
Tier II Report
SR-35 Columbia River Crossing Feasibility Study

Executive Summary

Prepared for

Southwest Washington Regional Transportation Council
Oregon Department of Transportation
Washington State Department of Transportation

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EXECUTIVE SUMMARY

The SR-35 Columbia River Crossing Feasibility Study is being conducted in response to local business and resident concerns about the safety and service life of the existing Hood River Bridge. The project began in 1999, with the plan for a feasibility study to determine if there was a need to replace the bridge and whether there was community support for a bridge improvement. The community supported a replacement of the bridge, and the feasibility study began in 2000.

The Study is organized into three sequential tiers:

- Tier I of the Study documented baseline conditions and identified the project's issues, purpose and need statement, and a range of crossing corridors and facility alternatives. It determined and initiated the environmental review process, and narrowed the corridors and facility alternatives to those that are most promising and practical.
- Tier II was intended to select a crossing corridor, refine the most promising long-term alternatives, select a short-term improvement option, and undertake a financial feasibility study to determine if there would be sufficient financial resources available to fund a long-term improvement project.
- Tier III will conclude the Study by selecting a preferred alternative, developing an implementation plan, and completing the Draft Environmental Impact Statement (DEIS) in compliance with the National Environmental Policy Act (NEPA).

The lead agencies for this study are the Southwest Washington Regional Transportation Council (RTC), the Oregon Department of Transportation (ODOT), and the Washington State Department of Transportation (WSDOT). Parsons Brinckerhoff was retained by the agencies to lead the technical analysis of the project, supported primarily by Entranco, Cogan Owens Cogan, and Zimmer Gunsul Frasca.

Background

Congressional representatives of Washington communities surrounding the Hood River Bridge obtained funding for the Study through the federal transportation funding act known as the Transportation Equity Act for the 21st Century (TEA-21) legislation in 1997. In 1999, a project planning phase was undertaken and a public meeting was held. Major concerns regarding the existing bridge include hazards presented by the narrowness of the travel lanes and lack of bicycle and pedestrian facilities, long-term adequacy of the bridge structure, and impacts on the local economy, especially for commercial vehicles using the bridge.

Three committees have been formed to advise the project team: a Resource/Regulatory Committee (RRC) comprised of representatives of state and federal agencies who will review environmental analyses, documents, and permit applications pertinent to agency regulations; a Local Advisory Committee (LAC) comprised of area residents and business owners; and a Steering Committee (SC) that includes local

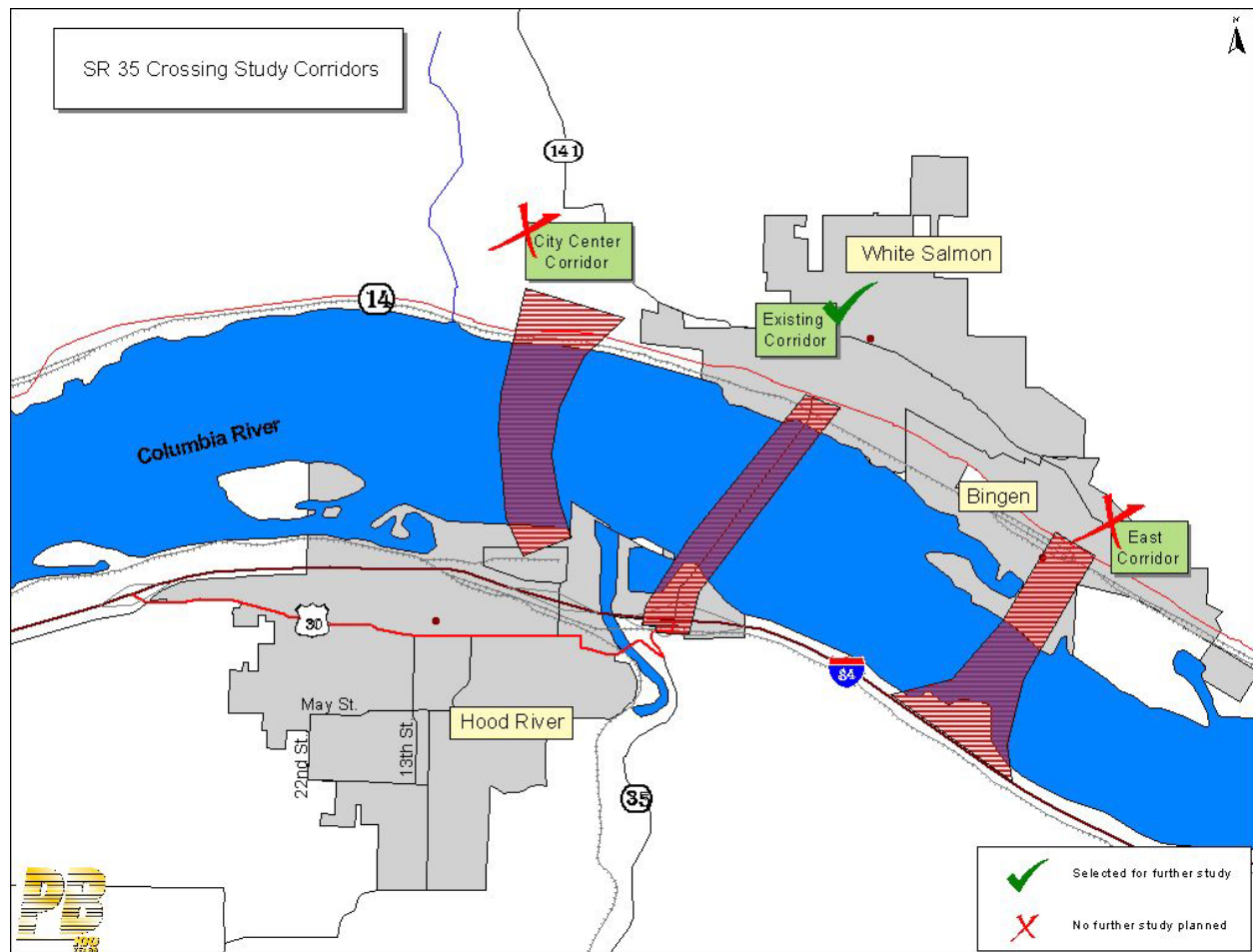
elected and appointed officials and agency staff. A project Management Team comprised of lead staff from RTC, ODOT, WSDOT, and consultant staff meets regularly to oversee the Study process.

Report Purpose

This report is a summary of Tier II findings. It includes a summary of public involvement activities, cost estimates for possible crossing facilities, financial feasibility results for a new crossing, environmental resource surveys and streamlining concurrence process, and an alternatives screening that recommends alternatives for advancement into Tier III. Tier II was completed in June 2002. Tier III is scheduled to be completed by early 2003.

The crossing corridors considered during Tier II are shown in Figure ES-1.

Figure ES-1. Map of Tier II Corridors



Analysis

Public Involvement

Tier II public and agency involvement included the following activities:

- Three meetings each of the project's LAC and SC. Two of these meetings were conducted as joint meetings with both groups.
- One meeting of the RRC.
- Two public open houses.
- A random sample telephone survey and motorist intercept survey of bridge users.
- Two newsletter updates distributed to the project mailing list and via local businesses, civic buildings, and other meetings.
- A youth bridge design contest.
- Media releases, news articles, and radio and newspaper interviews.
- Presentations to Klickitat County Commissioners, White Salmon Rotary, Columbia River Gorge Windsurfing Association, Hood River Rotary, Columbia River Gorge Commission, and Skamania and Klickitat County Transportation Policy committees.

Cost Estimates

Based on the January 2002 design workshop, conceptual drawings (plan and profile) for various bridge types were developed. Within each of the corridors, variations of possible structure types and configurations were defined. Structures varied by lengths and design features (e.g., different types and location of piers, different superstructure types). Construction costs for each alternative were based on unit costs and quantities for major construction components as well as bridge approaches and ancillary work. Additional costs have been included for engineering, construction management, and contingency to arrive at a total project cost. Table ES-1 summarized the cost estimates. Costs for right-of-way acquisition and environmental mitigation are not included.

Table ES-1. Summary of Cost Estimates (2002 dollars)

Corridor	Structure	Estimated Cost Range (millions)
City Center	New Fixed Span Bridge (various types)	\$106-113
	Twin-Bored Tunnel	\$350-400
Existing	New Fixed Span Bridge (various types)	\$110-121
	Retrofit Existing Bridge	\$137
East	New Fixed Span Bridge (various types)	\$129-142
	New Fixed Span Bridge (various types) for vehicles plus retrofit existing bridge for pedestrians and bicycles	\$179-192

Note: Cost estimates for bridges are based on 45-foot wide typical sections.

Financial Feasibility

A financial feasibility study was conducted, which included a discussion of the toll revenue potential, using the public opinion surveys as input as well as an analysis of the level of capital investment that could be supported by tolls. In addition, other potential local non-toll revenue sources were considered and summarized. Results for this study are summarized as follows:

- The revenue maximizing toll has been conservatively estimated at \$1.50 in 2001 dollars. This is equivalent to a toll of \$1.75 in year 2010 dollars, rounded to the nearest quarter.
- In 2010, this toll is expected to generate between \$3.5 and \$4.5 million in gross annual revenues before operation and maintenance (O&M) costs. O&M costs are estimated at approximately \$0.5 million per year in today's dollars.
- The proposed toll structure for financing a new crossing would include increasing toll to \$1.00 in 2004, with 50¢ set aside for capital costs of a new crossing between 2004 and 2010. Increase toll to \$1.75 in 2010 when new crossing opens. Periodically increase toll for inflation in 25¢ increments to maintain a constant real toll.
- Under the proposed toll structure, toll revenues appear capable of financing upwards of \$50 million in project costs.
- Each \$1 million of annual net revenue could finance approximately \$8.8 million of direct capital investment, or about \$10.9 million of project costs including capitalized debt service. This helps put perspective on how \$1 million in annual non-toll local revenues can contribute to overall project costs.
- A tax that charges businesses as well as households, like a property tax, would decrease the household contribution for most households and are the most viable of any local, non-toll financing options.
- \$1 million in annual tax revenue in Washington is equivalent to \$134 per household per year in Klickitat County. If we limit the revenue requirement to White Salmon and Bingen, \$853 per household would be needed in those two cities. On the Oregon side, raising \$1 million annually requires the equivalent of \$138 per household in Hood River County, or \$412 per household in the City of Hood River.
- Limited amounts of state and federal funding may be available, but it is unlikely that they will fund the majority of the project cost. Competitive grants that have the highest potential for funding this project include the Washington Transportation Improvement Board (TIB), Oregon Transportation Investment Account (OTIA), federal Enhancement, and federal High Priority Project program.

Environmental Review and Coordination

To support the alternatives screening process in Tier II, additional environmental surveys for sensitive plants and cultural resources were performed, tribal coordination was initiated, comprehensive screening criteria were developed, and agency coordination with resource and regulatory agencies was conducted. From these

activities, potential critical issues to the natural and built environments were identified for each of corridors. These critical issues were then raised in the alternatives screening process. Final recommendations to advance or eliminate alternatives from further study took into account the reasonable and practical efforts that would be needed to mitigate or contend with these critical issues.

As a bi-state transportation project, the SR-35 Study invokes both the Washington NEPA/SEPA/404 Merger and the Oregon Collaborative Environmental and Transportation Agreement to Streamline (CETAS) environmental streamlining processes. Concurrence on the first two points (Purpose and Need Statement and Criteria for Alternatives Selection) was requested during Tier II. In the Washington Merger process, all agencies have concurred with or have waived participation on both points. In the Oregon CETAS process, most agencies have concurred with both points. However, one non-concurrence was received from the US Fish and Wildlife Service (USFWS) on the Purpose and Need Statement. The ODOT staff that coordinates the Oregon CETAS process is working directly with the USFWS to determine the steps that must be taken to resolve this non-concurrence. Two CETAS agencies, the Oregon Department of Land Conservation and Development (DLCD) and the Oregon Division of State Lands (DSL), have not responded to concurrence requests. ODOT has waived these agencies' participation in the CETAS process. These two agencies will not receive future concurrence requests unless they request to rejoin the project review process.

Transportation

During Tier I, 20-year cross-river traffic forecasts were made to assist with the evaluation. Since the intent of Tier I was to narrow the list of corridors, rather than focus on specific locations, the transportation evaluation consisted of developing vehicle miles traveled (VMT) projections for cross-river traffic for the various corridors.

During Tier II, more detailed transportation information was developed to assist in the evaluation of these alternatives. Transportation considerations at the alternative-level screening were assessed using several measures: vehicle miles traveled, level-of-service (LOS), safety and accidents, bicycle and pedestrian mobility and proximity to existing and planned facilities, commercial goods mobility, and impacts on Interstate (I-84) and National Highway System (SR-14) facilities. The results of this alternative-level analysis were used in the alternatives screening process.

Alternatives Screening and Recommendations

Long-Term Alternatives

Two screening processes to narrow long-term alternatives were conducted during Tier II. The first screening narrowed the build alternatives from 17 to 6. A second alternatives screening was used to select alternatives for evaluation in the DEIS. Screening criteria were developed in accordance with technical expertise, the Purpose and Need Statement, and public and agency comments. Baseline information available on a corridor level and the results of technical studies conducted in Tier II were used as the basis for this screening. Alternatives were screened for their potential to have high, moderate, or low impacts associated with each criterion.

The second screening narrowed the build alternatives from six to one: the Existing Corridor Fixed Span Bridge for All Modes. Reasons for advancing or eliminating build alternatives for further study in the DEIS are summarized in Table ES-2.

The Existing Corridor (EC) Fixed Span Bridge for All Modes alternative was then differentiated into three alternative alignments: EC-1 West Connection to Dock Grade, EC-2 West Alignment, and EC-3 East Alignment. The conceptual alignments of the alternatives are shown in Figure ES-2.

All alternatives tie into the existing bridge access road on the south end of the corridor at a point between the toll booth and the four-way stop. Improvements would be made to the I-84 interchange to include signalization or roundabouts at the ramp termini. The four-way stop at E. Marina Way (port/retail entrance) would be converted to a roundabout. The private driveway onto the access road would be closed. In all scenarios, it is assumed that the toll booth will be converted to one-way operations.

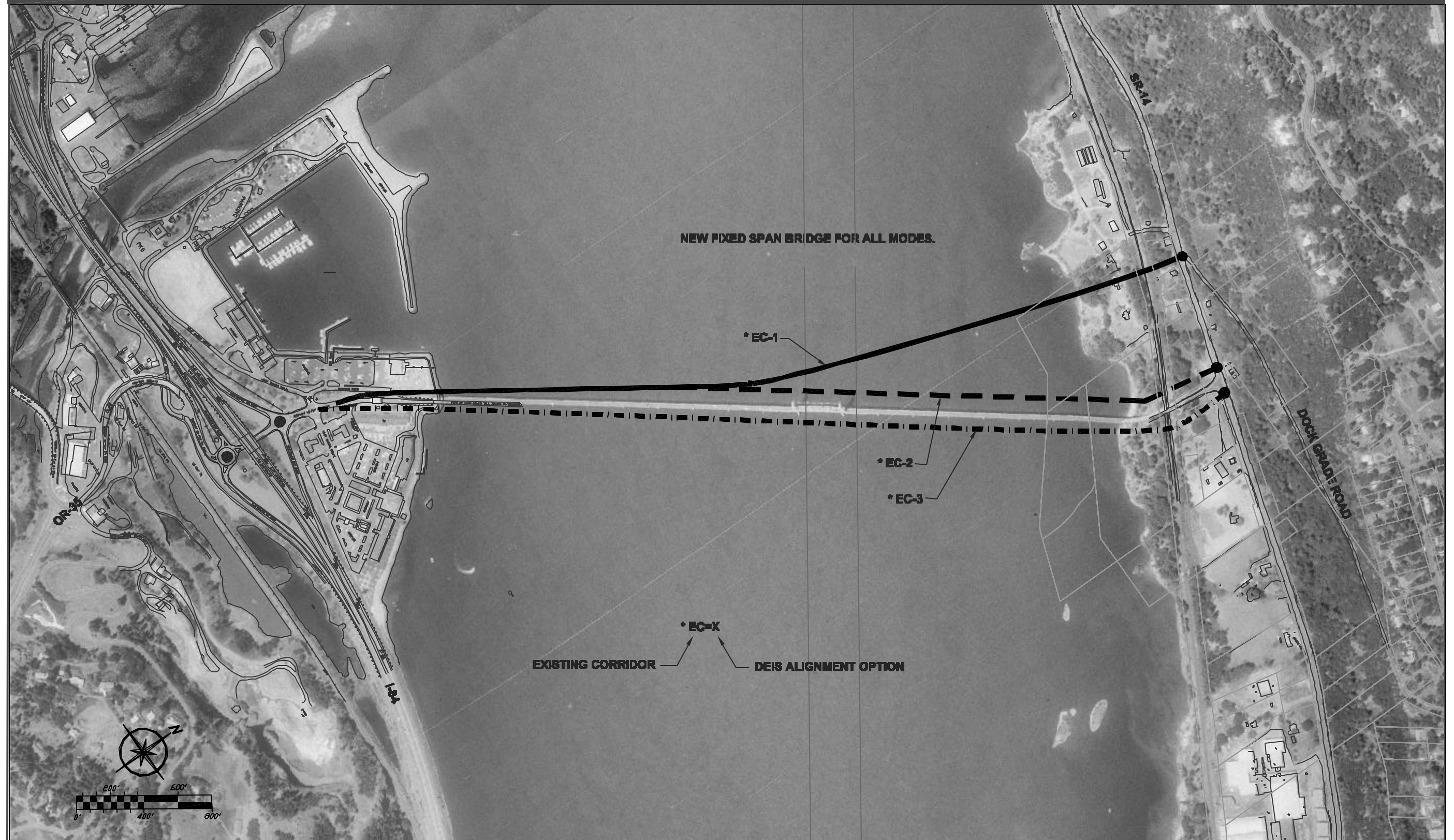
The following summarizes additional components of each alternative.

- **EC-1 West Connection to Dock Grade:** This alternative would be directly adjacent to the west side of the existing bridge until a point north of the shipping channel, where it would shift west to avoid the in-lieu (Native American treaty access) fishing site on the Washington side. It would be grade separated from the railroad mainline on the Washington side. The SR-14 intersection at Dock Grade would be signalized and widened to accommodate turn lanes. The grade of SR-14 would need to be raised, and Dock Grade would need to be realigned at the intersection for safety reasons.
- **EC-2 West Alignment:** This alternative would be directly adjacent to the west side of the existing bridge until a point north of the shipping channel, where it would shift slightly to the west to avoid the in-lieu fishing site on the Washington side. It would be grade separated from the railroad mainline on the Washington side. The SR-14 intersection would be signalized and widened to accommodate turn lanes.
- **EC-3 East Alignment:** This alternative would be directly adjacent to the east side of the existing bridge. It would be grade separated from the railroad mainline on the Washington side. The SR-14 intersection would be signalized and widened to accommodate turn lanes.

These three build alternatives plus the No Action alternative are recommended for further study in the DEIS.

SR 35 COLUMBIA RIVER CROSSING STUDY

SR-35 LONG TERM ALTERNATIVES



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Table ES-2. Summary of Rationale to Advance or Eliminate Alternatives

Corridor	Alternative	Recommendation for Further Study	Reason
City Center	New fixed span bridge for all modes	Eliminate	<ul style="list-style-type: none"> • Adverse impacts associated with water-based recreation, and • Severe geologic constraints on Washington side bridge landing.
City Center	New tunnel with existing bridge retrofit for pedestrian and bicycle use	Eliminate	<ul style="list-style-type: none"> • Substantial increase in vehicle-miles-traveled, • Substantial excavation in steep slope on Washington side portal, • High cost, and • High level of business displacement in Hood River.
Existing	New fixed span bridge for all modes	Advance	<ul style="list-style-type: none"> • Lowest impacts to transportation, • Lowest impacts to environmental resources, • Lowest impacts to recreation, and • Lowest cost.
Existing	Retrofit of existing bridge for all modes	Eliminate	<ul style="list-style-type: none"> • Identical low impacts as existing new fixed span, except it has higher capital costs and higher construction impacts.
East	New fixed span bridge with existing bridge retrofit for pedestrian and bicycle use	Eliminate	<ul style="list-style-type: none"> • High impacts to fish from in-water work associated with two bridges; • High environmental impacts associated with Bingen Pond, nearby peregrine falcons and bald eagles, and wetlands on Oregon approach; • High visual impacts associated with two bridges; • Four goal exceptions to Oregon statewide planning goals; • Potential encroachment on Koberg State Park; and • High cost (two bridges, new I-84 interchange, BNSF railway bypass).
East	New fixed span bridge for all modes	Eliminate	<ul style="list-style-type: none"> • High travel distances for pedestrians and bicyclists; • High environmental impacts associated with Bingen Pond, nearby peregrine falcons and bald eagles, and wetlands on Oregon approach; • Four goal exceptions to Oregon statewide planning goals; and • Potential encroachment on Koberg State Park.

Short-Term and Mid-Term Improvements

Short-term improvements are low-capital cost physical and operational improvements that are needed within the next five years to maintain or improve traffic operations on the existing bridge. Additionally, a set of mid-term improvements is recommended in case the bridge replacement is more than ten years away. These improvements would maintain or improve traffic operations in the 6-10 year timeframe. Figure ES-3 shows the short-term improvements recommended during Tier II.

Short-Term Improvements

Recommended short-term improvements to the existing bridge include:

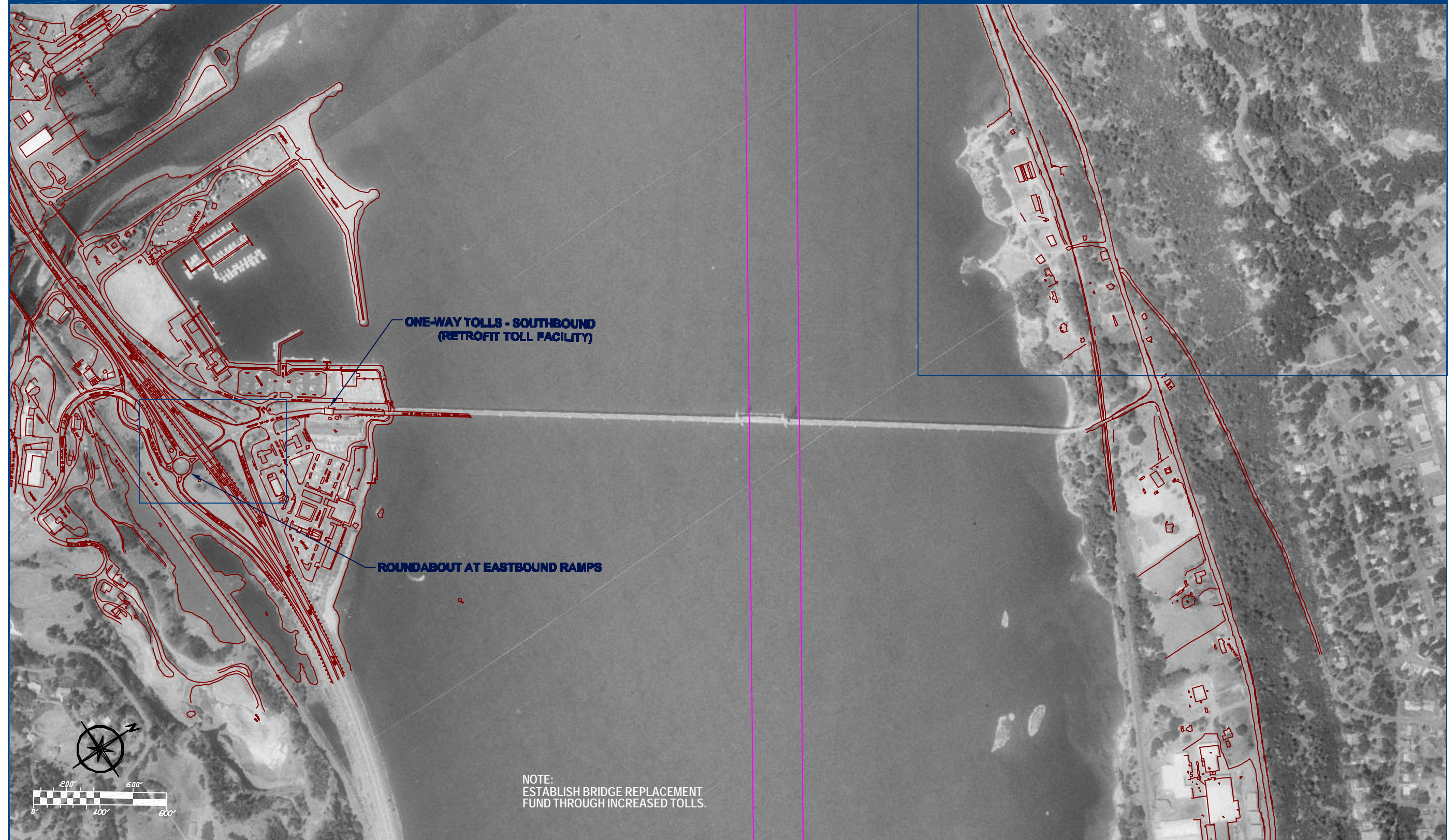
- Roundabout or traffic signal at I-84 eastbound ramps and Oregon 35/Hood River Bridge access road: This would reduce or eliminate peak traffic episode queuing and spillback onto the I-84 mainline. A roundabout is recommended due to the close proximity of Oregon 35, as well as the offset nature of the eastbound I-84 off- and on-ramps.
- Convert the toll booth to one-way tolls southbound: At peak traffic times, northbound traffic passing through the toll booth spills back through the adjacent four-way stop intersection. This is forecast to be a daily occurrence in the short-term future. In the long-term, these queues could block the I-84 ramp intersections. Converting the toll booth to one-way tolls southbound (\$1.50 toll paid once, rather than \$0.75 paid each way) will eliminate the potential for spillback queues affecting intersection and I-84 traffic operations. In the southbound direction, if queues form, the entire bridge can be used for the queue storage length, which does not impact any adjacent intersection. The one-way tolls should reduce the ongoing operating costs to the Port of Hood River by reducing the number of toll takers needed to operate the toll booth. The short-term conversion would consist of a retrofit of the existing toll booth, minor pavement widening to allow for northbound traffic to flow safely through the toll plaza, and signage changes and removals.
- Bridge replacement fund: A dedicated fund would be established through increased tolls to fund a replacement bridge. In the short-term, these would be collected by the Port of Hood River under an interagency agreement with the Washington State and Oregon Departments of Transportation.

Cost for these improvements are shown below. These costs do not include the cost of right-of-way acquisition nor do they include costs for environmental impact mitigation.

- \$270,000 for the roundabout
- \$100,000 for the toll booth conversion to one-way tolls
- \$573,500 total cost for short-term improvements (including additional costs for engineering, construction management, and contingencies).

SR 35 COLUMBIA RIVER CROSSING STUDY

SR-35 SHORT TERM IMPROVEMENTS



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Mid-Term Improvements

If the replacement of the bridge is not programmed to occur for at least ten years, traffic and congestion growth will result in additional improvements needed to maintain or improve traffic operations on the bridge. The recommended mid-term improvements to the existing bridge include:

- Signalize the I-84 westbound ramps at the Hood River Bridge access road: This would alleviate the future failing level-of-service at the interchange.
- Convert to a roundabout or signalize the four-way stop at the port/retail entrance: The four-way stop, which stops all vehicles, will eventually become a bottleneck and result in traffic spillbacks either into the toll booth area, or into the I-84 interchange area. Additionally, with short-term improvements at the I-84 ramps and at the toll booth to improve traffic flow, having a stop sign in the center of an otherwise flowing corridor may actually increase accidents over time.
- Restrict or close turns at the private driveway onto the Hood River Bridge access road: Vehicles turning left into, or out of, the driveway conflict with bridge traffic. With increased traffic, congestion, and queuing at the toll booth, and the increased potential for accidents, turning movements at the driveway should be restricted at a minimum to right-turns only, and potentially closed if the accident rate increases.
- Toll booth and automated toll collection system: This would alleviate southbound queuing near the toll booth by allowing regular bridge users to use automated toll collection. Project includes removal of current toll booth and the construction of new toll booth, canopy, and communication system to support automated toll collection. The new toll booth would be designed and built so that it would not need to be replaced with the construction of a long-term improvement in this corridor.
- Signalize the SR-14/Hood River Bridge access road intersection: Eventually, this intersection will experience LOS E/F conditions, which could result in higher accident rates as left-turning vehicle drivers become impatient with longer wait times and begin to attempt turns into unsafe gaps in traffic.

Cost for these improvements are shown below. These costs do not include the cost of right-of-way acquisition nor do they include costs for environmental impact mitigation.

- \$160,000 for the traffic signal at the westbound ramps
- \$270,000 for the roundabout at the Port/Retail intersection
- \$20,000 for the turn restriction or closure at the private driveway
- \$750,000 for toll booth and automated toll collection system
- \$160,000 for the signal at SR-14.
- \$2.1 million total cost for mid-term improvements (including additional costs for engineering, construction management, and contingencies).

Process to Implement Improvements

Short-term and mid-term improvements would need to be implemented by the agency having jurisdiction over the location being improved. The recommended Bridge Replacement Fund would not be initiated and used for short-term improvements, unless the DEIS determines that the preferred alternative is the no-action alternative.

To implement these improvements, both WSDOT and ODOT would need to incorporate the short-term and mid-term improvements into their collective highway system plans (ODOT: Oregon Highway Plan; WSDOT: Highway System Plan component of Washington's Transportation Plan). Once these documents were amended, funding for ODOT and WSDOT improvements would be sought through the State Transportation Improvement Program (STIP) process.

The Port of Hood River would implement projects through its Transportation Improvement Program or capital budget.

Next Steps

Tier III

Tier III could begin in the summer of 2002 and would include selection of a preferred long-term alternative, completion of the DEIS, and preparation of a financial and implementation plan.

Beyond Tier III

If Tier III is completed, then a Final Environmental Impact Statement (FEIS) would be prepared after the DEIS was circulated to the public. The FEIS would include a response to comments received during the public comment period and any modifications to the design or environmental impact mitigation previously identified in the DEIS, if necessary. After a Record of Decision is issued on the FEIS, preliminary engineering would occur. Funding for the FEIS and preliminary engineering would be sought during Tier III.

Decision to Continue Study Into Tier III

A meeting with the WSDOT and ODOT Regional Administrators was held in early June 2002. At this meeting, the Regional Administrators decided to postpone making the decision on whether to continue the Study into Tier III. Further discussions with WSDOT and ODOT will continue for several months. A decision on entering Tier III is expected at the end of Summer 2002. During this interim period, limited public involvement, design, and environmental activities will continue.