



U.S. 26 RHODODENDRON DESIGN REFINEMENT PLAN

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Prepared by:





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Refinement Plan Overview

The purpose of the Rhododendron U.S. 26 Design Refinement (Refinement Plan) is to determine the most appropriate cross section for the roadway within the Rhododendron community as well as the location of an enhanced pedestrian crossing and multimodal facilities to be implemented with a future pavement preservation project and as future development occurs.

Rhododendron's Corridor Vision

Rhododendron is an unincorporated community located on U.S. 26, approximately 21 miles east of Sandy, Oregon. Roughly 365 households and a dozen businesses are located in Rhododendron. The community has been the focus of several planning efforts including the 2018 Rhody Rising Visioning Plan and the 2021 Rhododendron Main Street Concept Plan.

Based on the documented vision and desired outcomes identified in these plans, the Refinement Plan team with the help of community and stakeholder input developed a *Corridor Vision Statement* as well as *Evaluation Criteria and Performance Measures* to guide the Refinement Plan process.

Additional detail on Corridor Vision Statement is included in Appendix A. Additional detail on Evaluation Criteria and Performance Measures is included in Appendix B.

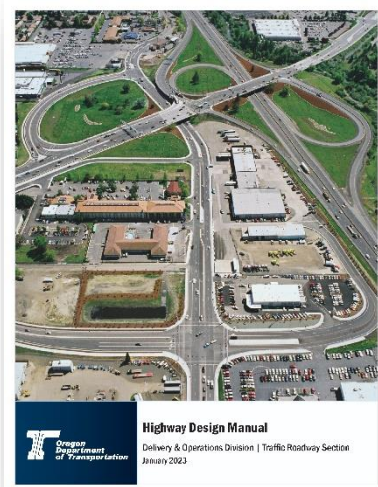
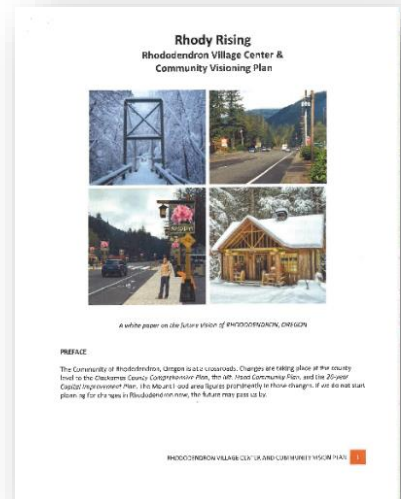
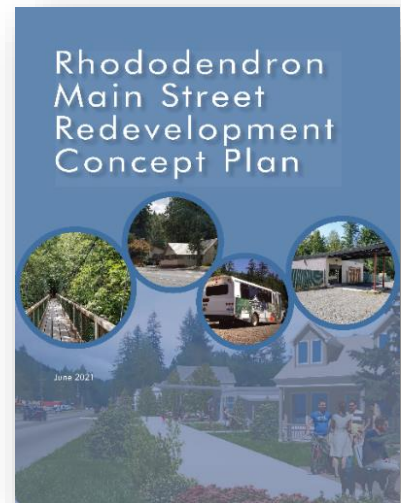
Performance-Based Approach

ODOT's Highway Design Manual (HDM) establishes a framework for determining the urban-related context along state roadways. Identifying desired project outcomes and understanding the urban context, and who will be using the roadway, helps decision-makers determine appropriate performance measures to evaluate the trade-offs of various design decisions.

Performance-based design is a shift from applying strict rigid design standards toward designing based on a community's specific setting and circumstances. Performance-based design supports planning efforts to create projects that are context-sensitive and reflect the original intended outcomes.

The Refinement Plan followed the performance-based approach framework identified in ODOT's HDM to develop, evaluate, and ultimately selected a preferred design concept for U.S. 26 in Rhododendron.

Additional detail on the Performance-Based Design Framework is included in Appendix C. Additional detail on the background Plan, Policy, and Literature Review is included in Appendix D.



Study Area

U.S. 26 runs through Rhododendron (east-west orientation) with a mix of residential buildings and businesses located on both sides of the highway. The Refinement Plan study area focuses on U.S. 26 between mile point (MP) 44.0 and MP 44.4.

U.S. 26 transitions from a two-lane highway with a posted speed of 55 mph to a five-lane highway with a posted speed of 40 mph when entering Rhododendron from the east. The five-lane cross section is present through the community, with an increased posted speed of 45 mph just west of the community's core area. Figure 1 illustrates the Refinement Plan study area.

What Needs Improving?

The project team reviewed the study area's characteristics to establish a baseline understanding of the existing safety, operational, and active transportation conditions.

Roadway Characteristics

U.S. 26 in Rhododendron today has a five-lane cross section, with a posted speed limit of 40 mph. Recorded speed data shows 85th percentile speeds of 58 mph on both ends of the study area, substantially higher than the 40 mph posted speed.



The two-lane section of U.S. 26 east of Rhododendron continues to Government Camp with limited passing opportunities. Based on field observations and community input, the transition from five-lanes (west) to two-lanes (east) leads to unpredictable driving and motorist accelerating to pass vehicles including large trucks through the community.

Due to environmental, cultural, tribal, and historic impacts, the two-lane section of U.S. 26 east of Rhododendron is anticipated to remain two-lanes for the foreseeable future.



H:\27\27338 - US26 Design Refinement Plan\01 Project Study Area\2021 Dates 6/23/2021

- Mile Points
- Study Corridor



Figure 1

Access Management

Access management is the planning for and management of vehicular access points to adjacent land uses along roadways. Proper access management improves the safety and efficiency of a roadway by further defining access points and controlling turning movements.

Within the study area today, Rhododendron has limited access management strategies with no management of access or driveway spacing. In many locations, driveways are not defined, allowing vehicles to make relative high-speed turns from U.S. 26 to adjacent land use parcels, increasing risk of crashes between people walking, biking, accessing transit, and driving.



The absence of curbs within the study area provides a lack of access definition and allow for relative high-speed turning maneuvers into adjacent parcels from U.S. 26.

High Risk Crash Location

Based on a review of crash data between 2016 and 2020, a total of eight crashes were reported within the study area; none of which resulted in fatalities or serious injuries. However, the segment crash rate for U.S. 26 in the study area exceeds the average crash rates for rural principal arterials in Oregon between 2016 and 2020.

Safety can also be measured in the likelihood of a crash occurring or “risk”. In 2020, ODOT produced the Oregon Bicycle and Pedestrian Safety Implementation Plan. The plan includes a systemic safety analysis of the entire state of Oregon, evaluating high risk crash locations for people walking and biking.

Based on ODOT's Bicycle and Pedestrian Safety Implementation Plan, the Rhododendron study area ranks in the top 20% statewide for high-risk crash locations for bicycles and pedestrians.

Roadway characteristics contributing to high pedestrian and bicycle risk include number of lanes, speed, lack of dedicated pedestrian and bicycle facilities, and undefined accesses to businesses.



Dirt walking paths adjacent to the highway are present on both sides of the highway.

Limited Access for People Walking and Biking

Access for people walking and biking in the study area is limited. Six-foot shoulders immediately adjacent to travel lanes are provided on both sides of the highway; however, dedicated bicycle lanes, sidewalks, and crosswalks do not exist.

Additional detail on the Existing Safety, Operations, and Active Transportation Needs is included in Appendix E.

Who Participated in the Planning Process?

Public involvement was a priority for the Refinement Plan process and engaging the community of Rhododendron required a tailored approach. Many community members have limited cell phone service and, in some cases, limited internet access. To address the unique needs the project team conducted the following public involvement strategies to gain community input on the project goals, development of design concepts, and ultimately selection of a preferred design concept for U.S. 26.

Community Drop-in Event



Community members gather and provide feedback on the Refinement Plan corridor vision and desired outcomes as part of the community drop in event.



Community members complete surveys and provide hands-on annotated feedback through a mapping exercise as part of the community drop in event.

A community drop-in outreach event was held on August 11, 2022, in Rhododendron from 2:00 to 4:00pm. ODOT staff publicized the drop-in event on ODOT's and Clackamas County's website, through community bulletin boards, in the local newspaper and through a targeted mailer to the approximately 300 community residents.

The two-hour event drew strong participation with over 50 people attending the drop-in event in-person, and 25 comment response surveys returned.

Stakeholder Interviews

The project team conducted stakeholder interviews to gather feedback from varying perspectives and representation within the project study area. Stakeholder groups interviewed included the Clackamas County Pedestrian and Bicycle Advisory Committee (PBAC), SkiBowl Group of Companies (property owner and local employer), Clackamas County Traffic Safety Engineer, Clackamas County Mt. Hood Express Human Services Supervisor, property owners of Alderbrook Lodge, and owners of the Dairy Queen.

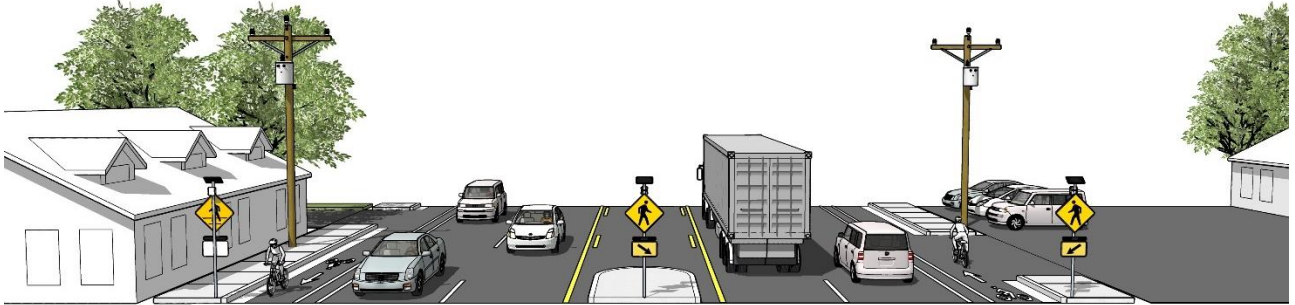
Virtual Public Open House

A virtual public open house was held online between February 1 and February 22, 2023. 144 community members participated in the virtual public open house providing feedback on the design concepts, enhanced crossing treatments, and enhanced crossing location.

Preliminary Design Concepts

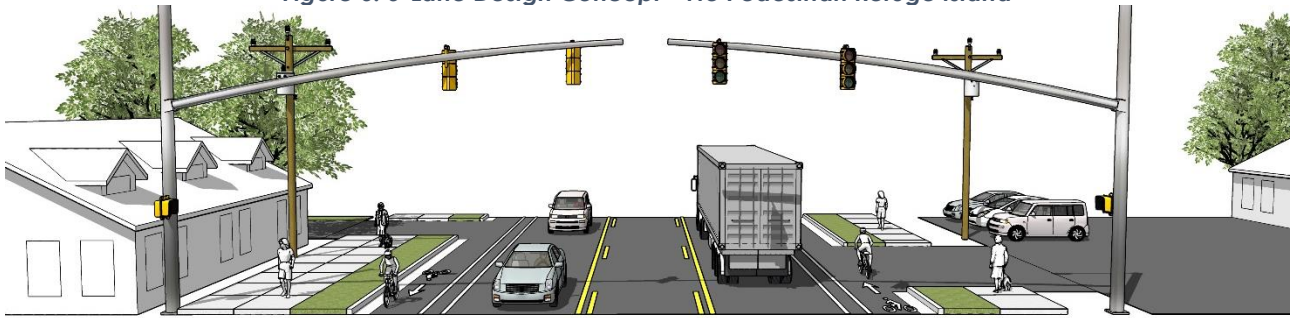
Three design concepts were presented as part of the virtual open public house in addition to the no-build scenario. The preliminary design concepts included in the virtual online public open house are illustrated in Figure 2 to Figure 4.

Figure 2: 5-Lane Design Concept



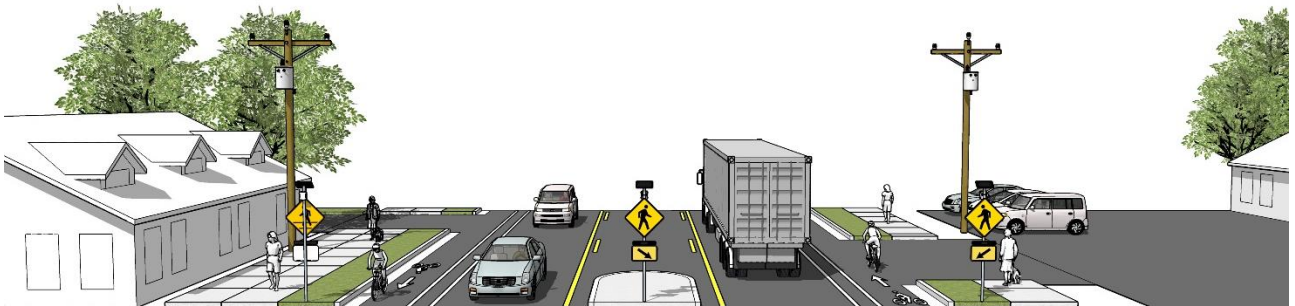
The 5-lane design concept maintains the current number of lanes and constructs sidewalks on both sides of the roadway, buffered bike lanes, as well as a pedestrian refuge island with a rectangular rapid flashing beacon (RRFB) to improve pedestrian crossings.

Figure 3: 3-Lane Design Concept – No Pedestrian Refuge Island



The 3-lane design concept – no pedestrian refuge island reduces the number of lanes to 3 lanes constructs sidewalks on both sides of the roadway, including an extra wide sidewalk on the south side of the roadway, buffered bike lanes, as well as a pedestrian signal to improve pedestrian crossings.

Figure 4: 3-Lane Design Concept – Pedestrian Refuge Island

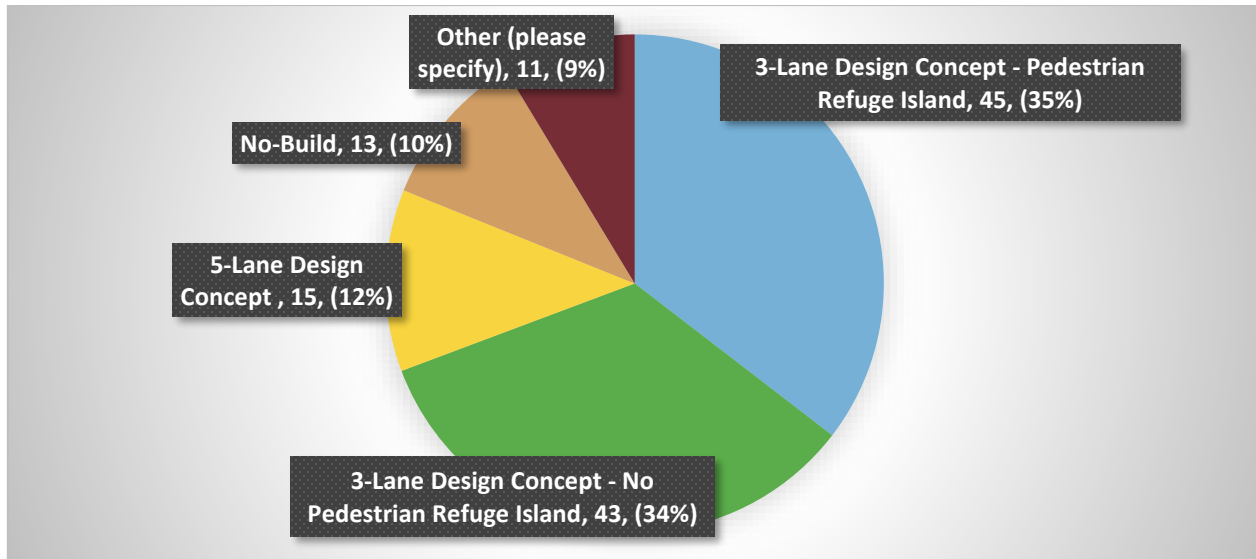


The 3-lane design concept –pedestrian refuge island reduces the number of lanes to 3 lanes constructs sidewalks on both sides of the roadway, including an extra wide sidewalk on the south side of the roadway, buffered bike lanes, as well as a pedestrian refuge island with a rectangular rapid flashing beacon (RRFB) to improve pedestrian crossings.

Design Concept Preferences

Of the 144 participants, 88 expressed support for a 3-lane design concept (compared to a 5-lane) with a relatively evenly split of people in favor and against the implementation of a pedestrian refuge island. Figure 5 illustrates the breakdown of responses in support of each design concept.

Figure 5: Virtual Public Open House Design Concept Preferences

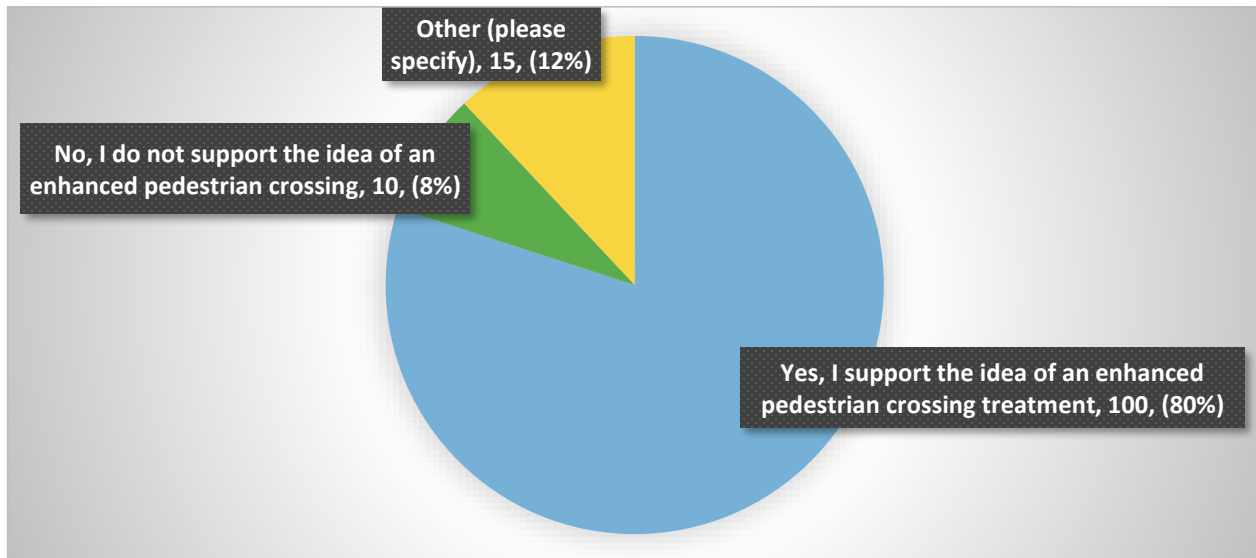


Based on community feedback, the 3-lane design concept is primarily supported due to the opportunity for reducing vehicular speeds and improving safety for all modes while maintaining the ease of snow maintenance.

Enhanced Crossing Preferences

The Virtual Public Open House also asked community members to weigh in on their preferences for an enhanced crossing and marked crosswalk. Of the 125 respondents, 100 support an enhanced crossing as illustrated in Figure 6.

Figure 6: Virtual Public Open House Enhanced Crossing Preferences



Additional details on the Refinement Plan public involvement activities including a summary of the Community Drop-In Event and Virtual Public Open House are included in Appendix F.

Design Concepts & Evaluation

The project team developed three fundamental design concepts to address the needs and deficiencies identified along U.S. 26 in Rhododendron. The design concepts were developed based on field observations, analysis performed by the project team, national and state guidance for multimodal facility selection, and community feedback. The design concepts included:

- No-Build
- 5-Lane (with Pedestrian Refuge Island)
- 3-Lane (with and without Pedestrian Refuge Island)

Evaluation Process

Each of the design concepts were analyzed based on the evaluation criteria and performance measures to understand how well the design concept performs and aligns with the Refinement Plan's intended outcomes and corridor vision. Input received by the community through public involvement activities was incorporated into the evaluation process to influence the selection of a preferred design concept. The evaluation criteria supporting the corridor vision is summarized below.

Safety

- The design concept provides safety countermeasures that have the potential to reduce the frequency of fatal and severe injury crashes and encourage slower speeds.

Multimodal Integration

- The design concept provides an integrated network of comfortable facilities and services for a variety of travel modes.

Connectivity

- The design concepts provides safe and convenient options to cross U.S. 26, connecting users to the adjacent assets, businesses, trails, and transit stops. The design concept meets ODOT's operational performance targets and continues to serve as an important regional connection addressing "vehicle carrying capacity".

Livability

- The design concept supports the community's vision for increasing the sense of place, allowing for vibrant mix of development, a reduction of travel speeds, and transportation facilities meeting the needs of the "all ages and abilities" population.

Feasibility

- The design concept has no major design feasibility concerns and minimizes cost relative to the project benefits. Unknowns are within reasonable control and the project is designed with consideration to winter maintenance practices.

Evaluation Results

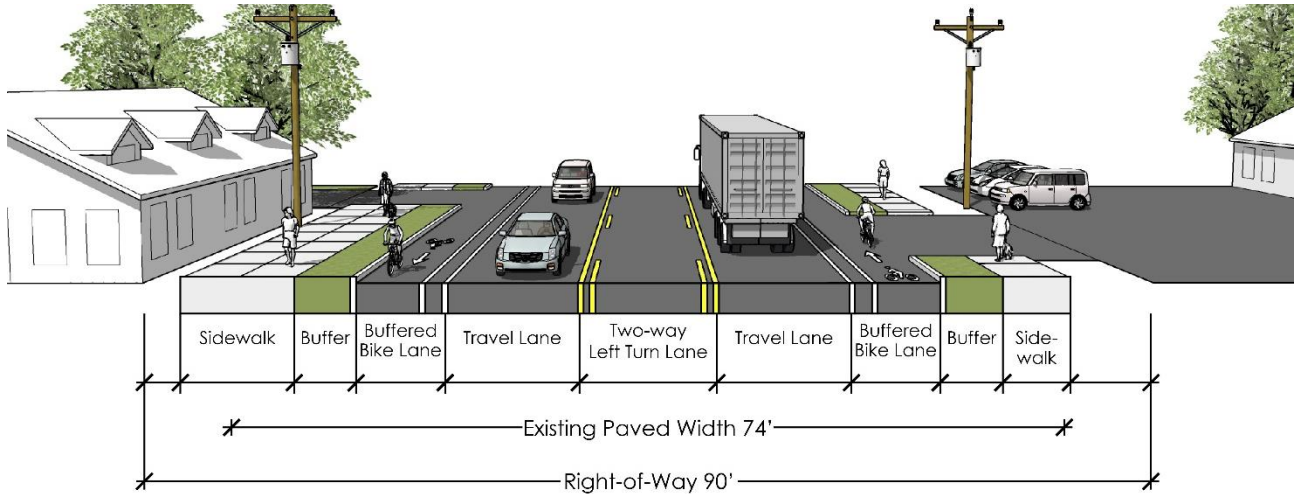
Based on the evaluation process, the 3-Lane with a Pedestrian Signal was identified as the design concept that most closely aligns with the corridor vision, intended project outcomes of improving safety and multimodal access, and most strongly supported by the community.

Additional detail on the Design Refinement and Design Concepts Evaluation is included in Appendix G.

Preferred Design Concept

The preferred design concept is the culmination of the U.S. 26 Design Refinement Plan process and the desired vision for U.S. 26 in Rhododendron. The design has been informed by detailed safety, operational, and active transportation analyses, as well as community input, ODOT maintenance, mobility advisory committee (MAC), and ODOT staff. Figure 7 illustrates the preferred design concept cross section.

Figure 7: Preferred Design Concept Cross Section¹



Transition Zone

The preferred design concept requires changes to the existing transition zones approaching Rhododendron in both directions along U.S. 26. Accompanying signage and striping modifications will be required to effectively manage vehicular speeds approaching the study area. A target speed of 35 mph is identified in the 2023 Highway Design Manual (HDM that reflects the Blueprint for Urban Design [BUD]) based on the Rural Community context. In the near-term, the goal is to provide speed management treatments to encourage people to drive at the existing 40 mph posted speed or below. *Today, the 85th percentile speed in the project study area is 58 mph.*

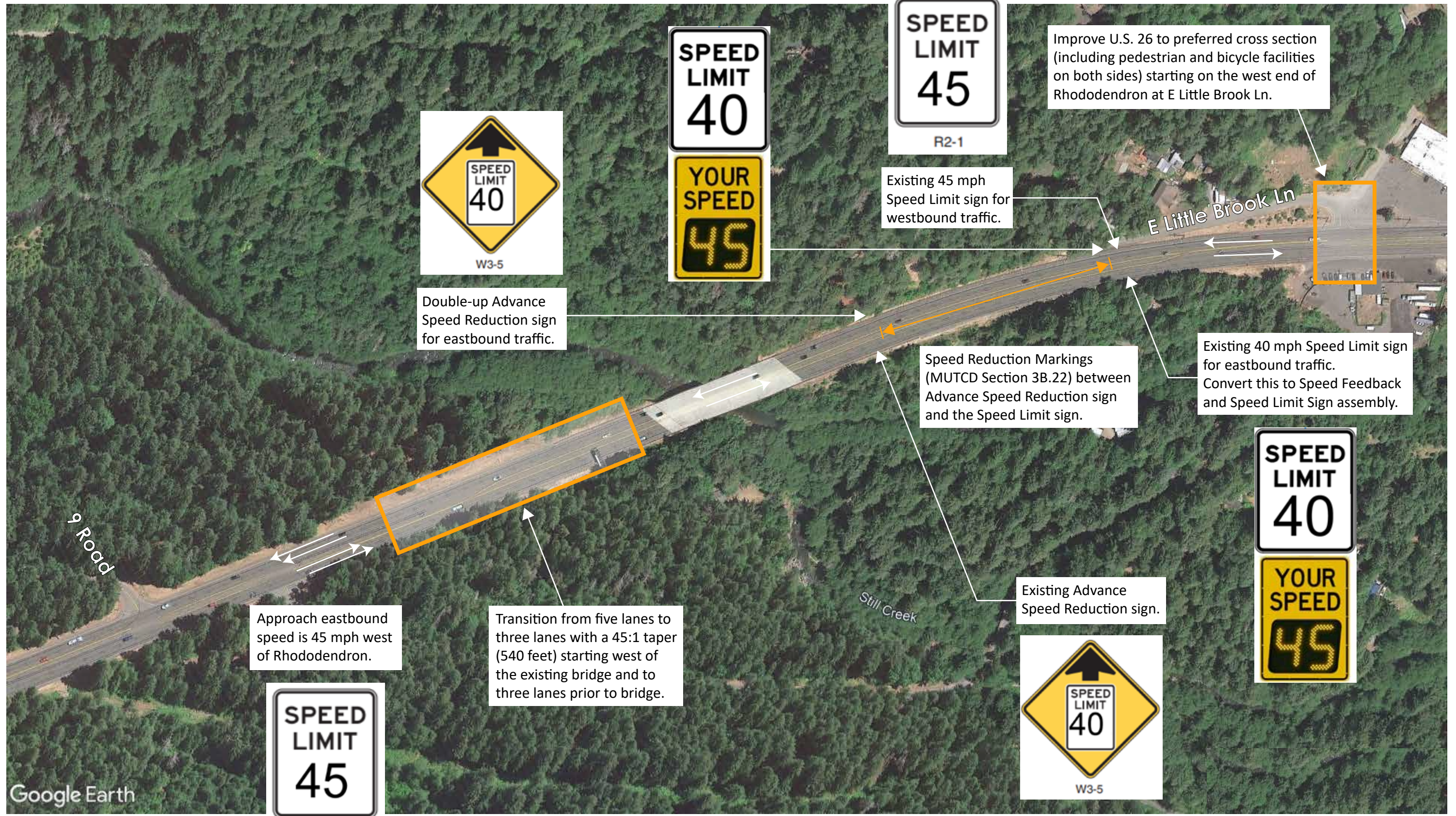
Eastbound Approach

To the west of the study area, the current roadway cross section is 5-lanes with a posted speed of 45 mph. A stepped approach transitioning from 45 mph to 40 mph is recommended with a 45:1 taper (540 feet) west of the existing Zigzag River bridge. Recommended signage and striping for the eastbound approach transition is illustrated in Figure 8. Speed reduction signage is recommended to coincide with in-lane pavement markings as well as speed feedback signs to accompany additional speed limit signs.

Westbound Approach

To the east of the study area, the current roadway cross section is 2-lanes with a posted speed of 55 mph. A stepped approach transitioning from 55 mph to 40 mph is recommended. Speed feedback signs are recommended to accompany additional speed limit signs. Recommended signage and striping for the westbound approach transition is illustrated in Figure 9.

¹ The preferred design concept will require further refinement as part of the implementation phase. Section 305.6 of ODOT's HDM provides guidance on recommended cross section elements and widths based on the Rural Community context: https://www.oregon.gov/odot/Engineering/Documents_RoadwayEng/HDM-0300.pdf



R2-1



R2-1



W3-5



W3-5



Eastbound Transition Zone
Rhododendron, Oregon

Figure
8

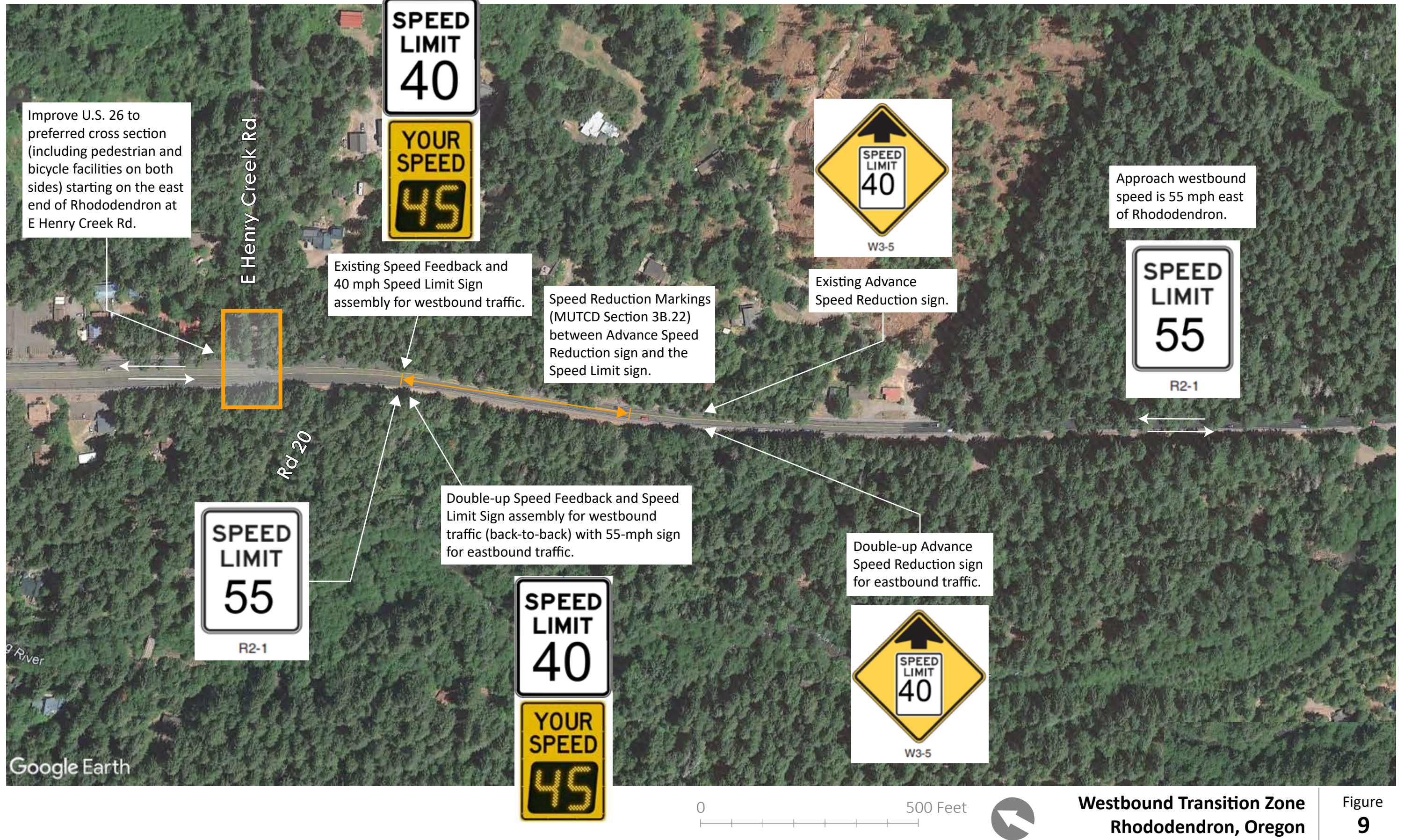


Figure 9

Enhanced Crossing

The installation of an enhanced crossing is identified as one of the highest priority project elements by the community. U.S. 26 divides the community of Rhododendron with destinations located on both sides of the highway and no marked crosswalk provided today.



The location of the enhanced pedestrian crossing was informed by community input and with consideration to existing destinations and potential future transit stops. *Note: The ultimate location and crossing facility treatment will need to be further verified by the State Traffic Engineer.*

Transit Stops

Mt. Hood Express operates along U.S. 26 within the study area providing transit service between Rhododendron, SkiBowl, Government Camp, Timberline Lodge and beyond. Transit service is frequently utilized by mountain-based employees living in the Mt. Hood Villages (Rhododendron, Welches, Brightwood, Wemme, and Zigzag) as well as recreational users including but not limited to people mountain biking who park in Rhododendron, take transit up the mountain, and ride back down.

A strong interest has been voiced in support for formalizing transit stop locations in Rhododendron to support transit service along U.S. 26. Bus pullouts are recommended on the north and south sides of U.S. 26 within the study area. At bus pullouts, transit stops are recommended to be equipped with amenities including shelters, signage, and lighting.

The recommended location of the proposed transit stops as well as the enhanced crossing will require further refinement but is anticipated to be located just west of the U.S. Post Office in close proximity to key destinations including Mt. Hood Village Market, Fernie's Coffee, Al Forno Pizza, U.S. Post Office, and the Snowline Motel property.

Next Steps

The U.S. 26 Design Refinement Plan represents the culmination of the performance-based design process outlined in ODOT's Highway Design Manual, including extensive public involvement to inform the selection of a preferred design concept for U.S. 26 in Rhododendron.

The U.S. 26 Design Refinement Plan does not currently have allocated funding for implementation. ODOT is exploring a range of funding mechanisms including a Great Streets grant opportunity.