Federal Lands Access Program Proposal
Port of Cascade Locks | Bridge of the Gods Multimodal Access and Safety Improvements Project – Enhancing the Pacific Crest Trail (Phase 1)

In cooperation with the United States Forest Service, Washington Department of Transportation, Pacific Crest Trail Association, Friends of the Columbia Gorge, and City of Stevenson

Cascade Locks, OR – Stevenson, WA
April 6, 2018

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Executive Summary

This proposal describes the project needs, conceptual solutions, planning level cost, and proposed schedule to improve safety and access for pedestrian, bicycle, and equestrian users on the Bridge of the Gods (BOG), which connects the Pacific Crest Trail (PCT) across the Columbia River in Cascade Locks, Oregon. This proposed planning level study (Phase 1) will support the evaluation and selection of a preferred project type as well as to identify improvements to the surrounding trail system, such as to bridgeheads, trailheads, and safe PCT access across roadways. Since the project would improve the PCT both in Oregon and Washington across state lines, Federal Highway Administration Western Federal Lands recommended a strategy of proposing simultaneously for Federal Lands Access Program (FLAP) funds in both states with one-third of the funding from Washington and two-thirds of the funding from Oregon. Phase 2, which is not part of this initial request for funding, will be to advance the resulting phase 1 selected alternative through final design and construction.

This proposal specifically provides applicability of this project to the FLAP program through discussion of the following:

- Project purpose, need, and background;
- Key project issues and challenges;
- Concept recommendations for improving safety and access;
- Concept cost estimates, an overview of environmental process, and project steps;
- Images and graphics that conceptually depict the scope of issues and potential improvements;
- Planning-level project cost estimates and schedule for this proposal

This proposal was commissioned by the Port of Cascade Locks (Port), in collaboration with the United States Forest Service (USFS), Washington Department of Transportation (WSDOT), Pacific Crest Trail Association (PCTA), City of Cascade Locks, Oregon Department of Transportation (ODOT), Southwest Washington Regional Transportation Commission (RTC), Skamania County, Hood River County, City of Stevenson, and Friends of the Gorge, all of who as Regional Supporting Stakeholders (RSS) contributed in-kind staff time to plan and review for this proposal and review.

The following are the key conclusions of previous studies completed by the Port of Cascade Locks in preparation for this proposal:

- Preliminary structural assessments have indicated that the addition of a pedestrian pathway to the Bridge of the Gods could be supported, while continuing to uphold existing vehicle loads. Additional planning, funding, environmental reviews and approvals, and engineering design are required to advance the project to construction.
- A detailed structural analysis of the bridge and alternatives analysis is required to define specific structural impacts and refine the full cost estimated for adding a designated pedestrian crossing on the bridge. Some components of the bridge may need to be replaced or retrofitted. Additional components, such as bridge decks, railings, and select structural elements are already slated to be repaired or replaced, regardless of a pedestrian addition, in the Port’s 15-Year Bridge Plan. Preservation of the existing bridge through the additional pedestrian structure is possible through structure improvements addressing existing deficiencies, without these required structural enhancements this vital connection across the Columbia River could be lost.
- Adjacent improvements to bridgeheads, trailheads, and the PCT will be needed in order to enhance connectivity and safe access to the new pedestrian bridge structure.
1 Project Overview

Both the Port and the RSS understand the safety issues that occur at and around the Bridge of the Gods as well as the fact that the Columbia River Gorge (Gorge) has had significant federal investment of which this project would strongly support. At and around the Bridge of the Gods are a number of safety and access issues that result in a strong need to improve the trail system. Throughout this proposal any reference to pedestrians implies all users of the bridge including PCT trail users, local and regional trail users, cyclists, equestrian users, sight-seers and tourists, and all other forms of non-motorized traffic.

Because of the size and complexity of this project the proposed approach is to break the planning/permitting and design/construction efforts into two phases. The separation of these two phases will allow for the initial project refinement which includes planning, public involvement, site investigations (geotechnical, cultural, Hazmat), preliminary trail design, and bridge Type, Size, & Location (TS&L) to establish the selected alternative project footprint which will support the future Phase 2 efforts to finalize design and construct the improvements. Both phases 1 and 2 are being submitted as separate FLAP proposals throughout project lifecycle as described in the proposed schedule below and detailed schedule which can be found in Figure 2.

1.1 Project Location

The project is located approximately 40 miles east of Portland, Oregon and 4 miles upriver from the Bonneville Dam on the Columbia River. The bridge spans over and connects to US Route 30 (Cascade Locks Highway) on the south end, crosses over the Columbia River and connects to the Washington State Route 14 (Evergreen Highway) on the north end at grade. The bridge crosses over the UPRR railroad on the Oregon side and BNSF railroad on the Washington side. On the Oregon side the bridge crosses over a parking lot utilized by locals, tourists, and Native American tribes as seasonal fish sales. The bridge connects to a westbound on-ramp and eastbound off-ramp from Interstate-84. The bridge has navigational vertical clearance of 135 feet and horizontal clearance of 656 feet from the normal pool elevation. Because of the bridge’s location and recognized significance connecting Oregon and Washington the Federal Highway Administration has added this bridge to the National Highway System (NHS) with the functional classification as principal arterial.

The natural beauty surrounding the bridge is recognized as nationally significant. Not only is the bridge part of the PCT, a National Scenic Trail, it’s also located in the heart of the Columbia River Gorge National Scenic Area (CRGNSA). The views from the bridge of the Columbia River, mountains, cities of Cascade Locks and Stevenson, and other gorge features are breathtaking, but current conditions don’t allow sightseers to enjoy the views safely. The bridge’s national significance has several additional facets adding to its draw. It connects two National Scenic Byways; it is part of the Oregon National Historic Trail, the Lewis and Clark National Historic Trail, and the proposed Ice Age Floods National Geologic Trail. There are also many other recent federal and locally funded projects within the Gorge, which will have a direct connection to these proposed improvements.
1.2 Project Background & Purpose

The primary purpose of the requested funding is to perform a planning study, identify a preferred alternative, and obtain permitting in preparation for obtaining additional final design and construction funding. Previous studies providing the foundation for this proposal have been conducted by the Port and PCTA, with the collaboration and investment of many local partners, including federal funds via the Scenic Byways grant program. The Port is looking to develop a solution to pedestrian conflicts while improving safety and connectivity along the PCT across the Columbia River which links major recreation sites on federal lands in both Oregon and Washington. Listed below are critical infrastructure components and responsible owners which maintain the facilities:

- The Port owns, maintains, and has responsibility for the Bridge of the Gods condition.
- The PCTA, in partnership with the U.S. Forest Service, maintains and operates the PCT.
- The WSDOT owns and maintains SR-14 and the intersection with Toll House Road.

The Port has been working closely with the RSS to clearly define the challenges in the area and to define a transportation system project to resolve the safety and access issues that have been present for decades. When the Port and RSS started to re-evaluate the area in 2016 in the process of looking for additional funding sources, the FLAP program looked to be the best fit because the Bridge of the Gods is functionally the PCT across the Columbia River. The PCT is a congressionally designated and federally administered National Scenic Trail which connects to additional federal lands and recreation sites on both sides of the river. After further investigations, including discussions with the USFS and Western Federal Lands, it became clear that this project would be a great candidate for additional funding through FLAP to further the planning process. Though there are many challenges the RSS felt overwhelmingly that they could overcome them through collaboration and planning. This project will be a multi-agency collaboration to resolve the system safety and access issues that impact all modes of traffic. A substantial investment of time and money has been spent to this point and each of the supporting agencies is onboard to take the project through to fruition. All the major improvements noted in this proposal have been documented in agency transportation master plans in preparation for the day when this project could be taken further.

1.3 Project Need

The Bridge of the Gods is a regionally and nationally significant structure and part of the Columbia River Gorge National Scenic Area. The bridge provides the PCT crossing over the Columbia River and serves as the access point to the PCT for the Gorge Express Bus, the West End Transit bus, two Scenic Byways, two National Historic Trails, and the Columbia River Historic State Trail system. The bridge is also an essential vehicular, freight, and pedestrian transportation link connecting the States of Oregon and Washington across the Columbia River. This project would lead to a significant preservation opportunity to improve the bridge seismic resiliency, provide a separated trail facility from motorized vehicles, improve adjacent trails, and add new trail connections. Local stakeholders and interest groups have for many years expressed an interest in enhancing adjacent trail approaches and dedicating a safer pedestrian crossing. The crossing...
must be evaluated as a system of features to address the current access and safety issues (bridge, bridgeheads, trailheads; wayfinding; connectivity to federal lands trails and facilities; PCT Safe Crossings of major roadways; integration of this project to others in the region) because any one improvement on its own will not address the need.

This river crossing between Stevenson, Washington and Cascade Locks, Oregon is recognized by FHWA, WSDOT, and ODOT as being vital to the local and regional economic systems and the quality of life throughout the region encompassing both sides of the Columbia River.

In 2017 the Port counted approximately 3,200 day use pedestrian crossings and based on the PCTA annual data, an additional 4,600 PCT thru-hikers hold permits to cross the bridge at the end of the summer. This puts the combined 2017 annual pedestrian user count near 7,800. Most of this pedestrian traffic takes place during the summer when the auto and truck traffic is also peaking, so the potential for conflicts are extremely high. In the 3 months of summer alone for 2017 (June - August) the Port had 1,800 pedestrian crossings, excluding PCT hikers. Throw in the 4,600 PCT hikers and you have an average of 70 crossings daily in just 3 summer months mixed in with the 6,000 daily vehicle crossings using the same constrained travel way. This bridge is the critical link for which the PCT relies on to connect federal lands across the Columbia River.

The bridge is unsuitable for safe pedestrian traffic with a narrow 22-foot roadway lacking even minimal shoulders. It is a perilous situation for pedestrians to safely access then cross this narrow bridge, 1/3 mile long, with nothing to separate them from traffic, and the water visible under their feet 140 feet below the steel grate. Safety risks increase when tractor-trailers must swerve to go around pedestrians into oncoming traffic, and other motorists are sometimes paying more attention to the scenic views than to the road. Pedestrian use has continued to be on the rise with numbers shown in Table 1 below documenting pedestrian use over the last four years:

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017**</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCT Permits</td>
<td>3000</td>
<td>3400</td>
<td>4400</td>
<td>4600</td>
</tr>
<tr>
<td>Day Use</td>
<td>1,700</td>
<td>6,500</td>
<td>4,200</td>
<td>3,200</td>
</tr>
<tr>
<td>Annual Total</td>
<td>4,700</td>
<td>9,900</td>
<td>8,600</td>
<td>7,800</td>
</tr>
</tbody>
</table>

* Data rounded to the nearest hundred users.
**Reductions likely due in part to the Eagle Creek fire.

The Bridge of the Gods functions as the PCT between Oregon and Washington with no reasonable alternative pedestrian crossings of the Columbia River within 43 miles east or west. The Port must continue to operate and maintain the bridge in its current configuration for all users into the foreseeable future because replacement of the bridge is too costly. Preservation of the bridge and construction of a separated pedestrian facility being the most viable solution. The PCTA and Port recognize interest from local, regional, and national stakeholders to have a safe and viable pedestrian crossing at the bridge. If the bridge is closed or weight limits reduced, the residents, businesses, and governments of cities and counties on both sides of the river will be severely impacted. Any alternate pedestrian detour route for the PCT is 86-miles round trip via I-84 and SR-14, west or east using the Glenn Jackson or The Dalles Bridges respectively. For pedestrians, cyclists, and equestrians, this bridge is the only option and critical link which connects 1 million acres of federal lands which are accessed along the PCT. There is a strong need to improve passage for pedestrians, bicyclists, and equestrian at this bridge to benefit the local, regional, and tourist users. The existing bridge is over 90-years old and a major rehabilitation has not been conducted in over 30 years, this project would support the preservation of the existing structure to improve safety and access along this critical link to the PCT which is so important to regional safety and economic goals.
The needs of the Bridge of the Gods users can be grouped into three physical areas within the project limits which are the Bridge of the Gods, the Oregon Bridgeheads, and the Washington Bridgeheads.

On the Bridge of the Gods a number of concerns arise and define the need, including:

- A pedestrian facility is fundamentally not provided on the Bridge of the Gods even though this structure acts as the sole PCT Columbia River crossing.
- The two-lane roadway is too narrow to provide a safe width for pedestrian, bike, and equestrian space, and combined with the overall length of the bridge make for a very unsafe pedestrian condition.
- The traffic and pedestrians are not separated, causing pedestrians to be very near to passing vehicles, which often swerve around them and into oncoming traffic.
- The bridge surface is an open-grid steel deck system resulting in a number of safety issues, including vertigo and trip hazard to pedestrians, slippery surface for bikers, discomfort for horses, and inability for pets or service animals to walk.
- The bridge railing is a traffic type system that is woefully inadequate for vehicles, and pedestrian level safety. The system does not meet current strength or user standards.
- The bridge and adjacent bridgeheads are not American with Disabilities Act (ADA) compliant.

At the Oregon Bridgehead, which includes the trail crossing under the Interstate 84, crossing across the bridge approach loop ramp, connections to Cascade Locks, connections to surrounding trail systems, the Toll House Park area, future relocation of the PCT Trailhead to SW Moody Street, future tolling automation enhancements, and tolling facility vehicular interaction with pedestrian users, the following issues arise including:

- Inadequate drainage, trail surface, and wayfinding signage undercrossing of the interstate or at Toll House Park.
- No clearly marked or safe pedestrian crossing is provided across the Toll House Road loop ramp.
- No clearly marked or safe pedestrian crossing is provided for access to Cascade Locks.
- The two-lane loop ramp roadway is too narrow, Pedestrian traffic is not separated from vehicular traffic, inadequate lighting is provided throughout park, and facilities are not ADA compliant.
- Inadequate parking is provided at the Toll House Park.

At the Washington Bridgehead, which includes the trail crossing across Washington State Route 14 (SR-14), connections to surrounding trail systems, and the gravel parking area, additional concerns arise, including:

- No clearly marked or safe pedestrian crossing provided across the 55 MPH SR-14 highway.
- No clearly marked or safe pedestrian connections are provided for access to the City of Stevenson’s non-motorized path system.
- Trail-level wayfinding is inadequate.
• Inadequate drainage, trail surface, and crossing signage on the highway.
• Pedestrian traffic is not separated from vehicular traffic.
• Inadequate lighting is provided throughout the Washington Bridgehead.
• Inadequate signage and parking is provided at the gravel parking area.
• The two-lane roadway is too narrow to provide a safe width for pedestrian, bike, and equestrian space.
• The facilities are not ADA compliant.

The Port and RSS’s common goal for this project is improving the Bridge of the Gods (and supporting transportation facilities) to provide safe pedestrian access via the PCT between federal lands in Oregon and Washington. Specific objectives in meeting this goal are:

• Connectivity to other Gorge access initiatives such as Columbia Gorge Express, C-TRAN West End Transit (WET), HCRH State Trail, Scenic Byways, and other tourism driven initiatives which drive economy for Gorge communities.
• To define the scope of preferred alternative, impacts, and improvements needed to address the safety concerns and improve the user experience on and around the Bridge of the Gods.
• To obtain necessary permitting and progress preferred alternative toward TS&L.

1.4 Outcomes of Planning Study

The outcomes provided by this proposal can be categorized into two areas: 1) details of the needed physical improvements and 2) detailed information needed to obtain permits and funding needed to advance toward design & construction. This proposal utilizes information from previous studies completed by the Port and PCTA to approximate the future design and construction cost to improve the Bridge of the Gods to support safe pedestrian crossings. The previous studies evaluated the feasibility of the existing structure to carry additional loads, configurations of structure, and adjacent improvements which could enhance the trail safety and connectivity across the Columbia River at Cascade Locks. Ultimately the configuration of improvements will be determined by the future planning study described in this proposal.

1.5 Previous Studies & Reports

In recent years there has been a significant increase of interests in the Gorge with regards to improving access to the public with regards to hiking, history, and tourism. This increased interest has led to several major federally funded projects in the Gorge such as the Gorge Express Bus and restoration of the Historic Columbia River Highway through the HCRH State Trail system. Improved access for pedestrians on the PCT across the Bridge of the Gods would enhance access and connectivity to the Gorge connecting to these types of projects. Understanding this connection, the Port and PCTA have invested considerable time and local funding to complete several investigative studies which support these Gorge initiatives.

• Bridge of The Gods Pedestrian Crossing Feasibility Study, December 31, 2012
• Improving Pedestrian Safety and Trail Experience at the Bridge of the Gods Study, December 31, 2015
• Tolling Alternative Analysis Memo, February 22, 2017

These studies can be provided by the Port upon request but relevant information from the study “Improving Pedestrian Safety and Trail Experience at the Bridge of the Gods Study, December 31, 2015” has been incorporated into this proposal. Slight adjustments to the data have been made to align the scope and cost data with our current understanding of the project.

1.6 Concept Description

Given the myriad issues, the Port has developed conceptual ideas and a basic configuration for adding pedestrian facilities to the existing bridge. We have added a brief description of an existing bridge retrofit pedestrian structure concept in Table 2.

![Concept Graphic – Existing bridge retrofit overhang structure](image_url)

This concept involves a structural steel extension of the floor beam to overhang a pedestrian facility outboard of the main cantilever truss spans. Longitudinal steel stringers support the path spanning between the floor beam extensions. This type of project has been successfully executed on steel trusses that have reserve structural capacity. This alternative also requires an overhang pedestrian path on the approach spans, which is assumed to be accomplished through full replacement on the Oregon Approach Spans and re-decking on the Washington Approach Spans. As currently determined by ODOT, the approach spans cannot sustain additional loading and Washington Approach Spans require strengthening or deck replacement.

<table>
<thead>
<tr>
<th>Description</th>
<th>Top Benefits</th>
<th>Key Issues</th>
</tr>
</thead>
</table>
| New overhang structure outboard of the existing roadway supported by the existing trusses and approach superstructure | • Simplified construction  
• Less traffic disruptions  
• Improved experience & safety via separated path | • Structural feasibility – bridge retrofitted to support loads  
• Added overturning forces from load applied outboard of existing truss  
• Approach span structure replacement or retrofit |
1.6.1 Planning-Level Estimates

In order to arrive at a more accurate estimate of the cost associated with one or more alternatives, further engineering evaluation is required to confirm or deny key assumptions. Based on experience with similar types of projects, bridges of this scale, and an understanding of the existing bridge condition, it is anticipated the range of cost for a structural solution of adding pedestrian facilities to the existing bridge is as shown in Table 3. These estimates could rise or fall with further investigation, and fluctuation in construction prices. Cost ranges described below are concept level only for planning purposes and would be refined in detail with this planning study. Costs below describe the work required for the structural pedestrian path including an allowance for both bridgeheads and to retrofit of the main structure required to maintain truck weight limits.

<table>
<thead>
<tr>
<th>Description</th>
<th>Planning Level Cost Range</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>New overhang structure outboard of the existing roadway with adjacent bridgehead improvements.</td>
<td>Low $15M</td>
<td>High $25M</td>
</tr>
</tbody>
</table>

1.6.2 Cost Overlap with Active Bridge Preservation Needs

There are rehabilitation needs programmed for the bridge and approaches in the Ports 15-year Plan, which the Port updates on a regular interval. If a pedestrian crossing is pursued and funding is made available, many of the current rehabilitation needs would be resolved through the project of adding pedestrian facility on the existing bridge. This overlapping need is explained in part by Table 4. Conceptually, Figure 1 shows through a Venn diagram how the cost needs overlap. Based on early estimates, around $3,000,000 in savings could be realized by combined bridge rehabilitation needs with the addition of improved pedestrian crossing.

<table>
<thead>
<tr>
<th>Overlapping Bridge Preservation Needs</th>
<th>Key Benefits to Adding Pedestrian Crossing Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bridge paint rehabilitation</td>
<td>• Safe connection between OR and WA PCT</td>
</tr>
<tr>
<td>• Bridge deck replacement</td>
<td>• Improvements match up with other key local and federal investments in the Gorge</td>
</tr>
<tr>
<td>• Bridge traffic rail replacement</td>
<td>• Cost savings for combined planning, engineering, construction, tools, skills, and processes</td>
</tr>
<tr>
<td>• Bridge structural strengthening for vehicles</td>
<td>• Less public impact due to reduced ongoing rehabilitation project disruption, if combined</td>
</tr>
<tr>
<td>• Landside (bridgehead) pedestrian connections</td>
<td>• Combined environmental containment</td>
</tr>
<tr>
<td>• Bridge seismic retrofit</td>
<td>• Positive public outreach</td>
</tr>
<tr>
<td>• Pedestrian safety, signage, and way-finding</td>
<td>• Common bridge preservation, enhancement, and maintenance goals</td>
</tr>
<tr>
<td>• Bridgehead improvements</td>
<td>• Significant safety enhancements though separation of modes of traffic</td>
</tr>
<tr>
<td>• Relocation of US Forest Service PCT trail head park to Moody Road Location</td>
<td></td>
</tr>
<tr>
<td>• SR-14 @ Bridge of the Gods Intersection Improvements</td>
<td></td>
</tr>
</tbody>
</table>
1.7 Project Partners & Endorsements

The bridge and landside improvements on the Oregon Bridgehead and Washington Bridgehead will require close coordination with partners from the local, state, federal, and other interest groups. In preparation for this proposal the Port and RSS have worked closely to begin outreach including gathering of support to this project. Below you will find a list of current project supporters which have taken the extra step to sign an endorsement letter of support for this project:

**Agencies** - United States Forest Service; Pacific Crest Trail Association; City of Cascade Locks, OR; Washington Department of Transportation, WA; Oregon Department of Transportation, OR; SW Washington Regional Transportation Council, WA; Skamania County, WA; Hood River County, OR; City of Stevenson, WA; Friends of the Columbia Gorge; One Gorge; Skamania County, WA; Historic Columbia River Highway Advisory Committee

**Elected Officials** - Senator Thomsen, OR; Representative Helfrich, OR; Representative Johnson, WA; Senator King, WA; Representative McCabe, WA; Senator Wyden, OR; Senator Merkley, OR; Representative Walden, OR; Representative Blumenauer, OR; Representative DeFazio, OR; Representative Herrera-Beutler, WA; Senator Cantwell, WA; Senator Murray, WA

Outreach and coordination are already underway but it will be critical to continue as this project moves forward. The project should be carefully designed and vetted with a proper outreach process in order to comply, including a robust public involvement process with open houses and other community outreach programs. In addition to the public outreach, the following groups have expressed an interest in the project and should be consulted when determining the final design of landside connections and features on or off the bridge:

**Key Stakeholders** - Pacific Crest Trail Association (CA/OR/WA); Port of Cascade Locks; Friends of the Columbia Gorge (OR/WA); City of Stevenson, WA; City of North Bonneville, WA; Skamania County, WA; City of Cascade Locks, OR; City of Hood River, OR; Hood River County, OR;
2 Key Project Issues & Challenges

Utilizing the previous studies conducted by the Port and PCTA plus several workshops held with the RSS the following areas have been identified as key project issues and challenges to focus on during the planning phase of the project. The following sections and Key Issues Map provide an overview of key project issues and challenges which will be evaluated.

2.1 Environmental

Consultation with local, state, and federal agencies will be required to design and construct pedestrian improvements on and around the bridge. The following is a preliminary list of permits that may be required and will need to be considered:

- **Permitting** - National Environmental Policy Act (NEPA); National Historic Preservation Act Section 106; Clean Water Act requirements (Section 401, Section 404, and NPDES 1200-C); Fish Passage Permit; Bridge Permit; DEQ Stormwater Management Plan; Hazardous materials environmental site assessment; Bridge Easement over Waters of the State; Other approvals required by the CRGNSA in consultation with Columbia River Gorge Commission

The following environmental critical constraints apply to the project:

- In water work period will restrict any work in the Columbia River, if necessary.
- Excavations are expected and this is included in Hazardous Materials or Archeological scope of the project.
- U.S. Coast Guard (USCG) navigational allowances must be maintained. Allowances include horizontal and vertical clearances and allowable durations of bridge closures and operational impacts. Permit avoidance is needed to maintain a Programmatic Categorical Exclusion (PCE). Operations must fall within the current permit and agreements with the Hood River and Skamania Counties.
- Potential issues posed by historic properties that could trigger an adverse effect include unacceptable modification to the barrier rail, sidewalk treatment, and lighting treatment. Potential issues could also trigger an adverse effect include unacceptable impacts to the bridge or parks.

2.2 Archeological & Cultural Resources

The Bridge of the Gods is eligible for the National Register of Historic Places. It is regionally and locally significant and any modification will require consultation with the State Historic Preservation Office (SHPO). Special consideration of aesthetics, architectural treatments, and visual impacts of any modification will be required. Additional funding sources for rehabilitation may be available if listed, but additional restrictions on
modifications may also be required. Further, shoreline areas near the bridgeheads on both sides of the Columbia River have high potential for having archaeological sites.

2.3 Right-of-Way

In order to design and construct a pedestrian pathway, right-of-way (ROW) and temporary or permanent easements will be required. These requirements are not expected to influence feasibility but should be considered during the planning, scheduling, negotiations, and cost estimating phases of the project. At a minimum, temporary construction easements will be required when working over the BNSF and UPRR railroads on both sides of the river. Acquiring these easements and permits can often be a lengthy negotiation process.

2.4 Railroad

Given that the bridge spans over the UPRR and BNSF railroad properties, a number of coordination needs arise and constraints result. Constraints specifically resulting from the UPRR and BNSF requirements include meeting the minimum required clearances at all times. Approval from the railroads is required and applicable design standards will be applied following the ‘BNSF Railway – Union Pacific Railroad Guidelines for Railroad Grade Separation Projects’ and UPRR ‘Public Projects – Plan Submittal Guidelines’ (Oct 10th 2014).

2.5 Stormwater

In order to comply with local, state, and federal permits, the installation of new impervious surfaces requires retention treatment of stormwater to improve water quality. Direct runoff into streams, rivers, and storm drains is typically no longer allowed except in special situations. Further project development will require special consideration of selected surface treatments. Impervious surfaces added to the bridge, which are desirable for pedestrians, bicyclists and equestrian use, may require drainage to be collected and drained off the bridge or may require special consultation to obtain environmental variance.

2.6 Roadway

Supporting safe access for pedestrians to and from the Bridge of the Gods will require adjacent improvements made at crossings of SR-14, WaNaPa Street (Highway 30), and Toll House Road. All three of these locations have been identified for future evaluation and improvement in local transportation master plans. Close coordination between the Port and the respective agencies must be made to improve the facilities due to how the transportation systems could have significant regional effects. Progress is already underway to discuss improvements with ODOT, WSDOT, RTC, City of Stevenson, and City of Cascade Locks to further evaluate alternative crossing solutions which may be intersection reconfigurations (signals or roundabouts) with pedestrian tunnels, pedestrian overcrossings, or at grade crossings. There are many considerations when selecting the best pedestrian crossing type based on the facility which include traffic numbers, speed, facility function, cost, and other environmental impacts. This study will further the ongoing discussions between agencies to resolve the intersections and pedestrian crossing types to best fit the solutions at each of the locations to improve safe connectivity of the PCT.
2.7 Structural

The following subsections overview the key structural issues related to pedestrian crossing feasibility; considering the bridge condition, probable rates of deterioration, current bridge load rating status, and potential weight restrictions. In general, a comprehensive engineering evaluation of the bridge is still required to fully comprehend the issues and associated costs.

2.7.1 Main Cantilever Truss

The steel truss of the three-span main cantilever segment is a significant roadblock that limits the pedestrian crossing alternatives for two reasons: the steel truss physically obstructs the pathway location and replacement or strengthening of the main spans would be very costly. The pedestrian path must be either inside the truss or outboard of the truss and cannot be safely split by the truss. There are also conflicts with the overhead steel bracing when considering alternatives with a path inside the steel truss, but the main issue is inadequate width. While the load rating assessments performed by ODOT help to establish the primary areas of concern in the structure, the load rating analysis does not account for how the additional asymmetric loading will impact the bridge. Significant additional structural analysis is needed to evaluate feasible alternatives.

2.7.2 Oregon Approaches

Based on the load rating conducted by ODOT, the Oregon approaches do not have adequate reserve structural capacity to resist the additional weight of a pedestrian facility. These limitations suggest that either a strengthening project would be necessary or replacement of these spans. A strengthening project may require deck replacement with a wider, lighter, more modern deck and bridge rail with structure added to support a pedestrian path. Full replacement of the approach spans with a modern structure would allow for both current vehicle weights and a pedestrian path. Full replacement of these spans can be accomplished with minimal impacts to the historic and aesthetic appeal of the bridge.

2.7.3 Washington Approaches

Based on the load rating conducted by ODOT, the Washington approaches also do not have adequate reserve structural capacity to resist the additional weight of a pedestrian facility. ODOT required weight restrictions for the bridge until repairs were made. These limitations suggest that either a strengthening project would be necessary or replacement of these spans. A strengthening project may require deck replacement with a wider, lighter, more modern deck and bridge rail with structure added to support a pedestrian path. Full replacement of the approach spans with a modern structure would allow for both current vehicle weights and a pedestrian path. Full replacement of these spans can also be accomplished with minimal impacts to the historic and aesthetic appeal of the bridge.

2.7.4 Substructure & Foundations

There are large in water concrete piers for this bridge. In order to provide pedestrian facilities on the bridge the existing substructure and foundation need careful evaluation. The bridge piers were designed in the 1920s and 1930s and are not expected to meet current design standards. Engineering calculations for loading conditions on the existing piers would be necessary to determine the load effects and feasibility of supporting additional load. Underwater inspections indicate no signs of deterioration. It is possible that retrofit would be required to support a pedestrian crossing; further investigation may be necessary.
3 Cost Estimating Approach & Schedule

The planning level project cost estimates in this proposal rely heavily on similar projects and consider the complexity, type of the work, and the difficulties with working over a major river crossing with environmental processes and design required. The next project step should include a more precise tabulation of work items based on the preferred alternative, bid prices, and further project scope definition. Costs will need to be refined as the project advances, as is typical with similar projects.

The overall planning, permitting, and preliminary design (TS&L) process was broken down into eleven tasks based on similar planning projects completed in the past with a comprehensive breakdown of cost available upon request. The FLAP match was developed using the recommended approach outlined in the executive summary as proposing simultaneously for FLAP funds in both states with one-third of the funding from Washington and two-thirds of the funding from Oregon. The applied percentage requirements for Washington being 13.5% and Oregon being 10.27% are then applied to the weighted distribution of overall project cost of $934,420. The resultant project match for the Port would be $105,919 based on the planning level estimate developed below as shown in Table 5.

<table>
<thead>
<tr>
<th>WBS</th>
<th>Task</th>
<th>Estimated Hours</th>
<th>Budget Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Task 1 – Project Management &amp; Coordination</td>
<td>995</td>
<td>$ 195,920</td>
</tr>
<tr>
<td>2</td>
<td>Task 2 – Survey &amp; Mapping</td>
<td>978</td>
<td>$ 88,000</td>
</tr>
<tr>
<td>3</td>
<td>Task 3 – Environmental Services</td>
<td>1154</td>
<td>$ 138,500</td>
</tr>
<tr>
<td>4</td>
<td>Task 4 – Public Involvement</td>
<td>552</td>
<td>$ 69,000</td>
</tr>
<tr>
<td>5</td>
<td>Task 5 – Utility Support &amp; Coordination</td>
<td>208</td>
<td>$ 26,000</td>
</tr>
<tr>
<td>6</td>
<td>Task 6 – Geotechnical &amp; Geologic Services</td>
<td>736</td>
<td>$ 92,000</td>
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<tr>
<td>7</td>
<td>Task 7 – Hydrologic &amp; Hydraulic Analysis</td>
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<td>$ 18,000</td>
</tr>
<tr>
<td>8</td>
<td>Task 8 – Civil Design</td>
<td>1008</td>
<td>$ 126,000</td>
</tr>
<tr>
<td>9</td>
<td>Task 9 – Bridge Design</td>
<td>733</td>
<td>$ 110,000</td>
</tr>
<tr>
<td>10</td>
<td>Task 10 – Aesthetics</td>
<td>176</td>
<td>$ 22,000</td>
</tr>
<tr>
<td>11</td>
<td>Task 11 – Alternatives Analysis</td>
<td>384</td>
<td>$ 48,000</td>
</tr>
<tr>
<td></td>
<td>Total Estimate</td>
<td>7058</td>
<td>$ 934,420</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Task</th>
<th>Estimated Hours</th>
<th>Budget Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAP Match</td>
<td>7058</td>
<td>$ 934,420</td>
</tr>
</tbody>
</table>

Washington Port Match = $42,007
Oregon Port Match = $63,913
Washington Project Funds = $276,166
Oregon Project Funds = $552,334

Not knowing the exact scope of the future project as it relates to the associated planning and permitting work, the approach described in section 1 was used to develop state match funds for the Port. Future Phase 2 design and construction costs will be separated into the individual components of elements which fall within the respective states or will be coordinated to determine the amount shared.

The costs shown in this proposal represent an accumulation of area knowledge based on previous studies related to the Bridge of the Gods. The summation of the work outlined in the above estimate is based on the proposed schedule in Figure 2.
4 Limitations

The figures provided in this document represent a preliminary step in the project development process. The Port did not perform an independent and comprehensive structural analysis on the entire bridge as part of these services and is relying on work by ODOT to draw conclusions, tempered by engineering experience and judgment. There are a number of structural elements of the bridge that need specific analysis to determine how to mitigate the weight of pedestrian facilities on the bridge. A conceptual design process and alternatives analysis would be completed as part of this study to identify the configuration for a preferred solution.
MAP 2: CONCEPT PROJECT IMPROVEMENTS
Federal Lands Access Program Proposal
Port of Cascade Locks | Bridge of the Gods Multimodal Access and Safety Improvements Project

MAP 3: PROJECT MAP OF KEY ISSUES