

Banks Bicycle and Pedestrian Plan



Appendices

- A. Title VI Report
- B. Technical Memorandum #1 – Refined Goals, Objectives, and Evaluation Criteria
- C. Technical Memorandum #2 – Baseline Information
- D. Technical Memorandum #3 – Inventory and Evaluation
- E. Technical Memorandum #4 – Crossing Options
- F. Technical Memorandum #5 – Conceptual Bicycle and Pedestrian Route Options
- G. SAC Meeting Summaries
- H. Key Stakeholder Interviews
- I. Open House Summary

Banks Bicycle and Pedestrian Plan



Appendix A Title VI Report



Title VI Report

September 25, 2015

Prepared for: Naomi Zwerdling, ODOT

Prepared by: Stacey Goldstein and Jolynn Becker, City of Banks

OVERVIEW

A report documenting project process and outreach must be prepared for the City of Banks Bicycle and Pedestrian Project (BPP), including process and outreach activities targeted for Title VI populations in the city. In the context of transportation and land use planning in Oregon, Title VI represents a set of federal acts and associated authorities to make planning and decision making more inclusive, as well as to more equitably share the benefits and impacts of projects and programs that receive federal funding. Title VI and associated authorities define protected populations based on demographic characteristics including race/ethnicity, language, age, gender, disability, and income. This report dovetails with Title VI reporting that ODOT must also provide for its planning projects.

The Public Involvement Plan (PIP) for the BPP (August 2015) established the importance of and basis for public involvement in this planning process. The objectives of the PIP were to conduct community-wide outreach and gather input so that the plan would reflect a community vision. The BPP consisted of three primary elements: Stakeholder Advisory Committee (SAC); citizen awareness; and plan hearings and adoption. The citizen awareness element was focused on providing residents and other stakeholders in the city with good access to project information and proceedings, including outreach methods such as a project website, press releases, City media, social networking sites, and public meetings.

The BPP committed to considering all comments made by agency members, stakeholders, citizens, and interest groups during the planning process. The City maintained a record of comments received and how they were addressed.

City staff reviewed Title VI populations using 2010 Census data. Based on Census data, approximately 8% of City residents are not Caucasian and approximately 7.2% are below the poverty line. There are not specific concentrations of minority or low-income residents in the city or in the study area for the BPP; rather, these populations are present throughout the city in relatively limited numbers. Given the diffuse nature of their location, outreach to these populations was generally addressed by the variety of broad outreach methods used to communicate with community members during this planning process. Project information and notices were sent directly to agencies involved with Title VI populations, including the local library, Banks School District, and direct outreach through City water meter billing.

This report addresses the project team committees, outreach methods, public involvement events, and project impacts in terms of how Title VI populations were involved or affected



PROJECT TEAM COMMITTEES

The SAC was composed of men and women of various ages and ethnicities, including a female Planning Commissioner, City Councilor, and bicycle advocate.

OUTREACH METHODS

Outreach methods used during the project and planning process were intended to reach a wide variety of community members of various ages, ethnicities, and incomes, whether their preference is for electronic, printed, or in-person communication.

- The City put out a call for SAC members using the City's website and Facebook page, and direct e-mail distribution to the City's committees and commissions.
- Notice of meetings, agendas, materials, and summaries were posted on the City and project website.
- Meeting notices were also provided through postings at City Hall and mailed/mailed notices to local agencies and mailings to a stakeholder mailing list and other interested parties.
- Press releases were issued for public Planning Commission and City Council work sessions and meetings.
- Press releases and notices were sent to places involved with Title VI populations, including the library, local grocery store posting board, and the Banks School District.
- Comment forms were provided at the project open house and via an interactive website for the BPP (www.banksbpp.com).
- The project website offered a subscription service to get project and meeting notifications. The website also provided a project area map that allowed the visitor to click on a location of interest and leave a comment.
- The City's water meter notices conveyed project updates and information, as did the City's Facebook page. The City's website included links to the project page as well.
- City Council and Planning Commission members were briefed about the project through monthly department reports, attendance at meetings, and individual discussions with City staff so that they could share information with and gather input from their constituents.
- City staff had up-to-date documents and materials available to answer questions and share information. Their contact information was regularly included in project materials and shared at meetings so that they could be contacted in person, by phone, or by email.

PUBLIC INVOLVEMENT EVENTS

The public involvement events for the BPP primarily of a series of committee meetings, workshops, and public meetings held at City Hall.

SAC Meetings

- *Kick-off meeting and walking tour on January 22nd, 2015*
- *Meeting #1 on March 5th, 2015*
- *Meeting #2 on April 16th, 2015*
- *Meeting #3 on July 23rd, 2015*

Workshops/Public Meetings

- *Online open house from May 20th – 31st and in-person open house meeting on May 21st, 2015*
- *Ongoing public involvement via interactive website throughout project*
- *Joint Planning Commission and City Council Work Session on August 11^t, 2015*
- *Planning Commission Public Hearing on September 29th, 2015*
- *City Council Hearing Anticipated on October 13th, 2015*

Project meeting notices included a statement that the Banks City Council Chambers are handicapped accessible. They also noted that special accommodation could be provided by contacting City Hall in advance of meetings, although this did not occur during the course of the project.

PROJECT IMPACTS

The planning process evaluated bicycle and pedestrian facility improvements that would support and improve walking and biking in the project area. These improvements are intended to benefit all community members in Banks including Title VI populations. They are likely to provide greater benefits on average to Title VI populations, given that those populations typically have fewer resources to own and maintain automobiles and will particularly benefit from improvements to other modes of transportation. No adverse impacts to Title VI populations (e.g., removal or restriction of walking, biking, or transit services or facilities) were identified as part of this project.

Banks Bicycle and Pedestrian Plan



Appendix B Technical Memorandum #1 – Refined Goals, Objectives, and Evaluation Criteria



TECHNICAL MEMORANDUM #1

Date: February 6, 2015

Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Kelly Laustsen and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

Subject: Project Goals, Objectives, and Evaluation Criteria

This memorandum provides the goals, objectives, and evaluation criteria for the City of Banks Bicycle and Pedestrian Master Plan (BPP) project. It provides the purpose of the project, a map of the project area, and draft evaluation metrics that will be used throughout the project. The intent of this memorandum is to establish the groundwork that will serve as the basis for the rest of the project.

PROJECT PURPOSE

The City of Banks' Bicycle and Pedestrian Master Plan ("BPP") will plan for a convenient and comfortable active (non-automobile based) transportation system for local trips within the community and tie in with regional trail systems. The BPP will identify access points, preferred alignments, key potential road crossing options, trail standards, design elements, regulatory requirements, preliminary cost estimates, and potential sources of funding while ensuring compliance with state and local standards. The BPP will build from the adopted TSP (dated October 2010) and respond to the active transportation needs and opportunities discussed in the TSP, including the need for "pedestrian and bicycle linkages both north-south within the existing Banks UGB (on the east side of Main Street) and connections from the UGB to other parts of the city, particularly to the downtown commercial area, the schools complex, and Sunset Park." The BPP will also incorporate the findings of previous planning studies, such as the Banks Park and Recreation Plan Updated (2010) and Banks Main Street Revitalization (2014).

The City's BPP will offer active transportation options for City residents and tourists. The proposed bicycle and pedestrian routes will provide convenient access to attractors within Banks, reduce reliance on the automobile, and improve safety by considering parallel routes to Highways 6 and 47.

BACKGROUND

A bicycle and pedestrian master plan is needed to identify, coordinate, and leverage current and upcoming efforts, investment, and opportunities to create a safe and seamless biking and walking environment in the City. The BPP is also needed to coordinate the local bike and pedestrian network with an emerging regional multi-use trail network. Existing and proposed trail routes such as the Tualatin Valley Scenic Bikeway, Bank-Vernonia Trail, Salmonberry Trail (Banks to Tillamook), and Council Creek Trail¹ all intersect in Banks and are increasing the number of visitors and citizens bicycling and walking in the area.

The BPP will be developed through a public participation process with the philosophy that people walking and biking are a priority and not just an afterthought. It is an opportunity for the community to participate in identifying existing constraints and needed improvements. Clear opportunities for public engagement have been built in to the project schedule, including an in-person and virtual open house midway through the project. The project will result in a plan that prioritizes the expansion and enhancement of the existing system to create an integrated bikeway and pedestrian network to encourage people to bike and walk in, around, and through the City. It will include preferred bicycle and pedestrian route maps, including cost estimates and potential funding sources.

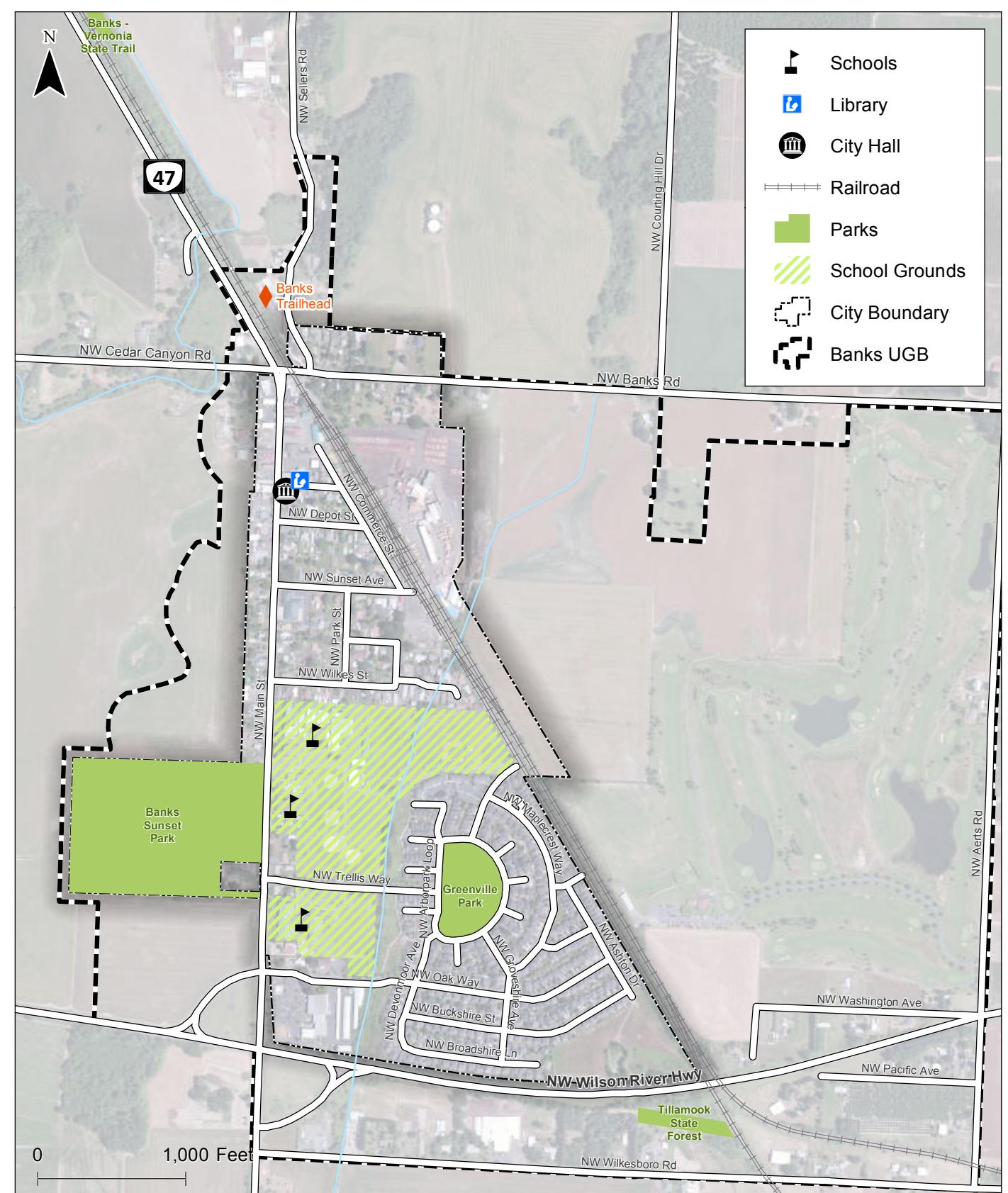
The intent of the BPP is to provide a bicycle and pedestrian system that is accessible for all types of users, regardless of age or ability. Bicyclists are commonly split up in to four groups based on their interest and confidence, from “strong and fearless” riders to “no way no how” riders. The BPP will target riders in between these extremes that are “enthused and confident” or “interested but concerned.” The creation of a BPP will ensure the community is designed so people can stroll, shop and bike in a safe and friendly environment. Improvement of the bike and pedestrian system will aid the City in pursuing high levels of livability with distinctive and memorable streets and pathways that are enjoyable, safe and friendly places to live, work, and visit.

PROJECT AREA

The project area includes the areas within the City limits and the City's Urban Growth Boundary. Figure 1 illustrates the study area, including existing roadways, land uses, and activity centers. This map will serve as a basemap for documenting existing facilities and potential future facilities.

¹ Part of the emerging regional multi-use trail network includes the development of a master plan for the 15-mile Council Creek Regional Trail which will link communities in Hillsboro, Cornelius, Forest Grove, Banks and Washington County and offer a safe, comfortable and enjoyable walking and bicycling route. When completed, the trail will provide connections to jobs, schools, transit, recreation opportunities and nature. The concept of the Council Creek Regional Trail has been a part of city and regional plans for many years. Now the City of Forest Grove, in partnership with the other communities, is leading a project to identify the preferred route for the trail and develop a master plan.





**Study Area
Banks, Oregon**

**Figure
1**

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Int'l

Data Source: Washington County GIS, Metro Data Resource Center

Image Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

DRAFT EVALUATION METRICS

As suggested in the project purpose, there are a number of intentions driving the development of the BPP. Evaluation metrics are a helpful means of ensuring that the plan is in line with the City's vision. In order to ensure a consistent understanding of the evaluation metrics used in this memorandum, definitions are provided below:

- **Goals** – provide direction for where the City would like to go. A goal is met when outcomes can be cited for that goal.
- **Objectives** – provide a more detailed breakdown of goals with more specific ends the City desires to achieve.
- **Evaluation criteria** – provide a quantitative or qualitative tool to assess progress towards the established objectives.

The measures and evaluation criteria will be used throughout the BPP for two key purposes:

1. Evaluate the existing transportation system and identify areas for improvement; and
2. Compare and select preferred **elements** to be included in the BPP.

Plan Elements

The final BPP will include the following elements, which will be assessed using the evaluation metrics as referenced above:

- **Projects** - capital investments made to improve the existing bicycle and pedestrian system. Examples include bike lanes, sidewalk improvements, and benches.
- **Policies** – statements adopted in the BPP that are intended to influence and guide City decisions and actions relating to bicycle and pedestrian planning. As an example, policies could be related to sidewalk design guidelines, bicycle treatment at intersections, or requirement for new development.
- **Programs** -plans of action aimed at accomplishing an identified county goal(s) and/or objective(s) that commonly include such details on what work is to be done, by whom, when, and the intended outcome of the action. An example is implementing a walking bus program.
- **Pilot Project** – an activity planned as a test or trial of a transportation project or program. An example is temporarily striping a bike lane to test its performance over a 6-month time period.
- **Future Studies** - research and investigation to be completed by the City after the BPP is completed. Such studies will not be done during the BPP process due to lack of available



data, a need for guidance and/or analysis from responsible agencies, and/or the need for a focused public involvement and analysis process beyond the BPP scope of work and budget.

Goals

Project goals provide broad guidance for the BPP that help direct where the City would like to go with the plan. The goals were developed with the project purpose in mind and include:

- **Livability:** provide for a high quality of life by providing transportation options and considering community values and interests.
- **Safety and Health:** enable people to safely walk, run or cycle in and through the City.
- **Accessibility:** develop a bicycle and pedestrian system that is accessible for all ages, skill levels, and interests.
- **Financial Responsibility:** use resources efficiently and invest in infrastructure that will serve the City for years to come.
- **Economic Vitality:** encourage visitors and investment in the downtown core.
- **Community:** encourage community interest and participation in walking and biking.

Project Objectives

The following project objectives more specifically describes the project purpose and ends the BPP intends to achieve.

- Increase the number of people that walk and bike in Banks.
- Link regional and local trails to key attractors on the main street and downtown area, such as shopping, schools, residential areas, and other community destinations.
- Provide connections to natural areas and resources and enhance appreciation for the City's natural assets.
- Increase transportation choices in the Highway 6 and 47 corridors by adding more bicycle and pedestrian routes and connections to transit.
- Provide well-designed, visible, safe, and convenient access points and street/highway crossings.
- Provide shorter trip lengths between destinations on the bicycle and pedestrian system than on-road networks.
- Identify the community vision for the overall bicycle and pedestrian route design, expressed through different treatments and design themes for distinctive sections.
- Address safety and security of bicycle and pedestrian route users.



- Provide adequate funding to maintain the existing active transportation system while prioritizing investments in future facilities.
- Minimize conflicts between people biking and walking and farm equipment, logging trucks and forestry related trucks.
- Find innovative, efficient, low- or no-cost solutions to providing parking for trail users.

As described in the “Background” section, the intent of the BPP is to reach all current and potential users of the pedestrian and bicycle system.

Evaluation Criteria

The evaluation criteria provide a means of measuring progress and a quantitative or qualitative way of comparing plan elements. They will be applied later in the process to assess plan elements and define priorities. Again, the plan elements may include projects, policies, programs, pilot projects, and future studies.

- **Cost** – what is the planning-level cost estimate of the element?
- **Potential Funding Mechanisms** – what funding sources are available that could potentially be applied to the element?
- **Feasibility** – are there any significant barriers to the element, such as ownership of the connection, limited right-of-way, the presence of significant natural resources?
- **Connectivity** – does the element fill an existing gap in the bicycle or pedestrian network or create a new connection?
- **Accessibility** – does the element enhance access to the active transportation system for all users, regardless of ability?
- **Destinations served by project** – how many activity centers and/or destinations (i.e. schools, commercial areas, residential areas, parks, natural resources, trails, transit stops, etc.) does the element serve?
- **Expected safety impact** – does the element address an area with a crash history? Is it expected to improve the safety performance of a facility, based on available research on pedestrian/bicyclist safety? Does the element impact an area with a higher volume of trucks or vehicles?
- **Level of traffic stress** – according to the methodology presented in the ODOT *Analysis and Procedures Manual*, what level of traffic stress does the element provide for bicyclists?
- **Population served** – does the element serve people that live in, work in, and/or visit Banks (i.e. is it located in an area with a demand for walking/biking? Does it appeal to a wide level of riders?)?



- **Anticipated economic impact** – does the element increase bicycle or pedestrian activity in the downtown core or other business areas?

The measures and evaluation criteria will be applied using a variety of analysis tools, including traffic counts and transportation operations analysis, Geographic Information Systems (GIS) data, existing research on bicycle and pedestrian facilities, as well as qualitative assessments.

NEXT STEPS

This memorandum was reviewed by the Stakeholder Advisory Committee (SAC) during its kick-off meeting on January 22nd, 2014. SAC members provided comments on the goals, project objectives, and evaluation criteria and recommended changes. The project team reviewed the SAC's feedback and updated the memorandum accordingly, resulting in this final copy. This memorandum will be referenced later in the project to evaluate the existing pedestrian and bicycle system and evaluate potential elements to be included in the BPP.



Banks Bicycle and Pedestrian Plan



Appendix C Technical Memorandum #2 – Baseline Information



TECHNICAL MEMORANDUM #2

Date: March 20, 2015

Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Kelly Laustsen, Bart Rudolph and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

Subject: Baseline Information

This memorandum provides baseline information for the City of Banks Bicycle and Pedestrian Master Plan (BPP) project. It identifies, analyzes, and summarizes existing federal, state, and local laws, plans, and policies that might impact the development of the BPP. The intent of this memorandum is to establish familiarity with existing documents the BPP will build from. It is organized as a literature review of federal, state, and local documents. A summary of the documents reviewed is provided in Table 1 on the following page.

FEDERAL DOCUMENTS

- Americans with Disabilities Act (ADA)
 - This bill ensures pedestrians with disabilities have the opportunity to use the transportation system in an accessible and safe manner. The Federal Highway Administration (FHWA) ensures that recipients of Federal aid and State and local entities that are responsible for roadways and pedestrian facilities do not discriminate on the basis of disability in any highway transportation program, activity, service or benefit they provide to the general public and ensures that people with disabilities have equitable opportunities to use the public rights-of-way system.
 - The ADA is relevant to the BPP as it provides guidance for planning and designing pedestrian facilities for people with disabilities. For example, it includes criteria on pedestrian curb ramps and crossings.

Document		Key Application for BPP
Federal	Americans with Disabilities Act (ADA)	Guidance related to designing and planning for pedestrians with disabilities.
	Manual on Uniform Traffic Control Devices (MUTCD)	Guidance on how to properly sign and designate bicycle and pedestrian facilities.
State	Oregon Transportation Plan (OTP) (2006)	Provides high-level guidance on system plans, particularly related to goals and evaluation metrics.
	Bicycle and Pedestrian Plan (1995) <i>(Currently being updated)</i>	Provides general principles and policies for bicycle/pedestrian facilities on state highways.
	Oregon Bicycle and Pedestrian Design Guide (2011)	Designates design standards and recommendations for bicycle and pedestrian facilities on state highways.
	Statewide Planning Goal #12 (Transportation)	Provides high-level guidance for local comprehensive planning as required by state law.
	Transportation Planning Rule	Implements Statewide Planning Goal #12 and provides rulemaking regarding the required Transportation System Plans.
	Statewide Transportation Improvement Program (STIP) (2015-2018)	Identifies funding for, and scheduling of, transportation improvement projects and programs.
Local	Washington County Flood Plain and Drainage Hazard Area Development Standards (2014)	Contains provisions for developing areas in Special Flood Hazard Areas. Recreation and nature trails are permitted uses and activities.
	City Comprehensive Plan (1979, Amended 1989)	Provides the long-term vision for the city and develops policies to help implement that vision.
	City Transportation System Plan (TSP) (2010)	Identifies key issues and makes recommendations relating to transportation within the City.
	City Park and Recreation Master Plan (2010)	Identifies specific recommendations for trail system improvements.
	Banks Main Street Revitalization Plan (2014)	Provides a vision for Main Street and recommendations related to bicycle and pedestrian facilities and amenities.
	Urban Growth Boundary (UGB)	Identifies areas where future growth may occur. Housing tracks and other types of urban development are not allowed to occur outside of the UGB.
	City zoning and related ordinances	Identifies appropriate and desired land use areas within the City.
	City of Banks Design Standards (2014)	Identifies standards and requirements for designing street and bicycle/pedestrian facilities in the City.
	City Capital Improvement Program (CIP)	Identifies capital projects that are planned or scheduled in the near-term and identifies proposed funding.
	Council Creek Regional Trail (CCRT) Master Plan (2014)	A new regional trail that proposes a route through Banks to connect with the Banks-Vernonia Trail.
	Tualatin Valley Scenic Bikeway	An established bikeway that routes through Banks from the Banks-Vernonia Trail to NW Wilkesboro Road via Main Street.
	Banks-Vernonia Trail	An established trail that generates additional bicycle and pedestrian traffic in the City.
	Salmonberry Trail (Banks to Tillamook) Concept Plan (2014)	A proposed regional trail with a possible link to the Banks-Vernonia Trail outside of the City.



FEDERAL DOCUMENTS (CONTINUED)

- Manual on Uniform Traffic Control Devices (MUTCD)
 - The MUTCD is recognized as the national standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel to ensure uniformity of traffic control devices. Part 9 of the MUTCD covers signs, pavement markings, and highway traffic signals specifically related to bicycle operation on both roadways and shared-use paths.
 - The MUTCD is relevant to the BPP as it provides guidance on how to properly sign and designate bicycle and pedestrian facilities.

STATE DOCUMENTS

- Oregon Transportation Plan (OTP) (2006)
 - The 25-year transportation plan guides statewide multimodal and modal plans and regional and local transportation system plans. As required by Oregon and federal legislation, the OTP provides overall policy direction and a framework for prioritizing transportation improvements and developing funding for them. It doesn't identify specific projects for development. Goal 1 (mobility and accessibility) is to provide a balanced, efficient and integrated transportation system that promotes transportation choices that are reliable, accessible and cost-effective. Goal 4 (sustainability) encourages conservation and communities to integrate land use and transportation choices.
 - Policy 1.2 (Equity, Efficiency and Travel Choices): It is the policy of the State of Oregon to promote a transportation system with multiple travel choices that are easy to use, reliable, cost-effective and accessible to all potential users, including the transportation disadvantaged.
 - Policy 3.2 (Moving People to Support Economic Vitality): It is the policy of the State of Oregon to develop an integrated system of transportation facilities, services and information so that intrastate, interstate and international travelers can travel easily for business and recreation.
 - The OTC provides high-level guidance on system plans, particularly related to goals and evaluation metrics. The BPP should be consistent with these goals and policies.
- Bicycle and Pedestrian Plan (1995) (*Currently being updated*)
 - This plan does not propose specific projects, but offers the general principles and policies that ODOT follows to provide bikeways and walkways along state highways. It also provides the framework for cooperation between ODOT and local jurisdictions, and offers guidance to cities and counties for developing local bicycle and pedestrian plans. Section One (policy and action plan) contains background



information, such as the importance of bicycling and walking, legal mandates and current conditions. This is followed by the goals, actions and implementation strategies ODOT proposes to improve bicycle and pedestrian transportation. Section Two (bikeway and walking planning, design, maintenance, and safety) will assist ODOT, cities and counties in designing, constructing and maintaining pedestrian and bicycle facilities.

- Since the major north-south route through Banks is a state highway, recommendations to improve bicycle/pedestrian facilities along Main Street will need to be coordinated with ODOT and be consistent with this plan.
- Oregon Bicycle and Pedestrian Design Guide (2011)
 - Appendix L of the Oregon Highway Design Manual outlines the design standards and recommendations for use on Oregon highways. ODOT encourages local agencies to use the dimensions and designs recommended in this plan, but it is recognized that local standards may exceed ODOT standards. When ODOT is constructing a bikeway or walkway in collaboration with a local jurisdiction, the more appropriate of the two designs should be used, based on the context.
 - Bicycle and pedestrian facilities on State Highways, like Main Street, must meet the design standards outlined in this document.
- Statewide Planning Goal #12 (Transportation)
 - This goal is to provide and encourage a safe, convenient and economic transportation system. It requires that a transportation plan, amongst other things, consider all modes of transportation including mass transit, air, water, pipeline, rail, highway, bicycle and pedestrian.
 - Statewide goals help guide local comprehensive planning as required by state law.
- Transportation Planning Rule
 - OR Admin Rule 660-012-0045 (Implementation of the Transportation System Plan)
 - This rule requires each local government to amend its land use regulations to implement the TSP. It also requires local governments to adopt land use or subdivision ordinance regulations that provide for safe and convenient bicycle, pedestrian and vehicular circulation. Local governments are to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel in areas where pedestrian and bicycle travel is likely if connections are provided, and which avoids wherever possible levels of automobile traffic which might interfere with or discourage pedestrian or bicycle travel.



- OR Admin Rule 660-12-0060
 - This rule states that if an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place certain measures, unless the amendment is allowed under certain provisions of this rule.
- The Transportation Planning Rule implements Statewide Planning Goal #12 and provides rulemaking regarding the required Transportation System Plans.
- Statewide Transportation Improvement Program (STIP) (2015-2018)
 - The Pedestrian and Bicycle Grant Program ended as a stand-alone solicitation process in 2012. The Oregon Transportation Commission (OTC) and ODOT have changed how the STIP is developed. The STIP will no longer be developed as a collection of projects for specific pools of funding dedicated to specific transportation modes or specialty programs. The STIP will now be divided into two broad categories: Fix-It and Enhance. The Enhance category will fund activities that enhance, expand, or improve the transportation system. The Fix-It category will fund activities that fix or preserve the transportation system. The Draft 2015-2018 STIP is complete, but ODOT initiated an evaluation of the new process before it is released. The 2012-2015 STIP included \$244,000 in 2012 for the planning phase of the Council creek Trail.
 - The STIP identifies funding for, and scheduling of, transportation improvement projects and programs. Bicycle and pedestrian improvements receiving federal funds must be identified in the STIP.

LOCAL DOCUMENTS

- Washington County Flood Plain and Drainage Hazard Area Development Standards (2014)
 - Article IV of the Community Development Code enforces the State of Oregon Specialty Codes pursuant to the requirement established in ORS 455. It contains provisions for developing areas in Special Flood Hazard Areas identified in the "Flood Insurance Rate Map, Washington County, Oregon" and the "Flood Insurance Study for Washington County" map.
 - Recreation and nature trails are permitted uses and activities in the Special Flood Hazard Areas. Permits for erosion control and applications for flood plain or drainage hazard area alterations may be required.
- City Comprehensive Plan (1979, Amended 1989)
 - An objective in the Recreation section states that the development of pedestrian and bicycle pathways should be promoted. A policy related to that goal states the



City will plan community recreation facilities in conjunction with existing and planned school facilities so that they complement each other in function.

- Objectives in the Transportation section state that development should occur in such a manner as to encourage and facilitate pedestrian movements and alternative modes of transportation, such as public transit and bicycling, should be encouraged and promoted. Specific policies state that in evaluating the transportation system, the City will support proposals that protect the quality of neighborhoods and the community. Another policy states that the City will require fronting on arterials to limit the points of access to minimize conflicts between local and through traffic consistent with the traffic needs of the proposed use and physical features of the subject site. Also, a policy states that the City will promote the development of a bicycle and pedestrian system to link residential areas to other land uses, especially parks, open spaces, schools, the downtown core and commercial areas.
- The comprehensive plan provides a long-term vision for the city and develops policies to help implement that vision. Bicycle and pedestrian facility improvements should be consistent with this plan.
- City Transportation System Plan (TSP) (2010)
 - The TSP recognizes that Main Street also serves as a state highway and tries to balance the needs of pedestrians, shoppers, employees, business owners, and residents with the needs of through traffic. The plan recognizes the following opportunities for bicycle and pedestrian connections:
 - Construct one or more pedestrian/bicycle overcrossings of the railroad to ensure east-west connectivity from the UGB expansion area east of the railroad to center city destinations.
 - Better connect bicycle lanes and pedestrian sidewalks within the city. Improvements should focus on connecting the existing system of bike lanes and sidewalks to improve non-motorized mobility. A north-south bike route should be established in the city in the area east of Main Street, with direct connections to the schools complex.
 - All new and modernized roadways should include bicycle and pedestrian accommodations.
 - The following concepts were developed to address the needs identified in the TSP analysis:
 - Install advanced warning signage at the intersection of Banks Road and Aerts Road to warn motorists of the reduced sight distance on the crest vertical curve, thereby improving safety conditions at the intersection.



- Reconstruct Banks Road to increase the safety for motorists, pedestrians, and cyclists traveling on Banks Road between Main Street (OR 47) and US 26.
- Establish an east/west bicycle and pedestrian circulation system to service the expanded UGB area.
- Install a bicycle/pedestrian overcrossing or undercrossing of the railroad from the area east of the Banks school complex to the eastside of Banks (UGB Expansion Area).
 - The TSP identifies and addresses key issues relating to transportation within the City. The TSP should be the starting point to identify and validate future bicycle and pedestrian improvements.
- City Park and recreation Master Plan (2010)
 - This plan recommends working with the County and State to explore the possibility of extending the Banks-Vernonia Trail to the south end of town or beyond. A separated walking path is proposed in the Highway 6 right-of-way and walking trails are also proposed to extend from the existing trails west of Arbor Village to the north and south.
 - This plan identifies specific recommendations for a trail system in Banks. These recommendations should be reviewed and validated as part of the BPP.
- Banks Main Street Revitalization Plan (2014)
 - This plan recommends expanding the UGB and constructing a new westside circulator road that parallels Main Street. It also recommends Main Street safety improvements including pedestrian crossings, full curb extensions, and marked crosswalk at Banks Road and OR 47 to improve connections to the Banks-Vernonia Trail. A new sidewalk and curb at the SW corner at the Five Star complex is suggested to better delineate pedestrian and vehicle zones. An improved internal system of trails (as identified in the Banks Parks and Recreation Master Plan), traffic calming at OR 47 and Main Street, and an access management strategy to enhance the pedestrian experience is also recommended.
 - This plan provides a vision for Main Street and recommendations related to bicycle and pedestrian facilities and amenities in the area.
- Urban Growth Boundary (UGB)
 - An expansion of Banks' UGB was approved in 2013. The expansion included approximately 400 acres of land that includes the Quail Valley Golf Course.
 - Housing tracks and other types of urban development are not allowed to occur beyond the UGB. The BPP should focus on improvements within the UGB or within expected amendments.



- City zoning and related ordinances
 - The land adjacent to the north and south ends of Main Street (OR 47) are zoned commercial (C) with single-family residential (R5) and community facilities (CF) zoning in between. General industrial (I) zoning occurs along parts of the railroad and more R5 zoning is found in the southwest part of the City.
 - When developing the BPP, transportation system improvements should not be in conflict with adjacent land uses or zoning ordinances.
- City of Banks Design Standards (2014)
 - This document provides local design standards and requirements for street design, bicycle and pedestrian facilities, on-street parking standards, and other related design standards.
 - Bicycle and pedestrian facilities proposed in the BPP will need to take into consideration the local design standards to ensure conformity.
- City Capital Improvement Program (CIP)
 - Four road improvement projects are identified in FY2014-2015; all are pending grant revenue. The roads identified are Commence Street, Park Street, Wilkes Street and Woodman Avenue/Parmley Avenue.
 - The CIP identifies capital projects that are planned or scheduled in the near-term and identifies proposed funding. City funded bicycle and pedestrian projects need to be identified in the CIP before they receive city funding.
- Council Creek Regional Trail (CCRT) Master Plan (Hillsboro to Forest Grove to Banks) (2014)
 - The Implementation Strategy Report recommends a widened sidewalk along the south side of NW Banks Road to better connect the Banks-Vernonia Trailhead to the City's planned Westside Circulator Roadway (WCR). A street-adjacent multiuse trail is recommended to run parallel on the west side of the WCR and connect to Main Street, south of downtown, running parallel with a proposed road connecting the WCR to Main Street. The recommended trail would continue on the west side of Main Street (OR 47) through the Oregon 6 undercrossing.
 - The BPP should coordinate with other planning efforts, like the CCRT, so that the north-south connections through the City with the Banks-Vernonia Trailhead do not conflict with each other.
- Tualatin Valley Scenic Bikeway
 - The Tualatin Valley Scenic Bikeway is a 50-mile bikeway, which incorporates the Banks-Vernonia State Trail and routes bicyclists through Banks via Main Street (OR 47) to NW Wilkesboro Road.



- The BPP should recognize the existing routing of other established routes, like the Tualatin Valley Scenic Bikeway, and take that into consideration when developing recommendations.
- Banks-Vernonia Trail
 - The Banks-Vernonia Trail is a 21-mile paved trail connecting Banks with Vernonia via an abandoned railroad bed. Trail improvements were completed in 2010 which included improvements at the Banks trailhead.
 - The Banks-Vernonia Trailhead is an important connection point that generates substantial bicycle and pedestrian traffic. Planning efforts during the development of the BPP should focus on this important node.
- Salmonberry Trail (Banks to Tillamook) Concept Plan (2014)
 - The Salmonberry Corridor offers a potential connective trail link between the Willamette Valley and the Oregon Coast along the 86 miles of the Port of Tillamook Bay railroad. Segment 1 is the twenty-five mile easternmost segment of the corridor that connects Banks to Crochran. It is envisioned to link into the existing Banks-Vernonia Trail.
 - This trail may connect to the Banks-Vernonia Trail outside of the City limits, but could increase trail traffic and bring more bicyclists and pedestrians into the City of Banks.

SUMMARY

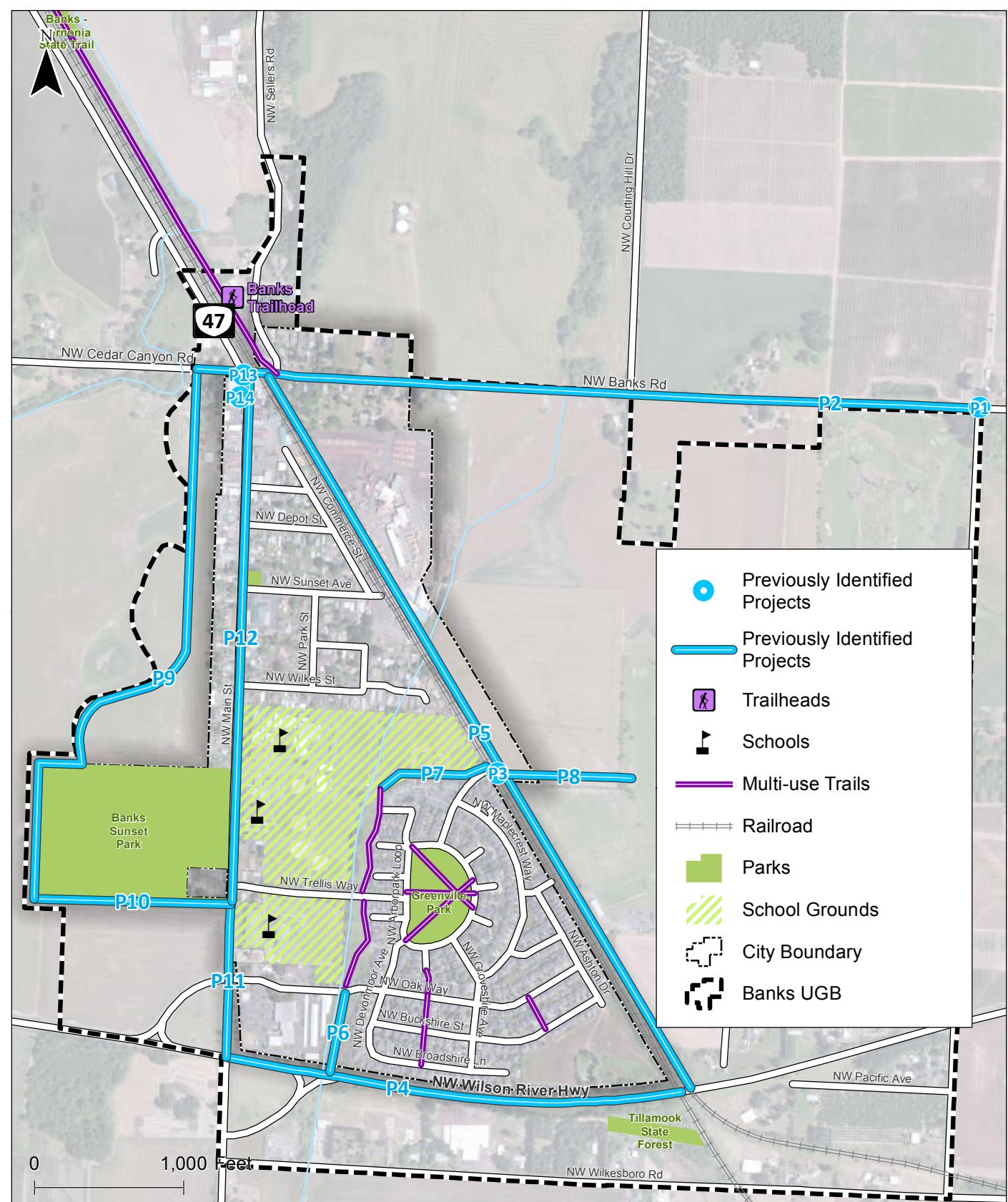
Based on the document review, key bicycle or pedestrian needs/deficiencies in Banks were identified, as well as proposed projects. Each is summarized below with the relevant document(s) noted. The key projects are mapped in Figure 1. An appendix is also provided with excerpts from existing local and regional plans that include recommended improvements.

- Key needs/deficiencies already identified:
 - The railroad is a potential barrier to east-west bicycle/pedestrian connectivity from the UGB expansion area to city center destinations. (TSP)
 - Better connectivity for bicycle/pedestrian facilities are needed throughout the city. (TSP, Park & Rec Plan, Main Street Plan)
 - Several plans recommend a north-south bike route be established and/or the Banks-Vernonia Trail extended to the south end of town, but different routes are recommended. (TSP, Park & Rec Plan, CCRT)
 - Expand the UGB. (Main Street Plan)
 - Main Street is in need of safety improvements. (Main Street Plan)
 - Traffic calming treatments are needed at OR 47 and Main Street. (Main Street Plan)



- Access management strategy is needed along Main Street (OR 47). (Main Street Plan)
- Establish an east/west bicycle and pedestrian circulation system to service the expanded UGB area. (TSP)
- Key projects already identified:
 - P1 Install advanced warning signage at the intersection of Banks Road and Aerts Road. (TSP)
 - P2 Reconstruct Banks Road from Main Street (OR 47) to US 26 (TSP) with widened sidewalks. (TSP)
 - P3 Install a bicycle/pedestrian overcrossing or undercrossing of the railroad from the area east of the Banks school complex to the eastside of Banks. (TSP)
 - P4 Establish an east/west bicycle and pedestrian circulation system to service the expanded UGB area. (TSP)
 - P5 Develop a state trail connecting Banks-Vernonia Trail to Highway 6. (Park & Rec Plan)
 - P6 Extend the existing private trail on the west side of Arbor Village from Oak to Highway 6. (Park & Rec Plan)
 - P7 Develop a City Trail to connect the existing private trail on the west side of Arbor Village to the proposed pedestrian railroad crossing. (Park & Rec Plan)
 - P8 Install a separated walking path along Hwy 6. (Park & Rec Plan)
 - P9 Construct new westside circulator road. (Main Street Plan, CCRT)
 - P10 Install a separated trail along the westside circulator road and connect to Main Street (OR47) paralleling a new proposed road. (CCRT)
 - P11 Install a separated trail along Main Street, south of downtown, to the OR 6 undercrossing. (CCRT)
 - P12 Implement traffic calming along Highway 47/Main Street. (Main Street Plan)
 - P13 Install a marked crosswalk at Banks Road and Main Street (OR 47). (Main Street Plan)
 - P14 Install new sidewalk and curb at SW corner of Five Star complex. (Main Street Plan)





Previously Identified Projects
Banks, Oregon

Figure
1

Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Int'l
Data Source: Washington County GIS, Metro Data Resource Center

Image Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

NEXT STEPS

This memorandum was reviewed by the Stakeholder Advisory Committee (SAC) during its meeting on March 5th, 2015. SAC members were invited to comment on the memo and provide any recommended clarifications or changes. The project team reviewed the SAC's feedback and updated the memorandum accordingly, with this final copy incorporating their comments. Moving forward with the development of the BPP, this memo will be referenced for information on relevant policies and planned projects.





TECHNICAL MEMORANDUM #2 APPENDICES

Recommendation excerpts from existing local and regional plans, including:

1. Conceptual Comprehensive Trail System Map – Banks Park and Recreation Master Plan (2010)
2. Westside Circulator Road Concept Map – Banks Transportation System Plan (2010)
3. Advanced Warning Sign Concept and Reconstruction of Banks Road Concept - Banks Transportation System Plan (2010)
4. East-West Bicycle/Pedestrian Circulation System Concept – Banks Transportation System Plan (2010)
5. Connectivity and Safety Recommendations - Banks Main Street Revitalization Plan (2014)
6. Trail Alignment Refinements - Council Creek Regional Trail Master Plan, Implementation Strategy Report (2014)

Appendix 1 Conceptual Comprehensive
Trail System Map – Banks Park
and Recreation Master Plan
(2010)

Comprehensive Trail System

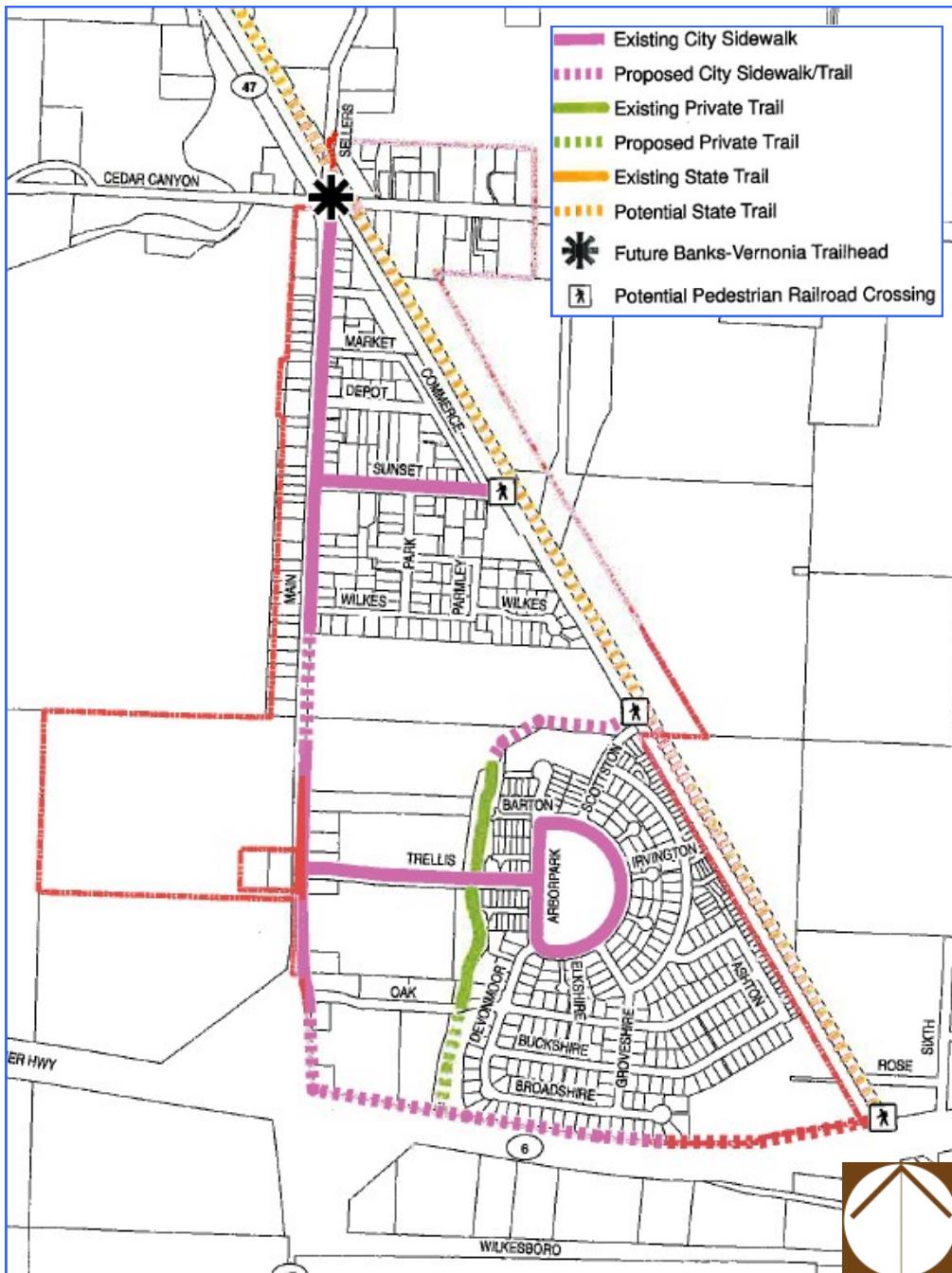
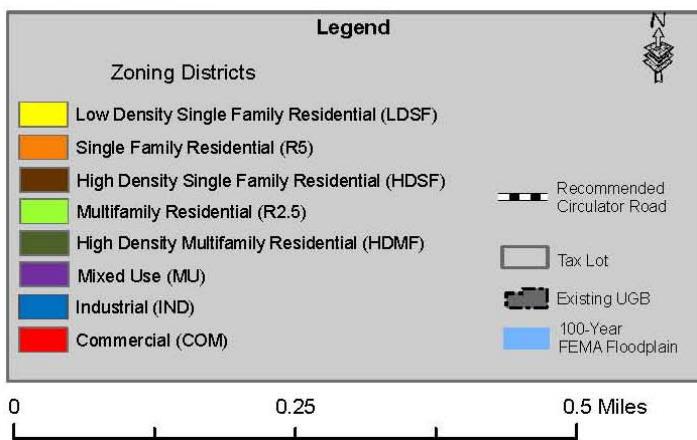
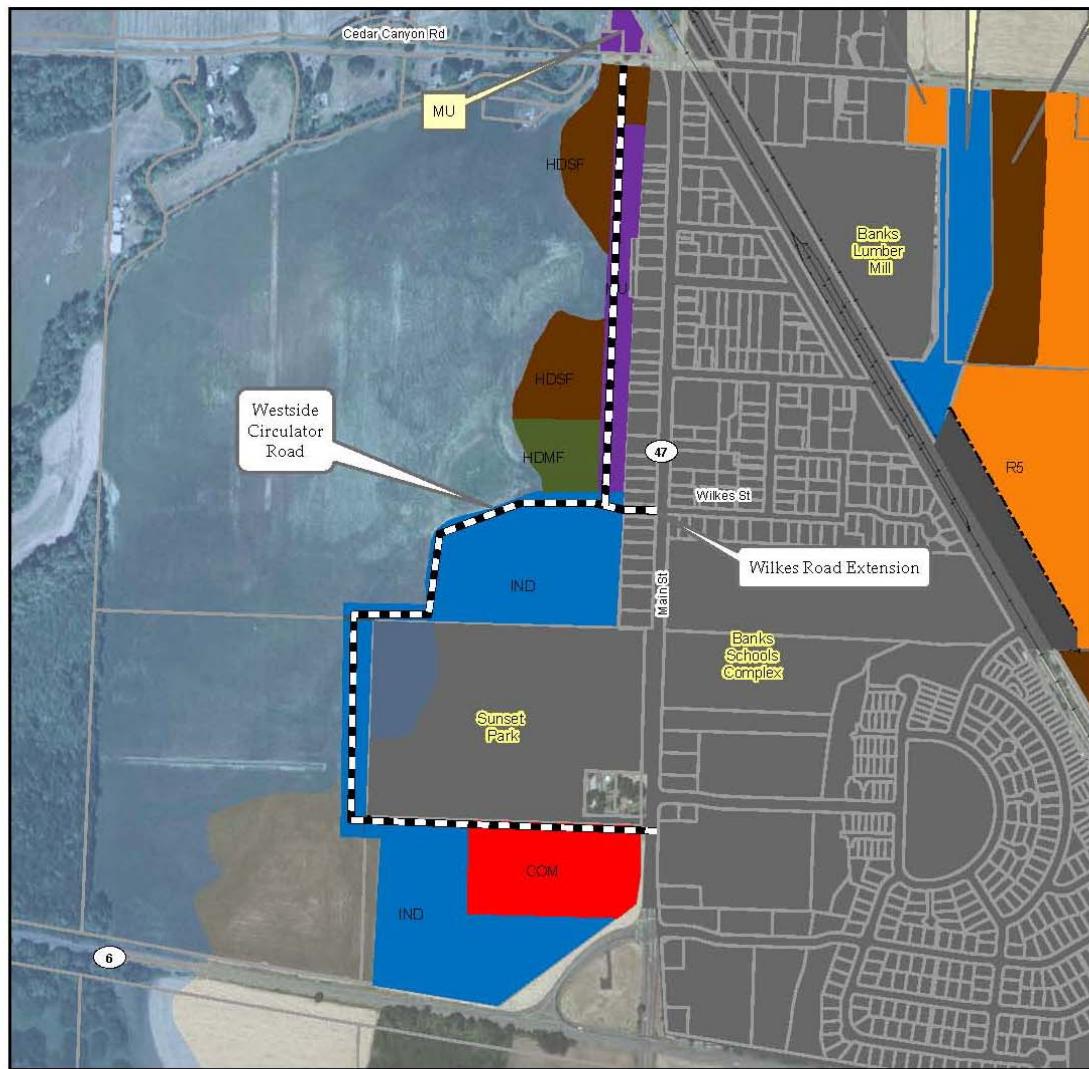


Figure 13: Conceptual Plan
Comprehensive Trail System

Appendix 2 Westside Circulator Road
Concept Map – Banks
Transportation System Plan
(2010)

FIGURE 13: CONCEPT #8 – WESTSIDE CIRCULATOR ROAD



Westside Circulator Road & Wilkes Rd. Extension

CH2MHILL

Appendix 3 Advanced Warning Sign
Concept and Reconstruction of
Banks Road Concept - Banks
Transportation System Plan
(2010)

Concept #4: Install advanced warning signage

Concept 4 is intended to increase safety for motorists, pedestrians, and cyclists traveling on Banks Road and those turning onto Banks Road from Aerts Road who do not have adequate sight distance based upon assumed design speed and existing conditions. The installation of advanced signing on all three legs of the intersection approach would warn motorists of reduced sight distance on the crest vertical curve, thereby improving safety conditions at the intersection. In addition to advanced signing, rumble strips for westbound Banks Road traffic just east of the crest vertical curve should be considered, and are included in the cost estimate. Existing vegetation should also be pruned and/or removed to improve sight distance conditions.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). In the aforementioned memorandum, this concept is titled “Alternative 4a”. Based on analysis conducted, this concept is recommended as a project to be placed on the city’s transportation CIP list.

Based on planning level estimate tools, this project is estimated at \$14,000. This estimate includes the evaluation of existing signing at the site, design and construction of new advanced signing, construction of rumble strips on Banks Road east of the intersection, contingency, and engineering costs. Cost estimate details are provided in Appendix D (in the cost estimate sheets, this concept is titled “Alternative 4a”).

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #5: Reconstruct Banks Road

Concept 5 is intended to increase safety for motorists, pedestrians, and cyclists traveling on Banks Road between Main Street (OR 47) and US 26.

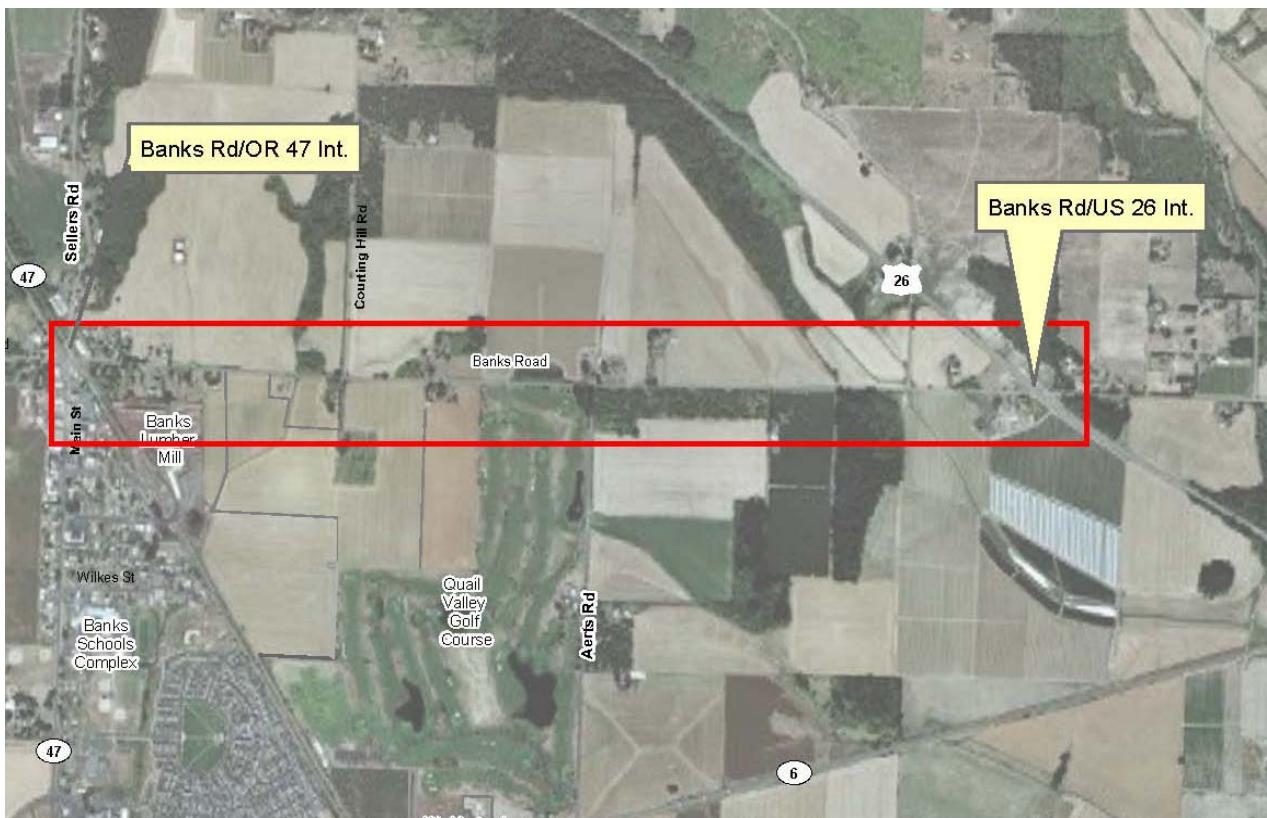
This concept entails re-grading the existing crest vertical curve at Banks Road and Aerts Road, and the sag curve 500 feet to the west of the intersection (see Figure 8), to meet a minimum 60 mile-per-hour vertical design speed sight distance requirement. This would allow drivers approaching Aerts Road from Banks Road, and drivers attempting to turn from Aerts Road, adequate sight distance. Approximately 3,800 feet of Banks Road and 100 feet of Aerts Road would be reconstructed to the Washington County Collector standard width of 36 feet. The golf course to the south of Banks Road would have retaining walls on fill. Some signs would need to be removed and replaced.

This concept would also entail widening the approximately 1.70-mile length of Banks Road between Main Street (OR 47) and US 26 (see Figure 9) to include shoulders on both sides of the road that meet Washington County Major Collector standards. It is assumed that existing usable roadway width is 20 feet, and would be widened to 36 feet. This would address the lack of adequate lane width and shoulders on Banks Road (in consideration of forecasted increases in traffic volume associated with the development of the UGB expansion areas on the east side of Banks) and the need to have a viable east-west alternative to OR 6 for accessing US 26 (so as to alleviate congestion and queuing issues at

both existing Banks access points to OR 6). This concept would significantly improve safety conditions for motorists, bicyclists, and pedestrians.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion areas.

FIGURE 9: CONCEPT #5 – WIDENING OF BANKS ROAD BETWEEN MAIN STREET (OR47) AND US 26



This concept is a combination of two formerly separate alternatives (titled “Alternative 4d” and “Alternative 5”) that were evaluated in *Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*, provided as Appendix C. As noted in the aforementioned memorandum, the two formerly separate alternatives would be exceedingly more cost-effective if done in concurrence. This is the reason that the two alternatives were combined into the present concept being discussed. Based on analysis conducted in the aforementioned memorandum, this concept is recommended as a project to be placed on the city’s transportation CIP list.

Based on planning level estimate tools, this project is estimated at \$8,233,900. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D (in the cost estimate sheets, see “Alternatives 4d and Alternative 5” for specific cost estimate elements, respective costs and overall combined cost as presented for the present concept). A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Appendix 4 East-West Bicycle/Pedestrian
Circulation System Concept –
Banks Transportation System
Plan (2010)

Need:

East-west bicycle/pedestrian circulation system.

Several versions of this concept were assessed and are discussed in turn below.

The proposed bicycle/pedestrian crossing corridor as shown on Figure 15 is conceptual and would be defined through the land development process as it is funded, designed, and built.

Concept #11 Option A: Install Bicycle/Pedestrian Overcrossing of Railroad from Area East of Banks Schools Complex to Eastside of Banks (UGB Expansion Area)

As shown in Figure 15, this concept entails constructing a pedestrian/bicycle overcrossing of the railroad tracks to connect the UGB expansion area east of the tracks to the west side of Banks (at the Banks schools complex area) and would include a connecting path on the eastside to the circulator road (thereby providing a connection to the bicycle facilities on the new road). This concept would entail a temporary closure of the railroad tracks (approximately 2 nights at 6 hours a night).

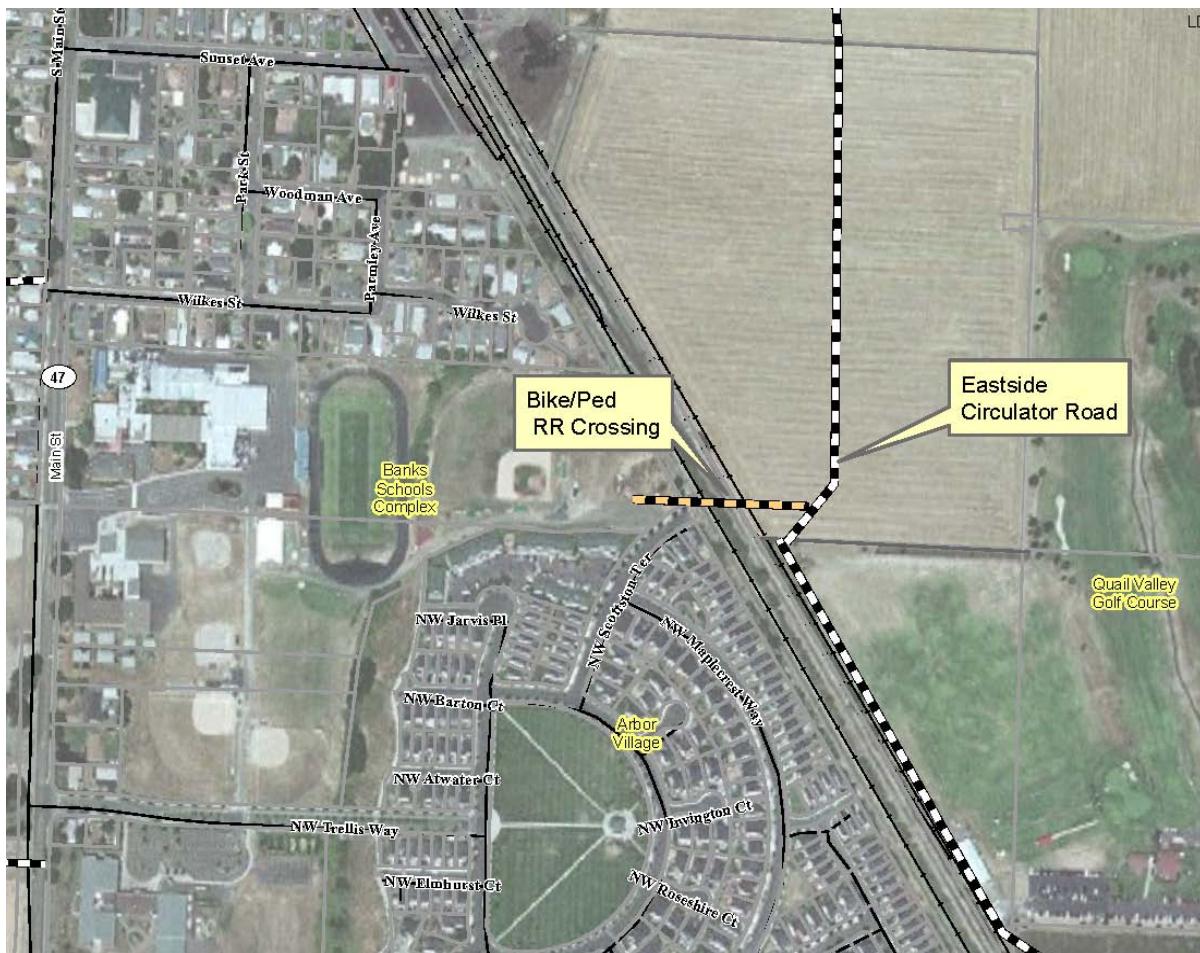
This concept addresses the need to provide safe, convenient, and reasonably direct east-west bicycle/pedestrian circulation. This concept could serve as an affordable interim step to meet this need in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area).

This concept would encourage the use of alternate modes of travel between the west and east sides of Banks (assuming development of the UGB expansion areas on the east side of Banks) in keeping with City goals and objectives.

This concept would significantly improve safety conditions for bicyclists and pedestrians who would be provided with an east-west connecting route that was separated from motor vehicle traffic. This concept would be a pivotal safe route to school component.

This concept would significantly improve mobility conditions for bicyclists and pedestrians traveling to and from the UGB expansion area on the east side of the railroad tracks. This concept would enable short trips from east to west Banks and most importantly to the Banks school complex and downtown Banks - to be made conveniently by foot or bicycle.

FIGURE 15: CONCEPT #11 – BIKE/PED RR CROSSING CORRIDOR



A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). In the aforementioned memorandum this concept is titled “Alternative 11a”. Based on analysis conducted, this concept is recommended as a project to be placed on the City’s transportation CIP list as a secondary bicycle/pedestrian bridge option IF Concept #11 Option B were not feasible, as discussed later in this report. Also, as previously noted, this concept should only be considered for implementation in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area).

Based on planning level estimate tools, this project is estimated at \$5,690,800. This estimate includes the design and construction of a new pedestrian/bicycle overcrossing, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #11 Option B: Install Bicycle/Pedestrian Undercrossing of Railroad from Area East of Banks Schools Complex to Eastside of Banks (UGB Expansion Area)

This concept would be in the same location and provide the same connecting points as in Concept 11 Option A (see Figure 15) but would entail an undercrossing (tunnel) connection rather than an overcrossing (bridge). This concept would necessitate a total closure of the railroad tracks for approximately 2-4 weeks.

The location for this undercrossing is optimal for the same reasons described for Concept 11, Option A.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). In the aforementioned memorandum this concept is titled "Alternative 11c".

Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list as the primary bicycle/pedestrian bridge option. **However**, as previously noted, this concept should only be considered for implementation in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area). In the event that the City wanted to pursue a bicycle/pedestrian bridge, but Concept 11 Option B were deemed infeasible due to the construction impacts on the railroad companies, Concept Option A would then be recommended.

Based on planning level estimate tools, this project is estimated at \$4,167,000. This estimate includes the design and construction of a new pedestrian undercrossing of the existing railroad, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

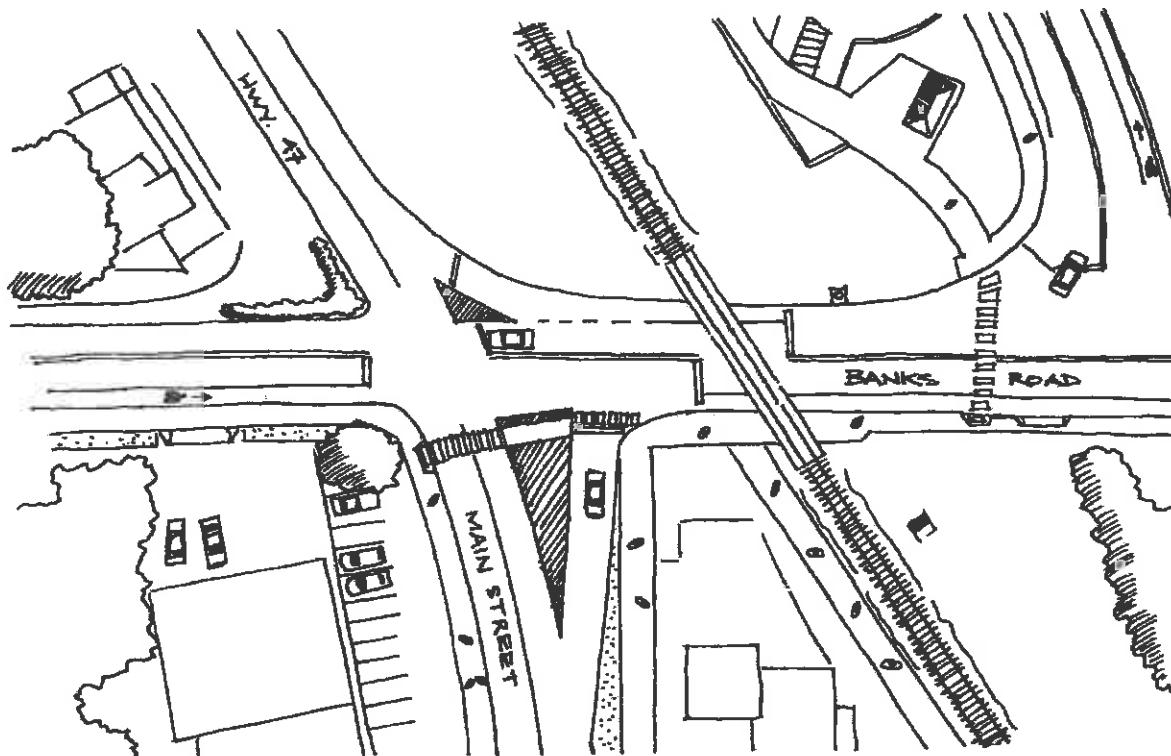
A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Appendix 5 Connectivity and Safety
Recommendations - Banks
Main Street Revitalization Plan
(2014)

Connectivity and Safety

CS1. Westside Circulator Road – The Urban Growth Boundary expansion will bring construction of a new Westside Circulator Road that parallels Main Street with planned access at Cedar Canyon Road, Wilkes Street, and the perimeter of Sunset Park. With the UGB expansion, it will be possible to design a streetscape environment from the ground up that can support needed parallel bike facilities, house underground utilities, and also provide east-west connectivity to Main Street. Advance planning for the future design of the Westside Circulator Road will be necessary to ensure the road can meet Banks' current and future expectations. An additional Main Street connection at Depot Road could provide better access to the north side of Banks. Some of the shortcomings of Main Street can be mitigated with the construction of the Westside Circulator Road.

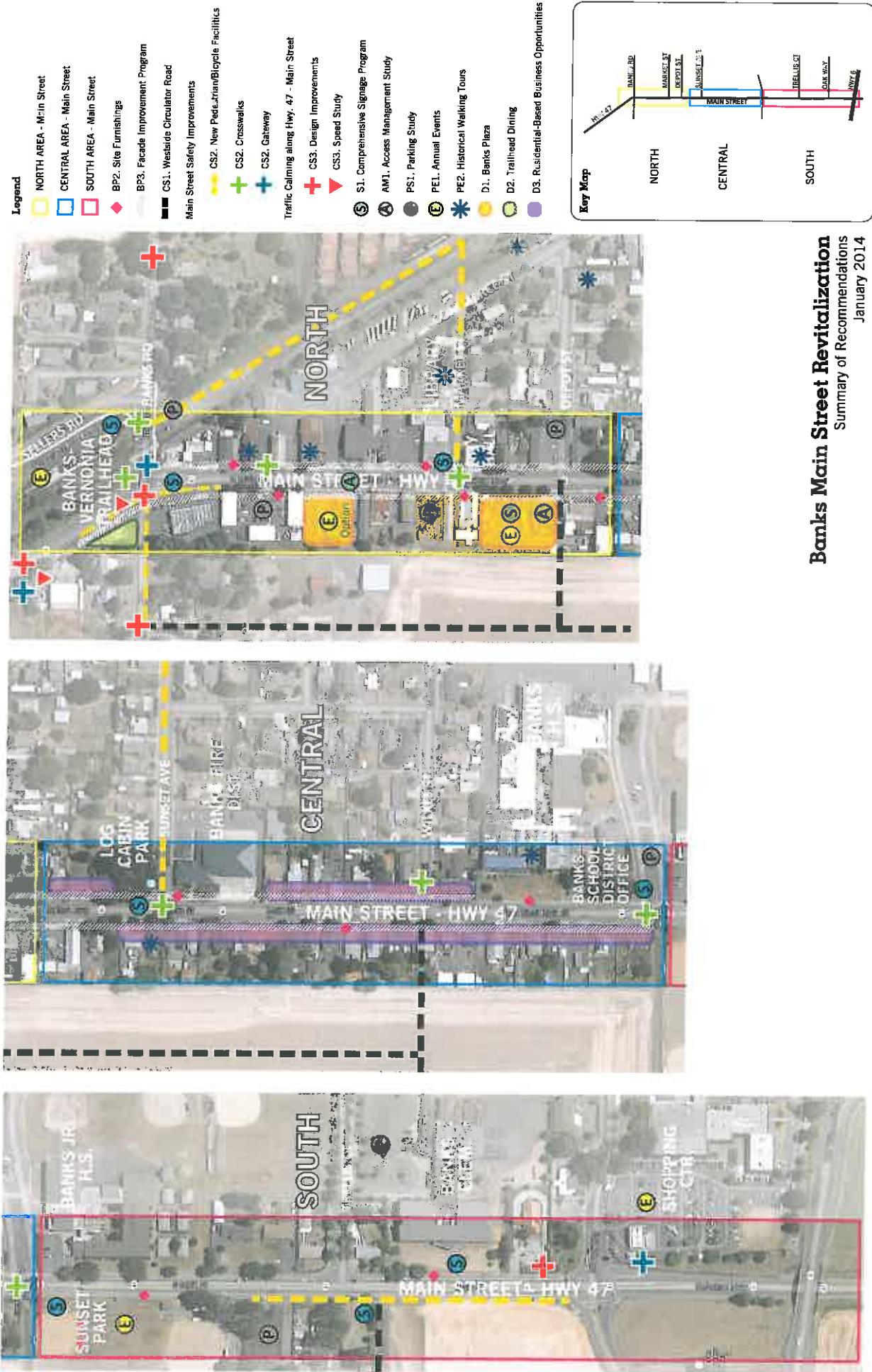
CS2. Main Street Safety Improvements – While the Westside Circulator Road could help address some challenges along Main Street, it is still essential that improvements to connectivity and safety be made in the short to medium term. Pedestrian crossings should, if possible, include full curb extensions, which make pedestrians more visible to drivers and also create space for additional furnishings and/or plantings. Other improvements at the Banks Road and Highway 47 intersection could include a signature gateway element and a marked crosswalk to improve connections to the Banks-Vernonia Trail. At the southwest corner of Banks Road and Highway 47, a new sidewalk and curb should be built at the Five Star complex to better delineate pedestrian and vehicle zones.



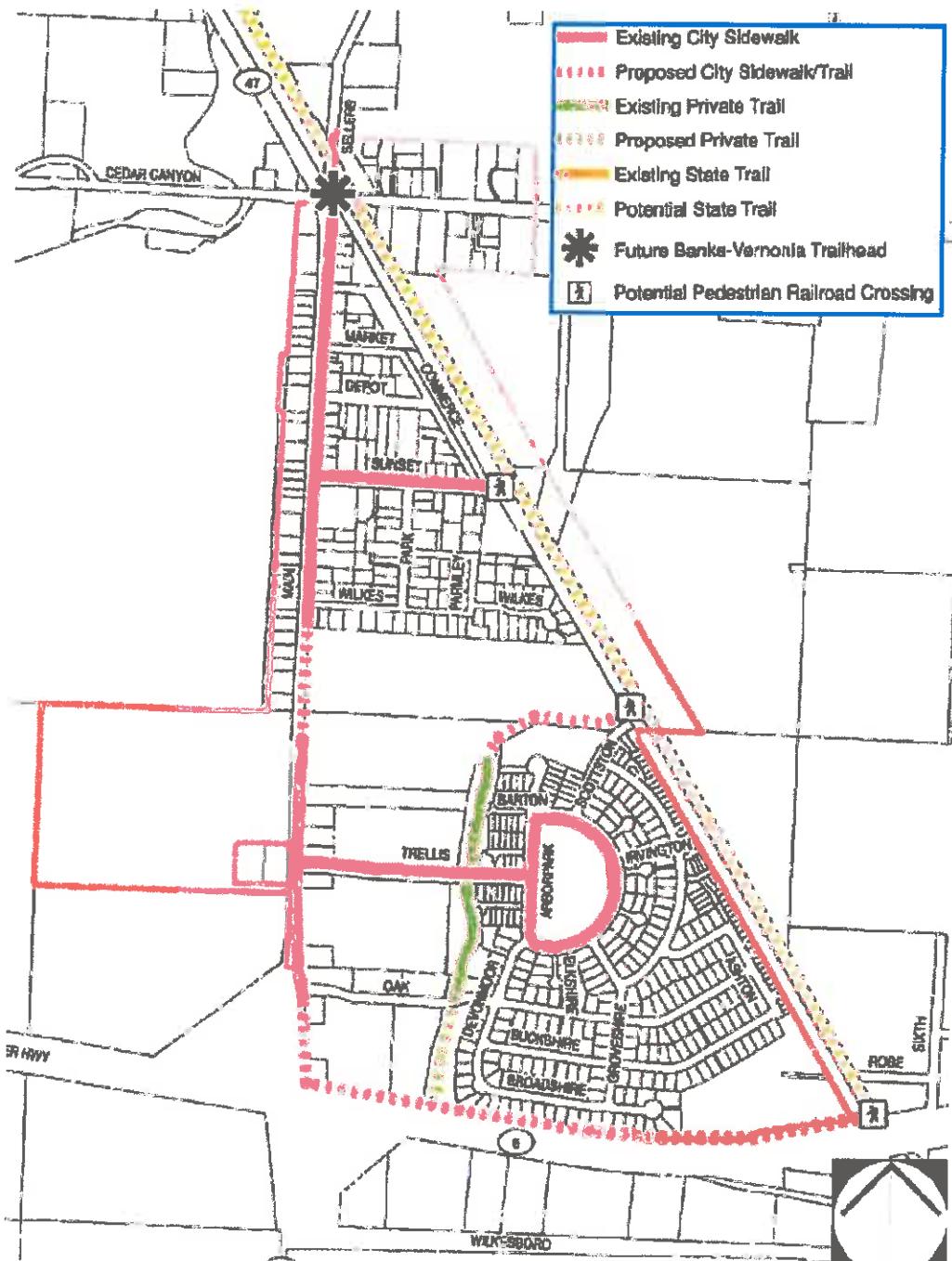
Above: Banks Main Street safety improvements at Highway 47 should include a new sidewalk at the Five Star complex, gateway treatment and crosswalks.

Banks Main Street Revitalization

Summary of Recommendations
January 2014



Banks' internal system of trails can be improved to create backside connections to Main Street and the Banks-Vernonia Trail trailhead as described in the 2010 Banks Park and Recreation Master Plan (Refer to Figure 13: Conceptual Comprehensive Trail System). Improvements on state facilities would need to be approved by ODOT. This may include conducting a "freight mobility review" to ensure freight movement is not adversely affected.



Above: Comprehensive Trail System concept from the Banks 2010 Park and Recreation Master Plan update.

CS3. Traffic Calming along Highway 47/Main Street – Banks should also work with ODOT to determine ways to make drivers more aware of the speed reduction along Highway 47 from the north. This could entail a speed study along Highway 47. Redesign of the 0.5 mile northern approach to Banks along Highway 47 should be considered. A more prominent entry sign to announce arrival to Banks may be appropriate because the current sign 0.35 miles north of Banks Road fails to slow drivers. Another approach is the use of Transportation Demand Management (TDM) strategies (i.e. scheduling deliveries to the lumber yard at off-peak times, encouraging walking and biking for students and residents) in an effort to better disperse the number and type of trips throughout the day.



Driveway Consolidation

AM1. Access Management Study – The pedestrian experience along Main Street is diminished by numerous curb cuts and driveways that provide access to parking areas dedicated to individual buildings. Some parking lots are served by two or three driveway access points. Driveway curb cuts create slope changes along the sidewalk that make it difficult for people with mobility issues to navigate. An access management study can look into the reconfiguration and consolidation of driveways to maintain access and improve the pedestrian experience. This will benefit pedestrian safety, improve Main Street's walkability, enhance visual aesthetics and maximize the capacity of the existing roadway configuration.

Parking Study

PS1. Parking Study – As a companion piece to the recommended access management study, a parking study could quantify current supply and demand for parking along Main Street and identify locations where tenants can share parking. TGM's *Parking Management Made Easy* manual should be consulted before undertaking a parking study. Local workshops on parking management are a service of the TGM program and may be useful for Banks.

Signage

S1. Comprehensive Signage Program - In addition to, or as part of, the recommended Beautification Plan, a comprehensive signage concept could be developed. This would help create an identity for Main Street, encourage foot traffic from the Banks-Vernonia Trail trailhead through town, and promote popular Banks' destinations such as the Sunset Speedway, Log Cabin

Appendix 6 Trail Alignment Refinements -
Council Creek Regional Trail
Master Plan, Implementation
Strategy Report (2014)

SEGMENT 1: BANKS

- A** Widened concrete sidewalk section along south side NW Banks Road better connecting the Banks-Vernonia Trailhead to the City's planned Westside Circulator Roadway (WCR).
- B** Street-adjacent multiuse trail (**WEST**) paralleling west side of future WCR. Trail on west side of WCR avoids new road crossing where trail re-intersects with Main Street south of downtown. Could be developed as standard multiuse trail before road construction, or as cycle track as part of road construction.
- C** Street-adjacent trail on west side of Main Street/Oregon 47 through the Oregon 6 undercrossing. Trail surface through undercrossing is concrete, undercrossing approach trails are asphalt. Uses existing signalization/crosswalk at Oregon 6 ramp intersection, as well as ODOT property between ramp and undercrossing. Trail sections approaching Oregon 6 undercrossing and the trail section under Oregon 6 do NOT include a buffer separation. This will reduce slope cuts and retaining wall heights.

The alignment from the WCR, along Main Street and under Oregon 6 could remain on the west side and shift to the east at NW Wilkesboro Road (Segment 1) or NW Greenville Road (Segment 1).

An eastside trail alignment remains a possibility. There are no technical differences between widening the two sides of the undercrossing. The challenges to the eastside alignment are due to prior development north and south of the Oregon 6 undercrossing. An eastside trail could interfere with existing commercial development on the north side of Oregon 6 and would have to cross the presently unsignalized Oregon 6 entry ramp and NW Wilkesboro Road intersection on the south side.



City of Banks Welcome Sign



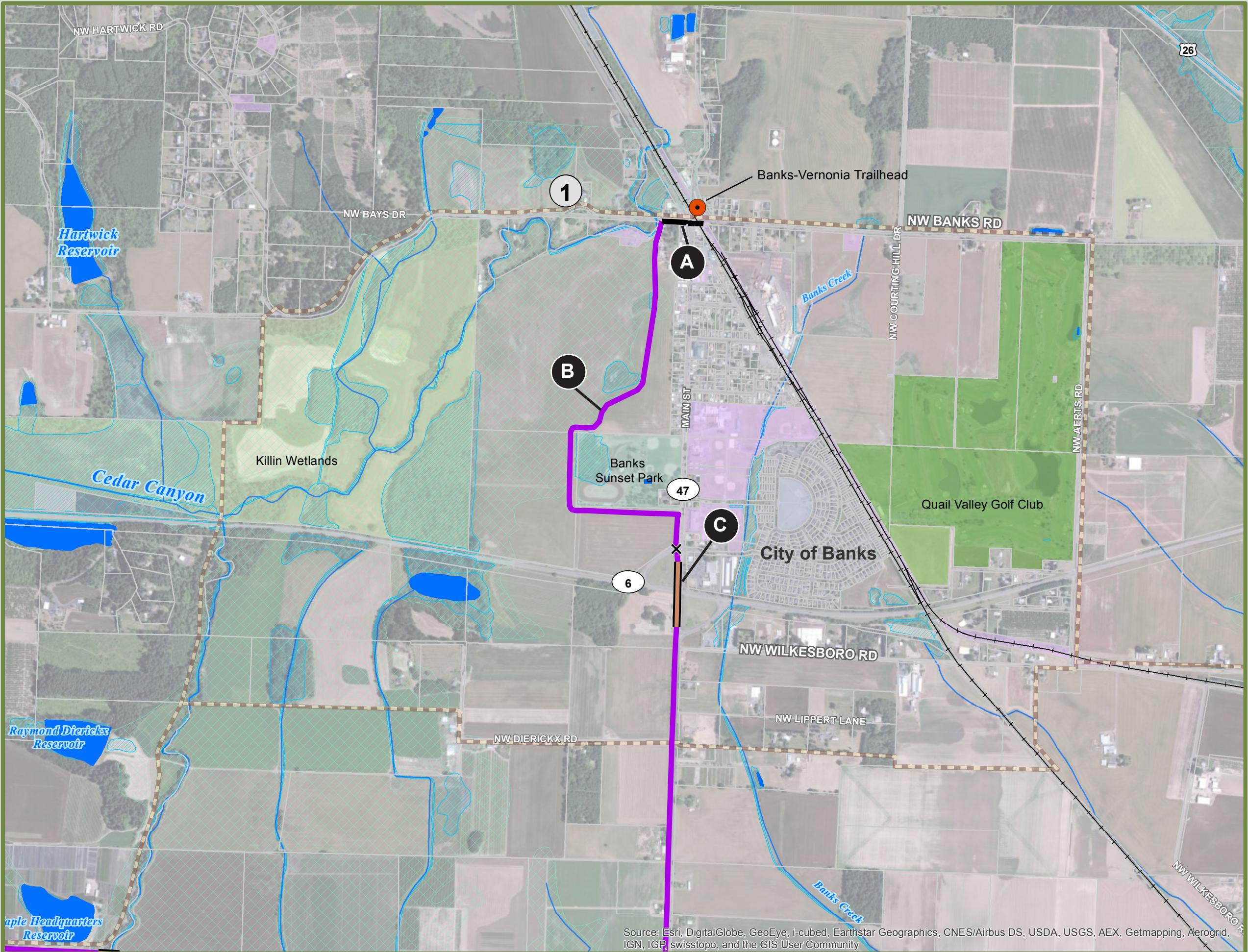
Oregon 6/Oregon 46 undercrossing looking north



Planned Westside Circulator Roadway route

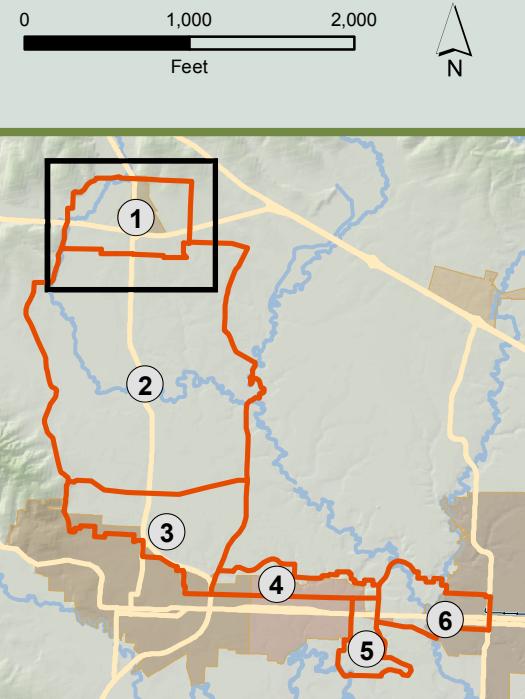
Council Creek Regional Trail Master Plan
Trail Alternatives
Segment 1
Banks

October, 2014



Trail Type
Multiuse Trail
Street-adjacent Multiuse
On-Street
Multiuse Rail-with-Trail
Multiuse Boardwalk
Community Trail
Flood-resistant Trail
Bridge or Undercrossing
Conceptual Trailhead Location

Crossing Type
Collector/Arterial Road Crossing
Minor Stream Crossing
New Railroad Crossing
Trail Segment Boundary
Railroad
BPA Corridor
Taxlot Boundary
Park
Natural Area
Private Recreation Area
Cemetery
Public Land
Streams
Waterbody
Wetland Area
FEMA 100 Yr. Flood Plain



Banks Bicycle and Pedestrian Plan



Appendix D Technical Memorandum #3 – Inventory and Evaluation



TECHNICAL MEMORANDUM #3

Date: March 20, 2015

Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Kelly Laustsen, Bart Rudolph and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

Subject: System Inventory and Evaluation

This memorandum provides a system inventory and evaluation of the existing land uses; natural and cultural resources; demographics; transportation system; and vehicle, bicycle, and pedestrian volumes. The purpose of the system inventory and existing evaluation is to help inform the conceptual bicycle and pedestrian route options developed as part of the Bicycle and Pedestrian Plan (BPP).

SYSTEM INVENTORY

The subsections below provide existing information on the transportation system in Banks and other related items, including land uses, historic and natural resources, and socio-economic data. The inventory will be used to help evaluate the pedestrian and bicycle network in Banks and identify potential elements to include in the BPP. All figures referenced below are provided in *Appendix A*.

Existing Land Uses

Figure 1 identifies vacant and developable land with the City of Banks. The majority of the vacant land within the city limits is northeast of the Portland and Western railroad tracks. The city is primarily surrounded by agricultural or vacant land. Vacant and developable land within the City's urban growth boundary (UGB) helps identify where future recreation, trail, or other improvements may be viable presently or in the future.

Figures 2 and 3 identify the existing land uses and current zoning within the urban growth boundary. Zoning establishes allowable and specific regulations for certain land uses within the City. Commercial zoning is primarily located along the northern and southern portions of Main Street, which includes the City's elementary, middle, and high school facilities immediately north of the southern commercial

area. Single family residential zoning is located along the middle portion of Main Street and in the southeastern part of the City. Industrial zoning is located generally in the northeast area of the city along the railroad tracks; however, existing non-conforming industrial uses are located south of Oregon Highway 6.

Figure 4 displays the comprehensive plan future zoning designations. There is not much difference between the current zoning and the comprehensive plan zoning, other than a few areas that reflect the actual land use and Exclusive Farm Use (EFU).

Figure 5 maps the activity centers located within the City, including the schools, library, City Hall, parks, and trail heads. Activity centers are typically considered to be attractions for bicycle and pedestrian activity.

Rights of way Tax Assessor Information

In examining potential opportunities, the evaluation will utilize the Oregon Map (ORMAP, <http://www.ormap.net>) to provide taxlot information for the properties within the City of Banks. The website includes an interactive map to identify specific tax lot information.

Historic, Natural Resources and Environmental Considerations

Figure 6 identifies historic places that have been inventoried by the State Historic Preservation Office (SHPO) and deemed eligible to be included in the historic places list, but currently not listed.

Figure 7 illustrates existing wetlands and the 100-year floodplain which mirrors the western edge of the City limits. However, it should be noted that recreation and nature trails are permitted uses and activities within the flood plain. The topography of Banks is relatively flat with the exception of northeast part of the community, where the elevation raises approximately 310 feet to its highest point at 520 feet above sea level.

Socio-Economic Data

Many factors can be used to help determine the demand for bicycle and pedestrian infrastructure. The population age can help determine ability and/or necessity. The median age of the population in Banks is approximately 30 years old. The poverty rate can also help determine the means to afford other modes of transportation. Roughly 7% of the population in Banks lives below the poverty line. Finally, the mode share for commute to work can help determine how many people rely on the infrastructure already in place. Approximately 4.2% of the population walk or take public transportation to/from work. Additional details are provided in *Appendix B*.



Existing Road Network

Figure 8 identifies the roadway functional classifications within the City of Banks. Table 1 provides a summary of the existing major routes within the city. Table 2 displays functional classification definitions as defined in the Banks Transportation System Plan (TSP).

Table 1. Existing Major Routes Summary

Street	Functional Class	# of Travel Lanes	Ownership	Sidewalks?	Bikelanes?	Freight Route?
Highway 6	Regional Highway ¹	2	State	No	No	Yes
Main Street / OR 47 (Inside City Limits)	Arterial	2	State	Partial ²	Partial ³	Yes
OR 47	Arterial	2	State	No	No	Yes
NW Banks Road	Collector	2	County	No	Partial ⁴	No
Wilkes Street	Collector	2	City	Yes	No	No
NW Trellis Way	Collector	2	City	Yes	No	No
NW Oak Way	Collector	2	City	Yes	Partial ⁵	No
NW Sellers Road	Collector ⁶	2	County	No	Partial ⁷	No
NW Wilkesboro Road	Collector ⁶	2	County	No	No	No

¹ Per the Oregon Highway Plan; the functional classification map in the Banks TSP shows Highway 6 an arterial

² No sidewalk on west side of roadway south of Sunset Park

³ No bike lanes north of Banks High School

⁴ Sidewalk provided on south side between Main Street and NW Sellers Road and a portion of the north side east of NW Sellers Road

⁵ Segment of bike lane approximately 250 feet east of Main Street to NW Devonmoor Avenue

⁶ Per the 2020 Washington County TSP (2035 update currently underway)

⁷ No bike lanes north of Banks Bicycle Repair & Rental

Table 2. Functional Classification Definitions

Classification	Definition
Regional Highways	Intended to provide inter-urban and inter-regional mobility and provide connections and links to regional centers, Statewide or interstate Highways, or economic or activity centers of regional significance.
Arterial Streets	Major transportation corridors that provide connections between other cities and geographic areas. Access to principle routes is managed and coordinated to minimize degradation of capacity while providing access to abutting land uses.
Collector Streets	Intended to provide access to abutting properties and to serve the local access needs of a neighborhood, including limiting through traffic.
Local Streets	Provide direct access to abutting land uses. These streets have low traffic volumes and are not intended to serve through traffic.

Source: Banks, OR Transportation System Plan

The Banks Transportation System Plan references Main Street (OR 47), within the city of Banks, as a designated Special Transportation Area (STA). STAs are a designated district of compact development located on a state highway within an urban growth boundary in which the need for appropriate local access outweighs the considerations of highway mobility except on designated OHP Freight Routes where through highway mobility has greater importance.

Figure 9 identifies existing speed limits in the city. The speed limit on Main Street (OR47) is 45 miles per hour (mph) south of the City, 25 mph through the city and 55 mph north of the City.



Figure 10 identifies on-street parking locations and traffic control devices. On-street parking is provided on virtually all local roads on at least one side of the street. On-street parking is not allowed on Main Street south of the High School entrance, where the bike lanes are located. On-street parking is allowed on Main Street north of the High School entrance and where the majority of the businesses are located. There is one signalized intersection at the NW Oak Way/Main Street and one overhead flashing pedestrian sign at the High School entrance, as shown in Exhibit 1.

Exhibit 1. Pedestrian Crossing at High School Entrance



Overhead flashing pedestrian sign at the High School entrance along Main Street (OR47)



Marked crosswalk at the Main Street (OR47)/Market Street intersection.

Transit System

The Tillamook County Transportation District (TCTD) provides passenger bus service between Portland and Tillamook via “The Wave” Route 5. According to the TCTD’s website, Route 5 operates 7 days a week with 2 daily eastbound and 2 daily westbound stops in Banks. The bus stop is located on NW Sunset Avenue as depicted in Figure 11.

Existing Bicycle and Pedestrian Network

Figure 12 identifies the existing bicycle infrastructure in Banks. Bicycle lanes are installed on Main Street (OR 47) between NW Oak Way and the Banks High School entrance. Bicycle lanes are currently prohibited from advancing north on Main Street (OR47) due to the existing roadway width and on-street parking, as shown in Exhibit 2. Bicycle lanes are also provided on NW Oak Way accessing the residential neighborhood in the southeast part of the city.

Exhibit 2. Bicycle Lane Challenges



Storm drain grate in the bicycle lane along Main Street (OR47)

Bicycle lane ending at the high school entrance along Main Street (OR47)

Figure 13 identifies the existing pedestrian facilities within the City. Sidewalks are available on almost every roadway, with the exception of Woodman Avenue, NW Banks Road, NW Sellers Road and NW Cedar Canyon Road. The southeast neighborhood has sidewalks on both sides of every street with multi-use trails connecting throughout the neighborhood. There are three marked crosswalks along Main Street (OR 47), including: NW Oak Way/Main Street intersection, the entrance to the High School and at the Market Street/Main Street (OR 47) intersection, as shown in Exhibit 3. There is a marked crosswalk across NW Banks Road connecting with the Banks-Vernonia Trailhead. Multiple crosswalks exist in the southeast neighborhood.

Exhibit 3. Existing Sidewalk Conditions



Sidewalk ending at Banks Sunset Park along Main Street (OR47)

Sidewalk approaching the Main Street (OR47)/NW Banks Road/NW Cedar Canyon Road intersection.



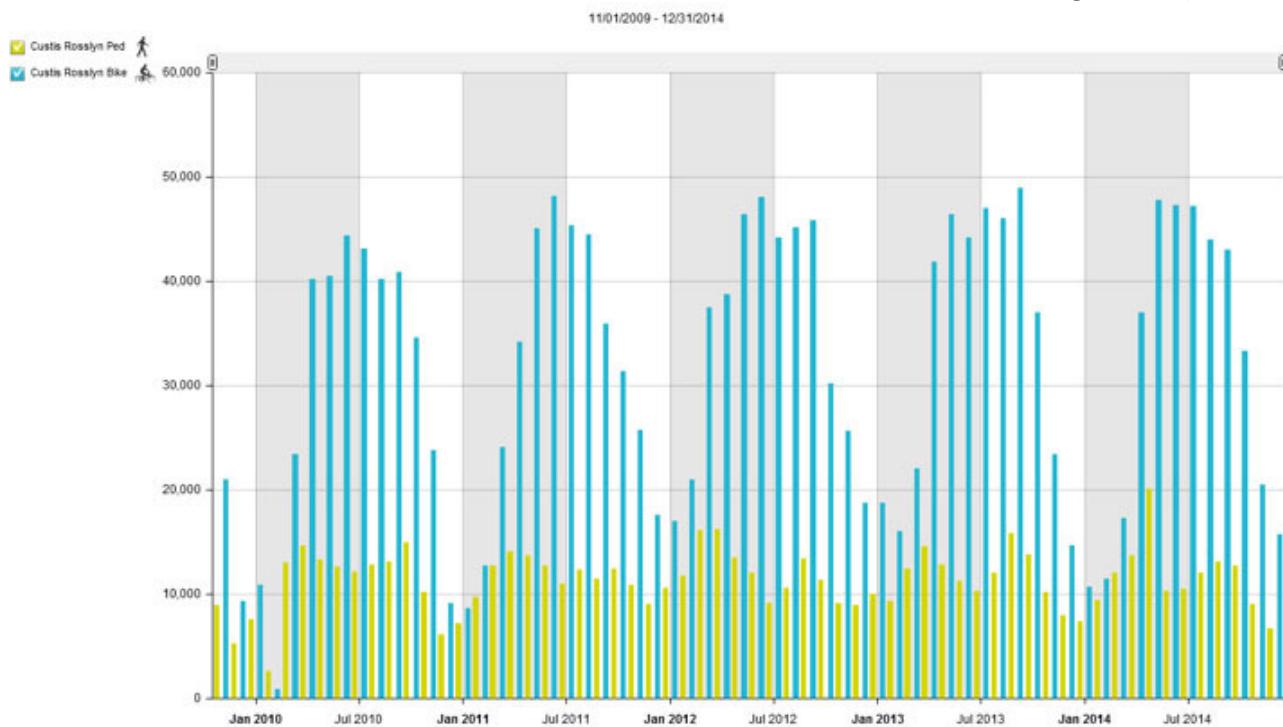
Existing Vehicle, Bicycle, and Pedestrian Volumes

In order to better understand existing vehicle, bicycle, and pedestrian volumes, a variety of data was collected at key locations throughout the City. Before reviewing the data collection, it is important to consider what factors impact multimodal user volumes, specifically environmental conditions. An explanation of the factors that affect bicycle and pedestrian data, as well as a summary of the data collected for the Banks BPP, is provided in the sub-sections below.

Factors Impacting Bicycle and Pedestrian Data

It is important to consider the seasonality of bicycle and pedestrian activity when reviewing the data collected for this project. As described *NCHRP 797: Guidebook on Pedestrian and Bicycle Volume Data Collection*, “One key difference between non-motorized and motorized volume counting that must always be kept in mind is that non-motorized volumes are much more sensitive to environmental conditions—precipitation, temperature, darkness, etc.—than are motorized vehicle volume” (2014). As an example, monthly bicycle data from Arlington County, VA is shown in Exhibit X. The data was continuously collected on the Custis Trail (an off-street, multi-use trail running east-west across Arlington) between November 2009 and December 2014 and shows seasonal patterns in pedestrian and bicycle use.

Exhibit 4. Bike and Pedestrian volumes on the Custis Trail (source: www.bikearlington.com)

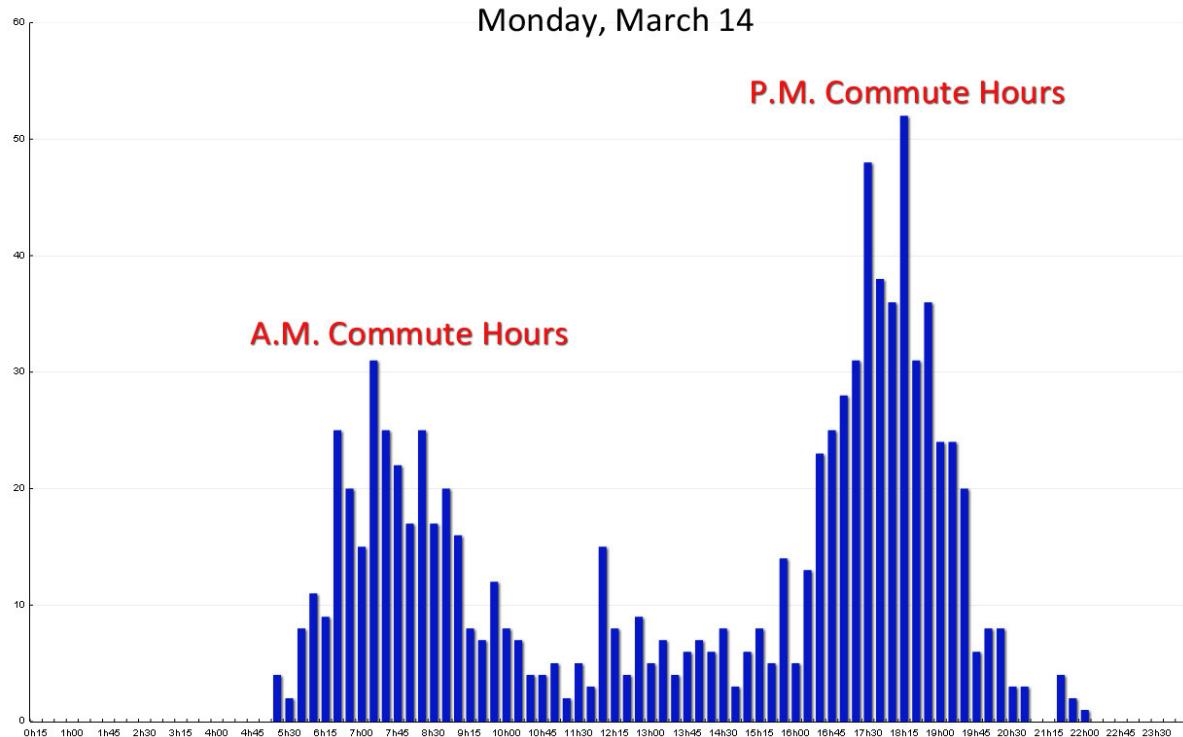


The exhibit shows that on the Custis Trail bicycle volumes are particularly prone to seasonal variations, with volumes peaking during the warmer spring and summer months.



In addition, bicycle and pedestrian volumes are influenced by the time of day and don't always follow typical trends observed in vehicle counts. On most roadways with commuter traffic, vehicle volumes will peak during the morning and evening, reflecting typically commuting times. Bicycle or pedestrian facilities that serve commuters may also show morning and evening peaks. For example, the Custis Trail previously shown in Exhibit 4 is a popular commuting facility and more highly used on weekdays than weekends, with morning and evening peaks as shown in Exhibit 5.

Exhibit 5. Fifteen-minute bike volumes on the Custis Trail (source: www.bikearlington.com)



However, recreational trails (like the Banks-Vernonia Trail) will not exhibit the same trends and are more likely to peak in volume during the weekends. Areas that serve schools may peak in the morning or afternoon to reflect students walking or biking to school.

Due to the timeline of this project, data was collected during December and January, typically low points for bicycle and pedestrian volumes. Therefore, it is not representative of typical volumes throughout the year and should primarily be considered as one reference point. This data is also valuable for the vehicle data collected and information it provides about truck volumes and activity. In addition, data was collected on a weekday during the evening peak and weekend during the midday. Therefore, it may not capture other periods of bicycle or pedestrian activity in Banks, such as that associated with the schools on Main Street.

Data Collection

Two types of traffic counts were collected at key intersections and on key roadways throughout the City, including:



- Turning movement counts (TMCs) were collected at the eight intersections shown in Figure 14 during the weekday evening peak hour (4 - 6 p.m.) and Saturday midday peak hour (10a.m. – 2 p.m.) in December 2014. The counts included vehicle, truck, pedestrian, and bicycle turning movement volumes.
- Twenty-four hour vehicle classification counts (tube counts) were collected at three locations for one week in January 2015. The counts include bicycle and vehicle volumes (by class) for the full period.

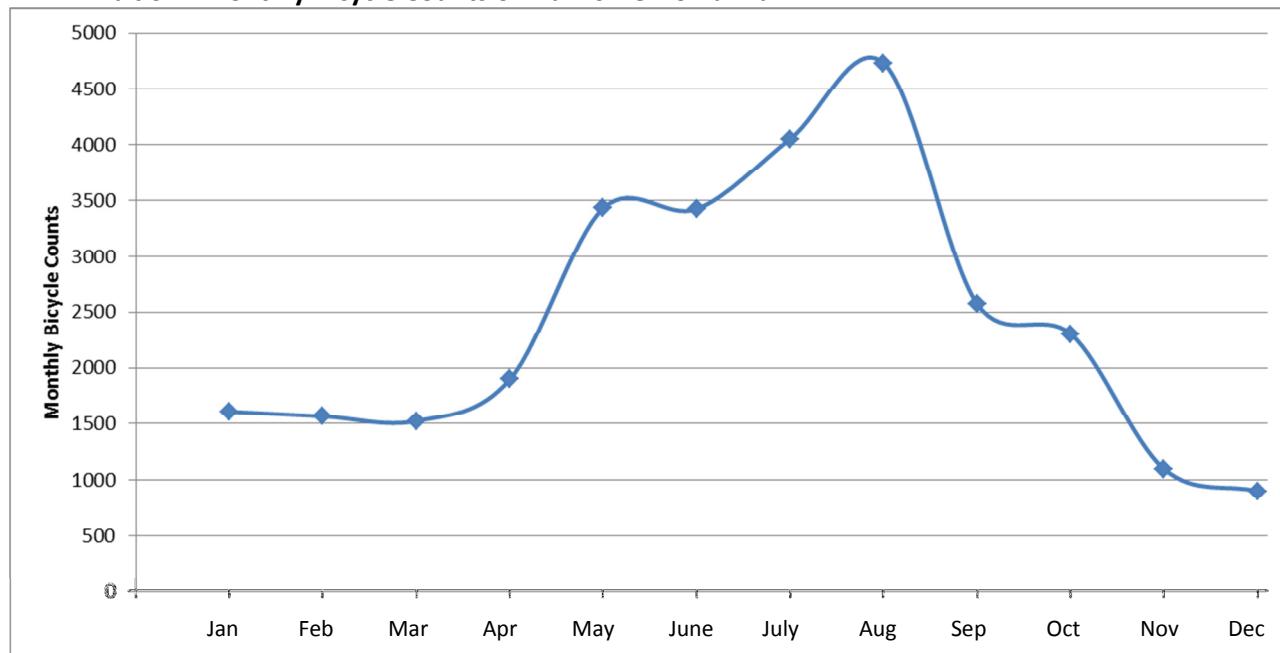
In addition, data was provided from Oregon State Parks for the Banks Vernonia Trail. The data collected is provided in *Appendix C*. The vehicle turning movement counts for the weekday PM and weekend peak hours are shown in Figure 15. The bicycle and pedestrian volumes at each intersection are shown in Figure 16. It should be noted that there are currently pedestrian crossings across Main Street at NW Oak Way, the Banks High School, and Market Street.

The data collected at each of the tube count locations and provided by Oregon State Parks on the trail is summarized below by location.

Banks-Vernonia Trailhead

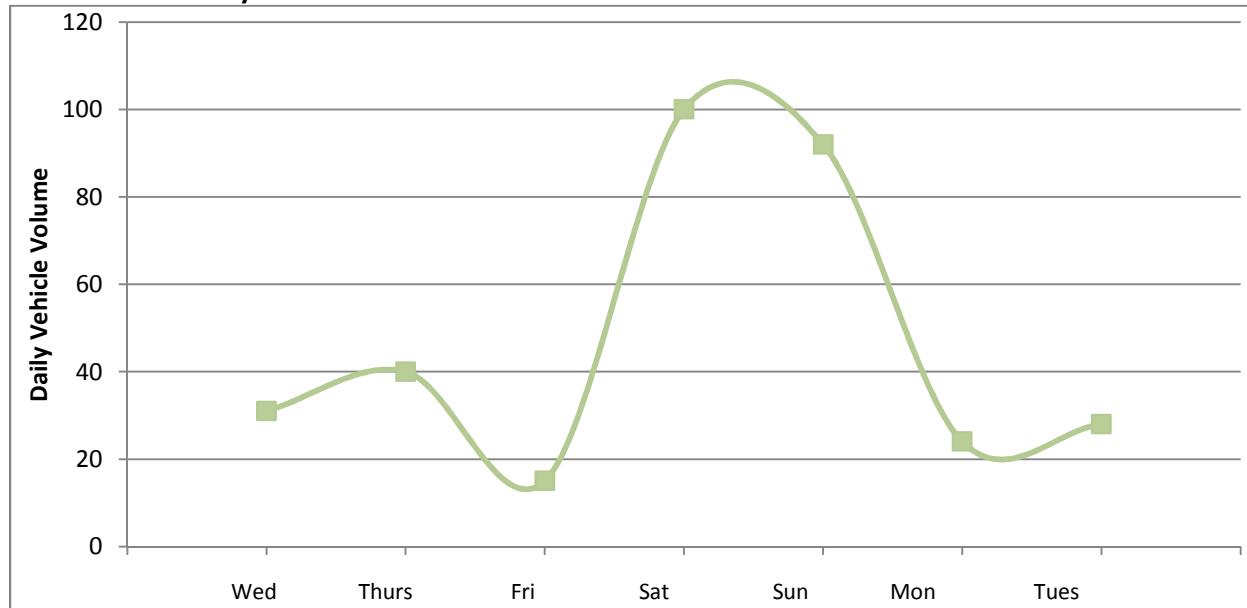
Oregon State Parks provided monthly bicycle counts at the Banks-Vernonia Trailhead for 2014, shown in Exhibit 6. As seen in the exhibit, volumes fluctuate significantly throughout the year, with the highest counts observed in May through August. This data translates in to an average of about 80 bicycle counts per day.

Exhibit 6. Monthly Bicycle Counts on Banks-Vernonia Trail



Twenty-four hour bicycle counts were collected on the Banks-Vernonia Trail north of the trailhead for one week in January 2015. The average daily vehicle volumes throughout the week are shown in Exhibit 7.

Exhibit 7. Bicycle Volumes on Banks-Vernonia Trail



As seen in the exhibit, bicycle volumes are higher during the weekend than the week, reflecting the recreational use of the trail.

NW Banks Road

Twenty-four hour vehicle classification counts were collected for one week in January 2015 on NW Banks Road just west of NW Courting Hill Drive. The average numbers of daily vehicles observed by class are shown in Table 3.

Table 3. NW Banks Road Vehicle Classification Data

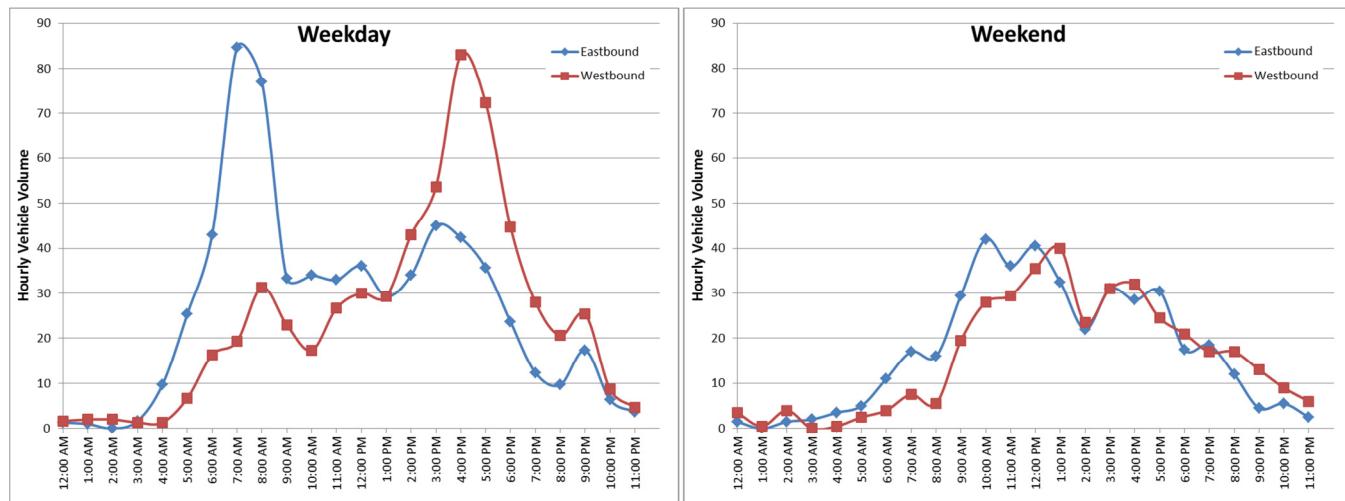
	Daily Average	Percent Total
Motorcycles	3	0.2%
Cars and Trailers	796	72.1%
Buses	3	0.2%
2 Axle Long	195	17.6%
2 Axle, 6 Tires	93	8.5%
3 Axles or larger	14	1.3%
Total	1,103	100.0%

As indicated in the table, the majority of vehicles counted on NW Banks Road are cars and trailers (72.1%). Over 25% of vehicles counted were 2 axle or larger trucks.



The average hourly vehicle volume throughout a weekday and weekend are shown in Exhibit 8.

Exhibit 8. Vehicle Volumes on NW Banks Road



As indicated in the exhibit, vehicle volumes on NW Banks Road are higher during the week than on the weekend. Volumes are more directional during the week, with eastbound volumes peaking in the morning and westbound volumes peaking in the evening.

Bicycle volumes observed on NW Banks Road were low, with a total of ten bicyclists observed over the week period (with eight observed on Sunday). This could be due to both the fact that counts were collected in January, typically a low month for bicyclist activity, and the lack of bicycle facilities on NW Banks Road. There are no paved shoulders on NW Banks Road and the vertical curves limit sight distance.

NW Main Street (OR 47)

Twenty-four hour vehicle classification counts were collected for one week in January 2015 on NW Main Street (OR 47) just north of NW Trellis Court. The average numbers of vehicles observed by class are shown in Table 4.

Table 4. NW Main Street (OR47) Vehicle Classification Data

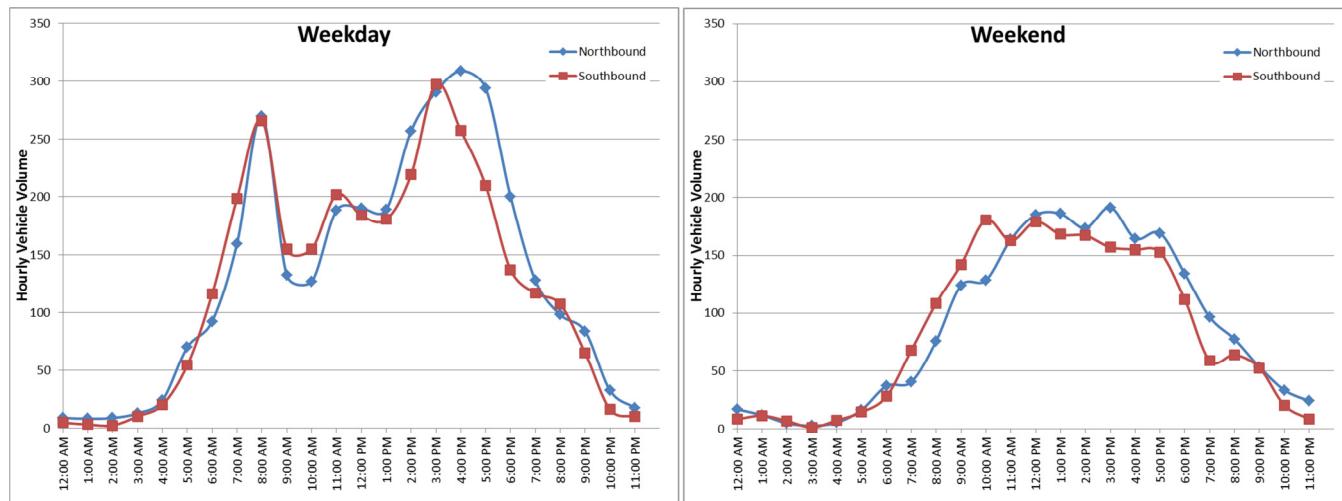
	Daily Average	Percent Total
Motorcycles	27	0.5%
Cars and Trailers	3463	62.2%
Buses	71	1.3%
2 Axle Long	1308	23.5%
2 Axle, 6 Tires	494	8.9%
3 Axles or larger	202	3.6%
Total	5565	100.0%



As seen in table 4, over 35% of vehicles observed on NW Main Street are 2 axle or larger trucks. The average daily traffic on NW Main Street is about five times higher than that on NW Banks Road.

The average hourly vehicle volume throughout a weekday and weekend are shown in Exhibit 9.

Exhibit 9. Vehicle Volumes on NW Main Street



As indicated in the exhibit, vehicle volumes on NW Main Street peak during the morning and early evening, with a small peak around the lunch time hour. Volumes are higher on a weekday than the weekend. No directional trends between northbound and southbound vehicles were observed.

Bicycle volumes observed on NW Main Street are higher during the weekend than during the week. Table 5 shows the average daily number of bicyclists observed. Bicyclists were also observed riding on the sidewalk along Main Street, noted in the table as well.

Table 5. NW Main Street (OR47) Average Daily Bicycle Volumes

	On Roadway		On West Sidewalk		On East Sidewalk	
	Northbound	Southbound	Northbound	Southbound	Northbound	Southbound
Average Weekday	4	2	0	1	2	2
Average Weekend	8	13	0	0	4	3

As previously noted, these volumes were collected in January, which is typically a low month for bicyclist activity. Therefore, they should not be considered representative of typical bicycle volumes on NW Main Street.

Crash Data

Figure 17 maps the twenty reported crashes during the last five years of available data. Between January 1, 2009 and December 31, 2013, twenty reported crashes occurred in Banks. Four of the five non-fatal injury accidents involved bicyclists or pedestrians. The bicycle related crash occurred at the



intersection of Main Street (OR47) and NW Depot Street and involved a vehicle turning, not yielding to the right-of-way. Two pedestrians were involved in a crash at or around the high school entrance off main Street (OR47) when a vehicle did not yield to the right of way. Another pedestrian was involved in a vehicle-related crash on NW Oak Way between Main Street (OR47) and NW Devonmoor Avenue. The pedestrian was illegally in the roadway. Three pedestrians were also hit by a vehicle near the intersection of NW Oak Way and NW Groveshire Avenue due to careless driving and the vehicle not yielding to the right of way. Table 6 summarizes all the reported crashes by type and severity.

Table 6 Crash Summary 2009-2013

Year	Crash Type						Severity	
	Bike/Ped	Backing	Fixed Object	Rear End	Sideswipe	Turning Movement	Property Damage Only	Non-Fatal Injury
2009	0	0	1	3	1	0	4	1
2010	0	0	0	0	0	0	0	0
2011	1	1	1	2	1	1	6	1
2012	2	1	0	0	0	2	3	2
2013	1	0	1	0	0	1	2	1

As seen in Table 6, rear-end crashes are slightly more prevalent than the other crash types, but turning movement and bicycle and pedestrian related crashes are also predominant crash types. While no specific location was identified as a high crash location, 55% of all crashes occurred along the Main Street (OR47) corridor. Three of the four crash reports that involved bicycles or pedestrians noted the driver's inattention or failure to yield to the right of way.

Planned Infrastructure Improvements / Recommendations

Previous planning improvement projects to the bicycle and pedestrian system are mapped in Figure 18. Recommendations include the west side corridor road, reconstruction of NW Banks Road, Bicycle and pedestrian railroad crossings to the UGB expansion area, safety improvements along Main Street (OR47) and other connectivity related improvements. At the time this memorandum was developed, none of these recommended improvements had been funded.

EVALUATION

The inventory above was used to identify gaps and deficiencies in the existing bicycle and pedestrian network. A gap is defined as a missing link in the network, such as a roadway without a bike or pedestrian facility. A deficiency is defined as a bicycle or pedestrian facility that is not up to standards or sufficient to meet users' needs, such as a sidewalk that is too narrow (less than four feet) or not ADA compliant.



Bicycle Gaps and Deficiencies

There is a lack of bicycle infrastructure connecting the southern part of Banks with the Banks-Vernonia State Trail, as well as a comprehensive connected network within the City itself. Currently, bicycle lanes are prevented from extending north of their current location on Main Street (OR 47) due to the roadway width and on-street parking. There is also a small gap between the Main Street (OR 47)/NW Oak Way intersection and where the bike lanes begin on NW Oak Way. The local neighborhoods have low volume roads and a trail system within them that helps provide connectivity and mode options.

The Main Street (OR 47)/NW Banks Road/NW Cedar Canyon Road intersection is an important intersection linking the Banks-Vernonia State Trail with the City. A bicycle lane is installed on a small section of NW Banks Road between Main Street and NW Sellers Road, but no infrastructure in place to help bicyclists navigate the intersection.

Pedestrian Gaps and Deficiencies

Sidewalks are in place on at least one side of almost every roadway in the city of Banks. The neighborhood in the southwest corner of the City has sidewalks on both sides of every street with trails and marked crosswalks leading to Greenville Park. The most notable gaps in sidewalk appear on the west side of Main Street (OR 47) from where the sidewalk ends next to Banks Sunset Park south to Highway 6 and the lack of designated facilities at the Main Street (OR 47)/NW Banks Road/NW Cedar Canyon Road intersection. Pedestrians have access to a sidewalk on the east side on Main Street and a crosswalk on NW Banks Road, but no facilities exist on the west side of Main Street at that intersection.

An interactive map is available online (<http://maps.kittelson.com/banksbpp>) that notes the gaps and deficiencies identified above, as well as those highlighted in Technical Memorandum #2 and the walking tour during the SAC meeting. SAC members and the public are encouraged to use the map to note any additional gaps or deficiencies they have observed in the city. The map will serve as a catalogue of the gaps and deficiencies in the bicycle and pedestrian network.

NEXT STEPS

This memorandum was reviewed by the Stakeholder Advisory Committee (SAC) during SAC Meeting #1 on March 5th, 2015. SAC members were invited to comment on the inventory and evaluation and provide their recommended changes. The project team reviewed the SAC's feedback and updated the memorandum accordingly, with this final copy incorporating their comments. Moving forward with the development of the BPP, the evaluation section will be used to identify gaps and deficiencies in the bicycle and pedestrian networks and develop potential plan elements. As noted above, the SAC members and public are encouraged to continue to use the interactive map available online (<http://maps.kittelson.com/banksbpp>) to note additional gaps and deficiencies.



APPENDICES

- A. Figures
- B. Socio-economic Data
- C. Traffic Counts



Banks Bicycle and Pedestrian Plan



Appendix E Technical Memorandum #4 – Crossing Options



TECHNICAL MEMORANDUM #4

Date: March 27, 2015

Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Karla Kingsley, Kelly Laustsen and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

Subject: Bicycle and Pedestrian Facilities, Crossing Options, and Amenities Toolbox

The past decade has seen the introduction of a variety of treatment options aimed at enhancing the transportation system for bicyclists and pedestrians. This memorandum provides a toolbox of bicycle- and pedestrian-related treatment options for implementation in the City of Banks, including:

- Bicycle facilities
- Pedestrian facilities
- General crossing treatments
- Railroad crossing treatments
- Bicycle intersection treatments
- Pedestrian/bicycle amenities
- Traffic calming treatments

For each treatment, an image, relative cost estimate¹, description, benefits, constraints, typical applications, and design considerations are provided, as well as resources for further information. This toolbox will be used throughout the development of the BPP to help identify potential treatments for the City to be included in the Plan.

¹ The relative cost estimate is on a scale of \$ to \$\$\$\$\$. Typical costs for each treatment may vary significantly based on local application and conditions, such as right-of-way acquisition, drainage needs, utility locations, etc. The main purpose of the costs in this toolbox is to show relative differences between treatments.

ORGANIZATION

The treatments are organized into the categories listed above, with headers and footers indicating the categories. Where applicable, the treatments are organized from highest level of protection to lowest level of protection. Typically, the treatments that provide the most protection will have the highest appeal to a wide variety of users. For example, bicycle treatments are commonly categorized by the level of separation they provide bicyclists from motor vehicles. Separated facilities have been found to attract more bicyclists of a variety of ages and abilities and are generally considered “lower stress” facilities. However, separated facilities must be carefully designed to allow for safe crossings and turning movements for both motor vehicles and bicyclists at intersections. As another example, treatments for pedestrian mid-block crossings range from a high-level of protection with a pedestrian signal to a lower level of protection with a high-visibility crosswalk. Intermediary levels of protection can be provided with a pedestrian hybrid beacon or rapid rectangular flashing beacon.

Table 1 summarizes the treatments provided in the toolbox by category. The toolbox that follows provides more detail on each facility type, benefits and other considerations, and common applications.

Table 1. Toolbox Contents

	Page #	Treatment	Image	Level of Separation / Protection
Bicycle Facilities	BF-1	Multi-Use Path		High Level of Separation/Protection
	BF-2	One-Way Separated Bike Lane (Cycle Track)		
	BF-3	Two-Way Separated Bike Lane (Cycle Track)		
	BF-4	Buffered Bike Lane		
	BF-5	Standard Bike Lane		
	BF-6	Advisory Bike Lane		
	BF-7	Paved Shoulder		
	BF-8	Bicycle Boulevard		
	BF-9	Shared Lane Roadways		Low Level of Separation/Protection

Pedestrian Facilities	PF-1	Multi-Use Path		High Level of Separation/Protection
	PF-3	Sidewalk		
	PF-2	Pedestrian Path (Sidepath)		
	PF-4	Shoulder Pedestrian Facility		Low Level of Separation/Protection
General Crossing Treatments	CT-1	Grade Separated Crossing		High Level of Separation/Protection
	CT-2	Pedestrian Signal		
	CT-3	Pedestrian Hybrid Beacon		
	CT-4	Rapid Rectangular Flashing Beacon		
	CT-5	Crossing Island (Pedestrian Refuge)		
	CT-6	Bulb-Out/Curb Extension		
	CT-7	Raised Pedestrian Crossing		
	CT-8	High Visibility Crosswalk		Low Level of Separation/Protection

	CT-9	Leading Pedestrian Interval (LPI)		Not Applicable
Railroad Crossing Treatments	RR-1	Automatic Pedestrian Gate		High Level of Separation/Protection
	RR-2	"Active" Treatments		
	RR-3	Basic "Passive" Treatments		
	RR-4	Other "Passive" Treatments		Low Level of Separation/Protection
Bicycle Intersection Treatments	BI-1	Bike Signal		High Level of Separation/Protection
	BI-2	Bike Boxes		
	BI-3	Two-Stage Left Turn Boxes		
	BI-4	Pavement Markings Through Intersections		Low Level of Separation/Protection

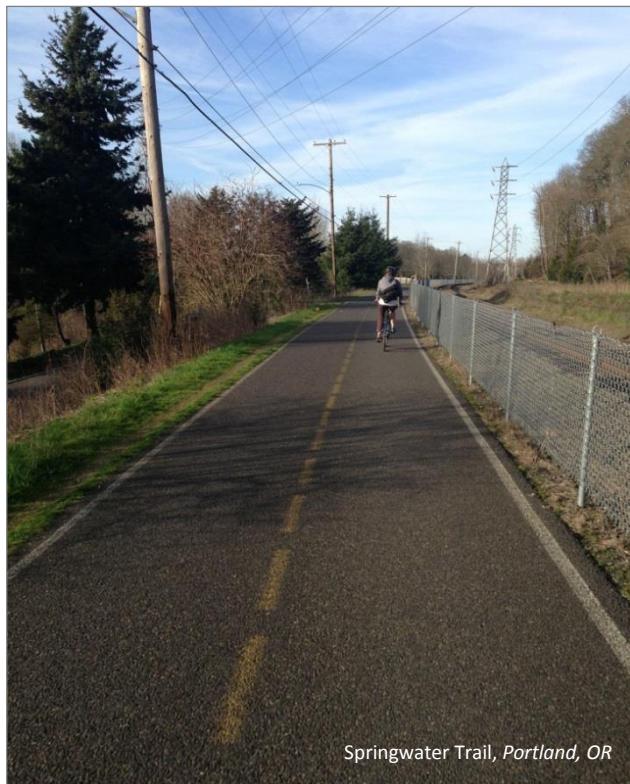
Pedestrian/Bicycle Amenities	A-1	Bicycle Parking		Not Applicable
	A-2	Street Furniture and Lighting		Not Applicable
	A-3	Transit Stop Shelters		Not Applicable
Traffic Calming Treatments	TC-1	Rumble Strips		Not Applicable
	TC-2	Speed Bumps, Speed Humps, Speed Tables		Not Applicable
	TC-3	Reduced Curb Radii		Not Applicable



Bicycle Facilities

MULTI-USE PATH

Cost: \$\$\$



Multi-use paths are paved, bi-directional, trails away from roadways that can serve both pedestrians and bicyclists.

Multi-use paths can be used to create longer-distance links within and between communities and provide regional connections. They play an integral role in recreation, commuting, and accessibility due to their appeal to users of all ages and skill levels.

Benefits

- Provides facility for both pedestrians and bicyclists in less space than separate facilities.
- Separation from motor vehicles can attract users of all levels.

Constraints

- May be unsafe in areas with frequent crossings or driveways.
- When parallel to roadways, requires substantial space for buffer.
- Potential for conflicts between bicyclists and pedestrians due to shared facility.
- Isolated paths may introduce personal security concerns .

Typical Applications

- Medium- to long-distance links within and between communities that also serve as recreational facilities.
- Parallel to roads in rural areas where sidewalks and on-street facilities are not present.

Design Considerations

- Best suited in areas where roadway crossings can be minimized (such as parallel to travel barriers such as highways, railroad tracks, rivers, shorelines, natural areas, etc.).
- Necessitate high-visibility treatments for crossings.
- A minimum width of 10 feet is recommended for low-pedestrian/bicycle-traffic contexts; 12 to 20 feet should be considered in areas with moderate to high levels of bicycle and pedestrian traffic.
- Pavement markings can be used to indicate distinct space for pedestrian and bicycle travel.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- Metro Greenway Trails
- ODOT Highway Design Manual



Bicycle Facilities

ONE-WAY SEPARATED BIKE LANE (CYCLE TRACK)

Cost: \$\$\$\$-\$\$\$\$\$



A one-way separated bike lane (SBL), also known as a cycle track or protected bike lane, is a bicycle facility within the street right-of-way separated from motor vehicle traffic by a buffer and a physical barrier, such as planters, flexible posts, parked cars, or a mountable curb. On two-way streets, a one-way SBL would be found on each side of the street, like a standard bike lane.

Benefits

- Provides physical separation from motor vehicle traffic, which can attract users of all levels.
- Buffer can provide opportunities for landscaping.
- Reduced risk of “dooring” when parked cars are present.

Typical Applications

- Roadway segments with sufficient right-of-way or where a “road diet” (vehicle lane reduction) can be implemented.
- Key segments of the bicycle network where more protection is desirable, such as areas with higher traffic volumes or speeds, or routes to common destinations, like schools.
- Roadways with infrequent driveways and side street accesses.

Design Considerations

- Intersections must be designed to ensure visibility of bicyclists using the facility. Treatments include separate signal phases for bicyclists and high visibility pavement markings.
- Buffer type can vary depending on context, presence of parking, and available right-of-way.
- Green pavement markings or striping can add visibility and awareness in “conflict areas” or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- CROW Design Manual for Bicycle Traffic.
- ODOT Highway Design Manual.
- ODOT Bicycle and Pedestrian Design Guide.
- FHWA Separated Bike Lane Planning and Design Guide



Bicycle Facilities

TWO-WAY SEPARATED BIKE LANE (CYCLE TRACK)

Cost: \$\$\$



A two-way separated bike lane (SBL), also known as a two-way cycle track or protected bike lane, is a facility within the street right-of-way separated from motor vehicle traffic by a buffer and a physical barrier, such as planters, flexible posts, parked cars, or a mountable curb. Two-way SBLs serve bi-directional bicycle travel within the facility on one side of the street.

Benefits

- Requires less right-of-way than a one-way SBL, due to the need for only one buffer.
- Provides physical separation from motor vehicle traffic, which can attract users of all levels.
- Reduced risk of “dooring” when parked cars are present.

Constraints

- May be less intuitive for drivers and bicyclists due to apparent “wrong-way” travel on one side of street.
- May be unsafe in areas with frequent crossings or driveways.
- Construction may be more expensive than standard bike lane.

Typical Applications

- On-street connections between off-street multi-use paths.
- Roadways with infrequent driveways and side street accesses.
- Key segments of the bicycle network where more protection is desirable, such as areas with higher traffic volumes or speeds or routes to common destinations, like schools.
- On one-way streets where two-way bicycle travel is desirable.

Design Considerations

- Intersections must be designed to ensure visibility of bicyclists using the facility. Treatments include separate signal phases for bicyclists and high visibility pavement markings.
- Buffer type can vary depending on context, presence of parking, and available right-of-way.
- Green pavement markings or striping can add visibility and awareness in “conflict areas” or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- CROW Design Manual for Bicycle Traffic
- FHWA Separated Bike Lane Planning and Design Guide



Bicycle Facilities

BUFFERED BIKE LANE

Cost: \$\$\$\$



Buffered bicycle lanes are on-street lanes that include an additional striped buffer of typically 2-3 feet between the bicycle lane and the vehicle travel lane and/or between the bicycle lane and the vehicle parking lane.

Benefits

- A parking-edge buffer on streets with on-street parking can reduce the likelihood of “dooring.”
- Increased separation from motor vehicles (over standard bicycle lanes) can increase bicyclist comfort.

Constraints

- Does not provide physical protection and therefore may not attract bicyclists of all levels.
- The additional width provided by the buffer may invite motorists to illegally park in the lane if not adequately signed and enforced.

Typical Applications

- Long-distance links within and between communities.
- Streets with sufficient pavement width to provide a buffer.
- Widely applicable in both urban and rural settings.
- Segments of the bicycle network with moderate vehicle speeds or volumes.

Design Considerations

- Typical buffer width is 2-3 feet, in addition to standard bicycle lane width of 5-6 feet.
- Green pavement markings or striping can add visibility and awareness in “conflict areas” or intersections where bicycle and vehicle travel paths cross.
- Buffer space can have diagonal stripes or rumble strips to deter vehicles from traveling or parking in the space.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- NACTO Urban Bikeway Design Guide
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide



Bicycle Facilities

STANDARD BIKE LANE

Cost: \$\$\$



A standard bike lane is an on-street facility that provides space designated for bicyclists, separated from vehicles by pavement markings.

Benefits

- Provides a designated facility for bicyclists using the minimum pavement width.
- Provides increased visibility for bicyclists.
- Relatively inexpensive treatment when pavement width is available.

Constraints

- Can position bicyclists in the “door zone” if located adjacent to parked vehicles without a buffer.
- Motorists may illegally park in the lane if not adequately signed and enforced.
- Does not provide physical protection or horizontal buffer from vehicles and therefore does not attract bicyclists of all levels.

Typical Applications

- Arterials, collectors, and other non-local streets with speeds higher than 25 mph or over 3,000 average daily motorized traffic volumes.
- Streets without sufficient right-of-way or pavement width for buffered bike lanes or separated bike lanes (SBLs).

Design Considerations

- Typical bike lane width is 6 feet, with 5 feet in constrained locations. A minimum 4-foot width can be used on constrained segments where on-street parking is not present.
- Green pavement markings or striping can add visibility and awareness in “conflict areas” or intersections where bicycle and vehicle travel paths cross.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- NACTO Urban Bikeway Design Guide
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide



Bicycle Facilities

ADVISORY BIKE LANE

Cost: <\$



Advisory bike lanes, also known as “suggestion lanes,” are bicycle lanes that motor vehicles can use to pass oncoming motor vehicles after yielding to bicyclists. Advisory bicycle lanes are used in combination with a single center lane (without a centerline) for bi-directional motor vehicle travel on relatively low-volume streets.

Benefits

- Provides striped bicycle facility on roadways with very limited right-of-way or pavement width.
- Encourages slower motor vehicle speeds and yielding to bicyclists.
- Very inexpensive treatment consisting of only signing and striping.

Constraints

- Motorists may not initially understand advisory lanes due to limited applications in the US to date.
- Does not provide physical protection from vehicles and may not attract bicyclists of all levels.

Typical Applications

- Streets with less than 6,000 average daily motorized traffic that do not have sufficient width for unshared bicycle facilities.
- Can be applied in urban or rural contexts.

Design Considerations

- Advisory bike lanes can be striped as 5-7 foot lanes with a single center motorized vehicle lane of 10 to 18 feet.
- Explanatory signage may be helpful in US contexts to communicate to motorists that they must yield to bicyclists before passing oncoming vehicles.

Additional Guidance

- CROW Design Manual for Bicycle Traffic (Netherlands Design Guide)



Bicycle Facilities

PAVED SHOULDER

Cost: \$-\$



A paved road shoulder can serve as a bicycle facility that provides space separated from motor vehicle traffic in rural areas.

Benefits

- Provides a space separated from motorists.
- Requires less right-of-way than a separated multi-use path.

Constraints

- Does not provide physical protection from vehicles and may not attract bicyclists of all levels.
- Shoulders serving other uses, such as broken-down vehicles, may force bicyclists into travel lanes.

Typical Applications

- Typically applied on rural roadways.
- Also used as an interim treatment in urbanizing areas.

Design Considerations

- A 6-foot width is preferred to accommodate bicycle travel, with a 4-foot minimum in constrained areas. Greater widths can be used in higher-speed locations.
- Rumble strips or profiled striping can be used to enhance safety and minimize motorists encroaching on the shoulder.

Additional Guidance

- AASHTO Guide for the Development of Bicycle Facilities
- ODOT Highway Design Manual
- ODOT Bicycle and Pedestrian Design Guide



Bicycle Facilities

BICYCLE BOULEVARD

Cost: \$



Portland, OR

Bicycle boulevards are low-volume, low-speed streets where bicycles and motorized vehicles share road space, but where bicycle movements are prioritized and optimized through use of motorized vehicle restrictions, traffic calming elements, and intersection crossing treatments.

Benefits

- Typically does not require additional right-of-way.
- Can create a comfortable space for bicyclists of all levels.
- Enhances connectivity of the network for bicyclists.

Constraints

- Bicycle boulevards may reduce through routes for motorized vehicles
- Some treatments, such as traffic circles or chicanes, may be expensive.



SE Spokane Street
Portland, OR

Typical Applications

- Local routes parallel to larger, higher-traffic roadways, such as arterials or collectors.
- Low-traffic neighborhood routes that can enhance the bicycle network connectivity.

Design Considerations

- A variety of traffic calming elements can be employed, including speed humps, traffic circles, chicanes, median barriers, and traffic diverters in order to keep traffic volumes low and minimize through-traffic.
- Consider providing “bicycle-only” through movements at intersections, where motorists are required to turn off the bicycle boulevard.
- Include shared lane markings and wayfinding signage for bicyclists.
- Recommended for streets with posted speeds of 25 mph or lower and volumes less than 3,000 average daily motorized traffic.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- Manual on Uniform Traffic Control Devices (MUTCD)



Bicycle Facilities

SHARED LANE ROADWAYS

Cost: <\$



Prince George's County, MD



Cornell Road,
Portland, OR



Kuna, ID

Shared lane roadways include roadways without separate bicycle facilities on which bicycle travel is not prohibited. Most roadways, with the exception of some limited access freeways, are “shared lane roadways” if they do not have a different type of bicycle facility. Shared lane roadways that are part of a designated bicycle network may include shared lane markings (“sharrows”) or signage to indicate the legal presence of bicyclists in the travel lane.

Benefits

- Allows for bicycle travel when other treatments are not feasible.
- Low- to no-cost.

Constraints

- Does not provide any separation from vehicles.
- Without additional traffic-calming treatments, it is likely to attract only strong and fearless bicyclists.

Typical Applications

- Rural roadways without shoulders often use “share the road” signage to indicate to road users that bicyclists may be present.
- Sharrows are typically used in urban or suburban locations on bicycle network links where other facilities are not present.

Design Considerations

- Sharrows should be placed at least 4 feet from the edge of the curb or on-street parking.

Additional Guidance

- ODOT Bicycle and Pedestrian Design Guide
- ODOT Highway Design Manual
- Manual on Uniform Traffic Control Devices (MUTCD)



Pedestrian Facilities

MULTI-USE PATH

Cost: \$\$\$



Multi-use paths are paved, bi-directional, trails away from roadways that can serve both pedestrians and bicyclists.

Multi-use paths can be used to create longer-distance links within and between communities, provide regional connections and play an integral role in recreation, commuting, and accessibility due to their appeal to users of all ages and skill levels.

Benefits

- Provides opportunity for a scenic recreational pedestrian facility.
- Hard surface allows for universal accessibility.

Constraints

- Pedestrian and bicycle conflicts may occur in shared space.
- When parallel to roadways, require substantial space for buffer.
- Isolated paths may introduce personal security concerns.

Typical Applications

- Medium- to long-distance links within and between communities that also serve as recreational facilities.
- Rural areas where sidewalks and on-street facilities are not present.

Design Considerations

- Best suited in areas where roadway crossings can be minimized (such as parallel to travel barriers such as highways, railroad tracks, natural areas, rivers, shorelines, etc.).
- Necessitate high-visibility treatments for crossings.
- A minimum width of 10 feet is recommended for low-pedestrian/bicycle-traffic contexts; 12 to 20 feet should be considered in areas with moderate to high levels of bicycle and pedestrian traffic.
- Pavement markings can be used to indicate distinct space for pedestrian and bicycle travel

Additional Guidance

- ODOT Bicycle and Pedestrian Design Guide
- AASHTO Guide for the Development of Bicycle Facilities



Pedestrian Facilities

SIDEWALK

Cost: \$\$\$



Portland, OR



SE 17th Avenue
Portland, OR



Milwaukee Ave
Portland, OR

A sidewalk is a dedicated pedestrian facility adjacent to the roadway and separated from traffic by a curb.

Benefits

- Provides pedestrians with a dedicated physically-separated space.
- Provides means of mobility for people using wheelchairs, people with strollers, or others who may not be able to travel on an unpaved surface.

Constraints

- Adding a concrete curb and sidewalk to streets adds a substantial expense to the overall construction cost.

Typical Applications

- Typically provided on urban (non-rural) and residential streets, with the exception of limited access freeways.
- Typically added to streets in urbanizing areas as development occurs.

Design Considerations

- Typically 6 to 8 feet wide. Sidewalks should be constructed at least 5 feet wide, with a minimum of 4 feet of clear width, excluding a shy distance of 1.5 feet from the curb and any adjacent obstructions.
- A landscaped buffer is preferable in residential areas and in locations with higher traffic speeds and volumes.
- Wider sidewalks of 12 to 20 feet can be beneficial in commercial or “town center” areas in order to accommodate higher pedestrian volumes, street furniture, pedestrian scale lighting, business signage, bike parking, transit stops, and other amenities.

Additional Guidance

- ODOT Highway Design Manual.
- ODOT Bicycle and Pedestrian Design Guide
- AASHTO Green Book
- NACTO Urban Streets Design Guide



Pedestrian Facilities

PEDESTRIAN PATH (SIDEPATH)

Cost: \$\$



A pedestrian path is a hard-surface path adjacent to the roadway in lieu of a sidewalk in areas where other bicycle facilities exist. Similar to a multi-use path, pedestrian paths are narrower in width and generally do not invite bicycle travel.

Benefits

- Provides a hard surface for pedestrians buffered from the roadway.
- Requires less right-of-way than a multi-use path.
- Lower cost than construction of a full sidewalk with curb and gutter.

Constraints

- May also attract bicyclists, creating the potential for conflicts between pedestrians and bicyclists.

Typical Applications

- In constrained rural areas where sidewalks are not present and multi-use paths cannot be accommodated.
- As an interim treatment in urbanizing areas to make connections between sidewalk facilities.

Design Considerations

- Typically 5- to 8-foot wide asphalt surface.
- Pedestrian paths are typically separated from the roadway by a gravel or vegetated buffer instead of a curb and gutter.
- Should follow ADA standards to allow for universal access.
- Though not intended for bicyclists, pedestrian paths may attract bicyclists if a separate bicycle facility is not provided.

Additional Guidance

- FHWA Designing Sidewalks and Trails for Access
- ODOT Highway Design Manual



Pedestrian Facilities

SHOULDER PEDESTRIAN FACILITY

Cost: \$-\$



A paved shoulder facility provides access for pedestrians on a hard surface in rural areas where sidewalks are not present.

Benefits

- Provides a hard surface space separated from motorists.
- Requires less right-of-way than a separated multi-use path.
- More cost-effective than installing sidewalks.

Constraints

- Does not provide physical protection of a curb and may not be comfortable for all users.
- Shoulders serving other uses, such as broken-down vehicles, may force pedestrians into travel lanes.



Typical Applications

- Typically applied on rural roadways.
- Also used as an interim treatment in urbanizing areas.

Design Considerations

- A 6-foot width is preferred to accommodate pedestrian travel, with a 4-foot minimum of paved surface in constrained areas. Greater widths can be used in higher-speed locations.
- Rumble strips or profiled striping can be used to enhance safety and minimize motorists encroaching on the shoulder.

Additional Guidance

- ODOT Highway Design Manual
- AASHTO Green Book



General Crossing Treatments

GRADE SEPARATED CROSSING

Cost: \$\$\$\$\$



A grade-separated crossing is a bridge (overcrossing) or a tunnel (undercrossing) that carries non-motorized traffic over or under a motorized corridor or other barrier to travel.

Benefits

- Provides physical separation from motor vehicle traffic, attracting users of all levels.
- Minimizes crash risk and can provide a safe crossing of any type of facility, including railroads and limited access highways.

Constraints

- Grade-separated crossings can be very expensive.
- Depending on topography, may require significant additional space to make grade changes.
- Long under-crossings have the potential to present safety and security issues.

Typical Applications

- Crossings of limited access highways, multi-lane roadways, or railroads.
- Multi-use path crossings often have grade separated crossings in order to provide comfortable and safe crossings for users of all levels.

Design Considerations

- If a substantial slope or out-of-direction travel is required, some bicyclists or pedestrians may avoid using the crossing, so minimize slope and out-of-direction travel if possible.
- In selecting a grade separated crossing, consider the surrounding topography, natural features, and floodplain.
- Consider whether the crossing needs to accommodate equestrians.
- Ensure adequate sight distance for bicyclists entering the facility to see oncoming bicyclists or pedestrians. If not possible, consider requiring bicyclists to dismount.

Additional Guidance

- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings



General Crossing Treatments

PEDESTRIAN SIGNAL

Cost: \$\$\$\$



This crossing type can provide pedestrians with a signal-controlled crossing at a mid-block location or at a previously stop-controlled intersection where pedestrian volumes warrant full signalization. The signal remains green for the mainline traffic movement until actuated by a push button to call a red signal for traffic.

Benefits

- Has nearly 100 percent rate of motorist yielding behavior at crossing locations.
- Same appearance as standard traffic signal, so motorist understanding is high.

Constraints

- Must be activated by pedestrians.
- More costly than other crossing treatments.

Typical Applications

- Midblock crossings with high pedestrian or bicycle demand and/or high traffic volumes.
- At locations where multi-use paths intersect with roadways.
- At previously stop-controlled intersections where pedestrian volumes warrant a signal.

Design Considerations

- The push button to activate the pedestrian signal should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings



General Crossing Treatments

PEDESTRIAN HYBRID BEACON

Cost: \$\$\$-\$\$\$\$\$



A pedestrian hybrid beacon (sometimes called a HAWK signal) is a pedestrian activated signal that is unlit when not in use. It begins with a yellow light alerting drivers to slow, and then displays a solid red light requiring drivers to remain stopped while pedestrians cross the street. Finally, the beacon shifts to flashing red lights to signal that motorists may proceed after pedestrians have completed their crossing.

Benefits

- Has nearly 100 percent rate of motorist yielding behavior at crossing locations.
- Improves pedestrian safety and reduces pedestrian-involved crashes.

Constraints

- Must be activated by pedestrians.
- More costly than other crossing treatments.



Typical Applications

- Midblock crossings with high pedestrian or bicycle demand and/or high traffic volumes.
- At locations where multi-use paths intersect with roadways.

Design Considerations

- The push button to activate the pedestrian hybrid beacon should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings



General Crossing Treatments

RAPID RECTANGULAR FLASHING BEACON (RRFB)

Cost: \$\$\$-\$\$\$\$



These crossing treatments include signs that have a pedestrian-activated “strobe-light” flashing pattern to attract motorists’ attention and provide awareness of pedestrians and/or bicyclists that are intending to cross the roadway.

Benefits

- Provides a visible warning to motorists at eye level.
- Increases motorists yielding behavior at crossing locations over round yellow flashing beacons (80 to 100 percent compliance).
- Allows motorists to proceed after yielding to pedestrians and bicyclists.

Constraints

- Flashing beacons must be activated by pedestrians.
- Motorists may not understand the flashing lights of the RRFB, so compliance may be lower than with a traffic signal.

Typical Applications

- Midblock crossings with medium to high pedestrian or bicycle demand and/or medium to high traffic volumes.
- Locations where multi-use paths intersect with roadways.

Design Considerations

- The push button to activate the RRFB should be easily accessible by pedestrians, wheelchair users, and bicyclists (if applicable).
- Consider adding a push button in the median island for crossings of multi-lane facilities.

Additional Guidance

- Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Urban Street Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings
- ODOT Bicycle and Pedestrian Design Guide



General Crossing Treatments

CROSSING ISLAND (PEDESTRIAN REFUGE)

Cost: \$-\$



A crossing island in the median provides a protected area in the middle of a crosswalk for pedestrians to stop while crossing the street. Also called pedestrian refuge islands or median refuges, they can be used at intersections or mid-block crossings.

Benefits

- Reduces pedestrian exposure at marked and unmarked crosswalks.
- Requires shorter gaps in traffic to cross the street.
- Allows pedestrians to cross in two phases.

Constraints

- Streets with constrained right-of-way may not have sufficient width to allow for a crossing island.

Typical Applications

- Preferred treatment for crossings of multi-lane streets.
- Often used in areas with high levels of vulnerable pedestrian users, such as near schools or senior centers/housing.
- Often applied in areas with high traffic volumes or with a pedestrian crash history.

Design Considerations

- Must have at least 6 feet of clear width to accommodate people using wheelchairs.
- At crossing locations where bicyclists are anticipated, a width of 10 feet or greater is desirable to accommodate bicycles with trailers or groups of bicyclists.
- Can be applied in conjunction with other traffic control treatments.

Additional Guidance

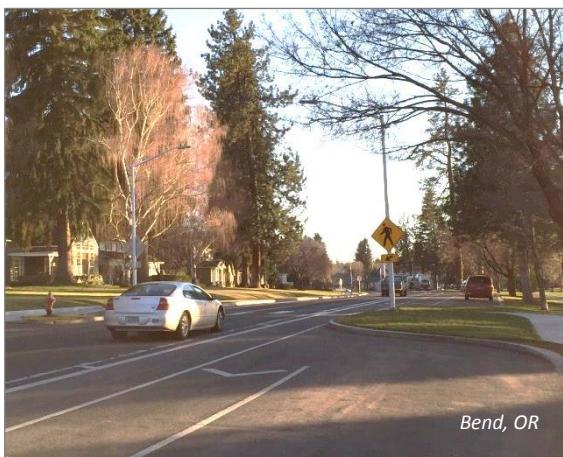
- ODOT Bicycle and Pedestrian Design Guide
- NACTO Urban Streets Design Guide
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings



General Crossing Treatments

BULB-OUT/CURB EXTENSIONS

Cost: \$\$



An extension of the curb or the sidewalk into the street (in the form of a bulb), usually at an intersection, that narrows the vehicle path, inhibits fast turns, and shortens the crossing distance for pedestrians.

Benefits

- Shortens crossing distances for pedestrians.
- Reduces motorist turning speeds.
- Increases visibility between motorists and pedestrians.
- Enables permanent parking
- Enables tree and landscape planting and water runoff treatment.

Constraints

- Can only be used on streets with unrestricted on-street parking.
- Physical barrier can be exposed to traffic.
- Greater cost and time to install than standard crosswalks.
- Can present turning radius problems to large vehicles.

Typical Applications

- Mid-block or intersection pedestrian crossings on streets with unrestricted on-street parking.
- Streets with on-street parking where pedestrian volumes ≥ 20 pedestrians per hour, ADT $\geq 1,500$ vehicles per day, and average right-turn speeds ≥ 15 mph.

Design Considerations

- Include a narrow passage for bicyclists to prevent conflict with vehicles.
- Provide accessible curb ramps and detectable warnings.
- Include landscaping on the curb extension to differentiate path for pedestrian travel, especially for pedestrians with vision impairments.

Additional Guidance

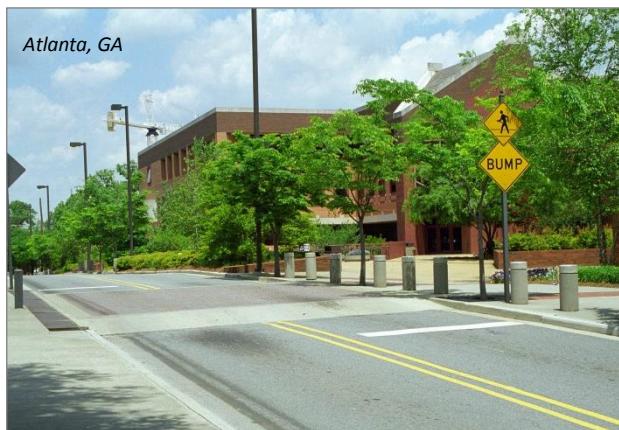
- ITE/FHWA Report Traffic Calming: State of the Practice
- FHWA Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide



General Crossing Treatments

RAISED PEDESTRIAN CROSSING

Cost: \$\$



Raised pedestrian crossings bring the level of the roadway even with the sidewalk, providing a level pedestrian path and requiring vehicles to slow. Raised crossings can be used at midblock crosswalks or intersections.

Benefits

- Provides a better view for pedestrians and motorists
- Slows down motorists.

Constraints

- Can be difficult to navigate for large trucks, snow plows, and low ground clearance vehicles.
- Relatively expensive.

Typical Applications

- Raised crosswalks are typically provided at midblock crossings on two-lane roads where pedestrian volumes \geq 50 pedestrians per hour and speed control is needed.
- Raised crosswalks may be provided at intersections where low-volume streets intersect with high-volume streets or where a roadway changes character (such as from commercial to residential).
- Raised crosswalks should not be used on transit routes or where there are steep grades or curves.

Design Considerations

- Raised crosswalks should be even with the sidewalk in height and at least as wide as the crossing or intersection.
- Provide detectable warnings for pedestrians where they cross from the sidewalk in to the crossing area.
- Consider drainage needs and provide appropriate treatments.
- Use colored asphalt as opposed to brick or decorative surface materials to make the crossing smoother for those with mobility impairments.

Additional Guidance

- ITE/FHWA Report Traffic Calming: State of the Practice
- FHWA Designing Sidewalks and Trails for Access Part II of II: Best Practices Design Guide



General Crossing Treatments

HIGH VISIBILITY CROSSWALK

Cost: \$



High visibility crosswalks consist of reflective roadway markings and accompanying signage at intersections and priority pedestrian crossing locations.

Benefits

- Communicates potential for pedestrian crossings to motorists.
- Designates a preferred crossing location for pedestrians.
- Motorists are required to stop for pedestrians entering crosswalks.
- Low cost.

Constraints

- Can be more effective with other types of traffic control (signals, stop signs).
- At uncontrolled locations (midblock), motorist compliance is not as high as with other treatments.

Typical Applications

- High visibility crosswalks are typically applied at intersections of arterials, collectors, and/or other facilities with moderate to high vehicle volumes and speeds.
- Can be applied at mid-block locations, especially in conjunction with other treatments.

Design Considerations

- Crosswalk striping can vary, and may include continental striping (top photo), ladder striping, zebra striping (bottom photo), etc.
- Can be constructed with paint or thermoplastic material.
- Minimum width is 6 feet, but wider crossings are preferred in areas with high number of pedestrians.

Additional Guidance

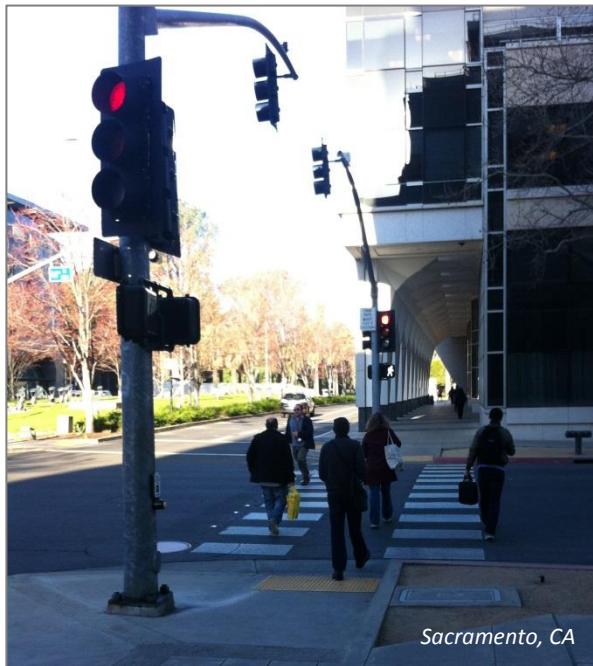
- NCHRP Report 562 Improving Pedestrian Safety at Unsignalized Crossings
- ODOT Bicycle and Pedestrian Design Guide



General Crossing Treatments

LEADING PEDESTRIAN INTERVAL (LPI)

Cost: \$



A leading pedestrian interval gives pedestrians a 2-5 second head start before the concurrent vehicle phase turns green to allow pedestrians to enter and occupy the crosswalk before turning vehicles get there.

Benefits

- Pedestrians are more visible in the crosswalk before vehicles start moving.
- Helps reduce conflicts with pedestrians and turning vehicles.

Constraints

- Reduces green time for vehicle movements.
- May add to delays at intersections operating near capacity.

Typical Applications

- Used in areas where right-turning vehicle movements often interfere with pedestrian crossing movements.

Design Considerations

- Only possible when pedestrian signal faces are present.

Additional Guidance

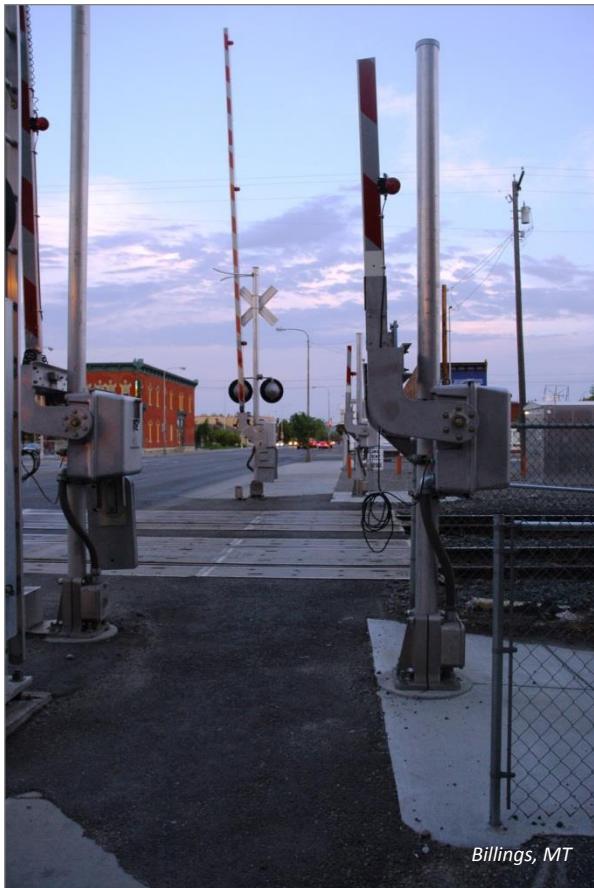
- ODOT Signal Design Manual
- ODOT Bicycle and Pedestrian Design Guide



Railroad Crossing Treatments

AUTOMATIC PEDESTRIAN GATE

Cost: \$\$\$\$\$



This “active” treatment is a gate connected to and activated by the train signal system, and lowers in tandem with the motor vehicle gate. It is designed to prevent pedestrians and bicyclists from crossing when a train is approaching.

Benefits

- Provide positive control and effectively communicates to pedestrians and bicyclists the need to stop at the railroad crossing.

Constraints

- More costly than other crossing treatments.
- Without channelization, pedestrians may walk around the gate.

Typical Applications

- Locations with limited sight distance at the pedestrian crossing.
- Locations with high-speed train operation.

Design Considerations

- Must provide sufficient clear space between gate and railroad crossing, so that pedestrians or bicyclists do not get trapped if the gates descend while they are crossing.

Additional Guidance

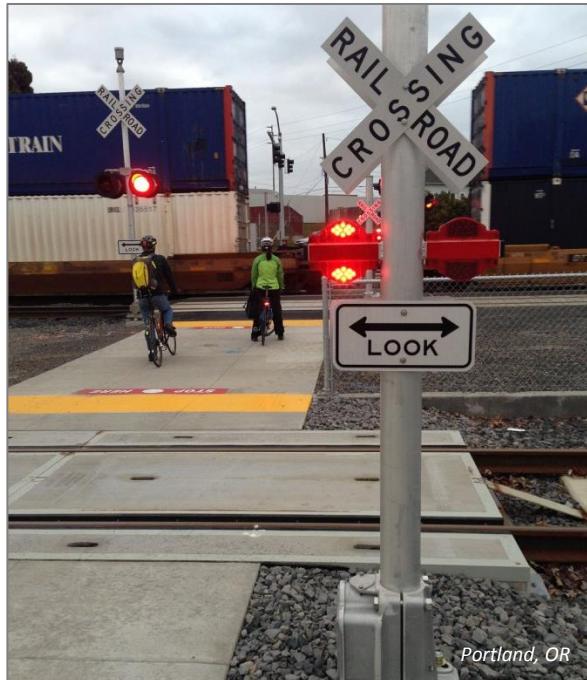
- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety



Railroad Crossing Treatments

“ACTIVE” TREATMENTS: FLASHING LIGHT SIGNALS AND AUDIBLE WARNINGS

Cost: \$\$\$



Flashing light signals consist of two light units that flash alternately at a rate of 45 to 65 times per minute and are typically applied at motorized vehicle crossings. Smaller variations of flashing light signals, located at eye level, can be used at pedestrian and bicycle crossing locations. Audible warning bells can accompany the flashing lights. These treatments are “active” in that they only operate when a train is approaching.

Benefits

- Actively communicate the approach of a train to pedestrians and bicyclists.
- Allows pedestrians to rely on active warning instead of needing to make a crossing judgment.

Constraints

- More costly than passive crossing treatments.
- Audible warnings may have impact on surrounding community.

Typical Applications

- At roadway intersections, active treatments are often used to control motorized vehicles and can also apply to adjacent pedestrian and bicycle facilities.
- At exclusive pedestrian or bicycle crossings, active treatments are used in locations where trains are traveling at moderate speeds, where pedestrian and bicycle volumes are moderate to high, or in cases with limited sight distance.

Design Considerations

- Eye-level variations of typical flashing light signals can be used for exclusive pedestrian and bicycle crossings.
- Audible warning devices are generally installed in conjunction with flashing light signals.

Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety





Railroad Crossing Treatments

BASIC “PASSIVE” TREATMENTS

Cost: \$



Basic treatments that can be used at rail crossings include “Stop Here” pavement markings, tactile warnings, and “look both ways” signage. These passive treatments are used to signal to pedestrians and bicyclists the correct location to stop when a train is approaching at a crossing and reminds them to look both ways before proceeding. “Passive” treatments are always present, as opposed to “active” treatments, which are operational only when a train is approaching.

Benefits

- Clearly indicates the safe stopping location to pedestrians and bicyclists in locations where it may be unclear.

Constraints

- Used alone, does not provide an active warning to pedestrians of an approaching rail vehicle, so pedestrians must make a judgment on when they can cross safely.

Typical Applications

- Used in crossing locations where the safe stopping location may not be clear.
- Generally used at signalized or unsignalized crossings where trains are moving at lower speeds.
- Can be used in conjunction with other crossing treatments. At intersections, pedestrian and bicyclists may also be alerted by audible and flashing light signals that warn motorists of approaching trains and may be controlled by pedestrian or bicycle signal heads.

Design Considerations

- Signs generally located on the right-hand side of the crossing, but should be located to optimize visibility.
- “Stop Here” and tactile warnings should be located in an area that provides safe queuing space for bicycles and pedestrians.

Additional Guidance

- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- ODOT Bicycle and Pedestrian Design Guide
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety



Railroad Crossing Treatments

OTHER “PASSIVE” TREATMENTS

Cost: \$-\$



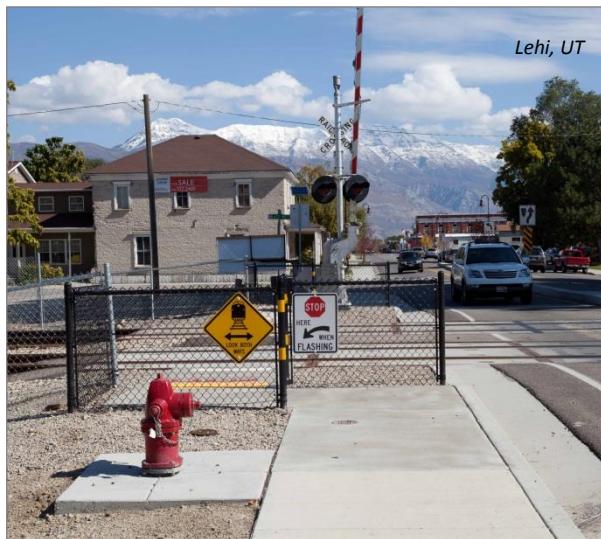
Other “passive” treatments include channeling (railing, fencing, or landscaping treatments) of pedestrian and bicycle movements to a specific location and swing gates that require a positive action by users, who must pull them open in order to cross the tracks.

Benefits

- Channelization can slow pedestrians and bicyclists and position them to look both ways prior to crossing railroad tracks.
- Swing gates prevent pedestrians and bicyclists from crossing without stopping, increasing the likelihood that they will look both ways for trains.

Constraints

- Channelization and swing gates must be carefully designed to ensure they are ADA accessible.
- Pedestrians must make judgment about when it is safe to cross.



Typical Applications

- Used in crossing locations where pedestrians or bicyclists may cross tracks without looking or may fail to look both ways before crossing.

Design Considerations

- Ensure that channel and swing gate dimensions allow for ADA access.
- Can be paired with “active” warning devices such as flashing light signals and audible warnings to further enhance effectiveness.

Additional Guidance

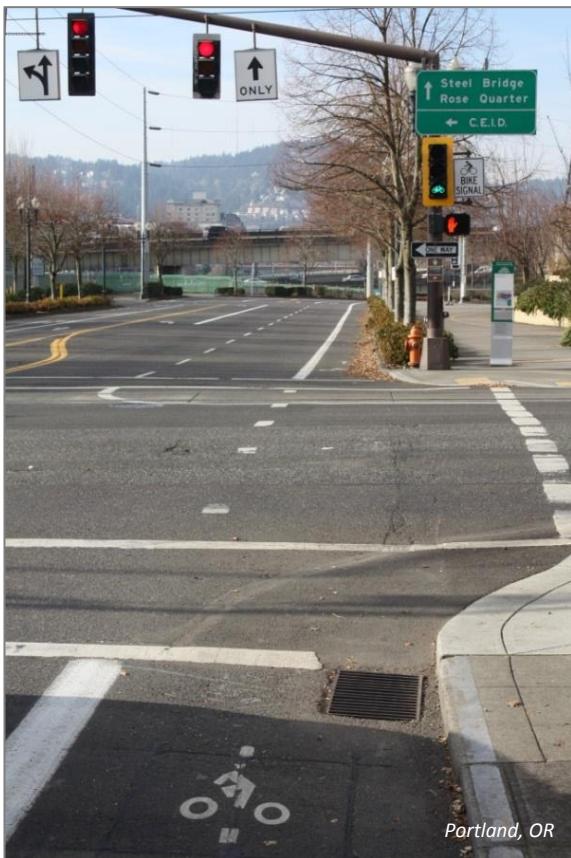
- FHWA Railroad Highway Grade Crossing Handbook
- Manual on Uniform Traffic Control Devices (MUTCD)
- TCRP Report 69 Light Rail Service: Pedestrian and Vehicular Safety



Bicycle Intersection Treatments

BIKE SIGNAL

Cost: \$\$\$\$



Bicycle-only signals can be used at intersections to provide a separate signal phase that is dedicated to bicyclists.

Benefits

- Provides bicycles with a dedicated signal phase without potential motor vehicle conflicts.
- Provides increased protection for bicyclists.

Constraints

- May increase intersection delay for motorists and bicyclists with the addition of a signal phase.

Typical Applications

- Roadway intersections with multi-use trails.
- At intersections with separated bike lanes on the roadways, or at transitions to and from two-way separated bike lanes.
- At intersections where large numbers of turning vehicles have the potential to conflict with through bicycle movements.

Design Considerations

- Ensure that signal heads are clearly visible to cyclists.
- Install painted indicators on bicycle detectors to show bicyclists where to wait.
- Consider prohibiting right-turn-on-red for motorists if right turns conflict with bicycle movements.

Additional Guidance

- NACTO Urban Bikeway Design Guide
- FHWA Separated Bike Lane Planning and Design Guide



Bicycle Intersection Treatments

BIKE BOXES

Cost: \$



Bicycle boxes are designated spaces at signalized intersections, placed between a set-back stop bar and the pedestrian crosswalk, that allow bicyclists to queue in front of motor vehicles at red lights.

Benefits

- Increases the visibility of queued bicyclists.
- Allows bicyclists to start up and enter the intersection in front of motor vehicles when the signal turns green and/or position for a left-turn.
- Provides queuing capacity for bicycles at signals beyond a typical bike lane.

Constraints

- Driver compliance rates vary.
- Bike boxes may prevent drivers from making right-turn-on-red movements.

Typical Applications

- Signalized intersections, particularly those with high bicycle volumes.
- Signalized intersections where a designated bicycle route turns left.

Design Considerations

- Minimum depth of the bike box should be 10 feet, and it should extend across the bike lane, any buffer space, and at least one adjacent vehicle travel lane.
- Can be extended across multiple vehicle lanes on multilane streets to allow bicyclists to position for left turns.

Additional Guidance

- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide



Bicycle Intersection Treatments

TWO-STAGE LEFT TURN BOXES

Cost: \$



Two-stage left-turn boxes allow bicyclists to safely and comfortably make left-turns at multilane intersections from a right-side bicycle lane or cycle track. Bicyclists arriving on a green light travel into the intersection and pull out into the two-stage turn queue box away from through-moving bicycles and in front of cross street traffic, where they can wait to proceed through on the next green signal.

Benefits

- Provides a low-stress option for left turns, so that bicyclists do not need to merge into traffic.
- Provides a clear and visible location for queuing bicyclists waiting to cross.

Constraints

- May be difficult to accommodate within a constrained intersection geometry.



Typical Applications

- At signalized intersections with multi-lane roadways.
- At locations where a low-stress left turn movement for bicyclists is desirable.

Design Considerations

- Should be located out of the way of through bicyclists, usually between the bike lane and the crosswalk. If there is on-street parking, space may be available between the bike lane and vehicle travel lane.
- Consider using passive bicycle detection in the two-stage left turn box to call the green signal phase for bicyclists.

Additional Guidance

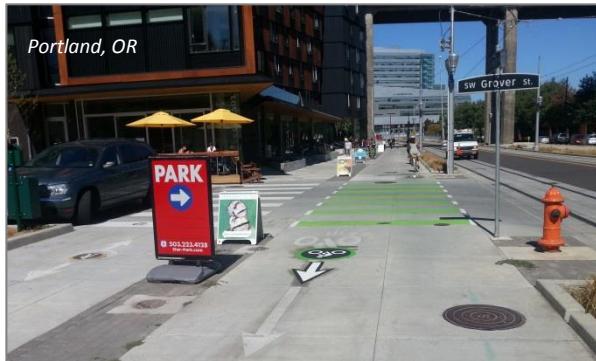
- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide



Bicycle Intersection Treatments

PAVEMENT MARKINGS THROUGH INTERSECTIONS

Cost: \$



Pavement markings can be extended through the intersection for both cycle tracks and bicycle lanes. Green paint can be used in “conflict zones” where vehicles and bicycles may cross paths in intersections, at driveways, or at right turn pockets.

Benefits

- Green paint can alert drivers of a conflict zone.
- Paint through an intersection can help bicyclists know where to cross and alert drivers to look for bicyclists.

Constraints

- Paint may wear more quickly in intersections and require additional maintenance due to vehicles crossing it more frequently.

Typical Applications

- Intersections and conflict zones, especially in high-traffic or high-speed areas.

Design Considerations

- Use white dashed lines at a minimum to extend a treatment through an intersection or across a conflict zone. Dashed green pavement can enhance awareness and visibility.
- Other non-standard treatments, such as solid green paint or bicycle “chevron” markings have been used in locations throughout the US.

Additional Guidance

- Manual on Uniform Traffic Control Devices (experimental status)
- FHWA Separated Bike Lane Planning and Design Guide
- NACTO Urban Bikeway Design Guide



Bicycle/Pedestrian Amenities

BICYCLE PARKING

Cost: \$



Devices and/or areas that allow secure bicycle parking, often located at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.

Benefits

- Provides a secure location to store and lock bicycles.
- Relatively inexpensive and easy installation.
- Encourages community bicycle use and makes local attractions/businesses more accessible to bicyclists.

Constraints

- Requires space in potentially busy areas, such as sidewalks.
- May remove on-street parking space if located on the roadway.

Typical Applications

- Typically provided at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.

Design Considerations

- The size and design of the bicycle rack can vary based on the estimated number of users and available space.
- Covered bicycle parking can provide protection from the weather for parked bicycles and people as they lock and unlock bikes. Bike lockers can provide additional security.
- If possible, bicycle racks should be placed immediately adjacent to the entrance/location they serve.
- Rack should not be placed to block the entrance of a building or inhibit pedestrian flow.
- Racks should be easy to find, convenient, and secure.

Additional Guidance

- APBP Bicycle Parking Guidelines



Bicycle/Pedestrian Amenities

STREET FURNITURE AND LIGHTING

Cost: \$\$\$-\$\$\$\$



Street furniture includes pedestrian seating, information/wayfinding structures, and trash cans. Street furniture and lighting can be used to enhance the pedestrian experience and encourage pedestrian activity on a street.

Benefits

- Encourages walking and sense of comfort and security for pedestrians.
- Relatively inexpensive and easy installation.
- Encourages foot traffic and can make local attractions/businesses inviting.

Constraints

- Requires space in potentially busy areas, such as sidewalks.

Typical Applications

- Typically provided at areas of high bicycle and pedestrian traffic such as bus stations, shopping centers, schools, and multi-use trails.
- Street furniture and pedestrian-scale lighting is usually provided on corridors with commercial activity and anticipated high-pedestrian use.

Design Considerations

- Street furniture should not be placed to block the entrance of a building or inhibit pedestrian flow.
- The type and size of street furniture should be based on the available space and anticipated demand.
- Street furniture should be accessible to all users.

Additional Guidance

- AASHTO Roadway Lighting Design Guide



Bicycle/Pedestrian Amenities

TRANSIT STOP SHELTERS

Cost: \$\$\$



Transit stop shelters help protect passengers waiting to load the bus from the elements and provides a great level of comfort. They also increase the visibility of transit stops and attractiveness for riders.

Benefits

- Provides protection from the elements and a place to sit for people waiting for transit.
- Provides a prominent visual cue about where the transit stop is located.

Constraints

- Costs more than a simple signed bus stop.
- Require additional sidewalk width beyond a standard 6-foot width.

Typical Applications

- Typically provided at bus stops with higher levels of activity or those that serve major transfer points, senior communities, schools, or major trip generators.
- May be paired with other bus stop amenities, like benches and bicycle parking.
- Shelters can be fully enclosed or just an overhead canopy, although semi-enclosed shelters are most common.

Design Considerations

- The style of the transit stop shelter can depend on the preferences of the local jurisdiction.
- At stops with a high number of daily boardings (i.e. over 100), a larger shelter or multiple shelters should be considered.
- Shelters should be cleaned and maintained regularly.
- Shelters should have transparent sides for greater visibility and panels should be resistant to fading or clouding.

Additional Guidance

- TCRP Report 19: Guidelines for the Location and Design of Bus Stops



Traffic Calming Measures

RUMBLE STRIPS

Cost: <\$



Pavement surface treatments intended to cause drivers to experience vehicular vibrations signaling them to slow down. Rumble strips can be raised pavement markers across the roadway or grooves along the shoulder or centerline. Rumble strips are best used in conjunction with other traffic calming treatments.

Benefits

- Low cost.
- Speed reduction and increase in driver awareness.

Constraints

- Vibration noise created may be inappropriate in residential areas.
- Perceived more as a warning to slow down, than a physical measure that forces slower speeds.
- Impact the comfort and control of bicyclists.
- Potential impacts on pavement deterioration based on pavement quality and placement.

Typical Applications

- Roadways with high speeds or where driver inattention is an issue.
- Rumble strips can be used on shoulders to alert drivers they are entering a part of the roadway not intended for use.
- Roadway rumble strips placed across the roadway are used to alert drivers of a changing roadway condition or the need for speed reduction.

Design Considerations

- All road users need to be considered and accommodated. Bicycles need particular attention, especially if they are expected to use the roadway or shoulders.
- There are a variety of types of rumble strips, so the site application should be considered to determine the most appropriate design.

Additional Guidance

- FHWA Technical Advisory: Shoulder and Edge Line Rumble Strips



Traffic Calming Measures

SPEED BUMPS, SPEED HUMPS, SPEED TABLES

Cost: \$\$



There are a number of raised treatments that can be used in the roadway to slow vehicular traffic, including speed bumps, humps and tables.

Speed humps utilize a larger vertical radius than speed bumps that results in wider widths and a gentler crossing by vehicles.

Speed tables are wide mountable obstructions installed on the pavement surface across travel lanes, and intended to cause vehicles to slow. Speed tables are wider flat-top speed humps, and are gentler on vehicles. They can be used on higher order roads than bumps or humps, because they allow a smoother ride and higher speeds.

Benefits

- Relatively inexpensive.
- Effectively slows vehicle speeds, with speed bumps and humps reducing speeds more than speed tables.
- Easily navigated by bicyclists.

Constraints

- May be considered noisy by nearby residents.
- Forces emergency vehicles to slow down.
- Inappropriate on streets with bus traffic due to rider comfort and reduced travel speeds.

Typical Applications

- Speed bumps or humps can be used on lower order roadways, while speed tables are appropriate on higher order roadways.
- Roadways where a reduction in speeds and traffic calming is desired.
- Speed bumps, humps, or tables work well with curb extensions.

Design Considerations

- Drainage needs should be considered and accommodated.
- Treatments should be used midblock, not at intersections.
- Treatments are not appropriate on roadways with grades over 8%.
- Advance signing and pavement markings on the treatment can be provided.
- Typically preferred for treatment not to cover a bike lane.

Additional Guidance

- ITE Traffic Calming Measures



Traffic Calming Measures

REDUCED CURB RADII

Cost: \$\$



Street corner is reconstructed with a smaller radius to reduce vehicle turning speeds.

Benefits

- Forces sharper turn by right-turning motorists and thus slower speeds.
- Improves safety of pedestrians by reducing crossing width and slowing motorists.

Constraints

- Requires additional space that may not be available.
- Makes turning movements more challenging for large vehicles and may not accommodate all trucks.

Typical Applications

- Typically used at intersections with high vehicle speeds and high pedestrian volumes where space is available.

Design Considerations

- The street type, angle of intersection, land uses, etc. should be considered when designing the curbs.
- Maintenance vehicles, emergency vehicles, school buses, and other anticipated large vehicles should be provided for in the design.
- The effective turning radius (considering presence of parking, bike lanes, medians, etc.) should be used to evaluate the ability of vehicles to make a turn, not the curb return radius.
- In locations where reducing the curb radius is challenging based on design vehicles, consider using a compound radius, at-grade paving treatments, or advance stop lines.

Additional Guidance

- FHWA Signalized Intersections: An Informational Guide
- FHWA Pedestrian Safety Guide for Transit Agencies
- NACTO Best Practices for Pedestrian Master Planning and Design

Banks Bicycle and Pedestrian Plan



Appendix F Technical Memorandum #5 – Conceptual Bicycle and Pedestrian Route Options



TECHNICAL MEMORANDUM #5

Date: June 5, 2015

Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Kelly Laustsen, Bart Rudolph and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

Subject: Alternatives Development

This memorandum provides an assessment of potential bicycle and pedestrian projects, policies, program, pilot projects and study alternatives to be included in the Bicycle and Pedestrian Plan (BPP). It also provides an overview of the plan elements, evaluation methodology, and proposed project list.

BACKGROUND

A bicycle and pedestrian master plan is needed to identify, coordinate, and leverage current and upcoming efforts, investment, and opportunities to create a safe and seamless biking and walking environment in the City. The plan will prioritize the expansion and enhancement of the existing system to create an integrated bikeway and pedestrian network to encourage people to bike and walk in, around, and through the City. It will include preferred bicycle and pedestrian projects, policies, programs, pilot projects, studies, cost estimates and potential funding sources.

The intent of the BPP is to provide a bicycle and pedestrian system that is accessible for all types of users, regardless of age or ability. Bicyclists are commonly split up in to four groups based on their interest and confidence, from “strong and fearless” riders to “no way no how” riders. The BPP will target riders in between these extremes that are “enthused and confident” or “interested but concerned.” The creation of a BPP will ensure the community is designed so people can stroll, exercise, shop and bike in a safe and friendly environment. Improvement of the bike and pedestrian system will aid the City in pursuing high levels of livability with distinctive and memorable streets and pathways that are enjoyable, safe and friendly places to live, work, and visit.

PLAN ELEMENTS

The final BPP will include the following elements, which will be assessed using the evaluation metrics as referenced above:

- **Projects** – capital investments made to improve the existing bicycle and pedestrian system. Examples include bike lanes, sidewalk improvements, and benches.
- **Policies** – statements adopted in the BPP that are intended to influence and guide City decisions and actions relating to bicycle and pedestrian planning. As an example, policies could be related to sidewalk design guidelines, bicycle treatment at intersections, or requirements for new development. Ultimately, the BPP policies would be incorporated in the Transportation System Plan, comprehensive plan and zoning code.
- **Programs** – plans of action aimed at accomplishing an identified county goal(s) and/or objective(s) that commonly include such details on what work is to be done, by whom, when, and the intended outcome of the action. An example is implementing a walking bus program.
- **Pilot Projects** – activities planned as a test or trial of a proposed transportation project or program. An example is temporarily striping a bike lane to test its performance over a 6-month time period.
- **Future Studies** – research and investigation to be completed by the City after the BPP is completed. Such studies will not be done during the BPP process due to lack of available data, a need for guidance and/or analysis from responsible agencies, and/or the need for a focused public involvement and analysis process beyond the BPP scope of work and budget.

Note that the term “project” is used throughout this memorandum to refer to the plan elements for ease and brevity. For example, the “projects” for evaluation described in the next section include all elements of the plan, including capital projects, policies, programs, pilot projects, and future studies.

PROJECTS FOR EVALUATION

This memorandum provides a preliminary list of potential projects for inclusion in the BPP and initial evaluation of each project. The list was developed based on the following:

- **Previously Identified Projects**: these projects were identified based on a variety of documents, including the City’s Transportation System Plan, Park and Recreation Master Plan, Banks Main Street Revitalization Plan, and Council Creek Regional Trail (CCRT) Master Plan. The documents were reviewed and projects identified and mapped in *Technical Memorandum #2: Baseline Information*.
- **Stakeholder Advisory Committee (SAC) and Public Suggested Projects**: these projects were developed based on input received from the SAC during stakeholder interviews, a kick-off walking tour, and subsequent meetings. Public input was also gathered via the interactive map for the project, available on the project website www.banksbpp.com.
- **New Identified Projects**: these projects are needed to address gaps or deficiencies in the existing transportation system that were not addressed in either of the project lists described above.



New Identified Projects

As indicated above, additional projects were developed beyond those previously identified or suggested by the SAC or public to address gaps or deficiencies in the existing transportation system. The project team developed these projects based on the assessment of the transportation system in *Technical Memorandum #3: Systems Inventory and Evaluation*. Projects to fill gaps in the bicycle and pedestrian system were selected based on high-priority needs, considering the following:

- Connectivity: projects that connect existing bicycle facilities or key areas (i.e. residential and commercial areas, existing trail networks);
- Gaps: projects that fill gaps in the existing bicycle network (i.e. segment of roadway missing bicycle lanes);
- Proximity to activity centers and destinations such as schools, commercial areas, residential areas, parks, natural resources, trails, etc.;
- Proximity to bus stops and routes; and
- Roadway volumes: as a general rule of thumb, bikeways are recommended on roadways with AADTs over 3,000.

PROJECT EVALUATION METHODOLOGY

The preliminary project list has been developed based on the vision, goals and objectives developed in *Technical Memorandum #1*. The intent of this initial evaluation is to identify:

- Which projects should be included into the BPP;
- Which projects need refinement; and
- Which projects should not be carried forward for additional evaluation.

Each project has been evaluated based on whether or not it supports the previously identified goals and objectives. Each goal (livability, safety and health, accessibility, financial responsibility and economic vitality) is supported with at least one objective. The objectives provide a more detailed breakdown of goals with more specific ends the City desires to achieve. Evaluation criteria have been developed for each objective to provide a definable measure of how a proposed project may make progress towards the established objectives.

The projects have been scored based on the framework identified in Table 1. As seen in the table, the goal assessment helps evaluate each evaluation criteria, objective, and ultimately project goal. The assessment relies heavily on the data generated and reviewed as part of the previous technical memorandums.



Table 1 Evaluation Criteria Matrix

Goal	Objective	Evaluation Criterion	Goal Assessment
(1) Livability: provide for a high quality of life by providing transportation options and considering community values and interests.	Increase transportation choices in the Highway 6 and 47 corridors by adding more bicycle and pedestrian routes and connections to transit.	Does the project... (1) Improve or provide additional bicycle or pedestrian facilities within the Highway 6 and/or Highway 47 corridor(s)? - or - (2) Improve or provide an alternate route to the Highway 6 and/or Highway 47 corridors (s)?	0 - Does not improve 1 - Expands/improves existing facility or creates a new partial corridor improvement 2 - Improves entire corridor or creates new alternate route
	Provide shorter trip lengths between destinations on the bicycle and pedestrian system than on-road networks.	Does the project... (1) Increase connectivity by eliminating an existing gap/barrier in infrastructure? - or - (2) Provide a new connection between facilities? - or - (3) Provide new bicycle/pedestrian facilities that result in a shorter or more direct trip than the road system provides?	0 - Does not eliminate a gap/barrier or provide a shorter trip length 1 - Provides a moderate reduction in overall trip length or addresses a gap/barrier 2 - Provides a significant reduction in overall trip length or eliminates a gap/barrier
(2) Safety and Health: enable people to safely walk, run or cycle in and through the City.	Increase the safety of bicycle and pedestrian route users.	Does the project... Address a location with a proven crash history?	0 - Improvement is not within an identified crash history location 1 - Improves existing facilities or provides new facilities at crash history location 2 - Implements safety related improvement based on data specific to the crash history location
		Does the project... Implement a safety related solution or improves the safety performance of a facility based on available research and/or best management practices (BMP) regarding bicycle/pedestrian safety?	0 - Improvement is not safety related or creates a potential safety concern 1 - Moderately helps to improve safety 2 - Implements a BMP aimed at improving safety at a specific location or corridor
	Minimize conflicts between people biking and walking and farm equipment, logging trucks and forestry related trucks.	Does the project... Eliminate or reduce conflicts between large scale vehicles and bicycles/pedestrians?	0 - Does not address a known conflict 1 - Moderately helps to reduce conflict 2 - Reduces conflict by proving buffer or other known safety related measure
(3) Accessibility: develop a bicycle and pedestrian system that is accessible for all ages, skill levels, and interests.	Provide well-designed, visible, safe, and convenient access points and street/highway crossings.	Does the project... Provide new or modify existing crossing(s)/access point(s) with enhanced safety measures?	0 - Does not improve a crossing or access point 1 - Improves or provides a new crossing or access point on a local road 2 - Improves or provides a new crossing or access point on a collector or higher classified road
	Implement the community vision for the overall bicycle and pedestrian route design, expressed through different treatments and design themes for distinctive sections.	Does the project... (1) Enhance access to system for all users? - or - (2) Improve the level of traffic stress?	0 - Does not improve the system for all users 1 - Moderate improvements for all users 2 - Significant improvements for all users or improves overall level of traffic stress
(4) Financial Responsibility: use resources efficiently and invest in infrastructure that will serve the City for years to come.	Provide adequate funding to maintain the existing active transportation system while prioritizing investments in future facilities.	Does the project... Extend the life of an existing facility or provide a new facility with additional maintenance costs?	0 - Provides a new facility with projected high maintenance costs 1 - Provides a new facility with projected low maintenance costs 2 - Extends the life of an existing facility or replaces eliminates the need for an existing facility
		What is the feasibility of the project? Do barriers exist, such as land ownership, limited right-of-way, presence of significant natural resources, or regulation/zoning restrictions?	0 - Significant barriers appear difficult or impossible to overcome 1 - Barriers exist, but improvement seems achievable 2 - No known barriers exist
(5) Economic Vitality: encourage tourism and investment in the downtown core.	Link regional and local trails to key attractors on the main street and downtown area, such as shopping, schools, residential areas, and other community destinations.	Does the project... Provide access to key attractors or destinations? - or - Provide access to undeveloped land (expanded UGB)?	0 - Does not access an attractor/destination 1 - Improves existing access to one or more attractor(s)/destination(s) 2 - Provides new access to one or more attractor(s)/destination(S)
		Does the project... Provide access or link to an existing or proposed regional trail network?	0 - Provides an internal link within a neighborhood 1 - Improves system wide network connectivity within the City of Banks 2 - Connects to an existing regional trail or planned trail identified in a regional plan

PROPOSED PROJECT LIST

This project list provided in *Attachment A* contains information about each project and the results of the evaluation process detailed in Table 1. The columns are described below:

- **ID:** unique identifying number randomly assigned to each proposed project.
- **Project Name/Description:** general description of the proposed project with the key elements identified.
- **Location:** location of the project, if applicable. The projects are also mapped on Figure A in *Attachment A*.
- **Purpose:** what the proposed project is intended to accomplish. Identifies if the proposed project addresses an identified gap in the existing bicycle or pedestrian infrastructure or incorporates an element that would improve or eliminate a known deficiency.
- **Category:** projects are classified in to general categories, including safety, access, pedestrian, crossing, education, etc.
- **Source:** identifies whether the project came from a previous plan, SAC, public, or project management team (PMT).
- **Cost estimate:** planning-level cost estimate, intended to provide a sense of magnitude.
- **Goal assessment:** the results of the evaluation process in Table 1 are shown for each goal, using the ratings 0, 1, and 2.
- **Total Goal Score:** the sum of the five goal scores.
- **Evaluation Priority:** the initial suggested priority for the project, based on the total goal score. Note that these are initial ratings and intended to provide a basis for further discussion. There are three possible priorities:
 - **High Priority:** if the total goal score is over 7.5, the project is categorized as a high priority and recommended to be included in the next stage of the BPP.
 - **Medium Priority:** if the total goal score is between 5 and 7.5, the project is categorized as a medium priority and recommended to be reevaluated for inclusion in the next stage of the BPP with possible revisions.
 - **Low Priority:** if the total goal score is under 5, the project is categorized as a low priority and recommended it be further assessed for potential removal from the BPP.
- **Notes:** this column includes any notes about the project, total goal score, or evaluation priority.



Table 2 on page 7 provides an example project from the list in *Attachment A*, showing the project information and indicating the degree to which the project supports each of the goals identified in the BPP.

NEXT STEPS

This memorandum was reviewed by the Stakeholder Advisory Committee (SAC) during SAC Meeting #2 on April 16th, 2015. SAC members were invited to comment on the methodology for evaluating the project list, suggest any additional projects that should be included on the list, and propose any changes to the priorities reflected in the project list. The project team reviewed the SAC's feedback and produced this updated memorandum and the updated project list shown in *Attachment B*. This updated project list was presented to the public during the May Open House for comment as well.



Table 2 Proposed Project List Example

BBPP ID	Project Name/Description	Location	Purpose	Category	Source	Cost Estimate	Goal Assessment					Total Goal Score	Evaluation Priority	Notes
							Goal 1	Goal 2	Goal 3	Goal 4	Goal 5			
1	Install advanced warning signage	Intersection of NW Banks Road and NW Aerts Road	Improve safety at the NW Banks Road and NW Aerts Road	Safety	Transportation System Plan	\$14,000	0.0	0.7	1.5	1.5	1.0	4.7	Low	-

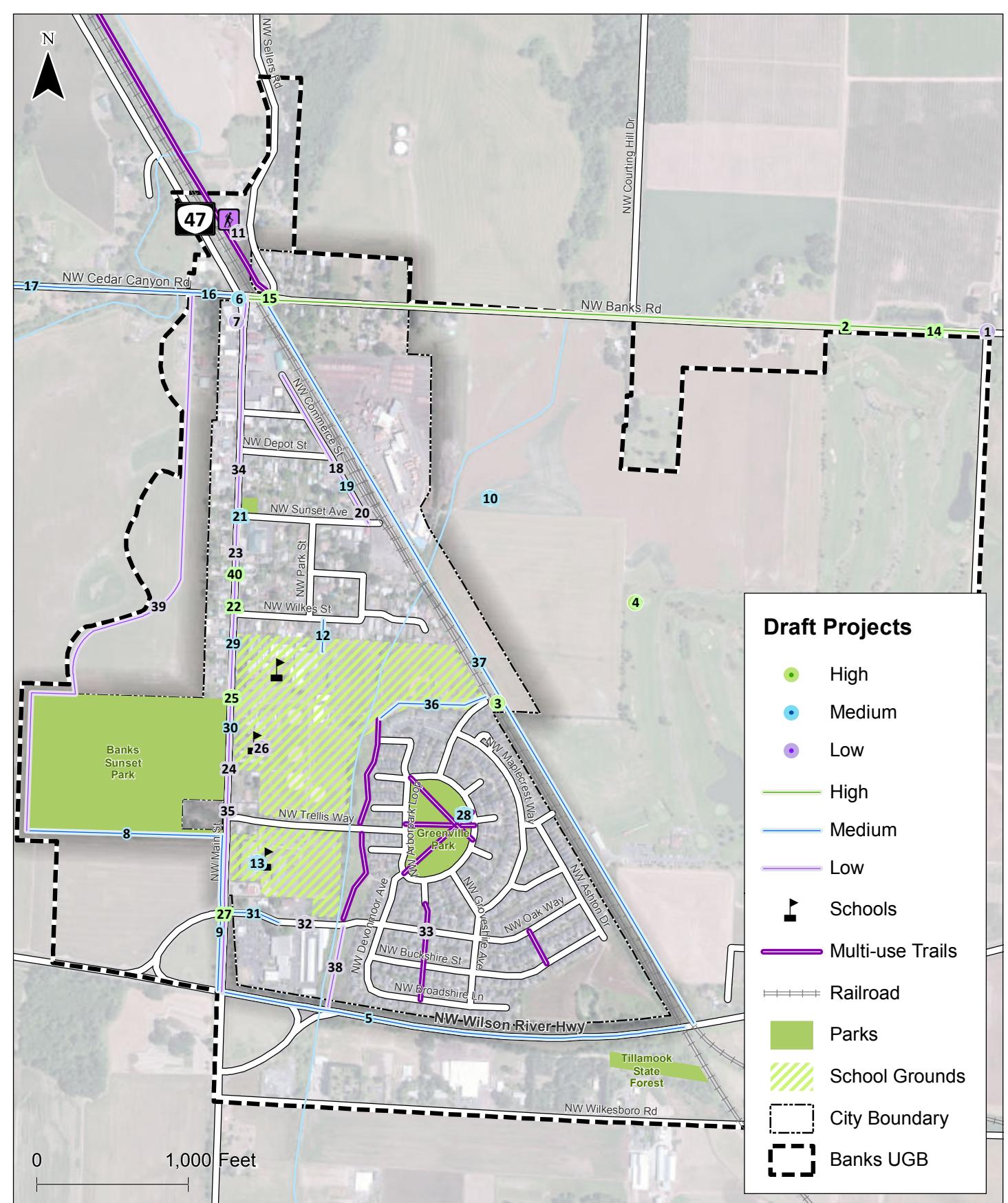
Goal 1 = Livability, Goal 2 = Safety and Health, Goal 3 = Accessibility, Goal 4 = Financial Responsibility, Goal 5 = Economic Vitality

Attachment A: Draft Project List 4.7.15

ID	Project Name/Description	Location	Purpose	Category	Source	Cost Estimate	Goal Assessment					Total Goal Score	Evaluation Priority	Notes
							1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality			
15	Install a rectangular rapid flash beacon (RRFB) or other similar treatment at pedestrian crossing on NW Banks Road	Pedestrian crossing on NW Banks Road accessing the Banks Trailhead	To provide increased safety at pedestrian crossings accessing the Banks-Vernonia trailhead parking	Safety	Tech Memo #3	\$25,000 - \$50,000	1.5	1.7	2.0	1.5	2.0	8.7	High	
2	Reconstruct with widened sidewalks	NW Banks Road between Main Street to US 26	Provide dedicated pedestrian facilities on NW Banks Road	Pedestrian	TSP	>\$1,000,000	2.0	2.0	1.0	1.5	2.0	8.5	High	Recommend making low priority due to buildout
14	Install bicycle lanes, shoulders, or an off street multi-use path	NW Banks Road between Main Street to US 26	Provide dedicated bicycle facilities on NW Banks Road	Bicycle	SAC #1	\$100,000 - \$500,000	2.0	2.0	1.0	1.0	2.0	8.0	High	Recommend making low priority due to buildout
22	Install bicycle lanes	Main Street between the high school and Sunset Avenue	Extend existing bicycle lanes north to enhance safety and comfort for bicyclists	Bicycle	Walking Tour / Tech Memo #3	<\$25,000	2.0	2.0	1.0	1.0	2.0	8.0	High	
40	Conduct a pilot project to install bike lanes	Main Street between Banks HS and Depot Street	Test the feasibility and impact of providing bike lanes north of Sunset Park to the start of the downtown commercial area	Bicycle	Tech Memo #3	<\$25,000	2.0	2.0	1.0	1.0	2.0	8.0	High	
6	Install a marked crosswalk	NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, crossing	Main Street Plan	<\$25,000	1.0	1.3	1.5	2.0	2.0	7.8	High	
25	Relocate the pedestrian crosswalk and overhead beacon to the north or south of the high school driveways	Main Street, north or south of the two school driveways	Improve safety and visibility of the pedestrian crosswalk across Main Street at high school between two driveways	Pedestrian	Walking Tour	\$25,000 - \$50,000	1.0	1.7	2.0	2.0	1.0	7.7	High	
3	Construct pedestrian/bicycle overcrossing of railroad	At railroad, just north of Arbor Village neighborhood	Construct pedestrian/bicycle overcrossing of railroad to connect existing development to UGB expansion area	Crossing	TSP	\$500,000 - \$1,000,000	2.0	0.7	2.0	1.0	2.0	7.7	High	
4	Conduct Access to UGB Expansion Area feasibility study	TBD	Identify potential access points where bicycle and pedestrian facilities could be installed to connect the existing network to the expanded UGB area and eliminate the railroad as a barrier	Access	SAC #1 / Public /TSP	\$50,000 - \$100,000	2.0	0.7	2.0	1.5	1.5	7.7	High	
27	Install sidewalk to fill the existing gap	West side of Main Street between Sunset Park and the Highway 6 / Main Street intersection	Provide pedestrian facilities on both sides of the Main Street corridor	Pedestrian	Tech Memo #3	\$50,000 - \$100,000	1.5	2.0	1.0	1.0	2.0	7.5	High	
28	Install a crosswalk and review opportunities for crossing enhancement, such as a raised speed table, overhead flashers, or traffic control	Across Main Street at the NW Trellis Court/Main Street intersection	Provide safe pedestrian access to Sunset Park	Pedestrian	Walking Tour	\$25,000 - \$50,000	1.5	1.3	2.0	1.5	1.0	7.3	Medium	
21	Install pedestrian crossing and review opportunities for crossing enhancement, such as raised speed tables or overhead flashers	Sunset Avenue / Main Street intersection	Improve safety at the Sunset Avenue / Main Street intersection	Crossing, Safety	Walking Tour	\$25,000 - \$50,000	1.0	1.7	2.0	1.5	1.0	7.2	Medium	

ID	Project Name/Description	Location	Purpose	Category	Source	Cost Estimate	Goal Assessment					Total Goal Score	Evaluation Priority	Notes
							1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality			
37	Develop a state trail connecting Banks-Vernonia Trail to Highway 6	Along railroad track between the Banks Trailhead and Highway 6	Provide a protected bicycle and pedestrian connection to the Banks Trailhead from Highway 6	Pedestrian, Bicycle	Park & Rec Plan	\$100,000 - \$500,000	2.0	1.7	1.0	0.5	2.0	7.2	Medium	
8	Install a separated trail	along the westside circulator road and connect to Main Street (OR47) paralleling a new proposed road	Provide an alternative to Main Street, access future growth to the west, and align with future regional trail plans	Pedestrian, Bicycle	CCRT / Public	\$100,000 - \$500,000	2.0	1.7	1.0	0.5	1.5	6.7	Medium	
12	Provide north/south pedestrian/bicycle access between Wilkes Street and the high school/middle school	Connect Wilkes Street with the schools to the south	Provide a direct connection between the schools and residential areas to the north	Pedestrian, Bicycle	SAC #1	< \$25,000	2.0	0.7	2.0	1.0	1.0	6.7	Medium	
5	Install a separated walking path	Parallel to Highway 6 between NW Main Street and railroad	Provide dedicated pedestrian facilities along Highway 6	Pedestrian	Park & Rec Plan	\$100,000 - \$500,000	2.0	1.0	1.0	0.5	1.5	6.0	Medium	
9	Install a separated trail	Along Main Street, south of downtown, to the OR 6 undercrossing	Eliminate conflicts between bicycles and vehicle traffic and align with future regional trail plans	Pedestrian, Bicycle	CCRT	\$100,000 - \$500,000	2.0	1.3	1.0	0.0	1.5	5.8	Medium	
13	Conduct a vehicle circulation study at the elementary and middle schools	Banks Elementary School, Banks Middle School	Further study the issue of back-ups from school pick-up on to Main Street, look for opportunities to improve circulation at schools	Access, Parking		\$50,000 - \$100,000	0.0	1.7	2.0	2.0	0.0	5.7	Medium	
31	Extend bicycle lanes on NW Oak Way to the NW Oak Way/Main Street intersection	NW Oak Way	Eliminate the bicycle lane gap along NW Oak Way	Bicycle	Tech Memo #3	< \$25,000	1.0	2.0	1.5	1.0	0.0	5.5	Medium	
10	Install bicycle way-finding signs	Way-finding kiosks installed 3 locations: Main St/Hwy 6, Log Cabin Park, and Banks-Vernonia Trailhead	Give bicyclists and pedestrians direction to area amenities, tourist locations, the Banks Trailhead, and economic centers	Education	SAC #1	\$25,000 - \$50,000	1.0	0.3	0.5	1.5	2.0	5.3	Medium	Recommend high priority due to low cost and high value
29	Install curb extensions at select intersections	Main Street corridor	Provide speed control along Main Street	Safety	SAC #1	\$25,000 - \$50,000	1.0	1.7	1.0	1.5	0.0	5.2	Medium	
30	Install dynamic radar-activated speed limit signs	Main Street corridor	Provide speed control along Main Street	Safety	SAC #1	\$25,000 - \$50,000	1.0	1.7	1.0	1.5	0.0	5.2	Medium	
16	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	Provide bicycle facilities accessing the potential future parking lot at the White Barn and Killin Wetlands	Bicycle	SAC #1	\$50,000 - \$500,000	1.0	0.7	1.0	1.0	1.5	5.2	Medium	
17	Install sidewalk or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	Provide pedestrian facilities accessing the potential future parking lot at the White Barn and Killin Wetlands	Pedestrian	SAC #1	\$50,000 - \$500,000	1.0	0.7	1.0	1.0	1.5	5.2	Medium	
36	Develop a City Trail	Between the existing private trail on the west side of Arbor Village to the proposed railroad crossing	Connect Arbor Village to the proposed bicycle/pedestrian railroad crossing	Pedestrian, Bicycle	Park & Rec Plan	\$100,000 - \$500,000	1.5	0.7	1.0	0.5	1.5	5.2	Medium	

ID	Project Name/Description	Location	Purpose	Category	Source	Cost Estimate	Goal Assessment					Total Goal Score	Evaluation Priority	Notes
							1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality			
19	Install sidewalk	NE Commerce Street between Sunset Avenue and Market Street	Provide pedestrian facilities on Commerce Street	Pedestrian	SAC #1	\$50,000 - \$100,000	1.5	1.0	1.0	1.0	0.5	5.0	Medium	
24	Install pedestrian-scale lighting	Main Street corridor	Improve lighting along Main Street, particularly for pedestrians	Pedestrian, Safety	SAC #1	\$50,000 - \$100,000	0.5	1.3	1.5	0.5	1.0	4.8	Low	
1	Install advanced warning signage	Intersection of NW Banks Road and NW Aerts Road	Improve safety at the NW Banks Road and NW Aerts Road	Safety	TSP	< \$25,000	0.0	0.7	1.5	1.5	1.0	4.7	Low	
23	Resurface Main Street	Main Street between Wilkes Street and Sunset Avenue	Eliminate cracks running parallel along Main Street	Safety	Walking Tour	\$100,000 - \$500,000	0.5	0.7	0.5	2.0	1.0	4.7	Low	
38	Extend the existing private trail	On the west side of Arbor Village from Oak to Highway 6	Connect Arbor Village to Highway 6	Pedestrian, Bicycle	Park & Rec Plan	\$50,000 - \$100,000	1.5	0.7	1.0	0.5	1.0	4.7	Low	
7	Install new sidewalk and curb	SW corner of Five Star complex	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, Pedestrian	Main Street Plan	< \$25,000	0.5	1.3	0.5	1.0	1.0	4.3	Low	
20	Review sight distance on Commerce Street and address deficiencies	NE Commerce Street between Sunset Avenue and Market Street	Eliminate sight distance issues along Commerce Street	Safety	SAC #1	\$50,000 - \$100,000	0.5	1.0	1.0	1.5	0.0	4.0	Low	
35	Review opportunities to install bicycle parking	Main Street corridor	Provide bicycle parking, particularly near businesses and other destinations	Bicycle	Main Street Plan	< \$25,000	0.5	0.0	0.5	2.0	1.0	4.0	Low	
32	Improve sight distance and lighting	NW Oak Way at post office entrance	To replace the missing light and shrub at crosswalk accessing the post office	Safety	SAC #1	< \$25,000	0.0	1.3	1.0	1.5	0.0	3.8	Low	
33	Scale back / trim / remove landscaping and trees causing sight distance issues; install advance warning signs for crossings	Various locations within Arbor Village neighborhood	Increase sight distance at crosswalks within Arbor Village neighborhood	Safety	SAC #1	< \$25,000	0.0	0.7	1.0	2.0	0.0	3.7	Low	
18	Resurface Commerce Street	NE Commerce Street between Sunset Avenue and Market Street	Eliminate potholes on Commerce Street	Safety	SAC #1	< \$25,000	0.5	0.3	0.5	2.0	0.0	3.3	Low	
34	Review opportunities to install street furniture (benches, water fountains, trash cans, etc.) and create pedestrian gathering locations	Main Street corridor	Improve pedestrian environment and aesthetics on Main Street Corridor	Pedestrian	Main Street Plan	\$25,000 - \$50,000	0.5	0.0	0.5	1.0	1.0	3.0	Low	
11	Conduct a Parking Management Study for the Banks Trailhead	Banks-Vernonia Trailhead	Further study the issue of crowded parking at the Banks-Vernonia trailhead and consider alternatives, such as additional parking areas or shared parking with businesses in town	Parking	SAC #1	\$50,000 - \$100,000	0.0	0.0	0.5	1.0	1.0	2.5	Low	
26	Install bicycle parking at schools	Area schools	Addresses the lack of bicycle parking at the schools	Other	SAC #1	< \$25,000	0.0	0.0	0.5	2.0	0.0	2.5	Low	



Draft Project List Banks, Oregon

Figure A

Attachment B: Draft Project List post SAC Meeting

ID	Project Name/Description	Location	Purpose	Category	Grouping	Source	Cost Estimate	Total Goal Score	Initial Evaluation Priority	Pre-SAC Meeting PMT Notes	SAC Notes	SAC Recommendations	Updated Evaluation Priority	Reasoning
15	Install a rectangular rapid flash beacon (RRFB) or other similar treatment	Pedestrian crossing on NW Banks Road accessing the Banks Trailhead	Provide increased safety at pedestrian crossings accessing the Banks-Vernonia	Safety	Trailhead access	Tech Memo #3	\$25,000 - \$50,000	8.7	High			Medium(1)	High	
2	Reconstruct with widened sidewalks	NW Banks Road between Main Street and US 26	Provide dedicated pedestrian facilities on NW Banks Road	Pedestrian	UGB Access	TSP	> \$1,000,000	8.5	High	Recommend making low priority due to build out	agree with note	Low (3)	Low	
14	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Banks Road between Main Street and US 26	Provide dedicated bicycle facilities on NW Banks Road	Bicycle	UGB Access	SAC #1	\$100,000 - \$500,000	8.0	High	Recommend making low priority due to build out	agree with note	Low (3)	Low	
22	Install bicycle lanes	Main Street between Banks High School and Sunset Avenue	Extend existing bicycle lanes north to enhance safety and comfort for bicyclists	Bicycle	Trailhead access/ Main Street	Walking Tour / Tech Memo #3	< \$25,000	8.0	High		doesn't make the connection complete	Low (2) Medium (1)	Medium	
40	Conduct a pilot project to install bike lanes	Main Street between Banks High School and Depot Street	Test the feasibility and impact of providing bike lanes north of Sunset Park to the start of the downtown commercial area	Bicycle	Trailhead access/ Main Street	Tech Memo #3	< \$25,000	8.0	High		doesn't make the connection complete Passing law If bike lane does not go all the way to the trailhead then not worth it	Low (2) Medium (1)	Medium	
7B (6)	Install a marked crosswalk	Across the south leg of the NW Banks Road/Main Street intersection	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, crossing	Trailhead access/ Main Street	Main Street Plan	< \$25,000	7.8	High		depends on where it is. Low if project 7 is low. Review #7 with this must match to project 7	Low (1)	High	
25	Modify/enhance the pedestrian crossing and review feasibility of consolidating driveways	Main Street crossing at Banks High School	Improve safety and visibility of the pedestrian crosswalk across Main Street at high school between two driveways	Pedestrian	School related	Walking Tour	\$25,000 - \$50,000	7.7	High			-	High	
4	Conduct access to UGB expansion area feasibility study to identify the preferred location for a pedestrian/bicycle overcrossing of the	UGB expansion area	Identify potential access points where bicycle and pedestrian facilities could be installed to connect the existing network to the expanded UGB area and eliminate	Access	UGB Access	SAC #1 / Public /TSP	\$50,000 - \$100,000	7.7	High		can wait till later Low for now Consider UGB	Low (3)	High	Study is necessary to inform railroad crossings
37B (3)	Construct pedestrian/bicycle overcrossing of railroad	At railroad, just north of Arbor Village neighborhood	Construct pedestrian/bicycle overcrossing of railroad to connect existing development to UGB expansion area	Crossing	UGB Access	TSP	\$500,000 - \$1,000,000	7.7	High		research at grade, attach to 37 Low for now unless it connects to Banks Rd at grade high priority, tied to project 37 Consider UGB Connect to project 37. Consider at-grade option.	Low (3)	High	Project 37 given high priority
27	Install sidewalk to fill the existing gap	West side of Main Street between Sunset Park and the Main Street/NW Oak Way intersection	Provide pedestrian facilities on both sides of the Main Street corridor	Pedestrian	Trailhead access/ Main Street	Tech Memo #3	\$50,000 - \$100,000	7.5	High		Oakway to Sunset Park Sidewalk will eventually be constructed with development (could be paid for)	-	High	
28	Install a crosswalk and review opportunities for crossing enhancements, such as a bulbouts, overhead flashers or traffic control.	Across Main Street at NW Trellis Court	Provide safe pedestrian access to Sunset Park	Pedestrian	Main Street	Walking Tour	\$25,000 - \$50,000	7.3	Medium			-	Medium	
21	Install a crosswalk and review opportunities for crossing	Across Main Street at Sunset Avenue	Improve safety at the Sunset Avenue / Main Street intersection	Crossing, Safety	Main Street	Walking Tour	\$25,000 - \$50,000	7.2	Medium		it is already one of the better crossings, others need help more	Low (1)	Medium	
37	Develop a state trail connecting Banks-Vernonia Trail to Highway 6	On the east side of the railroad track between the Banks Trailhead and Highway 6	Provide a protected bicycle and pedestrian connection to the Banks Trailhead from Highway 6	Pedestrian, Bicycle	Trailhead access	Park & Rec Plan	\$100,000 - \$500,000	7.2	Medium		This is the highest priority project for connectivity, attach to project 3 Tied to project 3, which side of tracks? When position on the draft project list is corrected Project located on west side of tracks	High (3)	High	There is insufficient ROW on the west side of the RR (25 feet between rail and path required). The path on the east side will be constructed with future development.
8	Install a multi-use trail on the west side of Banks per the Council Creek Regional Trail Master Plan	Along the planned westside circulator roadway (WCR) connecting NW Banks Road with planned trails to the south	Provide an alternative to Main Street, access future growth to the west, and align with future regional trail plans	Pedestrian, Bicycle	Regional plans	CCRT	\$100,000 - \$500,000	6.7	Medium			Low (1)	Medium	
12	Provide north/south pedestrian/bicycle access	Between Wilkes Street and the schools to the south	Provide a direct connection between the schools and residential areas to the north	Pedestrian, Bicycle	School related	PMT	< \$25,000	6.7	Medium		School district may be involved in property purchase	Low (2)	Medium	Connection important for school access and potentially for access to future RR crossing
5	Install a separated walking path	Parallel to Highway 6 between NW Main Street and railroad	Provide dedicated pedestrian facilities along Highway 6	Pedestrian	Other	Park & Rec Plan	\$100,000 - \$500,000	6.0	Medium		Low or not at all To nowhere right now	Low (4)	Low	
9	Install a separated trail	Along Main Street, south of downtown, to the OR 6 undercrossing	Eliminate conflicts between bicycles and vehicle traffic and align with future	Pedestrian, Bicycle		CCRT	\$100,000 - \$500,000	5.8	Medium		Land owners impacted	Low (3)	Low	
13	Conduct a vehicle circulation study at the elementary and middle schools	Banks Elementary School, Banks Middle School	Further study the issue of back-ups from school pick-up on to Main Street, look for opportunities to improve circulation at schools	Access, Parking	School related	SAC #1	\$50,000 - \$100,000	5.7	Medium		School is too close to Hwy 47 School has looked at options for a long time, but solutions are cost prohibitive. The school is located too close to the highway.	Low (2) High (1)	High	
31	Extend bicycle lanes	On NW Oak Way between the intersection of Main Street and existing bike lanes	Eliminate the bicycle lane gap along NW Oak Way	Bicycle	Other	Tech Memo #3	< \$25,000	5.5	Medium		doesn't seem realistic High priority	Low (1) High (2)	High	
10	Install bicycle way-finding signs	Way-finding kiosks installed 3 locations: Main St/Hwy 6, Log Cabin Park, and Banks-Vernonia Trailhead	Give bicyclists and pedestrians direction to area amenities, tourist locations, the Banks Trailhead, and economic centers	Education	Trailhead access	SAC #1	\$25,000 - \$50,000	5.3	Medium	Recommend high priority due to low cost and high value	Signs would likely be state signs.	Low (2) High (1)	Medium	
29	Install curb extensions at select intersections	Main Street corridor	Provide speed control along Main Street	Safety	Main Street	SAC #1	\$25,000 - \$50,000	5.2	Medium		Low priority. Farm equipment uses roadway. Curb extensions could be disadvantage for cyclists.	Low (2)	Medium
30	Install dynamic radar-activated speed limit signs	Main Street corridor	Provide speed control along Main Street	Safety	Main Street	SAC #1	\$25,000 - \$50,000	5.2	Medium		Maybe Issue is enforcement. Consider radar enforcement	Low (2) High (1)	Medium	
16	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	Provide bicycle facilities accessing the potential future parking lot at the White Barn and Killin Wetlands	Bicycle	Other	SAC #1	\$50,000 - \$500,000	5.2	Medium		Not in city	Low (3)	Low (Suggest project to County)	
17	Install sidewalk or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin	Provide pedestrian facilities accessing the potential future parking lot at the	Pedestrian	Other	SAC #1	\$50,000 - \$500,000	5.2	Medium		Not in city	Low (2)	Low (Suggest project to County)	
36	Develop a City Trail	Between the existing private trail on the west side of Arbor Village to the proposed railroad crossing	Connect Arbor Village to the proposed bicycle/pedestrian railroad crossing	Pedestrian, Bicycle	UGB Access	Park & Rec Plan	\$100,000 - \$500,000	5.2	Medium		attach to project 37 High if project 37 is high Partner with project 37.	High (3)	High	

ID	Project Name/Description	Location	Purpose	Category	Grouping	Source	Cost Estimate	Total Goal Score	Initial Evaluation Priority	Pre-SAC Meeting PMT Notes	SAC Notes	SAC Recommendations	Updated Evaluation Priority	Reasoning
19	Install sidewalk on the east side of the street and fill any gaps	NE Commerce Street between Sunset Avenue and Market Street	Provide pedestrian facilities on both sides of Commerce Street	Pedestrian	Other	SAC #1	\$50,000 - \$100,000	5.0	Medium		Project fills gaps.	-	Low	
24	Install pedestrian-scale lighting	Main Street corridor	Improve lighting along Main Street, particularly for pedestrians	Pedestrian, Safety	Main Street	SAC #1	\$50,000 - \$100,000	4.8	Low			-	Low	
1	Install advanced warning signage	Intersection of NW Banks Road and NW Aerts Road	Improve safety at the NW Banks Road and NW Aerts Road intersection	Safety	Other	TSP	< \$25,000	4.7	Low			-	Low	
23	Resurface Main Street	Main Street between Wilkes Street and Sunset Avenue	Eliminate cracks running parallel along Main Street	Safety	Main Street	Walking Tour	\$100,000 - \$500,000	4.7	Low		let ODOT do it some day ODOT	Remove (1)	Low (Suggest project to ODOT)	
38	Extend the existing private trail	On the west side of Arbor Village from Oak to Highway 6	Connect Arbor Village to Highway 6	Pedestrian, Bicycle	Other	Park & Rec Plan	\$50,000 - \$100,000	4.7	Low			Remove (1) Low (1)	Low	Consider option to go under Hwy 6
7	Install new sidewalk and curb	West side of Main Street along Five Star complex	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, Pedestrian	Trailhead access/ Main Street	Main Street Plan	< \$25,000	4.3	Low		connect to project 6 With project 6 High priority - match with project #6.	High (1)	High	
20	Review sight distance on Commerce Street and address deficiencies	NE Commerce Street between Sunset Avenue and Market Street	Eliminate sight distance issues along Commerce Street	Safety	Other	SAC #1	\$50,000 - \$100,000	4.0	Low			-	Low	
35	Review opportunities to install bicycle parking	Main Street corridor	Provide bicycle parking, particularly near businesses and other destinations	Bicycle	Main Street	Main Street Plan	< \$25,000	4.0	Low		Explore using vehicle parking space for bicycle parking.	Medium (1)	Medium	
32	Improve sight distance and lighting	NW Oak Way at post office entrance	Improve safety and visibility at the crosswalk accessing the post office	Safety	Other	SAC #1	< \$25,000	3.8	Low	High		High (1)	Medium	
33	Scale back / trim / remove landscaping and trees causing sight distance issues; install advance warning signs for crossings	Various locations within Arbor Village neighborhood	Increase sight distance at crosswalks within Arbor Village neighborhood	Safety	Other	SAC #1	< \$25,000	3.7	Low		too vague	-	Low	
18	Resurface Commerce Street	NE Commerce Street between Sunset Avenue and Market Street	Eliminate potholes on Commerce Street	Safety	Other	SAC #1	< \$25,000	3.3	Low			-	Low	
34	Review opportunities to install street furniture (benches, water fountains, trash cans, etc.) and create pedestrian gathering locations	Main Street corridor	Improve pedestrian environment and aesthetics on Main Street Corridor	Pedestrian	Main Street	Main Street Plan	\$25,000 - \$50,000	3.0	Low		wait on Main Street Plan	Low (1)	Low	
11	Conduct a Parking Management Study for the Banks Trailhead	Banks-Vernonia Trailhead	Further study the issue of crowded parking at the Banks-Vernonia trailhead and consider alternatives, such as additional parking areas or shared parking with businesses in town	Parking	Trailhead access	SAC #1	\$50,000 - \$100,000	2.5	Low		Workshop	Medium (1)	Medium	
26	Install bicycle parking at schools	Area schools	Addresses the lack of bicycle parking at the schools	Other	School related	SAC #1	< \$25,000	2.5	Low		Just installed at Middle School Middle schools just added bike parking.	High (1)	Medium	

Banks Bicycle and Pedestrian Plan



Appendix G SAC Meeting Summaries



City of Banks Bicycle and Pedestrian Plan (BPP)
Stakeholder Advisory Committee (SAC) Kick-off Meeting
January 22, 2014 / 2:00 – 5:00 pm
City Council Chambers, 13690 NW Main Street
Banks, OR 97106

Agenda

Meeting Purpose: Become familiar with the issues, opportunities and constraints present within the City; provide an overview of the project scope and schedule; confirm project goals and objectives.

Desired Outcomes: An understanding of the project, process, and communication tools. Consensus on the project goals, objectives, and evaluation criteria.

2:00 – 3:00	<p>Walking Tour</p> <ul style="list-style-type: none"> • Meet at the City Council Chambers • Main Street, school activity <p>Main Street</p> <ul style="list-style-type: none"> • Crack in Main St. parallel to roadway may causes challenges for bikes • Cars parked along street and risk of opening doors means bikes need to ride in middle of road • Bikes may weave in and out from roadway to sidewalk based on road activity • Banks Breakfast Ride from Hillsboro stops at Banks Cafe on Main Street • In the summer there is farm equipment along Main Street • Gaps in sidewalk <p>Main Street & Sunset Avenue</p> <ul style="list-style-type: none"> • Park, bus stop, and fire station at intersection <p>Main Street & Schools</p> <ul style="list-style-type: none"> • Crossing at Banks High School between two driveways on both sides • Pick-up activity leads to cars backed up to Main Street (at elementary school) <p>Main Street & Trellis Avenue</p> <ul style="list-style-type: none"> • Crossing may be useful here to serve park on west side 	City Staff and Consultant Team
3:00 – 3:20	<p>Welcome and Introductions</p> <ul style="list-style-type: none"> • Agenda Review/Meeting Purpose and Outcomes • SAC Member Self-Introductions • Project Team Self-Introductions <p>See attached sign-in sheet</p> <p>SAC members noted the following for success in the project:</p> <ul style="list-style-type: none"> • Connectivity, consideration of the new UGB area, key destinations 	Kelly Laustsen, Consultant Project Manager

- Desire to see near-term projects to keep the momentum from the code updates and Main Street Revitalization project going
- Main Street should balance existing and potential future uses (like mixed use), businesses, parking, bikes
- Enhance biking and walking and the draw of the City
- Community involvement

Other comments:

- TGM parking study in the works
- Main Street Outreach program is looking at zoning on Main Street

3:20 – 3:45	<p>Project Overview</p> <ul style="list-style-type: none"> • Background • Deliverables and Meetings • Schedule • Roles and Responsible <p><i>Document: Meeting Schedule, Deliverable Summary, and Roles/Responsibilities Memorandum</i></p>	Kelly Laustsen and Marc Butorac, Consultant Project Principal
3:45 – 3:55	<p>Orientation to Project Resources</p> <ul style="list-style-type: none"> • Project Notebooks • Website Overview – www.banksbpp.com <p>Website will be used to advertise open house and other opportunities for public involvement (like an interactive map to note issues/concerns/etc.)</p> <ul style="list-style-type: none"> • City will advertise website to public now 	Kelly Laustsen
3:55 – 4:55	<p>Review / Discuss Draft Goals, Objectives, Evaluation Criteria</p> <ul style="list-style-type: none"> • Background • Draft evaluation metrics • Discussion <p><i>Document: TM #1 - Project Goals, Objectives, and Evaluation Criteria</i></p> <p>General Comments</p> <ul style="list-style-type: none"> • The evaluation criteria will be applied later in the project to evaluate/prioritize projects, policies, programs, pilot projects, and studies (PPPPS) • Bicycling in Banks may be more tourism based • Desire to get more people bicycling and walking • Connection with natural areas (viewpoints, birdwatching, Dairy Creek) • Disconnect between different areas of Banks and desire for seamless connections • Desire to have something more visible indicating to people they have arrived in Banks, take advantage of opportunity trailhead provides • Future connection along railroad right-of-way still being discussed. • Travel Oregon puts on bike tourism workshops that could be useful for the city <p>Goals</p> <ul style="list-style-type: none"> • Add another goal to increase the number of people biking and 	Kelly Laustsen/All

- walking
- Stress community involvement (with livability)
- Ideal to have projects that impact residents and visitors (intersection of both)

Objectives

- Objectives are infrastructure related – need to be applicable to policies, programs, pilot projects, and studies

Evaluation Criteria

- Need something for economic vitality (i.e. foot traffic)
- Need to consider connections to natural areas, resources, trails, golf courses – included in activity centers?
- Expected crash frequency/severity will be challenging to measure/assess – consider other metrics like volumes of vehicles, trucks
- Need to consider others beyond residents and tourists (i.e. employees)
- Multimodal level of service will be difficult to measure/assess – consider alternative metrics like level of stress

4:55 – 5:00

Next Steps

Kelly Laustsen

Email any comments on Technical Memorandum #1 to Kelly Laustsen
klaustsen@kittelson.com by Friday, January 30th, 2015



SAC Kick-Off Meeting Sign-In Sheet

January 22nd, 2015



**City of Banks Bicycle and Pedestrian Plan (BPP)
Stakeholder Advisory Committee (SAC) Meeting #1
March 5, 2014 / 3:00 – 5:00 pm
City Council Chambers, 13690 NW Main Street
Banks, OR 97106**

MEETING SUMMARY

Red text indicates notes from meeting.

3:00 – 3:10	Welcome and Introductions <ul style="list-style-type: none"> • Agenda review/meeting purpose and outcomes • Update on parking management project <p>See attached sign-in sheet</p>	Kelly Laustsen, Consultant Project Manager
3:10 – 3:45	Review existing documents and data <ul style="list-style-type: none"> • Existing plans and policies • Existing facilities and conditions <p><i>Documents: TM #2 – Baseline Information</i></p> <p><i>TM #3 – Inventory and Evaluation</i></p> <ul style="list-style-type: none"> • Discussion about seasonality of bicycle/pedestrian counts and limitations with data collected for TM #3. <ul style="list-style-type: none"> ○ SAC suggested adding seasonality discussion to memo as important caveat when viewing data. ○ SAC raised concerns with potentially not providing the reader with context of the seasonality of counts, latent demand. ○ It was mentioned that Oregon State Parks collects counts on Banks-Vernonia Trail that can be added to the memo. • An Error in Exhibit 5 (Vehicle volumes on NW Main Street) was identified and will be corrected in final memo. 	Kelly Laustsen and Marc Butorac, Consultant Project Principal
3:45 – 4:35	Identification of gaps and deficiencies <ul style="list-style-type: none"> • Already catalogued: issues from walking tour, TM #2, TM #3 • Others from SAC? • Interactive map • Interactive map available on www.banksbpp.com <ul style="list-style-type: none"> ○ SAC members and public invited to visit map and add comments. • Comments from SAC meeting will be added to online map. • SAC stated that it would be useful to develop a bicycle and pedestrian plan for the school with involvement from staff/parents. • SAC identified the need for better wayfinding and signage throughout City. 	Kelly Laustsen/All

- SAC stated that it is currently challenging to see mileage markers on Banks-Vernonia Trail, which makes emergency response challenging.
- SAC wanted to make sure circulation/connections to the east side are appropriately considered in the plan.

4:35 – 4:55	Review toolbox of pedestrian and bicycle treatments	Kelly Laustsen/All
	<ul style="list-style-type: none"> • Organization and contents of toolbox • Use of toolbox in development of BPP 	

Document: TM #4 –Pedestrian and Bicycle Treatments Toolbox

- SAC suggested adding transit related amenities and treatments (e.g., transit stop amenities).
- SAC suggested adding safety treatments, especially to control speeds on Main Street (e.g., curb extensions and tighter curb radii with truck aprons).
 - Treatments from the Oregon Bike/Ped Safety Improvement Plan could be referenced
- SAC suggested adding covered bicycle parking/bike lockers.
- SAC discussed options for multi-use path along railroad, connecting down to Sunset or Depot.
 - *Rail line currently serves mill, infrequently crosses NW Banks Road*
 - *Can pursue project, get on plans and identify funding, which will help prompt discussions with railroad*
 - *Potential benefits from getting support of mill*
- SAC discussed different crosswalk treatments and experience with pedestrian hybrid beacon.
 - *Washington County doesn't use pedestrian hybrid beacon and instead uses full signal. This approach reduces the challenges associated with driver education.*
 - *Rapid rectangular flashing beacons can be placed in median for greater visibility.*
 - *Interest in in-roadway flashers.*
- City will discuss options with maintenance.

4:55 – 5:00	Next Steps	Kelly Laustsen
	<ul style="list-style-type: none"> • Upcoming meetings • SAC was asked to provide any comments on TM #2, #3, and #4 by Thursday, March 19th (klaustsen@kittelson.com – let Kelly know if you need more time) • SAC Meeting #2 will be held on Thursday, April 16 from 3-5 pm (TM #5) <ul style="list-style-type: none"> ○ <i>Request by SAC was made for TM #5 to be provided at least one week in advance of meeting</i> • Open House will be held on Thursday, May 21 from 6-8 pm • Virtual Open House will run from May 30-21 (linked from www.banksbpp.com) • Discussed importance of getting others involved and advertising the 	

upcoming Open House early.

- *Potential to have PC/CC work session before Open House*
- *Rachel will contact school board/PTO*
- Discussed potential of having Travel Oregon do a session on bike tourism in conjunction with the open house.
 - *Currently doing a series in Vernonia*



SAC Meeting #1 Sign-In Sheet

March 5th, 2015



City of Banks Bicycle and Pedestrian Plan (BPP)
Stakeholder Advisory Committee (SAC) Meeting #2
April 16, 2015 / 3:00 – 5:00 pm
City Council Chambers, 13690 NW Main Street
Banks, OR 97106

MEETING SUMMARY

Red text indicates notes from meeting.

3:00 – 3:10	Welcome and Introductions <ul style="list-style-type: none">• Agenda review/meeting purpose and outcomes• Updates since last meeting	Kelly Laustsen, Consultant Project Manager
<p>See attached sign-in sheet</p>		
3:10 – 3:45	Review process used to develop project list and evaluation methodology <ul style="list-style-type: none">• Plan elements• Projects for evaluation• Evaluation criteria and scoring	Kelly Laustsen and Marc Butorac, Consultant Project Principal
<p><i>Documents: TM #5 – Alternatives Development</i></p>		
3:45 – 4:45	Review draft project list and initial priorities <ul style="list-style-type: none">• Projects that should move up or down?• Projects that should be removed?• Projects that are missing?	Kelly Laustsen/All
<p><i>Documents: TM #5 – Alternatives Development – Project List and Map</i></p> <p>SAC members used individual spreadsheets of projects to provide feedback on project list and note whether they agree with initial priorities or thought projects should move up or down in priority. These comments are reflected on the attached draft project list.</p>		
4:45 – 5:00	Next Steps <ul style="list-style-type: none">• Upcoming meetings	Kelly Laustsen

BY:	
DATE:	4.16.15

		PAGE No.

SAC Mtg #2 Sign-In Sheet

<u>Name</u>	<u>Agency</u>
Rodney Line	Banks File Dep.
Denise Detlief	Bighorn Logging
Bruce Buffington	NWBSC
Bob Huston	Banks School District

Note: not all SAC members present signed-in



Draft Project List Post 4.16.15 SAC Meeting

ID	Project Name/Description	Location	Purpose	Category	Grouping	Source	Cost Estimate	Goal Assessment							Evaluation Priority	Notes	KML notes from SAC Meeting #2	SAC Notes	SAC Recommended Priority	Updated Evaluation Priority
								1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality	Total Goal Score							
1	Install advanced warning signage	Intersection of NW Banks Road and NW Aerts Road	Improve safety at the NW Banks Road and NW Aerts Road intersection	Safety	Other	TSP	< \$25,000	0.0	0.7	1.5	1.5	1.0	4.7	Low				Medium	?	
2	Reconstruct with widened sidewalks	NW Banks Road between Main Street to US 26	Provide dedicated pedestrian facilities on NW Banks Road	Pedestrian	Other	TSP	> \$1,000,000	2.0	2.0	1.0	1.5	2.0	8.5	High	Recommend making low priority due to build out		agree with note	Low Low	Low	
4	Conduct Access to UGB Expansion Area feasibility study	TBD	Identify potential access points where bicycle and pedestrian facilities could be installed to connect the existing network to the expanded UGB area and eliminate the railroad as a barrier	Access	UGB Access	SAC #1 / Public /TSP	\$50,000 - \$100,000	2.0	0.7	2.0	1.5	1.5	7.7	High			agree with note	Low Low Low	Low	
5	Install a separated walking path	Parallel to Highway 6 between NW Main Street and railroad	Provide dedicated pedestrian facilities along Highway 6	Pedestrian	Other	Park & Rec Plan	\$100,000 - \$500,000	2.0	1.0	1.0	0.5	1.5	6.0	Medium			doesn't make the connection complete	Low Medium Low	Low	
6	Install a marked crosswalk	NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, crossing	Trailhead access	Main Street Plan	< \$25,000	1.0	1.3	1.5	2.0	2.0	7.8	High		If bike lane does not go all the way to the trailhead then not worth it	doesn't make the connection complete Passing law If bike lane does not go all the way to the trailhead then not worth it	Low Medium Low	Low	
8	Install a separated trail	along the Westside circulator road and connect to Main Street, access future growth to the west, and align with future regional trail plans	Provide an alternative to Main Street, access future growth to the west, and align with future regional trail plans	Pedestrian, Bicycle		CCRT / Public	\$100,000 - \$500,000	2.0	1.7	1.0	0.5	1.5	6.7	Medium		Match to project #7	depends on where it is. Low if project 7 is low. Review #7 with this must match to project 7	Low	High	
9	Install a separated trail	Along Main Street, south of downtown, to the OR 6 undercrossing	Eliminate conflicts between bicycles and vehicle traffic and align with future regional trail plans	Pedestrian, Bicycle	Regional plans	CCRT	\$100,000 - \$500,000	2.0	1.3	1.0	0.0	1.5	5.8	Medium		High priority - match with project #6.	Match to project #7 connect to project 6 With project 6 High priority - match with project #6.	High	High	
10	Install bicycle way-finding signs	Way-finding kiosks installed 3 locations: Main St/Hwy 6, Log Cabin Park, and Banks-Vernonia Trailhead	Give bicyclists and pedestrians direction to area amenities, tourist locations, the Banks Trailhead, and economic centers	Education	Trailhead access	SAC #1	\$25,000 - \$50,000	1.0	0.3	0.5	1.5	2.0	5.3	Medium	Recommend high priority due to low cost and high value				High	
11	Conduct a Parking Management Study for the Banks Trailhead	Banks-Vernonia Trailhead	Further study the issue of crowed parking at the Banks-Vernonia trailhead and consider alternatives, such as additional parking areas or shared parking with businesses in town	Parking	Trailhead access	SAC #1	\$50,000 - \$100,000	0.0	0.0	0.5	1.0	1.0	2.5	Low			can wait till later Low for now Consider UGB	Low Low Low	Low	
12	Provide north/south pedestrian/bicycle access between Wilkes Street and the high school/middle school	Connect Wilkes Street with the schools to the south	Provide a direct connection between the schools and residential areas to the north	Pedestrian, Bicycle	School related	SAC #1	< \$25,000	2.0	0.7	2.0	1.0	1.0	6.7	Medium		Sidewalk will eventually be constructed with development (could be paid for)	Oakway to Sunset Park Sidewalk will eventually be constructed with development (could be paid for)		High	
13	Conduct a vehicle circulation study at the elementary and middle schools	Banks Elementary School, Banks Middle School	Further study the issue of back-ups from school pick-up on to Main Street, look for opportunities to improve circulation at schools	Access, Parking	School related		\$50,000 - \$100,000	0.0	1.7	2.0	2.0	0.0	5.7	Medium					Medium	
14	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Banks Road between Main Street to US 26	Provide dedicated bicycle facilities on NW Banks Road	Bicycle	UGB Access	SAC #1	\$100,000 - \$500,000	2.0	2.0	1.0	1.0	2.0	8.0	High	Recommend making low priority due to build out		it is already one of the better crossings, others need help more	Low	Low	

ID	Project Name/Description	Location	Purpose	Category	Grouping	Source	Cost Estimate	Goal Assessment					Evaluation Priority	Notes	KML notes from SAC Meeting #2	SAC Notes	SAC Recommended Priority	Updated Evaluation Priority	
								1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality	Total Goal Score						
15	Install a rectangular rapid flash beacon (RRFB) or other similar treatment	Pedestrian crossing on NW Banks Road accessing the Banks Trailhead	To provide increased safety at pedestrian crossings accessing the Banks-Vernonia trailhead parking	Safety	Trailhead access	Tech Memo #3	\$25,000 - \$50,000	1.5	1.7	2.0	1.5	2.0	8.7	High		Project located on west side of tracks	This is the highest priority project for connectivity, attach to project 3 Tied to project 3, which side of tracks? When position on the	High High High	High
16	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	Provide bicycle facilities accessing the potential future parking lot at the White Barn and Killin Wetlands	Bicycle	Other	SAC #1	\$50,000 - \$500,000	1.0	0.7	1.0	1.0	1.5	5.2	Medium		Connect to project 37. Consider at-grade option. research at grade, attach to 37 Low for now unless it connects to Banks Rd at grade high priority, tied to project 37 Consider UGB Connect to project 37. Consider at-grade option.	Low Low Low	Low	
17	Install sidewalk or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	Provide pedestrian facilities accessing the potential future parking lot at the White Barn and Killin Wetlands	Pedestrian	Other	SAC #1	\$50,000 - \$500,000	1.0	0.7	1.0	1.0	1.5	5.2	Medium			Low High	Medium	
18	Resurface Commerce Street	NE Commerce Street between Sunset Avenue and Market Street	Eliminate potholes on Commerce Street	Safety	Other	SAC #1	< \$25,000	0.5	0.3	0.5	2.0	0.0	3.3	Low		School district may be involved in property purchase	Low Low	Low	
19	Install sidewalk	NE Commerce Street between Sunset Avenue and Market Street	Provide pedestrian facilities on Commerce Street	Pedestrian	Other	SAC #1	\$50,000 - \$100,000	1.5	1.0	1.0	1.0	0.5	5.0	Medium		Low priority - not gaining anything Low or not at all To nowhere right now Low priority - not gaining anything	Low Low Low Low	Low	
20	Review sight distance on Commerce Street and address deficiencies	NE Commerce Street between Sunset Avenue and Market Street	Eliminate sight distance issues along Commerce Street	Safety	Other	SAC #1	\$50,000 - \$100,000	0.5	1.0	1.0	1.5	0.0	4.0	Low		Land owners impacted Land owners impacted	Low Low Low	Low	
21	Install pedestrian crossing and review opportunities for crossing enhancement, such as a bulbouts, overhead flashers or traffic control	Sunset Avenue / Main Street intersection	Improve safety at the Sunset Avenue / Main Street intersection	Crossing, Safety	Main Street	Walking Tour	\$25,000 - \$50,000	1.0	1.7	2.0	1.5	1.0	7.2	Medium		School has looked at options for a long time, but solutions are cost prohibitive. The school is located too close to the highway. School is too close to Hwy 47 School has looked at options for a long time, but solutions are cost prohibitive. The school is located too close to the highway.	High Low Low	?	
22	Install bicycle lanes	Main Street between the high school and Sunset Avenue	Extend existing bicycle lanes north to enhance safety and comfort for bicyclists	Bicycle	Trailhead access/Main Street	Walking Tour / Tech Memo #3	< \$25,000	2.0	2.0	1.0	1.0	2.0	8.0	High		High priority doesn't seem realistic	Low High High	?	
23	Resurface Main Street	Main Street between Wilkes Street and Sunset Avenue	Eliminate cracks running parallel along Main Street	Safety	Main Street	Walking Tour	\$100,000 - \$500,000	0.5	0.7	0.5	2.0	1.0	4.7	Low		Signs would likely be state signs. Signs would likely be state signs.	High Low Low	?	
24	Install pedestrian-scale lighting	Main Street corridor	Improve lighting along Main Street, particularly for pedestrians	Pedestrian, Safety	Main Street	SAC #1	\$50,000 - \$100,000	0.5	1.3	1.5	0.5	1.0	4.8	Low		Low priority. Farm equipment uses roadway. Curb extensions could be Issue is enforcement.	Low Low	Low	
25	Relocate the pedestrian crosswalk and overhead beacon to the north or south of the two school driveways and consolidate driveways	Main Street, north or south of the two school driveways	Improve safety and visibility of the pedestrian crosswalk across Main Street at high school between two driveways	Pedestrian	School related	Walking Tour	\$25,000 - \$50,000	1.0	1.7	2.0	2.0	1.0	7.7	High		Consider radar enforcement program. Issue is enforcement. Maybe	High Low Low	?	
26	Install bicycle parking at schools	Area schools	Addresses the lack of bicycle parking at the schools	Other	School related	SAC #1	< \$25,000	0.0	0.0	0.5	2.0	0.0	2.5	Low		Not in city	Low Low Low ?	Low	

ID	Project Name/Description	Location	Purpose	Category	Grouping	Source	Cost Estimate	Goal Assessment					Evaluation Priority	Notes	KML notes from SAC Meeting #2	SAC Notes	SAC Recommended Priority	Updated Evaluation Priority
								1.Livability	2.Safety & Health	3.Accessibility	4.Financial Responsibility	5.Economic Vitality	Total Goal Score					
27	Install sidewalk to fill the existing gap	West side of Main Street between Sunset Park and the Highway 6 / Main Street intersection	Provide pedestrian facilities on both sides of the Main Street corridor	Pedestrian	Trailhead access/Main Street	Tech Memo #3	\$50,000 - \$100,000	1.5	2.0	1.0	1.0	2.0	7.5	High		Not in city	Low Low ?	Low
28	Install a crosswalk and review opportunities for crossing enhancement,such as a bulbouts, overhead flashers or traffic control	Across Main Street at the NW Trellis Court/Main Street intersection	Provide safe pedestrian access to Sunset Park	Pedestrian	Main Street	Walking Tour	\$25,000 - \$50,000	1.5	1.3	2.0	1.5	1.0	7.3	Medium		Partner with project 37. attach to project 37	High High if project 37 is high	High High
29	Install curb extensions at select intersections	Main Street corridor	Provide speed control along Main Street	Safety	Main Street	SAC #1	\$25,000 - \$50,000	1.0	1.7	1.0	1.5	0.0	5.2	Medium		Project fills gaps. Project fills gaps.		Remove? Missing on east side, but vacant
30	Install dynamic radar-activated speed limit signs	Main Street corridor	Provide speed control along Main Street	Safety	Main Street	SAC #1	\$25,000 - \$50,000	1.0	1.7	1.0	1.5	0.0	5.2	Medium				Low
31	Extend bicycle lanes on NW Oak Way to the NW Oak Way/Main Street intersection	NW Oak Way	Eliminate the bicycle lane gap along NW Oak Way	Bicycle	Other	Tech Memo #3	< \$25,000	1.0	2.0	1.5	1.0	0.0	5.5	Medium				Low
32	Improve sight distance and lighting	NW Oak Way at post office entrance	To replace the missing light and shrub at crosswalk accessing the post office	Safety	Other	SAC #1	< \$25,000	0.0	1.3	1.0	1.5	0.0	3.8	Low	High	let ODOT do it some day ODOT	Remove	Low/Remove
33	Scale back / trim / remove landscaping and trees causing sight distance issues; install advance warning signs for crossings	Various locations within Arbor Village neighborhood	Increase sight distance at crosswalks within Arbor Village neighborhood	Safety	Other	SAC #1	< \$25,000	0.0	0.7	1.0	2.0	0.0	3.7	Low			Remove Low ?	Low/Remove
34	Review opportunities to install street furniture (benches, water fountains, trash cans, etc.) and create pedestrian gathering locations	Main Street corridor	Improve pedestrian environment and aesthetics on Main Street Corridor	Pedestrian	Main Street	Main Street Plan	\$25,000 - \$50,000	0.5	0.0	0.5	1.0	1.0	3.0	Low				Low
35	Review opportunities to install bicycle parking	Main Street corridor	Provide bicycle parking, particularly near businesses and other destinations	Bicycle	Main Street	Main Street Plan	< \$25,000	0.5	0.0	0.5	2.0	1.0	4.0	Low		Explore using vehicle parking space for bicycle parking. Explore using vehicle parking space for bicycle parking.	Medium	Medium
36	Develop a City Trail	Between the existing private trail on the west side of Arbor Village to the proposed railroad	Connect Arbor Village to the proposed bicycle/pedestrian railroad crossing	Pedestrian, Bicycle	UGB Access	Park & Rec Plan	\$100,000 - \$500,000	1.5	0.7	1.0	0.5	1.5	5.2	Medium			High	High
37	Develop a state trail connecting Banks-Vernonia Trail to Highway 6	Along railroad track between the Banks Trailhead and Highway 6	Provide a protected bicycle and pedestrian connection to the Banks Trailhead from Highway 6	Pedestrian, Bicycle	Trailhead access	Park & Rec Plan	\$100,000 - \$500,000	2.0	1.7	1.0	0.5	2.0	7.2	Medium		too vague		?
38	Extend the existing private trail	On the west side of Arbor Village from Oak to Highway 6	Connect Arbor Village to Highway 6	Pedestrian, Bicycle	Other	Park & Rec Plan	\$50,000 - \$100,000	1.5	0.7	1.0	0.5	1.0	4.7	Low				Low
40	Conduct a pilot project to install bike lanes	Main Street between Banks HS and Depot Street	Test the feasibility and impact of providing bike lanes north of Sunset Park to the start of the downtown commercial area	Bicycle	Trailhead access/Main Street	Tech Memo #3	< \$25,000	2.0	2.0	1.0	1.0	2.0	8.0	High		wait on Main Street Plan	Low	Low
37B(3)	Construct pedestrian/bicycle overcrossing of railroad	At railroad, just north of Arbor Village neighborhood	Construct pedestrian/bicycle overcrossing of railroad to connect existing development to UGB expansion area	Crossing	UGB Access	TSP	\$500,000 - \$1,000,000	2.0	0.7	2.0	1.0	2.0	7.7	High		Workshop	Medium	Medium
6B(7)	Install new sidewalk and curb	SW corner of Five Star complex	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Safety, Pedestrian	Trailhead access/Main Street	Main Street Plan	< \$25,000	0.5	1.3	0.5	1.0	1.0	4.3	Low		Middle schools just added bike parking.	Just installed at Middle School	High



City of Banks Bicycle and Pedestrian Plan (BPP)
Stakeholder Advisory Committee (SAC) Meeting #3
July 23, 2015 / 3:00 – 5:00 pm
City Council Chambers, 13690 NW Main Street
Banks, OR 97106

Agenda

Red text indicates notes from meeting.

3:00 – 3:20	Welcome and Introductions <ul style="list-style-type: none"> • Agenda review/meeting purpose and outcomes • Updates since last meeting • Review of in-person and virtual open house 	Marc Butorac, Consultant Project Principal
-------------	--	--

See attached sign-in sheet

3:20 – 4:20	Review Draft BPP <ul style="list-style-type: none"> • Plan sections • Plan elements 	Marc Butorac and Bart Rudolph, Consultant
-------------	---	---

Document: Draft BPP

- SAC suggested combining the high priority Main Street Bicycle Lane project between Banks High School and Sunset Avenue with the medium priority Main Street Bicycle Lane Pilot Project. The combined project will be a high priority.
 - Issues with Main Street on-street parking were also discussed. This included on-street truck parking availability, business owner's support for on-street parking and the need to coordinate with the on-going parking study.
- SAC mentioned that Railroad Trail project would need further study to identify which side of the railroad it would be constructed on. It was agreed that the draft plan would note that the exact alignment would need further study.
- SAC mentioned that the Arbor Village Sight Distance Improvements project should include possible parking restrictions near the pedestrian crossings.
- An error in the prospectus sheet for the Main Street Bicycle Lanes (project ID 2) was identified and will be corrected in the draft plan.
- SAC noted that one road was incorrectly named Trellis Court. The correct name, Trellis Way, will be corrected in the draft plan.

4:20 – 4:45	<p>Review draft implementing policies and ordinances</p> <ul style="list-style-type: none"> • Discuss incorporation of BPP in to City code <p><i>Document: Draft Implementing Policies and Ordinances</i></p>	Jolynn Becker, Marc Butorac, All
	<ul style="list-style-type: none"> • Marc mentioned that the following policies and plans were being looked at by the project team for possible revisions: <ul style="list-style-type: none"> ○ Banks Design Standards ○ Banks Development Code ○ Transportation System Plan ○ Comprehensive Plan ○ Main Street Revitalization Plan ○ Park and Recreation Master Plan • The project team and the City will schedule a meeting to discuss the findings before the draft plan is sent to the Planning Commission and City Council for their joint workshop. 	

4:45 – 5:00	<p>Next Steps</p> <ul style="list-style-type: none"> • Upcoming project activities • SAC was asked to provide comments on the draft plan and prospectus sheets by Thursday, July 30, 2015 (klaustsen@kittelson.com – let Kelly know if you need more time). • Joint City Planning Commission and City Council Workshop will be held on August 11, 2015. • City Planning Commission Hearing will be held on August 29, 2015. • City Council 1st reading will be held on September 13, 2015. • City Council 2nd reading will be held on October 10, 2015. 	Marc Butorac
-------------	--	--------------



SAC Meeting #3 Sign-In Sheet

23-Jul-15

Banks Bicycle and Pedestrian Plan



Appendix H Key Stakeholder Interviews



BANKS BICYCLE AND PEDESTRIAN MASTER PLAN

STAKEHOLDER INTERVIEWS

Project Introduction

The City of Banks' Bicycle and Pedestrian Master Plan ("BPP") will allow the community to develop a convenient and safe non-automobile transportation system for local trips within the city and tie in with regional trail systems. The BPP will identify access points, preferred alignments, key road crossing options, trail standards, design elements, regulatory requirements, preliminary cost estimates, and potential sources of funding while ensuring compliance with state and local standards.

The City's BPP will offer transportation options for City residents and tourists. The proposed bicycle and pedestrian routes will provide convenient access to attractors within Banks, reduce reliance on the automobile, and improve safety by considering parallel routes to Highways 6 and 47.

The draft Bicycle and Pedestrian Master Plan is scheduled to be completed in August 2015 with the adoption process extending through November 2015.

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.
2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?
3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?
4. Do you have any safety concerns related to the existing bicycle and pedestrian system?
5. What new connections would you like to see established or existing connections improved?
6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)
7. What is your vision for the future bicycle and pedestrian system in Banks?
8. What are your top priorities for the bicycle and pedestrian system in Banks?
9. Is there anything else you think we should know to help inform the development of the BPP?

Interviewees

Interview summaries are provided for the following interviewees:

Name	Agency or Position	Interview held:
Leonard Punzel	Banks Bicycle Repair & Rentals	12.17.14
Anne Debbaut	ODOT/DLCD	12.17.14
Bruce Buffington	NW Bicycle Safety Council	12.19.14
Jolynn B. and Stacey G.	City Staff	12.30.14
Rachel Nelson	Planning Commission	1.9.15
Dan Keller	City Council	1.30.15
Michael Davis	Park, Recreation & Tree Board	2.2.15





STAKEHOLDER INTERVIEW SUMMARY – LEONARD PUNZEL – 12.17.14

Contact Information:

Leonard Punzel
lpunzel@hotmail.com
503-680-3269
Banks Bicycle Repair & Rentals

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Leonard owns a bike shop near the trailhead for the Banks-Vernonia Trail.

He typically avoids riding on the roads in town (he has had experiences with cars forcing him off the road, doors opening).

He typically rides on the Banks-Vernonia Trail which he likes.

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Leonard noted some challenges with the bike route down main street, including:

- On-street parking in the northern end (old town), businesses are close to the road
- Main St is not that wide, especially on the northern end
- Industry (log trucks) go through town, has seen a car door taken off by a truck

Leonard doesn't think it is feasible to put a bike lane through Main St, so an off-street route would be the best of both worlds (for bikes and vehicles on Main Street).

Leonard noted that there are two distinct communities/areas in Banks:

- South end where businesses are more off the street, wider
- North end (old town) where business are right on the street

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

See above related to Main Street.

Sidewalks all through town, but could be more crosswalks on Main Street. Leonard noted that cars will typically stop and be courteous to pedestrians anyway.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

See above.

Leonard noted that the route out from Hillsboro is risky for bikes and has safety problems.

Otherwise Leonard hasn't noted any safety issues, but has observed that a lot of riders don't pay attention to cars.

5. What new connections would you like to see established or existing connections improved?

Leonard doesn't know what new connections might be available.

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

Leonard noted that there is a route one block off to the east of Main Street that could serve as a bicycle route, although there are some obstacles (like the bus barn). He also noted he saw a map that takes a route to the west that would also work.

7. What is your vision for the future bicycle and pedestrian system in Banks?

Leonard noted that to get more visitors from the Banks-Vernonia Trail, Banks needs more activities. A B&B would be helpful. While there are neat people in town, they need to catch the vision and develop more activities in town. He would love to see more interest in the town of Banks.

8. What are your top priorities for the bicycle and pedestrian system in Banks?

Leonard would like to see more ridership over driving, but thinks driving is due more to habit than anything else.

9. Is there anything else you think we should know to help inform the development of the BPP?

-





STAKEHOLDER INTERVIEW SUMMARY – ANNE DEBBAUT – 12.17.14

Contact Information:

Anne Debbaut
anne.debbaut@state.or.us
(503) 725-2182
ODOT/DLCD

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Anne is the regional representative for DLCD.

Anne attended an educational outreach program in Banks. She recalls two key issues:

- Trying to get better circulation within the City
- Connecting the City with the Banks-Vernonia Trail (getting people that park at the trail head to come in to town)

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Anne noted there are missing links in the sidewalks.

The connection between the trailhead and town has challenges (such as the lumber mill) and truck traffic on Main Street.

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

See above.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

Truck traffic on Main Street.

Area around the school is missing connections, such as to the grocery.

5. What new connections would you like to see established or existing connections improved?

Anne would like to see connections and consideration for the area annexed to the east and future development.

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

All of these items need to be considered. Anne noted that ROW and historic buildings could constrain the type of facilities that could be used in some locations (i.e. insufficient width).

7. What is your vision for the future bicycle and pedestrian system in Banks?

Connections to the school from significant residential areas, access, Safe Routes to School considerations.

8. What are your top priorities for the bicycle and pedestrian system in Banks?

Economic development, tourism, providing places for people to go and park.

Accommodate future growth areas long term.

9. Is there anything else you think we should know to help inform the development of the BPP?

There is an engaged community in Banks and active property owners that will likely want to participate in process.

Anne is likely unable to make many meetings due to schedule, but happy to review documents and participate.

Anne suggests that Banks finds innovative, efficient, low- or no-cost solutions to providing parking for trail users.





STAKEHOLDER INTERVIEW SUMMARY – BRUCE BUFFINGTON – 12.19.14

Contact Information:

Bruce Buffington
nwbpsc@comcast.net
971-570-4791
NW Bicycle Safety Council

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Bruce served on Washington County Safety Committee, served with ODOT, gathered letters of support for some projects in Washington County

Leads bicycle rides in Northwest County

Helps with an event that goes through Banks

Worked on the opening of trailhead in Banks - October 29th, 2010

Helped found the Tualatin-Valley Scenic Bikeway

Lots of conversations with the City of Banks over the years

Bicycle club just donated a bike rack to the City – as part of beautification program

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Greenville Park Area – not as friendly to what is going on in City of Banks, tension

Bruce has noted several occasions where people can't find places due to lack of signing (i.e. Banks Café)

Across from City Hall is a tavern that serves burgers, but never knew because no signage

Economic development for businesses – issue with signage

Traffic increased over time, bicycles ride through City and don't make stops at key locations/businesses (between high school and trailhead)

Entrance to Walnut/Highway – people stop there but not in town

Bruce leads the Banks Breakfast Ride – ride through town, only time you will see multiple bikes parked at a business in town

Businesses could consider discount for riders or identify themselves as a friendly stop for riders

Main Street is narrow with parking on both sides and trucks going through

- Bike lane disappears
- Might make people afraid to ride on the road

The City could be more support from schools to help with education – i.e. helmet wearing (limited resources) – his group donates helmets to City

The City is seasonal, with much less activity in the winter. Bruce noted the city is very friendly and there are lots of activities (like the golf course).

Bruce noted it is a nice trip to Vernonia – he once counted 73 bicycles at Black Bear Café. Vernonia is doing a lot more to support bicyclists, such as improved bicycle parking at Black Bear Café, Subway also has a bike rack, Blue House Café has indoor bike parking. Bicyclists have disposable income to spend.

Bruce would like to see bike stations put in with tools

The sidewalks are a little rough, narrow

Bruce thinks it is illegal to ride bikes on sidewalks

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

See above

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

As long as bikes follow rules of road they are okay.

5. What new connections would you like to see established or existing connections improved?

Bruce noted that Log Cabin Park is widely used – the City did put in bike racks, water fountain, picnic tables.

- Use as an attraction for event ride
- Trees with canopy
- Put in porta potty - nice

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

A restroom at Greenville Park would be helpful

Nice restroom at Log Cabin Park

7. What is your vision for the future bicycle and pedestrian system in Banks?

See comments above about increasing attractiveness for bicyclists, drawing in to businesses.

8. What are your top priorities for the bicycle and pedestrian system in Banks?

-

9. Is there anything else you think we should know to help inform the development of the BPP?

-



STAKEHOLDER INTERVIEW SUMMARY – JOLYNN B. AND STACEY G. – 12.30.14

Contact Information:

Jolynn B. and Stacey G

jbecker@cityofbanks.org

stacey@siegelplanning.com

City Staff

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Jolynn: Very little involvement in development, as everything was established before she got here. Now the City is trying to create a master plan. Would like to consider south to west commuting, new areas east to the west, and developing multiple ways to travel north/south (now really only one way in and one way out). She walks around town.

Stacey: There is a need for options, as Main Street is really it. There is a good amount of sidewalk along Main Street and a small area of bike lane. The area is “haphazardly put together.” There is a need for a comprehensive look at the system. The City is in the position of having land in the UGB, starting to see applications for annexation and future development. The sidewalks are definitely used – pedestrians and bikes on sidewalk. Related to Main Street and crossings – need to look at places to cross, extending sidewalks, bulbouts. There are logging trucks and a feeling of not being safe. There is no buffering (like landscape medians). A challenge is how to increase level of comfort for people on the sidewalks.

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Banks is a growing community - farming equipment on Main Street can take over half the road.

The width of Main Street limited. A question is whether it is preferred to keep bikes on Main Street or have an off street route? How do we balance that? Keeping bikes on Main Street helps with businesses, but could be a potential conflict with other users. How have other small communities dealt with this? What tools are out there?

Schools on Main Street – parking gets crazy. Many students don’t use buses but are picked up by parents. Traffic can back up on 47 down to light with cars waiting to get in to the school. How do we involve schools in coming up with a solution? Have talked about the problem before, but with school on Main Street there is not a lot of places to go in, queued to front door. What about staggering pick-up and drop-off times? All kids ride the same bus

(elementary, middle, high). Could access management be applied? The traffic is not as bad in the morning. Likely parents are mostly picking up students that live outside city limits.

Parking for bike trail – overflow on to Highway 47.

Bike parking along Highway 47.

Fire station on Main Street – warning lights. Corner of Main Street and Sunset a tricky spot – fire station, Log Cabin park, main in and out to lumber mill, intersection is very wide. Need to consider logging trucks, truck movements. Thinking about intersection in SE Portland with painting in the middle.

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

See above.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

See above.

5. What new connections would you like to see established or existing connections improved?

West to east (big one on Mayor's list). Need to consider all the land in the UGB and what makes sense. Banks Road is an easy way to get to the east side, but a small County road with not a lot of shoulders and limited sight distance.

Could consider a bike/ped bridge over railroad and whether it is cost justified.

Quail Valley Golf Course recently went through annexation and started a process with Parsons to look at east/west connections and railroad crossings. They are in early discussions with the City and property owners about how to make east/west connections and how to get ODOT approval. They are going to come in in January to discuss.

South to north connection along the rail that just goes straight up the rail right of way. Need for a multi-use connection north/south. Could consider a trail alongside Dairy Creek.

TSP creates another N/S street to the west of Highway 47.

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

Need spaces for people to sit and rest if walking. A lot of the community is retired and likes to walk, but wants places to sit and rest. There is a real need to get people around the City more easily and safely. We need to keep in mind the population.

Remember logging equipment – some of it is pretty wide. Sometimes people need to pull over to let them through.

Main Street Revitalization workshop looked at having another connection like on the west side.

7. What is your vision for the future bicycle and pedestrian system in Banks?

Safety, accessibility, connectivity.

8. What are your top priorities for the bicycle and pedestrian system in Banks?



See above.

9. Is there anything else you think we should know to help inform the development of the BPP?

The objectives in the scope of work probably came from a few places - workshop from Main Street outreach program (on website), discussion with Council and Planning Commission, ODOT.





STAKEHOLDER INTERVIEW SUMMARY – RACHEL NELSON – 1.9.15

Contact Information:

Rachel Nelson
rnelson@cityofbanks.org
971-732-5425
Planning Commission

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Rachel has been in Banks a little over a year. Married a member of City Council and got on the Planning Commission. Marketing/brand development background, come from that perspective. Still getting up to speed with working on government channels.

Rachel rides bikes with her kids around town and loves the Banks-Vernonia Trail. A concern is riding a bike from the development to the Banks-Vernonia Trail. A couple of back routes, but would like safer route with less traffic and better developed bike lanes to connect the development to Banks-Vernonia Trail.

Walking – walked to Sunset Park, down to Main Street. It would be great to have an enjoyable, pleasant place to walk. Uncomfortable walk (sidewalk widths, wayfinding, lack of inviting aesthetics, truck traffic, feeling of walking along a highway), so the area doesn't feel walkable.

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Residences in Cedar Canyon and along NW Banks Road are currently not connected to the rest of Banks.

The Banks-Vernonia Trail is an amazing feature to have in such a small community. It would be great if there were trails to lead residents on Cedar Canyon/NW Banks Road to the trail and to downtown (Main Street Revitalization). Rachel wants to see forward momentum on that.

It would be great if close outlying areas would feel comfortable walking/biking to downtown or to trail. It doesn't currently feel safe for self (especially kids) to make that trip.

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

Cedar Canyon and NW Banks Road – no bike lane. There are busy enough roads to not feel comfortable/safe biking on (as someone that isn't a bicyclist but will get on a bike to get around).

It would be wonderful from a community perspective to develop Banks-Vernonia Trail – an asset to the area.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

See above.

5. What new connections would you like to see established or existing connections improved?

Connection across the railroad tracks. A question as to how we get vehicles across the railroad to the golf course (may develop homes in the future) and other pieces of land annexed in to City. Also, how do we get bikes/pedestrians over the railroad (between the golf course and downtown/trail)? It would be great to help revitalize downtown and build character. The golf course should be considered as point of connection.

There has been lots of talk about what may be developed on the golf course – may be inn, lodging, commercial space, housing.

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

All of those facilities sound like good things – not educated enough on types of options. It sounds great to have paths off the main roadway. Banks is very scenic (unfortunately not the downtown area) – would love to see us use scenic options, like the Banks-Vernonia trail, to create options. A strength of the community and area is the rural, scenic nature combined with the fact that there are scenic areas in the vicinity (Helvetia, for example). There are not a lot of points of interest/destinations in Banks. It is an interesting mix of country and a community with amenities (golf course, things happening on Main Street, Banks-Vernonia Trail). Rachel wants to create an identity of Banks where biking is a way to get around. It could inspire people in the community to make use of biking and the trail and a point of the community (like Davis, CA).

7. What is your vision for the future bicycle and pedestrian system in Banks?

Facilities aren't geared to welcome people in and are not inviting. Banks could be a phenomenal place.

8. What are your top priorities for the bicycle and pedestrian system in Banks?

9. Is there anything else you think we should know to help inform the development of the BPP?

Looking forward to getting up to speed on the project. Her perspective is that she wants to see Banks have a vision behind it that develops it as a community and destination. She cares about design and aesthetics. This is a critical time, as Banks could make some great choices now to make it a true destination. Rachel wants the City to think outside the box, have a high altitude vision, and bring that vision to life.





STAKEHOLDER INTERVIEW SUMMARY – DAN KELLER – 1.30.15

Contact Information:

Dan Keller

dkeller@cityofbanks.org

503-705-3819

City Council

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Lived in town since 2001, serves on City Council. Kids ride bikes in town.

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Broken sidewalks (act like a roller coaster in the downtown area on the west side of the street for bikes on them), no real paths in town.

With trailhead have seen significantly more bikes through town.

- Need a better parking system
- Challenges with parking at trailhead

Connectivity for high school (and residential areas).

On-street parking (little off street parking for businesses) and parking at elementary school is a challenge.

Logging trucks are a challenge.

Would like to see more people use bikes, but it isn't currently the safest.

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

See above.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

See above – particularly for bikes.

5. What new connections would you like to see established or existing connections improved?

Getting bikes over the railroad track

- Coming with development on the east side
- Connect bike traffic east/west and to the north

- There may be easements over the tracks on the south side that could be used for a connection.
- 6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

Would like to make the City more inviting for people.

The sidewalks are pretty restricted (especially since bikes use them), so need to be careful about how we change them.

Infrastructure (like seating, bike parking) off the sidewalk could be good, especially by the library.

- 7. What is your vision for the future bicycle and pedestrian system in Banks?

The City is very family oriented, so would like to focus on serving kids and connecting key destinations (library, trailhead, schools, supermarket).

- 8. What are your top priorities for the bicycle and pedestrian system in Banks?

Connecting the City to the trailhead – could have parking farther south and develop a bike connection through town to the trailhead, more revenue for businesses.

- 9. Is there anything else you think we should know to help inform the development of the BPP?

Washington County may have funds we can draw from for new development of bike/ped facilities (WCCC).

Dan suggests we talk to the business owners group (Chamber of Commerce).

Dan would like a recap of the timeline to share at the next council meeting.





STAKEHOLDER INTERVIEW SUMMARY – MICHAEL DAVIS – 2.2.2015

Contact Information:

Michael Davis
michaelz622@yahoo.com
971-317-1380
Parks, Recreation, & Tree Board Representative

Interview Questions

1. Describe your interactions with the bicycle and pedestrian system in the City of Banks – i.e. as a user, policy maker, advocate, etc.

Mike is in a volunteer position on the Park and Recreation Board.

Mike noted that there are very few bike lanes in Banks now and otherwise you are on your own.

He used to ride his bike through town, but you can't ride on sidewalk. It gets a “little hairy in the street” with parked cars and traffic, so he mostly walks now.

2. What challenges or barriers do you see to residents/visitors walking or bicycling in the City?

Most of the problems Mike sees are on Main Street. If a bike event comes through town riders need to weave around parked cars. It can be scary to drive down Main Street because Mike is worried about conflicts with bicyclists.

3. Are there any specific existing deficiencies in infrastructure that might prevent bicycling or walking?

Some of the sidewalks are a little small, but otherwise they are not bad. There is a wide sidewalk by the school. You do have to watch for bicyclists coming up behind you using the sidewalk.

4. Do you have any safety concerns related to the existing bicycle and pedestrian system?

Most concerns are related to biking on Main Street, particularly when there are cars parked on both sides of the street (so it is challenging for bikes and cars to pass).

5. What new connections would you like to see established or existing connections improved?

A bike path in town away from the highway would be great. It can get really busy in town, especially on the weekends. A bike path that went around Main Street would be awesome.

6. What type of pedestrian/bicycle facilities do you think are most needed in Banks? (i.e. bicycle lanes, multi-use paths, wider sidewalks, crossings, etc.)

A bike lane or path around Main Street.

7. What is your vision for the future bicycle and pedestrian system in Banks?
Bringing in visitors to the City and connecting them to trail on the north side.

8. What are you top priorities for the bicycle and pedestrian system in Banks?
A bike path or lane through town.

9. Is there anything else you think we should know to help inform the development of the BPP?
Not now – will call if further questions come up. Mike should be able to attend future SAC meetings.



Banks Bicycle and Pedestrian Plan



Appendix I Open House Summary



Open House Summary

Date: June 5, 2015 Project #: 18078

To: Stakeholder Advisory Committee

Cc: Project Management Team

From: Kelly Laustsen, Bart Rudolph and Marc Butorac, P.E., PTOE

Project: City of Banks Bicycle and Pedestrian Master Plan

This memorandum provides a summary of the Open House held on Thursday, May 21, 2015 and the Virtual Open House conducted between Wednesday, May 20, 2015 and Sunday, May 31, 2015. The goals of these two public involvement activities were to review the project progress to-date and gather input from the public on the draft plan elements. The resulting input summarized herein will be used to refine the plan elements and develop the draft Bicycle and Pedestrian Plan (BPP).

OPEN HOUSE

Thursday, May 21, 2015, 6:00 p.m. – 8:00 p.m., City Council Chambers at 13690 NW Main Street

The Open House included approximately 13 poster boards (see pages 6-10, which provide copies of the boards) containing project information with 4 stations designed to obtain input. The stations included information about the project, goals and objectives, existing plans and previously identified projects, and draft project recommendations categorized into three prioritization groups (high, medium, and low). A short introductory presentation was made by Kelly Laustsen at the beginning of the meeting, followed by a presentation regarding the Travel Oregon Bike Tourism Studios. Photos from the event are provided in Figure 1. As the attendees evaluated the project boards, they were given maps of the recommended high, medium and low priority projects and asked to evaluate each one as to whether the project should move up or down in priority or be removed from the list all together. The worksheets are shown in Figure 2.

Participation

Eight (8) people signed in, but more than 8 people were in attendance. It is estimated that 20-25 people attended the Open House. Jolynn Becker, Scot Siegel (standing in for Stacey Goldstein), Naomi Zwerdling, Kelly Laustsen and Bart Rudolph were also in attendance from the project team. *Attachment A includes the sign-in sheet from the event.*

Figure 1: Open House Pictures

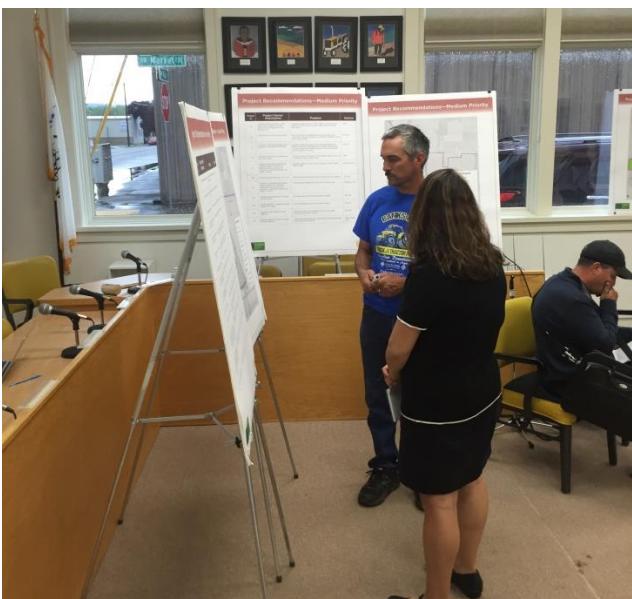
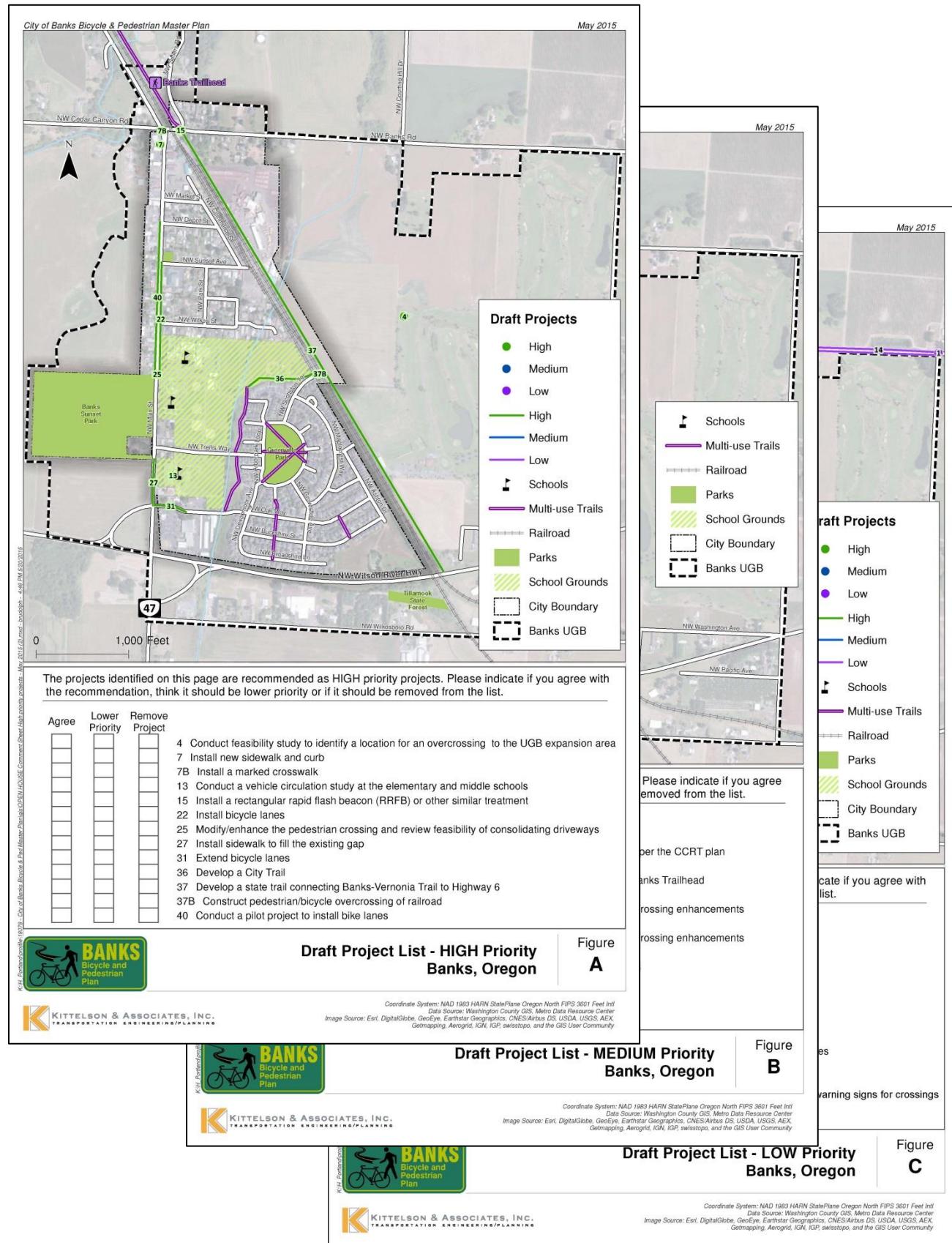


Figure 2: Open House Participant Worksheets



VIRTUAL OPEN HOUSE

Wednesday, May 20, 2015 – Sunday, May 31, 2015;
Linked from www.banksbpp.com

The Virtual Open House was available on-line from May 20th through May 31st. The welcome page presented a video from Planning Commissioner, Rachel Nelson. Rachel welcomed users to the site and explained how to navigate the Virtual Open House. A screenshot from the opening page to the Virtual Open House is provided in Figure 3. The site was organized much like the Open House with “rooms” (stations) that included information about the project, goals and objectives, existing plans and previously identified projects, and draft project recommendations. The site also featured an interactive map that allowed participants to view the location and priority of recommended projects. The interactive map included a comment feature so users could leave a comment and indicate whether a project should move up or down in priority. A screenshot from the virtual open house is provided in Figure 4. A link was provided so users could e-mail comments regarding any other bicycle or pedestrian safety/operational issues not addressed with the proposed projects.

Figure 3: Virtual Open House Welcome Page

The screenshot shows the homepage of the virtual workshop. At the top, there's a navigation bar with a back link and tabs for WELCOME, ABOUT THE PROJECT, GOALS & OBJECTIVES, EXISTING PLANS, DRAFT PROJECT RECOMMENDATIONS, and PROVIDE INPUT. The PROVIDE INPUT tab is highlighted in yellow. Below the navigation is a large video player showing a woman, Rachel Nelson, speaking. The video has a timestamp of 0:02 / 1:01. To the left of the video, there's a "WELCOME!" section with text about the virtual open house and a list of "Rooms". At the bottom, there's a note about sharing the site with friends and neighbors before it closes on May 31st.

← BACK TO THE PROJECT WEBSITE

CITY OF BANKS BICYCLE AND PEDESTRIAN MASTER PLAN VIRTUAL WORKSHOP

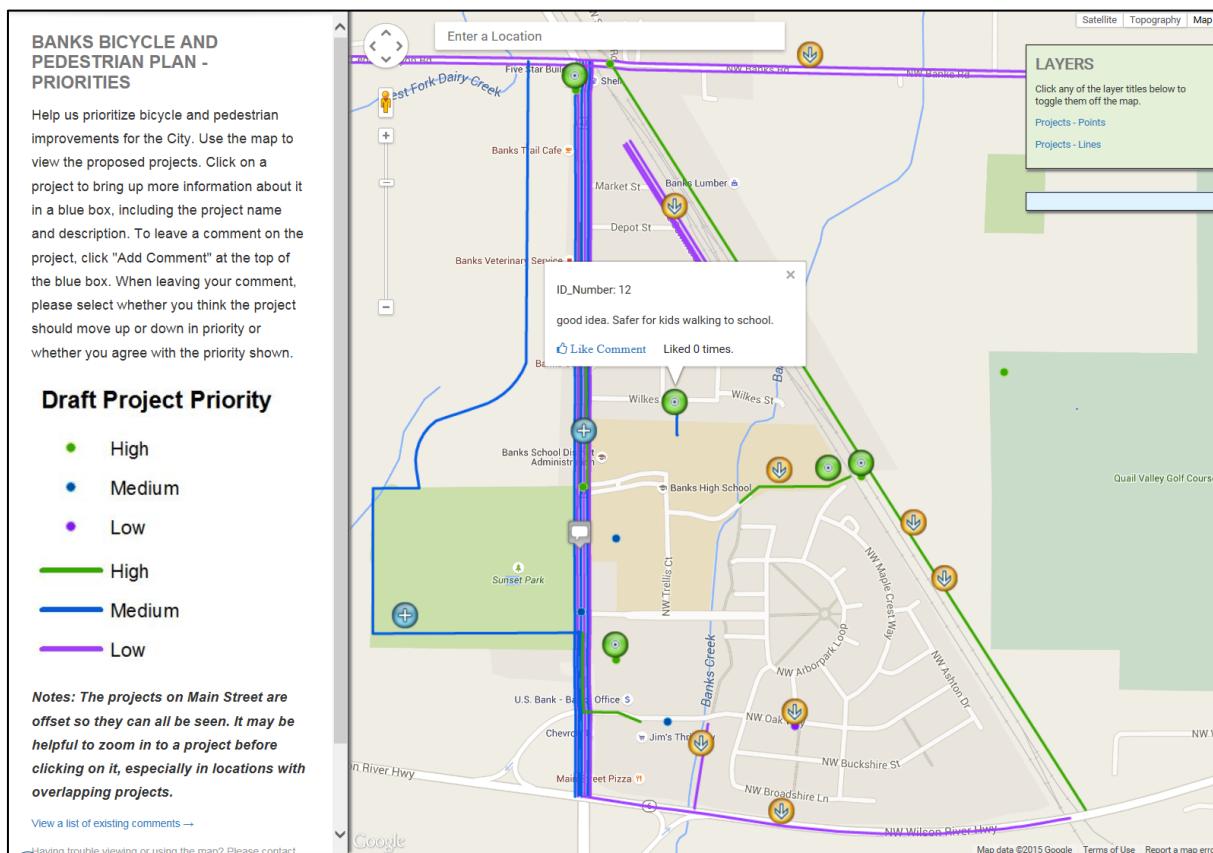
WELCOME!

Welcome to our Virtual Open House for the Banks Bicycle and Pedestrian Plan (BPP)! In each “room” (or tabs located on the top of this page) you will find information about the current activities to create a bicycle and pedestrian plan for the City of Banks. Each room corresponds to a specific topic.

- **The Yellow Room** gives you information about the plan itself, as well as general information to answer questions like “What is the purpose of a bicycle and pedestrian plan?”.
- **The Green Room** presents the draft goals and objectives to ensure that the Plan and recommended projects are in line with the City’s vision
- **The Blue Room** identifies the existing plans and policies that relate to bicycle and pedestrian planning in Banks.
- **The Magenta Room** will introduce you to the draft project recommendations.
- **The Orange Room** provides an opportunity to provide input on the draft goals and objectives as well as an interactive map to share your ideas, thoughts, and concerns regarding bicycle and pedestrian issues in the City.

Please tell your friends and neighbors about this site so we can hear from them before **Sunday, May 31st** when the virtual open house closes.

Figure 4: Virtual Open House Interactive Map



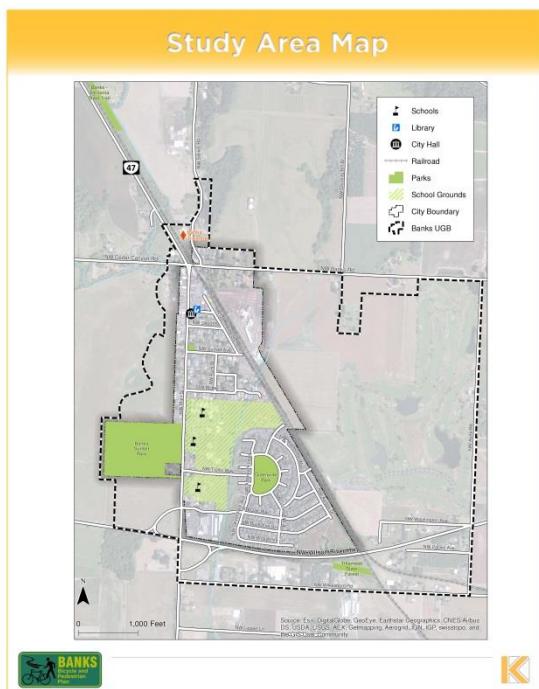
Participation

The interactive map received over 50 unique visitors, with 17 submitted comments. The on-line Virtual Open House is still available on-line to be viewed, but the site is no longer accepting comments. The site is available at the following address: <http://workshops.kaiproject.com/workshops/17-city-of-banks-bicycle-and-pedestrian-master-plan>.

OPEN HOUSE AND VIRTUAL OPEN HOUSE EXHIBITS

The exhibits displayed during the Open House and available on the Virtual Open House are shown below, with a short description of each exhibit provided.

About the Project



The *Study Area Map* identified the project area limits

About the Project

What is a Bicycle and Pedestrian Master Plan?

- Identifies, coordinates, and leverages current and upcoming efforts, investment, and opportunities to create a safe and seamless biking and walking environment in the City
- Prioritizes the expansion and enhancement of the existing system to create an integrated bikeway and pedestrian network to encourage people to bike and walk throughout the City

The intent of the Banks Bicycle Pedestrian Master Plan (BPP) is to provide a bicycle and pedestrian system that is accessible for all types of users, regardless of age or ability. The creation of a BPP will ensure the community is designed so people can stroll, exercise, shop and bike in a safe and friendly environment. Improvement of the bike and pedestrian system will aid the City in pursuing high levels of livability with distinctive and memorable streets and pathways that are enjoyable, safe and friendly places to live, work, and visit.

This project was made possible by a Transportation and Growth Management (TGM) Grant, which is joint program between Oregon Department of Land Conservation and Development (DLCD) and Oregon Department of Transportation (ODOT) to help *"local communities plan for streets and land use in a way that leads to more livable, economically vital, and sustainable communities and that increases opportunities for transit, walking and bicycling."*

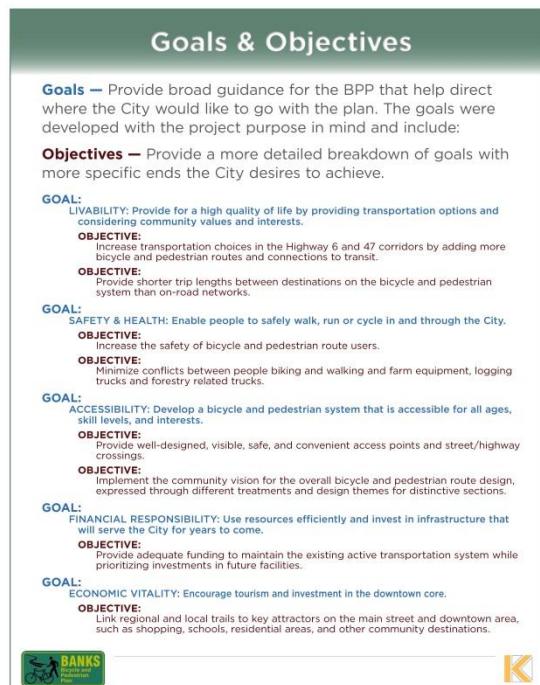
BANKS

The *About the Project* board explained what a bicycle and pedestrian master plan is and how it's beneficial to a community. It also identified the funding for the project.



The *Project Schedule* identified work completed prior to the Open house, upcoming SAC meetings, planning commission meetings, city council meetings and estimated project completion.

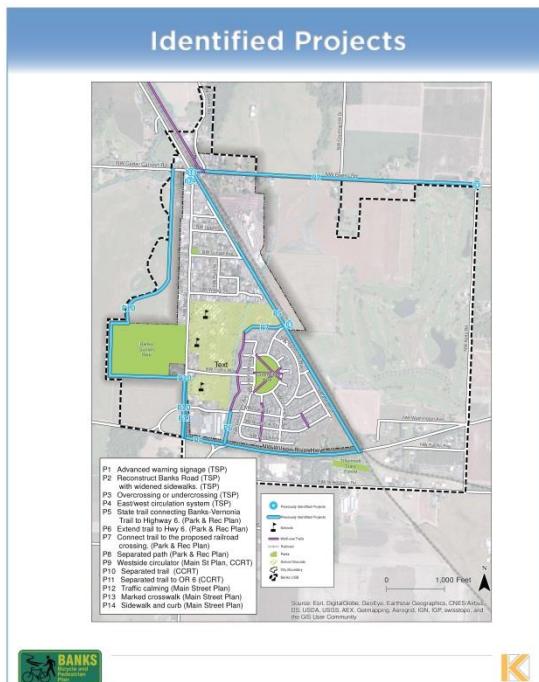
Goals and Objectives



The draft *Goals & Objectives* board provided an overview of what goals and objectives are and identified the goals and objectives selected for the BPP.

Existing Plans

Existing Plans		
	Document	Key Application for BPP
STATE	Oregon Transportation Plan (OTP) (2006)	Provides high-level guidance on system plans, particularly related to goals and evaluation metrics.
	Bicycle and Pedestrian Plan (1995) (Currently being updated)	Provides general principles and policies for bicycle/pedestrian facilities on state highways.
	City Comprehensive Plan (1979, Amended 1989)	Provides the long-term vision for the city and develops policies to help implement that vision.
	City Transportation System Plan (TSP) (2010)	Identifies key issues and makes recommendations relating to transportation within the City.
	City Park and Recreation Master Plan (2010)	Identifies specific recommendations for trail system improvements.
	Banks Main Street Revitalization Plan (2014)	Provides a vision for Main Street and recommendations related to bicycle and pedestrian facilities and amenities.
	Council Creek Regional Trail (CCRT) Master Plan (2014)	A new regional trail that proposes a route through Banks to connect with the Banks-Vernonia Trail.
LOCAL	Tualatin Valley Scenic Bikeway	An established bikeway that routes through Banks from the Banks-Vernonia Trail to NW Wilkesboro Road via Main Street.
	Salmonberry Trail (Banks to Tillamook) Concept Plan (2014)	A proposed regional trail with a possible link to the Banks-Vernonia Trail outside of the City.

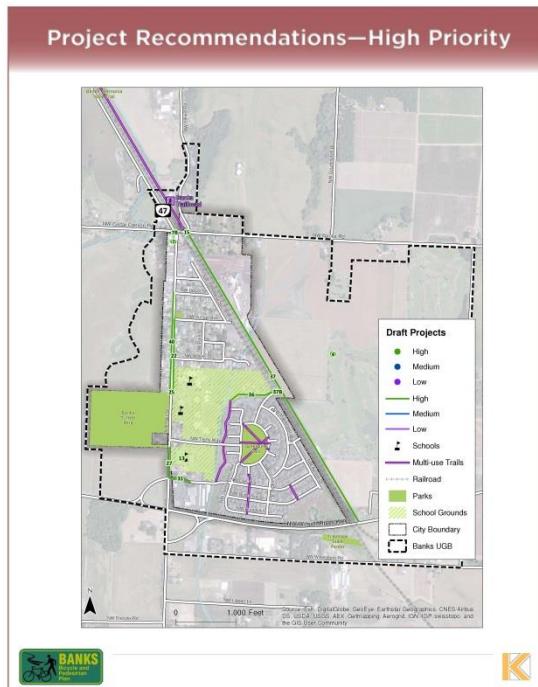


The *Existing Plans* board identified plans that might impact the development of the BPP. The intent of this board is to help participants establish familiarity with existing documents that are of relevance to the Bicycle and Pedestrian Plan (BPP) and build on what has been previously established.

The *Identified Projects* board mapped the relevant projects identified in the existing plans board to give participants an idea of what projects have already been identified and visualize how those projects might look like if built.

Draft Project Recommendations

The draft project list included over 40 projects throughout the city. Participants were asked to use the worksheets or interactive map to identify whether they think the recommended project should move up or down in priority or be removed from the list all together. Projects were grouped by high, medium and low priority.

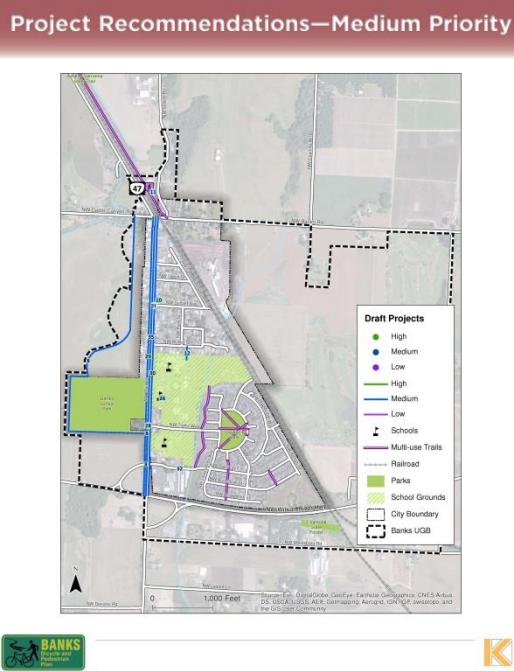


Project Recommendations—High Priority

Project ID	Project Name/Description	Purpose	Source
7	Install new sidewalk and curb	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Main Street Plan
7B	Install a marked crosswalk	Improve safety at the NW Banks Road/Main Street /NW Cedar Canyon Road/ Highway 47 intersection	Main Street Plan
13	Circulation study at the elementary and middle schools	Further study the issue of back-ups from school pick-up on to Main Street, look for opportunities to improve circulation at schools	SAC #1
15	Install a rectangular rapid flash beacon (RRFB) or other similar treatment	Provide increased safety at pedestrian crossings accessing the Banks-Vernonia trailhead	Tech Memo #3
22	Install bicycle lanes	Extend existing bicycle lanes north to enhance safety and comfort for bicyclists	Walking Tour / Tech Memo #3
25	Modify/enhance the pedestrian crossing and review feasibility of consolidating driveways	Improve safety and visibility of the pedestrian crosswalks across Main Street at high school between two driveways	Walking Tour
27	Install sidewalk to fill the existing gap	Provide pedestrian facilities on both sides of the Main Street corridor	Tech Memo #3
31	Extend bicycle lanes	Eliminate the bicycle lane gap along NW Oak Way	Tech Memo #3
36	Develop a City Trail	Connect Arbor Village to the proposed bicycle/pedestrian railroad crossing	Park & Rec Plan
37	Develop a state trail connecting Banks-Vernonia Trail to Highway 6	Provide a protected bicycle and pedestrian connection to the Banks Trailhead from Highway 6	Park & Rec Plan
37B	Construct pedestrian/bicycle overcrossing of railroad	Construct pedestrian/bicycle overcrossing of railroad to connect existing development to UGB expansion area	TSP
40	Conduct a pilot project to install bike lanes	Test the feasibility and impact of providing bike lanes north of Sunset Park to the start of the downtown commercial area	Tech Memo #3

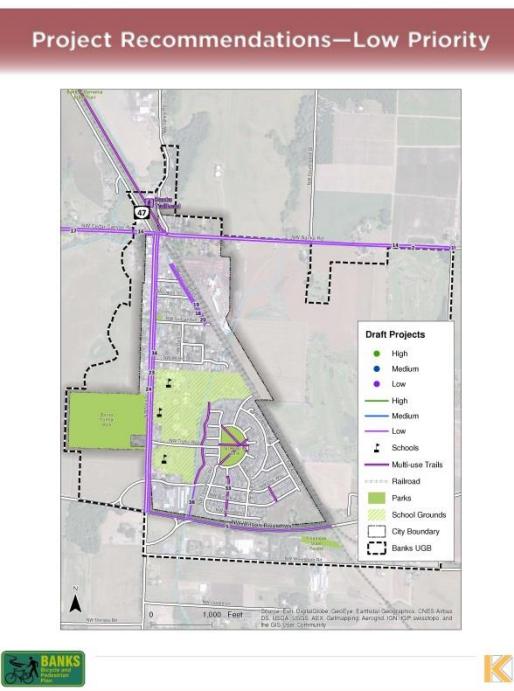
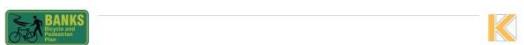
BANKS

K



Project Recommendations—Medium Priority

Project ID	Project Name/Description	Purpose	Source
8	Install a multi-use trail on the west side of Banks per the Council Creek Regional Trail Master Plan	Provide an alternative to Main Street, access future growth to the west, and align with future regional trail plans	CCRT
10	Install bicycle wayfinding signs	Give bicyclists and pedestrians direction to area amenities, tourist locations, the Banks Trailhead, and economic centers	SAC #1
11	Conduct a Parking Management Study for the Banks Trailhead	Further study the issue of crowded parking at the Banks-Vernonia Trailhead and consider alternatives, such as additional parking areas or shared parking with businesses in town	SAC #1
12	Provide north/south pedestrian/bicycle access	Provide a direct connection between the schools and residential areas to the north	PMT
21	Install a crosswalk and review opportunities for crossing enhancements, such as a bulbouts, overhead flashers or traffic control.	Improve safety at the Sunset Avenue / Main Street intersection	Walking Tour
26	Install bicycle parking at schools	Addresses the lack of bicycle parking at the schools	SAC #1
28	Install a crosswalk and review opportunities for crossing enhancements, such as a bulbouts, overhead flashers or traffic control.	Provide safe pedestrian access to Sunset Park	Walking Tour
29	Install curb extensions at select intersections	Provide speed control along Main Street	SAC #1
30	Install dynamic radar-activated speed limit signs	Provide speed control along Main Street	SAC #1
32	Improve sight distance and lighting	Improve safety and visibility at the crosswalk accessing the post office	SAC #1
35	Review opportunities to install bicycle parking	Provide bicycle parking, particularly near businesses and other destinations	Main Street Plan



Project Recommendations—Low Priority

Project ID	Project Name/Description	Purpose	Source
1	Install advanced warning signage	Improve safety at the NW Banks Road and NW Aerts Road intersection	TSP
2	Reconstruct with widened sidewalks	Provide dedicated pedestrian facilities on NW Banks Road	TSP
5	Install a separated walking path	Provide dedicated pedestrian facilities along Highway 6	Park & Rec Plan
14	Install bicycle lanes, shoulders, or an off-street multi-use path	Provide dedicated bicycle facilities on NW Banks Road	SAC #1
16	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	SAC #1
17	Install sidewalk or an off-street multi-use path	NW Cedar Canyon Road between Main Street and the future White Barn/Killin Wetlands parking area	SAC #1
18	Resurface Commerce Street	Eliminate potholes on Commerce Street	SAC #1
19	Install sidewalks on the east side of the street and fill any gaps	Provide pedestrian facilities on both sides of Commerce Street	SAC #1
20	Review sight distance on Commerce Street and address deficiencies	Eliminate sight distance issues along Commerce Street	SAC #1
23	Resurface Main Street	Main Street between Wilkes Street and Sunset Avenue	Walking Tour
24	Install pedestrian-scale lighting	Improve lighting along Main Street, particularly for pedestrians	SAC #1
33	Scale body / trim / remove landscaping and trees causing sight distance issues; install advance warning signs for crossings	Increase sight distance at crosswalks within Arbor Village neighborhood	SAC #1
34	Review opportunities to install street furniture (benches, water fountains, trash cans, etc.) and create pedestrian gathering locations	Improve pedestrian environment and aesthetics on Main Street Corridor	Main Street Plan
38	Extend the existing private trail	Connect Arbor Village to Highway 6	Park & Rec Plan



SUMMARY / PUBLIC COMMENTS RECEIVED

The following project specific comments were received via the Open House worksheet or Virtual Open House interactive map:

ID	Project Name/Description	Location	Draft Evaluation Priority	Open House Comments
7	Install new sidewalk and curb	West side of Main Street along Five Star complex	High	Remove (no curb - mark sidewalk "at grade") Agree (Agreed)
13	Conduct a vehicle circulation study at the elementary and middle schools	Banks Elementary School, Banks Middle School	High	Agree (This needs to be addressed. The parking of pick up vehicles on main street and down towards the development creates unsafe conditions. The schools were not held accountable for the traffic plan when the elementary went in. It needs to be addressed.)
36	Develop a City Trail	Between the existing private trail on the west side of Arbor Village to the proposed railroad crossing	High	Move DOWN (If the secondary piece that connects the other end of this trail with the hwy goes in, it will become a speedway for bikers. Homeowners may not want to have that many strangers at high speeds coming thru the neighborhood.) Agree (This would be good if the overpass of the tracks can let us drop into the golf course. Having it big enough for golf carts would add value to Arbor Village as a way to get to the golf course quickly without the highway.)
37	Develop a state trail connecting Banks-Vernonia Trail to Highway 6	On the east side of the railroad track between the Banks Trailhead and Highway 6	High	Remove (too much bureaucracy) Move DOWN (As a biker and resident who currently lives along the tracks, I am both excited and concerned about these plans. I am excited, because I would definitely plan to use the trail, and my kids would enjoy it a great deal as well in the future. My primary concern would be that we would see increased theft/crime/vandalism from folks having increased access to our backyard.) Move DOWN (Not a good option. Why divert from Hwy 47? You're dealing with kids and bikes on a trail with a live train line very close. The route around sunset park is much better and safer.)
8	Install a multi-use trail on the west side of Banks per the Council Creek Regional Trail Master Plan	Along the planned westside circulator roadway (WCR) connecting NW Banks Road with planned trails to the south	Medium	Move UP Move UP (This is the BEST plan to hook up from Forest Grove and avoid the dangers of the downtown area. And the dangers of the school area when kids are coming and going. It is not as good for business but since we don't have bike lanes we need to have a safe way for bikers to get around town. DO THIS TRAIL.)
11	Conduct a Parking Management Study for the Banks Trailhead	Banks-Vernonia Trailhead	Medium	Move UP
12	Provide north/south pedestrian/bicycle access	Between Wilkes Street and the schools to the south	Medium	Agree (Good idea. Safer for kids walking to school.)
21	Install a crosswalk and review opportunities for crossing enhancements, such as a bulbouts, overhead flashers or traffic control.	Across Main Street at Sunset Avenue	Medium	Comment (Where?)
22	Install bicycle lanes	Main Street between Banks High School and Sunset Avenue	Medium	Move DOWN (Not feasible without losing parking.) Agree (Yes, please install bike lanes! I am a biker in the area, we need safe routes through Main Street on our bikes so we're not interfering with traffic and putting ourselves/others in danger.) Move UP (I noticed the plan does not take bike lanes all the way through town. They stop short. This is a safety issue. For a town that has the trial, we really need to get the downtown set up for bikes to go thru safely.)
29	Install curb extensions at select intersections	Main Street corridor	Medium	Comment (Road is so narrow – is this really feasible?)
30	Install dynamic radar-activated speed limit signs	Main Street corridor	Medium	Move Down

ID	Project Name/Description	Location	Draft Evaluation Priority	Open House Comments
35	Review opportunities to install bicycle parking	Main Street corridor	Medium	Comment (I believe that parking is just as much as a priority as the bike routes. If you want to promote tourism then you need places for people to park that is not in the downtown's businesses parking lots or on Main St./Hwy 47 which is already hard to get through with farm equipment. I would like to see the city or state look into parking on one of the side streets by purchasing a house or two.)
40	Conduct a pilot project to install bike lanes	Main Street between Banks High School and Depot Street	Medium	Move DOWN (Do parking management study first.)
2	Reconstruct with widened sidewalks	NW Banks Road between Main Street and US 26	Low	Move UP
5	Install a separated walking path	Parallel to Highway 6 between NW Main Street and railroad	Low	Move DOWN (not needed. Unsafe.)
14	Install bicycle lanes, shoulders, or an off-street multi-use path	NW Banks Road between Main Street and US 26	Low	Move DOWN (Bike lanes to where east? Seems like a waste of money with no hook up to other trails. Very unsafe conditions.)
18	Resurface Commerce Street	NE Commerce Street between Sunset Avenue and Market Street	Low	Move DOWN (not needed)
19	Install sidewalk on the east side of the street and fill any gaps	NE Commerce Street between Sunset Avenue and Market Street	Low	Remove (only if connecting trail is on the west side of the RR tracks)
33	Scale back / trim / remove landscaping and trees causing sight distance issues; install advance warning signs for crossings	Various locations within Arbor Village neighborhood	Low	Move DOWN (No. do not decrease trees and landscaping. Do not allow the bike trails to cut thru Arbor homes and you will not need to do this.)
38	Extend the existing private trail	On the west side of Arbor Village from Oak to Highway 6	Low	Move DOWN (This should not happen... Extending to the hwy will bring bikers thru the neighborhood, and on the wetlands trail. This will create safety issues as bikes come thru in groups and with the white fences on each side there is nowhere to get out of the way.)
37B (3)	Construct pedestrian/bicycle overcrossing of railroad	At railroad, just north of Arbor Village neighborhood	Low	Agree (I am a big fan of this! As someone who bikes, lives along the tracks, and takes 2 of his kids in a trailer, not having to use main street to get to the Banks-Vernonia trail will be great!)

The following comments were received via written comments at the Open House, e-mail Comments from the website or Virtual Open House, or within the interactive map:

"I believe that parking is just as much as a priority as the bike routes. If you want to promote tourism then you need places for people to park that is not in the downtown's businesses parking lots or on Main St./Hwy 47 which is already hard to get through with farm equipment. I would like to see the city or state look into parking on one of the side streets by purchasing a house or two."

"I believe the whole idea of tourism development in our around the city of Banks needs to start with Parking. There is a huge lack of parking at the trail head and it impacts the local businesses. Main St./Hwy 47 is the only way to get from the north to south end of town. I myself drive 15' to 20' wide equipment through town and it can be very difficult. I would suggest the state buying a few houses in old town that have large lots for visitors to park at. Also I would like to see the state make bicycles buy a 2 year permit like the ohv permit. This would be a way to pay for parking, bathrooms and trail improvements."



Regarding project #7 (Install sidewalk and curb on the west side of Main Street south of the NW Banks Road intersection): "If curb and sidewalks are installed, the ability to use that parking lot will be virtually eliminated and it could become overflow parking for the trail on weekends."

NEXT STEPS

The input received from the open houses will be used to help further refine the draft plan elements and develop the draft Bicycle and Pedestrian Plan (BPP). The draft BPP will be shared with the Stakeholder Advisory Committee during its next meeting on July 23rd, 2015 for the SAC's review and comment.

Attachment A
Open House Sign-In Sheet



CITY OF BANKS BICYCLE AND PEDESTRIAN PLAN

Public Open House #1

May, 21, 2015

Sign-in Sheet

Name Zach King

Address 58232 NW Strassel Rd. - interested in Travel Oregon - Studio

Email Zach@King of all trades.net

Name JACK LEITZ

Address 42380 Depot St

Email _____

Name Laurie Sheridan Schlegel + Bill Schlegel

Address 37655 NW Hahn Rd

Email wmschlegel@gmail.com

Name RICH WEFTEL

Address PO Box 60, Banks 97106

Email SUSATCOR FRONTIER.COM

Name MARK WARD

Address 12350 NW Main St, Suite 100

Email 44647.jimssupermarket@ungretailer.com

Name Denise Holmes

Address 20465 NW Mrosik Rd Banks 97106

actually
Manning

Email deniseh.pdx@gmail.com

Name Terry Nelson

Address 18015 NW Hilltop Pl

Email Banks, OR 97106

Name _____

Address _____

Email _____