

Row River Trail Corridor Plan



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Executive Summary

The Row River Trail (Trail) is an outstanding example of the many recreational resources found in Lane County. Part of the State of Oregon's Covered Bridges Scenic Bikeway, the Trail is a popular recreation corridor for residents of and visitors to Lane County that provides significant economic benefit to nearby cities and rural communities. The 17 mile long Rails-to-Trails trail begins in downtown Cottage Grove, ends in Culp Creek, and crosses Lane County (County) roads at four locations: Mile Post (MP) 0.75 of Layng Road and MPs 4.0, 5.4, and 11.0 of Row River Road.

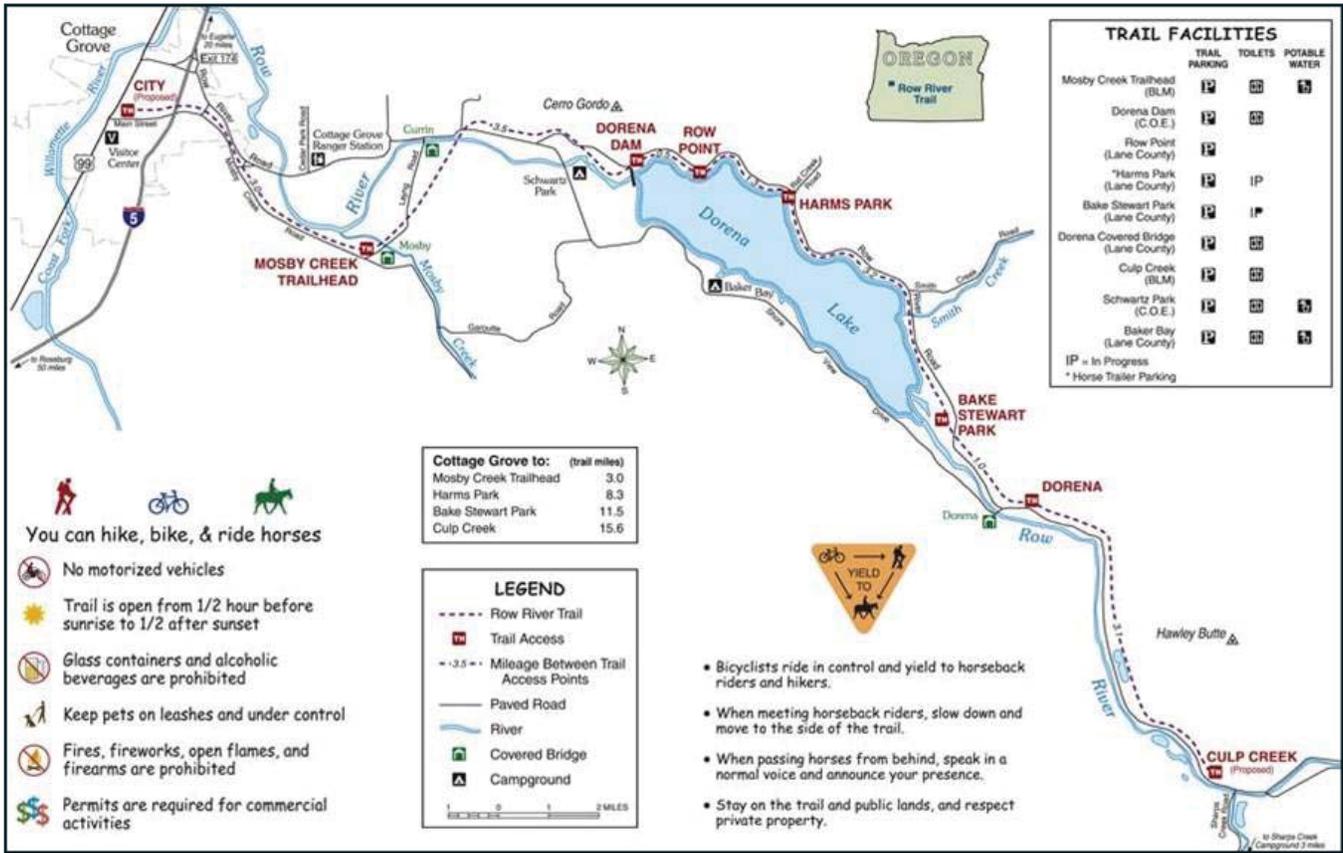
The Row River Trail Corridor Plan (Plan) addresses trail and road user safety improvements needed at locations where the Trail crosses Lane County roads. These improvements will in turn enhance the recreational opportunities along the Trail. Development of the Plan was prompted by a bicyclist fatality in September of 2011 at the Trail crossing at Mile Post 4.0 of Row River Road, the second such fatality at this location since 2007. Immediately after this tragedy, the County and the Bureau of Land Management (BLM) partnered to address trail and road user safety at Trail crossings, an effort that included development of this Plan.

Development of the Plan was supported and guided by numerous stakeholders, agencies, and community members who contributed their knowledge and expertise. The robust public involvement process shaped the preferred design alternatives and resulted in this Plan that reflects the public's interests and priorities and that has public support.

The Plan documents the public involvement process, existing conditions, trail design recommendations, and design alternatives. The preferred design alternative is a package of safety improvements for all four locations where the Trail crosses County roads. Reconstruction of the Trail is recommended at two of these crossings, including construction of a perpendicular undercrossing at the Trail crossing at MP 4.0 of Row River Road and realignment of the Trail (at-grade) at the Trail crossing at MP 5.4 of Row River Road. Signage, striping, and lighting improvements are proposed at all four locations where the Trail crosses County roads. A Federal Lands Access Program grant was awarded in 2013 to fund implementation of the preferred design alternative.

Section 1. Introduction

The Trail is a 17 mile long Rails-to-Trails trail that follows the route of the now abandoned Oregon Pacific & Eastern (OP&E) rail line. The Trail begins in downtown Cottage Grove and ends in Culp Creek and is part of the State of Oregon's Covered Bridges Scenic Bikeway. The Trail is a popular non-motorized, shared-use trail used by various user groups, such as pedestrians, runners, bicyclists, and equestrians, and provides access to a network of forest trails, covered bridges, Dorena Lake, Cottage Grove, and several rural communities.



Row River Trail

The portion of the Trail that extends from Culp Creek Trail Head to the Mosby Creek Trail Head is owned and managed by the BLM. The BLM opened this 14-mile portion of the Trail in 1998 following completion of the Row River Trail Master Plan in 1993. The portion of the Trail that extends from the Mosby Creek Trail Head to downtown Cottage Grove is owned and managed by the City of Cottage Grove. The City acquired this 3-mile portion of the abandoned rail line right-of-way in 1994 and extended the Trail in 2000.

Development of the Row River Corridor Plan was prompted by a bicyclist fatality in September of 2011 at the Trail crossing at MP 4.0 of Row River Road, the second such fatality at this location since 2007. Both fatalities involved motor vehicles headed west on Row River Road and bicyclists headed south on the Trail. The bicyclists failed to stop prior to crossing the road and were struck by motor vehicles. Immediately after the second fatality, the County and BLM partnered to address trail and road user safety at Trail crossings.

The portion of the Trail managed by the City of Cottage Grove is equipped with crosswalks or signalized intersections at each location where the Trail crosses roads within the City. Trail users have the right-of-way and motor vehicles are required to stop when trail users are legally using these crossings. The portion of the trail managed by the BLM is not equipped with crosswalks or signalized intersections where the Trail crosses County roads. Trail users must yield to motor vehicles when crossing the road.



Row River Trail Crossing in City of Cottage Grove

Early analysis of the Trail Corridor revealed that trail and road user safety was adequately addressed through the use of crosswalks and signalized intersections for that portion within the City. No issues of trail and road user safety within the City were raised by City officials or the public. As such, the Plan addresses trail and road user safety for that portion of the Trail Corridor in rural Lane County and managed by the BLM. The Plan addresses trail and road user safety improvements needed at the four locations where the Trail crosses County roads.

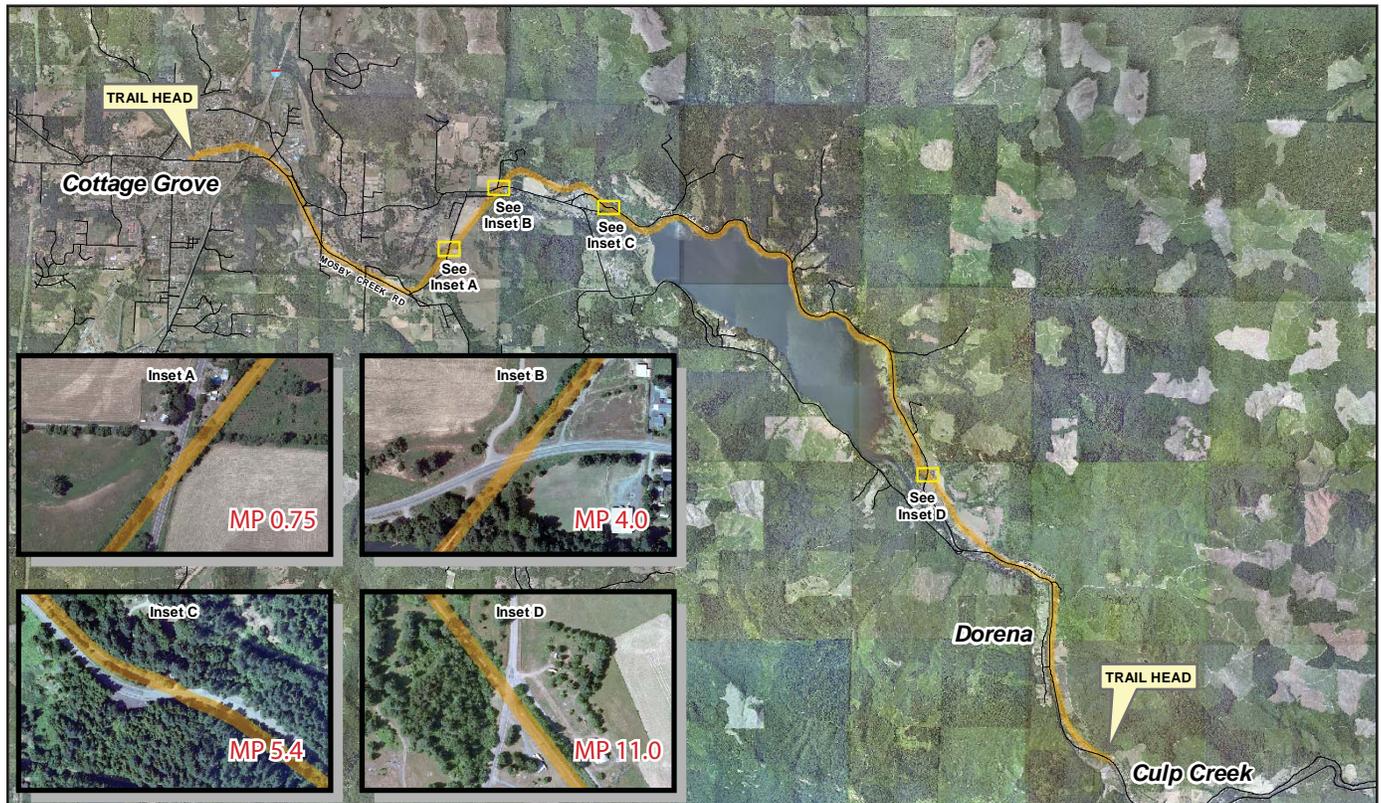
Short term improvements were completed by the County in the winter of 2012 at locations where the Trail crosses County roads. The County and BLM recognized more could be done to enhance trail and road user safety along this nationally recognized, popular recreational corridor. High traffic speeds on the intersecting County roads, limited sightlines, and long crossing distances were some of the safety issues that called for a comprehensive planning process to address trail and road user safety. Following BLM's receipt of a Safe, Accountable, Flexible, Efficient Transportation Equity Act-A Legacy for Users (SAFETEA-LU) grant in August 2012, the County and BLM formally commenced the planning process that resulted in this Plan.

Section 2. Existing Conditions

The Trail crosses County roads at four locations: MP 0.75 of Layng Road and MPs 4.0, 5.4, and 11.0 of Row River Road. Road and traffic characteristics at each crossing were important considerations in the design and selection of short term and long term safety improvements. Traffic data evaluated was collected by the County in the fall of 2011 and is provided as Appendix A. Short term improvements were completed by the County in the winter of 2012. Long term improvements are discussed in Section 5.

Layng Road is a two-lane rural road functionally classified as a Local Road (i.e., a road used primarily to provide access to adjacent properties). Layng Road does not have a posted speed limit. At MP 0.75, Layng Road has a pavement width of 22 feet, traffic volume of 207 average daily trips (ADT), and 85th percentile speed of 49.5 miles per hour. The term “85th percentile speed” refers to the speed at or below which 85 percent of the vehicles are traveling.

Row River Road is a two-lane rural road that is functionally classified as a Collector (i.e., a road used primarily to channel traffic from outlying areas to arterial roads that provide for traffic to and through urban areas). Row River Road is a high speed, 55 mile per hour facility that is used regularly by large trucks (i.e., trucks with 2 or more axles). At MP 4.0, Row River Road has a pavement width of 40 feet, traffic volume of 2,446 ADT, and 85th percentile speed of 58.2 miles per hour. MP 4.0 is the site of two bicyclist fatalities since 2007. At MP 5.4, Row River Road has a pavement width of 26 feet, traffic volume of 328 ADT, and 85th percentile speed of 51.5 miles per hour. At MP 11.0, Row River Road has a pavement width of 26 feet, traffic volume of 164 ADT, and 85th percentile speed of 56.2 miles per hour.



Row River Trail Crossings with Lane County Roads

Short term improvements were completed by the County in the winter of 2012 at all four locations where the Trail crosses County roads. Trail improvements included relocating stop signs for trail users closer to the road, increasing the size of the stop signs from 18 x 18 inches to 30 x 30 inches, and installing 12-inch wide stop bars adjacent to the stop signs, parallel to the road. Road improvements included relocating pedestrian and bicyclist crossing warning signs from 750 feet to 500 feet in advance of each crossing and installing pedestrian and bicyclist crossing warning signs at each crossing. Sightline improvements included trimming and removing vegetation at all four crossings and re-grading a berm at the Trail crossing located at MP 5.4 of Row River Road. Additional grading is recommended at the Trail crossing located at MP 11.0 of Row River Road. The County intends to complete this grading as part of the implementation of the preferred design alternative, provided the grading does not interfere with existing utilities.



Before Short Term Improvements: MP 4.0 Row River Road



After Short Term Improvements: MP 4.0 Row River Road

Section 3. Public Involvement Process

Development of the Plan benefited greatly from the input provided by numerous stakeholders, agencies, and community members. The Plan received strong support from the Coalition for Bicycling Safety (Coalition), a local advocate for bicyclist safety and motorist education. Formed in 2011 following a second bicyclist fatality at the Trail crossing at MP 4.0 of Row River Road, the Coalition has performed countless hours of maintenance on the Trail, trimming trees and other vegetation, applying pavement markings in locations where roots uplifted the pavement, and removing pine needles from the pavement to expose pavement markings and uplifted areas. The Coalition contributed knowledge and expertise to and encouraged the participation of community members in the planning process.

Development of the Plan was supported by a robust public involvement process that brought the diverse viewpoints of stakeholders and community members into the planning process. The public involvement process informed and obtained input from the public at key project milestones. The public input received shaped the preferred design alternatives and resulted in this Plan that reflects the interests and priorities of the public. Public involvement actions and activities included a project website, public open houses, stakeholder interviews, and technical advisory committee. A project website, www.lanecounty.org/RowRiverTrail, was created and maintained throughout the planning process to allow interested parties to learn about the project and public involvement opportunities, submit comments, and review public open house materials.

Two public open houses were held to inform interested parties of the process to date and obtain their input. Prior to each open house, press releases were issued to local and regional media outlets and notices were mailed to the owners of all properties located within ½ mile of the Trail and other interested parties. Feature articles were published in the Cottage Grove Sentinel and the Register Guard newspapers. Interviews with County staff were aired on KNND 1400 AM, a Cottage Grove radio station. Copies of the mailed notices and a summary of the written comments received at each public open house are provided as Appendix B.



November 16, 2012, Field Trip

Prior to the first public open house, County and BLM staff identified the Trail crossing at MP 4.0 of Row River Road as a critical location where major improvements were needed to address safety concerns. Staff developed design alternatives that were used to apply for grants to fund the improvements. Staff also rode their bikes the length of Trail to evaluate existing conditions and observe where other improvements were needed. Staff observed that major improvements were needed at the Trail crossing at MP 5.4 of Row River Road to address unsafe conditions resulting from poor visibility and alignment of the Trail with a curved portion of Row River Road. Staff observed that major improvements were not needed at the Trail crossings at MP 11.0 of Row River Road and MP 0.75 of Layng Road. Staff shared their observations at the first public open house.

The first public open house was held from 3:30 to 7:00 pm on December 4, 2012, at the Cottage Grove City Hall and was attended by over 40 members of the public. The purpose of the open house was to provide attendees with an opportunity to learn about the project and provide feedback about five design alternatives (straight undercrossing, perpendicular undercrossing, overcrossing, at-grade crossing with pedestrian hybrid beacon, and do nothing) for the Trail crossing at MP 4.0 of Row River Road. County and BLM representatives were available to answer questions, discuss issues, and gather input.



December 4, 2012, Public Open House

This open house consisted of two, 90-minute sessions during which County staff gave a brief PowerPoint presentation that addressed the project background, short-term improvements, and design alternatives. Attendees completed a dot exercise to indicate their preferred and least preferred design alternatives and completed comment cards to share their opinions about the design alternatives. Attendees used markers and sticky notes to mark on large aerial maps of the Trail where they thought other improvements were needed at other Trail crossings and elsewhere in the Trail Corridor.

With regard to the Trail crossing at MP 4.0 of Row River Road, the perpendicular undercrossing design alternative received the strongest support from attendees (67%), followed by the overcrossing (21%) and the do nothing (5%) design alternatives. The straight undercrossing and at-grade crossing with pedestrian hybrid beacon design alternatives were not supported by attendees. Attendees confirmed that major improvements were needed at the Trail crossing at MP 5.4 of Row River Road and were not needed at the Trail crossings at MP 11.0 of Row River Road and MP 0.75 of Layng Road. Attendees recommended other improvements in the Trail Corridor, such as repaving and widening the pavement surface, providing a separate soft surface for equestrians, exploring alternatives to bollards, educating users on trail safety and etiquette, and providing water for dogs and additional trash receptacles along the Trail.

Following the first public open house, County staff revised and generated new design alternatives in response to the public input received. The revisions for the Trail crossing at MP 4.0 of Row River Road included the elimination of the do nothing design alternative and of the pedestrian hybrid beacon from the at-grade crossing design alternative. Staff developed a design alternative for the Trail crossing at MP 5.4 of Row River Road that realigns the Trail to cross the road at a 90-degree angle. Staff also developed signage, striping, and lighting improvements for the Trail crossing at MP 5.4 of Row River Road. To provide consistency and enhance safety along the Trail Corridor, staff applied the signage, striping, and lighting improvements to the Trail crossings at MPs 4.0 and 11.0 of Row River Road and MP 0.75 of Layng Road.

Stakeholder interviews were conducted and the Technical Advisory Committee (TAC) was convened to review and provide input on the revised design alternatives and the signage, striping, and lighting improvements. Throughout the planning process, the project website contained an invitation encouraging interested persons to contact County staff to request stakeholder interviews. Interviews were conducted with the Board of the Greater Eugene Area Riders (GEARS), a non-profit bicycle club; the Lane Area Commission on Transportation's Trucking Designated Stakeholder; and the Eugene Chapter of

the Oregon Equestrian Trails, a non-profit equestrian club.

With regard to the Trail crossing at MP 4.0 of Row River Road, the at-grade crossing design alternative was preferred by the Board of GEARS and the Lane Area Commission on Transportation's Trucking Designated Stakeholder. These stakeholders commented that they were concerned about the cost of the undercrossing and overcrossing design alternatives and felt safety concerns could be addressed by realigning the trail and adding signage and lighting. The perpendicular undercrossing design alternative was preferred by the Oregon Equestrian Trails (OET). OET commented that some equestrians would use an undercrossing, but that others may be more comfortable with an at-grade crossing. OET also reviewed and were supportive of the design alternative for the Trail crossing at MP 5.4 of Row River Road and the signage, striping, and lighting improvements for all four locations where the Trail crosses County roads. These project materials were not available at the time of the other stakeholder interviews.

The Technical Advisory Committee (TAC) was convened on June 3, 2013, and was comprised of representatives from the BLM, City of Cottage Grove, City of Eugene, City of Springfield, Greater Eugene Area Riders (GEARS), Lane County Roads Advisory Committee, Lane Transit District, Oregon Parks and Recreation Department, and Safe Routes to School. TAC members not present were contacted separately by phone to obtain their comments. The TAC was divided as to a preferred design alternative for the Trail crossing at MP 4.0 of Row River Road, with approximately half supporting the perpendicular undercrossing design alternative and half supporting the at-grade crossing design alternative. TAC members expressed concern about safety in the undercrossing and recommended the design allow trail users approaching the crossing to see through to the other side of the undercrossing. TAC members noted the need to maintain and improve the "family-friendly" status of the Trail. Some thought the undercrossing would be intimidating, compromising the family-friendly status, while others felt grade separation between the Trail and the road was necessary to support the family-friendly status. The TAC was unanimous in their support of the design alternative for the Trail crossing at MP 5.4 of Row River Road and the signing, striping, and lighting improvements for all four locations where the Trail crosses County roads.

Following the stakeholder interviews and TAC meeting, County staff revised the perpendicular undercrossing design alternative for the Trail crossing at MP 4.0 of Row River Road, softening the curves of the Trail approaches to the undercrossing to improve visibility of and through the undercrossing. Concerns raised by stakeholders and the TAC about a perceived lack of safety in an undercrossing prompted staff to create drawings showing the location of lights within the undercrossing and the visibility of and through the undercrossing. These drawings were used to communicate the openness of the perpendicular undercrossing design alternative at the second public open house.

The second public open house was held from 3:00 to 7:00 pm on June 12, 2013, at the Cottage Grove Community Center and was attended by over 20 members of the public. The purpose of the open house was to provide attendees with an opportunity to help select a preferred design alternative for the Trail crossing at MP 4.0 of Row River Road and help finalize the design alternative for the Trail crossing at MP 5.4 of Row River Road. The signage, striping, and lighting improvements for all four locations where the Trail crosses County roads were also presented. County and BLM representatives again staffed the event.



June 12, 2013, Public Open House

The second public open house included a self-guided presentation of displays organized into four stations: design alternative for Trail crossing at MP 5.4 of Row River Road; design alternatives for Trail crossing at MP 4.0 of Row River Road; signage, striping, and lighting improvements; and recommendations for other improvements in the Trail Corridor. Attendees viewed four design alternatives (straight undercrossing, perpendicular undercrossing, overcrossing, and at-grade crossing) for the Trail crossing at MP 4.0 of Row River Road and completed a dot exercise to indicate their favorite and least favorite design alternatives. Attendees also completed comment cards to share their opinions about the design alternatives and the signage, striping, and lighting improvements and suggest other improvements in the Trail Corridor.

With regard to the Trail crossing at MP 4.0 of Row River Road, the perpendicular undercrossing design alternative received the strongest support from attendees (61%). The at-grade crossing design alternative received the least support, followed by the overcrossing design alternative. Attendees supported the design alternative for the Trail crossing at MP 5.4 of Row River Road and the signage, striping, and lighting improvements for all four locations where the Trail crosses County roads. Attendees recommended other improvements in the Trail Corridor, such as removing trees to improve visibility at the intersection of Row River Connector #1 and Mosby Creek Road, and removing and/or relocating bollards on the Trail. Following the second public open house, County staff refined the design alternatives and compiled the Plan.

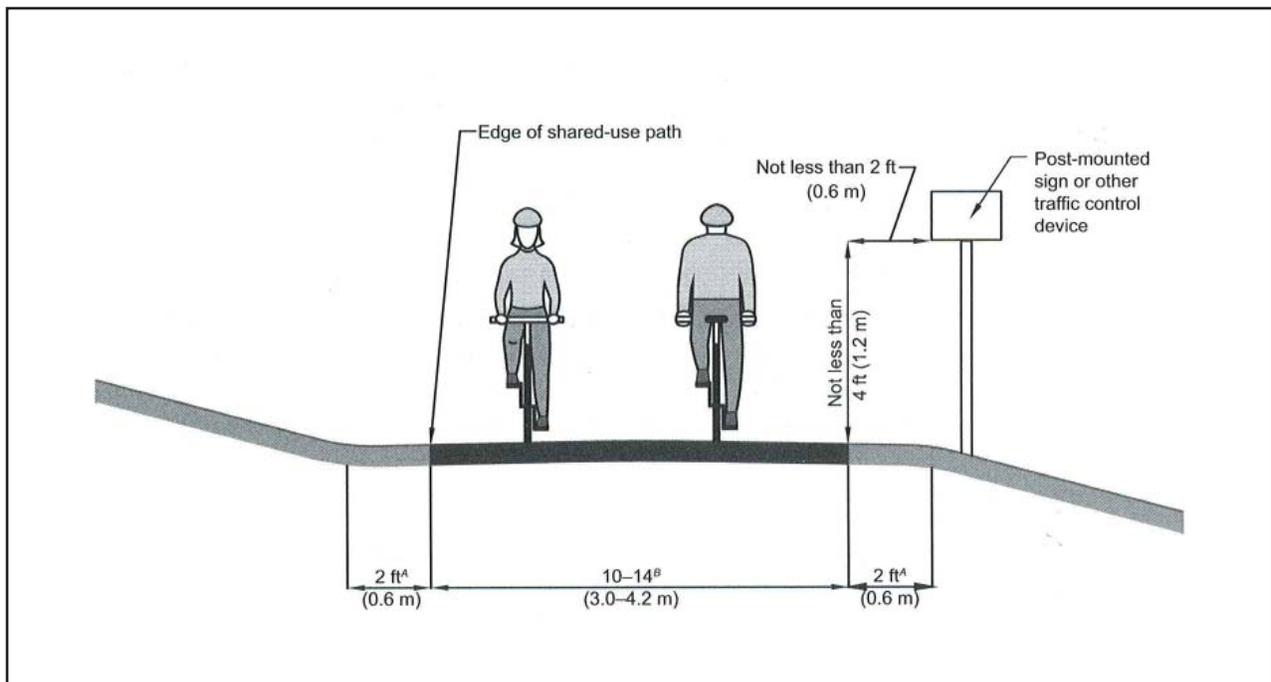
The Plan was presented to and a public hearing held before the Lane County Roads Advisory Committee (RAC) on August 28, 2013. The RAC is an advisory committee comprised of seven members appointed by the Lane County Board of Commissioners (Board) to advise the Board on road related issues. The RAC reviewed the Plan and, upon deliberating after the public hearing, unanimously recommended the Board approve the Plan and the preferred design alternative contained therein, and work with the BLM to establish, if needed, trail maintenance groups.

The Plan was presented to and a public hearing held before the Board on October 1, 2013. The Board reviewed the Plan, considered the recommendation of the RAC, and, upon deliberating after the public hearing, unanimously approved the Plan and the preferred design alternative contained therein by Order No. 13-10-01-09.

Section 4. Trail Design Recommendations

The Trail is a popular non-motorized, shared-use trail used by various user groups including pedestrians, runners, bicyclists, and equestrians. Since its construction in 1998, there has been some deterioration and deferral of regular maintenance of the Trail due to funding limitations. The condition of the Trail was raised by several people during the public involvement process for this plan. Trail users suggested improvements such as repaving and widening the pavement surface, providing a separate soft surface for equestrians, exploring alternatives to bollards, educating users on trail safety and etiquette, and providing water for dogs and additional trash receptacles along the Trail. Any such improvements are the purview of the BLM and are not within the scope of the safety improvements considered in this plan. However, due to the high level of interest expressed by the public, County staff researched current best practices pertinent to the suggested improvements. These are discussed in this section for consideration by the BLM and for informational purposes. These design recommendations are based on guidance and standards found in the literature listed below. The literature addresses the design of shared use trails in greater detail than contained herein and can be consulted for more detailed information.

- American Association of State and Highway Transportation Officials “Guide for the Development of Bicycle Facilities, Fourth Edition” (2012)
- Oregon Department of Transportation “Bicycle and Pedestrian and Design Guide” (2011)
- United States Department of Agriculture Forest Service “Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds” (2007)
- United States Access Board “Supplemental Notice of Proposed Rulemaking on Shared Use Paths” (February 2013)
- United States Department of Transportation Federal Highway Administration “Designing Sidewalks and Trails for Access” (1999)
- United States Department of Transportation Federal Highway Administration “Manual on Uniform Traffic Control Devices for Streets and Highways” (2009)



Typical Shared-Use Trail Cross Section

Source: AASHTO. (2012). *Guide for the Development of Bicycle Facilities, Fourth Edition.*



Trail Width Transition on Row River Trail

Width and Clearance

Trail users suggested widening the pavement surface to better accommodate the volume and mix of users. Currently, the pavement width varies between eight and 10 feet. According to the literature, a minimum pavement width of 10 feet is recommended for a two-way shared use trail. A pavement width of eight feet may be used for short distances in locations with physical constraints (e.g., significant side-slope or utility structure). If a pavement width of 10 feet cannot be maintained the entire length of a trail, visual cues such as signs or pavement markings can be used to alert trail users of narrowed trail sections. A pavement width of 11 to 14 feet may be considered in locations with a high volume and mix of trail users. A pavement width of 11 feet is recommended for a bicyclist to pass another trail user going the same direction, while avoiding a trail user approaching from the opposite direction.

Trail users noted several locations where vegetation encroaches over the pavement surface. As part of the short term improvements, County staff trimmed and removed vegetation at all four Trail crossings to improve clearance from obstructions and sightlines. According to the literature, adequate clearance from obstructions above (vertical clearance) and on each side (horizontal clearance) of pavement should be maintained the entire length of a trail. A vertical clearance to overhead obstructions, such as tree branches and structures, of at least 10 feet is recommended to allow passage of equestrians and maintenance and emergency vehicles. Additional vertical clearance may be considered where sightlines are impaired and where personal safety is a concern.

A graded shoulder (i.e., horizontal clearance) at least two feet wide should be maintained on each side of the pavement to allow trail users to maneuver to avoid conflicts and recover control. If a horizontal clearance of two feet cannot be maintained from obstructions, visual cues such as object markers, signs, or pavement markings can be used in advance of to alert trail users of obstructions. Graded shoulders should not exceed a maximum cross-slope of one foot of vertical change over a horizontal distance of six feet (1V:6H).



Shoulder Along Row River Trail

Trail users noted several locations where the pavement edge abuts a steep down-slope or other hazard. According to the literature, a graded shoulder at least five feet wide is recommended in locations where a trail parallels a body of water, steep down-slope (i.e., 1V:3H or steeper), or other hazard. A physical barrier such as a railing, fence, or dense shrubbery should be considered, especially in locations where the shoulder is less than five feet wide. Barriers should begin prior to and extend beyond obstacles, be at least three and a half feet in height and offset at least two feet from the pavement edge, and comply with applicable building codes. Barrier ends should flare away from the pavement edge.



Steep Slope Along Row River Trail



Damaged Pavement on Row River Trail

Surface

Trail users noted numerous locations where tree roots uplifted or penetrated through the pavement and suggested repaving these damaged areas. Some trail users have taken it upon themselves to mark damaged areas with spray paint to alert other trail users. According to the literature, the pavement structure of a trail should be designed, constructed, and maintained to ensure a smooth surface and support occasional use by maintenance and emergency vehicles. Soil sterilizers, weed control fabric, and root barriers are recommended to prevent weed growth and root penetration through and under the pavement. These types of treatments should be considered for new and repair of existing pavement to extend the life of the pavement and promote the safety of the trail users.

Adequate drainage of pavement surface and subsurface water runoff is essential to prevent damage (e.g., heaving, slumping, and cracking), flooding, and silt accumulation. A minimum cross-slope of one percent is recommended to provide adequate surface water drainage. A maximum cross-slope of two percent and grade of five percent are recommended to accommodate persons with disabilities.

Equestrian users of the Trail suggested providing a separate soft surface to accommodate horses. If a separate soft surface is not feasible, the literature recommends maintaining graded shoulders on each side of the pavement with a soft surface, such as woodchip, to accommodate trail users who prefer a soft surface. Design recommendations for graded shoulders are addressed above.

Bollards

Numerous trail users commented that bollards installed on the Trail are a serious hazard to bicyclists and cause injuries when struck. Two bollards are currently installed across the Trail at all road and many driveway crossings to prevent unauthorized access by motor vehicles. Safely navigating the bollards can

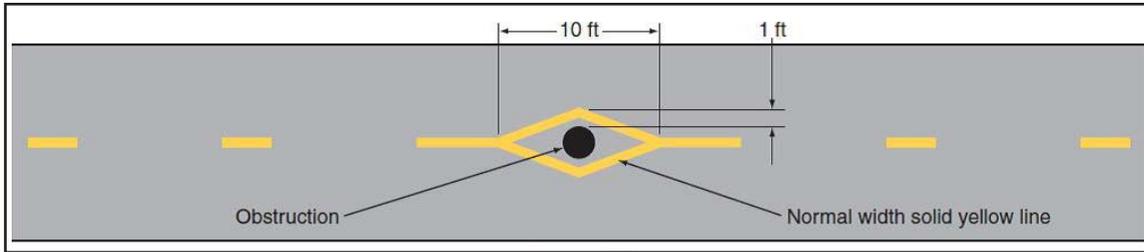
be challenging, especially for inexperienced bicyclists. The use of two bollards leaves four openings. If two bicyclists are approaching from opposite directions, bicyclists can be confused as to which of the four openings to use. Some trail users suggested removing bollards or, at the very least, relocating bollards or re-designing the bollards to pose less of a hazard to bicyclists.



Mile Post 5.4 Row River Road

According to the literature, a preferred method of discouraging unauthorized access of a trail by motor vehicles is to divide the trail into two narrow one-way sections, half the nominal trail width, separated by low landscaping. This design helps discourage access by motor vehicles, but does not impede visibility or pose a serious hazard to bicyclists. Maintenance and emergency vehicles can straddle the low landscaping to access the trail.

Where bollards are needed or found to be preferable to limit unauthorized access of a trail by motor vehicles, a single bollard placed in the middle of the trail is preferred to two bollards. If additional bollards are needed, an odd number of bollards are recommended. The use of two bollards is not recommended as it can channel trail users toward the middle of the trail, creating potential for collisions with other trail users. Bollards should be set back at least 30 feet from the road edge to allow trail users to safely navigate the bollards before approaching the road. Bollards should be at least 40 inches in height, four inches in diameter, and spaced five feet apart (if more than one is being used). Bollards should be flexible or lockable and removable to allow access by maintenance or emergency vehicles. Mounting hardware should be flush with the abutting surface. Bollards should be marked with retroreflectORIZED material or appropriate object markers and outlined with pavement markings to improve visibility and guide trail users around the bollards.



Bollard Approach Pavement Markings

Source: U.S. FHWA. (2009). *Manual on Uniform Traffic Control Devices for Streets and Highways*.

Signs and Pavement Markings

Trail users suggested installing signage along the Trail to alert users of road crossings and to educate users on trail safety and etiquette and to provide destination information such as mileage markers. Signs and pavement markings should conform to the Manual of Uniform Traffic Control Devices (MUTCD), which regulates the design and use of traffic control devices. Part 9 of the MUTCD contains standards and guidance for signs, pavement markings, and signals that may be used to regulate, warn, and guide bicyclists on roadways and pathways.

Signs along a trail should be retroreflectORIZED and in an easy to understand format with limited text and graphics understood by all trail users. Signs should be uniform in content, appearance, and placement to acclimate and increase the response time of trail users; and should be used sparingly to maximize their impact and minimize visual distraction and required maintenance. All portions of a sign, including its support, should be placed at least two feet laterally from the pavement edge and mounted at a height of at least four feet above the pavement. Signs placed over the pavement and graded shoulders should maintain a vertical clearance of at least 10 feet from the pavement. Signs should be placed so as not to inadvertently confuse motorists.

Regulatory signs can be used to inform trail users of pertinent traffic laws or regulations and should only be placed at the locations where the laws or regulations apply. Warning signs should be used to alert trail users of motorized traffic and other potentially hazardous conditions and should be placed at least 100 feet in advance of the hazardous condition.



Example Etiquette Sign

Signs can be placed at trail access points to highlight trail features and provide general "You Are Here" and trail etiquette information. Trail etiquette signs are strongly recommended to educate trail users of their responsibilities (e.g., pedestrians and bicyclists are to yield to equestrians) and help reduce potential conflicts between trail users.

Guide signs can be used to assist trail users in making their way, indicating directions, destinations, distances, and names of cross streets. Mile markers are strongly recommended to assist trail users in estimating their progress and provide a means for identifying the location of emergency incidents and maintenance activities.

Pavement markings should be used to address a specific safety concern, such as a solid yellow centerline to guide opposite directions of travel around an obstacle (e.g., bollard) or discourage passing in areas where sightlines are

impaired. As with signs, pavement markings should be uniform in appearance and placement, and used only as necessary. Pavement markings should be retroreflectorized and should not be slippery or project more than 0.16 inches above the pavement.

Amenities

The Trail has a number of amenities such as restrooms, benches, and picnic tables. Trail users suggested additional amenities such as providing water for dogs and additional trash receptacles along the Trail. The literature suggests amenities along a trail should complement the trail experience and comply with accessibility standards and guidelines. Amenities recommended include hitch rails, benches, shelters, picnic areas, bicycle racks, emergency telephones, drinking fountains for people and pets, water hydrants for equines, trash and recycling containers, restrooms, and self-service dispensers of bags for animal waste. Periodic rest areas equipped with benches are recommended for the benefit of all trail users, particularly persons with mobility impairments.



Restroom Along Row River Trail

Accessibility

Accessibility is an important design consideration for improvements to shared-use trails. The Trail is currently designed to be accessible, which contributes to its designation as one of the two “family friendly” Oregon Scenic Bikeways. Continuing to provide access for people with disabilities is not anticipated to be a significant challenge given the gradual slopes and turns of the abandoned rail line right-of-way in which the Trail is constructed. Federal accessibility standards and guidelines are a complex subject that cannot be fully explored herein. Up-to-date information on federal accessibility standards and guidelines can be obtained from the U.S. Architectural and Transportation Barriers Compliance Board (Access Board) website (www.access-board.gov).



Row River Trail Crossing at Harms Park

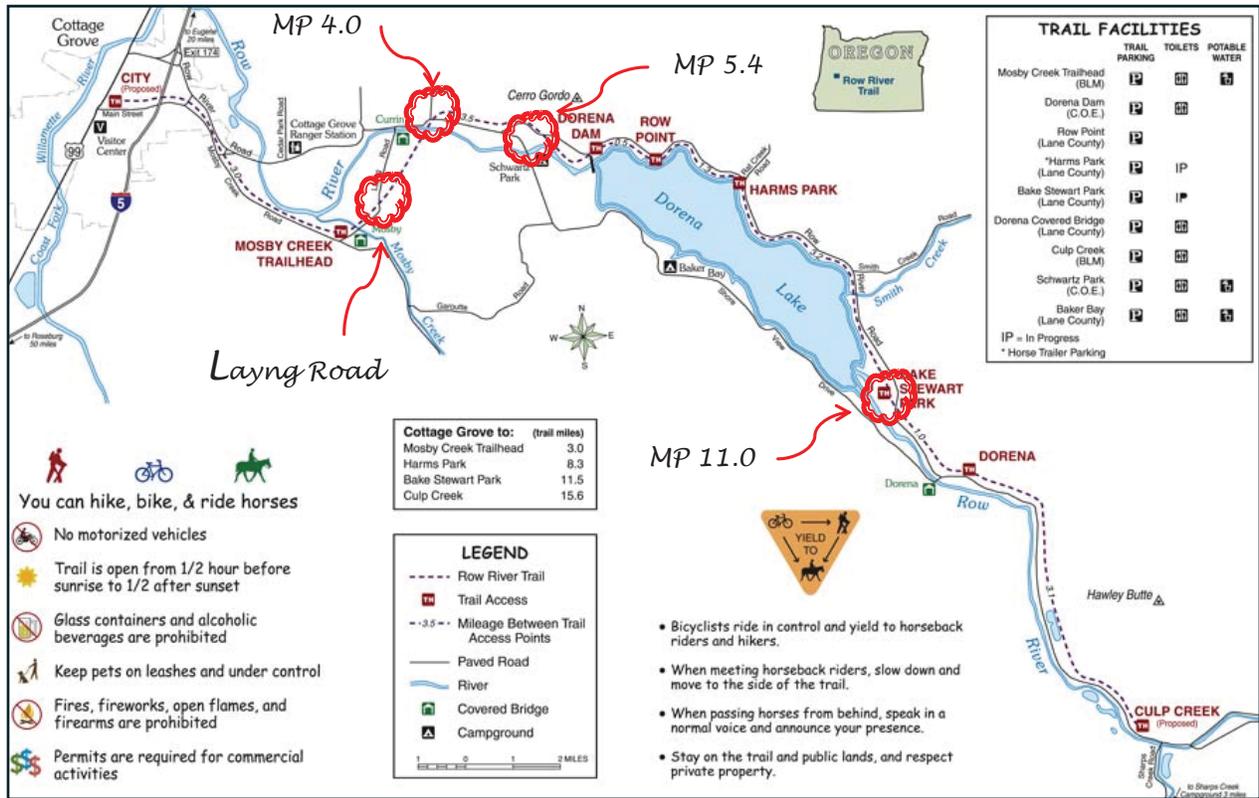
Source: Google. (2013). *Google Maps*. Retrieved September 9, 2013, from: <https://maps.google.com>

Harms Park

Trail users suggested considering safety improvements at the Trail crossing located at Harms Park. Vehicles exiting Row River Road to access the Park’s popular boat ramp and picnic area cross the Trail, creating the potential for conflicts with trail users navigating the crossing. Although not a location where the Trail crosses a County road, County staff recognized the Trail crossing would benefit from additional treatment and discussed possible solutions with the TAC and the County’s Traffic Engineer. A low cost potential solution that the BLM may want to consider consists of adding intersection warning signs and yield signs along the trail to alert trail users of crossing ahead, and pedestrian and bicyclist warning signs at the crossing to alert motor vehicles of crossing location.

Section 5. Design Alternatives

County and BLM staff evaluated and considered safety improvements at all four locations where the Trail crosses County roads: MPs 4.0, 5.4, and 11.0 of Row River Road, and MP 0.75 of Layng Road. The preferred design alternative is a package of safety improvements for these crossings. Reconstruction of the Trail is recommended at two of these crossings, including construction of a perpendicular undercrossing at the Trail crossing at MP 4.0 of Row River Road and realignment of the Trail (at-grade) at the Trail crossing at MP 5.4 of Row River Road. Signage, striping, and lighting improvements are proposed at all four locations where the Trail crosses County roads. A Federal Lands Access Program grant was awarded in 2013 to fund implementation of the preferred design alternative. The preferred design alternative is provided as Appendix C.



Row River Trail Crossings with Lane County Roads

MP 4.0 Row River Road

The preferred design alternative for the Trail crossing at MP of 4.0 of Row River Road is a perpendicular undercrossing. A primary design consideration was whether safety concerns justified grade separation between the Trail and the road. Variables considered included traffic volumes, vehicle speeds, crossing distance, topography, and the amount of space available. According to the literature referenced in Section 4, grade separated shared-use trail crossings are recommended when the road has high traffic volumes or vehicle speeds that reach or exceed 45 miles per hour, or when the trail crossing is heavily used and the trail is a main recreational corridor. Existing grade separated crossings tend to cross four-lane roads with very high traffic volumes. Although Row River Road is only a two-lane road, County and BLM staff found that the high traffic volumes, high vehicle speeds, long crossing distance, and limited sight distance for trail and road users justified a grade separated crossing. Some stakeholders and TAC members supported development of an at-grade design alternative. County and BLM staff developed four design alternatives including an at-grade crossing, overcrossing, straight undercrossing, and perpendicular undercrossing.



Row River Trail Crossing at MP 4.0 Row River Road

Source: Google. (2013). *Google Maps*. Retrieved July 30, 2013, from: <https://maps.google.com>

- At-Grade Crossing – The at-grade crossing design alternative realigns the Trail to cross the road at a 90-degree angle. The perpendicular alignment is recommended by the literature to allow trail users to see in both directions and minimize the crossing distance, which reduces the time trail users are vulnerable to passing motor vehicles. Two signal systems, Rectangular Rapid Flash Beacons (RRFB) and Pedestrian Hybrid Beacons (PHB), were considered for inclusion in the at-grade crossing design alternative.

RRFBs are traffic safety warning devices that supplement warning signs at unsignalized intersections or mid-block crosswalks. RRFBs use LED lights to emit rapid flashing lights similar to emergency flashers on police vehicles to alert drivers of the presence of pedestrians in a crosswalk. RRFBs are activated by pedestrians manually by a push button or passively by a pedestrian detection system. The LED lights are timed to allow time for the vehicles to yield while continuing to flash as the pedestrians cross the roadway. Drivers are expected to follow State law and yield to pedestrians in the crosswalk. Because of the high vehicle speeds on Row River Road, a RRFB was not considered to be a viable option so was not included in the at-grade crossing design alternative presented at the first public open house.

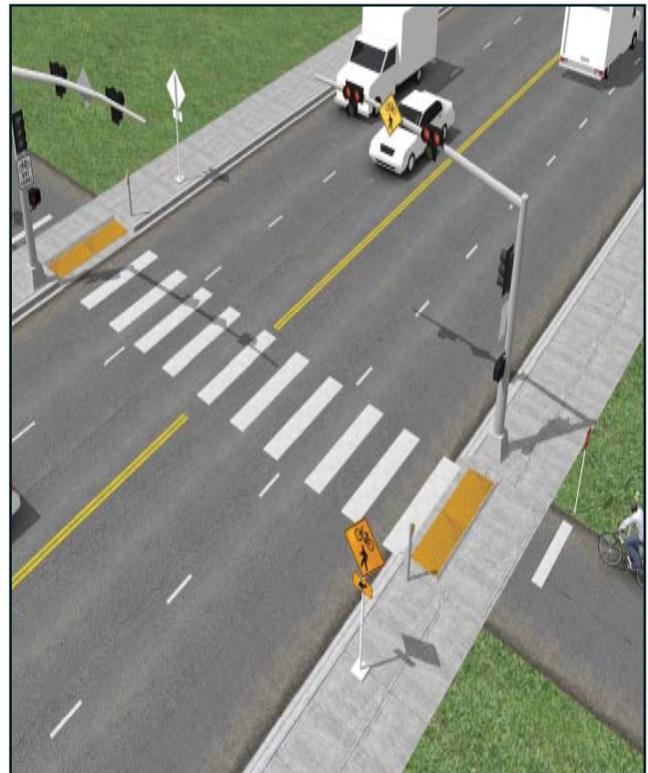
A PHB was included in the at-grade crossing design alternative presented at the first public open house. PHBs are warning devices located on the roadside or on mast arms over mid-block crosswalks. The beacon head consists of two red lights above a single yellow light. The beacon head is activated manually by a push button as users wait to cross the road. After displaying brief intervals of flashing and steady yellow lights, the beacon head displays a steady red light to motor

vehicles. A separate signal displays a “WALK” indication to pedestrians that allows them to cross the road while traffic is stopped. After the pedestrian phase ends, the “WALK” indication changes to a flashing orange hand to notify pedestrians that their clearance time is ending. The beacon head displays alternating flashing red lights to motor vehicles while pedestrians finish crossing before once again going dark at the conclusion of the cycle.

The at-grade crossing with PHB design alternative was not supported by attendees of the first public open house. As discussed in Section 3, County staff revised the design alternative in response to the public input received, eliminating the PHB. The revised at-grade crossing design alternative received the least support from attendees of the second public open house.



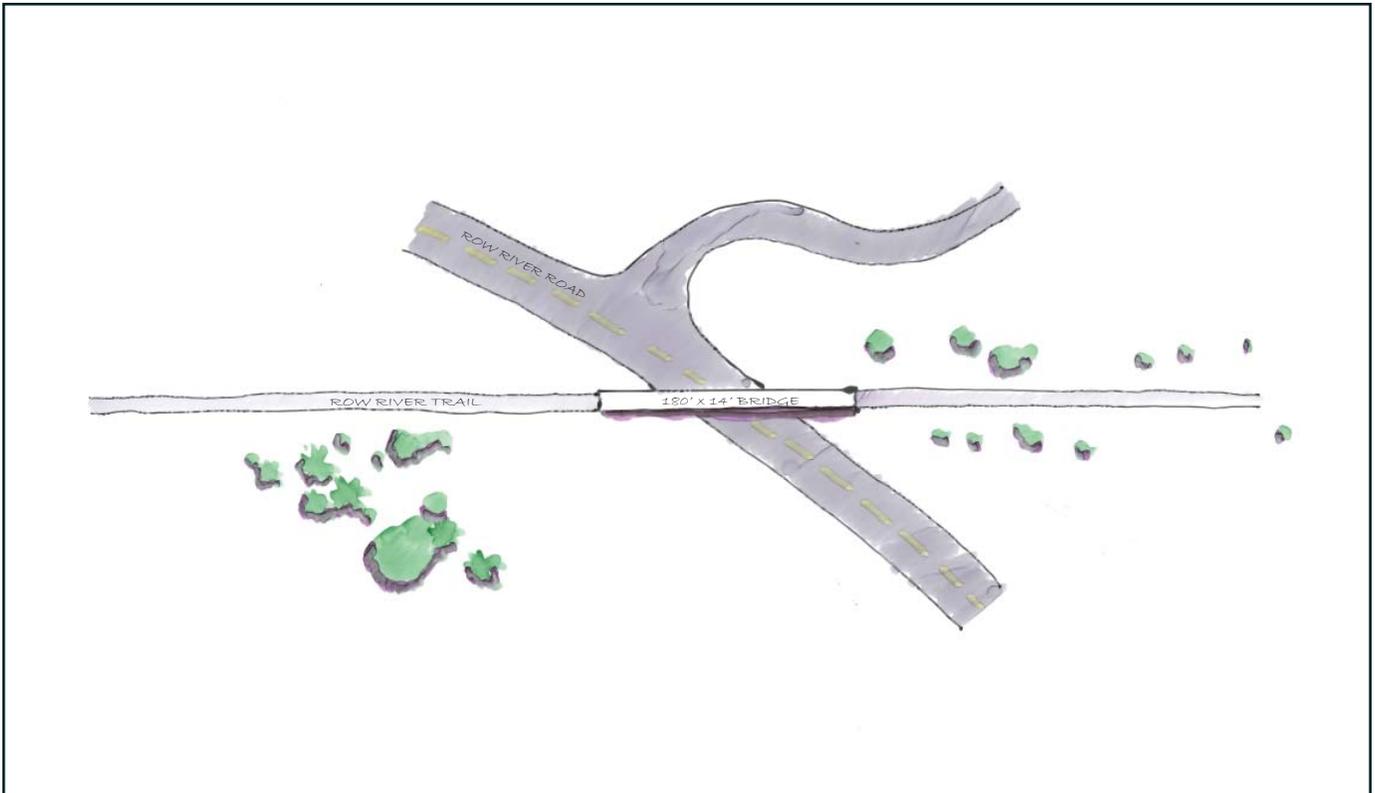
Example Rectangular Rapid Flash Beacon



Example Pedestrian Hybrid Beacon

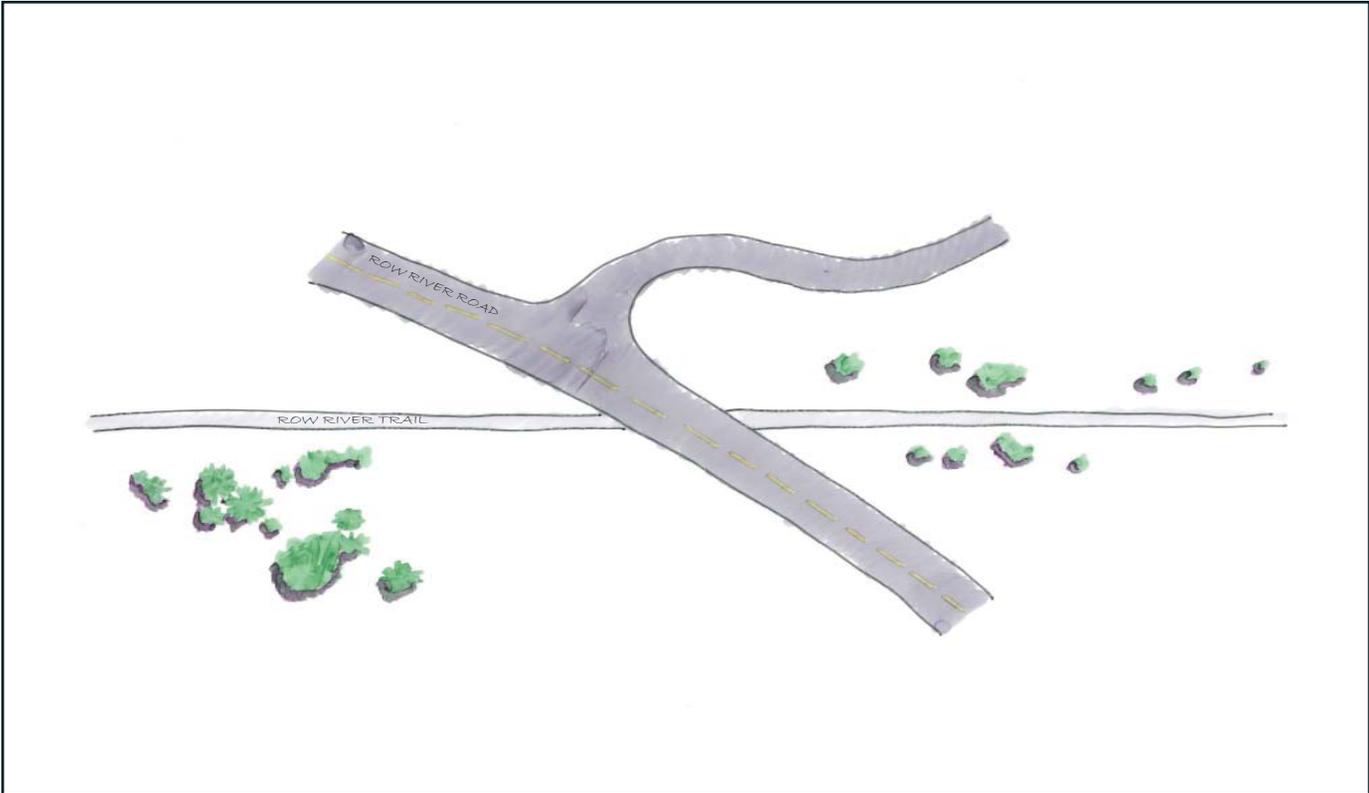
Source: NACTO. *Urban Bikeway Design Guide*. Retrieved August 9, 2013, from: <http://nacto.org/design-guide/>

- Overcrossing (Bridge) Design Alternative – The overcrossing design alternative includes a 160-foot long bridge structure and maintains the current alignment of the Trail. An earlier design version included an 85-foot long bridge structure, realigned the trail, and required a 700-foot span to meet requirements for road clearance and bridge approach grade. The revised design allows for a slightly shorter span, but the cost was similar to the earlier design. Due to the significant cost (\$1.3 million) and visual impact, County and BLM staff is not supportive of this design alternative. In addition, the design alternative creates a visual impediment to maintaining an at-grade crossing necessary to accommodate trail users not comfortable with a grade-separated crossing and provide access to and from Row River Road. The 85-foot long bridge structure was supported by only 21% of attendees of the first public open house. The revised 160-foot long overcrossing design alternative was the second least supported design alternative at the second public open house.

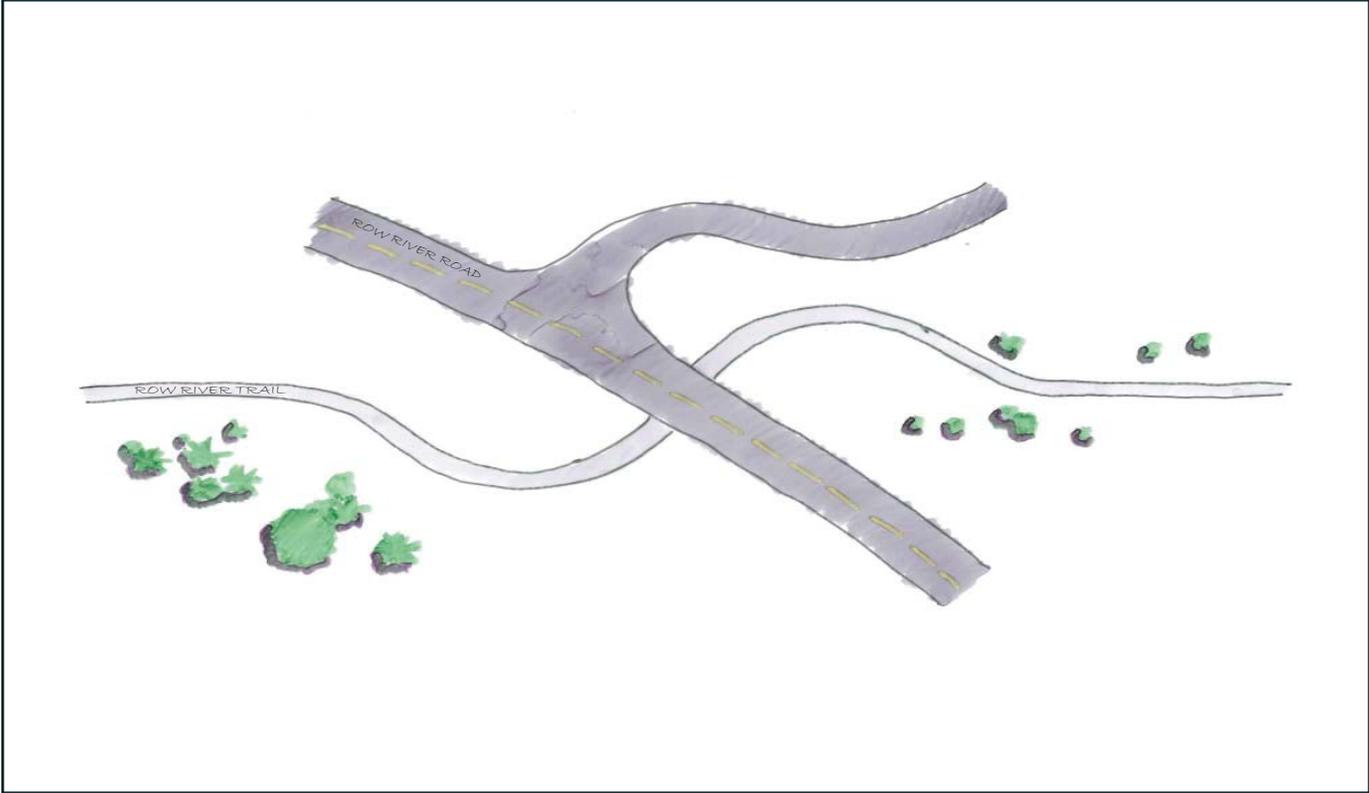


Overcrossing Design Alternative: MP 4.0 Row River Road

- Straight Undercrossing – The straight undercrossing design alternative is 16 feet wide, 86 feet long, and 9 feet tall, and maintains the current alignment of the Trail. Due to the length of the undercrossing needed to span the road, this design alternative is costly (\$1.0 million). Public input indicated concern with maintaining the current alignment as some felt that bicyclists could gain speed on the downhill side, creating a potential safety hazard in the tunnel. The straight undercrossing design alternative was not supported by attendees of the first or second public open houses.
- Perpendicular Undercrossing – The perpendicular undercrossing design alternative is 18 feet wide, 45 feet long, and 10 feet tall and realigns the Trail to cross under the road at a 90-degree angle. Realignment minimizes the length of the undercrossing needed to span the road, which results in a significant cost savings relative to the straight undercrossing. Realignment also slows traffic on the Trail, a concern associated with the straight undercrossing. Public input received prior to the second public open house indicated a perceived lack of safety in the undercrossing and a need to soften the curves of the Trail approaches to the undercrossing. As discussed in Section 3, County staff revised the design alternative in response to the public input received, softening the curves of the Trail approaches to the undercrossing to improve visibility of and through the undercrossing. Staff created drawings used to demonstrate the visibility of and through the undercrossing at the second public open house. The perpendicular undercrossing design alternative received the strongest support of attendees of the first and second public open houses, is supported by County and BLM staff, and is the preferred design alternative for MP 4.0 of Row River Road.



Straight Undercrossing Design Alternative: MP 4.0 Row River Road



Perpendicular Undercrossing Preferred Design Alternative: MP 4.0 Row River Road

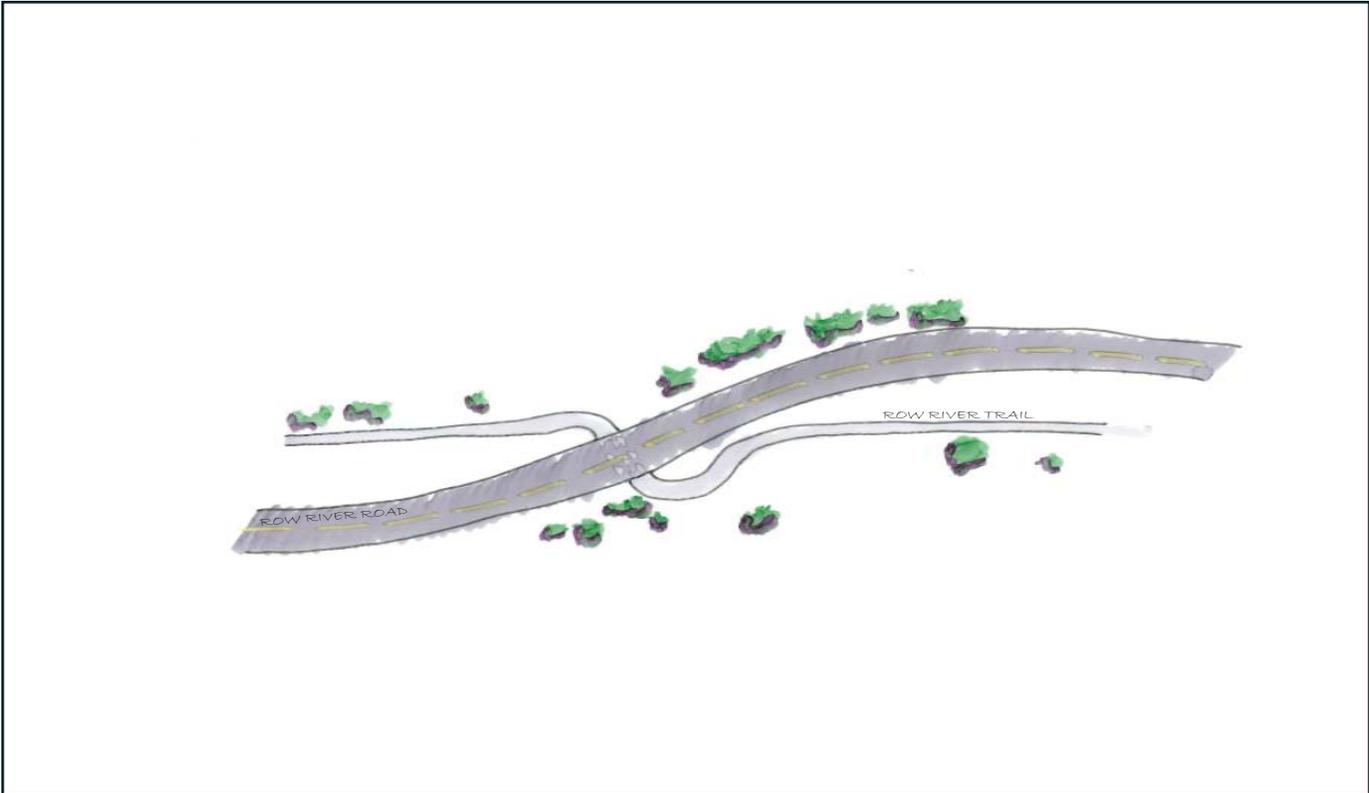
MP 5.4 Row River Road

The preferred design alternative for MP of 5.4 of Row River Road realigns the Trail to cross the road at a 90-degree angle. Due to the long crossing distance and poor sight distance for trail and road users, County and BLM staff observed, and attendees of the first public open house confirmed, that improvements were needed at this crossing. Early design alternatives included road realignment options that were soon eliminated as they would increase vehicle speeds and were not within the scope of the safety improvements considered in this plan. The preferred design alternative for MP 5.4 realigns the Trail to minimize the crossing distance and increase sight distance for trail users. The design alternative received full support of attendees of the second public open house, stakeholders, and the TAC.



Row River Trail Crossing at MP 5.4 Row River Road

Source: Google. (2013). *Google Maps*. Retrieved July 30, 2013, from: <https://maps.google.com>



Preferred Design Alternative: MP 5.4 Row River Road

MP 11.0 Row River Road and MP 0.75 Layng Road

The preferred design alternatives for MP 11.0 of Row River Road and MP 0.75 of Layng Road include signage, striping, and lighting improvements. Due to low traffic volumes and good sight distance for trail and road users, County and BLM staff observed, and attendees of the first public open house confirmed, that major improvements were not needed at these crossings. Recommended signage, striping, and lighting improvements to increase driver and trail awareness include:

- *Trail Improvements*
 - Add blinking red light to existing stop signs to alert trail users of stop ahead.
 - Add intersection warning signs that include small sign with intersecting road name.
 - Evaluate and, if appropriate, relocate existing stop bars in advance of stop signs.

- *Road Improvements*
 - Add RRFB-type lights to existing pedestrian and bicyclist crossing warning signs 500 feet in advance of each crossing. Lights will flash when passively activated by trail users approaching crossing.

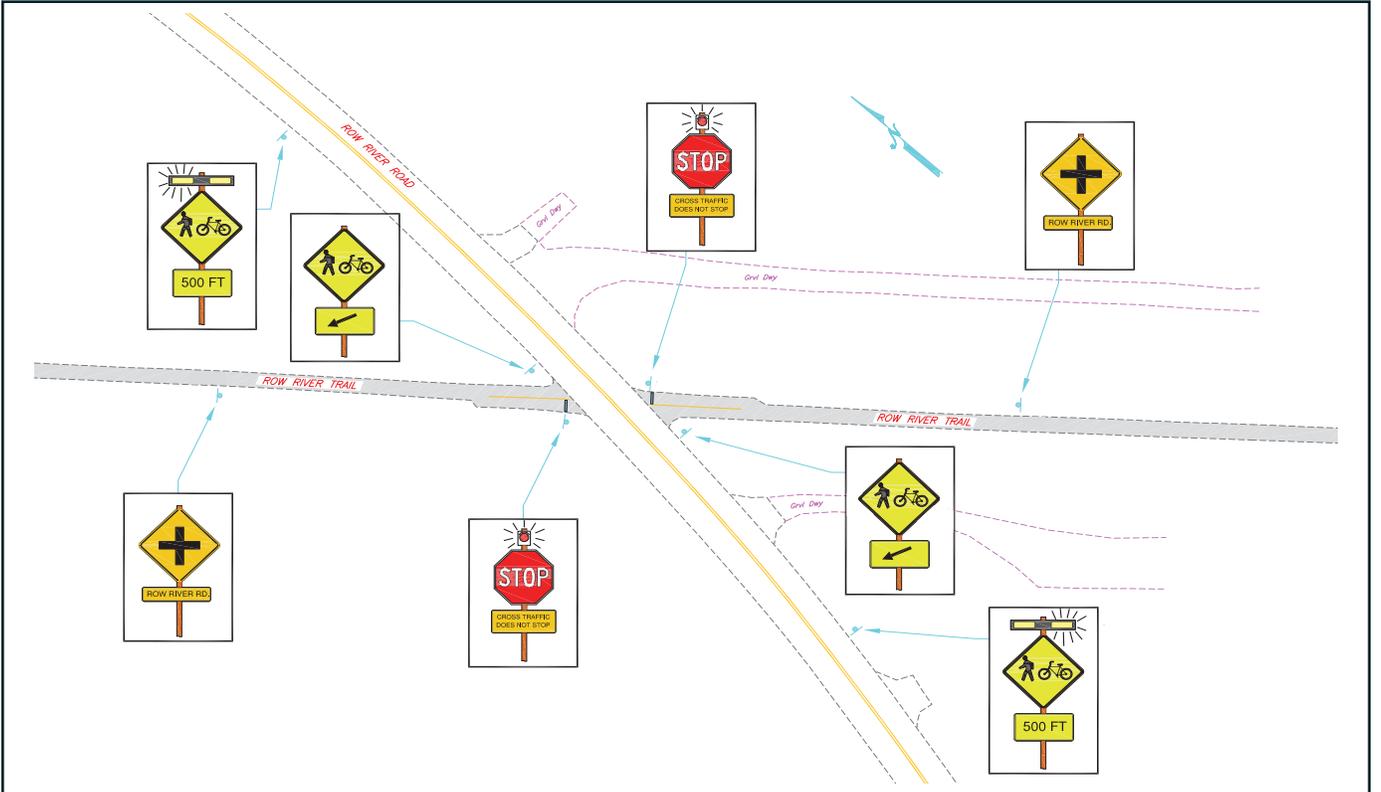
County and BLM staff considered and rejected other improvements, including rumble strips, road striping, and pedestrian medians, in favor of the package of improvements described above. The signage, striping, and lighting improvements are also proposed for the at-grade Trail crossings at MPs 4.0 and 5.4 of Row River Road. The TAC and attendees of the second public open house reviewed and supported the signing, striping, and lighting improvements for all four locations where the Trail crosses County roads.



Row River Trail Crossing at MP 11.0 Row River Road

Row River Trail Crossing at MP 0.75 Layng Road

Source: Google. (2013). Google Maps. Retrieved July 30, 2013, from: <https://maps.google.com>



Preferred Design Alternative: MP 11.0 Row River Road

Preferred Design Alternative

The preferred design alternative is a package of safety improvements for all four locations where the Trail crosses County roads. This is consistent with the original intent of the Plan to address trail and road user safety for that portion of the Trail Corridor in rural Lane County and managed by the BLM.

- Reconstruction of the Trail is recommended at two of these Trail crossings:
 - Construction of a perpendicular undercrossing at MP 4.0 of Row River Road.
 - Realignment of the Trail (at-grade) at MP 5.4 of Row River Road.
- Signage, striping, and lighting improvements are proposed at all four Trail crossings:
 - *Trail Improvements:* Add blinking red light to existing stop signs to alert trail users of stop ahead; add intersection warning signs that include small sign with intersecting road name; and evaluate and, if appropriate, relocate existing stop bars in advance of stop signs.
 - *Road Improvements:* Add RRFB-type lights to existing pedestrian and bicyclist crossing warning signs 500 feet in advance of each crossing. Lights will flash when passively activated by trail users approaching crossing.

Funding to Implement Preferred Design Alternative

This plan is in the enviable and unusual situation of having funding available to implement the preferred design alternative prior to completion of the planning process. Corridor plans are usually completed to identify preferred design alternatives and position an agency to seek funding for implementation. To take advantage of State funding sources only available every three years and or poised for elimination, County and BLM staff focused on developing design alternatives for the Trail crossing at MP 4.0 of Row River Road that were used to apply for funding prior to completion of the planning process. This crossing was the primary focus at the project outset as it was the site of the two bicyclist fatalities that prompted development of this plan. Engineering analysis confirmed this crossing is the most dangerous and the most critical to address. Although concerned such efforts may be premature, the County made the strategic decision to apply for funding. The County's application for funding from the Statewide Transportation Improvement Program (STIP) was not successful as the review committee felt the application was premature. The County's application for funding from the Federal Lands Access Program (FLAP) was successful. The grant awarded in 2013 will fund implementation of the preferred design alternative.

Operations and Maintenance

As discussed above, funding is available to implement the preferred design alternative. The County has committed to taking responsibility for the operation and maintenance of the perpendicular undercrossing at MP 4.0 of Row River Road. The BLM has agreed to take responsibility for the operation and maintenance of the signage and striping improvements at all four locations where the Trail crosses County roads. The agencies discussed a number of concerns regarding maintenance of the lighting improvements, which include solar panels for power and detection systems for passive activation. The greatest concern is that the lighting improvements will be repeatedly vandalized. The design of the lighting improvements will take this into consideration and it is the intention of the agencies to construct and maintain the lighting improvements. The lighting improvements, however, enhance and are not required components of the warning and regulatory signs.

Appendix A. Summary of Traffic Data

Location & Direction of Traffic	85 th Percentile Speed (Miles Per Hour)
Layng Road, Mile Post 0.75	
NORTH Bound	48.7
SOUTH Bound	50.3
Combined	49.5
Row River Road, Mile Post 4.0	
WEST Bound	59.1
EAST Bound	57.5
Combined	58.2
Row River Road, Mile Post 5.4	
WEST Bound	52.6
EAST Bound	50.3
Combined	51.5
Row River Road, Mile Post 11.0	
NORTH Bound	54.4
SOUTH Bound	59.1
Combined	56.2

Location & Direction of Traffic	Average Daily Trips					
	Total	Motorcycles	2 Axle & 4 Tire Vehicles	Bus	2 Axle & 6 Tire Trucks	3 or More Axle Trucks
Layng Road, Mile Post 0.75						
NORTH Bound	107	2	96	1	6	1
SOUTH Bound	100	1	90	1	25	1
Combined	207	3	186	3	50	2
Row River Road, Mile Post 4.0						
WEST Bound	1211	160	831	27	119	75
EAST Bound	1234	13	1061	17	102	40
Combined	2,446	173	1893	44	221	115
Row River Road, Mile Post 5.4						
WEST Bound	172	3	153	1	13	2
EAST Bound	156	3	141	2	9	2
Combined	328	6	294	3	22	4
Row River Road, Mile Post 11.0						
NORTH Bound	90	2	82	1	5	1
SOUTH Bound	75	3	64	2	6	1
Combined	164	5	144	3	10	2

Appendix B. Public Involvement Materials

You are Invited!

Row River Trail Corridor Plan Public Open House



Lane County, in partnership with the Bureau of Land Management (BLM), invites you to help us create a Corridor Plan for the Row River Trail system. At this first public open house, we want to hear from you regarding any safety concerns along the trail, and any future improvements you would like to see in the Corridor Plan.

We will also have some design concepts for consideration. This information will be used as we move forward to develop alternatives to improve the trail system. We look forward to seeing you!

December 4, 2012

3:30 - 5:00 PM Session

Presentation 3:30 - 4:15

Feedback 4:15 - 5:00

5:30 - 7:00 PM Session

Presentation 5:30 - 6:15

Feedback 6:15 - 7:00



Cottage Grove City Hall
Council Chambers
400 E. Main Street, Cottage Grove



For more information, contact Lydia McKinney at Lydia.McKinney@co.lane.or.us or (541) 682-6930 or visit our website at www.lanecounty.org/rowrivertrail

ROW RIVER TRAIL CORRIDOR PLAN

Open House

December 4, 2012

Public Comments Received

“INDICATE YOUR PREFERENCE” DOT EXERCISE RESULTS

Option 1 Overcrossing		Option 2 Undercrossing Straight		Option 3 Undercrossing Angled		Option 4 P.H.B		Option 5 Do Nothing	
Favorite	Least Preferred	Favorite	Least Preferred	Favorite	Least Preferred	Favorite	Least Preferred	Favorite	Least Preferred
7	1			14			12	1	5

WRITTEN COMMENTS

- Thanks for the opportunity! Suggest someone do some data gathering of driver and pedestrian by having the intersections, especially MP 4.0, to see who look, stops, slows, etc... Also, need for root control along the trail to eliminate bumps is sorely (yes, pun intended!) needed.
- The new signage is much more visible. Like the level equestrian crossings. Like both the short tunnel undercrossing and the over crossing. Concerned about the long, straight-through tunnel about bikers speeding through tunnel with crash potential. ADA accessibility and children in push chairs and wheel chairs. Are electric wheel-chairs considered motor vehicles? How maintainable are the alternatives?
- Why should tax payers be burdened with expensive modifications to accommodate a few people who will ignore traffic signs? A staggered gate would be the best.
- Option 3, Underpass, is by far the best option. As a resident adjacent to the trail I would like to see more trash receptacles. Thank you for inviting our input.
- Money needs to be raised for trail maintenance. The roadway is disintegrating and with increased usage.
- Receptacles for trash would be useful.
- I prefer Option 1, but also like Option 3. I hope that with any option, the same-grade alternative is inconvenient enough that people do not chose it over the safer alternative. I heard that any option will have a same-grade choice.
- Paint warning stripes on the trail are too close to the intersections to serve as a warning to most cyclists.
- All posts on trails represent obstacles to cyclists as a hazard. Those that are at or close to intersections divert the rider’s attention from watching and clearing the intersection. The likelihood of motor vehicles on the trail due to lack of posts is low. Therefore, recommend removal of all posts/signs in the trail or within 2 feet of pavement.
- Option #2. Also protection of water line when trimming.
- #3 by far the best option with the fewest potential problems. #4 would be worse than doing nothing. Thank you for the presentation.
- Please review the attached documents for recommendations about the use of bollards and alternatives for them. (Attached is the Manual on Uniform Traffic Control Devices for Streets and Highways)

ROW RIVER TRAIL CORRIDOR PLAN
Open House
December 4, 2012
Additional Public Input Received

AMENITIES

- Water for dogs

CONSTRUCTION

- We may need temporary construction easements
- Water line that feeds Cottage Grove may impact construction
- Utility relocation at their expense

CORRIDOR PLAN

- Bike volume/counts: Analyze what's happening
- Qualitative analysis (quantitative) of needs at each intersection
- Can there be a risk assessment in Corridor Plan?
- Crossing study: Defining fine

EDUCATION

- Education
- Education: Unique trail system in that bikes yield to cars
- Bikes don't follow rules

FUNDING

- Tourism money for funding
- What if no grant? Are there low cost solutions?
- Tourism money: Promotional/brochures/public service announcements

NEED FOR IMPROVEMENTS

- Is it your opinion that something has to be done?

ROAD CROSSING DESIGN ALTERNATIVES

- Flashing lights idea (passive detection) for both (or either cars or bikes)
- PHB: Proven technology: Lessons learned
- Bike racers: Which option works best for them?
- Crossing needs to be perpendicular to road regardless
- Just realign the trail
- Ongoing maintenance costs of all options
- Cost for Option #3 makes sense
- Is additional ROW needed?

ROAD CROSSING GRADE SEPARATED DESIGN ALTERNATIVES

- Concern about angle of underpass
- Lighting in short tunnel
- Graffiti on bridge vs. tunnel
- Exposure of overpass

ROAD CROSSING TRAIL DESIGN

- Rumble strips for bikes
- Location of stop bars too far out
- Road signs (up ahead) or name of road
- Stop signs too high
- You can't identify the crossing: suggest color

ROAD SAFETY

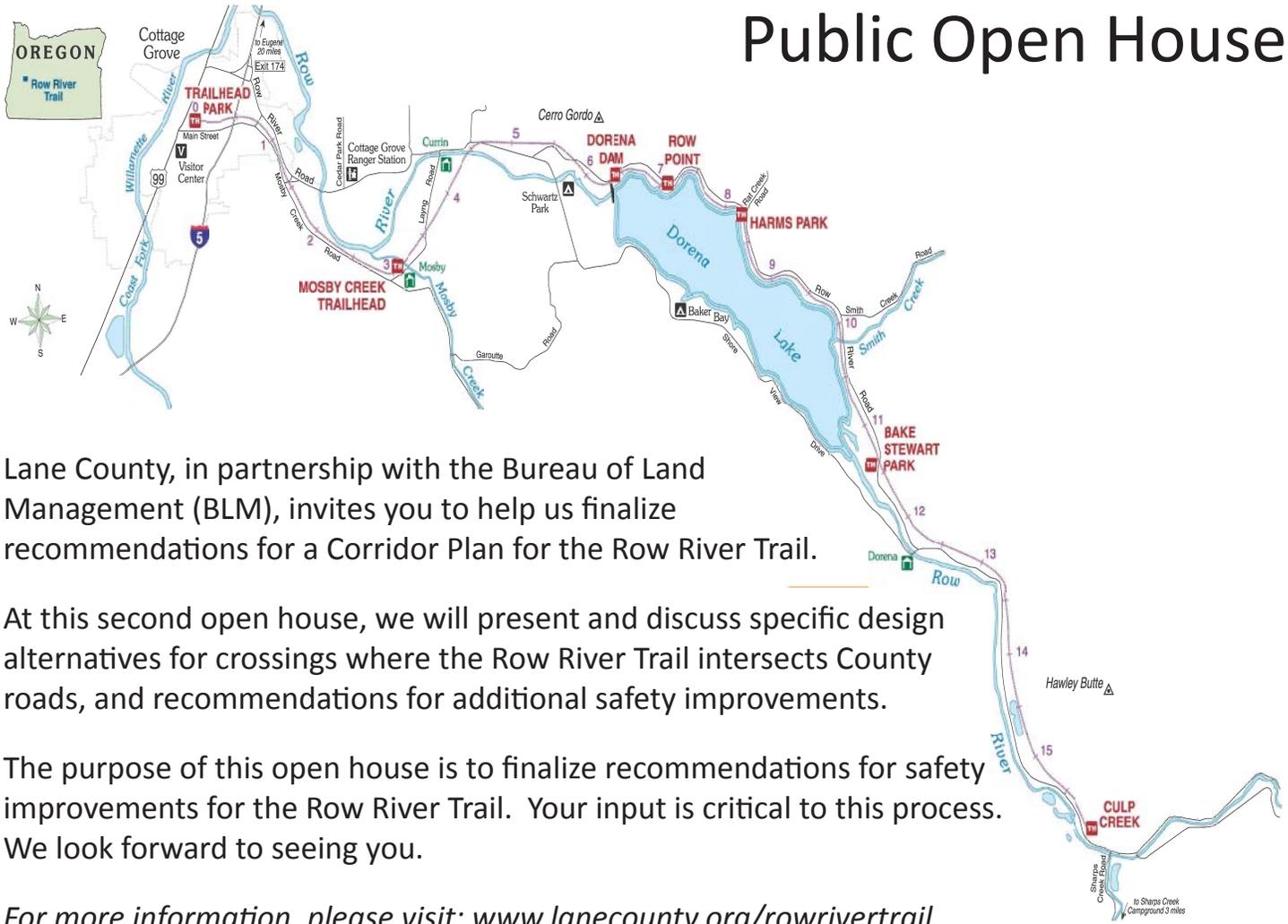
- Sunset blinds drivers at M.P. 5.4

TRAIL DESIGN

- Trail paving: Condition of trail
- Width of trail
- Safety of trail
- Trees on trail

You are Invited!

ROW RIVER TRAIL CORRIDOR PLAN Public Open House



Lane County, in partnership with the Bureau of Land Management (BLM), invites you to help us finalize recommendations for a Corridor Plan for the Row River Trail.

At this second open house, we will present and discuss specific design alternatives for crossings where the Row River Trail intersects County roads, and recommendations for additional safety improvements.

The purpose of this open house is to finalize recommendations for safety improvements for the Row River Trail. Your input is critical to this process. We look forward to seeing you.

For more information, please visit: www.lanecounty.org/rowrivertrail

Date: June 12, 2013
Time: 3:00 - 7:00 PM
Location: Cottage Grove Community Center
700 E. Gibbs Avenue, Cottage Grove



For more information:
Lydia McKinney, Senior Planner
(541) 682-6930
Lydia.McKinney@co.lane.or.us
www.lanecounty.org/rowrivertrail

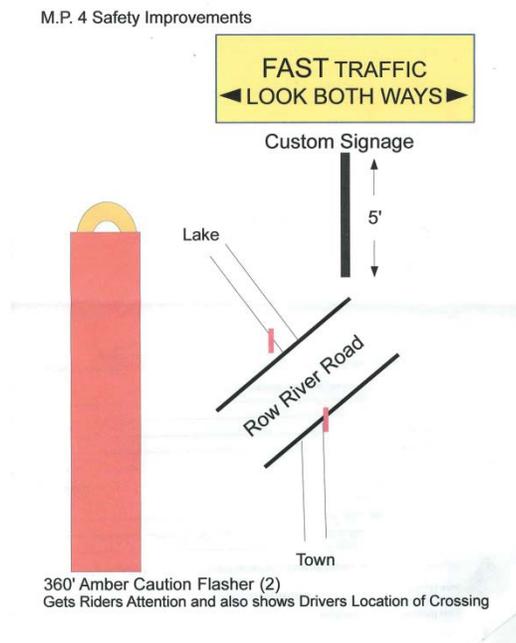
ROW RIVER TRAIL CORRIDOR PLAN
Open House: June 12, 2013
Public Comments Received

MILE POST 4.0 – WHAT DO YOU PREFER? Exercise Results

PUBLIC PREFERENCE	OVERCROSSING	STRAIGHT UNDERCROSSING	PERPENDICULAR UNDERCROSSING	AT GRADE CROSSING
Favorite	3	0	11	4
Least Favorite	6	2	2	7

WRITTEN COMMENTS

- Recommend removing trees to open up view.
Staff Note: Comment references intersection of Row River Connector #1 and Mosby Creek Road.
- Consider using laser detection, bollards along trail that shoot a beam across the trail. Have two sets on each side of the crossings. The 2 beams will establish direction so the lights don't signal when people are going away from the crossing. Detection can turn on lights along highway and also stop sign for pedestrians. These could also be used to gather data as was suggested in the other comments you've heard. Tell how many people use trail.
- The crossing @ Row River Connector needs to have view and SSD checked. Can't see far enough to react to traffic.
- On Layng Road crossing stop sign should be replaced with a yield sign. No lights are needed. Existing road signage is very good.
- See attached signing plan. Given during meeting.



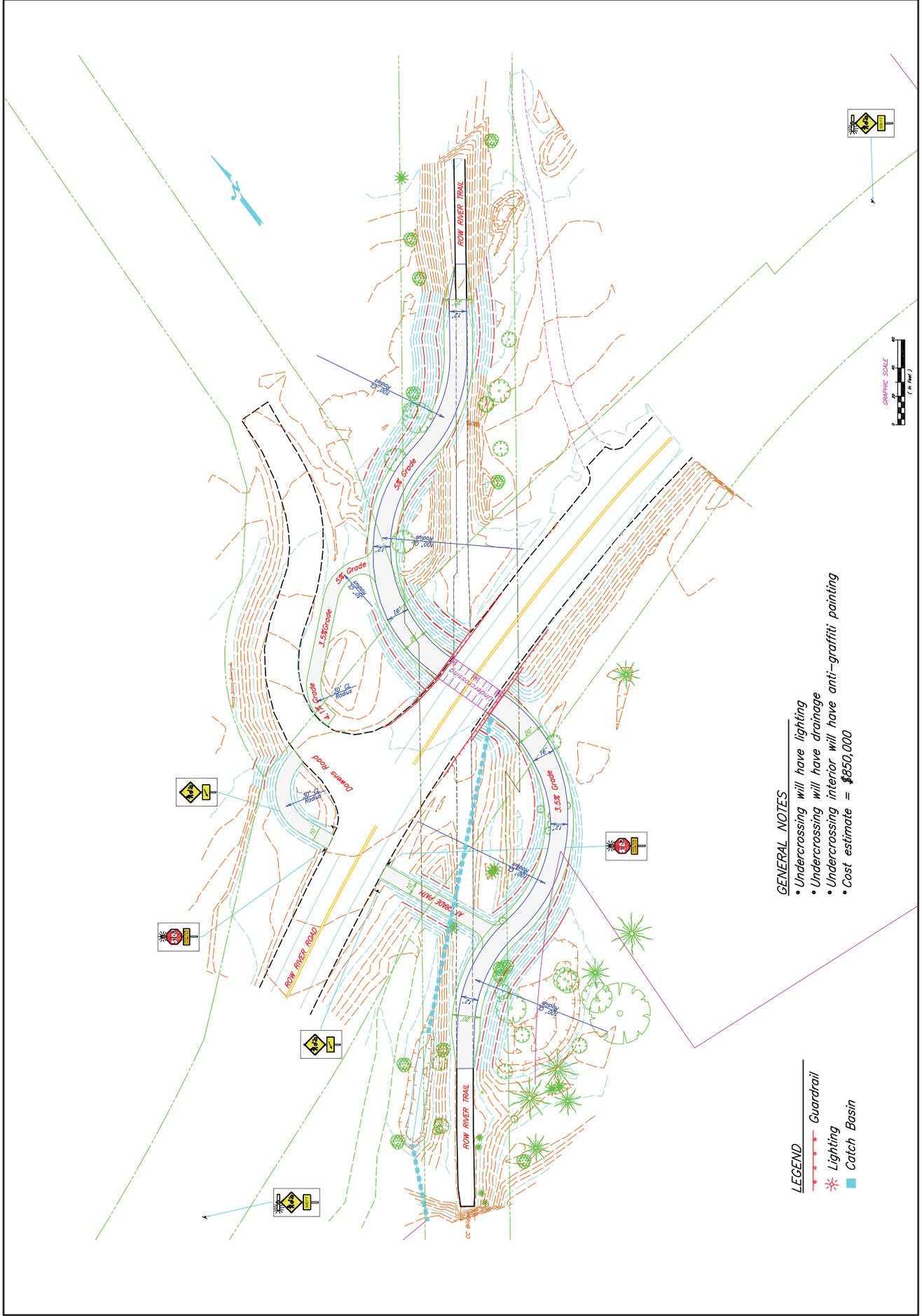
- First – Love the trail, use it often. Suggest that the bollards be either removed or moved. They are a hazard esp for young riders & do not stop ATV, cycles anyway. Maybe take out a section of them 4 – 5

miles & see what happens. Second option: move them back 50' so you are through them when about to cross road. Or just 1 & for sure take out the ones at driveways.

- Thanks for the information sent on this meeting and the safety recommendations for the crossing #4 on the Row River Bike Trail. We are away and unable to attend. We ride and walk on this trail regularly and consider it to be a dangerous crossing – even with the new signs and clearing of tree lower branches at the curves. The danger becomes more severe at afternoon times when the sun is setting and greatly affects automobile driver visibility. We support the safety measure of the undercrossing being considered and proposed as the best safety solution for this crossing – it will eliminate the danger problem completely for the thousands of riders/hikers and walkers that will use this trail now and in the years to come.
- Downtime for construction? Like the “horizontal speed bump” option for MP 4 (forces riders to slow/stop/look/listen before crossing – especially downhill grade). Don’t feel comfortable with any underpass – attracts unsavory characters and behavior. Love the trail!
- At Mile Post 14, personal belongings are piled on trail (behind old mill). Bollards not in place at Mile Post 15.7.
- I like overhead bridge for train – safe! & no road crossing. Long, diagonal tunnel may not be safe due to isolation & speeding bicycles. I greatly appreciate this process & wish you well.

Appendix C. Preferred Design Alternative

Preferred Alternative: Mile Post 4.0 Row River Road



GENERAL NOTES

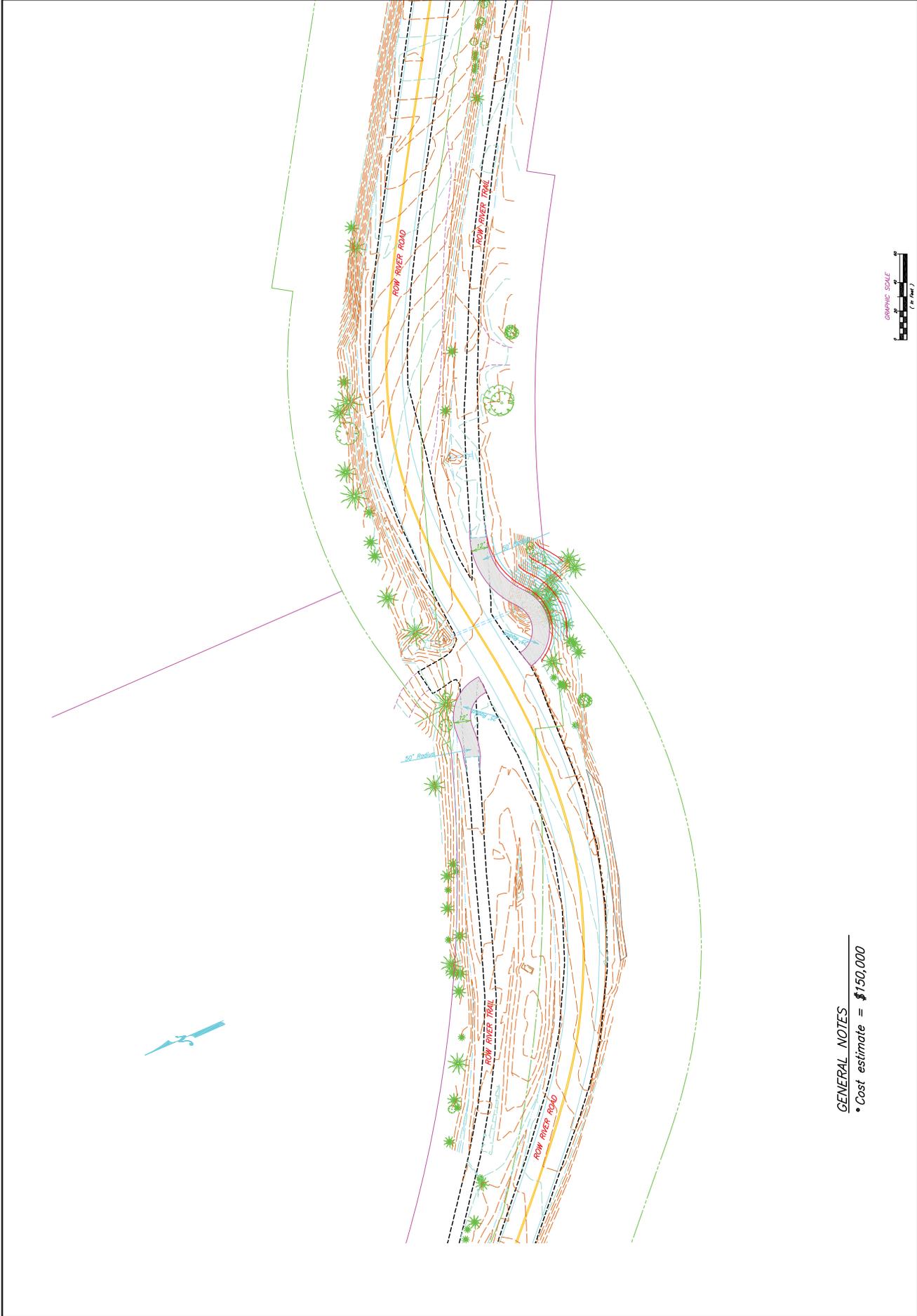
- Undercrossing will have lighting
- Undercrossing will have drainage
- Undercrossing interior will have anti-graffiti painting
- Cost estimate = \$850,000

LEGEND

- Guardrail
- - - - - Lighting
- * Catch Basin

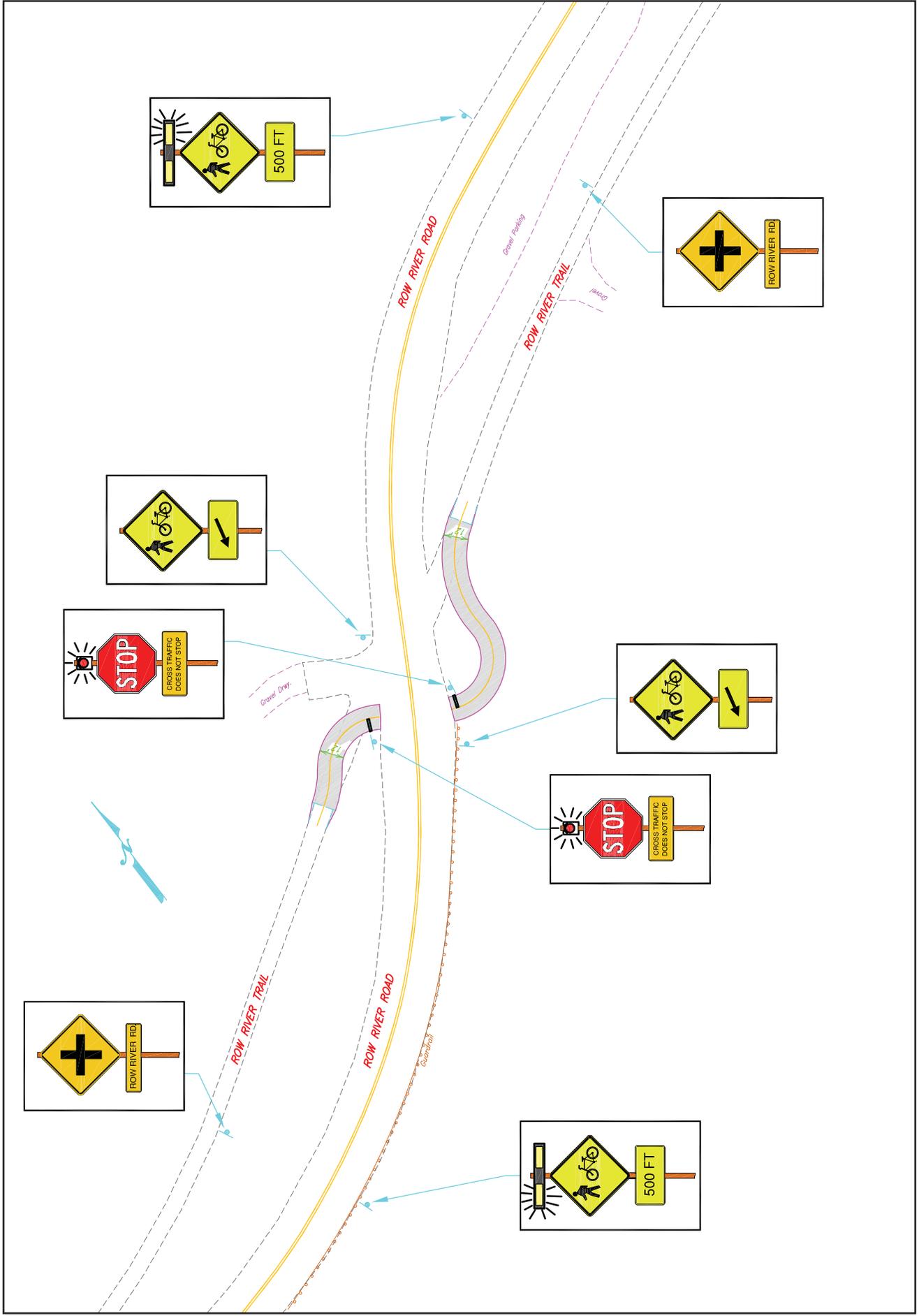


Preferred Alternative: Mile Post 5.4 Row River Road

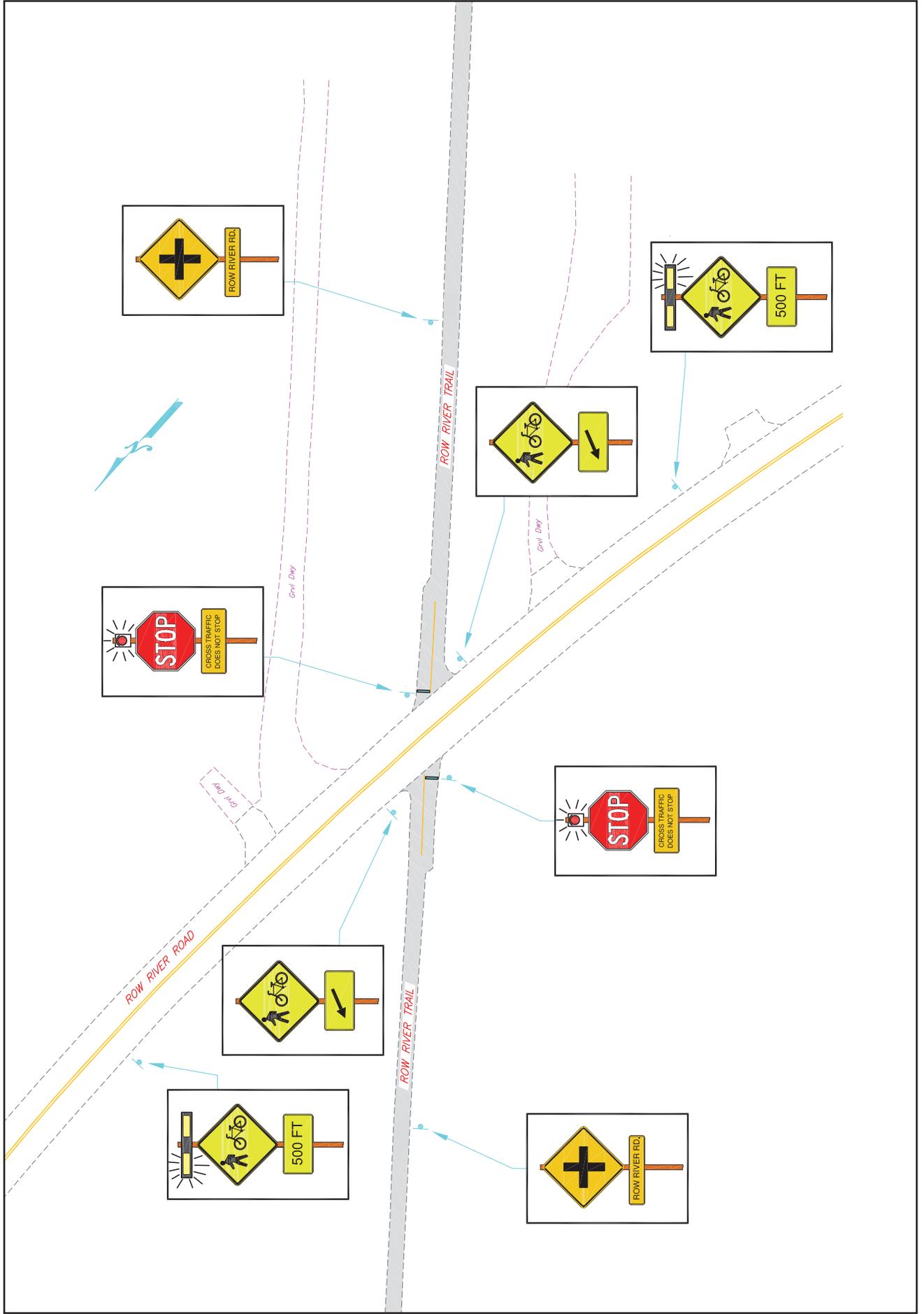


GENERAL NOTES
• Cost estimate = \$150,000

Signing, Striping, and Lighting: Mile Post 5.4 Row River Road



Signage, Striping, and Lighting: Mile Post 11.0 Row River Road



Signing, Striping, and Lighting: Mile Post 0.75 Laying Road

