Oregon Department of Transportation

Research Stage 1 Problem Statement

Number 26-35 – "Synthesis report on design and materials for walking and biking facilities"

1. Concisely describe the **transportation issue** (including problems, improvements, or untested solutions) that Oregon needs to research.

In order to meet ODOT's SAP goals for complete walking and biking facilities and the new standards in the Highway Design Manual, ODOT will need to build many more miles shared use paths across the state – this project will evaluate the costs and benefits of utilizing different materials and standards to help reduce the initial construction and on-going maintenance costs, reduce greenhouse-gas emissions from construction and usage, and improve the safety and comfort for vulnerable roadway users (while also reducing VMT from mode shift). Some different construction materials to consider are higher recycled asphalt content (potential reduced cost and GHG emissions from construction), permeable pavements (potential reduced cost and winter maintenance due to increased melting and increased safety for users), non-paved surfaces for a portion adjacent to a narrower ADA path (potential reduced construction cost, reduced winter maintenance cost, reduced GHG emissions, potential increased comfort for rural trails), and different surface treatments to help delineate space (increased comfort and safety for people walking and rolling, potential reduced maintenance in making paths look less like roadways). This could also include evaluating other design practices such as considering shading paths with trees or covering them with solar panels (to reduce thermal cracking, winter maintenance, mitigate GHG emissions, and increase the safety and comfort for people walking and rolling), best practices for preventing motor vehicle intrusion, signage and striping for separation of users, and considering charging for electric wheelchairs or e-bikes to increase usage. The project will also need to ensure that these treatments are ADA compliant and functional for people with visual and mobility impairments.

2. What **final product or information** needs to be produced to enable this research to be implemented?

This research will lead to changes in the HDM which will reduce the cost of building and maintaining shared use paths and make shared use path usage more comfortable and obvious to all users. The outputs required will be an environmental screening of the various shared use path construction materials, a cost benefit analysis of the construction/maintenance costs and other impacts, surveys on how these impact various user groups (especially different abilities and mobility devices), and creation of a toolkit of options.

3. (Optional) Are there any individuals in Oregon who will be instrumental to the success of implementing any solution that is identified by this research? If so, please list them below.

Name	Title	Email	Phone

4. Decision making lenses

Please complete the following three sections. Your answers to these questions will be applied on a programmatic basis to support agency decisions. Answering yes to the questions below is not required. Resolving a narrowly focused technical research problem may meet agency needs without answering yes to any of the following questions. The ODOT Research Section will seek a balanced portfolio some projects will answer yes to one of the three categories below (e.g. climate, equity, and/ or safety) and other projects in a different category.

We are looking for an overall program balance and no one project is expected to balance all categories. Generally, a research problem statement is expected to be able to answer yes with clear and verifiable information in only one of the three categories below, some projects may be able to answer yes in two or even three categories. Some projects (i.e. needs focused on specific elements of infrastructure design), may have no yes answers but may still be high value research need.

Climate

Oregon recognizes the climate crisis and makes systemic changes to reduce emissions caused by travel. Every mile driven in Oregon is powered by a clean source of fuel. We seek research that supports construction and maintenance operations are carbon neutral and investments in mobility that support travel by low and no emission modes. While every research project may not result in a reduction in emissions, transportation investments overall support emission reductions to achieve state goals. Oregon envisions a transportation system that is resilient in the face of seismic and climate events and impacts to the degradation of the natural environment are reduced. Our vision includes a transportation infrastructure is built in a way that avoids impacts on key habitat and results in better environmental conditions for wildlife and native vegetation. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan and Oregon Transportation Plan.

4f. Will addressing the **transportation issue** identified as a need in Question 1 develop, or validate methods for the estimation, measurement, or monitoring of transportation generated greenhouse gasses (GHG)?

☐Yes ☒No ☐Unsure

4g. If climate or GHG is not the focus of this **transportation issue** identified in this problem statement, will the research apply a GHG analysis to transportation infrastructure, planning, operations, maintenance, or materials?

☒Yes ☐No ☐Unsure

4h. Will the addressing the **transportation issue** include development or testing of construction practices, methods, or materials to establish potential reductions in greenhouse gas emissions?

☒Yes ☐No ☐Unsure

4i. Will the solving the **transportation issue** in question 1 study or support the reduction of vehicle miles traveled and single occupancy vehicle travel or support transition to electric vehicles (or other types of zero emission vehicles) or low-carbon alternative fuels?

☒Yes ☐No ☐Unsure

4j. Will the solving the **transportation issue** in question 1 lead to work that will support, measure, monitor, transportation system resilience in response to expected climate events, effects, or natural disasters in general?

☒Yes ☐No ☐Unsure

4k. Will the solving the **transportation issue** in question 1 lead to work that may result in better environmental conditions for wildlife and native vegetation ?

☒Yes ☐No ☐Unsure

4l. If you answered yes to any of the climate questions above or can provide alternative details related to climate, please provide additional information:

Climate, although not the primary focus of this proposal, is heavily impacted by this work as ODOT has many miles of shared-use paths planned or that need to be constructed to meet SAP goals and reducing the greenhouse gas emissions from the construction and maintenance of these paths will help ODOT meet climate goals. Beyond the construction and operational emission reductions, these shared-use paths will create safer and more comfortable facilities for people walking and rolling, leading to mode-shift and reduced vehicle-miles-traveled, further helping meet ODOT climate goals.

Equity

Equity can have many dimensions and impacts relating to communities, and transportation. It is important that problem statement proposals clearly explain in what capacities are equity dimensions or impacts being examined within problem statements. It is a goal of the OTP to "Improve access to safe and affordable transportation for all, recognizing the unmet mobility needs of people who have been systemically excluded and underserved. Create an equitable and transparent engagement and communications decision-making structure that builds public trust". Proposed research may have the intent of studying elements of this goal or apply analysis to specific transportation topics to ensure the resulting research recommendations is consistent with our equity goals. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan and Oregon Transportation Plan.

4a Is the **transportation issue** identified as a need in Question 1 specifically focused on transportation equity?

☒Yes ☐No ☐Unsure

4b If the **transportation issue** is not focused on transportation equity, will the primary topic be assessed for equity benefits or impacts within the research project?

☒Yes ☐No ☐Unsure

4c Is the implementation of potential findings from this research likely to directly involve participation from an identified group that would benefit from an equitable process or outcome?

☒Yes ☐No ☐Unsure

4d Is the intended final product or information expected to support ODOT's equity efforts (Including but not limited to supporting one of the equity related objectives of the ODOT's Strategic Action Plan or Oregon Transportation Plan) ?

☒Yes ☐No ☐Unsure

4e If you answered yes to any of the equity questions above or can provide alternative details related to equity, please provide additional information:

This project will primarily serve vulnerable road users, which have historically been underserved by the highway system, to make the system safer and more comfortable and to provide access in locations where it was not historically provided. These facilities are frequently relied on by transportation disadvantaged populations and disabled users and we will want to include them in this project to ensure that they are not overly negatively affected by any potential changes.

Safety

Research outcomes may include interventions and countermeasures to prevent or reduce the frequency of crashes or other causes of transportation-related injury or death; or may include measures to reduce severity of injury (including prevention of death) after a crash or other injurious event. For definitions and details please review the equity vision, goals, and objectives of the ODOT Strategic Action Plan, Oregon Transportation Safety Action Plan and Oregon Transportation Plan.

4m. Will solving the **transportation issue** in question 1 support improving **safety culture** for either transportation workers or the traveling public?

☐Yes ☒No ☐Unsure

4n. Will the solving the **transportation issue** support improving safety through **healthy and livable communities**?

☒Yes ☐No ☐Unsure

4o. Will solving the **transportation issue** support improving safety through using **best available technologies**?

☒Yes ☐No ☐Unsure

4p. Will solving the **transportation issue** support improving safety through **communication and collaboration**?

☐Yes ☒No ☐Unsure

4q. Will the solving the **transportation issue** support improving safety through **investing strategically**?

☒Yes ☐No ☐Unsure

4r. If you answered yes to any of the safety questions above or can provide alternative details related to safety, please provide additional information:

Shared use and separated paths are a critical component of healthy and livable communities, so reducing the construction and maintenance costs of these paths will enable ODOT to construct more paths more quickly. This research will help ODOT use the best available technology for path construction to improve the comfort and safety for the walking and biking users of the path, rather than using a standard devised for vehicles. Developing different standards and practices will hopefully lead to a lower cost, safer, and more comfortable facilities that also better meet our climate goals.

5. Other comments:

6. Corresponding Submitter's Contact Information:

Name:	Chris Cheng
Title:	Active Transportation Liaison, R4
Affiliation:	ODOT
Telephone:	541.408.1387
Email:	chris.cheng@odot.oregon.gov

This form is not a grant application or contract document.