to Bike	missing link! Doesn't really go anywhere too important, but it would be nice to circumnavigate the lake.
L31	Route I would like to Bike	This is the *only* route to cross the freeway and could be much more friendly
L32	Route I would like to Bike	north on James to Telegraph, north on Deemer to Kellogg, west to WCC
L33	Route I would like to Bike	If there could be shared bike lane across parking lot by Cornwall and trail across here, it would be better than skinny steep trail on south bank of creek
L34	Route I would like to Bike	Needs bike lanes
L35	Route I would like to Bike	Would be a good alternate to Samish from Padden if there was a shoulder.
L36	Route I would like to Bike	Need a usuable bike path vs the one that goes through Arroyo.
L37	Route I would like to Bike	Stretch needs bike shoulder. Traffic volume is enough to be problematic for biker safety.
L38	Route I would like to Bike	

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

L39	Route I would like to Bike	Locals are using this mostly done road, just finish it. The trade off of a safe route, vs trying to get developer to finish it... the safe route is worth it. Someone removes the "road closed" signs anyway.
L40	Route I would like to Bike	I feel that Halleck & Peabody Streets would make a great woonerf (see below). All that is needed is to switch the stop signs and apply traffic calming markings on the road. Very little cost with a great benefit. Thanks, Scott - okoboji1@yahoo.
L41	Route I would like to Bike	Trail off the steep Barkley and with no stairs.
L42	Route I would like to Bike	I know of no safe way to bike to the mall, and no bike parking once you get past the parking lots to the building.
L43	Route I would like to Bike	Looks like there's a ROW between two lots just south of the freeway -- could lead to a bike/ped tunnel.
L44	Route I would like to Bike	Looks like it's all public right-of-way...
L45	Route I would like to Bike	This is a sketchy section to bike.
L46	Route I would like to Bike	
L47	Route I would like to Bike	
L48	Route I would like to Bike	Diff cult road to bike on: narrow and bad surface. I saw a cyclist take a spill westbound on Knox between 14th-15th. I don t ride this, but would if it was wider.
L49	Route I would like to Bike	Route from downtown area along the waterfront out to the Lummi Ferry Terminal and Lummi Island.
L50	Route I would like to Bike	Build the biking path as originally planned in the Waterfront Redevelopment Plan from 2004 to give complete, continuous access along the waterfront.
L51	Route I would like to Bike	Even a little wider shoulder would be very helpful on this beautiful route
L52	Route I would like to Bike	This uphill can be done toward the end of training all summer. But really steep. An alternate would be good for the less sturdy.
L53	Route I would like to Bike	
L54	Route I would like to Bike	Woburn is a dangerous gap between the bike lanes on Fraser and Lakeway. Overa l the road surface is very bad. Southbound you are pressed between fast moving cars and a guardrail and turning left onto Lakeway is difficult. I've taken to going on th
L55	Route I would like to Bike	
L56	Route I would like to Bike	There are no bike accommodations along this route
L57	Route I would like to Bike	
L58	Route I would like to Bike	Uses abandoned railroad grade, and existing overpass for access under I-5. New trail would provide access to sunset pond, and destinations on Sunset via Woodstock way/Orleans.
M02	Road Needs Maintenance	Northbound has lots of gaps/openings in the asphalt. I feel I zig and zag around them to avoid the extra bumps.
M03	Road Needs Maintenance	The chip seal here is terrible, yet many cyclists train (hill repeats) on this low traffic road.
M04	Road Needs Maintenance	no bike lanes, bad pavement, hazardously mismatched parking and road surfaces
M05	Road Needs Maintenance	narrow, steep, no shoulder or bike lane
M06	Road Needs Maintenance	Route to BTC over br dge gathers a lot of traffic and moms with kids often take bikes on sidewalks. Needs speedbumps. signage, ideally a bike path bridge to north would be neat
M07	Road Needs Maintenance	Southbound Samish is okay for biking. The Northbound shoulder is mostly unusable.
M08	Road Needs Maintenance	Potholes
M09	Road Needs Maintenance	Potholes
M1	Road Needs Maintenance	Commuting route needs bike lane/shoulder
M10	Road Needs Maintenance	One of the bumpiest "paved" streets in the city, especially northbound.
M11	Road Needs Maintenance	Bike lane markings IN parking space markings on E side of road. Confusing. Cars not present in morning or evening or commute days, but can be difficult at lunch or sunny evenings.
M12	Road Needs Maintenance	The shoulder has bike tire-wide grooves and divots so if you're biking up the hill you have to take the lane.
M13	Road Needs Maintenance	The westbound portion of eldrich is uneven and dangerous for cyclists when cars are passing.
M14	Road Needs Maintenance	The bridge needs to be replaced. It's a main route for cyclists as it keeps them off the busy Cornwall & State St arterials.

Bellingham Bicycle Master Plan Interactive Map Comments: Current and Desired

(ID# corresponds to LINES on the Routes: 'Current and Desired' and 'Existing Issues with Routes' maps)

M15	Road Needs Maintenance	A lot of potholes are on this road, especially at the intersections. Makes it difficult to get up to speed without worrying about eating it into a parked car.
M16	Road Needs Maintenance	
M17	Road Needs Maintenance	Eastbound near F St has a lot of potholes. Lot of uneven road from patching on both sides. Start of bike lane by Bellweather Way has two big roots making it incredibly dangerous to use.
M18	Road Needs Maintenance	High speed cycles take lane on downhill. Some lids can be hazardous depending on their state of maintenance throughout year.
M19	Road Needs Maintenance	This stretch of trail is in really bad shape and difficult to bike
M20	Road Needs Maintenance	No bike lanes on bridge and huge potholes exist
M21	Road Needs Maintenance	postholes seam to be systemic in this location and pop up periodically throughout the year
M22	Road Needs Maintenance	New street overlay here but already has large potholes! Patch jobs are sinking or going to pieces.
M23	Road Needs Maintenance	RR Track safety upgrade needed. pavement repair needed. Drainage repair needed (ice from seep onto road from RR.)
M24	Road Needs Maintenance	"sidewalk" has HUGE pot hole from poor patch over a utility install. Has needed repair for several years. Very hazardous.
M25	Road Needs Maintenance	Strange to think this route will be a major link to the waterfront from downtown. It is currently very industrial and has no human scale. Major redesign will be needed to beautify it to make it appealing. Not a cheap fix at all. This will need maj
M26	Road Needs Maintenance	Corrugated concrete! Difficult to bike on!
M27	Road Needs Maintenance	Corrugated concrete - difficult to ride on with a bike.
M28	Road Needs Maintenance	numerous cracks and potholes in paved road through park
M29	Road Needs Maintenance	The actual comment is that I think the Interurban Trail and the road could trade places here. This could provide a large parking lot for Woodstock Farm, a safe trail and road for road bikers, and eliminate the maintenance concern of the landslide
M30	Road Needs Maintenance	Fix Electric Ave!
M31	Road Needs Maintenance	Needs it
M32	Road Needs Maintenance	Glass on side of road
X01	X-ing Improvement needed	Traffic turning northeast into rxr looking for parking often drive in middle of street and don't know how to merge with left-looping cyclists. Not great for peds, bikes or cars, this whole railroad street should be a ped/bike mall with parking eit
X02	X-ing Improvement needed	Cross over to Daycare
X03	X-ing Improvement needed	Attempt to cross to trail. Or day care. Steep ravines, no sidewalks.

Focus Groups

Focus Group Findings

Focus Group	Key Findings
Parks & Recreation Department **June 19, 2013** Discussion with Parks Department staff on connectivity between on-street bicycle network and trails, and bicyclists' use of and needs in parks.	• The Parks Department's goal is to get more people biking with the vision of connecting trails and on-street bicycle facilities to create a seamless network to help people get to where they want to go. • There needs to be a seamless system of signage whether on trail or roadway regardless of jurisdiction. • There need to be good on-street connections between trails • Parks will consider paving short trail connections between street rights of way on parks property. A maintenance agreement will need to be determined between Parks and Transportation for the upkeep of these trail segments. • Routing bikes through parks will be evaluated on a case by case basis • High quality connection needed along waterfront for commuters (i.e. Whatcom Waterway Trail is not appropriate for bikes) • Bike and pedestrian conflicts should be addressed through signage i.e. "Use bell or voice when passing", "share the trail" and wayfinding to direct bicyclists away from pedestrian appropriate trails.
Fire Department **June 19, 2013** Discussion with BFD staff on street design and the needs of emergency response.	• It is important to keep the street grid intact by avoiding restricted access or diversion. • It is acceptable for Fire trucks to drive over traffic calming devices (i.e. traffic circle aprons) vs. full street blockage which they cannot get through. • It is important to recognize that on some streets there are fire hydrants only on one side of the street. • The Fire Department does not have designated fire routes but use arterial streets as much as possible and residential streets for local access. • Posted 30 MPH speed limit is ok on an arterial street so that Fire will go 10 MPH over the speed limit at maximum 40 MPH in case of an emergency. • Residential streets are ok with speed limits at 20 MPH. • The department prefers bicyclists to use residential streets to avoid conflicts on arterial streets.
Western Washington University **June 20, 2013**	• Key access points to Western: 21st St, 25th St (to Arboretum then through Fairhaven College), Sehome trail to E College Way, Indian St.

Discussion about how to best coordinate with WWU for access to and through the campus and the street network needs of WWU students and staff.	• Western created dismount zones in the campus core to reduce conflicts between bicyclists and pedestrians. Education campaigns help to encourage compliance. They installed large bicycle parking facilities just outside the core area. • Western prefers to use QR codes for directory signage. They suggest the City indicates routes to and through campus on our City bicycle route map. • High St is primarily a transit mall - cars aren't allowed. Bicycles are, but there are challenges due to bicyclists riding at high speeds downhill (conflicts at Oak St). • Western installed shared lane markings on E College Way to reduce conflicts between motor vehicles and bicyclists. • There is possible interest in improving a bicycle route on 21st St extension then along the backside of Carver Gym to connect to High St. • A bicycle route to extend E College Way behind Old Main to connect to Jersey St is not feasible due to grade.
Opportunity Council **June 21, 2013** Discussion with homeless housing case managers regarding client and agency bicycling needs, concerns and ideas for improvements.	• Needs: many clients don't have transportation and have difficulty getting to jobs. Having a bicycle would broaden their options. • Issues: not having bicycles, difficulty maintaining and securing bicycles, lack of equipment (lights, lock, baskets), lack of education about safe riding and rules of the road. • Suggestions: offer safe riding classes at the Opportunity Council (including safety for kids), teach people how to put bikes on buses, provide maps and brochures in the lobby, provide bike maps at bus stops, provide access to low-cost maintenance and use of repair tools, offer bike rental (BikeShare) program, bike locking stations that use a bus pass or bike card, bike buddies, stiffer fine for bike theft, offer "earn a bike" program, outreach campaign ("hip" and relevant posters of people biking), education for motorists (rules of road, awareness of bicyclists), increased enforcement (cite motorists and bicyclists).
Opportunity Council **June, 2013** Client phone survey about bicycling needs, concerns and ideas for improvements.	• Needs: safer access for bicyclists (bike trails and bike lanes). • Issues: unable to afford a bicycle, lack of education about rules of the road, lack of knowledge about bicycle routes and how to get around the city, bicyclists and skateboarders on the sidewalk are a hazard to pedestrians (particularly the elderly), don't feel safe riding in the road (motorists don't watch out for bicyclists). • Suggestions: provide extra resources for low-income people to buy bicycles, provide bicycle lights, information about a safe bicycle route between Samish and downtown, put in more bicycle trails and bike lanes (bike lanes on Alabama), bicyclists need to wear bright colors, add more bicycle police

	officers, install green bike boxes at downtown intersections, at bicycle wayfinding signage.
Sterling Meadows Affordable Housing **July 8, 2013** Discussion with residents about bicycling needs, concerns, and ideas for improvements.	• Issues: parents don't feel safe letting kids ride, lack of education about safe riding and rules of the road, car traffic on Sterling Drive, kids not wearing helmets, pedestrian/cyclist visibility crossing from path at end of Sterling Drive to Bellis Fair Mall, lack of bicycle facilities on Bellis Fair Pkwy. • Suggestions: provide a separate bike trail out to Northwest, offer safe riding classes for children and families at Sterling Bike Works Project, options for low-cost or free helmets, create a park behind the church (place where kids could ride bikes away from traffic). • Formalize the trail connection between Sterling Drive and Bellis Fair Pkwy. And improve the crossing of Bellis Fair Pkwy: currently visibility is limited by vegetation on the curve. • Kids in the neighborhood don't have a park nearby, they'd like to be able to ride to Cornwall Park (closest park on the opposite side of I-5) •

Police Department
July 11, 2013
Discussion about practices, bicyclist and motorists behaviors/attitudes, opportunities, and coordination with the BPD on enforcement related issues.
	• Issues:
	  ○ Bicyclist behaviors: disregard for laws (wrong-way riding, sidewalk riding downtown, running stop signs and red lights)
	  ○ Motorist behaviors: not yielding to bicyclists (when making turns at intersections), inattention, unsafe passing
	  ○ Bicyclist attitudes: "Why should I have to follow traffic laws?"
	  ○ Motorist attitudes: "They (bicyclists) shouldn't be on the road."
	• Recommendations:
	  ○ Local bicycle clubs would like to see more enforcement for bicyclists to change behaviors.
	  ○ Emphasis patrols that target specific unsafe bicycling and driving behaviors.
	  ○ Education campaigns (BTV10, WWU, post on Facebook) to promote safe bicycling and driving and respect for all roadway users.

Washington State Department of Transportation (WSDOT) **July 11, 2013** Discussion about opportunities to improve I-5 crossings for bicyclists.	• Short term: options to improve bicycle safety and access at I-5 crossings could include wayfinding signs, sweeping, sidewalk and curb ramp replacements, and striping. • Long term: I-5 Master Plan - Fairhaven to Slater (includes projects to improve safety for bicyclist and pedestrian access at interchanges).

	• WSDOT can include Bellingham's Bicycle Master Plan in the appendix of their Washington State Bicycle Facilities and Pedestrian Walkways Plan.
	• I-5 Crossings:
	  ○ Lakeway Dr: Because the structure is old it might be less expensive to build a new tunnel crossing to the south.
	  ○ Orchard Dr./James St: The City of Bellingham is applying for a grant to use the old rail road tunnel for a crossing.
	  ○ Guide Meridian: Possible over pass at Van Wick Rd where James St ends
	  ○ Illinois St: One idea is to use the east side and install a north/south tunnel to Sunset.
	  ○ James St and Woodstock Way: Being upgraded to include a stop sign on
	  ○ Woodstock. Orleans would need a southbound bike lane
	  ○ Sunset and Racine: review the need for a traffic signal and trail
	  ○ Maple St: Area would need to be evaluated. May be a possibility for an overpass.
	  ○ Samish Way: short term considerations are the addition of signs and paint to improve the existing crossing.
	  ○ Fairhaven Parkway: High bicycle crash location. Signal is proposed for the eastern intersection but unfunded at this time.

Student Survey Findings

Question	6th Grade Students: sample size 44	2nd Grade Students: sample size 23
Where do you ride your bike?	• School • Friend's house in neighborhood • Elementary schools to play • Parks to play • Barkley Village • Skate park • Grocery store • Interurban and Railroad trails • Galbraith Mtn. trails	• School • Friend's house in neighborhood • Parks to play • Elementary school to play • Boulevard Park (with parents) • Farmer's Market (with parents) • Downtown (with parents) • Library (with parents or older siblings)
What prevents you from riding a bike?	• Distance • Weather	• Distance • Weather • Not having a bike
Are your parents comfortable with you riding your bike?	• Not on busy roads without bike facilities • Not when it is dark, or areas where there are few people present • Not alone • Not outside the neighborhood	• Not alone • Not outside the neighborhood
Where do you feel safe riding your bike?	• Interurban and Railroad trails • Sidewalks • Bike lanes	• Sidewalks • Neighborhood streets
What would make it easier or safer for you to ride?	• Better, safer route to the mall • More trails - separated from traffic • Better trail crossings • Bike boulevards • Safer intersections/crossings for bicyclists • Widening and paving Interurban and Railroad trails • Covered bike parking at school • Bike facilities downtown (sidewalk riding isn't allowed) • Wayfinding signage	• More trails - separated from traffic • More bike racks at school and parks

PTA Survey Findings

Question	Sample size 14
Do you or other family members ride bicycles?	• The adults in our family ride bicycles - 92% • Our children ride bicycles - 85%

What are the main barriers to your children and family members biking to school or in your neighborhood?	• I'm not comfortable having my children cross busy streets - 46%
	• There is too much traffic in our neighborhood - 31%
	• Cars drive too fast in our neighborhood - 31%
	• My children have before or after-school activities that make it difficult for them to ride bikes - 31%
	• My children don't have an adult to ride with them - 23%
	• My children don't know how to bike safely - 1%
	• Other barriers:
	  ○ New school attendance areas make it too far to bike
	  ○ Concerned about busy arterial crossing
	  ○ Kids can't put bikes or scooters on bus to after school care
	  ○ Hills
	  ○ Lack of bike racks at school, students can't afford to buy locks
	  ○ High school student has too much gear to carry (musical instrument, sports gear, books)

What would help you feel safer about letting your children ride bikes?	• Bicycle facilities such as bike lanes, trails, etc. - 79% • Safer intersections and street crossings - 71% • Low volume, low speed streets to ride on - 64% • Bike safety classes in school - 43% • Having an adult or bike buddy to ride with - 36%
What would you like to see addressed in the City's Bicycle Master Plan? It could be anything - bicycle facilities (such as bike lanes, trails, bicycle parking), education programs, enforcement, etc.	• Please let the Bellingham School District know that citizens are frustrated with the non-geographic system of dividing the school regions so we can't bike to school. • Signage to inform/remind drivers that children are using this route to bike to school. • Bigger bike lanes and education programs on riding safely. • Bike lanes with a barrier between biker and cars and bike-only roads, more bike paths, more speed bumps in neighborhoods to slow down cars, police getting drivers who take free rights when not allowed. • Bicycle education, more bike racks and bike lanes. • More bike lanes. • Incentives to kids for biking, walking and taking school buses to school rather than having parents drive them. A Smart Trips type program for schools? We need to encourage and reward it more than one day/year. • Lower speed limit on Lakeway Drive from 35mph to 25mph. • The more people ride, the more bikes are seen by drivers. Think Amsterdam. There's still an image of bikes being in the way of cars on the streets. Education is part of the need.

	• We need more educational programs for our children and families, bicycle parking around the Bellingham community and safer bike lanes. Families are also in great need of bicycle helmets for their children in Title 1 schools.

Public Meeting #2

BICYCLE MASTER PLAN OPEN HOUSE

CITY OF BELLINGHAM • WASHINGTON •

Help make bicycling safer, easier, and more comfortable for all people and skill levels - come and **share your ideas** and priorities for the new Bellingham Bicycle Master Plan. The open house will include a **presentation at 6:30 PM** and a set of stations where you can:

- Rank goals and objectives
- Provide ideas on maps for existing and future bike routes
- Identify important locations to bicycle to in Bellingham
- Learn about bicycle facility types (e.g. – bike lanes, bicycle boulevards, cycle tracks etc.)

BICYCLE PARKING:

- Free valet bike parking provided by everybodyBIKE. Look for the everybodyBIKE tent, across Halleck Street from the school front entrance.

AUTOMOBILE PARKING:

- On Halleck Street in front of the school
- On D Street between Halleck Street and Irving Street
- In the Municipal Court parking lot off C Street

Thursday, February 20, 2014
Whatcom Middle School
Auditorium, 2nd Floor
810 Halleck Street

PROJECT WEBSITE:

www.cob.org/bike

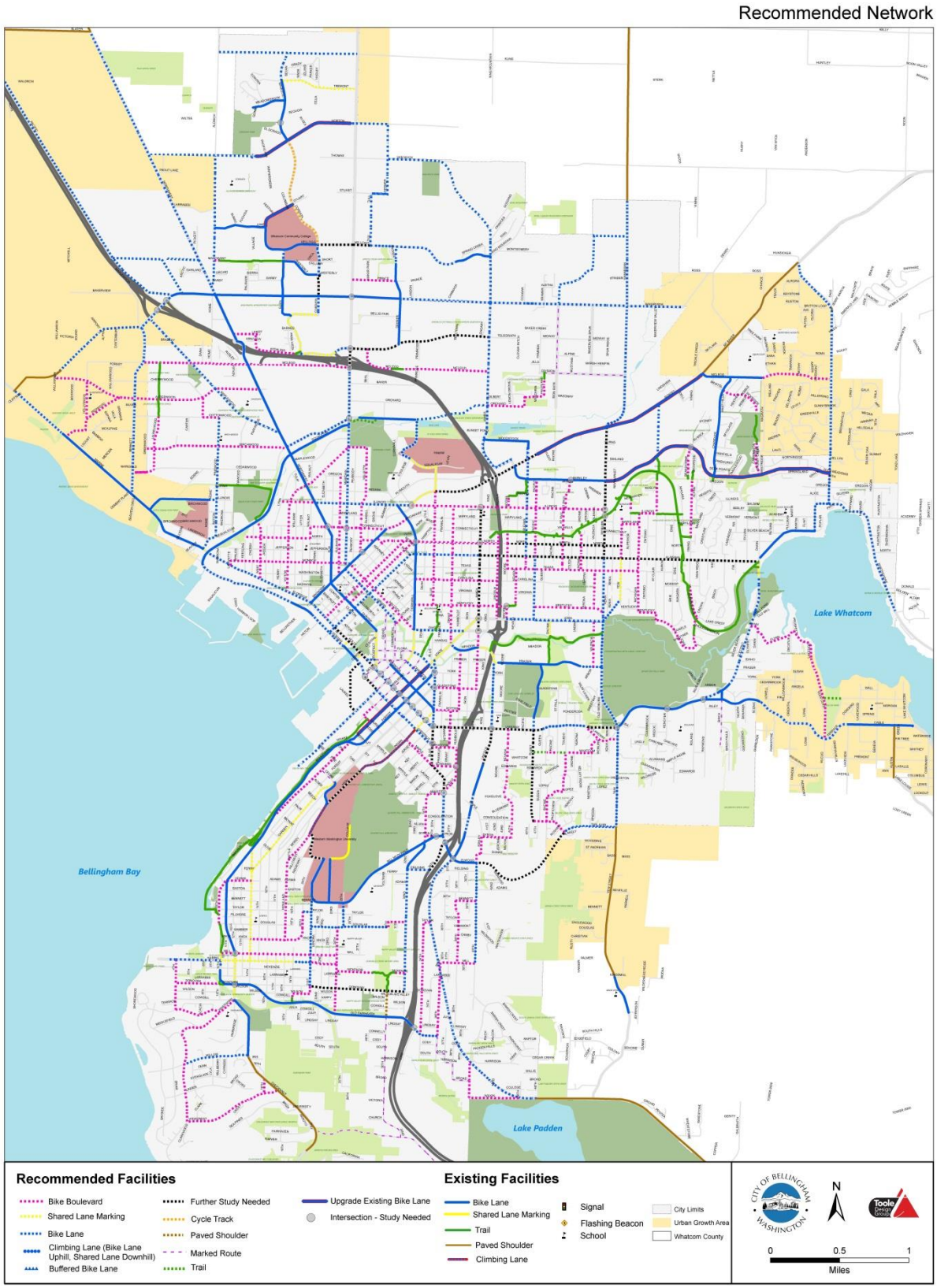
SURVEY:

www.surveygizmo.com/s3/1211291/Bellingham-Bike-Master-Plan-Survey

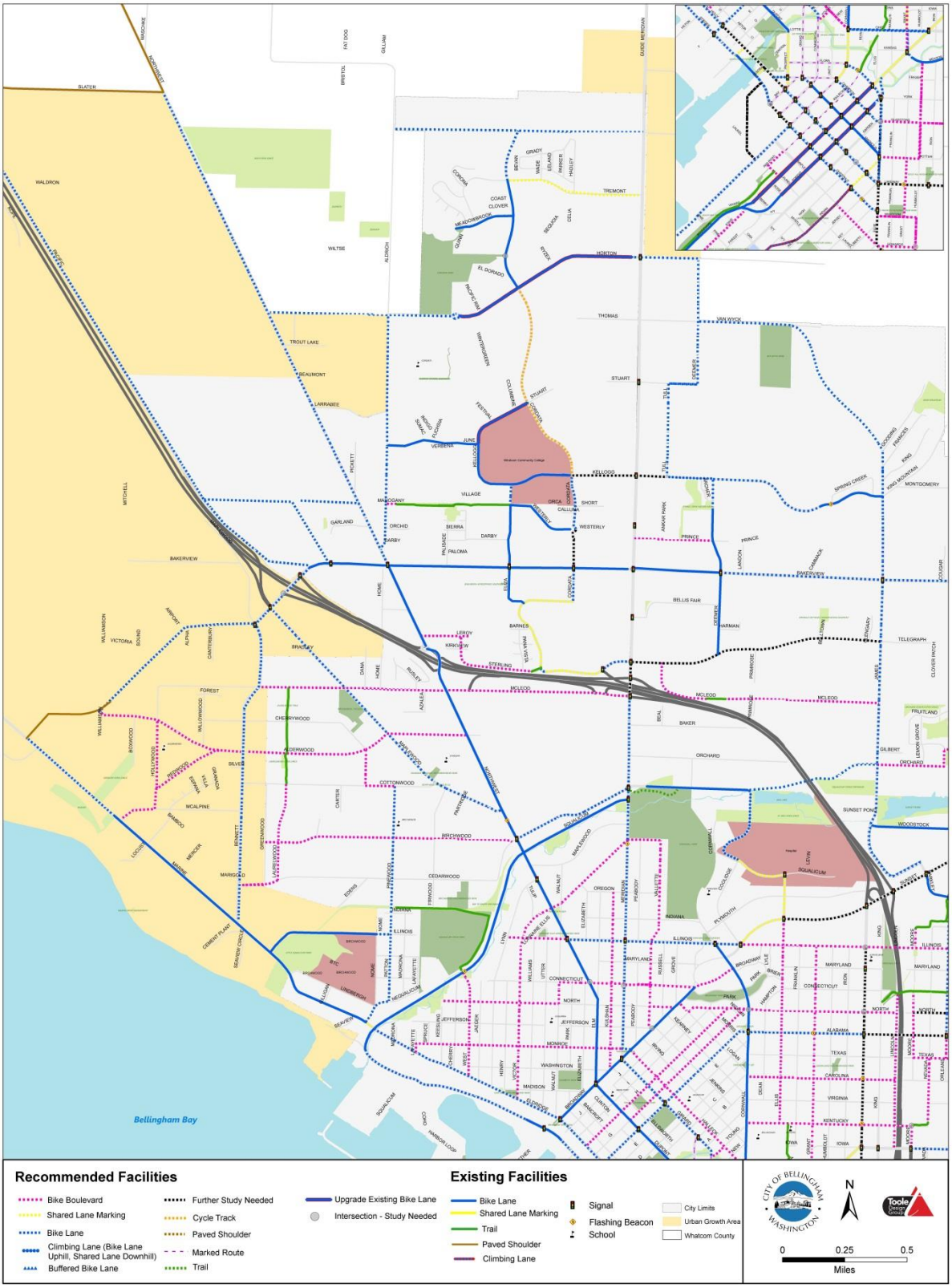
INTERACTIVE MAP:

http://wikimapping.net/wikimap/project124.htm#UUyFYKj3GNR

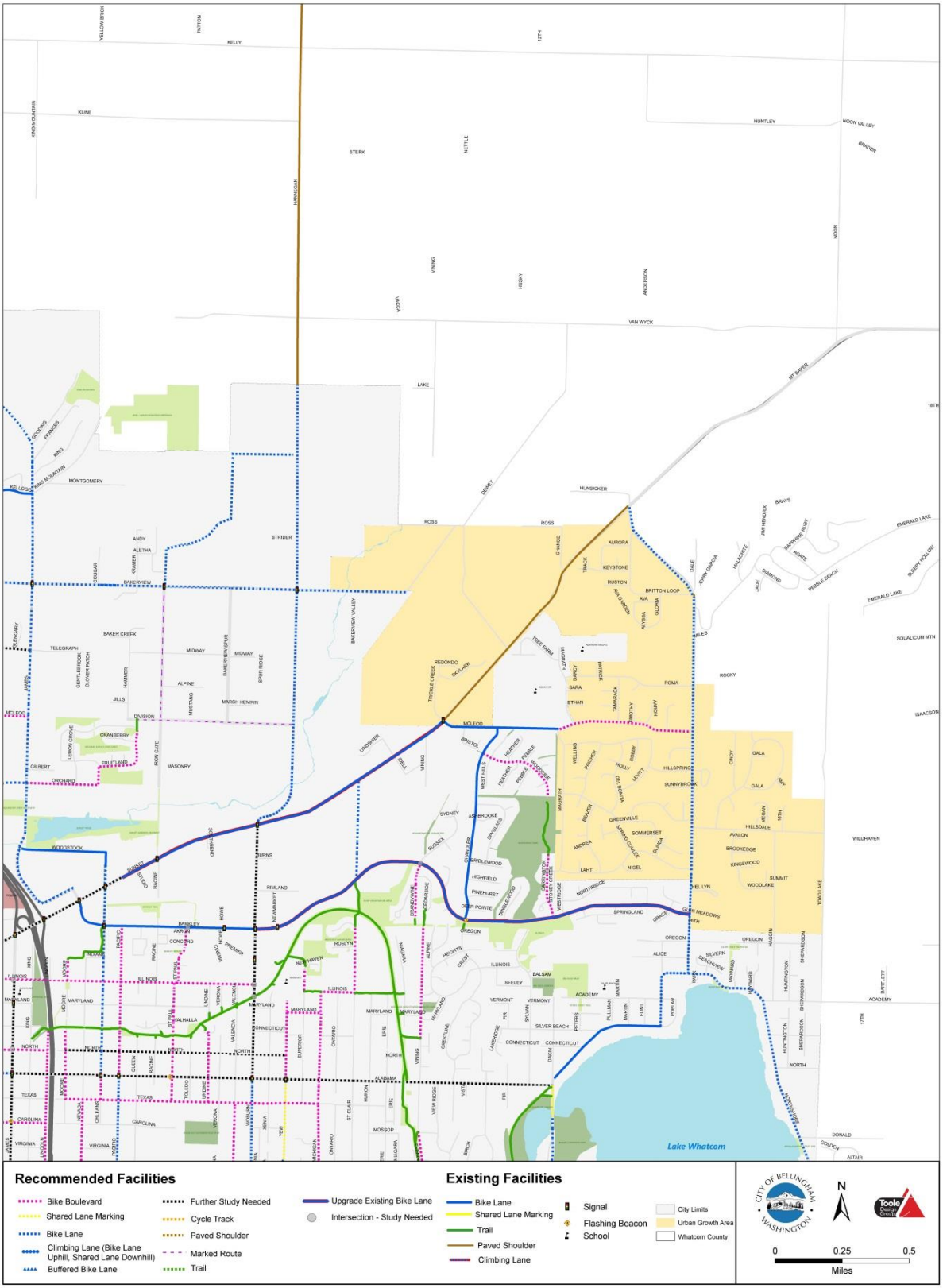
Base Maps of Proposed Network



Recommended Network - Northwest



Recommended Network - Northeast



Bicycle Master Plan Open House #2 Public Comments

Bicycle Master Plan Open House #2 Public Comments

Name	Address	Comment
Mark O'Connor	Bellingham 98225	Where is the public bike parking with rain cover? To make utilizing our bicycles for utilitarian purposes it would be best to have dry parking. Waterproof equipment is not cheap however our low-income members of the community will likely want utilize it the most. Let's keep their groceries dry.
Anonymous		Confusing traffic light at Ellis & York. (used diagram to illustrate) Will this ever become a traffic circle? Traffic becomes heavier every year. Some drivers think a green light lets them turn gentle curve from York to York. No! One needs a left-turn green arrow. Here come cars barreling down Ellis hill! The big intersection helps prevent crashed. They stop in the middle of it. I tell my daughter: "Please don't even come this way."
Anonymous		(Unity/Central) I stay on sidewalks. But broken curbs are bumpy, east of the Library, hard for bikes and wheelchairs. (used diagram to illustrate)
Anonymous		York St/State St (used diagram to illustrate) When cars have red light, the driver looks left to see if some car is coming, then turns 'right on red'. Pedestrian or bicyclist facing east with 'walk light' on gets run over as by a tank at
Anonymous		Meridian/W. Orchard (used diagram to illustrate) Cars waiting to turn onto Meridian always stop in the crosswalk, blocking pedestrians and bicyclists coming down the sidewalk. Bushes too tall are also a problem for small cars to see approaching cars at intersections.
Anonymous		(Cornwall NE of Magnolia) Biking to Rite-Aid downtown for medication, this 67-yr-old Grandmother dodges cars on a dangerous city road. How about a "pass" for elderly slow one-speed bicyclists who promise not to hit a pedestrian on the mostly deserted sidewalks in downtown.
Kevin Baier	Bellingham 98226	Please improve bicycle connectivity between NE and NW sections of Bellingham. Access from Squalicum H.S. area to Bellis Fair/WCC area is very poor. Can we please get bike lane on James (behind Kmart), Hannegan (after 542 intersection) and/or Kellogg (on curve before church.) I urge you to improve connectivity in these areas, there is no safe access currently. An accident is imminent and I hope it is not me. Thank you so much for holding this Open House and listening to the people and the cyclists. Sincerely, Kevin Baier (bike commuter)
Izaac Post	Bellingham 98225	1) State Street between Iowa & Flora needs a dedicated ROW for such a busy auto-centric road. 2) Going down W. College Way off Highland Drive prior to reaching Bill McDonald Way is really really steep and scary on a bike. A defined route through campus eliminates the safety risk with elevation gain/loss. 3) Connection through Western campus are currently limited by lots of impedements, such as stairs, no bike zones or pedestrian traffic. Finding ways to collaborate with WWU on a clear bike path would be appreciated.
Kevin Hall	Bellingham 98225	What are the possibilites of a pedestrian bridge, crossing Meridian right at Cornwall Park? Specifically between Birchwood and Squalicum Parkway, to continue onto ta hopefully renovated rails to trails and plug into the existing trail starting at Northwest Ave. This would open up a huge artery, from Larrabee to Squalicum Beach with no hassle.

Shirley Forslof	Bellingham 98229	On trails it is important to consider pedestrian safety. Many times bike riders pass walkers going very fast and no warning that they are there. Reminders of courtesy to walkers or bicycle speed limits should be posted on the trails. I appreciate it when a bike rider lets me know they are behind me and what side they are passing on. Also if the bicyclist has a bell on their bike.
Louise Bjornson	Bellingham 98225	Pedestrian safety is getting to be a bigger and bigger issue. Speeding bicycles on our trails endangers pedestrians. Keep our trails safe for families and seniors. Finish the Bay to Baker Trail! It is an important connection E/W for Pedestrian and Bicyclists.
Bob Heinricks	Bellingham 98225	Bikes in B'ham: A. Ubiquitous implications are a "free for all" 1. Attn to rules of the road license bikes 2. Enforce no bikeriding, walk your bike 3. Bicycle patrol on pedestrian walkway! P/A system swallowed the speaker's voice: too soft B. License plates on bikes 1. Revenue for programs 2. Rider licensing, 12 yrs up 3. Theft control-recover During WWII, Grand Rapids, MI licensed all bikes used on City streets. Important sources listed above!
Kristin Noreen	Bellingham, WA 98226	I looked at the crash data map and didn't see where I was hit; it may be outside the city limits, but it was near-fatal and deserves to be included if it was in-city. It was on Hannegan Road at Van Wyk, just north of Bakerview. I keep being yelled at by drivers on Cordata Blvd to use the sidewalk. How do drivers not know that bicycles belong on the road, not on the sidewalk? I've taken the written driver exam in 4 states and every time there have been questions on the test about bicycle laws. Has that changed since 1992? Can we consider a public education campaign? Also, just want to reiterate my usual hot spots: we desperately need traffic control at Stuart and Cordata Blvd. Many cyclists use Stuart to avoid Cordata Blvd until it is no longer possible, then we turn left on Cordata from Stuart. It gets harder every year to make that turn. West Kellogg west of the Guide is terrible: riding eastbound uphill toward the Guide, the road abruptly narrows at the hilltop and cars can't see you moving left. At the intersection, there is a conflict as bikes crossing straight must go to the right lane, where southbound drivers are turning right off the Guide, and there are often near misses at that pinch point (see attached photo of Kellogg Rd/Guide Meridian). This intersection is popular with cyclists going from the east side (Irongate and James/Sunset area) to Cordata. A cyclist traveling east-west has to use the center lane on E Kellogg to approach the intersection, as the right lane is a dedicated right-turn lane. The cyclist enters the intersection from the center lane, then must cross at an angle to enter W Kellogg in the right lane. This is dangerous because cars that are southbound on the Guide often turn right onto W Kellogg while the light is red, cutting off any cyclist who is trying to cross the Guide. Crossing to the left lane and merging would be even more dangerous at this high-volume crossing.

Robert Gray	Bellingham, WA, 98229	I am writing to express my disapproval for the COB's master bicycle plan. Bellingham has a road problem; the problem isn't cars, or the people that drive them. The problem is that COB has failed in its responsibility to keep up with road maintenance and improvements. Instead, COB wants to focus on bicycle lanes, and the relatively few people that use them for recreation. Currently, there is an inordinate amount of time and resources committed to improving the bicycle lifestyle for comparatively few (to automobiles) riders, instead of balancing efforts to maintain roads and to keep traffic flowing safely and efficiently for all citizens. In order to install bike lanes, the city has to remove road capacity. It is not realistic in a growing community to reduce road capacity; to punish automobile drivers so that a few bicycle riders can feel that they are safer. If bicycle riders want to feel safer, they can use side roads and city-wide trails that automobiles are not allowed access to. COB needs to maintain (instead of reducing), and in some cases improve, road capacity in our growing city. Until that happens, forcing more automobiles and bicycles together in reduced road space will only create more resentment and safety problems. Thank you
Ira Hyman (referred via Carol Berry)		Right now, WWU is where bike lanes go to die. The City of Bellingham has done a decent job of improving bike routes to campus. But when one enters campus all bike lanes disappear. Here are suggestions for relatively inexpensive improvements (as opposed to a million dollar bridge that doesn't start or end on a bike route). **1.** Do something about the entrance to campus from the north on High Street. A few years ago, the B'ham Herald listed this as the most dangerous intersection in Bellingham for bike-car accidents. Nothing has been done to improve things since. One big problem is that bikes entering campus are forced out to the other side of the road to enter campus because of the gate. A biker has to time things with busses and service vehicles for the same space. Instead, create a bike path between the road and the sidewalk on the west side of the gate. Two ramps, a small amount of pavement, and some paint. Decreases the amount of conflict inherent in the current structure. A slightly more expensive fix is to slow traffic there. Could be a 4-way stop. Could eliminate the road on the steep hill. Another issue is the number of people stopping in the road coming to campus to drop someone off. You either need a pull-out there for drop-offs and pick-ups (something we need in a few places on campus honestly). **2.** Put a pair of bike lanes on the east side of the walkway coming from Bill McDonald parkway and heading toward Haskell Plaza. The space is wide enough to provide routes for bikes and peds separately. You could also stand to put a bike ramp up to the pathway so bikes aren't having to use the same ramp as peds (and one for bikes leaving campus there, preferably with a light that is triggered by a bike but this would add to the cost). **3.** Mark the service road going to SMATE with sharrows. Flat, so bikes can keep up. Indicates where bikes should be. 4. Put bike lanes in the road coming from High to Bond/Carver. There's plenty of space there as well to separate bikes from peds. In addition, the space between Bond and Carver should not be a parking zone for service vehicles. If that is your preferred route for bikes to get from north to south, then you need to have space for the bikes to get through there with less conflict with peds. A longer term suggestion: Plan a service and bike route behind Carver as part of the remodel. Right now that space is quite narrow and not a great bike route.

Bicycle Master Plan Open House #2 Network Comments				
Name	**Balance of facility types?**	**Facilities you disagree with?**	**Least or most favorite aspect of Recommended**	**Other**
	No cycle tracks or new off-road trails planned.		It seems that all of the most important connections, such as Sunset, just say "Further Study Needed". The consultants have not tackled resolutions to the routes with the biggest problems.	What about the need for sensors to trip traffic signals?
	I like the balanced approach.	The roundabout installed on State Street heading north has a very sharp turn onto the trail across by the HUB. Because of this, people on bikes go onto the sidewalks to avoid this sharp turn angle. Can a new ramp from	That the issues with Lakeway to Sudden Valey commuters (plus Galbraith) have still no solutions.	
	Seems like an okay balance, though I might prioritize bike lanes on arterials a little more (they're often more direct and convenient routes).	Cycle track on Cordata? Is there really a need for that expensive facility in an area of town that may not utilize it?	Most: connecting routes for continual flow. Least: Lots of "further study needed" areeas. I hope the City follows through on these studies, especially for high-traffic intersections.	More covered bike parking downtown. Climbing bike lane on Chestnut between State St and North Garden.
	Hopefully more bike boulevards through local downtown streets. More climbing lanes! Barkley, Alabama, McLeod, Hannegan!		Not enough plans to connect northeast section of town to northwest section of town. Need some better access for bikes on James, Kellogg or Hannegan. PLEASE?	
				Texas vs Carolina underpass/connectivity by Trader Joe's. Less turning left by southbound traffic, easier to go east, better street condition, proximity to retail, easier northbound right turn, better visibility.
	I think this is an excellent start, especially since much of this network needs to be constructed retroactively. However, I think safety concerns are still serious, especially along arterials. Also this needs to be designed to connect with Parks facilities and take not only bicycle networking but also habitat connectivity into account. One City!	Puget Neighborhood - Parks trails not shown! Need connectivity along Lincoln St and with Nevada Bike Blvd shown. Neither of these seem to relate well with planned or proposed student housing developments or even with the WWU Park & Ride lot on Lincoln. Shopping, schools, parks also destination. Nevada is narrow & lacks sidewalks for pedestrians. The route along Old Lakeway, Whatcom to Racine doesn't show Samish Crest open space trails (the logical destination). Safe passage under I-5 towards downtown needs to be addressed. Lakeway unsafe - tunnel at Maple?		
			Sharrows are problematic. Have to have education for cars! (Have had several near-misses at new circle with sharrows at State Street)	Ohio/Cornwall intersection and others need to have cycle-triggering stop lights!!

		Mill St (in Fairhaven to Happy Valley Neighborhood) It is marked as bike boulevard but the steep hill there may warrant a climbing lane. Harris (running through Fairhaven) is marked shared lane however the steepness of the hill that this road covers makes this facility problematic a climbing lane makes more sense or a bike lane.	Climbing lanes should be more buffered from the street to decrease the amount of vehicle exhaust inhale by panting bikers. Bikers who daily ride in and out of downtown are forced daily to breathe in these harmful fumes.	On Chestnut between Bay and Cornwall (Downtown) is an uphill roadway and could be a logical continuation of the buffered bike lane further up on Chestnut.
		I would like to see more connectivity w/waterfront for N. end of downtown, e.g. near Columbia N'hood, e.g. over RR bridge at end of Broadway. RR obstructs too many passageways.	Consider cycle tracks thru new waterfront area! Or dedicated bike-only paved lane.	I am most interested in a route thru downtown to the North. Right now, going S. via Magnolia is fine; heading N. requires a convoluted route, sidewalks, etc. to guarantee safety, especially when with kids.
	Like emphasis on bike boulevards - curious how you encourage usage - markings? Education. I'm not the biggest believer in bike lanes as "facilities" they are a bit of an illusion of safety.			I'm curious about the areas of Further Study Needed. Seems like those are the most dangerous/challenging to fix. So when do they get addressed? Pushing it back?
		Way finding signs are useful, especially with mileage. Bicycle boxes, green bike lanes & striped paved shoulders are too dangerous. Buffered lanes and sidepaths are much better. Bike boulevards are also good	How about wayfinding signs that car drivers can see & be alerted to cyclists?	
	Seems worthwhile to establish test areas asap & collect data before making final decisions on a broad network	Intersection of Connelly & I-5 is super dangerous for cyclist. I personally know three people who were hit by cars merging N. onto I-5. Each sustained serious injuries. Please make this intersection a priority.		1) The Schools need improved bike parking: covered, secure, monitored. Kids won't ride their bikes to school if the bike sits in the rain, gets stolen, etc. 2) Slow down city traffic wherever possible 3) The City does a great job sweeping bike lanes. This is important! Cyclists won't use the lane if it becomes littered with broken glass & other debris. 4) Educate local law enforcement on cyclists. I have heard anecdotes of bizarre interpretations of the law by apparently unprepared City police. 5) Enforce regulations that make cycling safer: bike lights, no parking in marked bike lanes, etc. 6) Small things matter. Example: after snow fall events, snow is often plowed onto bike lanes & shoulders. The sand in the plowed snow forms a mini-moraine after the snow melts, impairing the use of the shoulder/lane by cyclists. It would be so easy to plow the snow off the bike lane/shoulder w/one last pass of the plow!

				Please, please, please don't make any 2-way cycle tracks. Look at Broadway Capitol Hill Seattle...awful
			No connection on Stuart Road between Meridian & Cordata, it's needed.	
	Everyone is patting themselves on the back but we can not continue to do issue-specific planning that is not part of a comprehensive approach. We need more urban bike lanes & fewer bike lanes in open spaces & habitat areas. I like the bike box. There is no attempt to develop this as part of a comprehensive plan that addresses habitat connctivity & issues of fragmentation. This was done as a single-interest program where all expanded bike use was considered good.	This was not developed as a really green program where there is review & concern with healthy ecosystem functions. This is not progressive, does not protect our future. I raised these concerns early on & they have been ignored. There needs to be understanding & consideration of competing interests and the impacts even from bike use.	Issue-specific & self-serving. Humans are not the only species that needs connectivity, but it was the only species considered. Intensity of human use is an important impact. Why is there no mitigation connected to this plan to offset habitat & wildlife impacts!	
		There is not enough concern about pedestrian safety. Every meeting I have been at for the last couple of weeks - when this meeting was mentioned - horror stories from around the room came forth of bicycle running into pedestrians or close scary encounters.		
	Sharrows are cool and what Eric Brown said.	Recommending bike routes is like telling your tummy how to digest. Just do it, point A to B	The route from Elwood to San Juan is super cool	Bikes should not pretend to be cars, you will lose. Do your thing. Stay out of the way.
	In the Roosevelt Neighborhood seems like the emphasis is on boulevards more so...which is fine with the Neighborhood Association, in conjunction with our efforts to reduce cross traffic & promote more ped/bikes = public out & about	I think the notion of the North St Bike Route between Pacific and Woburn is redundant & problematic for many reasons. -A bike path already 1 block north (trail) and a very good idea of a "boulevard" on Texas St, as well as any proposed amendments to Alabama. - N St is currently fully vegetated (unimproved) and is considered in City's "open space" #'s - and is much appreciated by many residents adjacent as a buffer to neighbors, wildlife habitat, etc. (self included)	-Improving Texas St as a low traffic bike emphasis boulevard is a great idea -Clear signage etc to promote the Kentucky St underpass - great idea -Iowa St is very inhospitible to ped &bikes and nearly impossible to get to Whatcom Creek trail off Racine	
	A lot of minimal improvements & very few substantive ones. Where are the cycle tracks indicated on the key?			

	Too many "shared" lanes, too few designated bike lanes and cycle tracks. Good start, but much stronger effort is really what a city like Bellingham needs & deserves. A few streets (Cornwall, Railroad?) should work toward being closed to cars entirely.	Good start, but much stronger effor needed to really make any meaningful difference at all. Please try harder. More bike lanes, more cycle tracks and more bicycle-exlusive roadways.	Where are the cycle tracks?	
Bill Angel Dan Angel	Upgrade the Sunset Blvd route I-5 to McLeod for students on bikes. Complete the route via Bug Lake to James St. Lower cost lower stress bike boulevards and trails would seem to add lots of connection easily & cheaply. Do those.	The new roundabout at NW & McLeod forces bicycles to the sidewalk. Don't build roundabouts that hinder bike travel. It also is less safe due to confusing status of the bicyclist, vehicle/pedestrian?	We really like the focus on safe routes to school! The West/East connectors to Squalicum High need a lot of work, especially Sunset Boulevard! Connect all students to their high school with bike routes.	Complete a loop around the entire mall property.
	Bike boulevards are exciting. Love to see so much planned. Trails are definitely my preference, but these help connect 'green' routes east to west.	no	I'd prefer to see more connections between trail network to stay completely off the road.	
		Make State St from roundabout south to Holly a contraflow lane		
				Curb cut at Sunset/Illinois (so bikes can go southbound on Sunset). Please enable repair and reopening of ped/bike bridge over Whatcom Creek (Railroad Bridge)
	While arterials seem to be most direct from pont A to point B my experience has me feeling that routes along low-stress facilities, while they may be longer, are more enjoyable & safer. PDX has a nice system of neighborhood lanes	Recommended facilities along busy roads (i.e. Meridian north of I-5) seem like lower priority places. Folks seem less inclined to bike in high traffic spots	Cycle tracks	
				How do we get a bike lane on 542? Shoulder is great but we could use a lane! Yeah!

Appendix B: Prioritized Projects List

The Bicycle Master Plan process utilized a data-driven prioritization methodology to evaluate projects according to key variables that are known to influence bicycling rates. The result of the prioritization process provides the City with a strategy for phasing project implementation. The following table identifies short-term, medium-term, and long-term priorities.

Bellingham Bicycle Master Plan - Recommended Network Project Prioritization List						
NOTE: To search this list for specific projects type "Ctrl" + "F" and enter all or part of the street name.						
Short-Term Projects						
Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
CW-16	Young/Kentucky/Nevada/Texas	Halleck	Woburn	Bicycle Boulevard	64.922	$211,780
FSN-5	Lakeway	Queen	Ellis	Further Study Needed	57.312	$0
CW-34	Lincoln/Meador/Grant/Ohio	Lakeway	Cornwall	Mixed	53.217	$63,120
CW-20	Illinois	Woburn	Lynn	Mixed	48.942	$249,733
CW-9A	Holly	Ellis	Bay	Further Study Needed	46.140	$0
CW-9B	Chestnut	Bay	Ellis	Mixed	46.140	$46,158
CW-5	24th	Old Fairhaven Parkway	Douglas	Bicycle Boulevard	45.853	$21,955
FSN-10	James	Illinois	Iowa	Further Study Needed	42.037	$0
CW-33	Byron/34th/Abbott/Pasco/Humboldt/Whatcom/Grant/Potter/Humboldt	Bill McDonald	Gladstone	Bicycle Boulevard	41.608	$164,525
CW-24	Barkley/Chandler/Mcleod	Woburn	Magrath	Upgrade Existing Bike Lane	40.757	$66,133
N-60	Lincoln	North	Iowa	Bicycle Boulevard	40.735	$19,191
N-70	F	Roeder	Cornwall	Bike Lane	40.539	$66,229
CW-35	Mill	12th	24th	Bicycle Boulevard	38.584	$175,809
CW-28	Maplewood/Alderwood/Bennett	Northwest	Airport	Mixed	38.160	$207,179
CW-11	Holly/Elridge/Nequalicum	F	Nome	Mixed	35.805	$87,989
CW-30	Aldrich/Northwest	Horton	Bakerview	Bike Lane	35.442	$79,759
FSN-14	Meridian	McLeod	Telegraph	Further Study Needed	34.868	$0
CW-26	Fruitland/Orchard/Squalicum/Ellis	Fruitland/Division Trail Connection	Illinois	Mixed	34.755	$107,726
N-93	Meridian	McLeod	Squalicum	Bike Lane	31.955	$32,195
Medium-Term Projects						
CW-1	State	Wharf	York	Upgrade Existing Bike Lane	31.861	$92,773
N-155	Laurel/Railroad	State	Maple	Bicycle Boulevard	31.782	$5,991
CW-19	Young/Halleck	Cornwall/Girard	Broadway	Bicycle Boulevard	31.474	$100,554
CW-17	North/Lincoln/RR Trail	Cornwall	Woburn	Mixed	31.159	$161,139
N-92	Birchwood	Northwest	Meridian	Bike Lane	29.835	$38,719
N-63	Grant	Illinois	Ohio	Bicycle Boulevard	29.776	$106,539

NOTE: To search this list for specific projects type "Ctrl" + "F" and enter all or part of the street name.

Medium-Term Projects (cont'd)

Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
N-154	Undine	Texas	RR Trail	Bicycle Boulevard	29.769	$109,725
CW-25	Electric/Flynn/Lakeside/Euclid	Alabama	Lakeway	Mixed	29.711	$300,687
FSN-6	Lincoln	Lakeway	1,350 ft south	Further Study Needed	28.623	$0
N-56	St Paul	Barkley	Texas	Bicycle Boulevard	28.530	$123,122
N-49	Yew/Maryland/Michigan/Illinois /St Clair	Alabama	RR Trail	Bicycle Boulevard	28.355	$30,542
FSN-19	North State	South State/Boulevard	Wharf Roundabout	Bicycle Boulevard	28.339	$26,373
FSN-3	High	Oak	Highland	Shared Lane Marking	27.706	$14,905
N-44	Texas/Michigan/Kentucky/St Clair/Iowa/Rhododendron	Woburn	RR Trail	Bicycle Boulevard	26.922	$46,843
N-96	Bennett	Alderwood	Marine	Bike Lane	26.629	$53,558
N-94	McLeod	Northwest	Meridan	Bicycle Boulevard	26.067	$25,840
CW-10	Roeder/Chestnut	Squalicum	Bay	Mixed	25.774	$102,790
N-41	Michigan	Maryland	Texas	Bicycle Boulevard	25.556	$111,850
N-115	Cordata	Horton	Westerly	Mixed	25.381	$1,376,436
N-65	Carolina	Cornwall	Lincoln	Bicycle Boulevard	25.106	$95,914
N-25	40th/Dumas/Ashley/Byron/44th /Nevada	Elwood	Lakeway	Bicycle Boulevard	24.318	$43,630
N-47A	Alabama	Cornwall	James	Bike Lane	24.298	$36,048
CW-18	Cornwall	Ohio	Champion	Shared Lane Marking	24.255	$10,607
N-142	Barkley	Chandler	Britton	Upgrade Existing Bike Lane	24.192	$51,426
N-58	Orleans	Woodstock	Texas	Mixed	24.003	$57,754
FSN-1	Donovan	32nd	21st	Further Study Needed	23.947	$0
N-69B	Champion	Cornwall	Ellis	Bike Lane	23.910	$21,815
N-34	Puget	Lakeway	Potter	Bike Lane	23.800	$7,125
FSN-9	Holly	Bay St	F	Further Study Needed	23.760	$0
N-100	Hollywood/Redwood/McAlpine	Alderwood	Marine	Bicycle Boulevard	23.719	$28,876
N-52	Valencia	Texas	Kentucky	Bicycle Boulevard	23.610	$9,597
N-66	York/Ellis	Cornwall	Lakeway	Mixed	23.393	$40,984
N-38	Woburn	Lakeway	Iowa	Mixed	23.218	$51,453
N-69A	Champion	Holly	Prospect	Climbing Lane	23.033	$3,885
N-12	Douglas/30th/Taylor	21st	32nd	Mixed	22.925	$605,880
N-152	Maple	Indian	Ellis	Bicycle Boulevard	22.836	$16,298
N-53	Iowa/Moore	Kentucky	Woburn	Mixed	22.698	$77,573
N-72	H	Holly	North	Bicycle Boulevard	22.557	$177,792
N-11	McKenzie/Connelly Cr Trail/McKenzie	24th	32nd	Bicycle Boulevard	22.347	$11,982
N-33	Lakeway	Queen	Old Lakeway	Climbing Lane	22.318	$19,286
N-149	10th	Mill	McKenzie	Mixed	22.163	$5,619
N-102	Maplewood	Alderwood	W Bakerview	Bike Lane	22.132	$53,763
FSN-8	Lakeway	Old Lakeway	Woburn	Further Study Needed	22.131	$0
N-107	Sterling/Trail	Northwest	Bellis Fair	Bicycle Boulevard	22.099	$20,530
N-73	Girard	Commercial	Broadway	Bike Lane	21.941	$41,456
FSN-4	Ellis/Maple/Samish	Lakeway	Pasco	Further Study Needed	21.671	$0
N-28	Samish	Bill McDonald	Pasco	Bike Lane	21.671	$24,622
N-158	Indian	Chestnut	Magnolia	Shared Lane Marking	21.670	$7,804
N-71	G	Dupont	North	Bicycle Boulevard	21.662	$97,495
N-30	Whatcom	Ellis	Grant	Bicycle Boulevard	21.592	$4,261
N-153	Ellis	Illinois	Kentucky	Bicycle Boulevard	21.428	$125,134
N-84	North/Broadway/Logan/J/North	Vallette	Cornwall	Bicycle Boulevard	21.382	$51,659
N-62	James/Gladstone	Meador	Ellis	Bicycle Boulevard	21.224	$96,173

NOTE: To search this list for specific projects type "Ctrl" + "F" and enter all or part of the street name.

Long-Term Projects

Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
CW-32	Trail/19th/Wilson/21st	Old Fairhaven	Bill McDonald	Mixed	20.983	$46,794
N-7	Harris	12th	24th	Mixed	20.653	$107,368
N-48	Yew	Iowa	Alabama	Mixed	20.652	$24,867
CW-7	Lincoln	Abbott	Byron	Bike Lane	20.537	$17,140
N-57	Superior	Illinois	RR Trail	Bicycle Boulevard	20.516	$3,027
N-101	McLeod	Bennett	Northwest	Bicycle Boulevard	20.468	$26,099
N-121	Horton	Nortwest	Meridian	Bike Lane	20.365	$134,263
N-43	Lakeway/Terrace	Lowell	Cable	Bike Lane	20.323	$106,603
N-42	Electric	Lakeway	Flynn	Bike Lane	20.092	$104,702
CW-31	Eliza	Westerly	Kellogg	Bike Lane	20.074	$6,486
N-59	Moore/Trail	Illinois	Orleans	Bicycle Boulevard	19.652	$9,206
N-81	Kulshan	Oregon	Broadway	Bicycle Boulevard	19.457	$25,246
N-40	Valencia	Iowa	Fraser	Bicycle Boulevard	19.338	$11,735
N-64	State	York	Iowa	Shared Lane Marking	19.319	$22,419
CW-23	James	Sunset	Orchard	Mixed	19.310	$666,588
N-133	Sunset	James	Studio	Further Study Needed	19.078	$0
N-13	32nd	Donovan	Fielding	Bike Lane	18.688	$68,592
FSN-7	Puget	Lakeway	Consolidation	Further Study Needed	18.671	$0
N-106	Alderwood	Maplewood	Northwest	Bicycle Boulevard	18.630	$11,228
N-67	Moore/Texas	RR Trail	Nevada	Bicycle Boulevard	18.479	$111,728
N-114	Prince	Meridian	Deemer	Bicycle Boulevard	18.268	$11,088
N-50	Woburn	Alabama	Iowa	Bike Lane	18.209	$35,287
N-19	10th/Adams	Douglas	14th	Bicycle Boulevard	18.178	$17,996
N-8	Mill	10th	12th	Bicycle Boulevard	18.126	$3,711
FSN-2	W College	Highland	Bill McDonald	Further Study Needed	17.993	$0
CW-27	James/Bakerview/Deemer	Orchard	Kellogg	Bike Lane	17.766	$115,035
N-10	Knox/20th/Taylor	14th	21st	Mixed	17.545	$23,430
N-54	Pacific	Alabama	Iowa	Bike Lane	17.490	$35,289
N-110	W Telegraph/Bellis Fair/Cordata	Meridian	Bakerview	Mixed	17.326	$43,331
N-77	North	Keesling	Walnut	Bicycle Boulevard	17.247	$16,482
N-55	Pacific	Barkley	Alabama	Bicycle Boulevard	17.233	$19,694
FSN-13	Woburn	Sunset	Alabama	Further Study Needed	17.218	$0
N-39	Fraser	Undine	Woburn	Climbing Lane	17.006	$11,497
N-85	Vallete	Illinois	Broadway	Bicycle Boulevard	16.975	$106,944
N-111	Telegraph	Meridian	Deemer	Bike Lane	16.551	$27,619
FSN-15	Sunset Dr	Studio	McLeod	Upgrade Existing Bike Lane	16.528	$152,874
CW-2	14th/Garden	Mill	Cedar	Shared Lane Marking	16.458	$64,457
N-23	Fielding/36th	32nd	Samish	Mixed	16.454	$12,570
CW-21	Meridian	Squalicum	Illinois	Bike Lane	16.391	$43,926
N-51	Kentucky	Pacific	Woburn	Bicycle Boulevard	16.351	$26,621
N-83	Victor/Vallette	Meridian	Illinois	Bicycle Boulevard	16.254	$38,007
N-118	Tull	Stuart	Kellogg	Bike Lane	16.046	$29,125
FSN-17	Kellogg	Tull	Cordata	Further Study Needed	16.019	$0
N-78	Connecticut/Walnut	Broadway	North	Bicycle Boulevard	15.867	$59,807
N-113	McLeod	Telegraph	James	Bicycle Boulevard	15.740	$34,271
N-80	Victor	Meridian	Northwest	Bicycle Boulevard	15.736	$52,002
N-24	San Juan	40th	Yew	Mixed	15.520	$23,441
N-150	12th	Mill	Chuckanut	Shared Lane Marking	15.444	$14,587
CW-29	Northwest/Mahogany	Aldrich	Arctic	Bike Lane	15.386	$26,637
N-82	Meridian	Broadway	Illinois	Bike Lane	15.363	$36,965

Long-Term Projects (cont'd)						
Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
N-119	Kellogg	Tull	Spring Creek	Mixed	15.195	$52,427
N-29	Edwards	Maple	Humboldt	Bicycle Boulevard	15.150	$5,983
N-148	Mahogany	Aldrich	East to trail	Bicycle Boulevard	14.767	$1,533
FSN-16	Cordata	Westerly Rd	Bakerview	Further Study Needed	14.573	$0
N-14	Connelly	Old Fairhaven	36th	Climbing Lane	14.569	$10,666
N-147	Ohio	Grant	State	Bike Lane	14.561	$7,737
N-74	Monroe/Lafayette	Meridian	Eldridge	Bicycle Boulevard	14.519	$30,432
N-75	Victor	Northwest	Eldridge	Bicycle Boulevard	14.433	$66,450
N-90	Birchwood/Cedarwood	Greenwood	Northwest	Bicycle Boulevard	14.415	$35,848
N-141	Carrington/Northridge Trail/Woodside	Barkley	Chandler	Bicycle Boulevard	14.315	$20,042
N-91	Nequalicum/Patton/Pinewood/Cottonwood/ Cherrywood	Nome	Alderwood	Bicycle Boulevard	14.143	$41,855
N-117	Stuart	Tull	Deemer	Bike Lane	14.034	$8,923
N-61	Humboldt	Meador	Gladstone	Bicycle Boulevard	14.024	$9,693
N-125	Kline	Aldrich	Meridian	Bike Lane	13.962	$78,068
N-86	Broadway	Connecticut	Cornwall	Bicycle Boulevard	13.748	$43,641
N-103	Airport/Bakerview	Alderwood	I-5 Overpass	Bike Lane	13.661	$80,582
FSN-11	Sunset	Ellis St	James	Further Study Needed	13.631	$0
N-140	McLeod	McGrath	Britton	Bicycle Boulevard	13.565	$18,241
N-99	Alderwood	Airport	Bennett	Bicycle Boulevard	13.547	$22,033
N-120	Deemer	Horton	Stuart	Bike Lane	13.531	$39,138
N-1A	30th	Donovan	Old Fairhaven	Bike Lane	13.451	$4,818
N-112	Telegraph	Deemer	James	Bike Lane	13.350	$51,634
N-88	Sunset	Ellis	Illinois	Shared Lane Marking	13.153	$9,054
N-68	Cornwall	Chestnut	south end	Bike Lane	13.088	$61,779
N-156	Racine	Whatcom Creek Trail	Iowa	Shared Lane Marking	12.989	$5,381
N-76	West	Squalicum	Eldridge	Bicycle Boulevard	12.909	$14,816
N-137	Northshore	Britton	Alabama	Climbing Lane	12.902	$19,749
N-134	St Clair	Sunset	Barkley	Bike Lane	12.794	$28,841
N-21	Highland	Knox	W College	Bicycle Boulevard	12.781	$28,985
N-95	Laurelwood/Cedarwood	Cottonwood	Bennett	Bicycle Boulevard	12.681	$19,397
N-5	4th/Donovan/Bayside Rd	Harris	Hawthorn	Bicycle Boulevard	12.593	$36,113
N-20	14th	S State	Garden	Shared Lane Marking	12.486	$6,842
N-16	34th/Taylor	Connelly	Samish	Bicycle Boulevard	12.464	$30,171
N-123	Tremont	Cordata	Meridian	Shared Lane Marking	12.444	$24,100
N-126	Van Wyck/James	Deemer	Bakerview	Bike Lane	12.421	$118,499
N-35	Racine/Lopez/Toledo/Whatcom/ Woburn	Consolidation	Old Lakeway & Puget	Bicycle Boulevard	12.353	$38,461
CW-6	Samish	Elwood	48th	Bike Lane	12.265	$2,159,381
N-36	Old Lakeway	Lakeway	Yew	Bicycle Boulevard	12.236	$9,568
N-139	Britton	Mt Baker Hwy	Northshore	Mixed	11.985	$135,702
N-105	Mahogany/Arctic	Pacific Hwy	Bakerview	Bike Lane	10.812	$57,140
FSN-18	Granary-Bloedel (through the waterfront)	Roeder	Cornwall	Further study needed	10.661	$0
N-136	Vining	Klipsun trail	RR Trail	Bicycle Boulevard	10.640	$14,465
N-108	Northwest	Slater	Mahogany	Bike Lane	10.312	$142,078
N-124	Cordata	Tremont	Kline	Bike Lane	10.286	$16,333
N-98	Marine	Airport	McAlpine	Bike Lane	10.215	$39,159
N-17	36th/Mill	Samish	40th	Bicycle Boulevard	10.173	$9,815
N-3	Hawthorn/Fieldston/Viewcrest	Chuckanut	Chuckanut	Bicycle Boulevard	10.094	$64,245

NOTE: To search this list for specific projects type "Ctrl" + "F" and enter all or part of the street name.

Long-Term Projects (cont'd)

Project ID	Project Street (or route)	From	To	Recommended Improvement	Final Prioritization Score	Planning-Level Estimated Project Costs See Cost Calculator Worksheet for Estimate Rates (red text denotes cost estimates from City Engineer)
N-45	Rhododenron/Vining	RR Trail	View Ridge	Bicycle Boulevard	9.930	$9,343
N-127	Bakerview	James	Corino	Bike Lane	9.927	$108,252
N-6	Harris	Marine Park	12th	Mixed	9.914	$39,303
N-18	38th/Bennett	Mill	40th	Bicycle Boulevard	9.790	$21,247
N-37	Yew	Lakeway	City limits	Climbing Lane	9.542	$43,642
N-26	Consolidation/Pacificview	Puget	San Juan	Bicycle Boulevard	9.134	$9,173
N-15	40th/Wilkin	Samish	Samish	Bicycle Boulevard	8.982	$22,416
N-4	Willow	Fieldston	Chuckanut	Bike Lane	8.527	$36,517
N-135	Brandywine/Klipsun Trail	Barkley	Vining	Bicycle Boulevard	8.424	$109,614
N-144	36th/Larrabee	Connelly	Samish	Bicycle Boulevard	8.164	$15,435
N-122	Horton	Meridian	Deemer	Bike Lane	8.080	$18,656
N-130	Hannegan	Bakerview	Sunset	Bike Lane	7.868	$73,103
N-138	Northshore	Britton	Eagle Ridge	Bike Lane	7.431	$7,000,000
N-104	Pacific Hwy	Bakerview	Slater	Bike Lane	6.862	$192,105
N-128	Irongate	Bakerview	Hannegan	Bike Lane	5.307	$61,468
N-129	Hannegan	Bakerview	City limits	Bike Lane	4.402	$59,455
N-145	40th	Mill	Elwood	Mixed	3.888	$46,427

Marked Routes (Not Prioritized)

N-146	Prospect	Lottie	Holly	Marked Route	0.000	$1,149
N-160	Division	Hannegan	Fruitland/Division Trail Connection	Marked Route	0.000	$1,712
N-161	Irongate	Bakerview	Division	Marked route	0.000	$2,143
N-1B	30th/32nd	Old Fairhaven	Old Samish	Marked Route	0.000	$4,818
N-2	Old Samish	Chuckanut	City Limits	Marked Route	0.000	$6,008
N-164	Bay	Chestnut	Champion	Marked Route	0.000	$652
N-165	Commercial/N Commercial	Chestnut	Young	Marked Route	0.000	$2,184
N-166	Grand	Champion	Girard	Marked Route	0.000	$1,616
N-167	Cornwall	Chestnut	Champion	Marked Route	0.000	$1,271
N-168	Railroad	Maple	York St	Marked Route	0.000	$2,149
N-169	Champion	Cornwall	Prospect	Marked Route	0.000	$967
N-170	Flora	Cornwall	Prospect	Marked Route	0.000	$1,149
N-171	36th/South/37th/Harrison/38th/Broad	Connelly	40th	Marked Route	0.000	$2,295
N-172	Cedar	State	Garden	Marked Route	0.000	$570
					Total	$20,525,751

Appendix C: Further Study Needed Project Descriptions

Over 9 miles, or 7%, of the Recommended Bicycle Network is listed as "Further Study Needed," which means that a specific facility type cannot be identified until further analysis of the link is conducted by City staff. Some of these links score very high when compared to other links in the recommended network due to benefits in bicycle connectivity, safety, and mobility. In light of this, the City should commit annual funding to complete the additional studies necessary to identify viable improvement options. Descriptions for each of the network links requiring further study are listed below Table C.1.

Table C.1: Recommended Bicycle Network Links Needing Further Study

Bellingham Bicycle Network Link	Bicycle Master Plan Prioritization Score	Priority Rank (Out of 186)
Lakeway Drive (Queen to Ellis)	57.312	2
Holly (Ellis to Bay)	46.140	5
Chestnut (Bay to Railroad)	46.140	6
James Street (E. Illinois to Iowa)	42.037	8
Meridian Street *[SR 539]* (McLeod to Telegraph)	34.868	17
Lincoln Street (Lakeway to S Fred Meyer driveway)	28.623	28
Donovan Avenue (32nd to 21st)	23.947	45
West Holly Street (Bay to F)	23.760	48
Lakeway Drive (Old Lakeway to Woburn)	22.131	62
Ellis/Maple/N. Samish (Lakeway to Pasco)	21.671	65
Sunset Drive *[SR 542]* (James to Studio Ln)	19.078	88
Puget Street (Lakeway to Consolidation)	18.671	90
West College Way (Highland to Bill McDonald)	17.993	97
W Telegraph (SR 539 to I-5 northbound off-ramp)	17.326	101
Woburn Street (Sunset to Alabama)	17.218	104
36th (Fielding to Samish)	16.454	110
Kellogg Road (Tull to Cordata)	16.019	115
San Juan Boulevard (40th to Pacificview)	15.520	119
Cordata Parkway (Westerly to Bakerview)	14.573	126
Sunset Drive (Ellis to James)	13.631	139
Granary-Bloedel Avenue (through the Waterfront)	10.661	163

Lakeway Drive (Queen Street to Ellis Street) - Rank #2

Approximately 26,000 vehicles per day pass through this 0.78-mile east-west section of Lakeway Drive, which is a 4-5 lane wide principal arterial, posted at 25 mph, and connects the Puget Neighborhood, Civic Field Complex, Lakeway Center commercial area, Carl Cozier Elementary School, Interstate 5, the York Neighborhood, and downtown Bellingham. This section of Lakeway is also an important transit corridor linking the WWU Lincoln Street Park-N-Ride Facility with downtown and other destinations. In 2013, the City installed a transit queue-jump at the intersection of Lakeway/Lincoln to help keep WTA busses on time. The heavily used northbound on- and off-ramps for Interstate 5 are accessed at the intersection of Lakeway/King, which is only 220 feet west of the Lakeway/Lincoln intersection. The City has spent considerable time coordinating these closely spaced and heavily trafficked signals. The southbound on- and off-ramps for Interstate 5 access Lakeway Drive immediately west of I-5. There is not enough physical space on Lakeway beneath the I-5 bridge to add traditional bicycle lanes, but this link received the second highest score on the priority list because there are no viable alternatives to cross Interstate 5 in this part of Bellingham, making it an extremely important link in the bicycle network. Further study is needed to find a solution to accommodate bicycle facilities here.

Holly Street (Ellis Street to Bay Street) - Rank # 5, (Bay Street to F Street) - Rank #48

Approximately 8,700 vehicles per day travel this 0.4-mile southeast to northwest section of West Holly Street, which is a principal arterial that connects Interstate 5, downtown, Maritime Heritage Park, Whatcom Creek trails, and Old Town. On-street parking exists on both sides of the street but there are currently no marked bicycle facilities. Accommodating dedicated bicycle facilities on Holly Street may prove to be very challenging due to the many high demand left and right turns made by vehicles at intersections, driveways, and on-street parallel parking stalls, especially on the downhill section of Holly between Ellis and Railroad.

Chestnut Street (Bay Street to Railroad Avenue) - Rank #6

Between 6,000 and 9,000 vehicles per day travel this 3-block northwest-southeast section of Chestnut Street. As part of the Bay-Chestnut deck rehabilitation project in 2014, a marked climbing lane will be installed for southeast-bound bicyclists and shared lane markings will be added for northwest-bound bikers connecting to the marked bike lanes on Roeder Avenue. Between Bay Street and Cornwall Avenue there are two southeast-bound travel lanes, one northwest-bound travel lane and on-street parking in front of ground-floor retail and office establishments. At Cornwall Avenue, Chestnut becomes a one-way street with two vehicle travel lanes between Cornwall and Railroad as well as on-street parallel parking on the west side and front-in angled parking on the east side. Curb extensions on the north side of the Chestnut/Railroad intersection extend to the edge of the two vehicle travel lanes to minimize the pedestrian crossing distance of Chestnut.

James Street (E. Illinois Street to Iowa Street) - Rank #8

Between 12,000 and 16,000 vehicles per day travel this 4-lane 0.90-mile north-south section of James Street, which is a principal arterial posted at 25 mph, and connects Sunnyland Elementary School, the James Street commercial center, and downtown Bellingham. On street vehicle parking exists on both sides of James between Kentucky and Texas, but there are currently no bicycle facilities. Major arterial crossings exist at James/Ohio; James/Iowa/State; and James/Alabama. James Street between Iowa and Ohio is a one-way street and the James/Iowa/State and James/Ohio intersections are part of one of Bellingham's busiest designated trucking routes.

Meridian Street *[SR 539]* (McLeod Road to Telegraph Road) - Rank #17

Approximately 45,000 vehicles per day pass through this 0.12-mile north-south section of Meridian Street, which is the busiest principal arterial street section in Bellingham and comprises the limited access area of the Interstate 5/Meridian (SR 539) freeway interchange. North of I-5, Meridian Street is officially SR 539 from Bellingham to the U.S.-Canadian border. The 2008 I-5 Master Plan calls for complete reconstruction of the interchange at an estimated cost of $50 million dollars, but WSDOT is very unlikely to provide any funding to accomplish this in the foreseeable future. In 2013, WSDOT constructed safety and access management improvements from I-5 to Kellogg Road, including widening the radius from the northbound I-5 off-ramp onto Meridian for freight trucks, eliminating the northbound left-turn lane at Meridian/Telegraph, and installing yellow c-curb center median to prevent left turns across heavy traffic. Similar to Lakeway Drive, there are no viable alternatives for bicyclists to cross the barrier of I-5 so further study is required to find a solution to accommodate bicycle facilities here. Finding a viable solution to accommodate bicyclists in this location will be extremely difficult.

Lincoln Street (Lakeway Drive to southern Fred Meyer driveway) - Rank #28

Approximately 12,000 vehicles per day pass through this 4-lane 0.19-mile north-south section of Lincoln Street, which is a secondary arterial that connects Carl Cozier Elementary School, Fred Meyer, Lakeway Center commercial area, Lakeway Estates Senior Mobile Home Park, student apartments, and the WWU Lincoln Street Park-N-Ride facility served by WTA transit busses. Commercial driveways for Fred Meyer and Lakeway Center do not align with each other and create numerous turning conflicts for bicyclists on Lincoln Street.

Donovan Avenue (32nd Street to 21st Street) - Rank #45

Approximately 3,000 vehicles per day travel this 0.68-mile east-west section of Donovan Avenue, which is a collector arterial posted at 30 mph through the south portion of the Happy Valley Neighborhood. An old substandard sidewalk/walking path exists on the south side of the street, but the street itself is very narrow, there are no shoulders, and there are bio-swale ditches in some places.

Lakeway Drive (Old Lakeway Drive to Woburn Street) - Rank #62

Approximately 21,000 vehicles per day travel this 4-lane 0.22-mile east-west section of Lakeway Drive, which is a principal arterial, posted at 35 mph. This section of Lakeway Drive connects the Puget and Whatcom Falls Neighborhoods, is narrower than other sections of Lakeway, and is commonly referred to as 'the dip' due to the topographic depression formed by a creek drainage channel. There is no physical space to accommodate bicycle facilities and the relatively steep slopes on either end of the dip make bicycling in this high traffic area very challenging and uncomfortable. Lakeway Drive is a designated truck route and WTA runs several bus routes on Lakeway and Woburn.

Ellis/Maple/N. Samish (Lakeway Drive to Pasco Street) - Rank #65

Between 13,000 and 16,000 vehicles per day travel this 4-to-5-lane 0.49-mile combination of arterial streets, which is a principal arterial that connects downtown to the York and Sehome Neighborhoods and the North Samish Way Urban Village. Ellis Street is posted at 25 mph and experiences significant northbound traffic congestion between Chestnut Street and Lakeway Drive, with very heavy left turns from Chestnut to Ellis and heavy right turns from Ellis to Lakeway. Southbound travelers encounter the c-curb median protected 'S-curves' on Maple between Ellis Street and the 5-lane North Samish Way, which is posted at 35 mph. On-street parking exists on a small portion of Ellis and future plans for the Samish Urban Village call for on-street parking on North Samish Way between Abbott and Consolidation.

Sunset Drive *[SR 542]* (James Street to Studio Street) - Rank #88

Approximately 40,000 vehicles per day travel on this 5-lane 0.45-mile east-west section of Sunset Drive, which is a principal arterial, but is officially State Route 542, locally known as "Mt. Baker Highway," from James Street to the Mt. Baker Ski Area in east Whatcom County. The .15-mile west end of this link is also the limited access area of the I-5/SR 542 interchange with southbound on- and off-ramps at the James/Sunset intersection and the northbound on- and off-ramps at a traffic signal on the east side of the freeway. The posted speed limit is 35 mph and access management has been implemented between I-5 and Barkley Boulevard with yellow c-curb median and limitations on driveways accessing Sunset, but the two commercial driveways at Lowe's (south) and Sunset Square (north) both have heavy traffic volumes and turning movements on Sunset. The intersection at Sunset/Barkley has very heavy traffic congestion and heavy right-turn movements south onto Barkley Blvd and north into Sunset Square.

Puget Street (Lakeway Drive to Consolidation Avenue) - Rank #90

Approximately 1,800 vehicles per day travel this narrow 2-lane 0.67-mile north-south section of Puget Street, which is a collector arterial that climbs steeply uphill from Lakeway Drive. The posted speed limit is 25 mph and residential parking exists on both sides of the street in places, but south of Edwards Street, the west side along Puget Street drops off in a very steep and forested slope. Neither bicycle facilities nor sidewalks currently exist on Puget Street and further study is needed to determine if there is a feasible way to provide both. In reality, alternatives are limited due to the fact that there is only 21 feet of asphalt surface and accommodating either bicycle or pedestrian facilities will require the construction of either a paved bicycle climbing lane or a shared use bicycle-pedestrian pathway.

West College Way (Highland Drive to Bill McDonald Parkway) - Rank #97

Approximately 7,000 vehicles per day travel this steep, narrow, curving 2-lane 0.26-mile secondary arterial street that marks the southwest boundary of the WWU campus and connects residential dormitories to the WWU recreation center and south campus parking lots. The posted speed limit is 25 mph and steep slopes and bedrock line the south side of the street and steep forested slopes line the north side of the street. An extruded asphalt curb provides a walking pathway on the north or uphill side of the street, but there is no physical space to accommodate bicycle facilities without widening the physical footprint of the street. In reality, alternatives are limited due to the fact that there is only 21 feet of asphalt surface and accommodating either bicycle or pedestrian facilities will require the construction of either a paved bicycle climbing lane or a shared use bicycle-pedestrian pathway.

West Telegraph Road (Meridian Street *[SR 539]* to I-5 Northbound Off-ramp to Mall) - Rank #101

Approximately 9,000 vehicles per day travel this 5-lane arterial street into the Bellis Fair Mall regional shopping center, but in 2013, left-turns from SR 539 to West Telegraph into the mall were eliminated for safety reasons and traffic volumes may be lower in 2014.

Allocating space for bicyclists on this street segment will be very challenging, and perhaps not warranted. No bicycle facilities are planned or recommended on SR 539 north of Telegraph Road; the segment of SR 539 between McLeod and Telegraph is listed as "Further Study Needed" (above); left-turns from SR 539 to West Telegraph are no longer allowed; and the segment ends at the northbound fly-over off-ramp from Interstate 5 into the mall. While marked bike lanes are recommended for Telegraph Road between SR 539 and McLeod Road, it will be extremely difficult to justify installing these due to significant traffic volume, congestion, and lack of physical space on asphalt between curbs.

Due to the above, bicycle facilities on West Telegraph should only be installed in conjunction with bicycle facilities on Telegraph Road east of SR 539 and on SR 539 between Telegraph and McLeod.

Woburn Street (Sunset Drive *[SR 542]* to Alabama Street) - Rank #104

Approximately 16,000 to 19,000 vehicles per day travel this 2-to-5-lane 0.92-mile section of Woburn Street, which is a principal arterial, high-frequency transit route, and designated truck route that connects SR 542 to Barkley Urban Village, Illinois Street, the Railroad Trail, and Alabama Street. The posted speed limit is 35 mph and from Alabama to the Railroad Trail crossing, Woburn is 2 lanes with residential parking on both sides of the street. At the Railroad Trail crossing, pedestrian bulb-outs exist to make pedestrians and bicyclists more visible to drivers and to shorten the crossing distance on Woburn. From Illinois Street where Woburn enters the Barkley Urban Village, the street widens to 4 lanes with a parkway-style landscaped median and dedicated left-turn lanes at the Woburn/Barkley and Woburn/Rimland traffic signals. From Burns to Sunset (SR 542), Woburn is 4 lanes with a center two-way left-turn lane and then dedicated left and right turn lanes at the Woburn/Sunset (SR 542) traffic signal.

36th Street (Samish Way to Fielding) - Rank #110

Approximately 2,400 vehicles per day travel this narrow 2-lane street, which serves as access to the Sehome shopping center. 36th Street is posted at 25 mph and functions like a collector arterial, but is not technically a City street because it is completely within WSDOT right-of-way. Deep bioswale ditches, with both landscaped and wetland vegetation, exist on each side of the road bed and sight distance is less than optimal for vehicles entering and exiting the Sehome shopping center. Alternatives for accommodating bicyclist and pedestrians are limited due to the fact that there is only 21 feet of asphalt surface, which will require the construction of either paved bicycle lanes or shared use bicycle-pedestrian pathways on each side of the street.

Kellogg Road (Tull Road to Cordata Parkway) - Rank #115

Approximately 6,000 to 9,500 vehicles per day travel this 4-lane 0.37-mile section of Kellogg Road, which is a secondary arterial that connects the Cordata Neighborhood, Whatcom Community College, major commercial development, a medical center, and the King Mountain Neighborhood. The posted speed limit is 35 mph and heavily traveled Meridian Street (SR 539) intersects this section of Kellogg Road, with high volumes of left and right turns being made from each approach of the Kellogg/Meridian (SR 539) intersection. Three major driveways exist on the north side of Kellogg between Meridian (SR 539) and Cordata Parkway, with access management provided by parkway-style landscaped medians and dedicated left-turn lanes. Each of these commercial driveways experiences a high volume of right-turning vehicles. Significant additional vehicle traffic is expected on Kellogg in the future due to the remaining development potential throughout the Cordata Neighborhood.

San Juan Boulevard (40th Street to Pacificview Drive) - Rank #119

This link in the Bellingham Bicycle Network does not, and may never, exist. San Juan Boulevard is a planned regional secondary arterial connection that would provide great regional transportation connectivity where none exists today, however, it is probably not feasible to construct due to environmental impacts and associated mitigation and construction costs. The City began engineering, design, and right-of-way acquisition for San Juan Boulevard in the mid-2000's, but the presence of steep slopes, wetlands, and streams reviewed under local, State, and federal critical areas regulations have made the project prohibitively expensive and the City considers the project to be fatally flawed and not constructible. While it is very doubtful that an arterial street will be constructed in this location, it may be possible for the Parks Department to construct a Greenways regional multiuse recreational trail between 40th Street and the regional park planned for the top of Samish Hill purchased with Greenways Levy funds. Due to the steep slopes along this alignment, the trail would need to feature several switchback turns in order to serve as a legitimate recreational biking option.

Cordata Parkway (Westerly Road to West Bakerview Road) - Rank #126

Approximately 13,000 vehicles per day travel this 4-lane 0.13-mile section of Cordata Parkway that connects the Cordata Neighborhood, Whatcom Community College, WTA's Cordata Station transit hub, major commercial development, and the Bellis Fair Shopping Center. Cordata Parkway is a secondary arterial posted at 35 mph. Access management has limited the number of driveways onto Cordata, but there are high volumes of left and right turns onto Cordata from West Bakerview Road. Significant additional vehicle traffic is expected on Cordata in the future due to the remaining development potential throughout the Cordata Neighborhood.

Sunset Drive (Ellis Street to James Street) - Rank #139

Approximately 12,000 vehicles per day travel this 2-to-3-lane 0.33-mile section of Sunset Drive, which connects the Cornwall Park Neighborhood, St. Joseph's Hospital, the Sunnyland Neighborhood, and Interstate 5. This portion of Sunset Drive is a secondary arterial posted at 25 mph, which narrows from 4 lanes plus a dedicated left-turn lane at Sunset/James/I-5 southbound on-/off-ramps to 2 lanes plus dedicated left and right-turns at the Sunset/ Ellis intersection. Both intersections experience heavy traffic congestion and high volumes of left- and right-turning traffic due to Interstate access on the east end and hospital access on the west end. Residential homes line each side of the street, along with a few prominent churches and a former WSDOT site on the south side of Sunset.

Granary-Bloedel Avenue (Roeder Avenue to Cornwall Avenue) - Rank #163

Construction of this new multimodal collector arterial through the mixed-use portion of the Waterfront District is funded and anticipated for 2015. As with all new multimodal arterial streets that the City constructs, facilities for pedestrians, bicycles, transit riders, and vehicles will be provided. While a Waterfront District Master Plan was adopted in 2013, the type and intensity of development that will

actually materialize remains to be seen. At a minimum, bicycle lanes will be required to comply with Bellingham arterial standards and federal funding requirements and the posted speed limit will be 25 mph. Over time, as development occurs, the land use context will inform the City on the type of bicycle facilities that may be needed on Granary-Bloedel.

Appendix D: Planning Level Cost Calculator

Network Costs by Facility Type

Facility Type	Total Miles of Facility	Total Number of Intersections	Cost per feature or per mile	Total Cost
Bicycle Boulevard (base cost)	52.14		$35,200	$1,835,328
Bike Boulevard Type I Intersections		19	$75,000	$1,425,000
Bike Boulevard Type II Intersections		10	$100,000	$1,000,000
Bike Boulevard Type III Intersections		0	$300,000	$0
Bike Lane	42.28		$77,600	$3,280,928
Bike Lane (requiring roadway enhancement)*	3.44		Varies from $1,000,000 to $7,000,000	$9,776,045
Climbing Lane	7.34		$60,480	$443,923
Climbing Lane (requiring roadway enhancement)*	0.56		$1,070,000	$600,000
Buffered Bike Lane	4		$117,680	$470,720
Cycle Track	0.83		$1,647,450	$1,367,384
Shared Lane Marking	6.89		$43,300	$298,337
Marked Route	7.79		$4,300	$33,497
Further Study Needed**	9.44		$0	$0
Total	**134.71**			**$20,531,162**

*Project requires significant roadway enhancements in order to implement the recommended bicycle facility.

**Further study needed projects require additional analysis City staff before a specific facility type can be identified.

Facility Cost Assumptions

	Facility Unit Cost (per feature or per mile)	Calculation	Assumptions
Bicycle Boulevard (base cost)	$35,200	80 shared lane markings at $225 each) + (80 sign assemblies at $215 each)	Bike Boulevard Base - Signage and shared lane markings (80/mile) - No allowance for additional curb work, stormwater, ROW, etc.
Bike Boulevard Type I Intersection (lower volume street crossing)	$75,000		Bulb outs & Crosswalk
Bike Boulevard Type II Intersection (medium volume street crossing)	$100,000		Flashing crossing or HAWK
Bike Boulevard Type III Intersection (higher volume street crossing)	$300,000		Full traffic signal
Add bike lanes (with parking)	$77,600	Facility Unit Cost = $3.25/LF * 5280 feet * 2 lines * 2 sides + $225 per bike symbol * 20 symbols/mile * 2 sides	Assumes 2 bicycle lane lines and 20 bike and arrow symbols per mile are added on each side of the roadway to create the bicycle lane. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add buffered bike lane (with parking)	$117,680	Facility Unit Cost = (3 lines*5280*$3.25/LF * 2 sides)+(880 LF diagonal lines*2*$3.25/LF)+(20 symbols/mile*$225 * 2 sides)	Assumes a 30" diagonal stripe every 15 feet between two continuous parallel lines both sides of street plus inside bike lane/parking lane stripe, 20 bike and arrow symbols per mile both sides. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add bike lanes (no parking)	$43,300	Facility Unit Cost = $3.25/LF * 5280 feet * 1 line * 2 sides + 20 symbols/mile*$225 * 2 sides	Assumes 2 bicycle lane lines and 20 bike and arrow symbols per mile are added on each side of the roadway to create the bicycle lane. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.

Add buffered bike lane (no parking)	$83,360	Facility Unit Cost = (2 lines*5280*$3.25* 2 sides)+(880 LF diagonal lines*2*$3.25)+(20 symbols/mile*$225 * 2 side)	Assumes a 30" diagonal stripe every 15 feet between two continuous parallel lines both sides of street, 20 bike and arrow symbols per mile both sides. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Climbing lane (with parking)	$60,480	Facility Unit Cost = $3.25/LF * 5280 feet * 3 lines + $225 per bike symbol * 20 symbols/mile*$225 + $225 per shared lane marking symbol * 20 symbols/mile	Assumes 2 bicycle lane lines and 20 bike and arrow symbols per mile are added on one side of the roadway to create the bicycle lane. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs. Assumes parking lane lines added to one side of street and 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Climbing Lane (no parking)	$26,160	Facility Unit Cost = $3.25/LF * 5280 feet * 1 line + $225 per bike symbol * 20 symbols/mile + $225 per shared lane marking symbol * 20 symbols/mile	Assumes 1 bicycle lane line and 20 bike and arrow symbols per mile are added on one side of the roadway to create the bicycle lane. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs. Assumes 20 shared lane marking symbols per mile are added on one side of the roadway to create the shared lane pavement marking facility. $225 per shared lane pavement marking includes the material (thermoplastic) and installation costs.
Add shared lane markings (no parking)	$9,000	Facility Unit Cost = $225 per shared lane marking symbol * 20 symbols/mile * 2 sides	Assumes 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.
Add shared lane markings (with parking)	$43,300	Facility Unit Cost = $3.25/LF*5280 feet*2 lines + $225 per shared lane marking symbol *20 symbols/mile * 2 sides	Assumes parking lane lines added to both sides of street and 20 shared lane marking symbols per mile are added on each side of the roadway to create the shared lane pavement marking facility. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs.

Cycle Track (midrange cost)	$1,647,450	Facility Unit Cost = (1 line*5280*$3.25* 2 sides)+(20 symbols*$225 * 2 side) + full curb ($250,000 * 2 sides) + signal upgrades (4 x $150,000)+25% miscellaneous	Assumes a one-way separated bikeway both sides of street, 20 bicycle symbols per mile both sides. $225 per bike and arrow symbol includes the material (thermoplastic) and installation costs. Continuous curb at $250,000 per mile. Four signal upgrades at $150,000 each. Add 20% for miscellaneous additional costs, e.g. landscaping, traffic control, utility adjustments.
Bike Route Signing	$4,300	Facility Unit Cost = $215 per sign assembly*10*2 sides	Spacing of bike signs is flexible based on engineering judgment and current practices. This calculation assumes up to 10 bike route/wayfinding signs per mile installed on both sides of bicycle route. In some cases the number of signs per mile may be more or less than 10. Unit cost includes one sign, post and installation. Some wayfinding sign assemblies may have more than one sign, and therefore would be higher cost.

Global Assumptions

1) Cost calculations assume that bicycle facility improvements are made on both sides of the street. Assumes any pavement costs are independent of bicycle facility.
2) Bike lane, buffered bike lane, climbing lane, and shared lane marking cost calculations include parking lane striping.
3) Further study needed projects require additional analysis by City staff before a specific facility type (and cost) can be identified.
4) Cost estimates do not include design unless specifically stated in assumptions. Design costs, which include construction planning, public process, facility design, and other background work required to implement the project, can generally be estimated at 15% to 20% of the facility construction cost. Projects requiring a higher level of public process may have higher design costs.
5) Cost estimates involving major construction do not include contingency costs, which typically are estimated at 15 to 25% of the construction costs.

Individual Project Costs

Individual planning level project costs are listed in Appendix B. They were generated using the costs provided in the assumptions table above. These numbers were provided by the City of Bellingham at the time of the draft plan. To generate costs per bicycle boulevard project, the number of arterial intersection crossings for each project was identified. A cost was then assigned based on the type of

intersection improvement(s) needed (Type 1, 2, 3) plus a base cost per mile for signage and shared lane markings. For other facility types the assumptions outlines the calculations used. For the mixed projects, the cost for each facility type was applied. Specific project costs were identified for four projects that received preliminary engineering estimates by Public Works Engineering. These projects (listed below) require significant roadway enhancements in order to implement the recommended bicycle facilities.

Preliminary Engineering Cost Estimates for Projects Requiring Significant Roadway Enhancements

Street	From	To	Improvement	Cost per mile	Total cost
Samish Way	Elwood	48th	Bike lanes	$1,000,000	$2,159,000
James Street	Sunset	Orchard	Mixed	$1,000,000	$666,500
Northshore Road	Britton	Eagle Ridge	Bike lanes	$7,000,000	$7,000,000
Douglas Avenue	30th	21st	Climbing lane	$1,070,000	$600,000

Summary Costs for Recommended Network

On-Street Facilities	Total Recommended Miles	Total Cost
Bike lanes	45.72	$13,056,973
Buffered Bike Lanes	4	$470,720
Shared lane markings	6.89	$298,337
Climbing Lanes	7.9	$1,043,923
Bicycle Boulevard	52.14	$4,260,328
Cycle Track	0.83	$1,367,384
Marked Route	7.79	$33,497
Further Study	9.44	$0
TOTAL	134.71	$20,531,162

Maintenance Costs

Maintenance Cost Calculations

Shared lane markings	$9,000.00	Facility Unit Cost = $225 per shared lane marking * 20 shared lane markings per mile * 2 sides	Assumes thermoplastic. All SLM symbols generally replaced every five years at $225 per shared lane marking
Bicycle lanes	$43,320.00	Facility Unit Cost = $3.25 per linear foot * 5280 feet * 1 line * 2 sides + $225 per bike and arrow symbol * 20 bike and arrow symbols per mile * 2 sides	Assumes thermoplastic for striping and symbols. Outside striping marking generally replaced every six years at $3.25 per linear foot and bike lane symbols replaced every ten years at $225 per symbol.
Buffered bike lane	$9,372.00	Facility Unit Cost = 2 lines*5280*$3.25* 2 sides)+(880 LF diagonal lines*2*$3.25)+(20 bike and arrow symbols per mile* 2 sides*$225)	Assumes thermoplastic for striping and symbols. All striping markings generally replaced on average every 7.5 years* at $3.25 per linear foot and bike lane symbols replaced every ten years at $225 per symbol.
Bicycle Boulevard	$9,000.00	Facility Unit Cost = 40 shared lane markings * $225	Assumes thermoplastic shared lane markings. SLMs generally replaced every six years at $225 per marking.
Spot improvements (5 per year)	$75,000.00	TBD	Assumes 5 spot improvements per year at an average cost of $15,000. Spot improvements may range in scope and scale.

Maintenance Item	Assumptions	Estimated Annual Network Maintenance Cost
Replace Damaged/Missing Signs	*Cost represents replacement of all signs on network times 10 (average number of signs per mile) at $215 per sign. All signs will generally need to be replaced every 10 years.*	$34,894
Sweep bicycle lanes (annually at full build-out)	*Assumes bike lanes only (at full build-out) sweeping twice per month at $50 per mile.*	$102,516
Shared Lane Markings (average annual cost for network)	*Assumes replacement of SLMs on the network every six years at 20 per mile X 2 sides.*	$16,403

Bicycle Lanes (estimated annual cost for network)	*Assumes replacement of bike symbols on the network every ten years and striping replaced* on average every 7.5 years.*	$21,630
Buffered Bicycle Lanes (estimated annual cost for network)	*Assumes replacement of bike symbols on the network every ten years and striping replaced* on average every 7.5 years.*	$27,493
Bicycle boulevard (estimated annual cost for network)	*Assumes replacement of SLM symbols on the network every six years.*	$117,315

*Bicycle lane and buffered bicycle lane striping shall occur every 5 years (outside line marking) and every ten years (inside line marking).

Other Facility Costs

Item	Assumptions	Unit Cost
Install Full Traffic Signal	*Assumes that the full cost of the traffic signal is applied as a bicycle facility improvement (no cost shared by pedestrian, transit, motor vehicle, or other budgets)*	$300,000
Install Pedestrian Crossing Signal	*Assumes that the full cost of the pedestrian crossing signal is applied as a bicycle facility improvement (no cost shared by pedestrian budgets)*	$100,000
Install Pedestrian Crossing Island	*Design specifications (size, number of islands, etc.) may vary. Assumes that the full cost of the pedestrian crossing islands will be applied as a bicycle improvement (no cost shared by pedestrian budgets)*	$15,000 - $40,000
Upgrade Existing Pedestrian Crossing Signal to Accommodate Bicycles	*Assumes 4 special-order bicycle traffic signal heads will be needed at the intersection. Assumes no other hardware or software upgrades, but such upgrades may be necessary.*	$12,000
Traffic Island		$10,000
Bicycle-Activated Signal Push Button		Varies
Bicycle Detection Pavement Markings		$75
Signs	*The number of signs installed per mile along a bicycle route will vary depending on intersection density, number of intersecting routes, parking restrictions and other factors.*	$215
Bike Racks	*Assumes standard inverted U rack and includes installation.*	$400

Calibrate bicycle detection at traffic signals (on-street facilities)	*Assumes four approaches per intersection calibrated at man-hour per approach, $100 per man hour*	$1,500

Disclaimer:
These costs are intended to be general and used for long-range planning purposes. The construction estimates do not include costs for planning, surveying, engineering design, right-of-way acquisition, mobilization, maintenance of traffic during construction, landscaping/aesthetics, utility adjustments, lighting, drainage, storm water management, erosion and sediment control, significant grading, bridges, retaining walls, significant changes in vehicular traffic patterns, or contingency costs. Maintenance costs are based on estimates from a variety of sources including the City of Bellingham. Construction costs will vary based on the ultimate project scope (i.e. combination with other projects) and economic conditions at the time of construction.

Appendix E: Design Considerations

The following appendix provides detailed design considerations for implementation of bicycle facilities recommended for the on-street network. The design considerations complement the content of Chapter 4: Design and Maintenance Guidance.

Bicycle Boulevards

Design Considerations

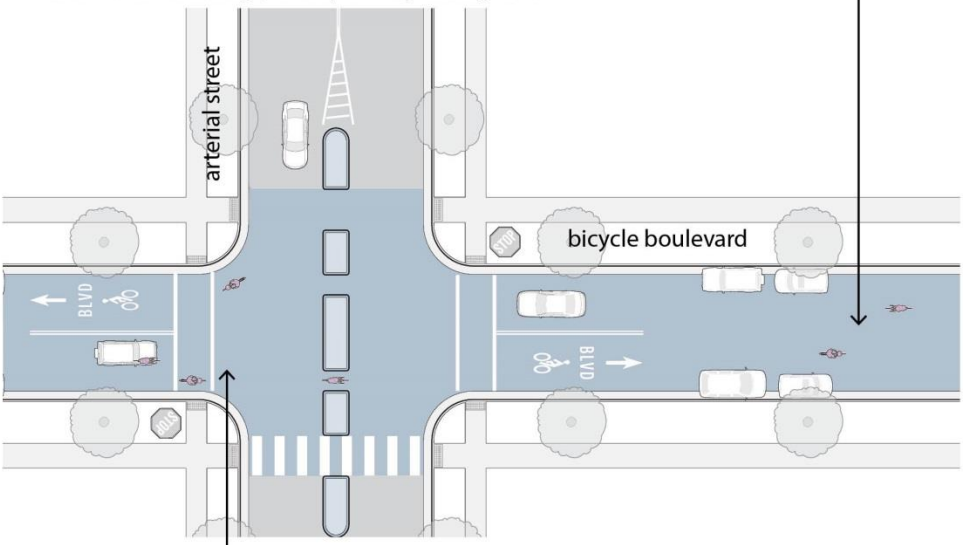
A neighborhood street may already have many of the desired characteristics that make it a comfortable and continuous riding experience, or may incorporate several of the following bicycle boulevard design elements to accommodate bicyclists:

- Traffic-calming features such as neighborhood traffic circles, curb extensions, and chicanes that slow motor vehicle traffic but allow bicyclists to maintain momentum.
- At two-way stop-controlled intersections, priority assignment that favors the bicycle boulevard, so bicyclists can ride with few interruptions.
- Traffic diverters at key intersections to reduce through motor vehicle traffic while permitting passage for through bicyclists.
- Wayfinding signs and/or pavement markings to guide bicyclists along the way and to key destinations.
- Shared lane markings or other markings where appropriate to alert drivers and cyclists to the recommended lane position for bicyclists on a shared roadway.
- Crossing improvements such as median crossing islands, curb extensions, marked crosswalks, rapid flash beacons, or traffic signals where the bicycle boulevard crosses major streets.

Bike Boulevards

On the bicycle boulevard:

- wayfinding signage and pavement markings such as "bike boulevard," shared lane markings, or bicycle wayfinding "dots"

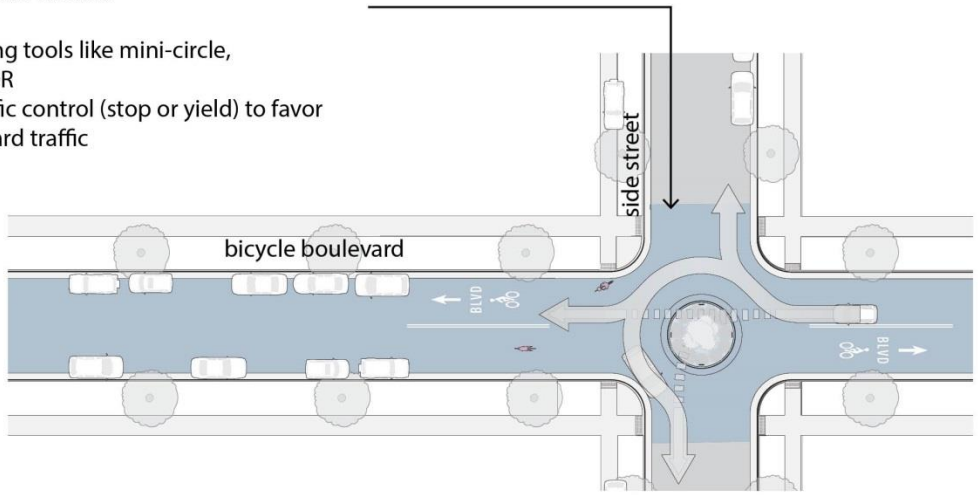


At arterial crossings, a variety of traffic control measures may be employed in order to:

- facilitiate bicycle crossing of the arterial
- slow or limit through traffic on the bicycle boulevard

At intersecting side streets:

- traffic calming tools like mini-circle, bumpouts OR
- positive traffic control (stop or yield) to favor bike boulevard traffic

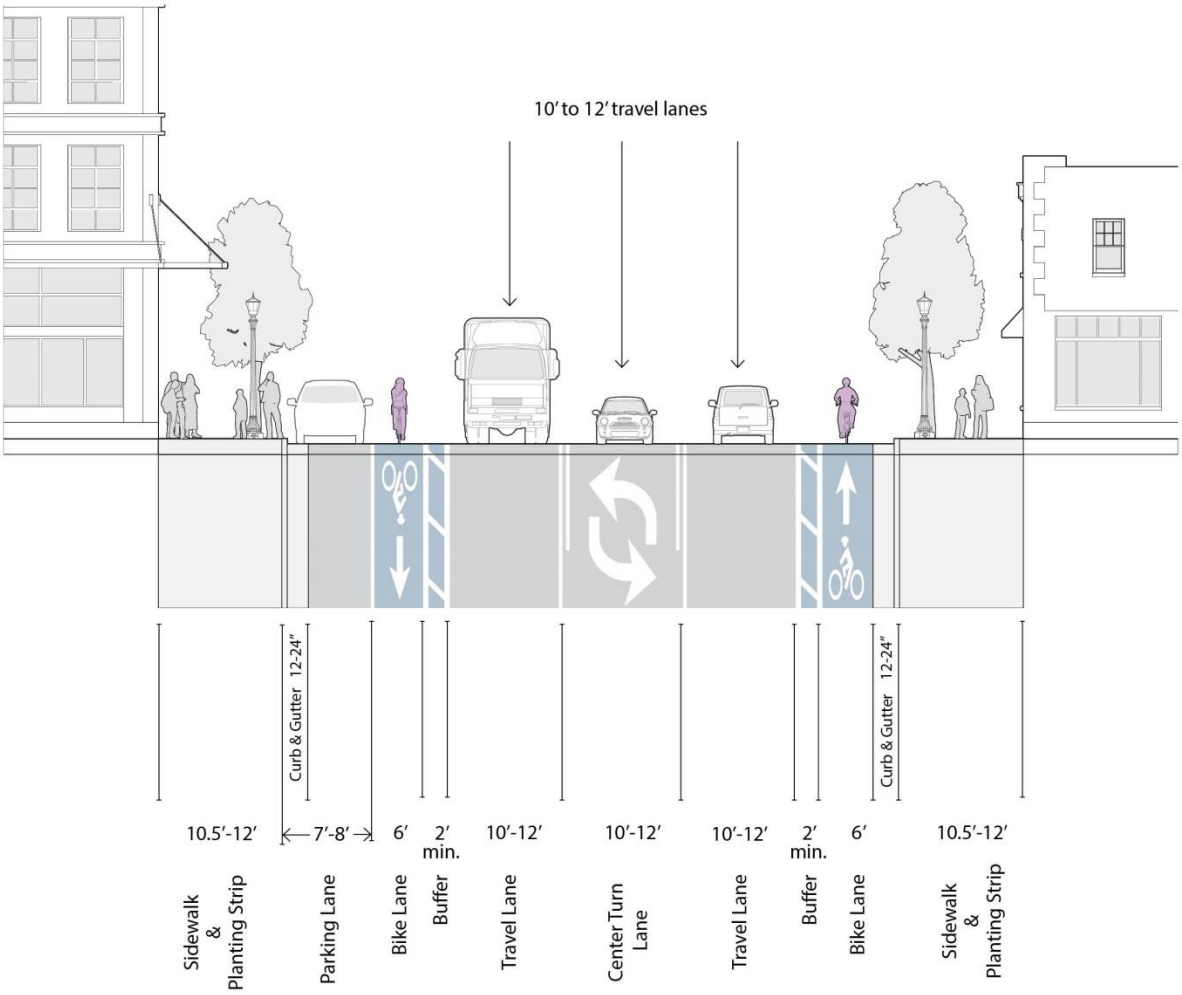


Buffered Bike Lanes

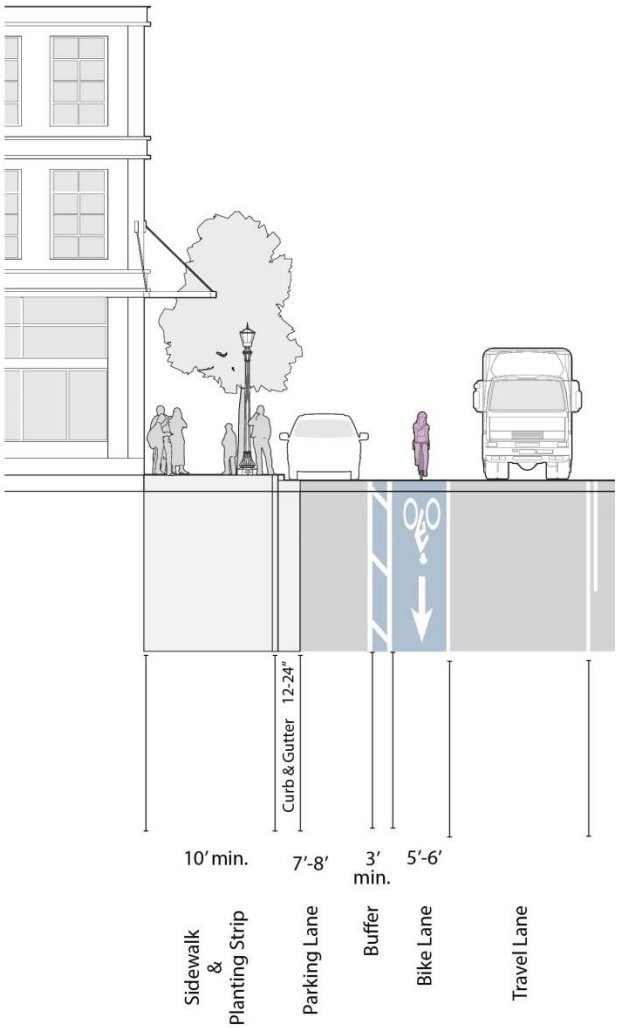
Design Considerations

- The minimum width for the buffer area is 2 feet. There is no maximum.
- Widths of buffered bike lanes are the same as those for bike lanes without buffers.
- Buffer striping will require additional time and materials for installation and maintenance when compared to conventional bicycle lanes.
- Consider placing the buffer next to the parking lane where there is high parking turnover.
- Consider placing the buffer next to the travel lane where speeds are 35 mph or greater or when the ADT exceeds 10,000.

Buffered Bike Lane



Buffered Bike Lane Adjacent to Parking Lane

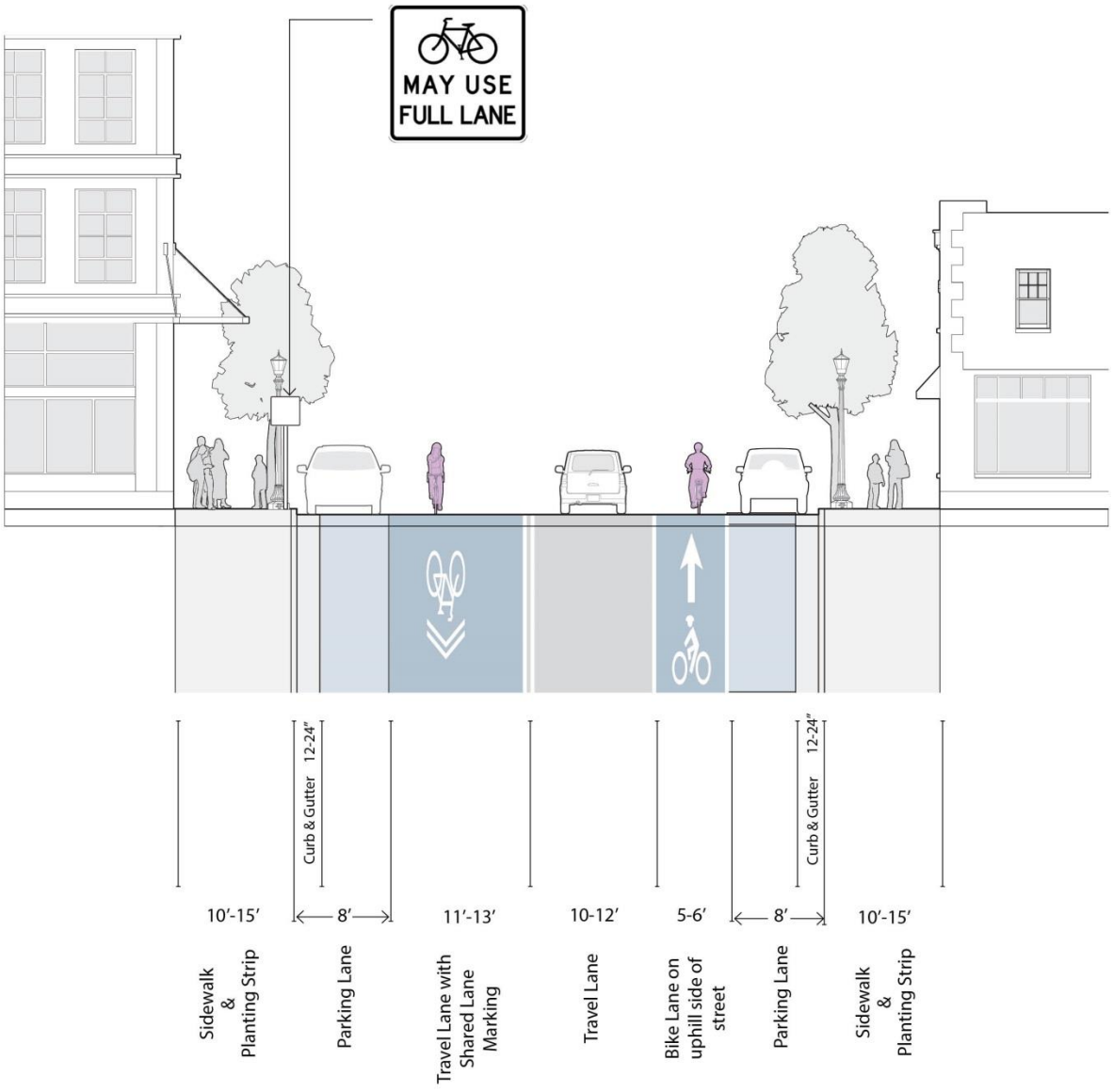


Climbing Lanes

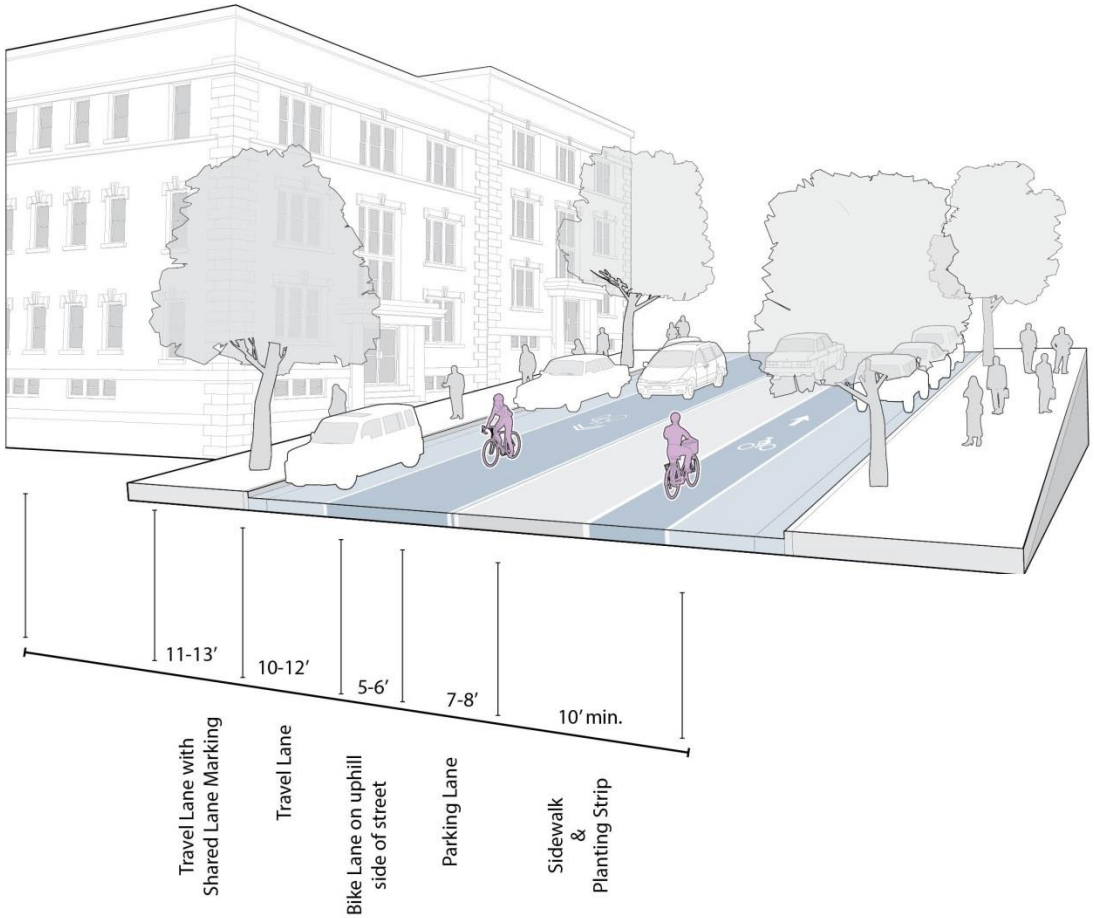
Design Considerations

- Installation of climbing lanes may require vehicle lane striping to be shifted slightly in order to provide sufficient bicycle lane width.
- Wider (i.e. 6 feet) climbing lanes provide more operating space for uphill traveling bicyclists, and should be considered.
- When traveling downhill bicycles pick up speed and can travel at similar speeds as motor vehicles, therefore shared lane markings should be used in the downhill direction to direct bicyclists away from potential hazards (e.g. doors of parked cars), which are more difficult to react to at higher downhill speeds. Downhill bicycle lanes should only be considered where there is sufficient space to provide buffers between the travel lane and parked cars.
- A bike lane on one side of the roadway, without a complementary facility on the other side of the roadway (e.g. shared lane marking) will result in wrong-way riding in the bike lane.
- Bike lanes may require periodic sweeping to clear debris.

Bike Climbing Lane



Bike Climbing Lane

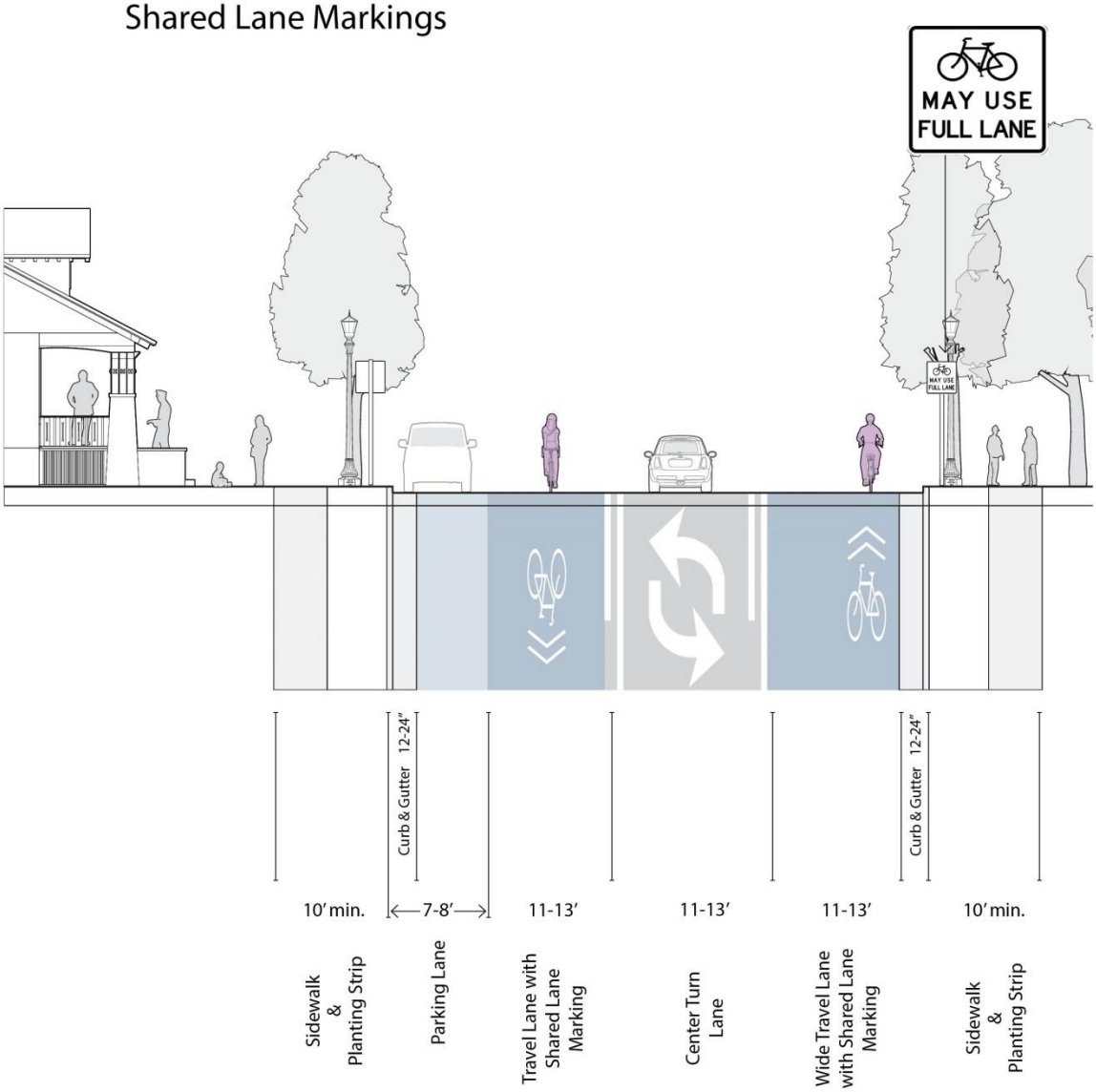


Shared Lane Markings

Design Considerations

- Shared lane markings must not be used on streets with speed limits higher than 35 mph.
- On streets with lanes that are 11 feet or less, the shared lane marking should be placed in the center of the lane to indicate that motorists must change lanes to pass bicyclists.
- Shared lane markings should be placed in a location that is outside the door zone of parked vehicles.
- On multilane streets, shared lane markings are placed in the outside lane.
- On one-way streets, shared lane markings may be placed on both sides of the street if there are high volumes of bicyclists turning left and right.
- Frequency: Shared lane markings are typically placed one at the beginning and one at the end of the block, in each direction of travel.

Shared Lane Markings



Cycle Tracks

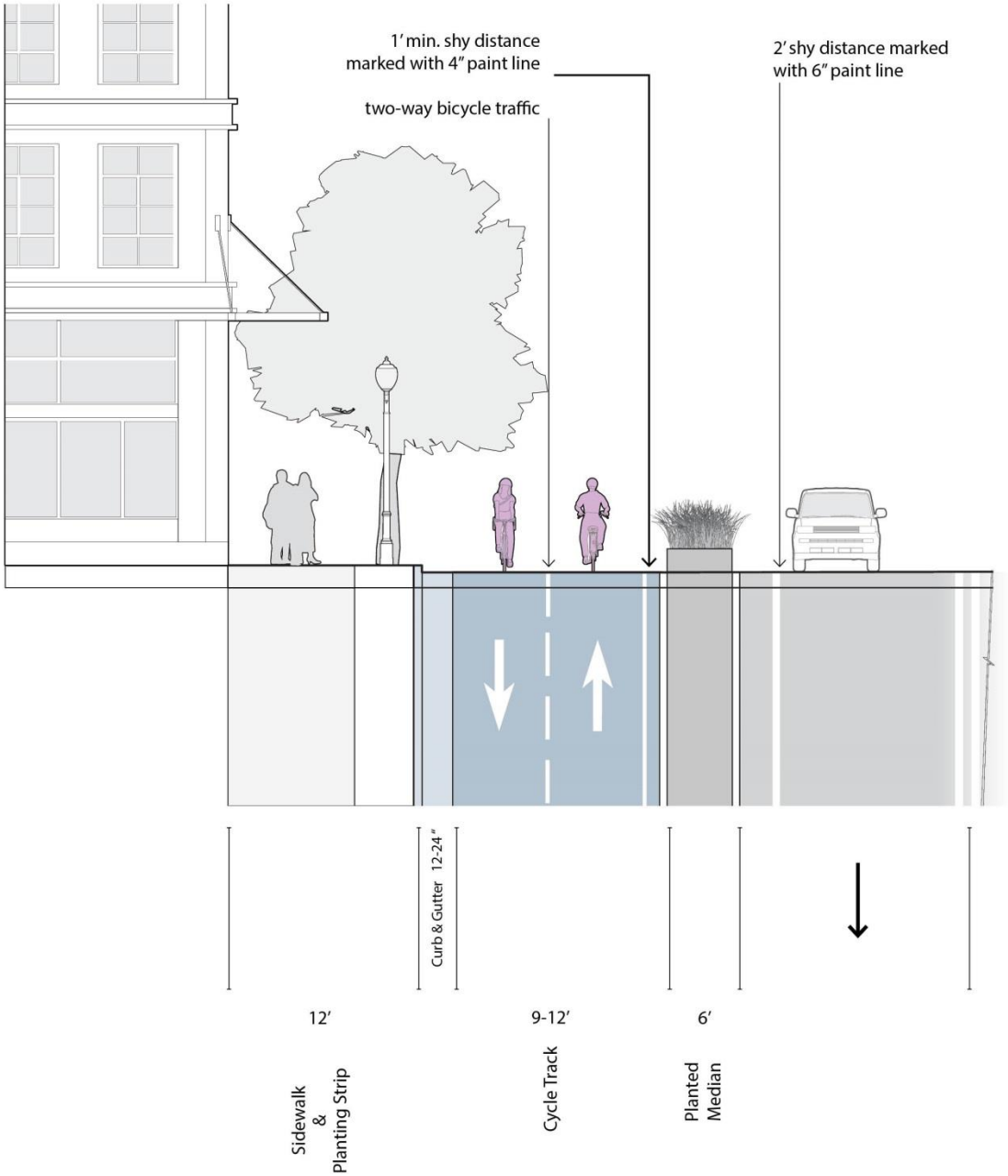
Design Considerations

- The bike lane line should resume with a solid line on the far side of the intersection (outside crosswalk area).
- One-way cycle tracks typically range in width from 5 feet to 7 feet. The buffer between the cycle track and adjacent traffic should be a minimum of 2 feet.
- Two-way cycle tracks typically range in width from 10 feet to 12 feet. In constrained locations, an 8 foot, cycle track may be considered. The buffer between the cycle track and adjacent traffic should be a minimum of 3 feet.
- When protected by a parking lane, 3 feet is the desired width for a buffer between parking lane and cycle track to allow for passenger loading and to prevent dooring collisions.
- Streets with the least number of driveways or cross- streets provide the best opportunity for a quality cycle track.
- Cycle tracks should be installed only on streets for which conflicts at intersections can be effectively mitigated using parking lane restrictions, bicycle markings through the intersection, or other signalized intersection treatments.
- Special consideration must be given to available space and operational speed on two-way cycle tracks proposed on streets with sustained grades due to the heightened potential for conflict between uphill and downhill bicyclists, as well as turning vehicles.
- The buffer space may be emphasized with bollards, planters, signs or other forms of physical protection.
- At transit stops along cycle tracks, special consideration should be given to manage bicyclist, pedestrian and transit operator interactions.
- Bicycle lane word, symbol, and/or arrow markings (MUTCD Figure 9C-3) shall meet the MUTCD guidelines for placement.
- If a two-way cycle track is configured on a one-way street, the addition of a “ONE WAY” sign (MUTCD R6-1, R6-2) with “EXCEPT BIKES” plaque is the appropriate sign treatment to shall be posted along the facility and at intersecting streets, alleys, and driveways informing motorists to expect two-way bicycle traffic.
- Special consideration should be given regarding the use of color or pavement markings to enhance locations of conflict, such as where cycle tracks cross intersections or driveways
- Features such as a two-stage turn queue box should be considered to assist bicyclists in making turns from the cycle track facility.
- When providing accessible vehicle parking spaces alongside cycle tracks, there are a number of considerations for accommodating persons with disabilities in the design of one-way and two-way protected cycle tracks.
- Driveways and minor street crossings are a unique challenge to cycle track design. The following guidance may improve safety at crossings:
    - If the cycle track is parking-protected, vehicle parking should be prohibited near the intersection to improve visibility. The desirable no-parking area is 30 feet from each side of the crossing.
    - For motor vehicles attempting to cross the cycle track from the side street or driveway, street and sidewalk furnishings and/or other features should accommodate a sight triangle of 20 feet to the cycle track from minor street crossings, and 10 feet from driveway crossing.
    - Color, yield lines, and “Yield to Bikes” signage should be used to identify the conflict area

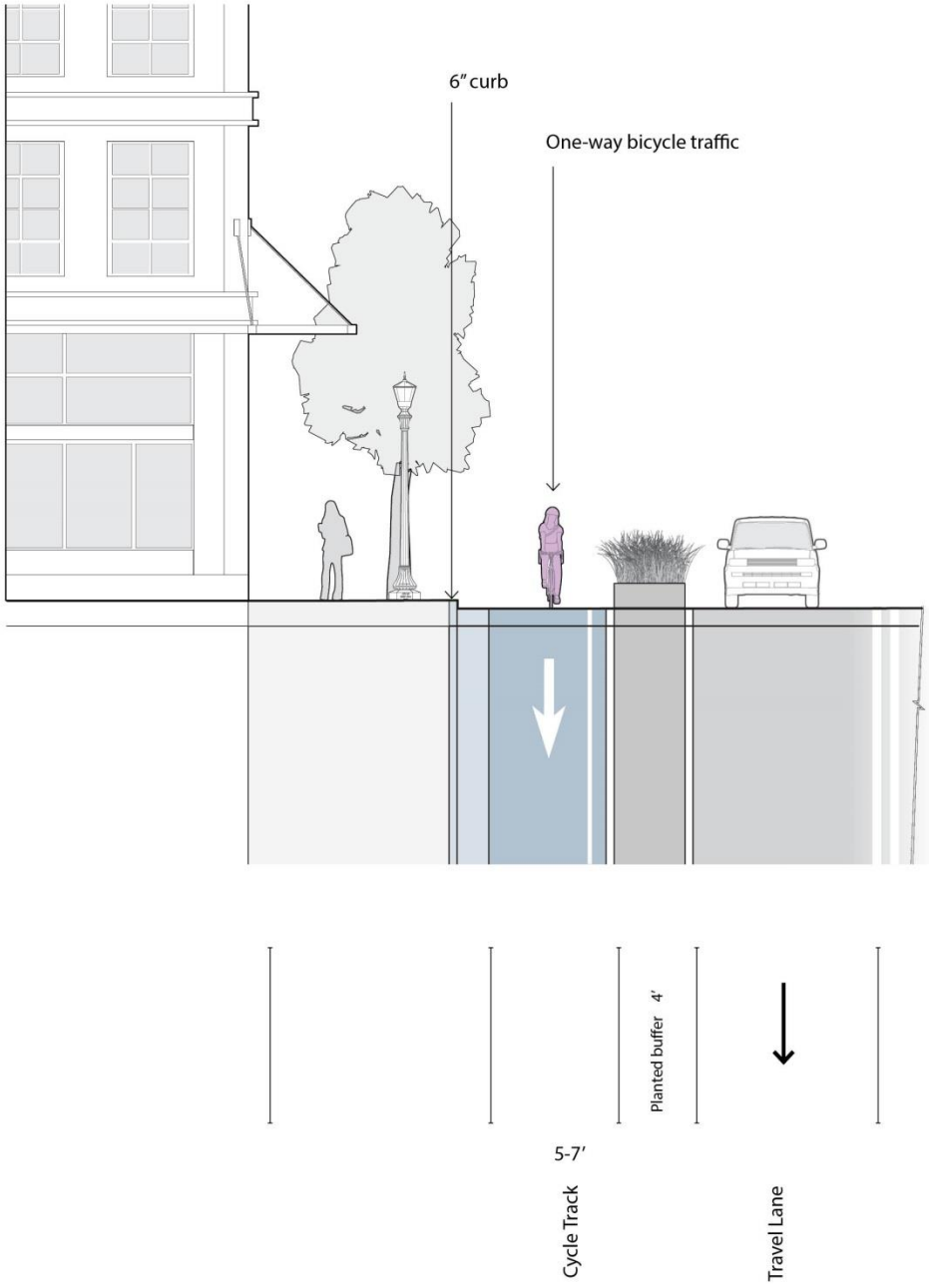
and make it clear that the cycle track users moving through the intersection have priority over entering and exiting traffic.
    - Motor vehicle traffic crossing the cycle track should be constrained or channelized to make turns at sharp angles to reduce travel speed prior to the crossing.

- For additional design guidance refer to the 2012 AASHTO Guide for the Development of Bicycle Facilities and the NACTO Urban Bikeway Design Guide.
- Maintenance must be considered when designing a cycle track.

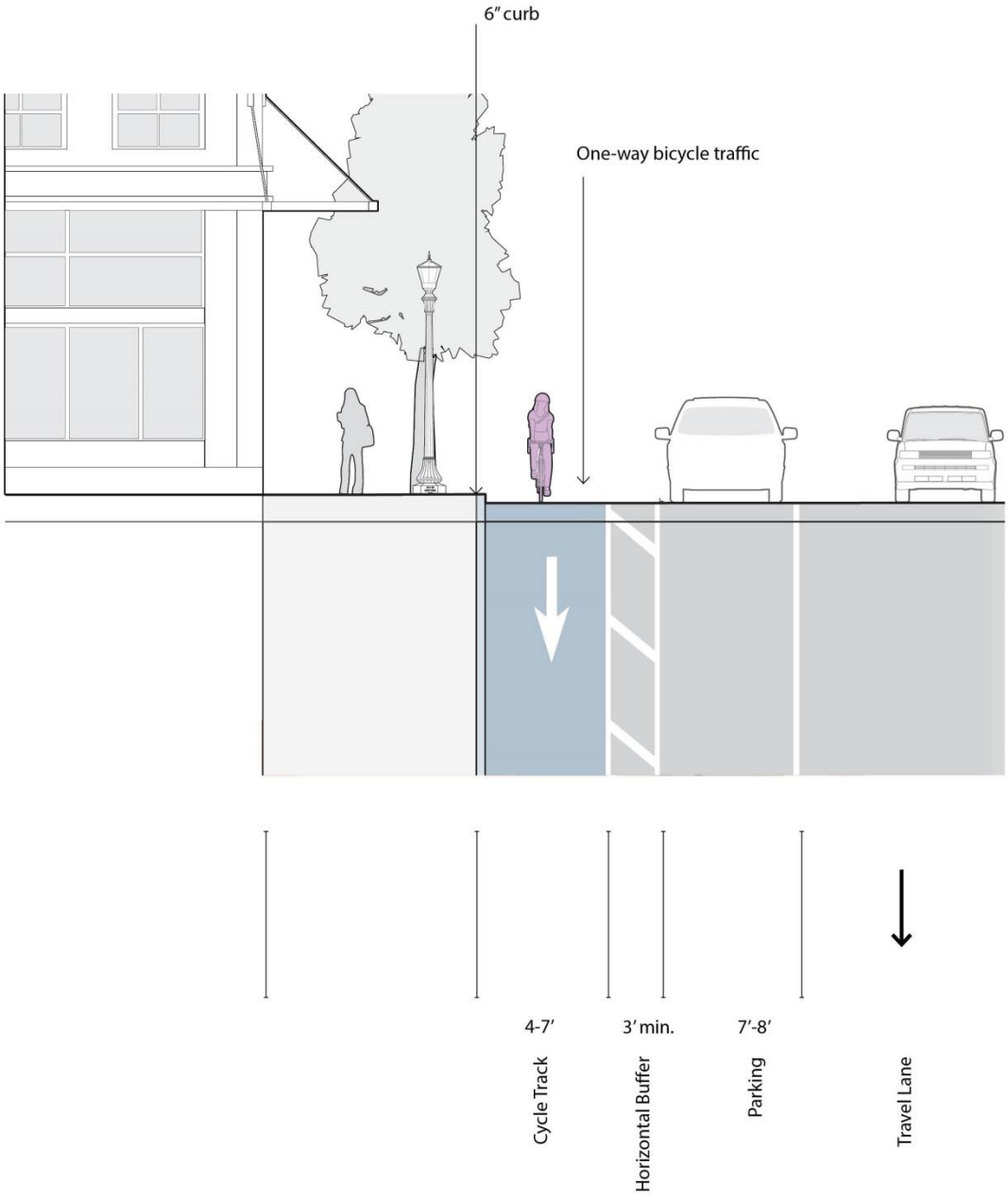
Cycle Track, two-way with horizontal buffer



Cycle Track, one-way with separation



Cycle Track, one-way with floating parking

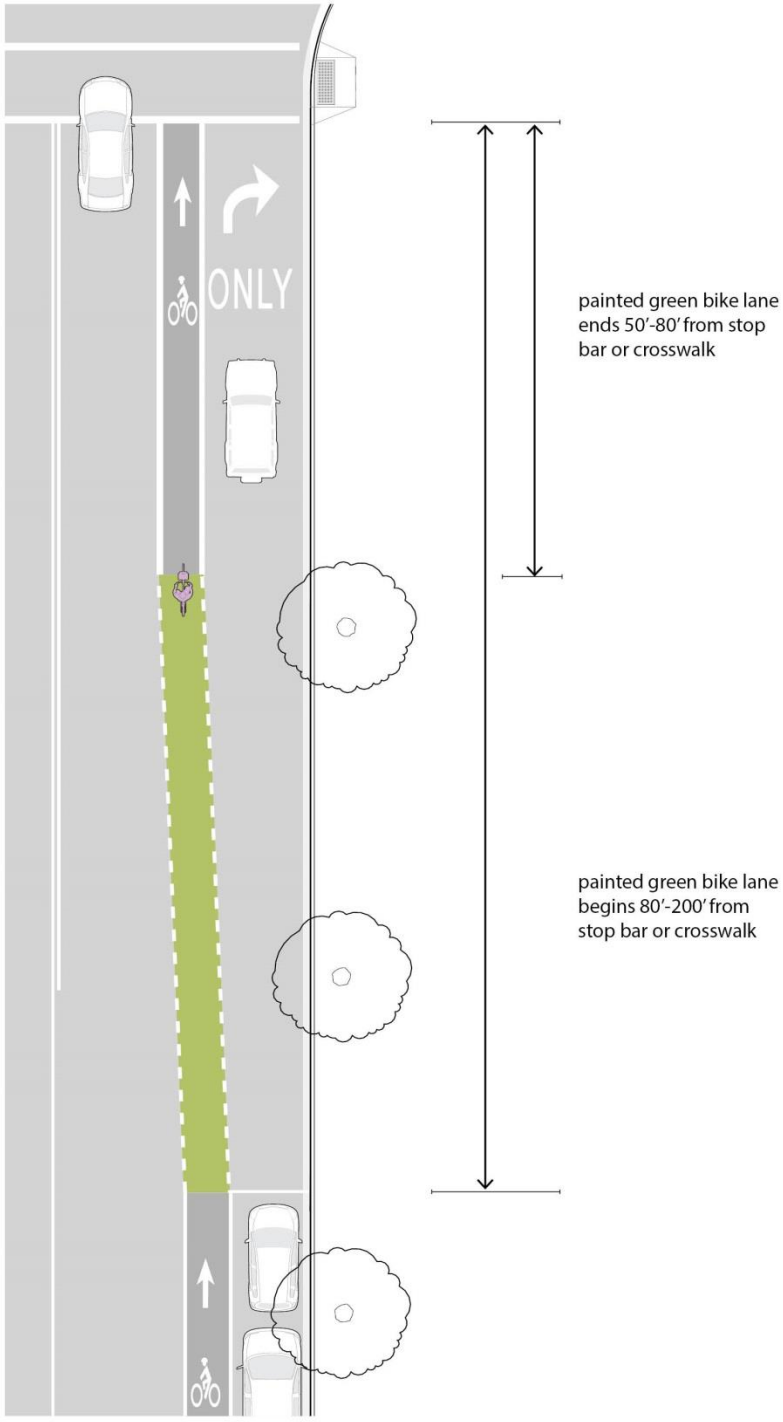


Bike Lanes at Intersections

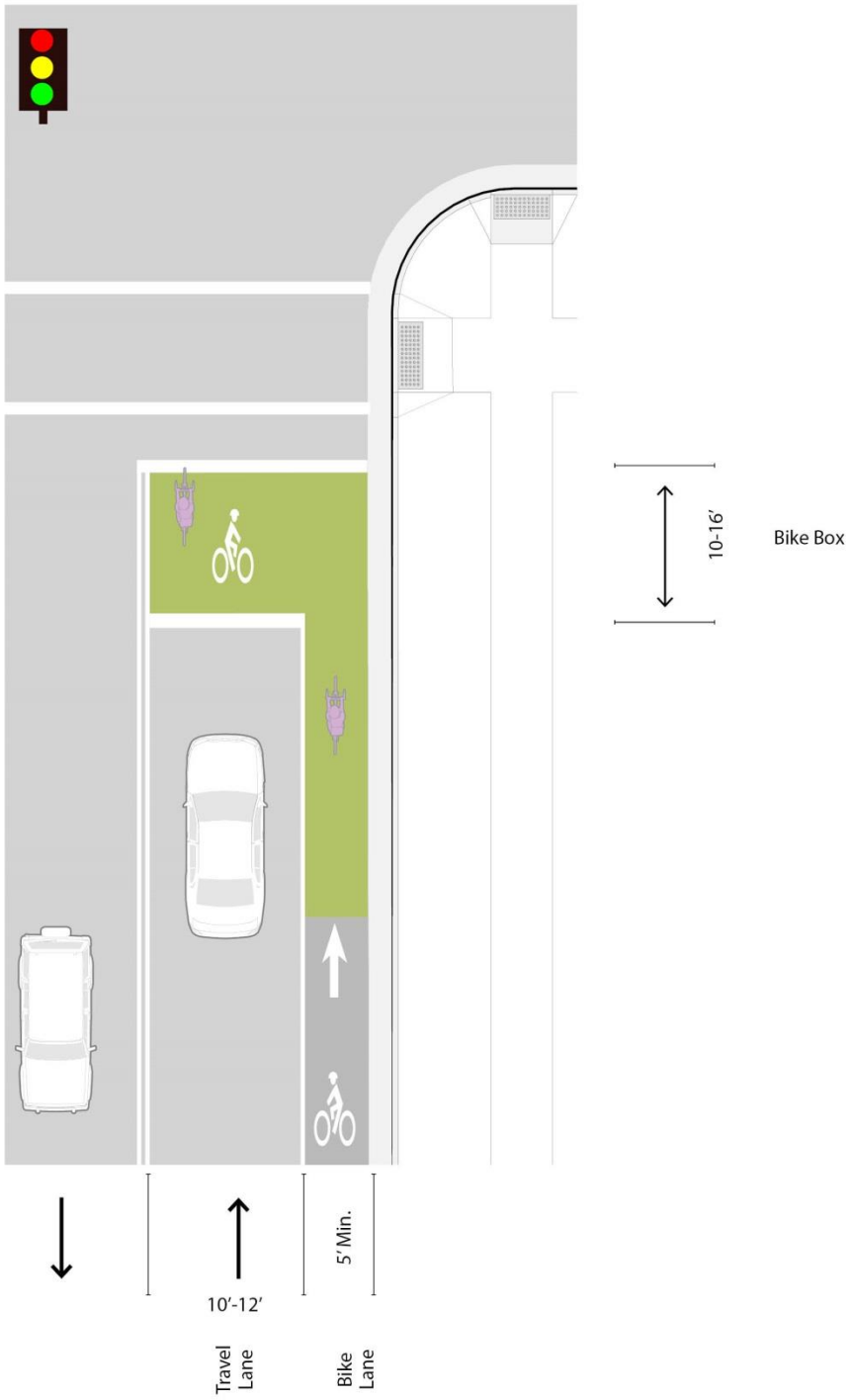
Design Considerations

- On approaches to intersections with high volumes of right turning traffic that do not have right-turn-only lanes, bike lane lines should be dashed. The dashed line is intended to provide a reminder that motorists may merge into the bicycle lane as they prepare to turn right.
- Dashed lines should begin 50 to 200 feet prior to the crosswalk or edge of intersection if no crosswalk exists.
- The bike lane line should resume with a solid line on the far side of the intersection (outside crosswalk area).
- At intersections where bike lanes must be dropped due to the addition of turn lanes or a narrowing of the roadway, the bike lane should be dropped 50-200 feet prior to the narrowing. Shared lane markings should be used to indicate the preferred positioning of through moving bicyclists.
- Where bicycle lanes are dropped to add a right turn lane, shared lane markings may be placed in the left hand portion of the right turn lane or within the right-most through lane.

Green Bike Lanes



Green Bike Box

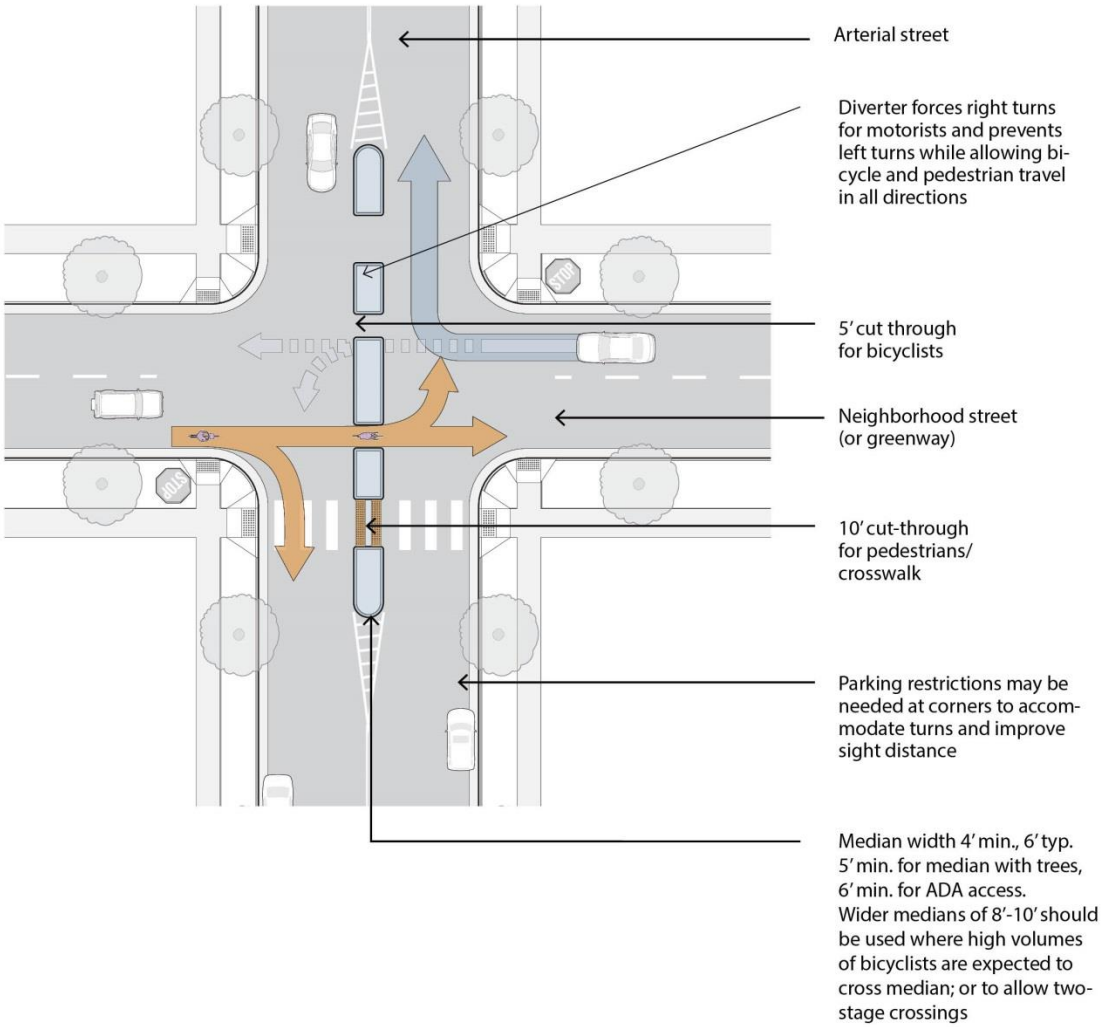


Intersection Median Barrier

Design Considerations

- The intersection median barrier must be a minimum 6 feet wide (8 to 10 feet preferred on primary bicycling routes) to provide sufficient area for multiple pedestrians and bicyclists waiting to cross the street, and for longer bicycles, or bicycle combinations (e.g., a bike with trailer is approximately 9 feet in length).
- Alternatively, separate cut-through/crossing areas may be provided for bicycles and pedestrians. Pedestrian crossing areas should align with crosswalk while the bicycle cut-through may be placed in line with vehicle travel lanes.
- At unsignalized locations pedestrian/bicycle crossing warning signs may be placed within the intersection median barrier, as well as on each side of the street. Other crossing enhancements may be considered as well.
- The street must be wide enough to accommodate a median. Excessive lane shifting to fit a median barrier is not desired. In addition, there must be enough lane width to accommodate truck and emergency vehicular turning movements.

Traffic Diversion: Diverter Medians



Corner Curb Radius

Design Considerations

The effective turning radius (rather than the actual curb radius), should always be used to determine the ability of vehicles to negotiate a turn. Determination of the design vehicle should consider and balance the needs of the various users of a street - from pedestrians and bicyclists to emergency vehicles and large trucks - considering the volume and frequency of these various users.

The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. The designer should distinguish between "designing for" and "accommodating" the needs of large vehicles, which may not require design modifications.

A typical curb radius of 20 feet or less should be used wherever possible including where:

- There are higher pedestrian volumes
- There are low volumes of large vehicles
- Bicycle and parking lanes create a large effective radius

Factors that may affect the curb radii must be taken into consideration:

- The street type
- The angle of the intersection
- Curb bulbs
- The number and width of receiving lanes
- Large vehicles
- Effective turning radius

Where there are high volumes of large vehicles making turns inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area.

See the table below for guidance on the location and design vehicle for different street types.

Vehicle Type	Location	Design Vehicle	Potentially Allowable Exceptions
Transit Vehicles[1]	Corners with turning buses on bus routes or where buses start run or return to base. In locations where traffic volumes influence effective turning radii with lane encroachment.	CITY-BUS or WB-40 A-BUS, articulated bus	Turn partially from adjacent lane
	Corners with potential occasional turning buses due to detours	CITY-BUS or WB-40	Turn partially from adjacent lane
Emergency[2] Vehicles	All intersections	Fire Vehicle Hook and Ladder with Outriggers	Turn partially from adjacent lane; turn fully from adjacent lane, turn from opposite lane, turn into opposite lane
Freight Vehicles[3]	Per Comprehensive Plan	WB-50	Turn partially from adjacent lane

1 On corners along bus routes, where buses may have to make occasional detours, turns should

accommodate a transit vehicle using the entire roadway, similar to an emergency vehicle. Other transit vehicles, such as articulated buses may have a larger design vehicle.

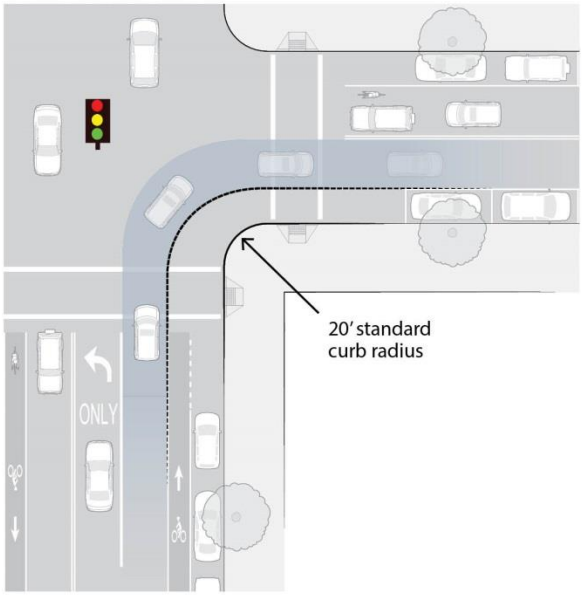
[2] Because emergency vehicles have sirens and flashing lights and other vehicles must pull over, they can typically use the full right-of-way without encountering opposing vehicles. On busier streets, the ability of emergency vehicles to swing wide may be limited by queued traffic which may not be able to pull over.

[3] Freight corridors are streets that are designated on page T-11a in the Transportation Chapter of the Comprehensive Plan. Freight corridors should be designed for WB-50 trucks. Larger WB-60 trucks may also be present on City streets, particularly on designated state highways, truck routes and in industrial areas. These may need to be accommodated in certain instances, though they are not practical in most of Bellingham.

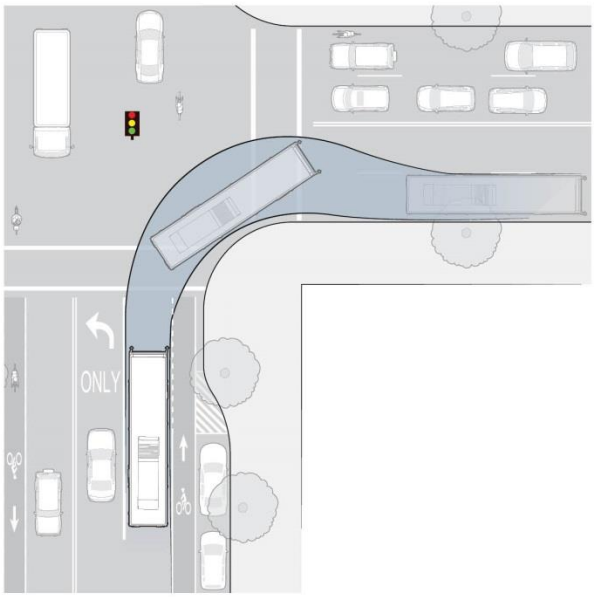
A variety of strategies can be used to maximize pedestrian safety while accommodating large vehicles including:

- Adding parking and/or bicycle lanes to increase the effective radius of the corner
- Varying the actual curb radius (i.e. compound curb radii) over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn. Compound radii effectively shorten crossing distances and make pedestrians visible while accommodating larger vehicle turns; because they allow more sweeping turns and they do not slow turning vehicles.
- Painting a median: Where there is sufficient lane width on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.
- Restricting access: Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network.
- Installing advance stop lines on the destination street to increase the space available for large vehicles to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.

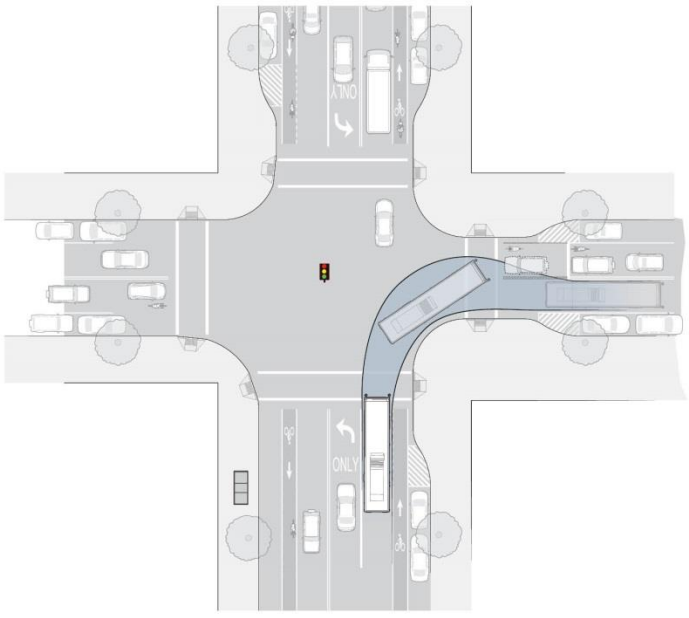
Curb Radius



Typical curb radius at signalized intersection



4-lane signalized intersection
Bus turns into inside lane



2-lane signalized intersection
recessed stop bar accommodates bus right-turn movements

Roundabouts

Design Considerations

Roundabouts should feature the following elements:

- Splitter islands at all ingress and egress points that provide a crossing island for pedestrians, breaking up the crossing into two separate movements. Splitter islands should have a minimum width of 6 feet, and preferably 8 feet from curb face to curb face.
- Marked crosswalk through the center of the splitter island set back one car length (20 to 25 feet) from the entry point into the roundabout, allowing motorists to focus on yielding to pedestrians in crosswalk before negotiating entry into roundabout traffic while also not forcing pedestrians too far out of direction. Sight distances should be maintained to the left as the motorist enters the roundabout so that motorists are aware of vehicles and bicycles in the roundabout, as well as to the right as motorists are exiting the roundabout so they can see pedestrians in the marked crosswalk.
- Deflection that encourages slow traffic speeds, but allows for movement of larger vehicles.
- A landscaped visual obstruction in the central island, which obscures the driver's view of the road ahead, to discourage users from entering the roundabout at high speeds.

Roundabouts can be more complex than standard intersections for persons with disabilities, particularly the visually impaired. There are several treatments that should be incorporated to mitigate these challenges, including:

- The draft PROWAG (not adopted) requires detectable warning strips at all entry and exit points, including splitter island refuges.
- Setting sidewalks back from the edge of the circular roadway by at least 5 feet so that visually impaired can more clearly identify and follow designated crossing points.
- Building the roundabout to a design speed of 20 mph or less.
- The draft PROWAG requires accessible pedestrian signals to be installed at all crosswalks across any roundabout approach with two or more lanes in one direction. The PROWAG requirement does not specify the type of signal except that it must be accessible, including a locator tone at the pushbutton, with audible and vibrotactile indications of the pedestrian walk interval.
- Signage indicating the presence of the pedestrian crossing should be used to remind drivers that while they are only required to yield to traffic within the roundabout, they are required to stop for pedestrians that are in the crosswalk.

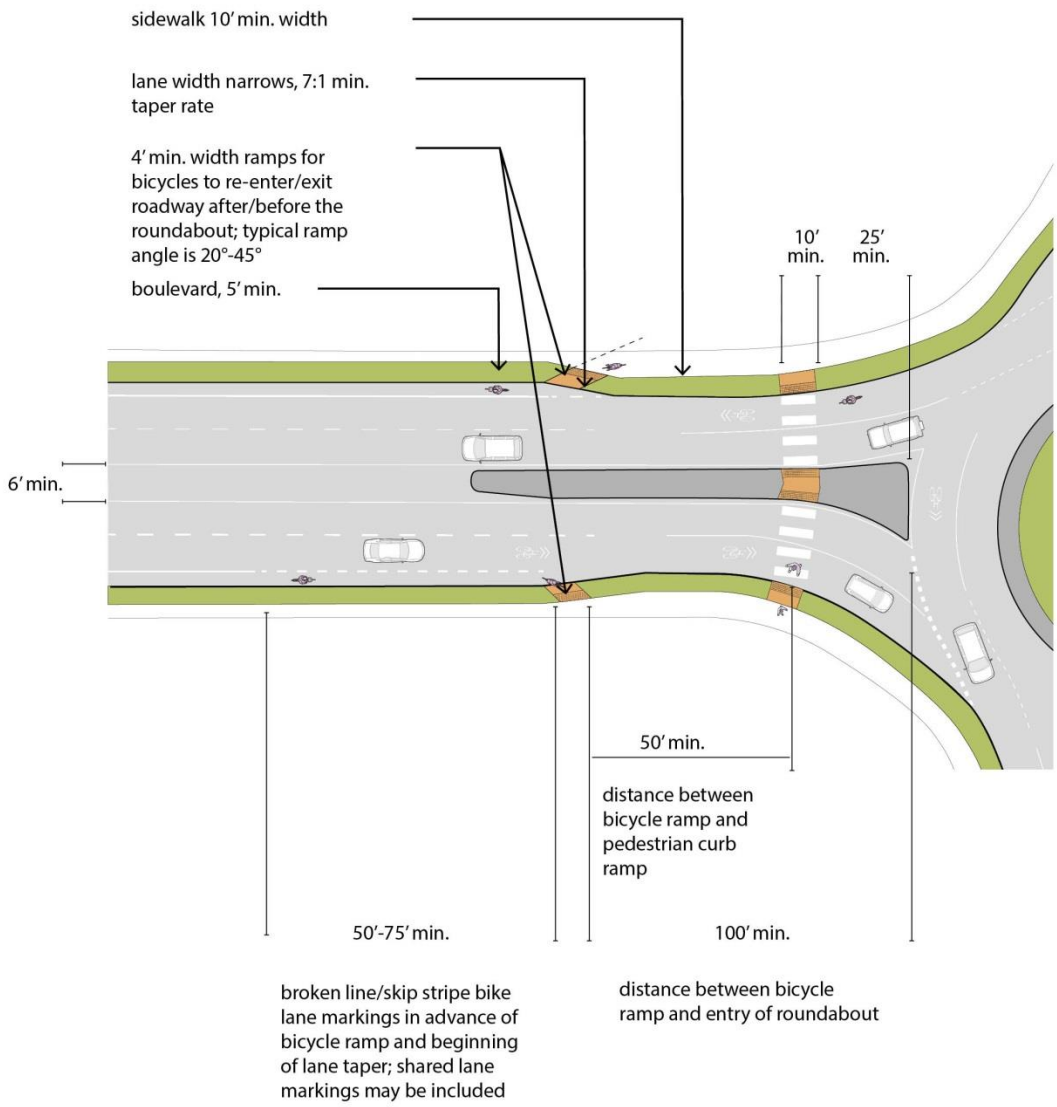
Other Design Considerations

- Continuing bicycle lanes through roundabouts has not been shown to improve safety. Rather, bicycle lanes should terminate in advance of crosswalks at roundabouts, providing sufficient space for bicyclists to merge with motor vehicles. Alternatively, bicycles may be accommodated on sidewalks. The AASHTO *Guide for the Development of Bicycle Facilities* provides detailed design guidance for both options.
- Ramps, angled between 20 and 45 degrees, should be provided 50 feet before and 50 after the pedestrian crossing of the splitter island, allowing bicyclist to exit before or reenter the roadway after the roundabout.
- Broken line bicycle lane markings should be provided 50 to 75 feet in advance of the ramps; shared lane markings should also be included. Signage to warn pedestrians that bikes may be joining them on the sidewalk may be needed.
- For a typical single-lane roundabout at a four-way intersection the center island will more or less

be a circle that can vary in size from 12 feet to 90 feet to fit a wide range of intersections, achieve desired deflection, and accommodate through movements and different turn movements by various design vehicles. For intersections with an odd number of approaches or offset approaches the shape of the center island should be modified to achieve appropriate deflection.

- Including a truck apron (a paved, load-bearing area) around the edge of the central island is the typical approach for accommodating larger design vehicles. The truck apron is often paved with a fairly rough texture, and raised enough to discourage encroachment by smaller high-speed passenger cars and achieve desired deflection. The truck apron should have a three inch high rolled curb.
- Restricting or not accommodating turn movements by trucks and articulated busses may allow the construction of a smaller roundabout without the acquisition of right-of-way and with all the benefits of roundabouts at the cost of forcing the occasional large truck to take an alternative route. Roundabouts may be constructed to accommodate through movements by large trucks, and restrict turn movements by these vehicles while accommodating turn movements by single unit trucks and transit vehicles.
- Signing and marking of roundabouts should be in compliance with the current version of the MUTCD, however roundabouts should be designed so their design and function are self-explanatory, and the need for signing is minimal. NCHRP Report 672, Roundabouts: An Informational Guide, Second Edition 2010 provides detailed design guidance on roundabouts.
- If traffic analysis determines that the capacity of a proposed single-lane roundabout is exceeded during one or two short periods during the day, consideration should be given to metering the roundabout rather than constructing a larger multi-lane roundabout. The result is a smaller, slower roundabout that is more appropriate for all users for most of the day.
- The area at the base of the ramp closest to the curb may not get swept very well by street sweepers and may require supplemental sweeping.

Bicycle and Pedestrian Accommodation at Roundabouts



Rectangular Rapid Flashing Beacons (RRFB)

Design Considerations

- RRFBs should be accompanied by pedestrian crossing signs both at the signal and in advance of the crosswalk location. The assembly approaching the crossing should include a plaque that says AHEAD. The assembly at the location should include a downward arrow plaque placed at the crosswalk location.
- A STOP HERE FOR PEDESTRIANS sign with advanced stop bars should be placed a minimum 50 ft. from the crosswalk and should be considered where RRFBs are installed. A Pedestrian Crossing sign with an AHEAD or a distance supplemental plaque may be used in conjunction with and in advance of a MUTCD R1-5b/R1-5c sign.
- Beacons must be placed on either side of roadway and visible from both directions of traffic. If a median exists at the crossing location, a third beacon may be placed in the median, which studies show, significantly increases motorist yield rates.
- In order to encourage pedestrians to enter crosswalk while the RRFB is active, passive or active actuation should trigger an immediate response.

HAWK Signal

Design Considerations

HAWK signals must be accompanied by the following crossing treatments:

- High-visibility crosswalk
- Advanced stop bar placed 50 feet from crosswalk
- MUTCD R10-23 “Crosswalk Stop on Red” signs mounted both on the mast arm and the supporting pole.

The HAWK Signal indicates a preferred crossing location and thus does not improve crossing at all quadrants of an intersection as a signalized intersection would. It does not improve movement through the intersection for cyclists in on-street lanes as they are subject to motor vehicle indications.

Bicycle Activated Signal Push Button

Signals specifically intended for pedestrian and bicycle street crossings such as midblock or HAWK signals may require special activation. Bicycle activated push buttons are a separate pushbutton located along the curb or location easily accessed by bicyclists. Bicycle activated pushbuttons allow bicyclists to activate the signal without having to change their course of travel, dismount or detour onto the sidewalk to use a pedestrian pushbutton. This improves compliance and efficacy of the signal. The disadvantage of push buttons is that they require bicyclists to come to a full stop. They also make it challenging for bicyclists wanting to make a left turn. The following design considerations should be taken into account:

Signals specifically intended for pedestrian and bicycle street crossings such as midblock or HAWK signals may require push buttons if passive detection is not possible. When a signal is activated by push buttons, separate push buttons should be provided for bicyclists. Bicycle activated push buttons should be located along the curb or location easily accessed by bicyclists. Bicycle activated push buttons allow bicyclists to activate the signal without having to change their course of travel, dismount or detour onto the sidewalk to use a pedestrian push button. This improves compliance and efficacy of the signal. Push buttons can present challenges to bicyclists wanting to make a left turn. The following design considerations should be taken into account:

- Place push button within reach of the curb but with appropriate setbacks to avoid being hit by passing motor vehicles.
- Push buttons work well on streets without parking or where there are parking restrictions at the intersection
- Use a large button for easy actuation by bicyclists
- Placement of the pushbutton assembly and bicycle queuing should take right turning motor vehicles into consideration.

Bicycle Parking

Design Considerations

- Bicycle racks must support the bicycle in at least two places to prevent it from falling over and allow locking of the frame and one or both wheels with a standard U-lock.
- Racks must be securely anchored to the ground and resist cutting, rusting and bending or deformation.
- A minimum 2 feet of clearance around the rack should be provided to allow users to access and securely lock the bicycle from the side. Adequate end clearance should also be provided to allow users to enter and exit the rack area.
- Bicycle racks must not interfere with bus loading/unloading areas.
- Generally, bicycle racks should be placed within the furniture or building frontage zones, where there is adequate room for a bicycle to be locked up without protruding into the pedestrian zone or the clear zone behind the curb.
- Bicycle racks should be placed on concrete or other similarly paved surface. Racks should not be placed on a soft surface planting strip.
- In-street bicycle parking (i.e. corrals) may be considered where there is on-street parking and high bicycle parking demand and limited other locations for public and private bike parking.
- In-street bicycle corrals require special consideration for street sweeping and snow removal and storage. Maintenance agreements may be required for in-street bicycle parking facilities to

ensure they are cleared of snow and debris. Bus stops, fire hydrants, turning bus movements, utility covers and sewer valves, parking meters, stormwater drainage, and adjacent landscaping obstacles should be considered when identifying a location for an in-street bicycle corral.

- Further guidance on bicycle parking can be found in the APBP Bicycle Parking Guidelines.

Travel Lanes

Design Considerations

Considerations Regarding Lane Widths

- Narrowing lane widths and reclaiming space once dedicated for automobile traffic is an important tool in equitably dividing roadway space. Studies show that narrower lane widths have no measurable impact on capacity; however they may result in a reduction of average travel speeds by 1-3 mph. In response to specific conditions on a given roadway, lane widths different from those prescribed below may be required.
- During reconstruction projects, space reallocated from vehicle lanes can be used to widen sidewalks, create curb extensions, plant street trees or greenscape elements, install street furniture, implement bicycle lanes or cycle tracks, or provide on-street parking lanes through a lane diet.
- During resurfacing or restriping projects, installing minimum lane widths can provide additional space to install bicycle lanes or cycle tracks. On roadways with on-street parking, it is advantageous to provide additional width to either the parking lane or the bicycle lane, particularly in areas with high parking turnover, to reduce the likelihood that a bicyclist will be struck by a motorist opening a car door.
- A capacity analysis is often necessary to evaluate the impacts of a proposed design on the operation of the roadway or the adjacent road network.

Multiple Minimums

The cumulative relationship between lanes and the sidewalk must be taken into account when selecting lane width. In general, multiple minimums should be avoided (e.g. minimum curb lane, bike lane and parking lane). The lane accommodating the most vulnerable mode should not be minimized.

Bus Lane

- A wider bus lane (14 – 16 feet) is preferred for shared bus and bicycle lane in order to allow for passing while staying in lane and to maximize bicyclists' comfort and safety.

Travel Lanes

- Wider lanes (11-12 feet) are appropriate in locations with high volumes of heavy vehicles (> 8%) or designated transit routes.
- Travel lanes immediately adjacent to on-street parking should provide a minimum combined parking and travel lane width of 18 feet.

Bicycle Lanes

- The preferred width for bicycle lanes is 6 ft. in areas with high volumes of vehicles.
- Wider bicycle lanes (6 -7 feet) are preferred in locations with heavy parking turnover.
- Bicycle lanes 4 feet in width may be considered on roadways when not adjacent to on-street

parking, or where no vertical curb is present.

Parking Lanes

- In areas of low parking turnover a 7 feet parking lane may be appropriate. In areas with high parking turnover and high volumes of bicyclists, an 8 or 9 ft. parking lane may be appropriate.
- For lanes with peak hour parking restrictions, 12 feet is the minimum width to accommodate shared use by parked vehicle and bicycles during off-peak times.

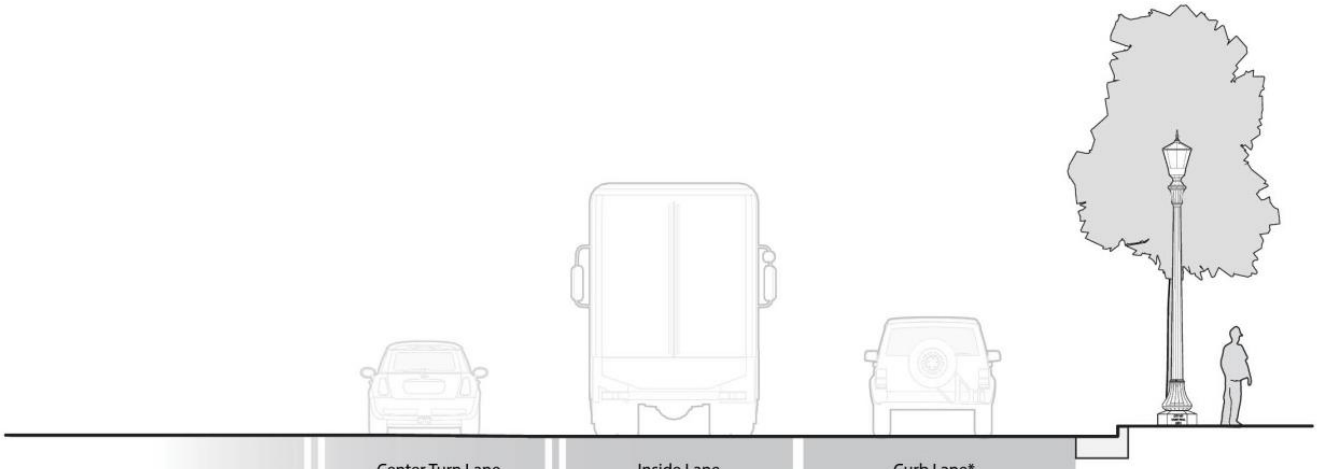
One-way vs. two-way streets

One-way streets are configured to allow for one direction of travel while two-way streets allow for two directions of travel. One-way streets may be configured to allow for the contra flow of certain vehicles; usually transit or bicycles. One-way and two-way streets each provide advantages and disadvantages in terms of traffic operations, access, and pedestrian safety. In some cases existing one-way or two-way configurations may be reevaluated as part of an overall strategy to optimize street space and better accommodate all travel modes.

In terms of pedestrian safety, there are benefits of both one-way and two-way streets so the decision to convert a one-way street to two-way (or vice versa) is context- sensitive. Studies have shown that converting two-way streets to one-way generally results in fewer crashes involving pedestrians because there are fewer turning movements. However, one-way streets tend to encourage higher motor vehicle speeds, and may increase vehicular traffic if motorists are required to circle around to access destinations in a dense, urban environment. Two-way streets may reduce vehicle speeds due to increased turning movements and increased perceived friction along the roadway. In addition, many one-way streets have multiple lanes, which may create a multiple-threat crash condition for pedestrians crossing the road.

Converting one-way streets to two-way streets may be an effective strategy for managing traffic patterns, reducing motor vehicle speeds, improving access to businesses and changing the character of a neighborhood from being a ‘pass through’ to a ‘destination’ for motorists. Many communities have found that local businesses benefit from on-way to two-way conversions because access is improved and motorists are more likely to stop and patronize businesses. Conversely, conversion of a two way street to a one-way street may improve traffic operations while providing space for other street zone elements. If a street is converted to a one-way, it should be evaluated to see if additional changes should be made. Potential changes include lane diets, road diets, curb bulbs, turning radius reductions and signal timing that discourages higher vehicle speeds. Traffic circulation in the surrounding area must be carefully considered before converting streets to one-way or two-way.

Travel Lane General Guidance



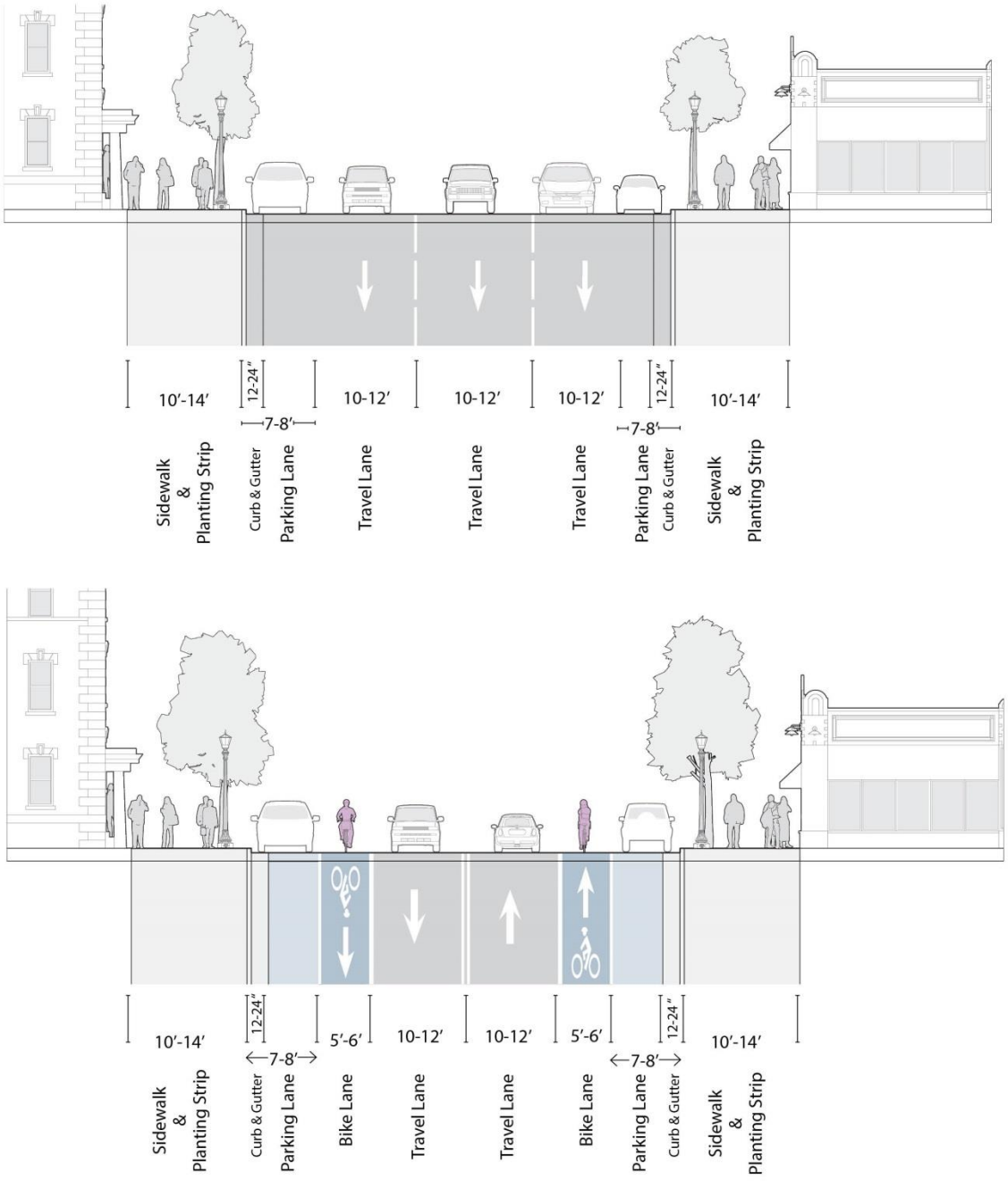
	Center Turn Lane	Inside Lane	Curb Lane*
RANGE	10′ - 12′	10′ -12′	10′- 13′
BASELINE	11′	11′	11′
CONDITIONS FOR WIDENING			
Bus route	✓		✓
Bus route + bike lane			✓
Truck route	✓		✓
Frequent left turns	✓		
Adjacent to bike lane			✓
Absence of inside lane	✓		✓
Two-way roadway			✓
CONDITIONS FOR NARROWING			
Manage speeds	✓	✓	✓
ADT below 12,000	✓	✓	✓
Infrequent left turns	✓		
REGARDING RANGES			

The cumulative relationship between lanes must be taken into account when selecting land width.
In general, multiple minimums should be avoided (i.e. min. center turn lane, inside lane and curb lane).

*Curb Lane does not include gutter pan

Parking Lane
RANGE width 7′ - 8′
BASELINE width 8′ (includes gutter pan)
CONDITION for 8′- Commerical street with high turnover
CONDITION for 7′- Residential street with low turnover

One-Way/Two-Way Conversions
Directional Conversions



Appendix F: Wayfinding Protocol and Best Practices

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Signing of the Bicycle Network 270

This appendix provides guidance for establishing a comprehensive bicycle wayfinding system for on-street routes and trails. The guidance includes current practices from federal manuals, best practices from two model cities and additional information not found in federal manuals on how to design, plan and implement a wayfinding system for bicycles within Bellingham.

Introduction

Wayfinding signs provide basic information about distances, directions and destinations, helping bicyclists plan and navigate their travel routes. Bicycle signage can help promote the use of established bike routes and can encourage bicycling on designated corridors. The presence of wayfinding and other types of signage sends a visual cue to all road users that bicyclists may be present, potentially increasing driver awareness of bicyclists. Signage is an important part of creating a transportation system that supports bicycle use.

This document provides recommendations for sign design and placement based on national guidelines in the current Manual on Uniform Traffic Control Devices (MUTCD) and on best practices from other U.S. cities.

Current Practice

The City of Bellingham Parks and Recreation Department currently places trail markers and directional signs on bollards along the Greenway Trail system. The signs provide guidance to trail users on the direction and distance to important destinations and helps trail users stay on the intended trail. The size and location of the signs indicates that they were primarily designed for use by pedestrians and slower bike movement.

Existing Greenway system signs

The Parks and Recreation Department has developed design standards for the Greenway Trail wayfinding signs and their content. The following guidelines are from the *Design Standards for Park and Trail Development* November 2011:

Directional Signs –General

1. Directional signs shall be placed on bollards at intersections with main city streets, trail intersections, or other locations where trail clarification is needed.
2. Directional signs will list the name of the Greenway Trail system; followed by, when appropriate, a name associated with the location of the sign (e.g. Prospect Street, Joe's Garden, Birchwood Park, etc.); followed by, when appropriate, the name and mileage to destination points; followed by directional arrows. Some bollards may have more than one directional sign listing additional information.
3. Greenway Trail system names shall be consistent through the length of the trail and its connectors and be based on common name usage. Examples of system names are: Whatcom Creek Greenway, Railroad Trail, Bay-to-Baker Trail, Interurban Greenway, Coast Millennium Trail, etc.
4. At termination points in areas of future development, temporary signs shall be placed stating: "Trail Ends. For future development information, contact Bellingham Parks and Recreation at (list phone number here) or at (list website here)".
5. Directional signs shall be made of non-rusting metal and fasteners, and be consistent in style.
6. Sign colors shall be green for background and white for lettering.

Greenway Trail Signs

1. Greenway Trail signs shall be placed on bollards at intersections with main city streets, major trail intersections and trailheads.
2. Signs will state the following information: [Greenways logo], “Bellingham Parks and Recreation”, and link to the City website.
3. Signs shall be provided by the Parks Department.

Directional Signs – Specifications

1. Signs shall be street sign material, aluminum blank, rounded corners. Reference Section 9-28.8 of the WSDOT Standard Specifications for sign thickness. Note: The rounded corner will vary depending on the manufacturer. Sign images or templates may need to be adjusted accordingly.
2. Each sign shall have (4) 3/16" holes on each blank, one in each corner, 1/4" distance from each corner.
3. Dimensions:
   5.625” x 4” Directional Signs (words)
   4” x 2” arrows (one-way, two-way)
   4” x 4” arrow (up and to left or right)
4. Lettering: Three lines maximum.
5. Color: Background is Standard Dark Green. Letter or arrows shall be white. 1/8” Borders shall be white. Reflective material can be used but is not required.
6. Hardware: #6 x3/4” Stainless Steel, #1 square head (tamper proof), pan head screws. Use #1 square drive (available at Hardware Sales and other locations)

The recommendations in this appendix take into consideration the existing Greenway Trail Sign design standards and outlines implementation of a separate bicycle wayfinding system. The bicycle wayfinding system is intended to supplement and integrate with the Parks Greenway Trail sign system. The bicycle wayfinding system can help guide bicyclists along on-street linkages between trail segments, identify trail entrances, and determine which segments of the Greenway Trail system are accessible by bicycle. The bicycle wayfinding system discussed here should use the same destination and directional information as the Greenway Trail signs.

Existing Greenway system signs

Policy and Regulatory Framework

The following federal manuals provide guidance on specific aspects of bicycle wayfinding but do not provide information on how to implement a wayfinding system within a municipality. The following section outlines the guidance available in each manual.

Manual on Uniform Traffic Control Devices (MUTCD) Guidelines

The Manual on Uniform Traffic Control Devices (MUTCD 2009 edition) includes standards for:

- Sign design for directional bicycle signs.
- Sign installation such as minimum height of signs above ground and horizontal placement from edge of the roadway or trail.
- Symbols and appropriate abbreviations for destination names.

The MUTCD introduces sign types and provides additional right-of-way placement guidelines for directional signs.

The AASHTO Guide for the Planning, Design and Operation of Bicycle Facilities

The American Association of State Highway and Transportation Officials (AASHTO) Guide provides supplemental information to the MUTCD. The guide explains the use and benefits of different sign types for bicycle wayfinding. It also provides guidance on where to use signs: on what types of routes and how to place signs at intersections.

Additional Wayfinding Design Guidance

The National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide provides guidance based on current best practices in large cities. It covers types of signs and destinations, pavement markings, typical applications, and design guidance.

Best Practices

Chicago, IL

The City of Chicago has implemented an extensive directional sign system for bicycles using destination-based signage for the on-street bicycle network. The D11-1c and D1-1c series signs were developed by the City of Chicago in an effort to consolidate and reduce the amount of signage required by the 2003 MUTCD for bicycle wayfinding. Both sign types were later incorporated into the 2009 edition of the MUTCD. The D11-1c provides specific destination information, such as "To Evanston" in lieu of the general "BIKE ROUTE" text of the MUTCD's D11-1 sign. This is helpful in distinguishing different routes in a dense bicycle route network. The D11-1c is used by the City of Chicago both on the near and far side of some intersections, to help bicyclists decide what route to take and then to confirm the route after a choice has been made.

Similarly, the D1-1c consolidates direction, destination and distance information onto one smaller sign. Several D1-1c signs can be installed together at the approach to a decision point to provide information on multiple routes.

Above left: The D11-1 Bike Route sign. Above right: The D1-1c sign consolidates direction, destination and distance information onto one sign.

D1-1c series signs preceding an intersecting signed bike route in Chicago, IL.

Seattle, WA

The City of Seattle also has a directional sign system for bicycles. Modeled after the Chicago system, the Seattle system also uses the D11-1c and D1-1c series of signs. Because Seattle has an extensive off-street trail system, additional signs were required to distinguish named routes. For this reason, the M1-8 series (in the image to the right this is the "Burke Gilman Trail" sign) of signs are used in Seattle along named routes, often installed with supplementary signs from the M2, M3, M4, M5 and M6 series which are cardinal direction signs, arrow signs and supplemental guidance signs. M1 signs are also installed at decision points on trails with D1-1c or D11-1c signs (see figure).

In order to include the colloquial route name on the M1-8a sign, adjustments were made to the standard sign. The route number was replaced with route name within the main body of the sign. The space at the top of the sign was used for a logo. In the example a pedestrian and bicycle logo are used but this could be

Decision and named route signs from Seattle. On trails, both sign types are used to mark the route and provide direction to destinations on and off the trail.

any logo including trail branding. This complete sign system helps bicyclists get to destinations throughout the city and provides guidance to and along named bicycle routes including trails.

Sign Type Recommendations

Bicycle route signs are signs that guide bicyclists along preferred, designated routes to destinations throughout the city and region. Bicycle routes may consist of on-street facilities and off-street trails.

The bicycle route sign system is designed for bicyclists who are familiar with the city's landmarks and districts, but unfamiliar with the preferred route to their intended destination(s). To assist the bicyclist, the system should provide three general kinds of guidance:

1. **Named Route Signs (M1):** along designated named routes
2. **Decision and Spot Decision Signs (D1):** at decision points where two or more routes intersect or where guidance is required
3. **Route Designation or Confirmation Signs (D11):** to confirm a route choice and provide guidance at a turn in a route

The Bellingham Bicycle Network may consist of two general categories of signed routes:

1. Named Routes:
    a. On-street routes that connect between trails (Example: on-street trail extensions or routes that combine trail segments with on-street segments, such as Boulevard Trail Connector)
    b. Cross town routes (Example: Illinois Street Bicycle Boulevard)
    c. Trails (Example: Railroad Trail, Connelly Creek Trail)

2. Unnamed Network Routes:
    a. Routes between destinations such as transit, schools, business districts, major employment centers, or major trail access points

The two route types will work in unison to provide bicyclists with a navigable system along designated bicycle routes.

Named Route Signs (M1-8 series)

M1-8 or M1-8a signs can be installed along named on-road routes and trails to assist users in wayfinding along named routes or to confirm that the user is on the desired route. The M1-8 series signs are small in size and are a cost effective way to mark bicycle routes. Use M1-8 or M1-8a with supplementary signs such as directional arrows (M5 and M6 series) and the words "North", "South", "East", "West", "To", "End", "Begin", etc. (M3, M4 series). If a route already has a colloquial name, the sign should use the name rather than a route number, to avoid confusion. Route names are encouraged because they can often provide additional contextual information such as

2009 MUTCD Figure 9B-4

destination information, i.e. Illinois Street Bike Route will likely follow Illinois Street. Route numbers do not provide this context and require a bicyclist to use a map to understand where the route goes. In areas where signed bike routes are dense, the use of route numbers can be confusing if a bicyclist has to ride on several numbered routes to get to a particular destination. Numbered routes can work well; however, for cross jurisdiction travel, on routes that do not already have a colloquial name or on routes with many turns where a colloquial name does not exist.

Sign Specs: Size: 12" x 18", white on green and retro-reflective. The letters on signs should be 2" to 1.5" high for best visibility.

Sign Placement in the Right-of-Way:

On-trail M1-8 or M1-8a signs may be used:

1. At trail entrances and exits.
2. 30'-50' after every controlled intersection or street crossing.
3. Every ¼ mile to mile where there is a gap in signage. Spacing will depend on the density of the street network.
4. At transitional locations (such as trail-to-road transitions) or in cases where bicyclists will be transitioning to sidewalks.

A modified M1-8a sign at the entrance to a multi-use trail in Seattle, WA.

On-street M1-8 or M1-8a signs may be placed:

1. 30+ feet before a turn with an M5 or M6 arrow (follow decision sign guidelines for placement at the approach to an intersection).
2. 30-60 feet after a turn to confirm the route.
3. At decision points where needed.
4. Within proximity to a named route (within a few blocks), similar to a spot sign. Named route signs can be used in conjunction with a supplementary sign such as an arrow and "To". When farther than a few blocks off the designated route, decision signs can be used to direct users to named route.

Sign placement on post: M1-8 or M1-8a signs can be mounted on the same post, below regulatory, warning or destination signs.

1. M1-8 or M1-8a signs may be placed back-to-back with one another or with regulatory or warning signs.
2. When multiple M1-8 or M1-8a signs are placed on the same post, they can be stacked depending on height and visibility. The current route sign should be at the top.

Decision Signs (D1-1c series)

Decision signs mark decision points where two or more bicycle routes intersect. Decision signs are installed on the approach to an intersection or before a trail head. On Greenways these signs should contain the same information as the Greenway directional signs. Signs include direction, destination and distance (in tenths of miles) information.

An example D1-1c sign, from the 2009 MUTCD

Sign Placement in the Right-of-Way: Place 30+ feet on the approach to a decision point or intersection of another signed bicycle route. To allow for comfortable left turns, place the decision sign at the appropriate distance from the intersection based on the number of lanes that a bicyclist must merge across:

- No merge: 30 feet
- One lane merge: 100 feet
- Two lane merge: 200 feet

Provide enough distance between the sign and the intersection to allow for comfortable merging across travel lanes.

Sign Specs: 36” x 6”, white on green and retro-reflective.

Sign placement on post: Directional sign organization at a given decision point will be based on the following guidelines:

1. Install D1-1c signs on the approach to intersections where signed routes intersect and where routes lead directly to the intended destination. The bicycle route system can connect business districts, schools, parks, neighborhoods and other important locations that are *directly* on designated routes.

D1-1c sign assembly on a trail, Seattle WA

2. The number of destinations provided on a given post is not to exceed three. This allows for proper vertical clearance to be maintained. Three signs per post is also about the maximum amount of information that can be read by a passing bicyclist.

3. The number of signs on a given post that point in the same direction is not to exceed two. This guideline is based on the fact that D1-1 signs will be installed at intersecting bike routes, and there should be at least one sign indicating destinations in each direction.

4. The sign with the nearest destination should go at the top of the assembly with the most distant destination at the bottom. If destinations are equal in distance, the sign with an up arrow should be placed on top. This arrangement allows for new destinations to be added to the bottom as routes pass the destinations at the top of the sign.

5. When directional signs are used with named route signs, both may be placed on the same sign post, with the named route sign (e.g., M1-8a and supplementary signs) below the D1-1c sign(s). Placing multiple sign types on one post will reduce the number of posts used as well as provide all necessary information for bicyclists in one location.

Sign Content: Destination and directional information will be unique on most signs. Determining destinations is important to the function of the network. Distance information will be determined by the spacing of decision points and destination locations.

1. Identify and Rank Destinations:

    - Develop a list of all destinations and rank them in a hierarchy. For example:
        - **Primary**: Trails, business districts, neighborhoods, regional parks
        - **Secondary**: Institutions, transit stations, other municipalities
        - **Tertiary**: Other public institutions/facilities, airport, designated bicycle streets
    - The ranking will help determine the sign content at a given decision point within the network.

2. Provide distance measurements in tenth of a mile increment such as 4.3 and 1.2. This allows for detailed destination information in denser urban areas. If mileage on a sign is a whole number, do not include the tenth mile placeholder. For example use “4” rather than “4.0.”
3. If a bike route terminates at a location where there is no destination use the name of the terminal perpendicular street or bike route as the destination.

Directional Spot Signs (D1-1b series)

Example D1-1b sign, from the 2009 MUTCD Figure 9B-4

Spot signs are similar to directional signs but provide direction and destination information only. Use D1-1b signs when a destination is off the signed route or when getting to the route requires additional wayfinding. Spot signs may include the words “To” and “Via” where

necessary and may vary in width to accommodate limited space in the right of way. Spot signs do not need to be followed by a confirmation sign.

Spot sign along bicycle route in Seattle.

Spot signs may be used to provide:

1. Guidance to signed bicycle routes from adjacent roadways, side paths etc., or access to important facilities such as a trail.

2. Guidance from signed bicycle routes when important destinations are a short distance off the signed route. In such cases, a directional sign may indicate the best access point from the signed route to the destination. Use additional spot signs to guide bicyclists to that destination.

Route Designation, Turn and Confirmation Signs (D11-1c series)

Example of D11-1c, from the 2009 MUTCD Figure 9B-4

These signs confirm that a bicyclist is on the correct route. The sign is used in two ways:

1. Route Confirmation Sign: Signs are placed on the far side of an intersection and at intervals along the route to confirm that the bicyclist is still on the correct route.

2. Turn Sign: At turns in a route with an arrow (M5 or M6 series sign). In this case D11-1c and an arrow sign are placed on the approach to an intersection. Confirmation signs will include destination information, generally with the word "To." When a confirmation sign is used on a named route, an M1-8 or M1-8a sign may be placed below the confirmation sign.

Sign Specs: 24" x 18", white on green and retro-reflective.

Sign Assemblies

Named route signs and directional signs can be placed together on the same posts. This can occur under the following conditions:

- Along a named route where there is a decision point.
- At a decision point along a route that is leading to a named route. In these instances it might be an on-street route that is close to or intersecting a named route (see photo example).

Recommended Sign Placement in Right-of-Way:

Turn Signs:

Follow placement guidelines for decision signs.

Confirmation Signs:

1. 30-60 feet on the far side of the intersection after decision points, preferably within sight of the decision sign.
2. 30-60 feet after stop controlled or signalized intersections.
3. Every ¼ mile to mile of unsigned segment along designated on-street bicycle routes, depending on the density of the street grid (places with longer blocks and fewer streets need fewer signs).

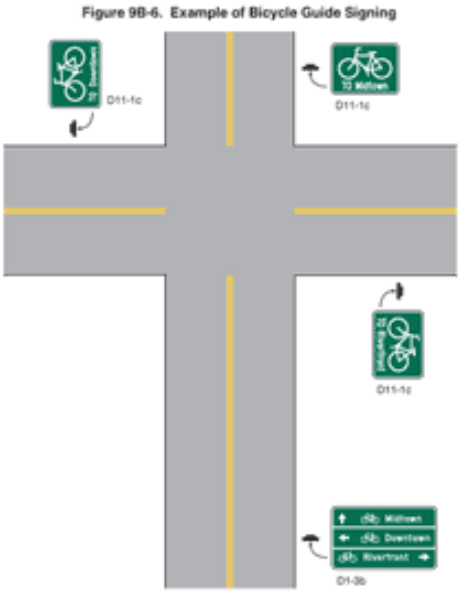


Figure 9B-6 from the 2009 MUTCD provides general lateral placement of D1-1 and D11-1 signs at an intersection.

Sign content:

If there are two destinations in one direction, a confirmation sign may include two lines of text. This may require reduction of the bicycle symbol.

Supplemental Signs

Supplemental signs provide additional information to D11-1 or M1 series signs. Cardinal direction signs (M3 series) and alternate route signs (M4 series) are placed above the M1 series. Arrow signs in the M5 and M6 series are placed below D11-1 and M1 signs to provide directional information.

Supplemental signs, from the 2009 MUTCD Figure 9B-4

General Sign Components

The following guidelines outline general rules for the sign contents:

1. For all signs, use upper and lower case letters.
2. Use Clearview Series C font. This font is approved for use by the Federal Highway Administration. It strikes a balance between visibility and maximum characters per sign.
3. Use two-inch high capital letters. This size is visible from approximately 80 feet away.

4. For destination names that are too long to fit on one line, use intuitive abbreviations.
5. Do not use periods in the abbreviations of destination names.
6. Avoid the use of diagonal arrows when possible.
7. Use graffiti film on bicycle route signs that are lower to the ground, particularly on trails. This will increase the longevity of the signs.

Roadway and Shared-use Trail Placement Guidelines

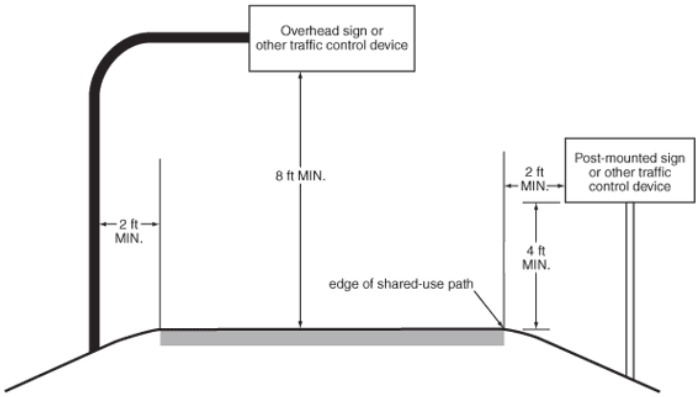
Guidance on signage placement is important to providing a legible sign system. Predictable and uniform placement of directional signs at traffic controlled intersections and at intervals helps to provide proper guidance particularly if a turn in a route is to occur.

Trails

Horizontal, lateral and vertical installation of bicycle signs differs for shared-use trails and roadways. For trails, follow the MUTCD guidelines for lateral and vertical signs placed along shared-use trails:

1. 8 foot minimum vertical clearance
2. 2 foot clearance from edge of trail to edge of sign
3. 4 foot minimum distance between ground and bottom edge of sign

Figure 9B-1. Sign Placement on Shared-Use Paths



Sign placement for trails, from the 2009 MUTCD Figure 9B-1

Roadways

For bicyclists, a good baseline distance required to read a sign and determine an action is 30 feet from the intersection. Additional engineering judgment is required when placing directional signs to allow for visibility of the sign with parking, vegetation and other possible obstructions.

Sign mounting height is also outlined in the MUTCD (Section 2A.18); however, due to speed and sight line differences between bicyclists and motor vehicles, minimum post heights are recommended for bicycle signs.

Mounting height guidance:

1. Sidewalk Clearance: 7 feet of clearance from the bottom of the sign to the ground should be allowed. If there are multiple signs per post, and the lowest sign is lower than 7 feet, the lowest sign cannot stick-out more than 4 inches into the sidewalk. If bicycles use the sidewalk the clearance height should be 8 feet.

2. If there is no sidewalk and few obstructions such as parked cars, optimum vertical height for bicycle signs is 7 feet from the bottom of the sign.

Signing of the Bicycle Network

The Bellingham Bicycle Master Plan outlines a bicycle network that consists of 169 miles of existing and proposed routes on roadways and trails. Wayfinding is an important component of the recommended bicycle network. Wayfinding signs may be used alone, for example on signed routes, or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings).

The implementation of the signage improvements in this Plan could begin sooner or occur independently from the physical network recommendations. For example, on some lower speed/lower volume roadways, the installation of wayfinding signage may precede the striping of bike lanes, and could serve as an interim step toward improving conditions.

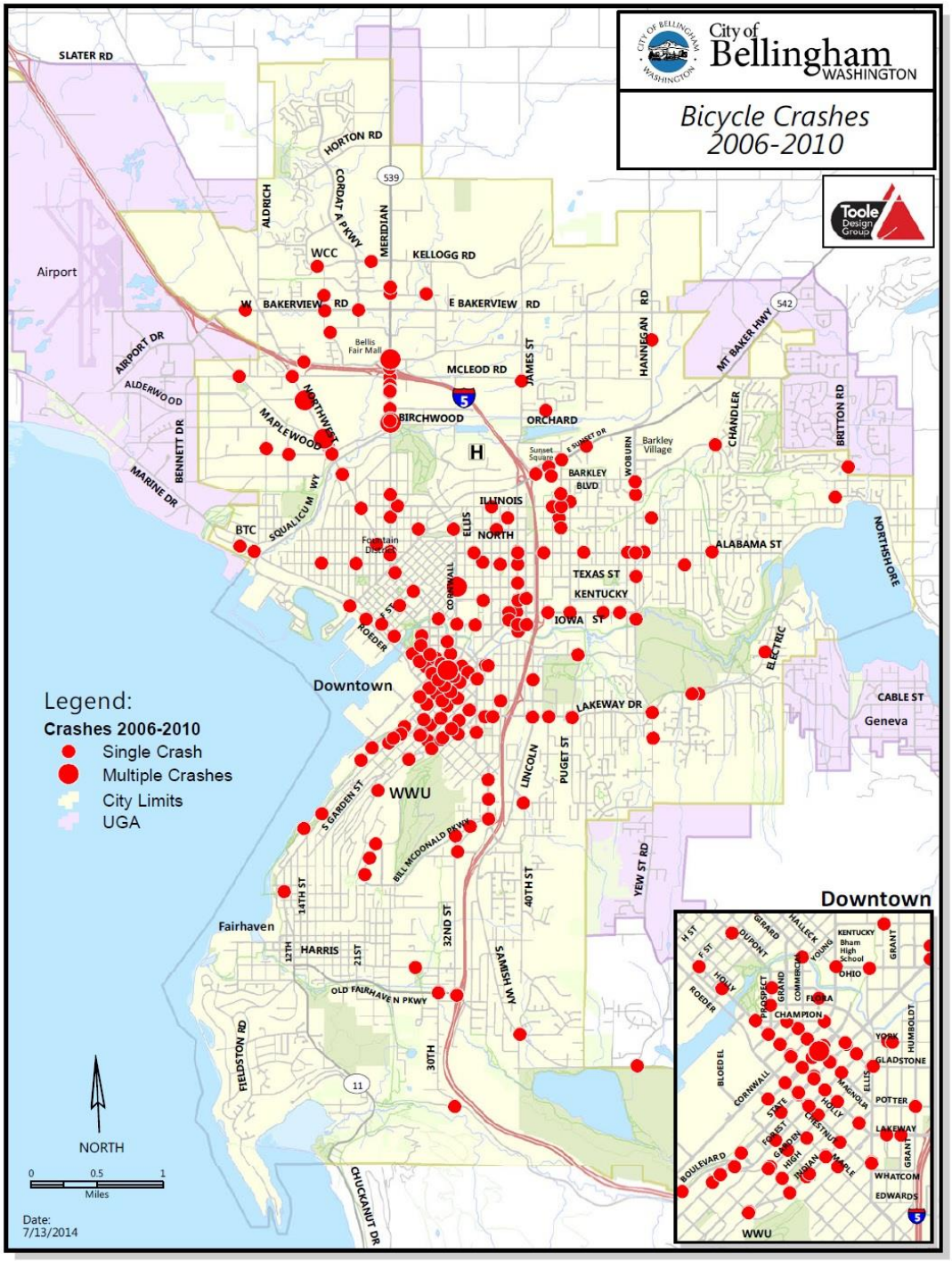
The following criteria can be used to determine when and if it is appropriate to designate a signed route without providing a bike lane or shared lane markings:

- If there are alternate, parallel routes within close proximity (less than a half mile) and featuring bicycle facilities.
- On streets with lower traffic volumes.
- On spur routes (routes that span a relatively short distance and terminate at a specific destination or loop back into the main route).

Appendix G: Crash Data Map

Crash Map

This map represents locations of collisions involving a bicycle between 2006 and 2010. Crash locations were used in the prioritization of bicycle facilities (Chapter 3) as a component of the safety factor.



Appendix H: Annual Bicycle Counts

The City of Bellingham annual bicycle counts provide baseline data to track future growth in bicycle riding city-wide. Two-hour counts are taken during the morning and afternoon peak commute times at 18 different locations around the City. Count results from 2008 to 2013 are detailed in the following table.

Location	*2008 AM*	*2008 PM*	*2009 AM*	*2009 PM*	*2010 AM*	*2010 PM*	*2011 AM*	*2011 PM*	*2012 AM*	*2012 PM*	*2013 AM*	*2013 PM*	*Average*
Northwest and Alderwood	66	63	30	37	40	52	36	46	44	67	38	53	48
Cornwall and Alabama	70	67	62	70	44	52	51	47	70	70	51	44	58
Holly and Railroad	129	272	81	243	102	270	95	224	140	214	63	119	163
South Bay Trail at Wharf	38	152	27	140	40	124	38	121	40	137	27	29	76
Fraser and Racine	34	38	14	22	23	41	18	34	40	28	12	12	26
Railroad Trail behind Barkley Village	49	39	15	41	25	51	17	32	27	49	23	45	34
Lakeway and Grant			38	50	34	65	45	39	34	75	33	48	46
Cordata and Westerly			17	14	18	13	17	26	26	35	24	26	22
E Illinois at Memorial Park			31	28	26	37	39	47	32	62	25	29	36
Dupont and F			73	62	83	82	89	147	106	140	54	78	91
21st and Bill McDonald Pkwy			80	72	88	121	68	102	96	110	59	81	88
James and E Orchard					9	20	12	12	15	14	6	4	12
Meador and James					32	77	49	68	52	87	50	43	57
Lakeway and Lincoln					26	79	35	72	36	54	28	50	48
Samish and Byron					22	40	26	59	33	66	14	49	39
Meridian and Birchwood					28	35	54	47	26	53	36	42	40
12th and Fairhaven Pkwy							55	77	61	82	37	67	63
Ellis and Ohio									77	145	39	52	78