



MCLOUGHLIN-CANEMAH TRAIL PLAN

Alignment Feasibility & Evaluation Report

Prepared by Alta Planning + Design
with Northwest Geotech, Inc and Pacific Habitat Services, Inc
For the City of Oregon City, Oregon

November, 2017



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ACKNOWLEDGMENTS



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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

OVERVIEW

In 2016, the City of Oregon City, in partnership with the Oregon City Trail Alliance, the McLoughlin Neighborhood Association, and the Clackamas County Historical Society, was granted a Nature in Neighborhoods grant of \$25,000 to fund a planning effort for the McLoughlin-Canemah Trail (MCT), a segment of the larger Oregon City Loop Trail. The objective was to determine Permanent and Interim trail alignments and safety upgrades to create a safer pedestrian and bicycle route between two neighborhoods while connecting city amenities along the way.

Goals for this trail were developed based on the results of a survey taken by the project's Community Advisory Group members, and from conversations with group members and City staff.

GOALS: The McLoughlin-Canemah Trail should:

- Provide an attractive route of travel for people walking and biking between the McLoughlin Promenade and Canemah Children's Park that connects residential areas, parks, and businesses.
- Strive to provide facilities that serve all ages and abilities, including people with disabilities or mobility limitations.

- Minimize risk and conflicts between automobile traffic, bicycle traffic, and pedestrians.
- Provide a trail design that is context-sensitive, particularly to the Canemah National Register Historic District, McLoughlin Promenade, and the McLoughlin Conservation District.
- Provide experiences and views of Willamette Falls
- Celebrate experiences of nature while protecting and enhancing native vegetation and habitat within the corridor.
- Discourage criminal activity and provide a secure environment for all users.
- Responsibly utilize public funds to provide a high-quality trail experience both now and into the future.
- Avoid use of private property in the Canemah National Register Historic District.

PROJECT STUDY AREA

The MCT study area includes just over 100 acres bounded by 2nd Street to the north, McLoughlin Blvd/Hwy 99E to the west, S. High St to the east, and the Canemah Neighborhood Children's Park to the south. Alignment alternatives connect and include portions of the McLoughlin Conservation District with the Canemah National Register Historic District between the McLoughlin Promenade and Canemah Neighborhood Children's Park.

PARTNERS, STAKEHOLDERS & PUBLIC ENGAGEMENT

The project team engaged with a number of partners, stakeholders, and members of the community throughout all phases of this project. Partners included Portland General Electric and the Oregon Department of Transportation.

A Community Advisory Group was assembled with representative from several stakeholders who helped to define project goals, evaluate alignment alternatives, and select the Interim and Permanent alignments.

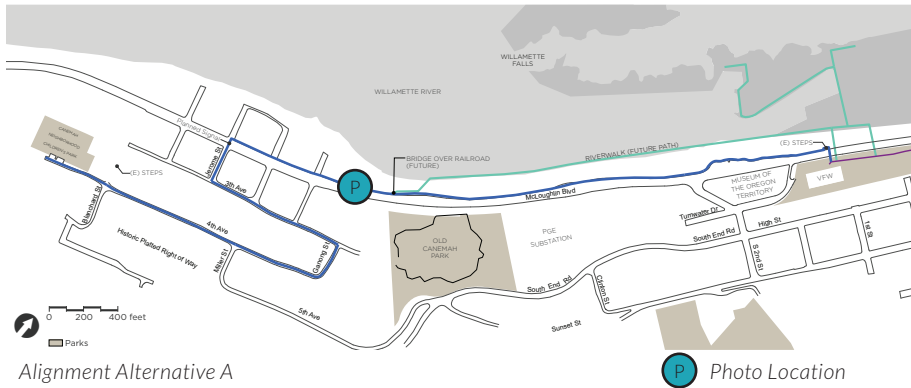
The local community was engaged in the project primary through a Greenway for Day event, which attracted 70-80 participants during a four hour event that included walking a portion of the alignment and responding to a series of Design Toolkit poster boards showing traffic calming strategies.

The project team also received 56 survey responses from the community emphasizing the value of Old Canemah Park, views of Willamette Falls, and the challenges associated with 99E, steep grades, traffic calming, and wayfinding.

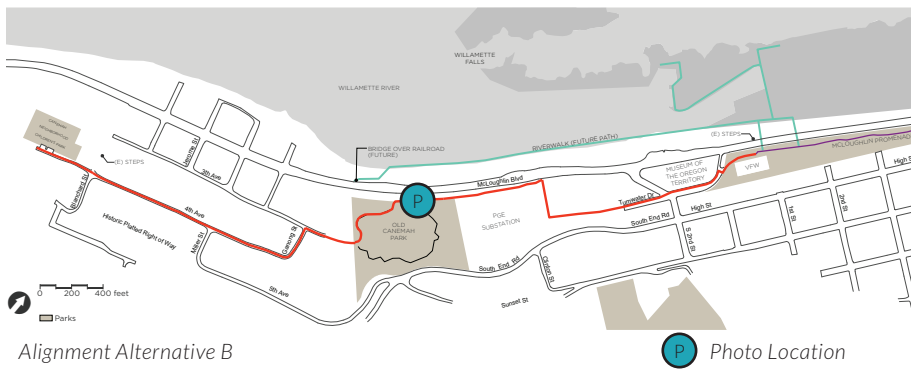
TABLE 1. ALIGNMENT ALTERNATIVES - EVALUATION MATRIX

QUALITY			SAFETY		PROPERTY			CONSTRAINTS		OVERALL EVALUATION		RECOMMENDATIONS	
QUALITY OF EXPERIENCE	WILLAMETTE FALLS VIEWS	ALL AGES & ABILITIES	VEHICLE CONFLICT RISK	CRIME RISK	HISTORIC DISTRICT	CANEMAH IMPACTS	PROPERTY IMPACTS	GEOTECH CONSTRAINTS	ENVIRONMENTAL IMPACTS	OVERALL SCORE	ORDER OF MAGNITUDE COST	INTERIM RECOMMENDATION	PERMANENT RECOMMENDATION
ALIGNMENT ALTERNATIVE - A													
											\$6.0 - \$6.5 M	Not Recommended	Not Recommended
ALIGNMENT ALTERNATIVE - B													
											\$2.1 - \$2.6 M		
ALIGNMENT ALTERNATIVE - C													
											\$2.6 - \$3.0 M	Not Recommended	Not Recommended

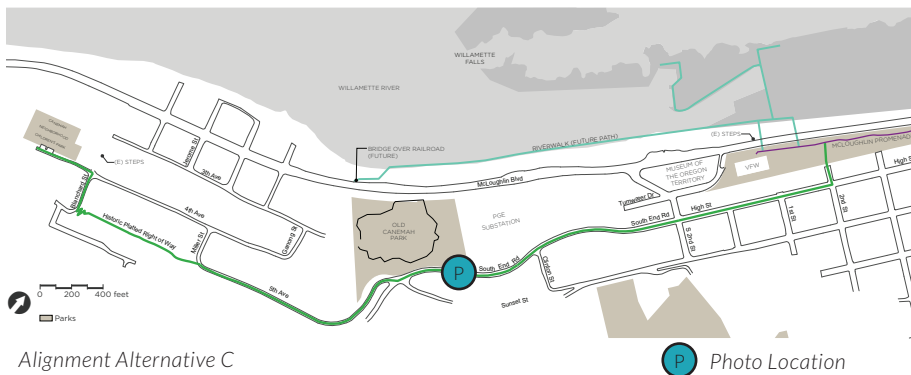
EXECUTIVE SUMMARY



McLoughlin Blvd boardwalk, looking north



Old Canemah Park Trail, looking north



S. High Street, existing shoulder, looking south

ALIGNMENT ALTERNATIVES EVALUATION

The three Alignment Alternatives were evaluated and compared based on criteria derived from the Project Goals: Quality of Experience, Willamette Falls Views, Access for All Ages and Abilities, Vehicle Conflict Risk, Crime Risk, Impacts to Canemah National Register District, General Property Impacts, Geotechnical Constraints, Environmental Constraints, and Cost Estimates (Table 1).

The evaluations were based on findings from field reconnaissance, terrain analysis, geotechnical evaluation, environmental evaluation, and ongoing dialogue throughout the project between the project team, key partners, the Community Advisory Group, and the general public. Summaries of opportunities and constraints associated with each alignment alternative are listed below:

ALIGNMENT A - OPPORTUNITIES

- Boardwalk offers an intimate connection with Willamette Falls
- Alignment along roadway is highly visible

ALIGNMENT A - CONSTRAINTS

- The experience along McLoughlin traffic can be uncomfortable
- Would require widening sidewalk and boardwalk within constrained ODOT right of way

ALIGNMENT B - OPPORTUNITIES:

- Offers direct connections between neighborhoods and parks
- High quality views of Willamette Falls

ALIGNMENT B - CONSTRAINTS:

- Segment along McLoughlin Blvd has significant roadway width constraint
- Alignment using the existing VFW driveway assumes a modified automobile entrance to the VFW to/from S 1st St.

ALIGNMENT C - OPPORTUNITIES

- Most slopes are comfortable for people walking and biking
- Provides access on South End Rd for people walking and biking

ALIGNMENT C - CONSTRAINTS

- Doesn't connect neighborhoods to Old Canemah Park
- Width constraints along S. High Street could be cost-prohibitive



INTERIM ALIGNMENT RECOMMENDATION

The Interim trail alignment recommendation begins at the McLoughlin Promenade and connects via 2nd Street to High Street. From there, the trail turns onto S. 2nd Street and continues west to McLoughlin Blvd/Hwy 99E. Using the existing traffic signal crossing, the trail continues on the east side of McLoughlin Blvd/Hwy 99E until reaching the Portland General Electric (PGE) substation entrance.

From the PGE entrance, the Interim and Permanent trail recommended alignments are identical. The trail connects between the PGE substation and McLoughlin Blvd/Hwy 99E, enters Old Canemah Park, and connects to the Canemah National Register District neighborhood. The route through the neighborhood follows Marshall Street and 3rd Avenue west/southwest, turns onto Ganong Street, and follows 4th Avenue until reaching the Canemah Neighborhood Children's Park.

DESIGN ASSUMPTIONS - INTERIM

- Wayfinding and shared use signage and pavement markings between 2nd Street and McLoughlin Blvd
- Add connection between McLoughlin Promenade and High St
- Reinforcement at top of basalt cliff along McLoughlin Blvd
- New multi-use path along edge of PGE substation property
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 3rd Ave, Ganong St, and 4th Ave.

PERMANENT ALIGNMENT RECOMMENDATION

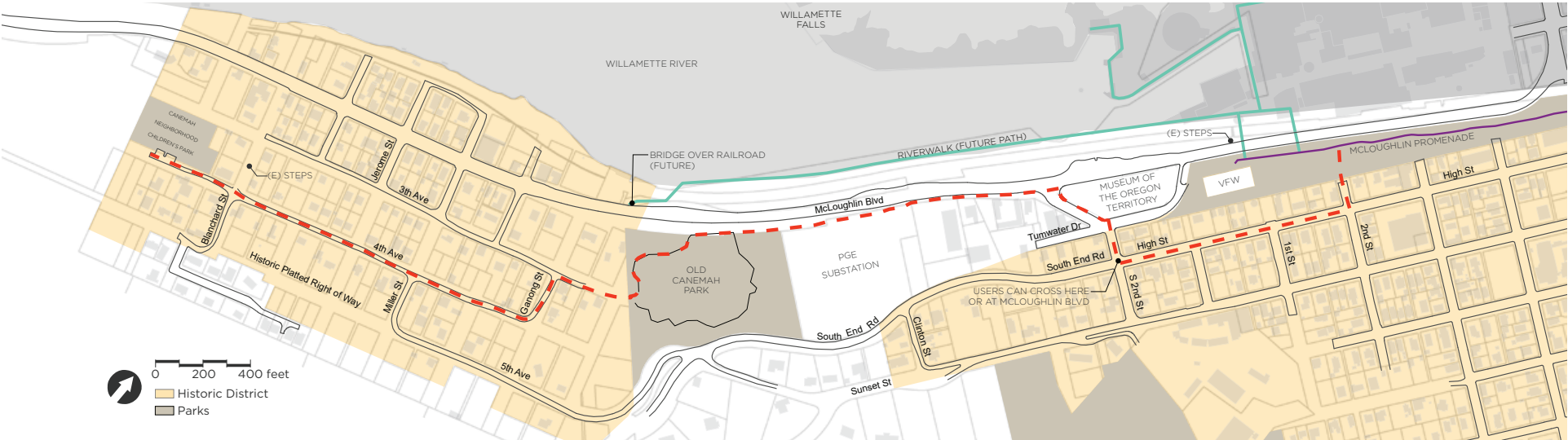
The Permanent trail alignment recommendation begins at the McLoughlin Promenade and connects to Tumwater Drive via the Three Rivers VFW Post 1324 parking lot and a dedicated non-motorized path down the existing driveway. From there, the trail follows Tumwater Drive, crosses at S. 2nd Street, and continues south/southwest on Tumwater Drive through re-developed parcels, turning toward McLoughlin Blvd/Hwy 99E just north of the Portland General Electric (PGE) substation property.

From the PGE entrance, the Interim and Permanent trail recommended alignments are identical. The trail connects between the PGE substation and McLoughlin Blvd/Hwy 99E, enters Old Canemah Park, and connects to the Canemah National Register District neighborhood. The route through the neighborhood follows Marshall Street and 3rd Avenue west/southwest, turns onto Ganong Street, and follows 4th Avenue until reaching the Canemah Neighborhood Children's Park.

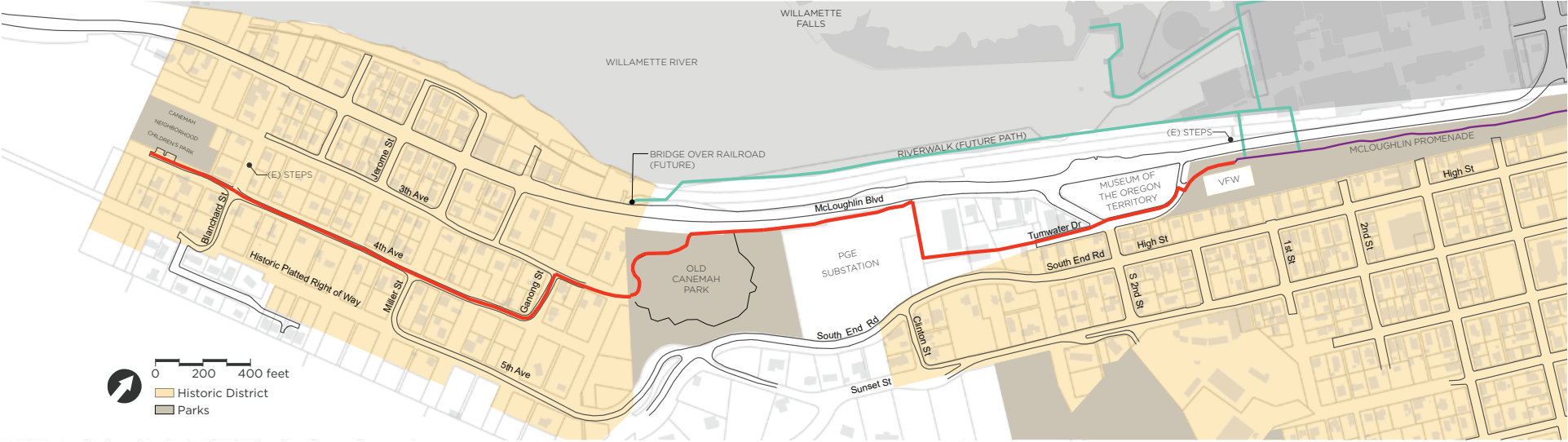
DESIGN ASSUMPTIONS - PERMANENT

- Possible automobile connection to/from VFW via 1st St allows dedicated ped-bike connection to Tumwater Dr. Left turn from McLoughlin Blvd onto Tumwater Dr to be closed.
- Widen sidewalk to shared use path width along Tumwater Dr
- Intersection crossing at S 2nd Ave and Tumwater Drive re-designed for safety
- Trail can be installed along with future/expected development
- Easement associated with PGE substation property
- Widen trail through Old Canemah Park
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 3rd Ave, Ganong St, and 4th Ave. Speed limit reduced to 20 MPH.
- Cost estimate includes reinforcement at top of basalt cliff.

Interim Trail Alignment Recommendation



Permanent Trail Alignment Recommendation





INTRODUCTION

Project Goals and Objectives

For many years, Oregon City has envisioned safer connections between the Canemah and McLoughlin neighborhoods, the Willamette River and Willamette Falls, and celebrated parks that attract residents and visitors of all ages and abilities.

Currently, there are no safe and viable pedestrian or bicycle connections between the Canemah Neighborhood and the McLoughlin Promenade including to points north such as Jon Storm Park, Clackamette Park, and Downtown Oregon City. The McLoughlin-Canemah Trail (MCT) will provide these much needed pedestrian and bicycle connections for the community.

In 2016, the City of Oregon City, in partnership with the Oregon City Trail Alliance, the McLoughlin Neighborhood Association, and the Clackamas County Historical Society, was granted a Nature in Neighborhoods grant of \$25,000 to fund a planning effort for the MCT, a segment of the larger Oregon City Loop Trail. The City provided a local match through funding significant staff time and volunteer hours. The objective of the grant-funded trail plan project was to determine an alignment for a permanent trail, and to identify an Interim trail alignment and safety upgrades. While each entity in the partnership had priorities and reasons for supporting the project, the overall objectives were to create a safer pedestrian and bicycle route between two neighborhoods while connecting city amenities along the way.

Goals for this trail were developed based on the results of a survey taken by the project's Community Advisory Group members, and from conversations with group members and City staff. The Community Advisory Group approved the goals after its first meeting in July 2017. These goals were used to develop the trail alternatives and to evaluate the alternatives against each other. Goals are listed to the right.

Site Setting

Located in Oregon City approximately 15 miles southeast of downtown Portland, the McLoughlin-Canemah Trail study area northern trail-head is located approximately half a mile south of Downtown Oregon City.

Oregon City was established on the east bank of the Willamette River at Willamette Falls, the furthest upstream extent for tidal influence on the river, a historic fishing location for native peoples, and a major terminus for water-based navigability.

The local MCT study area includes just over 100 acres bounded by 2nd Street to the north, McLoughlin Blvd/Hwy 99E to the west, S. High St to the east, and the Canemah Neighborhood Children's Park to the south. Alignment alternatives connect and include portions of the McLoughlin Conservation District with the Canemah National Register Historic District between the McLoughlin Promenade and Canemah Neighborhood Children's Park.

Much of the study area is characterized by steep topography including basalt bluffs that line McLoughlin Blvd/Hwy 99E to the south. Willamette Falls lies to the northwest and offers high quality views to local residents and visitors, soon to become more accessible with the Willamette Falls Legacy Project.

There are several notable destinations nearby. Near the center of the study area, between the two historic districts, are located Three Rivers VFW Post 1324, the Museum of the Oregon Territory, and a Portland General Electric (PGE) substation. Old Canemah Park is also near the center of the study area and includes viewpoints of Willamette Falls, a rich forested area, interesting and variable topography, and opportunities for small gatherings.

Project Goals

The McLoughlin-Canemah Trail should...

- Provide an attractive route of travel for people walking and biking between the McLoughlin Promenade and Canemah Children's Park that connects residential areas, parks, and businesses.
- Strive to provide facilities that serve all ages and abilities, including people with disabilities or mobility limitations.
- Minimize risk and conflicts between automobile traffic, bicycle traffic, and pedestrians.
- Provide a trail design that is context-sensitive, particularly to the Canemah National Register Historic District, McLoughlin Promenade, and the McLoughlin Conservation District.
- Provide experiences and views of Willamette Falls.
- Celebrate experiences of nature while protecting and enhancing native vegetation and habitat within the corridor.
- Discourage criminal activity and provide a secure environment for all users.
- Responsibly utilize public funds to provide a high-quality trail experience both now and into the future.
- Avoid use of private property in the Canemah National Register Historic District.

INTRODUCTION

Regional Context

By providing a safe and attractive connection to the McLoughlin Promenade, the MCT will also connect to the Willamette River Greenway Trail, McLoughlin Historic District Trail, Trolley Trail, Willamette Terrace walkway, and other destinations and points of interest in Oregon City.

Another connection that will be made possible as a result of the MCT is with the Willamette Falls Legacy Project and Riverwalk trail, which connects Oregon City to Willamette Falls.

Together, these trails will provide rich transportation and recreational opportunities for residents and visitors alike. In addition, just south of the Canemah Neighborhood Children's Park is Metro's 332 acre Canemah Bluff Natural Area. This natural area includes trails, overlooks, and captivating views of the Willamette River and Willamette Falls.

Environmental and Geotechnical Considerations

Approximately 40% of the study area is included in Oregon City's Natural Resources Overlay District (NROD), which is intended to protect habitats and associated functions of streams, riparian corridors, wetlands and the regulated wildlife found in the City. NROD provides a framework for the protection of Metro Titles 3 and 13 lands and addresses Stateside Planning Goal 5 within the City. Wetlands are the most notable element within the study area.

Nearly 85% of the study area is mapped by the Oregon Department of Geology and Mineral Industries (DOGAMI) as having potential geological hazards because of past landslides or steep slopes. These potential hazards are not a grave concern for many of the alternative alignment segments which follow existing paved roads. However, geotechnical and slope stability concerns are highest where new path construction would require fill on the downhill side of slopes over historic landslide deposits.

Relevant Projects and Plans

The City of Oregon City adopted a [Trails Master Plan](#) in 2004. That plan identified dozens of planned and proposed trails to create a trail network throughout the City. The Oregon City Loop Trail was identified as a regional trail within the Master Plan. As a regional trail, the Oregon City Loop Trail was envisioned as a wide shared use path to serve people walking and bicycling, people using mobility devices, and in some cases, equestrians. In the Master Plan, the McLoughlin-Canemah Trail (MCT) was also identified as a shared use path and links the Loop Trail to trails in the downtown area. The adoption process for this plan will update the Loop Trail concept to officially include the MCT and other connections.

In 2014, the City conducted an analysis identifying gaps in the sidewalk and trail network between the Promenade and the Canemah Children's Park. This internal work set the stage for the public planning process for the MCT.

The concept plan for the Willamette Falls Riverwalk, which will provide public access to Willamette Falls from downtown Oregon City, was finalized in June 2017. The Riverwalk includes a pedestrian bridge from the old Blue Heron Mill site up to the McLoughlin Promenade. While the concept plan presents several options for the exact location of that pedestrian bridge, all of them are located near the VFW building on the bluff. Adopted plans show the MCT connecting to the Promenade and the pedestrian bridge.

The Oregon City [Transportation System Plan](#), adopted in 2013, includes two shared use paths and family friendly routes within the MCT corridor, along with crossing improvements that could be part of the trail. The following TSP Projects are within the vicinity of the MCT.

Table 1. Oregon City 2013 TSP Projects within MCT Project Area

PROJECT NUMBER	PROJECT NAME	PROJECT EXTENT	DESCRIPTION	PRIORITY
S36	Tumwater-4th Shared-Use Path	Tumwater Dr to 4th Ave	Add a shared-use path through Old Canemah Park connecting 4th Ave to the Tumwater/South 2 nd intersection	Long-term
S37	OR 99E (south of Railroad Avenue) Shared-Use Path	Railroad Ave to UGB	Add a shared-use path along the north side of the street. Rehabilitate existing boardwalk between South 2nd Street and Hedges Street	Long-term Phase 2
C36	Pedestrian Crossing at Jerome St & 99E	OR 99E at Jerome St	Install crosswalk and pedestrian activated flasher on OR 99E in Canemah	Long-term Phase 2
FF21	Canemah Family Friendly Route	Old Canemah Park to Cemetery Rd	This site is located within the Canemah National Register District. Add wayfinding and shared lane markings. Add a walking path on one side of the street, if approved by the Historic Review Board. Route via 5th Avenue, Blanchard Street, 4th Avenue, Ganong Street and 3rd Avenue	Long-term Phase 4
FF22	Tumwater-South 2 nd Family Friendly Route	Waterboard Park to Tumwater and 4th St Shared Use Path to McLoughlin Promenade	Add sidewalks on both sides of the street. Add wayfinding and shared lane markings. Route via Tumwater Drive, South 2nd Street and Waterboard Park Road	Long-term Phase 4

Regional plans that include the MCT and/or the Oregon City Loop Trail include the Metro [Regional Transportation Plan](#) and [Regional Trails Plan](#).

INTRODUCTION

Important Agencies and Partners

Metro, the region's elected government agency, provides trails grants through its Parks and Nature department. Grants are funded through the bond measure that voters approved to create better access to nature and protect healthy habitat in and near the region.

Portland General Electric (PGE) operates a substation on its property within the trail corridor. The substation is located next to Old Canemah Park and there are existing pedestrian desire paths that cross through the PGE property to connect into the park.

The Oregon Department of Transportation (ODOT) owns and maintains McLoughlin Blvd/99E, which runs parallel to part of the trail corridor.

Clackamas County maintains much of the area's infrastructure including South End Road within the project area. Oregon City is the county seat.

Stakeholder and Public Engagement Summary

The McLoughlin-Canemah Trail will pass through an urban area with many neighbors and stakeholders. These include:

- The Three Rivers Veterans of Foreign Wars Post 1324 (VFW) building is located on the bluff at the junction with the McLoughlin Promenade, Willamette Falls Riverwalk, and McLoughlin-Canemah Trail.
- Clackamas County Historical Society (CCHS) operates the Museum of the Oregon Territory, which sits at the end of the Promenade next to the VFW and is an important destination along the future trail.
- The McLoughlin and Canemah neighborhoods both boast active neighborhood associations. McLoughlin encompasses the historic Promenade and includes some of Oregon City's oldest homes. Canemah encompasses the Canemah National Register Historic District, Old Canemah Park, Canemah Children's Park, and the Canemah Bluff Natural Area.
- Oregon City Trail Alliance (OCTA) is a nonprofit advocacy organization whose purpose is to support a strong network of walking and biking trails to expand options for walking, running, and cycling.
- The Oregon City Parks Foundation is a nonprofit formed to support maintenance and enhancement of Oregon City's parks and trails.

- Local businesses in the trail corridor are located along 99E near S. 2nd Street and include The Highland Stillhouse, Falls View Tavern, Bud's Towing, and Gerber Collision & Glass.
- Local residents in the area are potential future trail users and will be affected by the trail alignment and design.
- The City's standing committees for Historic Review, Natural Resources, Parks and Recreation, Transportation, and Citizen Involvement all have an interest in various facets of the trail plan.
- Downtown Oregon City Association (DOCA) is the stakeholder-steward of Downtown Oregon City, and aims to stimulate economic vitality and investment in the downtown and in Oregon City. DOCA sees trails and nature as an important part of the economic vitality of Oregon City.

Neighborhood and Committee Presentations

Project staff presented trail information and gathered input at meetings of the McLoughlin Neighborhood Association, Canemah Neighborhood Association, Parks and Recreation Advisory Committee, Transportation Advisory Committee, and the Historic Review Board.

Public Engagement Process

Table 2. Public Engagement Summary

PUBLIC EVENT OR MEETING	DATE	APPROXIMATE NUMBER OF ATTENDEES
Site Walk	06/27/2017	18
PGE Meeting	06/27/2017	8
ODOT Meeting	06/27/2017	6
Advisory Group Meeting #1	07/11/2017	18
Greenway for a Day	07/29/2017	80
Online Survey	07/29 – 08/07	56
Advisory Group Meeting #2	08/15/2017	18
Advisory Group Meeting #3	09/21/2017	15
McLoughlin Neighborhood Association	09/07/2017	25
Canemah Neighborhood Association	09/14/2017	15
Parks and Recreation Advisory Committee	09/28/2017	10
Transportation Advisory Committee	10/17/2017	10
Historic Review Board	10/24/2017	10

Community Advisory Group

The City brought together a Community Advisory Group for the trail planning process that included many of the stakeholders and partners listed above. The 18-member Community Advisory Group's purpose was to guide the process to establish project goals, evaluate alternatives, and provide a recommendation to the City Commission for the final trail alignment.

The Community Advisory Group began its work with a site walk on June 27, 2017. The group began at the VFW and crossed S 2nd St, walked along 99E, behind the PGE substation, and into Old Canemah Park, taking 4th Avenue to the Canemah Children's Park. They returned to the VFW using the Canemah staircase, 3rd Avenue, crossing 99E, and walking on the 99E boardwalk to the traffic light at S 2nd St. Along the way, the group stopped to discuss the opportunities and challenges of the various trail alignment options.



INTRODUCTION

Advisory Group Meetings

Over the course of three meetings, the Community Advisory Group crafted project goals, reviewed community input, evaluated various trail alignments, and arrived at consensus for a preferred trail alignment recommendation. Meeting notes are included in the Appendix.

Greenway for a Day

To gather input from residents and other future trail users, the project team organized a temporary trail event called Greenway for a Day on Saturday, July 29. The event invited citizens to experience existing conditions within the McLoughlin-Canemah Trail project corridor, to walk one of the trail alignment alternatives, and to provide comments about their experience and preferences.

Participants traveled from the Museum of the Oregon Territory to Canemah Children's Park, following the one-mile temporarily marked trail alignment. The event attracted approximately 70-80 participants over the four-hour event.

Stations were set up at the Museum of the Oregon Territory and Canemah Children's Park with surveys, games,

refreshments, maps of the alignment alternatives, and design toolbox boards showing a range of design strategies that could be employed within the trail corridor.

The project team received 56 survey responses which included the following highlights.

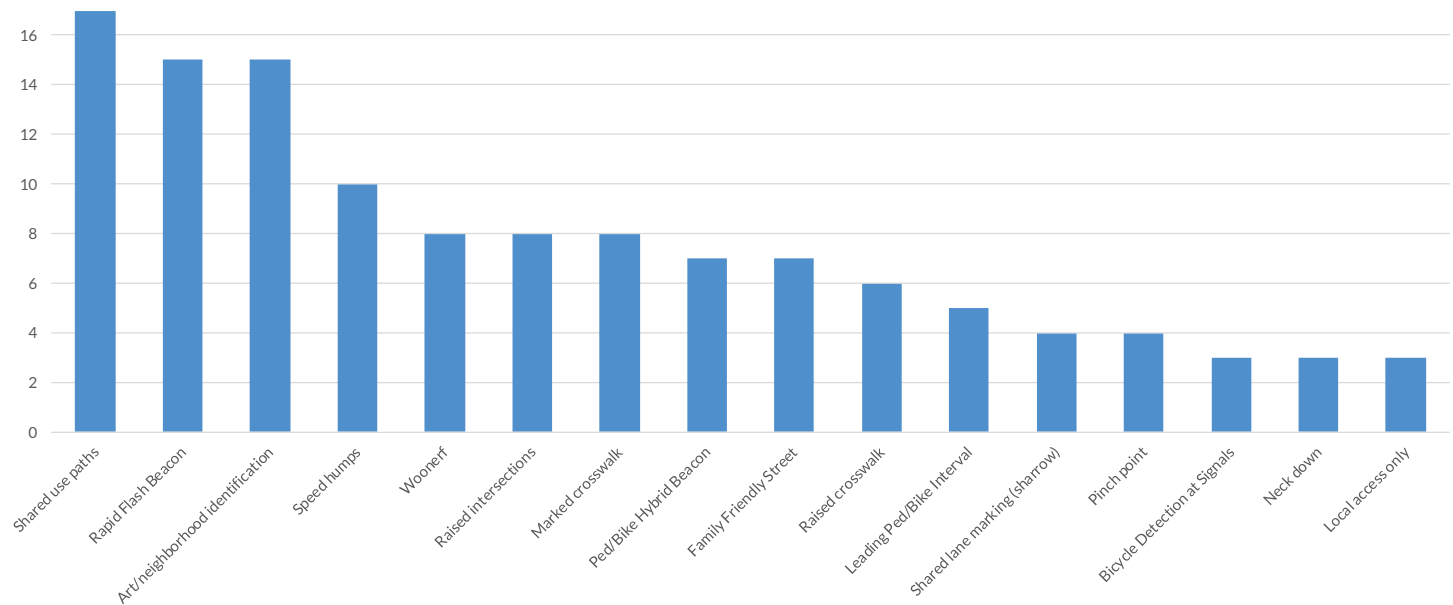
- Most participants reported that the best part of the trail experience was Old Canemah Park.
- People liked the access to nature and the view of Willamette Falls from the heavily wooded park.
- Many people identified the least favorite part of the experience as being the portion along 99E. Some comments mentioned the existing gravel path, others mentioned the traffic, and others mentioned concern for safety of that segment.
- Participants pointed out that there is currently not a safe and reasonable route for riding a bicycle between the Canemah Historic District/Children's Park and the Museum of the Oregon Territory area. This is a critical need especially as more families who want to commute to downtown Oregon City move to the neighborhood. The steep grades on Ganong Street between 3rd and 4th are challenging for cyclists and McLoughlin Blvd is unsafe

in its current condition. South End Road potentially offers the best route for cyclists but only if width could be increased, traffic calmed, and travel speeds significantly decreased to provide safe facilities for cycling.

- Many participants mentioned a need for traffic calming on sections where people walking and biking would share the roadway with vehicles. Many felt uncomfortable walking adjacent to McLoughlin Blvd without any kind of protection or buffer.
- Participants mentioned that there is a general need for trail and park wayfinding in Oregon City and that wayfinding for this project (with its many alignment jogs) will need special consideration. Specifically, people noted that a sign would be needed at Ganong Street to direct users to 4th Street to avoid the stairway on 3rd Street. The stairway entrance should also be better defined, if it is to be part of the trail alignment.

The graph below summarizes participants support for safety toolkit options presented at Greenway for a Day (Figure 1). Full survey results from the Greenway for a Day can be found in the Appendices of this report.

Figure 1. Public Support for Selected Traffic Calming Strategies



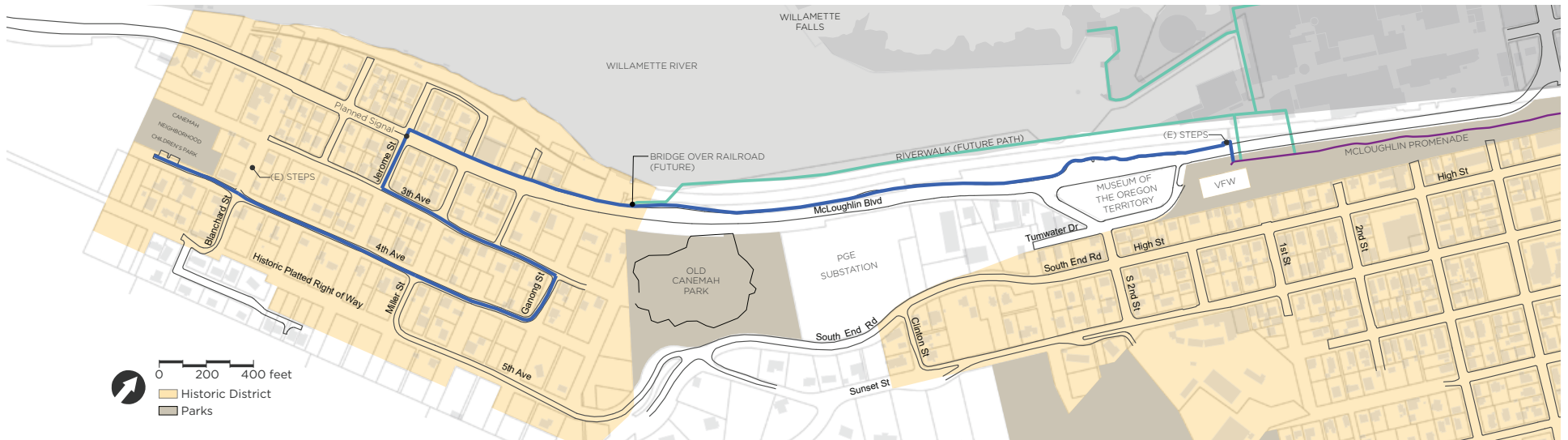
Advisory Group Roster

- Canemah Neighborhood Association
- McLoughlin Neighborhood Association
- Portland General Electric
- Oregon Dept. Of Transportation
- Metro
- Veterans of Foreign Wars (VFW)
- Citizen Involvement Committee
- Natural Resources Committee
- Transportation Advisory Committee
- Parks and Rec Advisory Committee
- Oregon City Trail Alliance or local trail advocate
- Area Property Owners/Residents (multiple)



ALIGNMENT ALTERNATIVES EVALUATION

ALIGNMENT ALTERNATIVES EVALUATION - DESCRIPTION - "A"



SUMMARY DESCRIPTION

Alignment - A (1.25 miles) begins at the McLoughlin Promenade, crosses the pedestrian bridge from the VFW over McLoughlin Blvd, and follows the McLoughlin Blvd sidewalks and boardwalk southwest to Jerome St. After crossing Jerome St, the trail continues into the Canemah Neighborhood via 3rd and 4th avenues.

DESIGN ASSUMPTIONS

- Requires expanding the existing sidewalk and boardwalk on the west side of McLoughlin Blvd from Jerome St to South 2nd St
- Traffic calming, signs, and pavement markings for Family Friendly Street on Jerome St, 3rd Ave, Ganong St, and 4th Ave
- Cost estimates do not include ROW acquisition or McLoughlin pedestrian bridge improvements at the VFW

OPPORTUNITIES












- Boardwalk offers an intimate connection with Willamette Falls
- Alignment along roadway is highly visible
- Minimizes environmental impacts

CONSTRAINTS

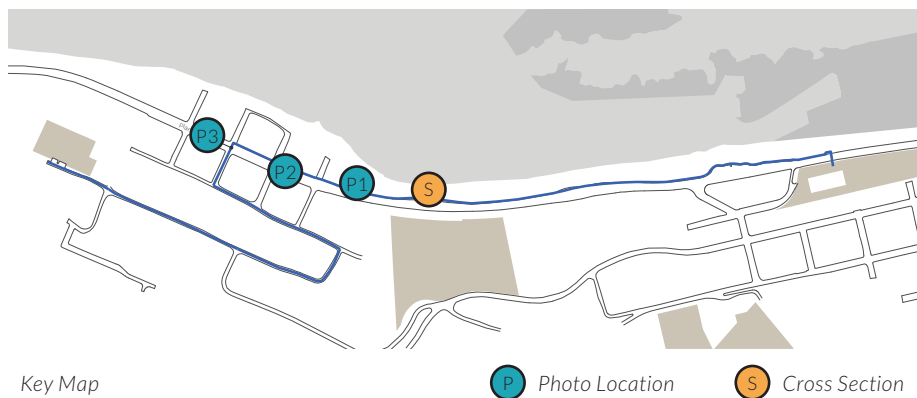
- Lacks a direct connection to Old Canemah Park
- Existing boardwalk is in disrepair, expensive to re-construct
- The experience along McLoughlin traffic can be uncomfortable
- Would require widening sidewalk within constrained ODOT right of way
- Out of direction travel

EVALUATION MATRIX

○ Not Advisable ◐ Major Constraint ◑ Moderate Constraints ◒ Minor Constraints ● Optimal

QUALITY			SAFETY		PROPERTY		CONSTRAINTS		OVERALL EVALUATION		RECOMMENDATIONS		
QUALITY OF EXPERIENCE	WILLAMETTE FALLS VIEWS	ALL AGES & ABILITIES	VEHICLE CONFLICT RISK	CRIME RISK	HISTORIC DISTRICT	CANEMAH IMPACTS	PROPERTY IMPACTS	GEOTECH CONSTRAINTS	ENVIRONMENTAL IMPACTS	OVERALL SCORE	ORDER OF MAGNITUDE COST	INTERIM RECOMMENDATION	PERMANENT RECOMMENDATION
											\$4.0 - \$4.5 M	Not Recommended	Not Recommended

ALIGNMENT ALTERNATIVES EVALUATION - EXISTING CONDITIONS - "A"



P-1 | McLoughlin Blvd boardwalk, looking north

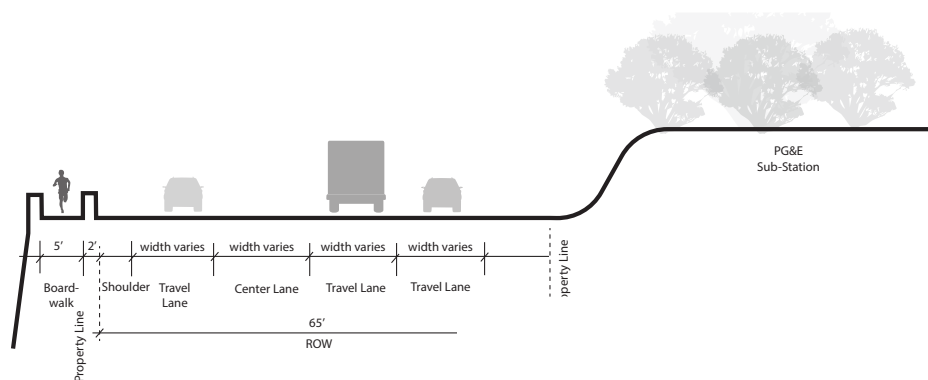


P-2 | McLoughlin Blvd sidepath, looking north

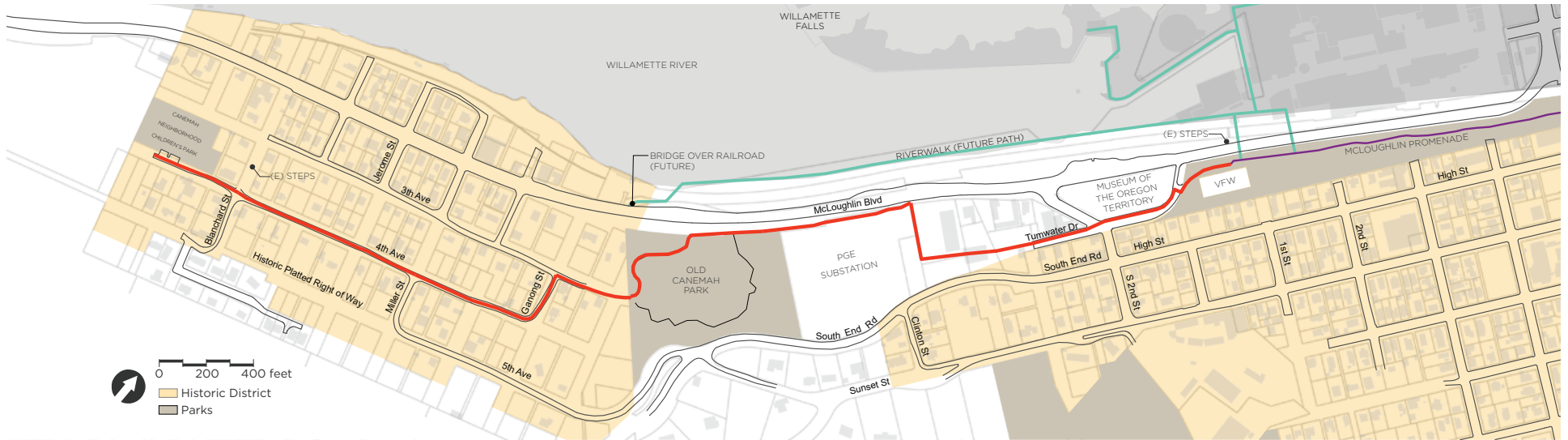


P-3 | McLoughlin Blvd crossing at Jerome St, looking south

Existing Cross Section



ALIGNMENT ALTERNATIVES EVALUATION - DESCRIPTION - "B"



SUMMARY DESCRIPTION

Alignment - B (0.95 miles) begins at the McLoughlin Promenade and follows Tumwater Dr to the west. It crosses S 2nd St at McLoughlin Blvd & continues west to the PGE Substation. The proposed trail separates from the road along the front of the PGE property and Old Canemah Park before connecting, via 3rd Ave, Ganong St, and 4th Ave, to the Canemah Neighborhood Children's Park. An alternative alignment extending Tumwater Dr west of S 2nd St (avoiding McLoughlin Blvd) may be possible with future redevelopment.

DESIGN ASSUMPTIONS

- Widen sidewalk to shared use path width along Tumwater Dr
- Intersection crossing at S 2nd Ave and Tumwater Drive re-designed for safety
- Widen trail through Old Canemah Park
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 3rd Ave, Ganong St, and 4th Ave
- Cost estimate includes reinforcement at top of basalt cliff

OPPORTUNITIES:

- Offers direct connections between neighborhoods and parks
- High quality views of Willamette Falls
- Few environmental impacts

CONSTRAINTS:

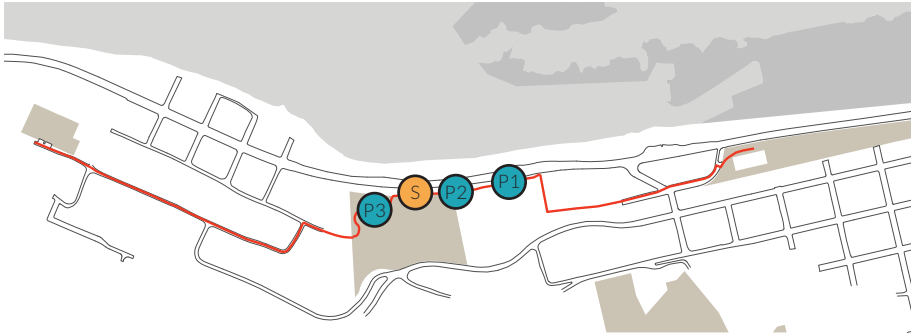
- Segment along McLoughlin Blvd has significant roadway width constraint
- Alignment using the existing VFW driveway assumes a modified automobile entrance to the VFW to/from S 1st St

EVALUATION MATRIX

○ Not Advisable ◐ Major Constraint ◑ Moderate Constraints ◒ Minor Constraints ● Optimal

QUALITY			SAFETY		PROPERTY		CONSTRAINTS		OVERALL EVALUATION		RECOMMENDATIONS		
QUALITY OF EXPERIENCE	WILLAMETTE FALLS VIEWS	ALL AGES & ABILITIES	VEHICLE CONFLICT RISK	CRIME RISK	HISTORIC DISTRICT	CANEMAH IMPACTS	PROPERTY IMPACTS	GEOTECH CONSTRAINTS	ENVIRONMENTAL IMPACTS	OVERALL SCORE	ORDER OF MAGNITUDE COST	INTERIM RECOMMENDATION	PERMANENT RECOMMENDATION
<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	\$2.1 - \$2.6 M	<div><div></div></div>	<div><div></div></div>

ALIGNMENT ALTERNATIVES EVALUATION - EXISTING CONDITIONS - "B"



Key Map

P Photo Location **S** Cross Section



P-1 | McLoughlin Blvd, between S. 2nd and PGE Substation

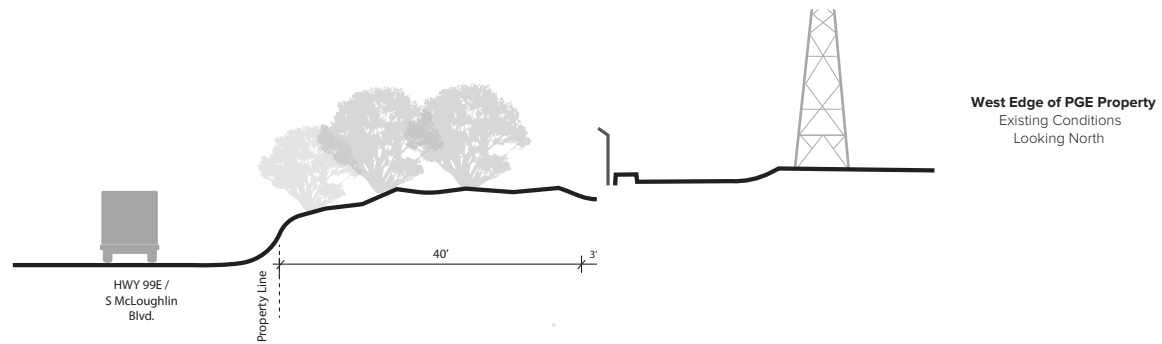


P-2 | Willamette Falls view from Old Canemah Park

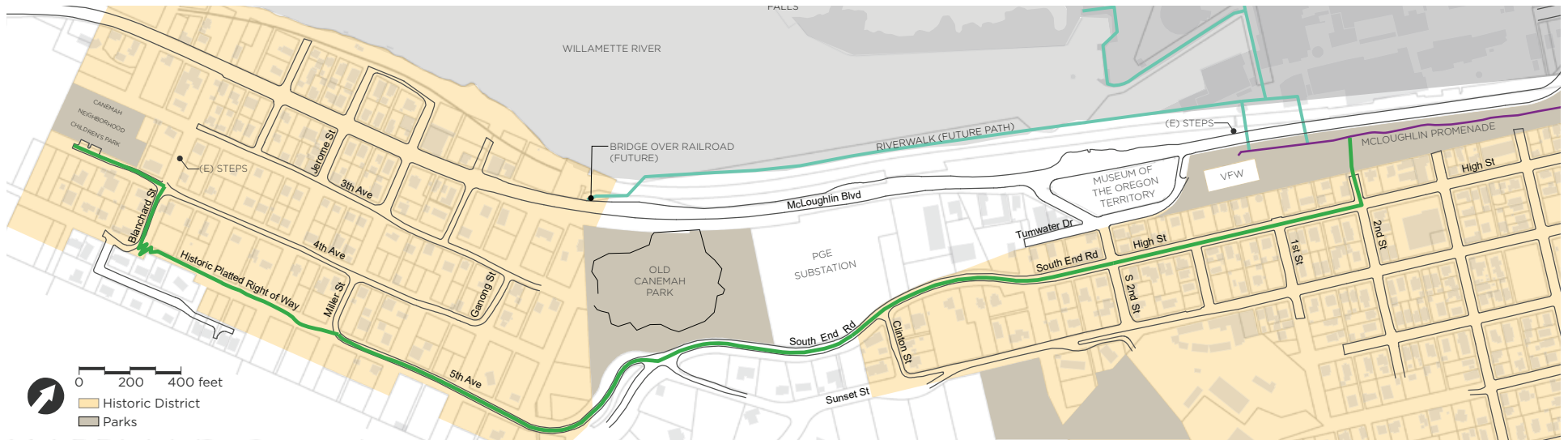


P-3 | Old Canemah Park trail

Existing Cross Section



ALIGNMENT ALTERNATIVES EVALUATION - DESCRIPTION - "C"



SUMMARY DESCRIPTION

Alignment - C (1.1 miles) begins at the McLoughlin Promenade at 2nd St and follows S High St to the southwest as High Street transitions to South End Road. It continues on 5th Ave, includes a historic Right of Way extension between Miller St and Blanchard St, and connects to Canemah Neighborhood Children's Park via 4th Ave.

DESIGN ASSUMPTIONS

- Shared roadway for cyclists on High St between 2nd St and S 2nd St
- Widens High St (S 2nd to Sunset St) to provide minimum side path width
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 5th Ave to Miller St and from Blanchard St to Canemah Neighborhood Children's Park
- Shared use path on City right of way between Miller St and Blanchard St
- Cost estimates include retaining wall and minor basalt excavation; does not include traffic signal at S 2nd St

OPPORTUNITIES

- Most slopes are comfortable for people walking and biking
- Provides access on South End Rd for people walking and biking

CONSTRAINTS

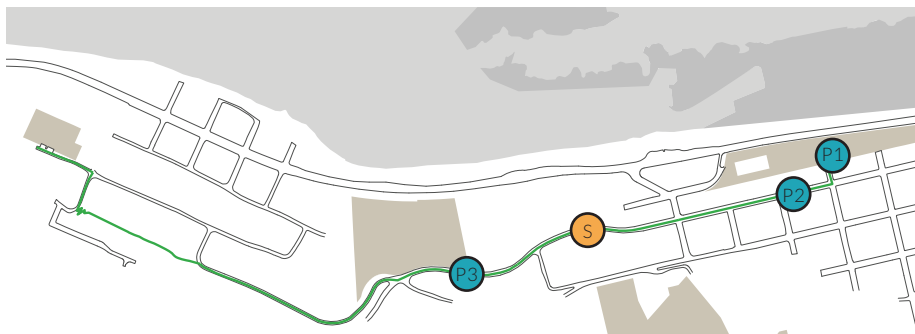
- Doesn't connect neighborhoods to Old Canemah Park
- Few or no views of Willamette Falls
- Width constraints along S. High Street could be cost-prohibitive
- Segment between Miller St and Blanchard St to be built on former land slide area with geotechnical concerns

EVALUATION MATRIX

○ Not Advisable ◐ Major Constraint ◑ Moderate Constraints ◒ Minor Constraints ● Optimal

QUALITY			SAFETY		PROPERTY			CONSTRAINTS		OVERALL EVALUATION		RECOMMENDATIONS	
QUALITY OF EXPERIENCE	WILLAMETTE FALLS VIEWS	ALLAGES & ABILITIES	VEHICLE CONFLICT RISK	CRIME RISK	HISTORIC DISTRICT	CANEMAH IMPACTS	PROPERTY IMPACTS	GEOTECH CONSTRAINTS	ENVIRONMENTAL IMPACTS	OVERALL SCORE	ORDER OF MAGNITUDE COST	INTERIM RECOMMENDATION	PERMANENT RECOMMENDATION
◑	○	◑	◑	◑	☑	◒	◑	◑	◑	◑	\$2.6 - \$3.0 M	Not Recommended	Not Recommended

ALIGNMENT ALTERNATIVES EVALUATION - EXISTING CONDITIONS - "C"



Key Map



Photo Location



Cross Section



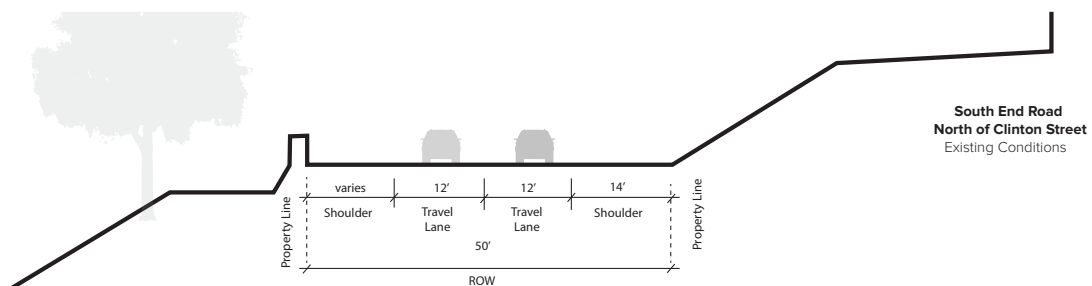
P-1 | 2nd Ave connection from McLoughlin Promenade



P-2 | S High Street, south of 2nd Ave



P-3 | S. High Street, existing shoulder

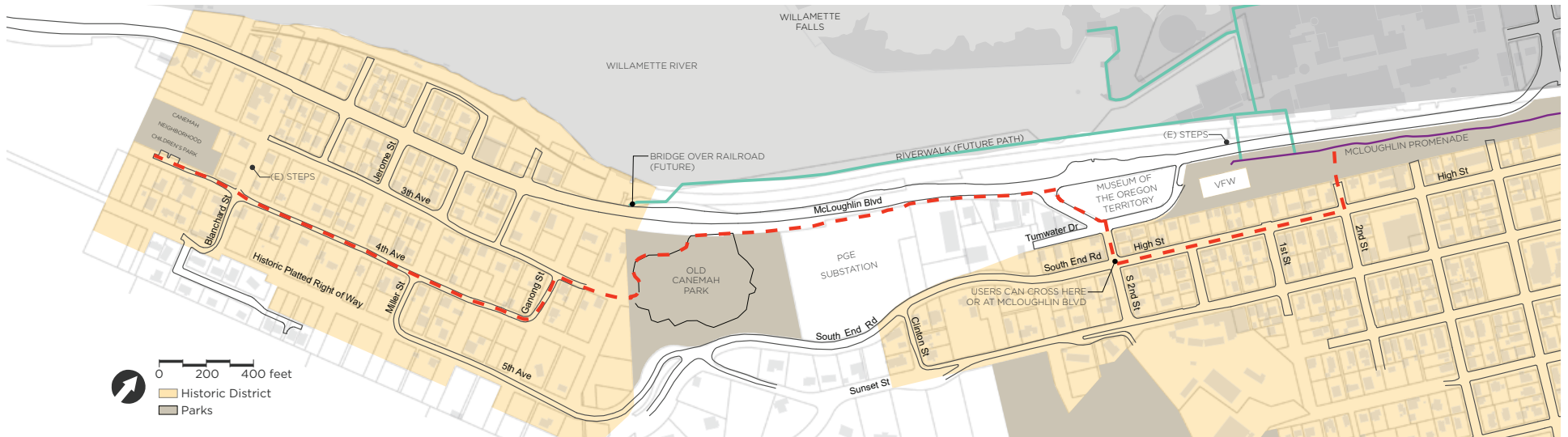


Existing Cross Section

IV.

PREFERRED TRAIL ALIGNMENT

Interim Trail Alignment Recommendation



SUMMARY DESCRIPTION

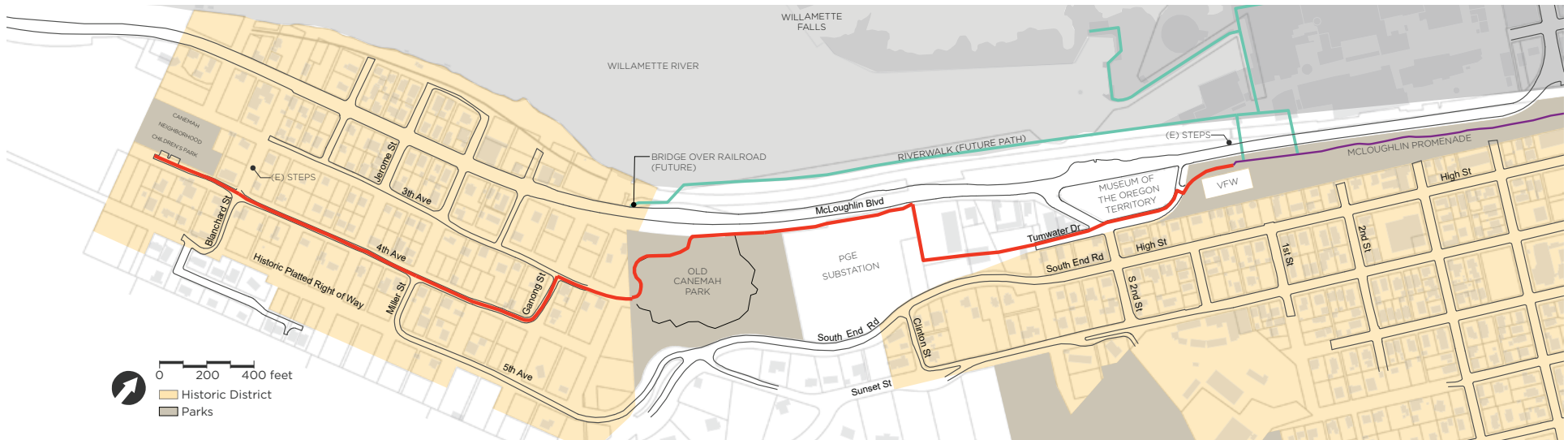
The Interim trail alignment recommendation begins at the McLoughlin Promenade and connects via 2nd St to High St. From there, the trail turns onto S. 2nd St and continues west to McLoughlin Blvd/Hwy 99E. Using the exiting traffic signal crossing, the trail continues on the east side of McLoughlin Blvd/Hwy 99E until reaching the Portland General Electric (PGE) substation entrance.

From the PGE entrance, the Interim and Permanent trail recommended alignments are identical. The trail connects between the PGE substation and McLoughlin Blvd/Hwy 99E, enters Old Canemah Park, and connects to the Canemah National Register District neighborhood. The route through the neighborhood follows 3rd Ave west/southwest, turns onto Ganong St, and follows 4th Ave until reaching the Canemah Neighborhood Children's Park.

DESIGN ASSUMPTIONS

- Wayfinding, shared use signage and pavement markings on High St
- Widen sidewalk on South 2nd St from High St to McLoughlin Blvd, and on McLoughlin Blvd between the PGE substation and South 2nd St
- New multi-use path along edge of PGE substation property
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 3rd Ave, Ganong St, and 4th Ave.
- Reinforcement at top of basalt cliff along McLoughlin Blvd
- Add connection between McLoughlin Promenade and High St

Long-Term Trail Alignment Recommendation



SUMMARY DESCRIPTION

The Permanent trail alignment recommendation begins at the McLoughlin Promenade and connects to Tumwater Drive via the Three Rivers VFW Post 1324 parking lot and a dedicated non-motorized path down the existing driveway. From there, the trail follows Tumwater Drive, crosses at S. 2nd Street, and continues south/southwest on Tumwater Drive through re-developed parcels, turning toward McLoughlin Blvd/Hwy 99E just north of the Portland General Electric (PGE) substation property.

From the PGE entrance, the Interim and Permanent trail recommended alignments are identical. The trail connects between the PGE substation and McLoughlin Blvd/Hwy 99E, enters Old Canemah Park, and connects to the Canemah National Register District neighborhood. The route through the neighborhood follows Marshall Street and 3rd Avenue west/southwest, turns onto Ganong Street, and follows 4th Avenue until reaching the Canemah Neighborhood Children's Park.

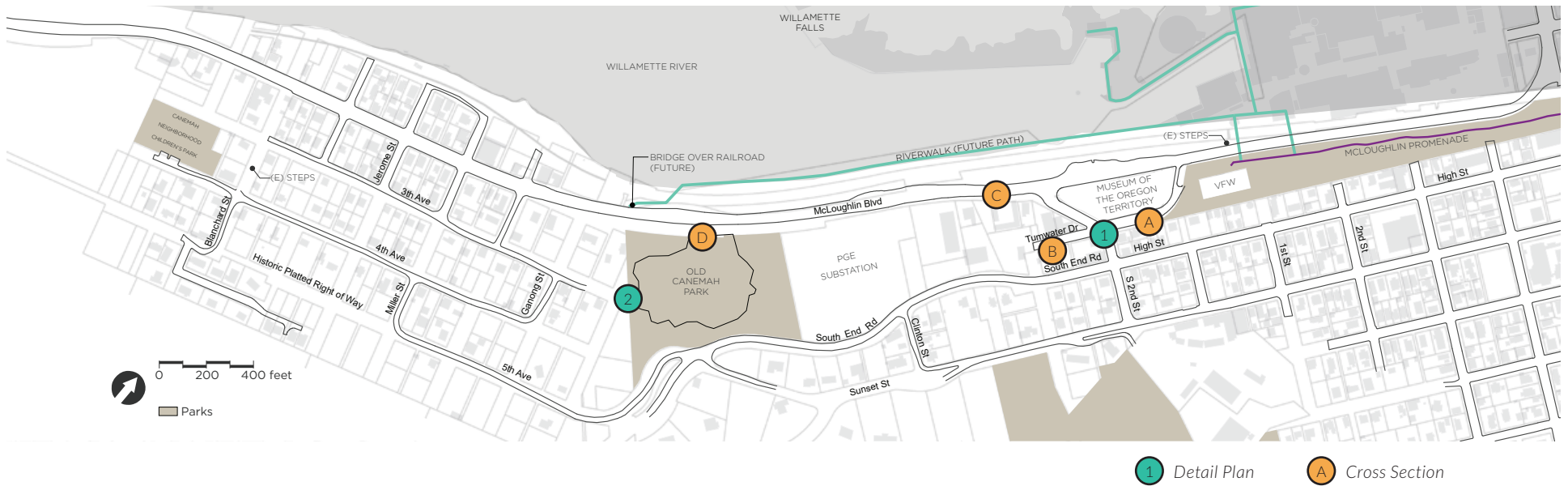
DESIGN ASSUMPTIONS

- Possible automobile connection to/from VFW via 1st St allows dedicated ped-bike connection to Tumwater Dr. Left turn from McLoughlin Blvd onto Tumwater Dr to be closed.
- Widen sidewalk to shared use path width along Tumwater Dr
- Intersection crossing at S 2nd Ave and Tumwater Drive re-designed for safety
- Trail can be installed along with future/expected development
- Easement associated with PGE substation property
- Widen trail through Old Canemah Park
- Traffic calming, signs, and pavement markings for shared Family Friendly Street on 3rd Ave, Ganong St, and 4th Ave. Speed limit reduced to 20 MPH.
- Cost estimate includes reinforcement at top of basalt cliff.



TYPICAL CROSS SECTIONS & DESIGN FEATURES

KEY MAP: Typical Cross Sections & Design Features



The McLoughlin-Canemah Trail passes through several unique areas with diverse existing conditions that each require specific trail design treatments and approaches. In the following pages, typical cross sections are shown for several of these locations as well as Design Intent level plans showing recommended on and off street intersection or crossing improvements.

Typical Cross Sections

- A** Tumwater Drive (north of S. 2nd Street) - [Typical Section](#)
- B** Tumwater Drive (south of S. 2nd Street) - [Typical Section](#)
- C** McLoughlin Blvd/99E - [Typical Section](#)
- D** Old Canemah Park Trail - [Typical Section](#)

Detail Plans - Intersection/Crossing Improvements

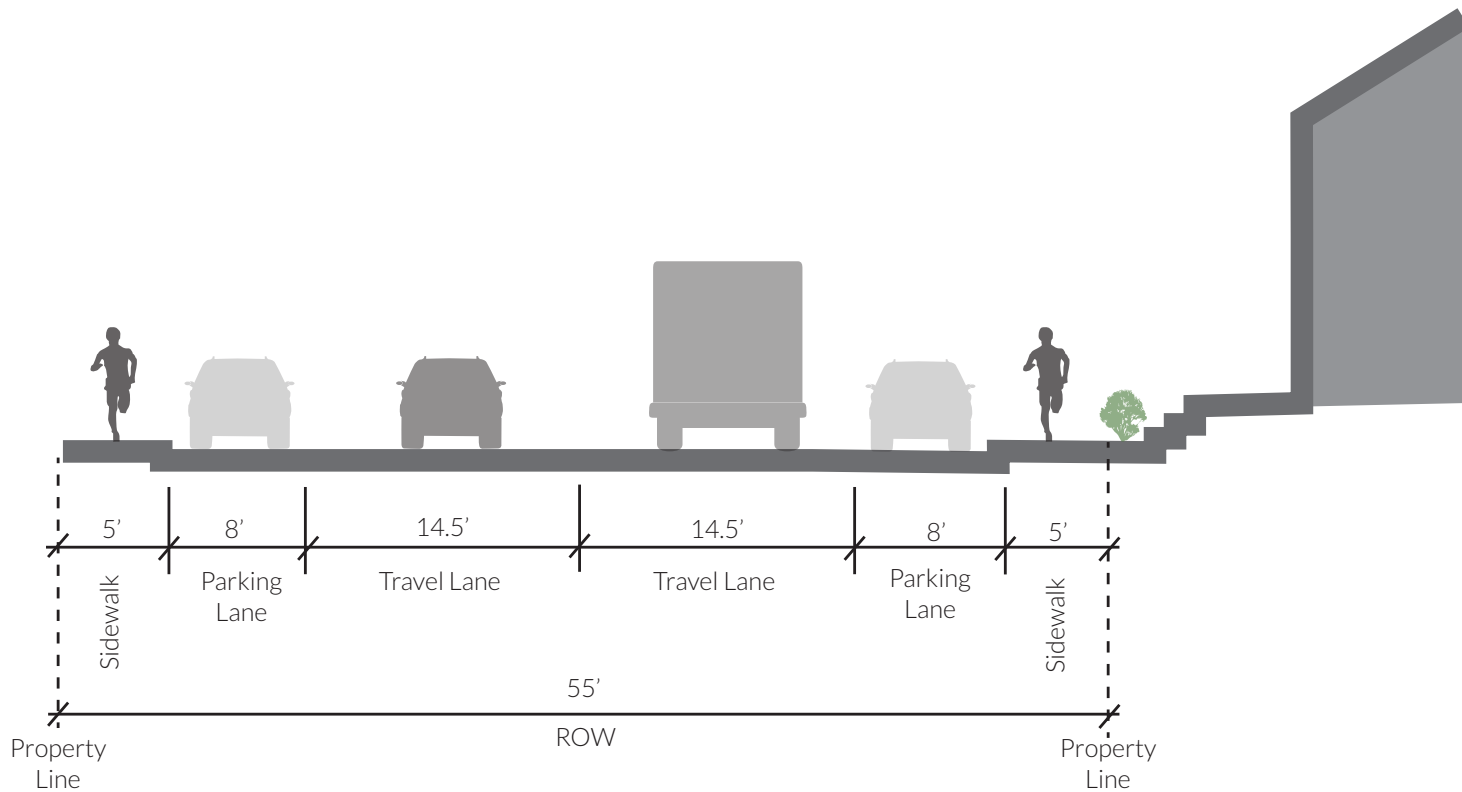
- 1** S. 2nd Street & Tumwater Intersection Treatment - [Plan](#)
- 2** Old Canemah Park West Entrance Crossing - [Plan](#)





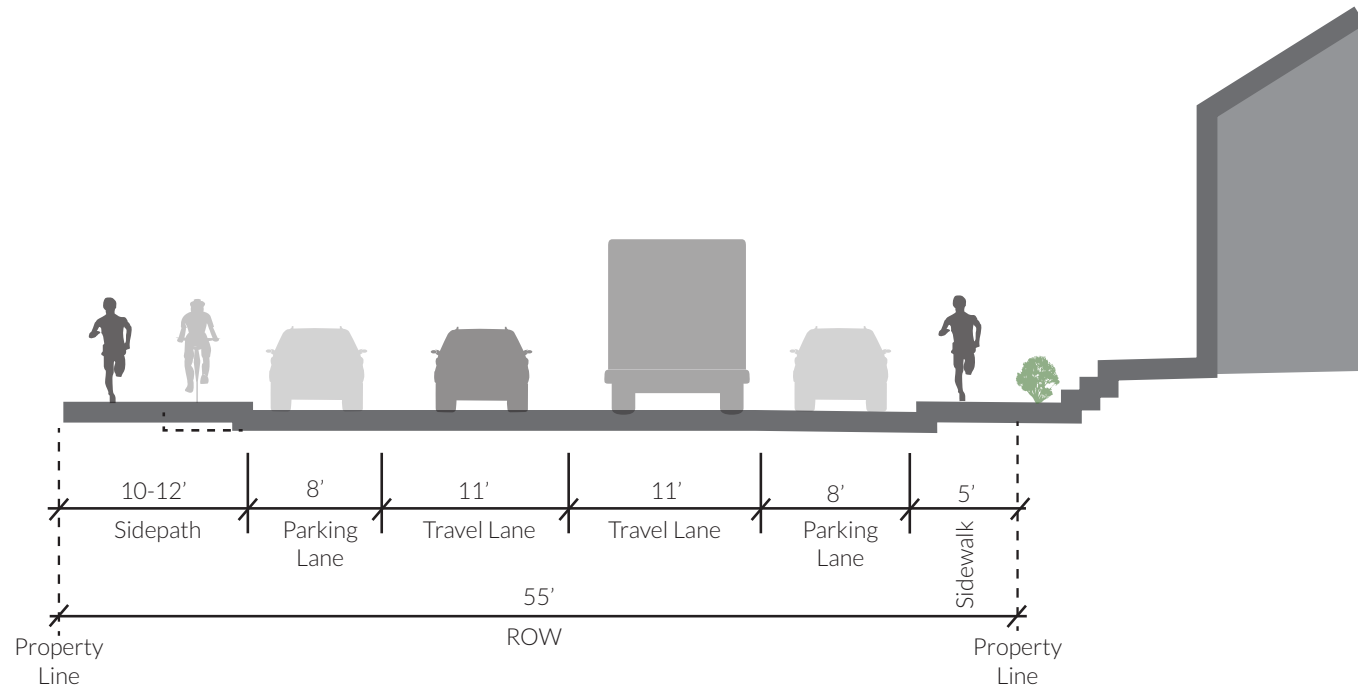
Tumwater Drive (north of S. 2nd Street), Existing Conditions

Tumwater Drive consists of a 55' right-of-way with substantial (14.5') travel lanes, two parking lanes, and two 5' sidewalks. There is a commercial property to the west side of the street and residential to the east.



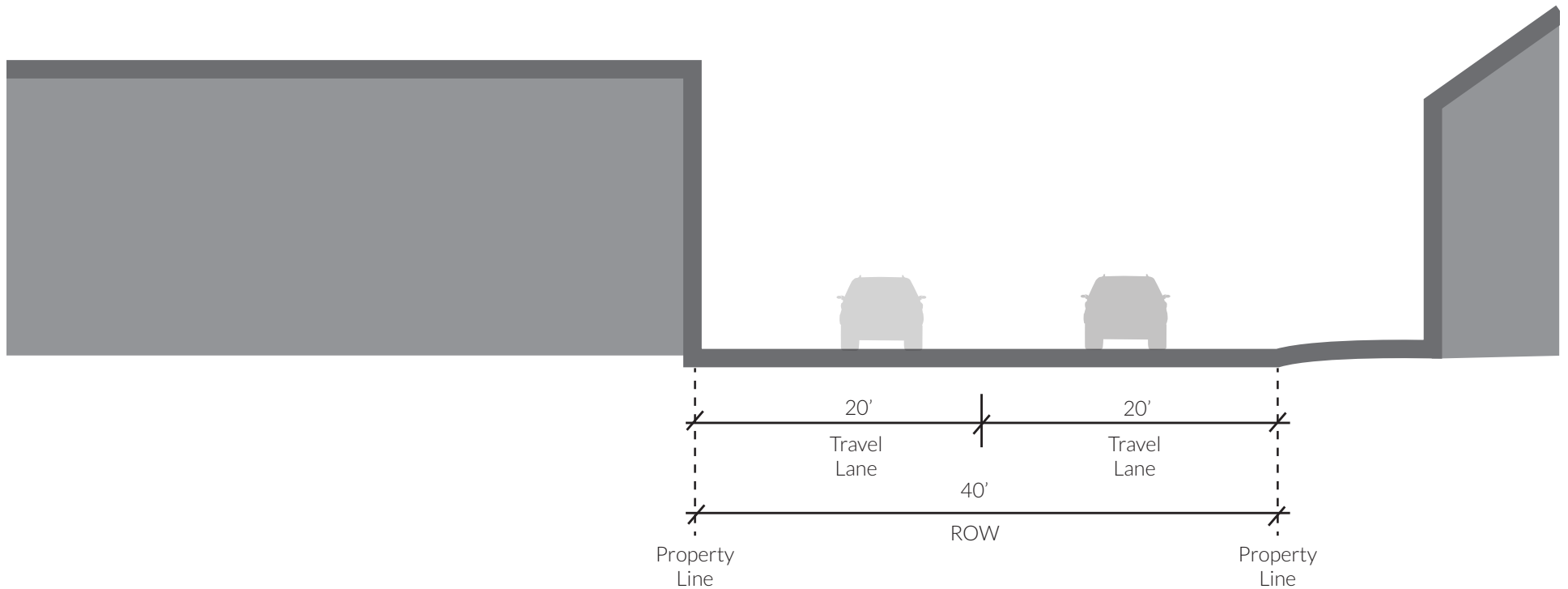
Tumwater Drive (north of S. 2nd Street), Proposed Design

The proposed design for Tumwater Drive narrows the travel lanes to 11' to provide space for a 12' elevated side-path on the west side of the street. This new multi-use side-path allows space for both pedestrians and bicyclists.



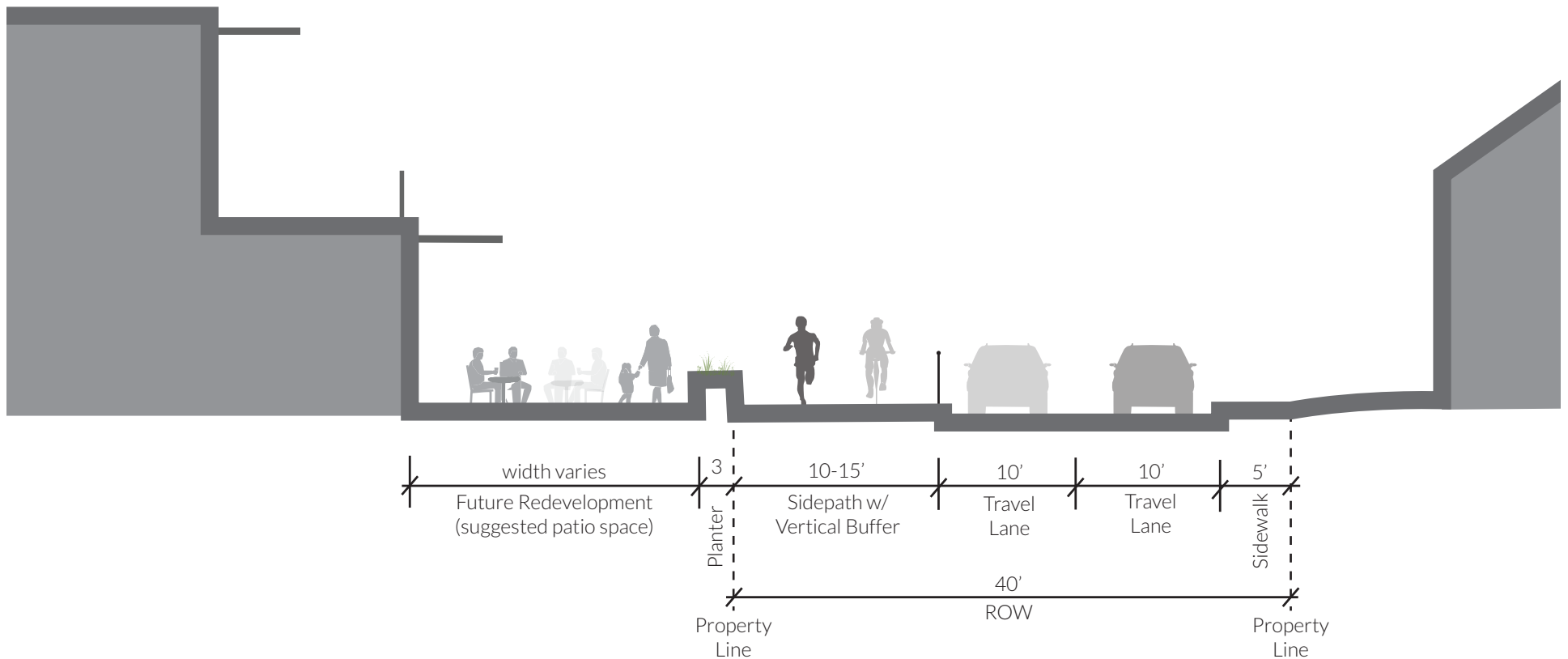
**Tumwater Drive (south of S. 2nd Street), Existing Conditions**

The southern end of Tumwater Drive consists of a 40' right-of-way with two substantial (20') travel lanes. There is an industrial property on the west side of the street and residential lots to the east.



Tumwater Drive (south of S. 2nd Street), Proposed Design

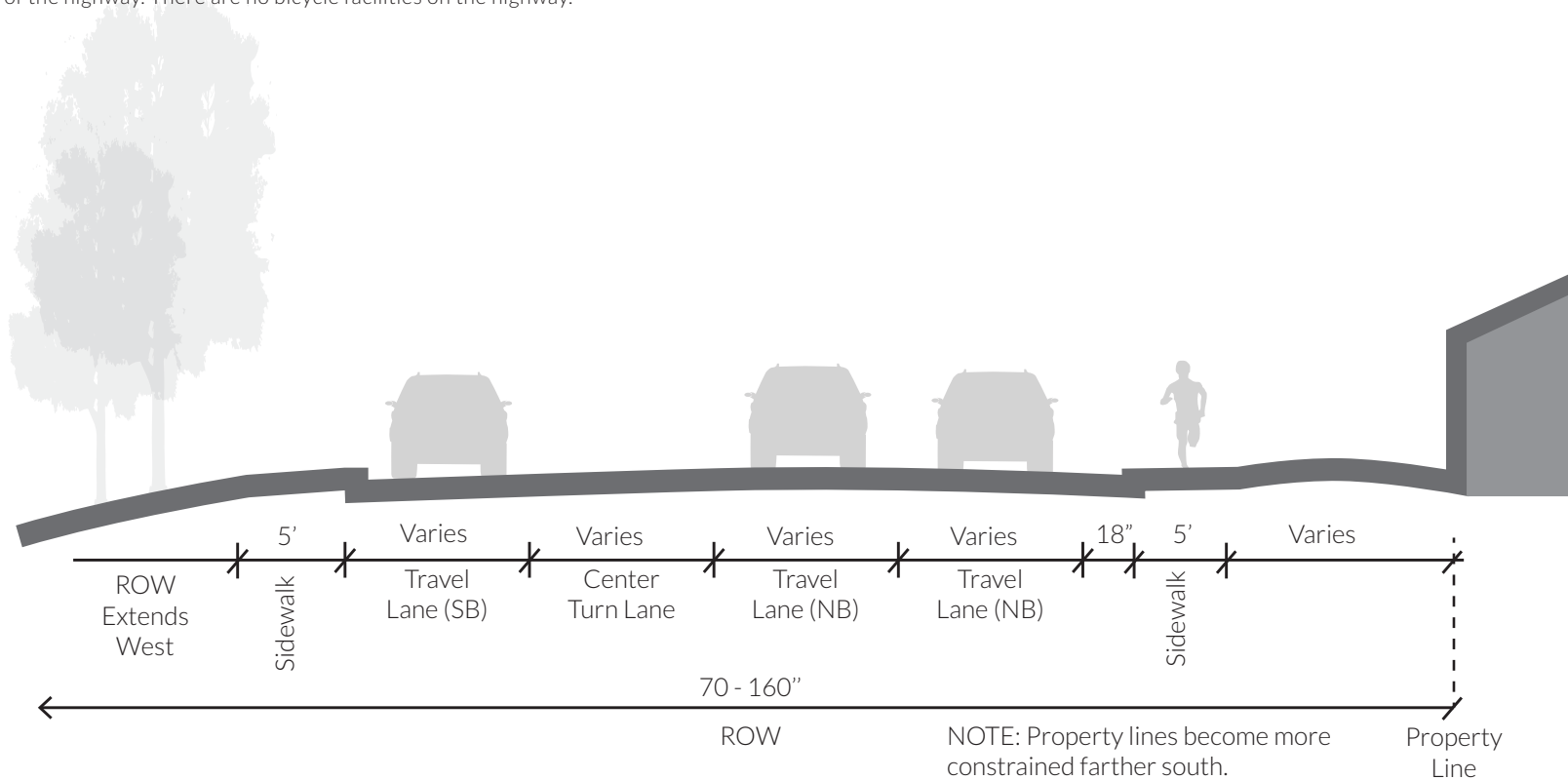
With the re-development of parcels between McLoughlin Blvd and Tumwater Drive, south of S. 2nd Street, travel lanes are narrowed to 10' in both directions with a 5' sidewalk on the east side of the street. The MCT is designed as a 15" side-path with a vertical buffer. Re-developed commercial parcels should "face" Tumwater Drive by orienting entrances, windows, and seating space toward the trail and roadway.





McLoughlin Blvd/99E, Existing Conditions

McLoughlin Blvd/99E consists of a 140' right-of-way with a landscaped buffer to the west and commercial property to the east. There are two 5' sidewalks, one south-bound travel lane, a center turn lane, and two north-bound travel lanes. Distance varies between the sidewalk and the property line on the east side of the street. The sidewalk ends at 102 S McLoughlin Blvd and there are no pedestrian facilities continuing south along the upland side of the highway. There are no bicycle facilities on the highway.

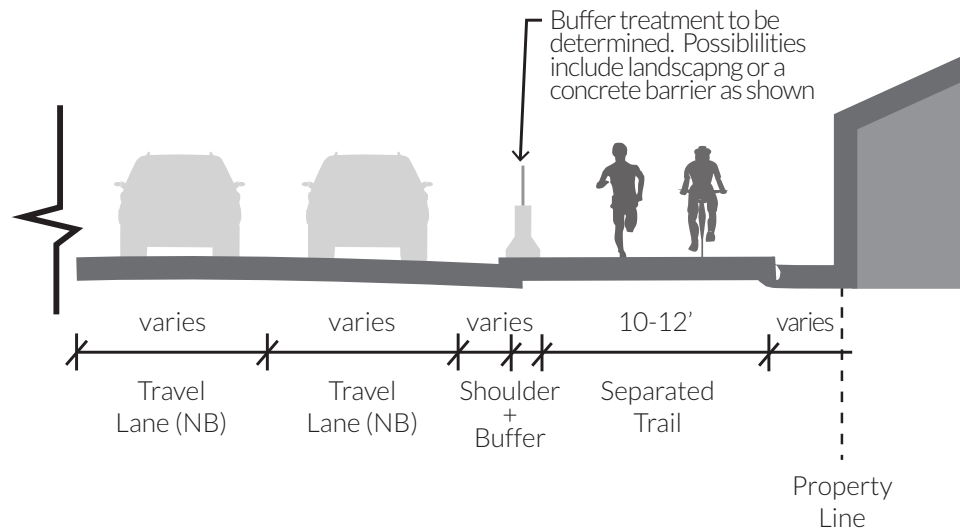


McLoughlin Blvd/99E, Proposed Design

The proposed design for McLoughlin Blvd/99E protects MCT users by providing a buffer of landscaping or potentially a vertical barrier, such as a concrete jersey barrier, between the travel lanes and the trail. The 10-12' trail replaces the existing sidewalk (depending on location). The design will require further refinement and a design exception(s) from ODOT standards.



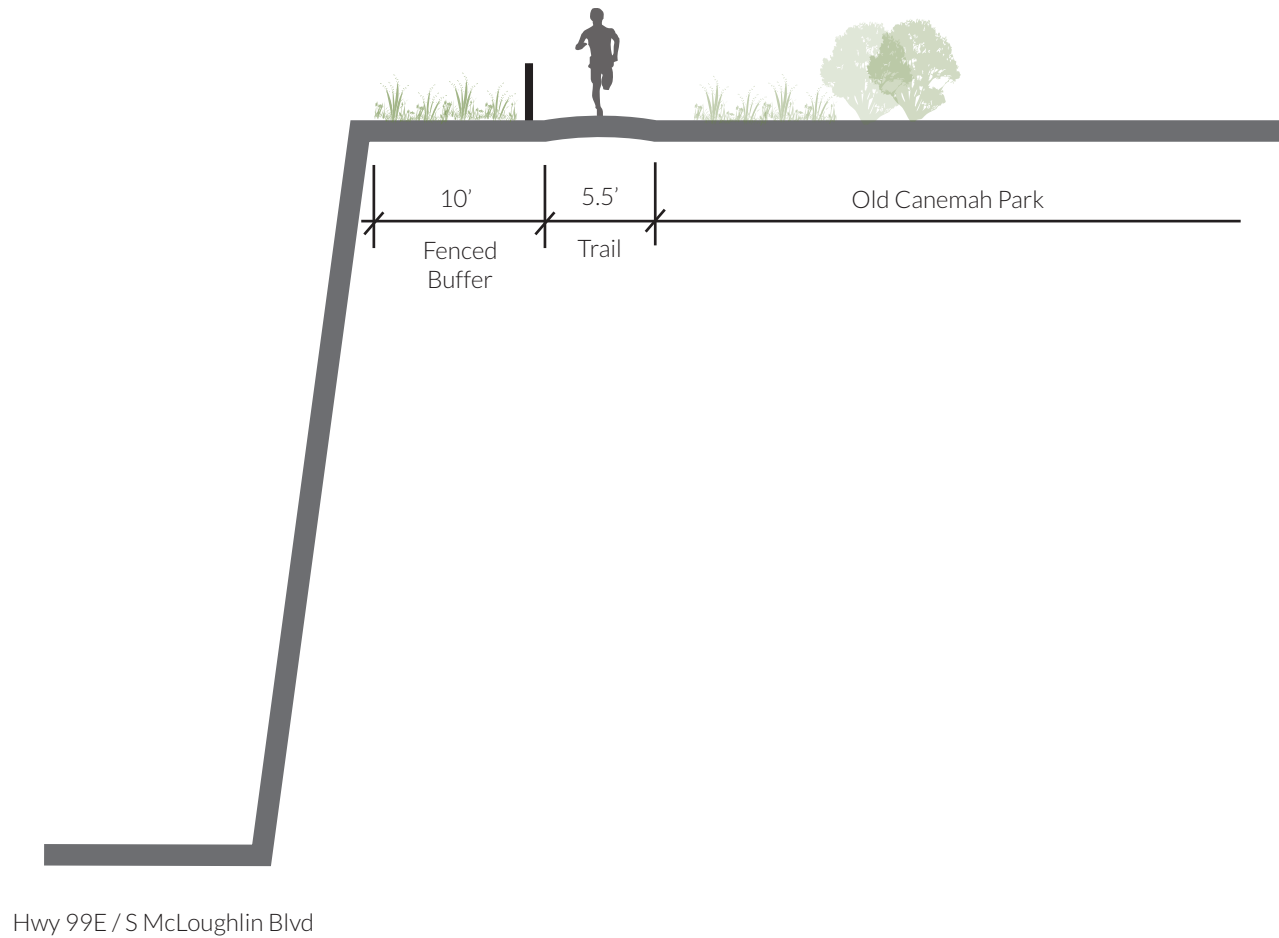
ODOT facility near Portland Expo Center showing protected sidepath w/ shoulder and concrete barrier. A similar facility could potentially be provided along McLoughlin Blvd.





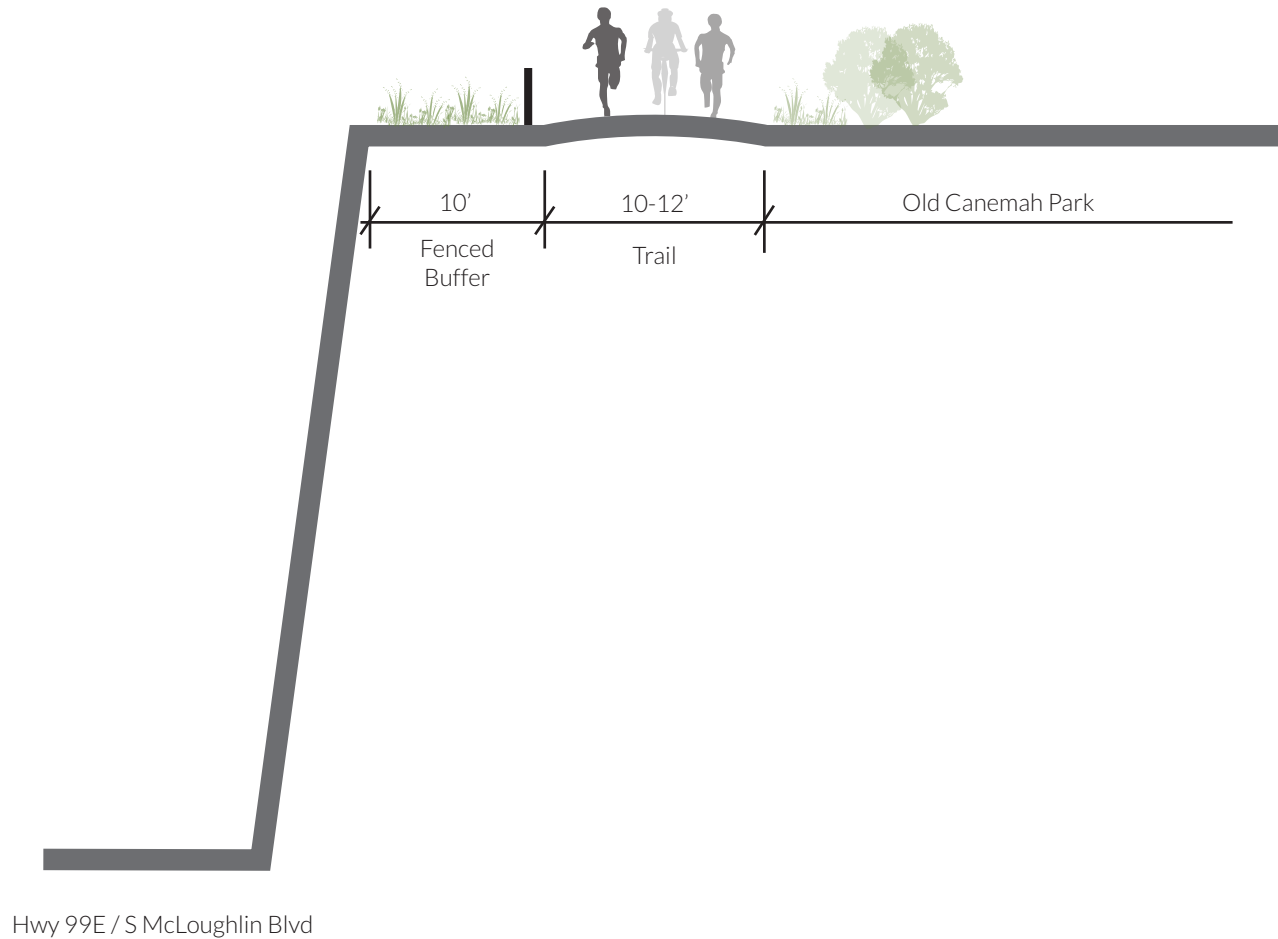
Old Canemah Park Trail, Existing Conditions

Old Canemah Park currently has a 5'-6" paved trail that weaves through the park. Along the basalt cliffs above McLoughlin Blvd/99E, the trail is buffered by a fence and vegetation.



Old Canemah Park Trail, Proposed Design

The McLoughlin-Canemah Trail would expand the existing path to the southeast to provide a 10-12' multi-use trail. The existing fence and vegetated buffer are maintained.



1

S. 2nd & Tumwater Intersection Treatment



To provide an adequate trail facility for the **Interim Alignment** that connects between Tumwater Dr and McLoughlin Blvd, it is recommended that the right turn lane on S. 2nd St be reduced (re-striped) from 15' to 11'. This would allow the 6' sidewalk on the north side of S. 2nd St to be widened to 10'.

Because S. 2nd St is a bus route, it is important that any design changes made to accommodate the McLoughlin-Canemah Trail not interfere with bus operations.

Analysis using AutoTurn within an AutoCAD Civil 3D environment suggests that reducing the right turn lane width to 11' would not prevent buses from making the right turn from S. 2nd Street onto McLoughlin Blvd. However, Trimet should be engaged as a project stakeholder early in the MCT implementation process to test any proposed design in the field using an actual bus.

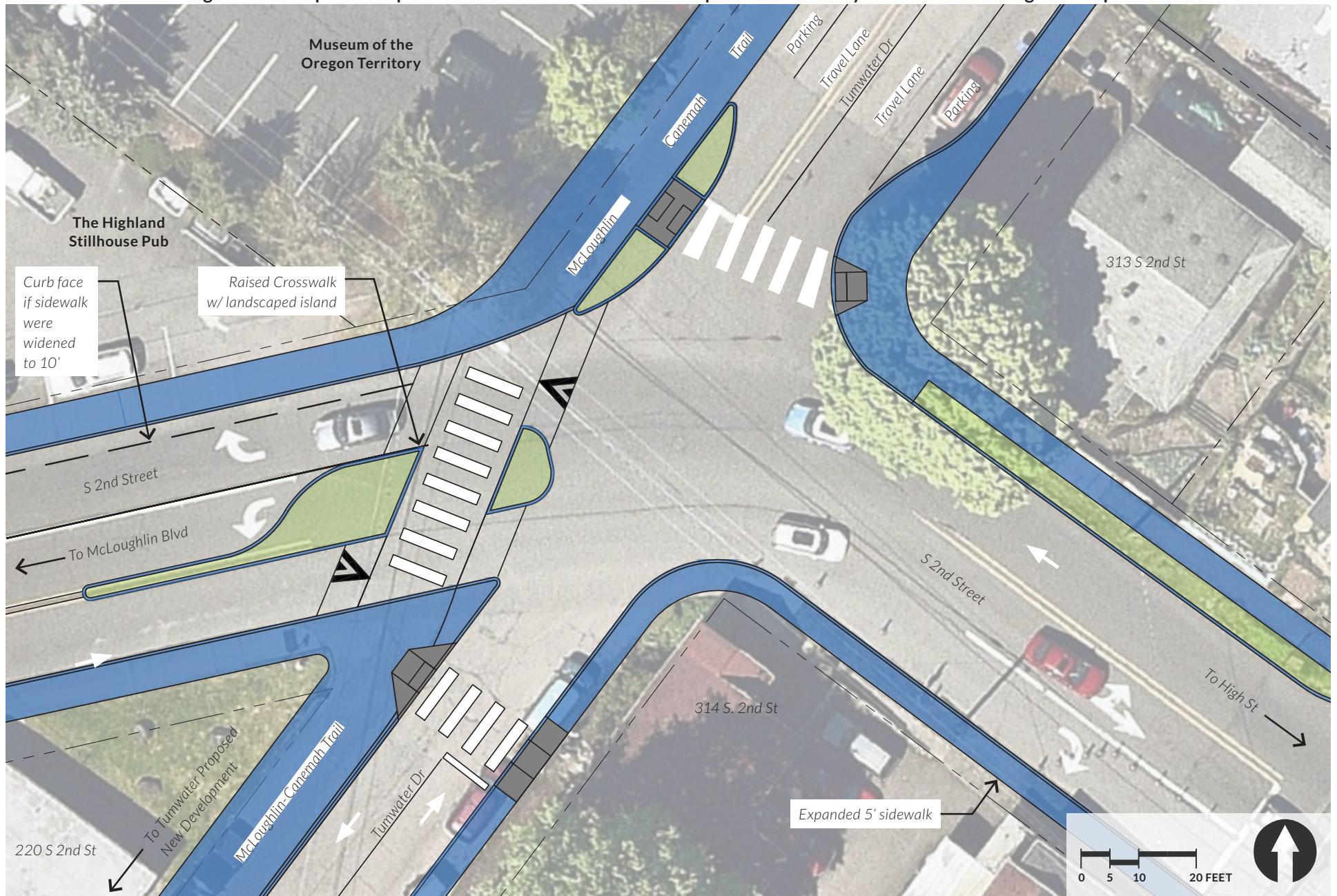
As part of the **Long-Term Alignment** implementation, the intersection at S. 2nd Street and Tumwater Drive requires safety improvements.

Assuming a single paved path on the west/north side of Tumwater Drive along the Museum of the Oregon Territory parking lot, the following intersection design treatments are recommended:

- Raised crosswalk with a landscaped island on S. 2nd Street. This will calm traffic, serve as a gateway threshold for traffic calming into the city from McLoughlin Blvd/Hwy 99E, and will shorten the crossing distance for trail users.
- Curb ramps with a marked crosswalk on the south segment of Tumwater Drive

TYPICAL CROSS SECTIONS & DESIGN FEATURES

Diagrammatic depiction of potential intersection treatments. Requires further analysis and detailed design development.



2

Old Canemah Park Trail, West Entrance and Canemah Neighborhood



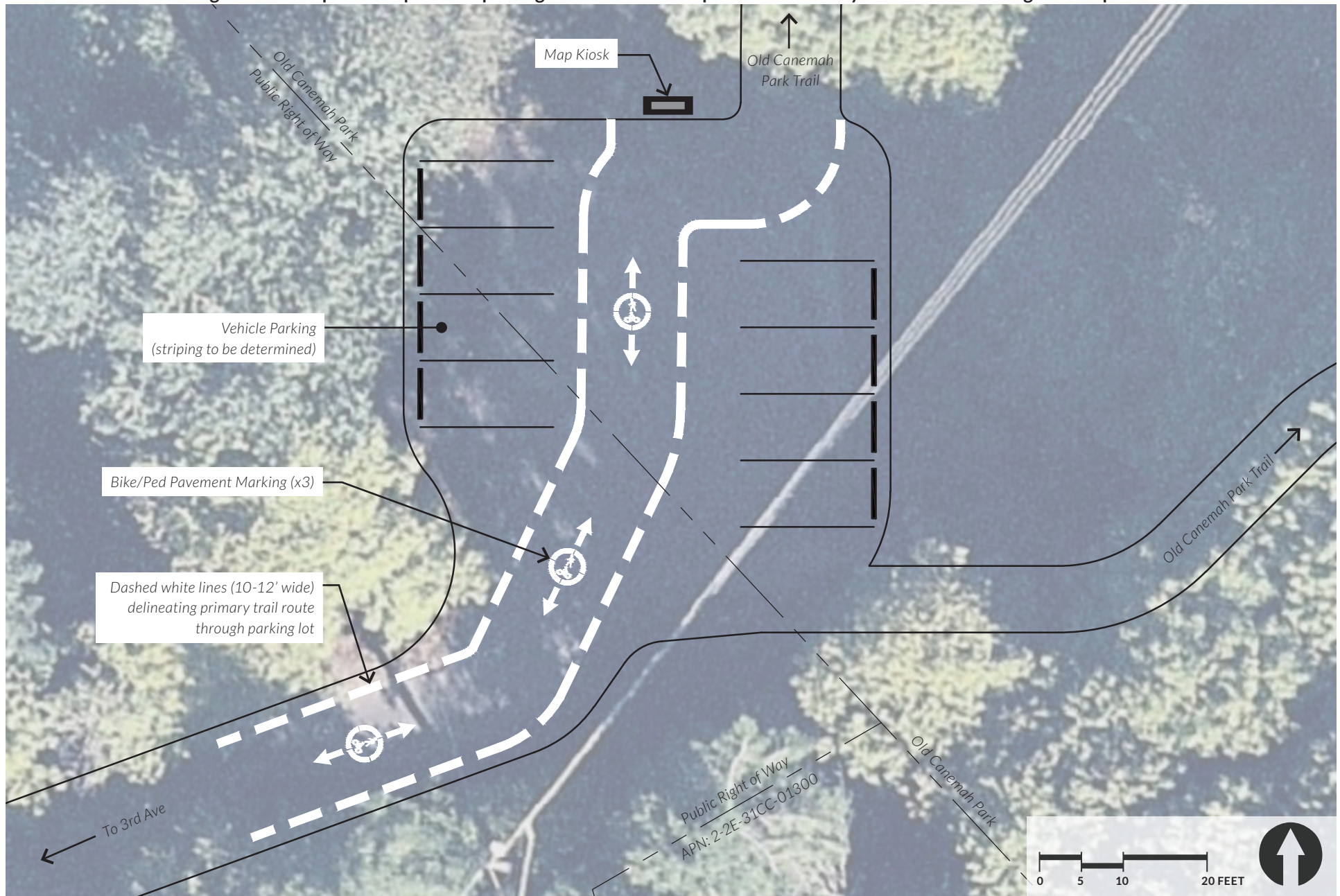
The following treatments are recommended to increase comfort, safety, and accessibility for trail users as they pass through the parking lot of Old Canemah Park:

- White pavement markings, set 12' apart to match trail width, that delineate the primary trail route through the parking lot. This route follows the vehicular drive isle to avoid reducing vehicle parking spaces in this already constrained lot.
- Pedestrian/bicycle pavement markings placed within the delineated travel path to communicate intended use of the space to both trail users and motorists.
- A wayfinding map kiosk located close to the trail will serve to inform visitors about the larger trail network and its connections, help guide trail users along the correct route, and highlight potential destinations that trail users might be interested in.

As the MCT continues through the Canemah Neighborhood along 3rd Ave, Ganong St, and 4th Ave, similar approaches are recommended to delineate space including shared-use pavement markings, shared-use signage, and wayfinding signage.

TYPICAL CROSS SECTIONS & DESIGN FEATURES

Diagrammatic depiction of potential parking lot treatments. Requires further analysis and detailed design development.



Next Steps and Implementation

The adoption of the McLoughlin-Canemah Trail Plan will amend the City's Parks Master Plan, Trails Master Plan, and Transportation System Plan to reflect the trail and add and refine capital project lists. In late 2017, the City Commission will be asked to approve amendments to these plans to reflect the new trail.

City staff, with the help of stakeholders, will identify internal resources and apply for additional grant funds to implement the trail. Potential funding sources include Parks System Development Charges, Transportation System Development Charges, and state grants such as Connect Oregon and ODOT Enhance. Next steps are described in the table below.



Table 3. Implementation Priorities

NO.	TASK	PRIORITY / TIMEFRAME	RESPONSIBILITY
1	Pursue 20 MPH speed limit in Canemah neighborhood	1	Planning, Public Works
2	Design/implement Tumwater Drive closure	1	Planning, Public Works, ODOT
3	Explore interim improvements to 99E	1	Planning, Public Works, ODOT
4	Outreach to Canemah neighbors, add street markings within Canemah	1	Planning, Public Works
5	High Street bike route striping	1 (with 2018 resurfacing)	Planning, Public Works
6	Obtain a survey of the trail alignment area	2	Parks and Rec with coordination from PGE
7	Develop a trail signage plan	2	Parks and Rec, Public Works
8	Apply for grants for trail construction	2	All stakeholders, especially groups with nonprofit status
9	Construct interim trail improvements	2	Parks and Rec, Public Works, stakeholder volunteers, with coordination from PGE and ODOT
10	Explore and design VFW driveway changes	2	Parks and Rec, VFW
11	Construct permanent trail improvements	3	Parks and Rec, Public Works, with coordination from PGE and private development

VI.

APPENDIX 1 - GEOTECHNICAL REPORT



TECHNICAL MEMORANDUM

To: Mary Stewart / Alta Planning and Design

From: Alan P. Bean / Northwest Geotech, Inc.

Date: October 17, 2017

Subject: Geotechnical Reconnaissance Level Study

Project: McLoughlin – Canemah Trail Alignment Alternatives
NGI Project No. 3214.1.1



Expiration Date: 12-31-17

The purpose of this memorandum is to provide a reconnaissance level geotechnical assessment of potential alignment alternatives. Our scope of work was limited to geologic research, a brief reconnaissance of the proposed alignments and review of preliminary cross section sketches. This memorandum focusses on portions of the alignment where either economic risk due to challenging construction conditions may be present and/or land and rock slope stability risks are interpreted to be present.

General

The attached Figure 1 provides a reference for alignments discussed herein and was provided to NGI on August 16th, 2017. Previously we had assisted Alta with acquiring mapped historic landslides which have been overlain on the attached drawing. While we are not aware of any recent activity/movement of the large ancient landslides, the steep slopes formed by the scarps are marginally stable and smaller localized slumps/slides are common, especially where grading has been performed. The most notable examples are the series of slides along South End Road between 5th Avenue and the top of the plateau, where presumably historic road fill construction techniques were insufficient to maintain long term stability. While this area of South End Road is outside of the proposed trail alignment alternatives, it is representative of challenges posed when constructing alignments along these ancient landslide scarps.

Alignment A

Alignment A for the most part is along existing developed right of way but has a relatively long section (A-02) of boardwalk that is constructed as a bridge and/or viaduct for much of its length. In order to expand the width to dual use trail standards we would anticipate that all of the deck and outer rail would require reconstruction. We estimate at least 50% of the foundations and possibly all would need to be reconstructed and some retrofitted with rock anchors in a difficult cliff side construction environment above the active rail line. Further, and to provide for a longer-term design life, complete reconstruction of the boardwalk with materials other than wood should be anticipated. In general, the boardwalk appears to be near the end of its intended design life. This section of the basalt cliff appeared to be relatively stable other than periodic rockfall.

At the southern end of the boardwalk (Section A-03), widening via a retaining wall or even extension of the boardwalk may also be necessary. The remainder of Alignment A has few constraints and from a geotechnical prospective the primary focus where it connects to shared alignments would be evaluating and controlling surface water collection to move water off the potentially sensitive slopes.

Alignment B

This alignment is relatively flat prior to Section B-02 which will require widening/infilling of the highway ditch adjacent to the PGE substation where at highway grade. Near the southern end of the PGE substation the trail would ramp upward requiring a retaining wall. At this location which can also be described as the northern terminus of the old Canemah Park basalt face, the trail should be aligned such that it is directed away from the cliff and with a setback of roughly 20 feet. This portion of the cliff that is approximately 180 feet long is considered less stable than most of the remainder of the face to the south. Heading southward, the existing fence barrier at the top of slope represents an acceptable setback for a view point somewhere along this section. We recommend reviewing the rock face in more detail such that less stable portions can be identified and avoided when selecting the location of a viewpoint. Currently the protective wire netting is anchored approximately 10 feet from the face and therefore represents the minimum setback distance for an overlook/view point. We understand that ODOT may be making some improvements to the netting and anchorage in the summer of 2018 which may provide an opportunity to install three to six rock bolts through the upper basalt block to help protect a viewpoint long term. At a minimum, the ODOT project may allow a window and equipment/lane closure to map and evaluate the rock face below potential viewpoints.

In heavily treed areas, budgeting for trail sections should provide for construction of 5 inches of reinforced concrete over 8 inches of aggregate base. Open meadow areas of the trail could be constructed of 2.5 inches of Asphaltic Concrete (AC) over 8 inches of aggregate base that extends 12 inches beyond the edge of the AC.

If paving improvements and nominal widenings are included in the shared portions of the alignment, some drainage control improvements may be prudent such as small AC berms to direct flows away from homes and driveways to catch basins or natural drainage ways.

Alignment C

Within Section C-1, between 2nd Street and 5th Avenue, there are just a couple of pinch points along South High Street that would require cutting the soil or rock face on the uphill side back to the ROW line. The most obvious one is on South High Street approximately 500 feet south of S. 2nd Avenue, which would presumably take the form of a near vertical rock cut. Rock excavation can be performed using drilling and jacking methods that are typically more expensive than conventional blasting which is not an option in the urban environment. Residential stairways may be impacted in this area. The second location is approximately 300 to 400 feet north of the intersection with Sunset Street and depending on conditions may require a retaining wall if sound rock is not present on the uphill side. Widening on the downhill side is generally not feasible with the exception of the relatively short mound of bedrock located just south of Clinton Street which should be cut back even if only to improve site distance.

Section C-02 would represent a new trail alignment and we see no major geotechnical related issues with this alignment other than the first section that loops around the bedrock mound. The steep side slope in this location would require that the trail section be primarily constructed by cutting into the presumed rock mound, i.e., constructing fill wedges in steep terrain are not advised.

Section C-03 pavements are in very poor condition and an overlay should be assumed for the full width of the road.

Section C-05 represents a new overland alignment roughly 850 feet long and located within the undeveloped 5th Street ROW. The cross slope in the area increases to the South. As a result, when constructing trails along slopes exceeding 3H:1V the trail construction process would likely require two benches, one on the cut (uphill side) of the trail, and one for the downhill side. After removing the cut soils from the alignment, the lower bench would then be filled with imported granular material to create a stable pathway section. The downhill bench cut may be in the range of 2 to 4 feet in depth to create a necessary width and limit the uphill cut slope to just a few feet to avoid uphill slope instability. Some form of retention of this uphill cut (such as a 3'x3' gabion block) may be assumed where cross slopes approach 2H:1V. This appears to be the case in roughly the last 300 feet of the alignment and thus earthwork costs per foot of trail for this last portion of this Section would be relatively high, and the downhill side of the trail may also need retention and/or have a relatively steep edge fall off. The last 85' of the alignment would require relatively tight turns and switchbacks, with short walls on both downhill and uphill sides.

Limitations

The opinions and discussions herein are intended for alignment alternatives planning studies and should not be construed as geotechnical design recommendations. Once an alignment is selected we recommend a standard Geotechnical Investigation be conducted to support the project design phase.

If you have any questions please feel free to contact our office.

Attachments: Figure 1 – Vicinity Map

VIII.

APPENDIX 3 - GREENWAY FOR A DAY PUBLIC EVENT SUMMARY

GREENWAY FOR A DAY PUBLIC EVENT SUMMARY

The Greenway for a Day event attracted approximately 70-80 participants over the four-hour event. Participants traveled from the Museum of the Oregon Territory to Canemah Children's Park, following the one-mile temporarily marked trail.

Many people began at the museum, but others began elsewhere along the path. Most people were walking, but a few people biked the trail, and one family pulled their kids in a bike trailer.

Participants were invited to take a survey after they completed the trail and to review the draft trail alignment options and Safety Toolkit ideas. Over 40 surveys were filled out at the event and dozens of people completed the green dot activity to give feedback on the Safety Toolkit options. The online survey gained an additional 16 responses. Detailed survey and green-dot activity results are included in this Appendix.



What was your favorite part of the walk?

- Access to downtown area made known. Enjoyed the field area with river views.
- ALL OF IT!!!
- All of it. I didn't know this area was here and I have lived in OC 38 years
- Old Canemah Park
- Discovering new parts of Oregon City and separate bike and walking trail in Canemah Park
- Discovering the picnic tables overlooking the river - what a great lunch spot!
- Going up and down hills
- Grassy area overlooking the river
- Having a destination for the kids (park). Shaded areas were awesome to have
- Path through Canemah Park
- Portions west of the substation
- Riding in the bike trailer
- Riding through Old Canemah Park
- River views
- Seeing the river and meeting other neighbors
- Stairs (Canemah neighborhood)
- The off road
- The organization
- The park and the view
- The part around the Power Lines to make it more useful
- The scenery is great.
- The scenic walk through Old Canemah, as well as the exercise.
- The stairs and walking through the treed areas and the views
- The stairs, good exercise and good walkway
- The swings
- The view of the river and falls
- The views from the ridge above 99e
- The walk through Old Canemah Park
- Trails above children's park
- Walking through the Old Canemah Park. It was quiet and rather peaceful and the views of the falls were great.
- Well marked and scenic

GREENWAY FOR A DAY PUBLIC EVENT SUMMARY

What was your least favorite part?

- 99E by collision/body shop
- Along 99E - I wouldn't use this route you've done, too narrow there old Canemah they the neighborhood wouldn't appreciate the invasion of their peace and quiet.
- Beginning going by collision repair shop & PGE sub station. Need to go out on boardwalk
- Cars were kinda scary, but I was OK
- Dogs
- End St too hilly for biking
- Getting bit breaking up a dog fight due to another's dog off leash and ran up to my dog):
- Going home
- Gravel surface
- I enjoyed the whole walk
- It's hot
- Liked it all
- Lots of cars
- Mcloughlin Stretch
- Need landscaping at 2nd St.
- No complaints - beautiful day, nice stroll, helpful people & I saw a dragonfly
- Non
- Path along 99E
- Path along PGE fence
- PGE/McLoughlin walk
- Poison oak along trails at the children's park
- Portions east of the substation
- Power plant area
- Stairs
- Steep terrain
- The amount of traffic worries me as a cyclist with kids.
- The commercial area by 99
- The potential for poison oak.
- The small area on the highway
- The stairs
- The stairs, poison ivy.
- The street

- The walk across 99
- The walk through Canemah streets and up a hill (but really no big)
- Traffic on highway 99
- Walking along 99
- Walking along the power station
- Walking along the south side of McLoughlin/99E. Without a barrier of some type it seems risky!
- Walking through the grass at the power plant

Survey Results: Comments on Alignments

- #7 & 8 are where it feels unsafe
- #27 a crossing here would be wonderful!!
- #28 & 29 sidewalk improvements would be great, it feels unsafe with traffic so close
- #33 we have tried this path and it seems unsafe with the traffic that goes by so fast and the path gets so narrow
- 5th St seems like a bad option
- -A1/A2 preferred
- -Flat biking trails preferred
- Clearly mark where to go for stairs or path for baby's strollers & no stairs
- Family friendly streets.
- Good idea for the community, marked pedestrian paths are preferred
- I don't like to take trails which share traffic areas.
- I really like the County trail that circles Stonecreek Golf Course. This type would draw me to the city.
- I would just drive to Canemah Park with kids - they enjoy the hike to the cemetery
- I would like to preserve parking but want a trail to downtown OC. I bike from our neighborhood all week
- Include 3rd Ave alternative with lighting on the stairs :)
- Just do it!
- Leave out walking/biking between Old Canemah Park to children's park
- Like the idea of developing the walk along 99 - the boardwalk
- Looks good
- McLoughlin on riverside seems easier, but A1 alignment through Old Canemah would be nice as well.
- Need a couple of ped crossings across McLoughlin

- No, Great job!
- Really love cycle across as neither 99E or South End save for peds/cycles to travel Canemah -> downtown
- Try to keep off McLoughlin
- You're doing GREAT

Other comments and safety suggestions

- A crossing at Jerome would improve safety and any traffic calming in the Canemah neighborhood would be helpful. As it is now, people tend to drive too fast in the neighborhood
- A safe crossing at 99E, a bike parking, Traffic calming
- Add crossings on 99E; Master plan for Oregon City Loop Trail
- All of the above and slower traffic signs for S High St. Keep drivers from using gravel road from Tumwater up to S High
- Bike improvements are my priority
- If you want me to visit the city to walk / bike then I need a public parking area and a map of the trails for the entire city.
- Just keep it near the falls, and trim some of those maples!
- Lighting and police patrol
- Lower speed limits. Could even be 30 MPH for a portion of 99E if a portion of the trail must be on that highway.
- More shade
- Ped Crossings! Yes
- Safe crossing at 99E is a great idea
- These sound great! Making easy access to Main Street area is welcome and wanted! We are residents of Canemah and REALLY want access directly to downtown/main area. We were disappointed the railway connection was removed from Phase I, but hopeful access will come.
- Would love bike lane on South End
- Yes to a safe crossing of 99E and yes to traffic calming measures... Traffic going too fast in neighborhood. Bike path on streets please!

IX.

APPENDIX 4 - STAKEHOLDER EVALUATION MATERIALS

STAKEHOLDER EVALUATION MATERIALS

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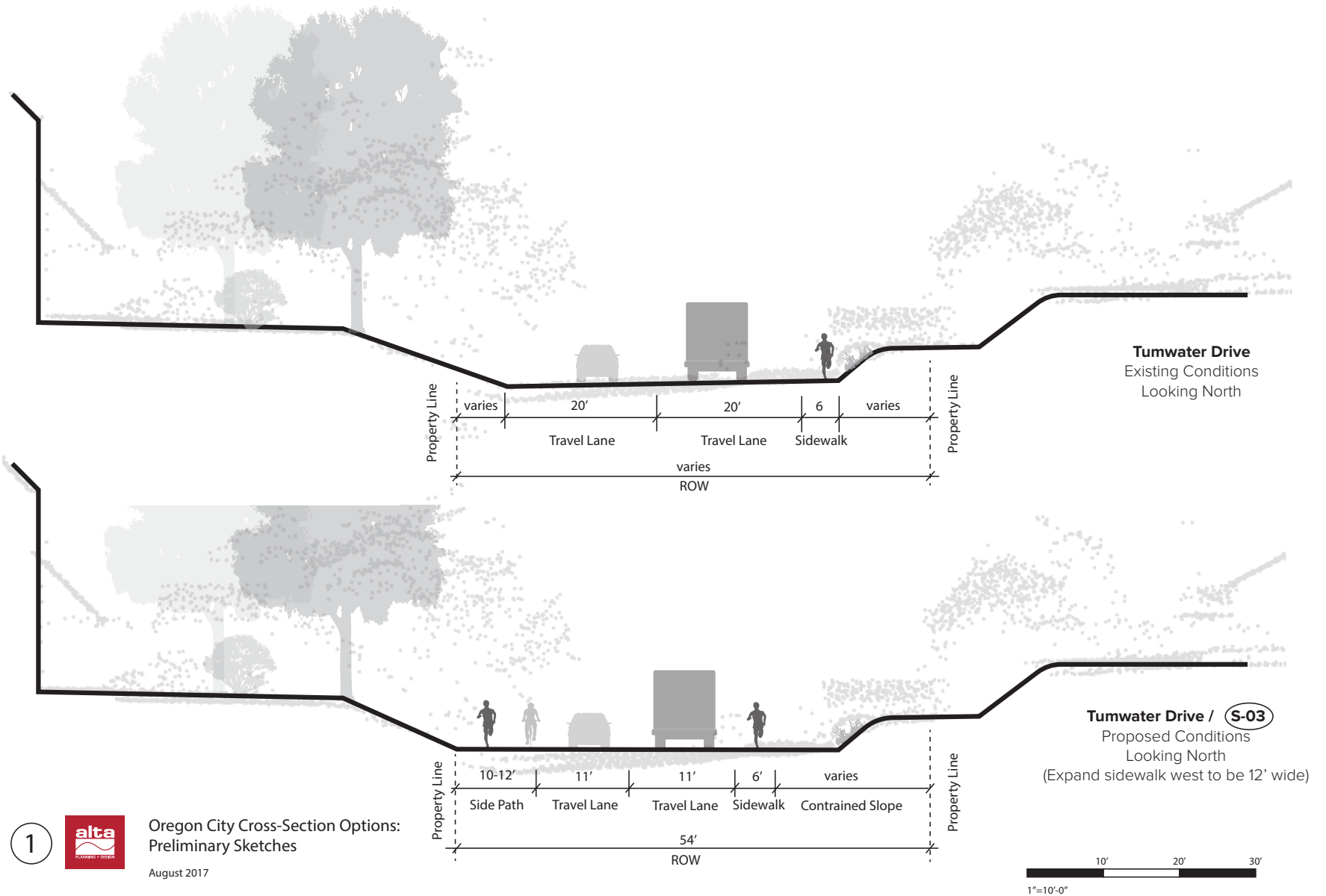
STAKEHOLDER EVALUATION MATERIALS

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McLoughlin-Canemah Trail - Alternative Trail Alignments Evaluation Matrix DRAFT																							
	GOAL:- Provide an attractive route of travel for people walking & biking between the McLoughlin Promenade & Canemah Children's Park that connects residential areas, parks, & businesses.		GOAL:- Strive to provide facilities that serve all ages and abilities, including people with disabilities or mobility limitations		GOAL:- Minimize risk and conflicts with between automobile traffic, bicycle traffic, and pedestrians.		GOAL:- Provide a trail design that is context-sensitive, particularly to the Canemah NRHD, McLoughlin Promenade, and the McLoughlin Conservation District.		GOAL:- Provide experiences and views of Willamette Falls.		GOAL:- Celebrate experiences of nature while protecting and enhancing native vegetation and habitat within the corridor		GOAL:- Discourage criminal activity and provide a secure environment for all users		GOAL:- Responsibly utilize public funds to provide a high-quality trail experience both now and into the future		GOAL:- Avoid use of private property in the Canemah National Register Historic District.		Geotechnical Constraints		Recommended Interim Alignment	Recommended Permanent Alignment	
SEG ID	METRIC: Quality of experience		METRIC: Limitations for all ages and abilities facility		METRIC: Vehicle conflict risk		METRIC: Historic District		METRIC: Views of Willamette Falls		METRIC: Environmental impacts		METRIC: Environmental crime risk		METRIC: Cost		METRIC: Canemah NRHD property impacts	METRIC: Other Property Impacts	METRIC: Geotechnical constraints		Recommendation for interim trail alignment	Recommended for permanent trail alignment	
S-1	●	Pleasant residential street	●		●	Shared use, low speed/volume	✓	McLoughlin Cons Dist.			●	No impact	●	High visibility/low risk	\$	Signage and pavement marking w/ minimal construction, new paved connection to acromenade	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-2	●	Parking lot and driveway, residential/museum frontage street	●	Steep slope on VFW driveway	●	Shared driveway and low visibility	✓	McLoughlin Cons Dist.			●	No impact	●	High visibility/low risk	\$	Signage and pavement marking w/ minimal construction	●	●	None	●	No impacts		TBD
S-3	●	Curb-tight sidewalk, no street trees	●		●	Cross at 99E					●	No impact	●	High visibility/low risk	\$\$	Widen sidewalk	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-4	●	Curb-tight sidewalk, no street trees	●		●	Cross at 99E					●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts		TBD
S-5	●	Curb-tight sidewalk, no street trees	●	Moderate slope (S 2nd)	●	Cross at 99E or High St.	✓	McLoughlin Cons Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
A-1	●	Close to river and highway	○	Stairs	●	Full Separation			●		●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	PGE and ODOT ROW	●	No impacts		TBD
A-2	●	Close to river and highway	●		●	Moderate	✓	Canemah Hist Dist.	●		●	No impact	●	High visibility/low risk	\$\$	New Boardwalk	●	●	PGE and ODOT ROW	●	Boardwalk modification may require stabilization		TBD
A-3	●	Close to river and highway	●	Moderate slope + pinch point	●	Moderate. Assume RFB at Jerome	✓	Canemah Hist Dist.	●		●	No impact	●	High visibility/low risk	\$\$\$	New Boardwalk and Hwy 99 crossing	●	●	PGE and ODOT ROW	●	Boardwalk modification may require stabilization		TBD
B-1	●	Views but close to highway	●		●	Adjacent to 99E with + driveway crossings.			●		●	Medium impact	●	Moderate	\$\$	New sidewalk/trail construction	●	●	PGE and ODOT ROW	●	Requires cut/fill w/min impacts	✓	TBD
B-2	●	Access to nature	●		●	No vehicle interaction			●		●	Medium impact	●	Moderate	\$\$	New trail construction	●	●	Close proximity to residence	●	May require cliff face stabilization	✓	TBD
B-3	●	Semi attractive pending development	●		●	Potential for no vehicle interaction	✓	McLoughlin Cons Dist.			●	No impact	●	No impact	\$	Improvements packaged into re-development	●	●	Commercial Parcels	●	No impacts		TBD
C-1	●	Close to nature, views	●	low-moderate slope + pinch point	●	Assumes curb separation	✓	McLoughlin Cons Dist.	●		●	No impact	●	High visibility/low risk	\$\$	Extend pavement, signage and pavement marking. May need blasting	●	●	Close proximity to residence	●	No impacts		TBD
C-2	●	Access to nature	●	very steep slope	●	No vehicle interaction					●	Medium impact	●	Isolated	\$\$	Extend pavement, signage and pavement marking	●	●	PGE	●	Requires cut/fill w/min impacts		TBD
C-3	●	Close to nature	●	low-moderate slope	●	Assumes curb separation	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$\$	Extend pavement, signage and pavement marking	●	●	Close proximity to residence	●	No impacts		TBD
C-4	●	Pleasant residential street	●	moderate slope	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signage and pavement marking w/ minimal construction	●	●	Close proximity to residence	●	No impacts		TBD
C-5	●	Access to nature	●	very steep slope	●	Unimproved ROW; driveways	✓	Canemah Hist Dist.			●	NROD impact	●	Isolated	\$\$	New trail construction	●	●	Close proximity to residence	●	Landslide potential		TBD
S-6	●	Pleasant residential street	●	moderate slope (3rd Ave)	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-7	●	Pleasant residential street	●	moderate slope (3rd Ave)	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-8	●	Pleasant residential street	○	Stairs	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-9	●	Pleasant residential street	●	steep slope (Ganong)	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-10	●	Pleasant residential street	●		●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
S-11	●	Pleasant residential street	●	low-moderate slope	●	Low speed/volume	✓	Canemah Hist Dist.			●	No impact	●	High visibility/low risk	\$	Signs & pvmt markings w/min const	●	●	Close proximity to residence	●	No impacts	✓	TBD
	Assumptions: Value given to access to nature, street trees, buffers from traffic, and neighborhood character.		Assumptions: All ages and all abilities requires slopes at or below 5%. 5-15% is less comfortable for bicyclists and other users.		Assumptions: Designs minimize risk associated with traffic speeds and volume. Optimal scoring assumes no interaction with vehicular traffic.		Assumptions: Designs will not violate any provisions of historic or conservation districts.		Assumptions: There is an existing view of the falls.		Assumptions: To be provided by environmental consultant.		Assumptions: Moderate risk areas are those that are isolated from both roadways and occupied structures.		Assumptions: As indicated above		Assumptions: No direct impacts within CNRHD	Assumptions: Direct impacts passes through private property. Indirect impacts imply close proximity.	Assumptions: To be provided by geotechnical consultant		Assumptions: Preliminary City Staff recommendation	Assumptions: TBD following stakeholder meetings	
LEGEND																							
	● Optimal		● Minor Constraints						● Moderate Constraints				● Major Constraints						○ Not advisable or feasible				

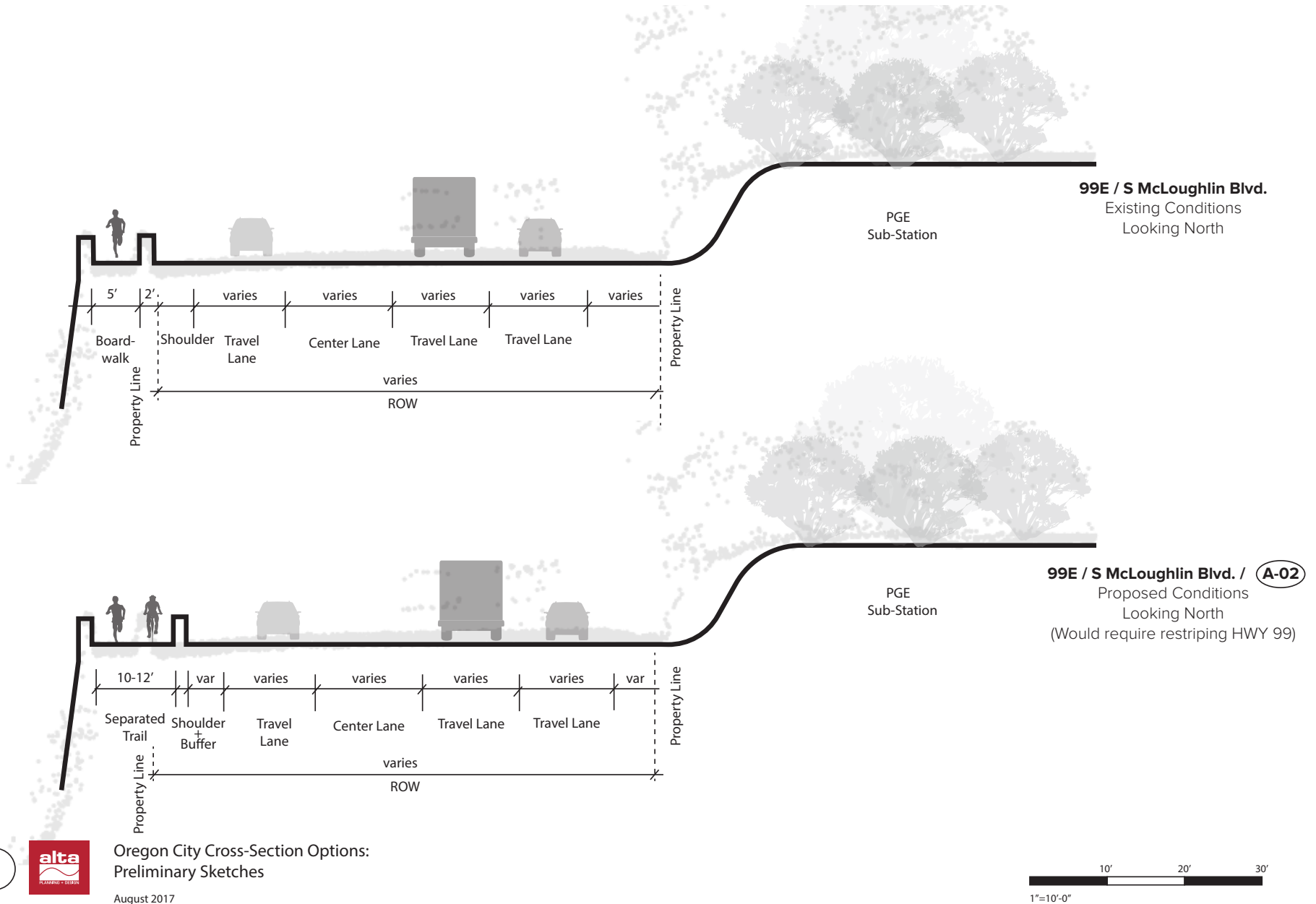
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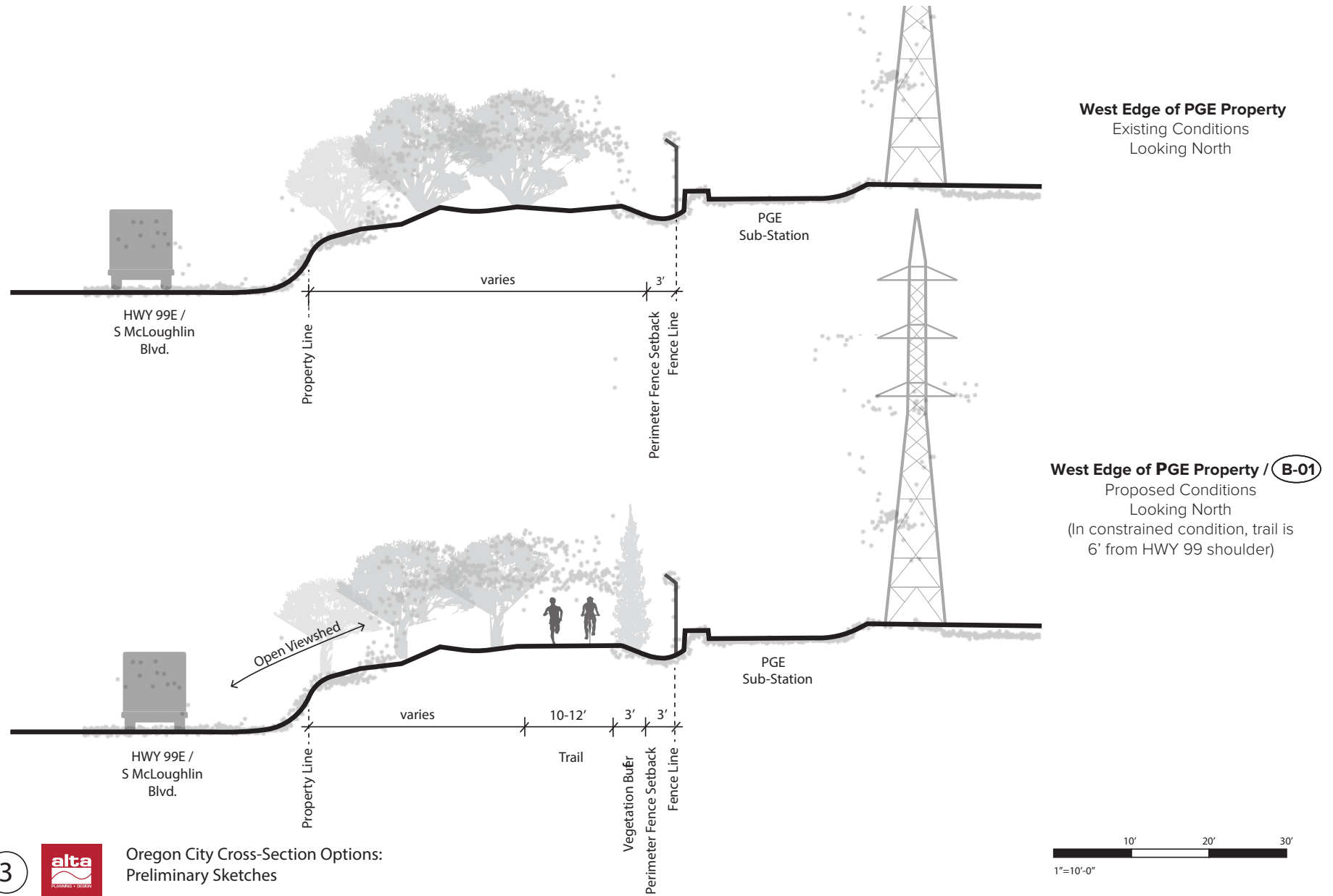
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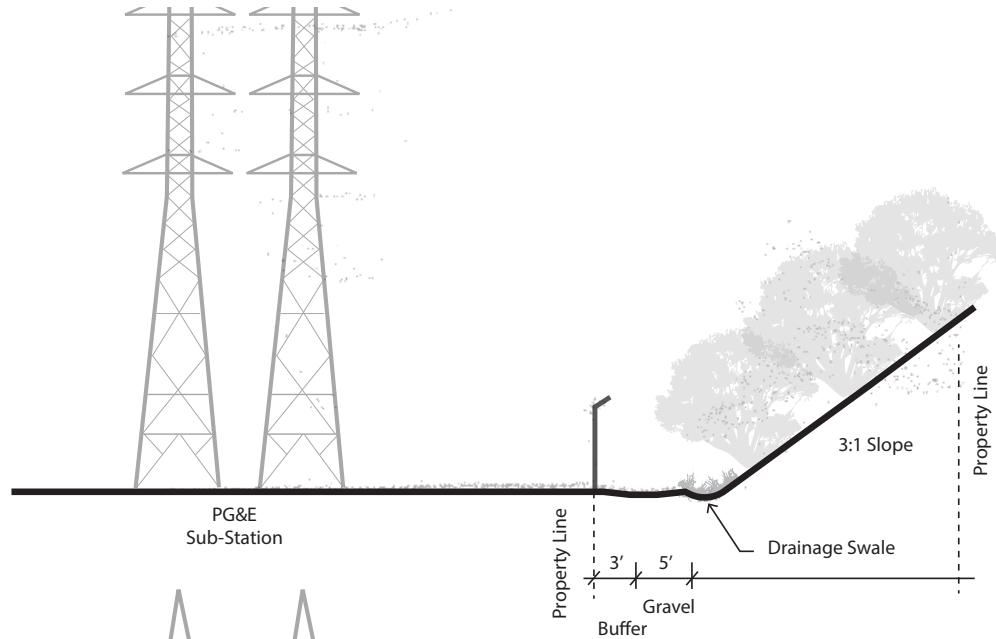
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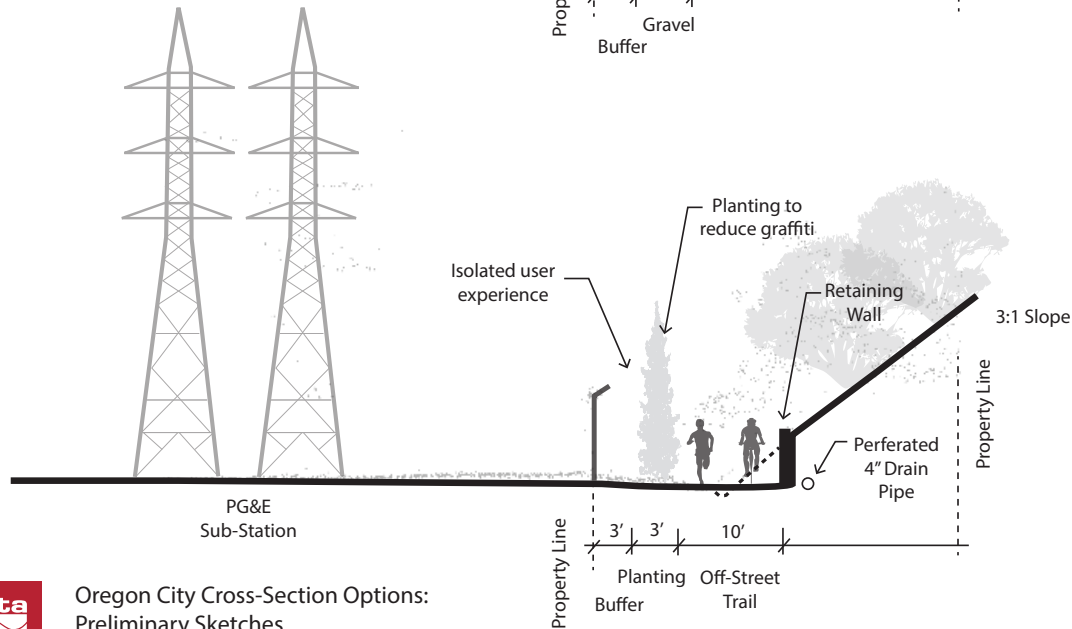
Oregon City Cross-Section Options:
Preliminary Sketches

August 2017

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SE Corner of PG&E Property
Existing Conditions
Looking North

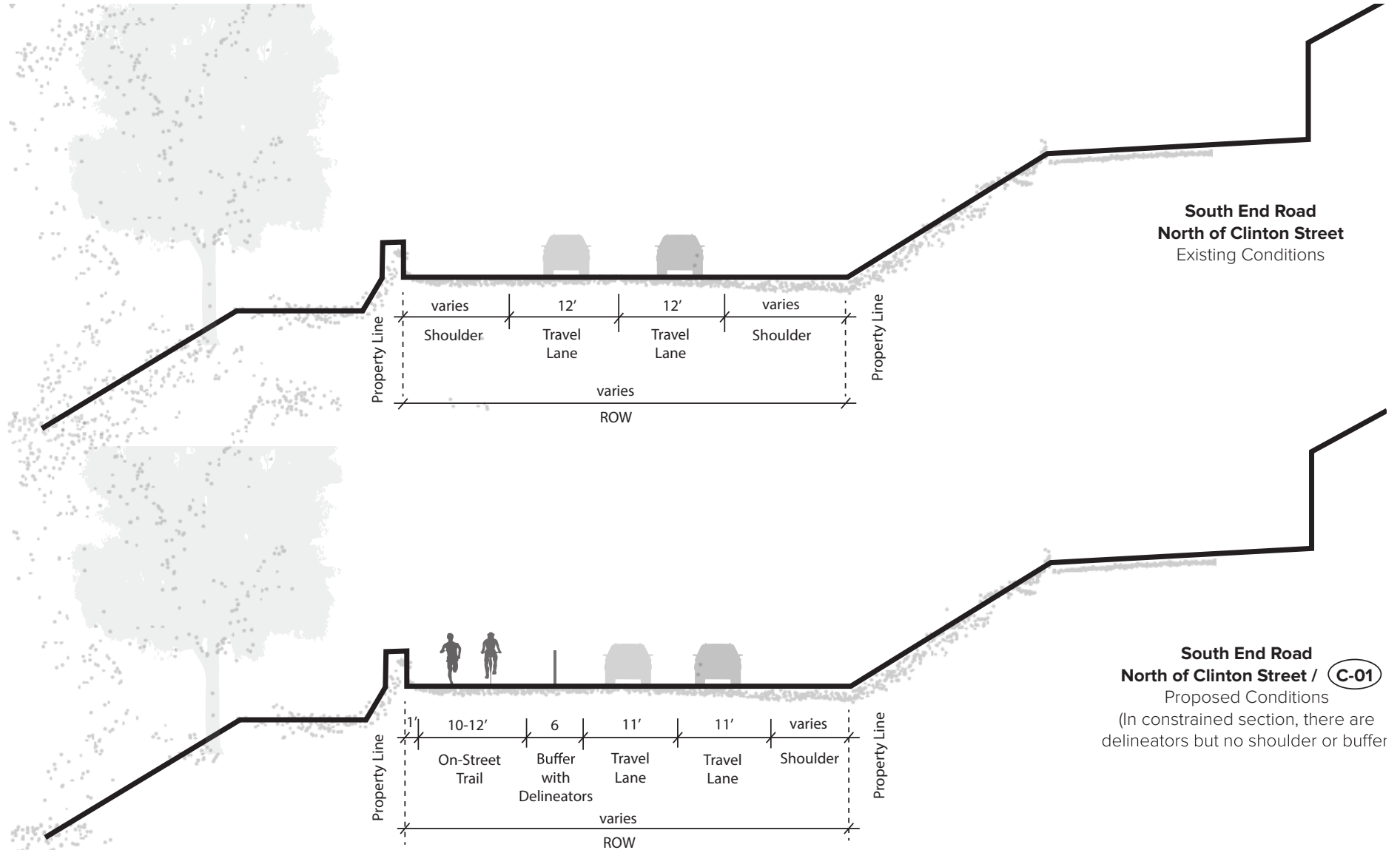


SE Corner of PG&E Property / B-03
Proposed Conditions
Looking North



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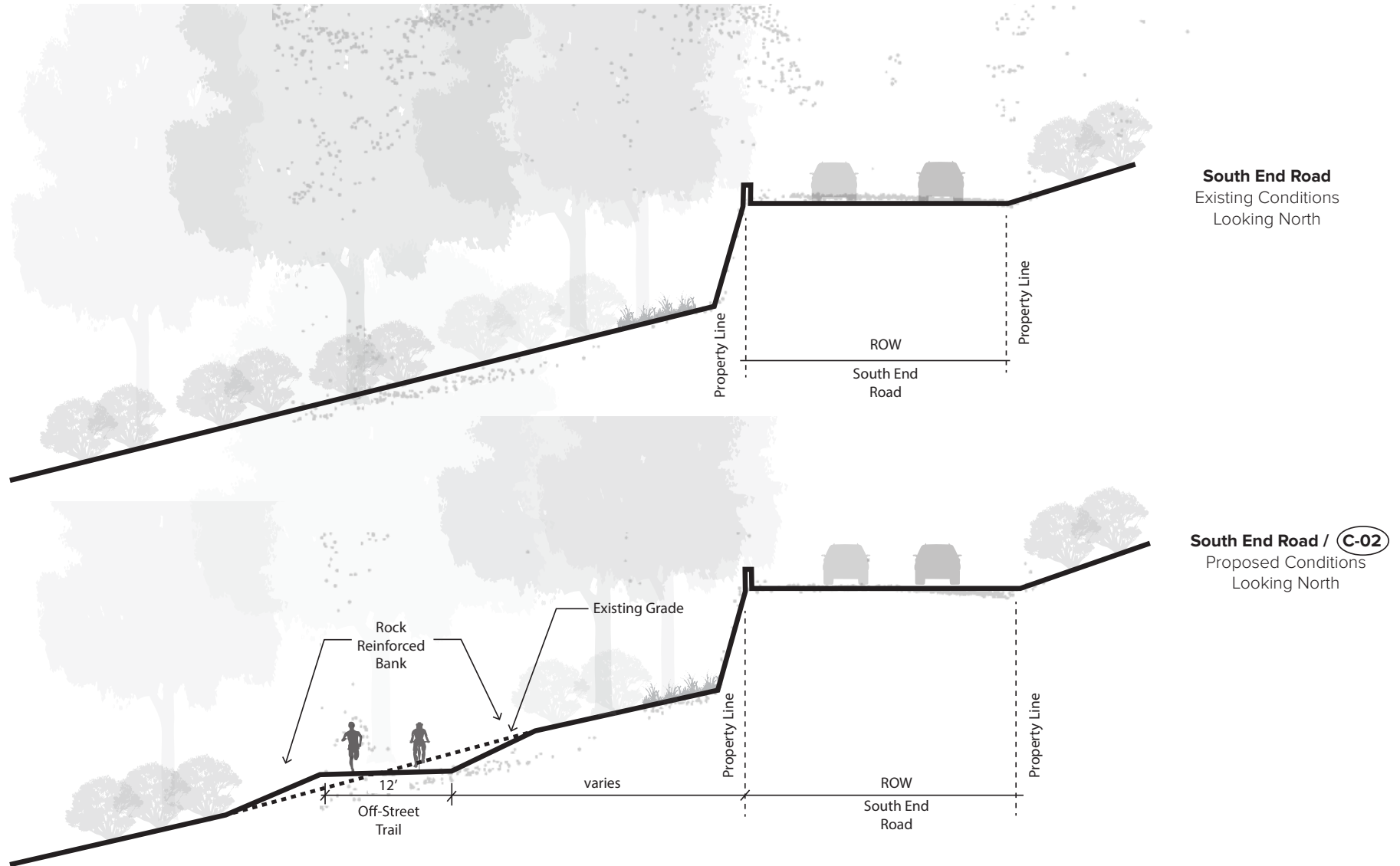
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Preliminary Sketches

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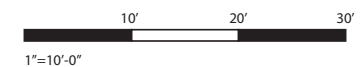


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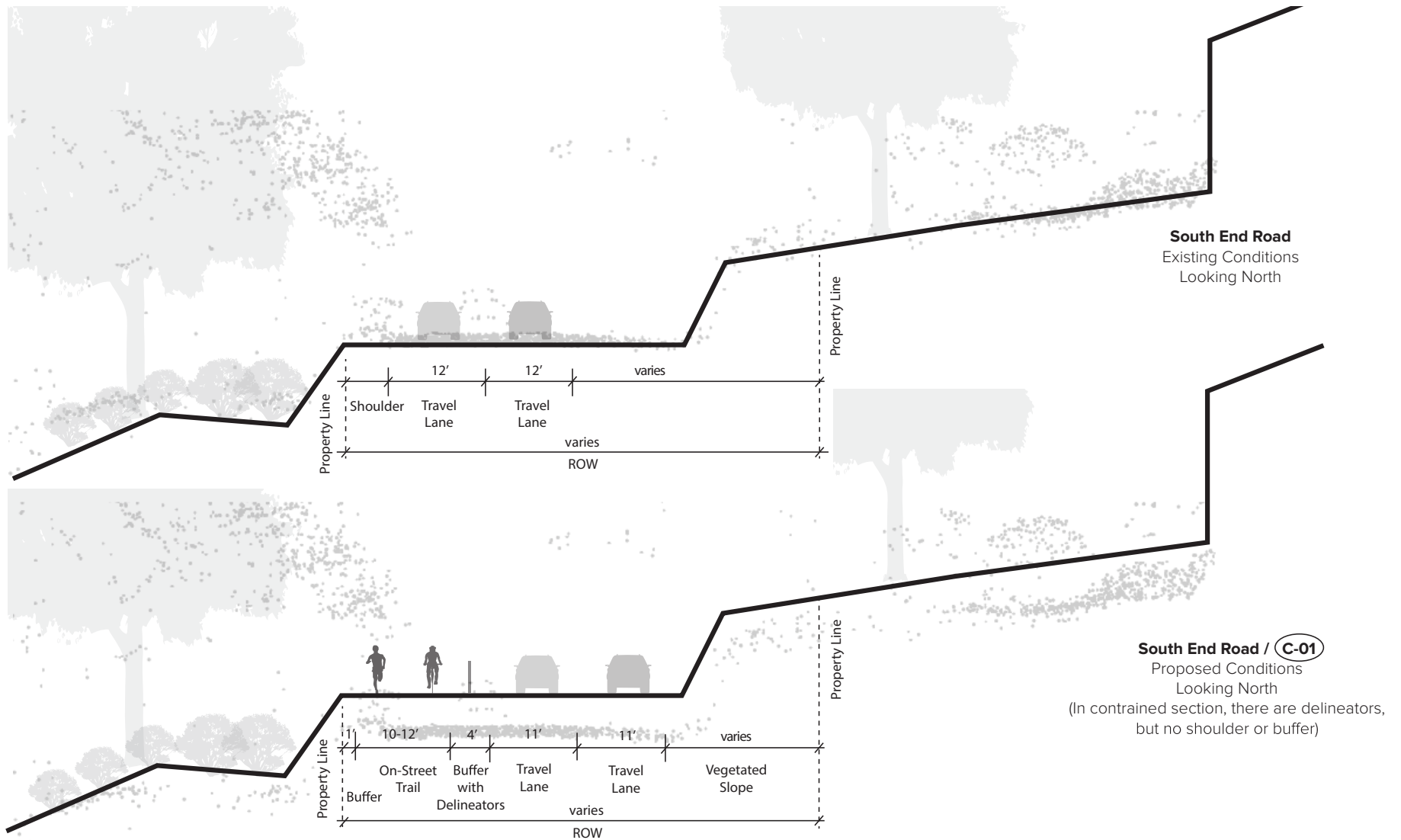
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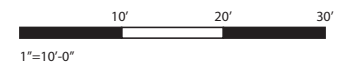


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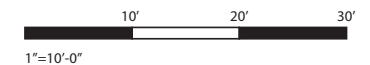
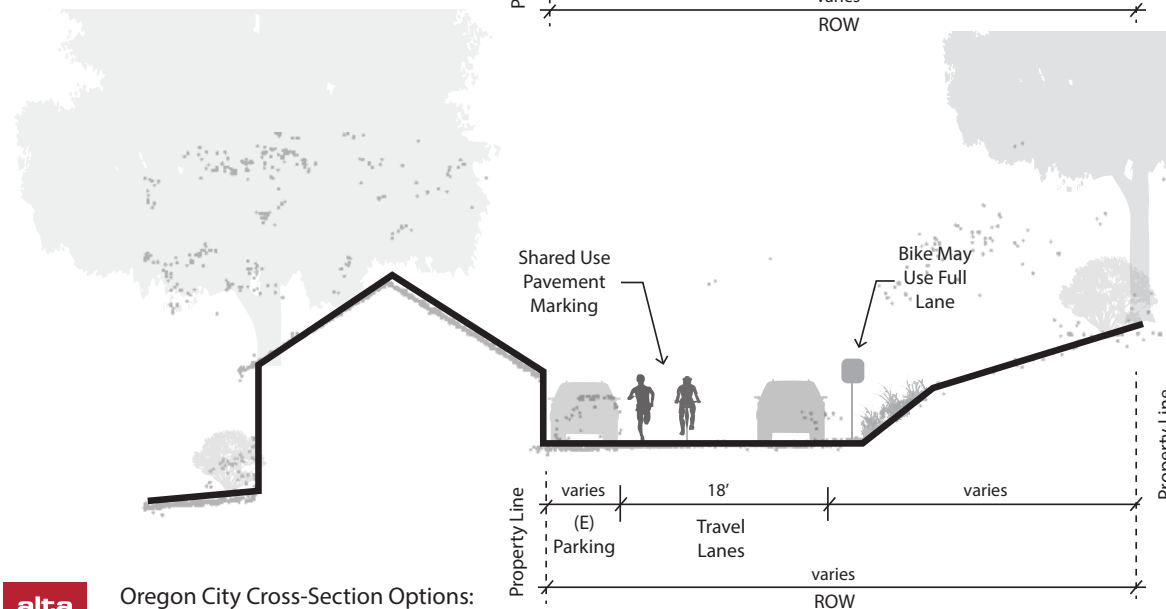
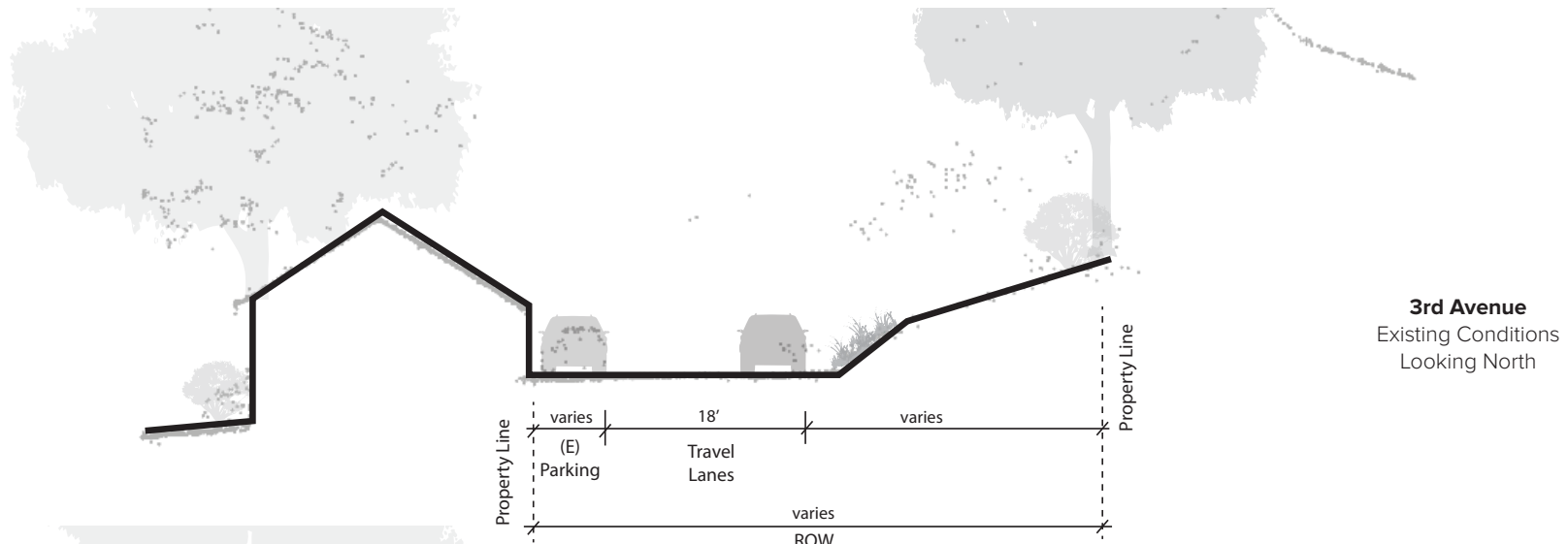
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August 2017



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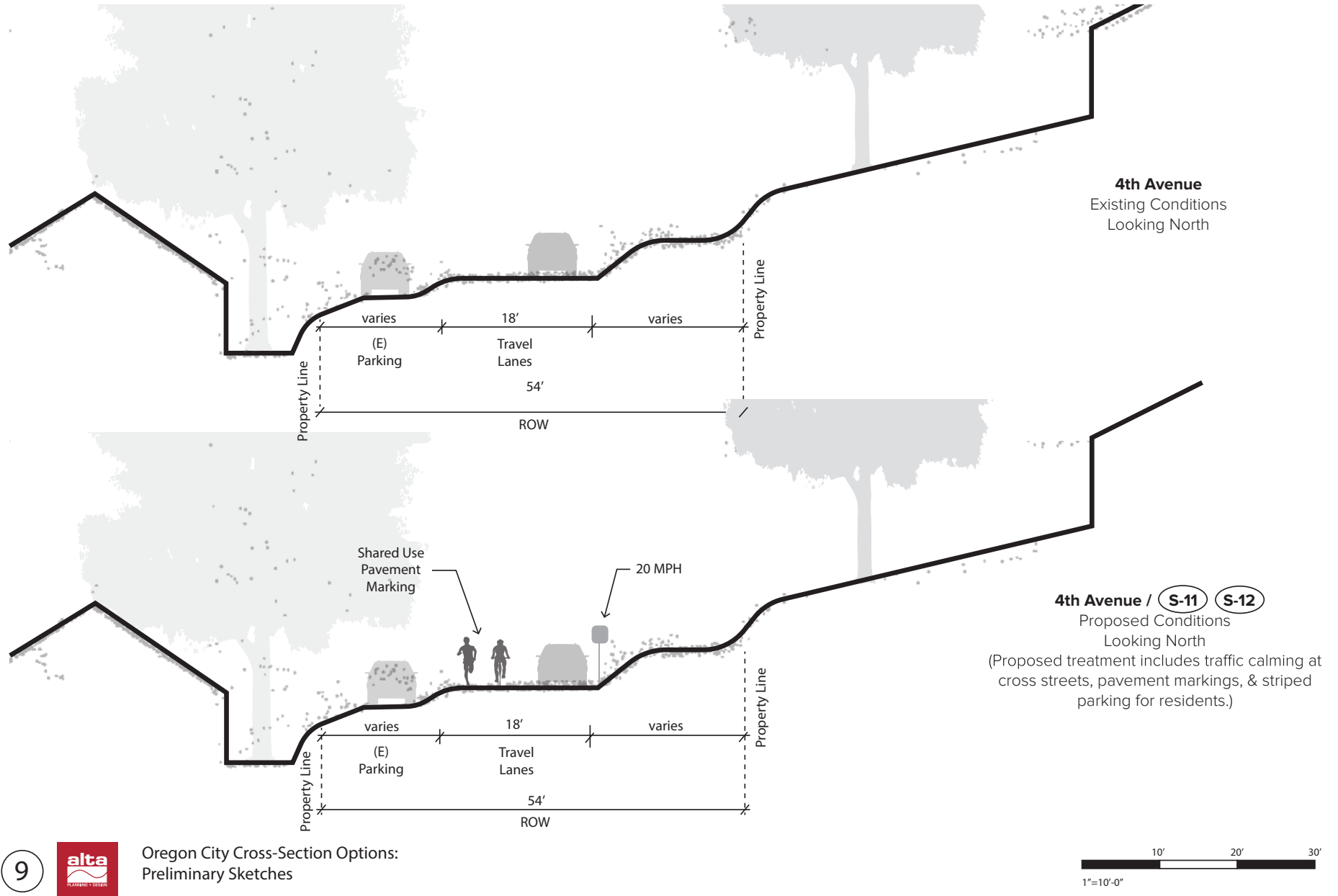
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Oregon City Cross-Section Options:
Preliminary Sketches

August 2017

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APPENDIX 5 - PLANNING LEVEL COST ESTIMATES

PLANNING-LEVEL COST ESTIMATES

Note: These planning-level costs were prepared for alignment alternative evaluation and comparison only.

Segment Name	Notes	Fully Burdened Cost
ALIGNMENT - A		
BOARDWALK	Replace existing	\$2,500,000
ON STREET	Canemah and access points to 99E, includes signal at Jerome	\$371,175
PED BRIDGE	No improvement to existing bridge	\$0
WIDEN SIDEWALK	99E	\$3,169,110
TOTAL		\$6,040,285
ALIGNMENT - B		
ON STREET	Canemah	\$36,435
SEPARATED TRAIL	2nd and Tumwater to Old Canemah Park Trail (includes crossing at 2nd)	\$1,687,999
WIDEN EXISTING TRAIL	Old Canemah Park Trail	\$245,490
WIDEN SIDEWALK TO TRAIL WIDTH	Tumwater	\$119,700
TOTAL		\$2,089,624
ALIGNMENT - C		
ON STREET	Canemah and access point at 5th, does not include signal at S 2nd	\$45,465
SEPARATED TRAIL	Includes switchback ramp to Blanchard	\$450,198
WIDEN ROADWAY FOR SIDE PATH	Includes retaining wall, and minor excavation of basalt	\$2,110,023
TOTAL		\$2,605,686

PLANNING-LEVEL COST ESTIMATES

Note: These planning-level costs were prepared for alignment alternative evaluation and comparison only.

On-Street Improvements - Canemah neighborhood					
Item Description	Unit	Quantity per mile	Unit Price	Total	Notes
Wayfinding Signs	EA	6	\$600.00	\$3,600.00	
Regulatory Signs	EA	4	\$350.00	\$1,400.00	Every 400' each direction
Pavement markings	EA	12	\$750.00	\$9,000.00	Every 200' each direction, thermoplastic bike with chevron
Stop signs	EA	4	\$150.00	\$600.00	
New speed limit signs	EA	5	\$150.00	\$750.00	
Median refuge island	EA		\$12,000.00	\$0.00	1 per mile
Painted curb extensions	LS	4	\$500.00	\$2,000.00	
Speed humps	EA		\$2,000.00	\$0.00	Every 800'
Curb Ramp Improvements	EA		\$2,500.00	\$0.00	Curb ramp upgrades at on 25% of intersections
Diverter	EA		\$8,000.00	\$0.00	Every 2 miles
Estimated Direct Cost				\$17,350.00	
Contingency	40%			\$6,940.00	
Engineering / Design	30%			\$5,205.00	
Construction / Overhead / Mobilization	25%			\$4,337.50	
Project Administration	15%			\$2,602.50	
Estimated Construction Costs (70% burden)				\$36,435.00	

PLANNING-LEVEL COST ESTIMATES

Note: These planning-level costs were prepared for alignment alternative evaluation and comparison only.

Shared Use Path - 2nd to the Old Canemah Trail segment					
Item Description	Unit	Qty	Unit Cost	Total	Notes
Clearing and Grubbing	SF	24026	\$0.35	\$8,409.00	shoulders + ac trail + conc trail
Excavation	CY	890	\$24.00	\$21,360.00	shoulders + ac trail + conc trail
Erosion Controls	LF	4600	\$2.50	\$11,500.00	both sides, length of project
Sedimentation Controls	LF	2300	\$7.15	\$16,445.00	hay bales, assume one side for planning
Grading	SY	2670	\$15.00	\$40,050.00	shoulders + ac trail + conc trail
Reinforcement at top of cliff	LF	200	\$166.50	\$33,300.00	
Crusher fine shoulders	CY	38	\$100.00	\$3,800.00	2) 2' wide
Concrete curb and gutter	LF	1015	\$35.00	\$35,525.00	
Asphalt path over aggregate base	SF	7775	\$9.00	\$69,975.00	10' wide, PGE to OCT
Concrete path over aggregate base	SF	15225	\$12.00	\$182,700.00	15' wide, no shoulders, 2nd to PGE
Protected trail crossing of 2nd	LS	1	\$110,000.00	\$110,000.00	
Mile markers	EA	0	\$350.00	\$0.00	
Landscape screening	SF	810	\$4.50	\$3,645.00	
Pole or guy wire relocation	LS	1	\$250,000.00	\$250,000.00	PGE said 20k - 500k
Tree planting	EA	32	\$350.00	\$11,200.00	assume 4 new trees for every 1 removed
Tree removal	EA	8	\$350.00	\$2,800.00	assume 16 per 1/4 mile
Bollards	EA	0	\$1,100.00	\$0.00	assume none
Wayfinding Signs	EA	4	\$600.00	\$2,400.00	
Regulatory and Warning Signs	EA	2	\$350.00	\$700.00	
Mechanical Seeding	SF	0	\$0.20	\$0.00	
Estimated Direct Cost				\$803,809.00	
Contingency	40%			\$321,523.60	
Engineering / Design	30%			\$241,142.70	
Construction / Overhead / Mobilization	25%			\$200,952.25	
Project Administration	15%			\$120,571.35	
Estimated Construction Costs (70% burden)				\$1,687,998.90	

PLANNING-LEVEL COST ESTIMATES

Note: These planning-level costs were prepared for alignment alternative evaluation and comparison only.

Widen Shared Use Path - Old Canemah Park					
Item Description	Unit	Qty	Unit Cost	Total	Notes
Clearing and Grubbing	SF	11790	\$0.35	\$4,127.00	shoulders + 5'ac
Excavation	CY	435	\$24.00	\$10,440.00	shoulders + 5'ac
Erosion Controls	LF	1310	\$2.50	\$3,275.00	both sides, length of project
Sedimentation Controls	LF	655	\$7.15	\$4,683.00	hay bales, assume one side for planning
Grading	SY	875	\$15.00	\$13,125.00	1 shoulder + 5' trail
Crusher fine shoulders	CY	64	\$100.00	\$6,400.00	2) 2' wide
Asphalt path over aggregate base	SF	6550	\$9.00	\$58,950.00	
Mile markers	EA	0	\$350.00	\$0.00	
Tree planting	EA	32	\$350.00	\$11,200.00	assume 4 new trees for every 1 removed
Tree removal	EA	8	\$350.00	\$2,800.00	assume 16 per 1/4 mile
Bollards	EA	0	\$1,100.00	\$0.00	assume none
Wayfinding Signs	EA	2	\$600.00	\$1,200.00	
Regulatory and Warning Signs	EA	2	\$350.00	\$700.00	
Mechanical Seeding	SF	0	\$0.20	\$0.00	
Estimated Direct Cost				\$116,900.00	
Contingency	40%			\$46,760.00	
Engineering / Design	30%			\$35,070.00	
Construction / Overhead / Mobilization	25%			\$29,225.00	
Project Administration	15%			\$17,535.00	
Estimated Construction Costs (70% burden)				\$245,490.00	

PLANNING-LEVEL COST ESTIMATES

Note: These planning-level costs were prepared for alignment alternative evaluation and comparison only.

Widen Sidewalks to 12' - Tumwater (VFW-2nd)					
Item Description	Unit	Qty	Unit Cost	Total	Notes
Saw cut and remove asphalt (8' width)	LF	375	\$15.00	\$5,625.00	(cost assumes widen path by 6' and 2' to form curb and gutter)
Remove concrete curb	LF	375	\$6.00	\$2,250.00	
Standard concrete curb (6")	LF	375	\$35.00	\$13,125.00	
Guard rail/barrier along curbline	LF		\$95.00	\$0.00	
Tumwater closure	LS	1	\$5,000.00	\$5,000.00	Striping and removable bollards
Restripe travel lanes	LF	375	\$3.00	\$1,125.00	
Striping removal	LF	375	\$1.00	\$375.00	
Concrete Path	SF	2250	\$12.00	\$27,000.00	6' widening Tumwater
Concrete Path	SF		\$12.00	\$0.00	7' widening, 2nd, 99E
Wayfinding Signs	EA	3	\$600.00	\$1,800.00	
Warning Signs	EA	2	\$350.00	\$700.00	(assume 2 warning signs per block)
Estimated Direct Cost				\$57,000.00	
Contingency	40%			\$22,800.00	
Engineering / Design	30%			\$17,100.00	
Construction / Overhead / Mobilization	25%			\$14,250.00	
Project Administration	15%			\$8,550.00	
Estimated Construction Costs (70% burden)				\$119,700.00	