

# U.S. COAST GUARD DECISION ANALYSIS

## COLUMBIA RIVER CROSSING

### **Project Description**

The Columbia River Crossing (CRC) project is a joint undertaking by the states of Oregon and Washington acting through their respective transportation departments. The entire CRC project includes seven closely-spaced interchanges, including connections with state highways and major arterial roadways that provide access to downtown Vancouver, two international ports, industrial centers, residential neighborhoods, retail centers, and recreational areas. A significant element of the CRC project is the construction of a new bridge across the Columbia River between Portland, Oregon and Vancouver, Washington. Because the Columbia River is a navigable water of the United States, the Coast Guard must approve the location and plans for the new bridge.

### **Project Background and Evolution**

In the late 1990s, governmental leaders in the greater Portland metropolitan area began the planning process to improve surface transportation on the I-5 corridor from Portland through Vancouver, Washington. In January 1999, regional elected officials and decision makers initiated the *Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Assessment*, to better understand the magnitude of the congestion problem and explore possible improvements. Interstate 5, which is the major north-south transportation artery along the U.S. west coast between Canada and Mexico, crosses the Columbia River on a pair of outdated bridges that contain a vertical lift spans enabling large marine traffic to pass beneath them. The I-5 corridor between Portland and Oregon carries substantially more vehicles than the design capacity of the bridges, which in part causes traffic delays and motor vehicle accident rates two times higher than similar roadways in the region.

The eastern bridge (carrying northbound traffic) was built in 1917 and the western bridge (carrying southbound traffic) was built in 1958. The two-bridge crossing, which served 30,000 vehicles per day in the 1960s, now carries more than 135,000 automobiles, buses, and trucks each weekday. Although structurally sound, the bridges were constructed on wooden piles and do not meet modern construction standards for seismic stability.

In 2001, the Washington and Oregon governors appointed an I-5 Trade and Transportation Task Force of community members, business representatives, and elected officials to address concerns about congestion on I-5 between Portland and Vancouver. The Task Force developed a plan to improve transportation in the I-5 corridor between the I-405 interchange in Portland and the I-205 interchange north of Vancouver, and adopted the Final Strategic Plan on June 18, 2002. The findings and recommendations led to more focused study and the development of the I-5 CRC proposal.

In 2004, a Boat Survey Technical Memorandum was prepared by the project, summarizing large vessel vertical clearance requirements for the I-5 crossing. Thompson Metal Fab was mentioned in the Survey. It was determined that, over the past 25 years, the river has been at a stage 15 feet or lower 98% of the time. This information combined with the vessel inventory between the I-5 and I-205 bridges concluded that a future bridge with a vertical clearance of 125 feet above the Columbia River Datum could effectively accommodate all existing vessels.

Beginning in early 2005, the CRC project worked with stakeholder groups and held a series of public meetings to solicit feedback on how to define the project goals and objectives. Public and stakeholder input played an important role in the development of the CRC project from the beginning.

Throughout 2005 and into early 2006 The Task Force met regularly with the CRC project team to provide advice and recommendations on all project milestones. These meetings provided critical input during the formation of the project's Purpose and Need statement. In addition, a series of public open houses during the fall of 2005 provided more input from the public regarding how the project should define its goals and objectives.

On Sept 21, 2006, the USCG held a public hearing in Portland Oregon. During the meeting, General and Manson Construction Companies both stated a need for 125' vertical clearance with a possible need for 140' in the future.

In the Fall of 2006, CRC consolidated bridge and transit options into 12 preliminary alternatives. Each alternative included several transportation components: bridge, highway, transit, freight, bicycle and pedestrian improvements, and strategies to reduce travel demand. These preliminary alternatives were tested against the evaluation criteria. The results highlighted the strengths and weaknesses of the components. After evaluating the 12 preliminary alternatives, CRC staff recommended four for inclusion in the project's Draft Environmental Impact Statement. An additional alternative was added after receiving input from the Task Force.

The 39-member CRC Task Force was composed of leaders representing a broad cross section of Washington and Oregon communities. Public agencies, businesses, civic organizations, neighborhoods, and freight, commuter, and environmental groups were all represented. The group met 23 times to advise the CRC project team and provide guidance and recommendations at key decision points culminating in summer 2008 with their recommendation on the Locally Preferred Alternative (LPA).

The CRC project team also worked with many other local, state, and federal agencies to ensure that the purpose of this project would not conflict with other local and regional goals and would not predispose itself to an alternative that would be difficult for agencies to permit or approve. The federal co-lead agencies for this project, the FTA and the FHWA, were also instrumental in the development of the project's Purpose and Need.

Since October 2005, CRC staff has had more than 22,000 face-to-face conversations at more than 750 events on evenings, weekends and work days. Outreach and public involvement activities are highlighted below:

- 131 public meetings with community advisory groups
- 81 community meetings and events on Hayden Island
- 57 informational booths at community fairs, festivals and farmers markets
- 35 open houses, workshops and drop-in events
- Hundreds of copies of the Draft EIS were distributed, two public hearings were held, and 1,600 comments were received during the public comment period. Public open houses and design workshops are held for the general public and special interest groups in coordination with key project milestones. Input from these events, in combination with advisory group recommendations and technical analysis help develop the CRC project.

### **The Environmental Impact Statement and Vertical Clearance**

FTA and FHWA are the NEPA lead agencies and issued a Final Environmental Impact Statement (EIS) on September 23, 2011 and signed a Record of Decision (ROD) on December 7, 2011. The EIS and ROD were based upon the Locally Preferred Alternative (LPA) being a pair of mid-level fixed bridges with a vertical clearance of 95 feet above Columbia River Datum<sup>1</sup> (CRD). Because the existing bridges provide for 178 feet of vertical clearance in the open position, several upriver industrial fabricators expressed concern that certain large loads transported by barge under the bridge required openings and would not fit under the LPA with only 95 feet of vertical clearance.

On December 7, 2011, the Coast Guard wrote to CRC requesting further analysis of the navigational impacts that would result from the LPA. In response, CRC submitted a Navigation Impact Report (NIR) on November 12, 2012, that discussed the various bridge heights considered in the planning process, the Columbia River system and its navigational channels, current and future navigation in the region and potential mitigation of navigational impacts. The NIR evaluated impacts of mid-level bridge heights ranging from 95 feet to 125 feet, and ultimately concluded that the LPA bridge height should be raised to 116 feet above zero CRD.

To determine if the increase in vertical clearance (from 95' to 116') in the primary channel of the bridge required a supplemental EIS, FTA and FHWA performed a NEPA re-evaluation on 28 December 2012. The NEPA re-evaluation concluded "impacts presented herein and the refinement in design of vertical clearance from 95 feet to 116 feet, do not present new significant impacts under NEPA which were not evaluated in the project NEPA documents and ROD and, therefore, pursuant to 23 CFR Section 771.130, no additional NEPA documentation is required."

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<sup>1</sup> Throughout this analysis, river water levels and vertical clearance figures are expressed relative to the Columbia River Datum (CRD), a fixed datum, or reference elevation, established by the Army Corps of Engineers in 1911. Based upon river level data collected at the I-5 bridges between 1972 and 2012, the highest average daily high (early May) is approximately 10 feet above CRD, the lowest average daily low (early October) is approximately 2 feet above CRD, and "ordinary high water" level (exceeded less than 2% of days over 40 year period) is at 16 feet above CRD.

## The Navigation Impact Report

### Waterway Description and Use

The Columbia River’s deep draft navigation system provides for a 43-foot-deep by 600-footwide channel from inside the Columbia Bar upriver to ports on both the Washington and Oregon sides of the river. The upriver terminus of this deep draft channel known as the Lower Columbia, is just below the Interstate 5 bridges. Three bridges cross the main channel of the Columbia River in the project area: the northbound and southbound structures of the I-5 bridges (proposed to be replaced by the CRC project) and the BNSF Railroad Bridge (a swing bridge) located less than one mile downriver (west). The I-5 bridges are in the shallow-draft section of the system and the BNSF bridge is in the deep-draft section.

The shallow-draft system begins just downriver from the I-5 bridges and extends upriver to The Dalles lock and dam at river mile 191.6. The shallow-draft system has a controlling depth of approximately 17 feet. Just east of The Dalles is another BNSF railroad bridge at Celilo Falls with a vertical clearance of 79 feet.

The proposed bridge will become the governing structure on the waterway. All other bridges downriver from the Celilo Falls BNSF bridge provide higher vertical clearances.

Bridge	Vertical	Horizontal
US 101 Bridge	198	1,070
Lewis and Clark Bridge	198	1,020
BNSF RR Swing Bridge	Unlimited (open)	200
Existing I-5 Bridge (charted at MLLW)	178 (lift span open)	263
	46 (barge channel)	511
	72 (alt channel)	260
I-205	145 (mid 300’ of span)	470

In addition, the proposed bridge will redefine the guide clearance requirements for the waterway, which are as follows:

	Bridge Type	Horizontal	Vertical	Datum
Mouth to BNRR Bridge at Vancouver	Fixed	1,000 ft.	180 ft.	25ft. on Portland gauge.
BNRR Bridge at Vancouver mm105.6 to Dalles	Fixed	450 ft.	135 ft.	600 kf PS stage.
Dalles to Kennewick, Mile 328	Fixed	400 ft.	60 ft.	2 pct flowline.

Vessels currently using the river in the vicinity of the project include tugs and barges, recreational sailboats and powerboats, marine contractor barges with construction cranes

and materials, cruise and passenger boats, dredges, government vessels, vessels transporting shipments of marine industrial businesses and fabricators and others. On average, about 2,600 commercial vessel trips occur each year in this section of the Columbia River, based on logs of the U.S. Army Corps of Engineers over the last 12 years. In addition, more than 185,000 recreational activity days per year occurred on average in the Columbia River in Multnomah County, according to the Oregon State Marine Board. Of the recreational users, nearly 20,000 activity days were from sailboats.

#### Existing I-5 Bridge Channel Alignment with BNSF Rail Bridge:

Under the I-5 bridges, vessels pass through one of three channels: the primary channel, the barge channel and the alternate barge channel. The primary channel lies under the bridges' lift spans and has a horizontal clearance of 263 feet and a vertical clearance of 39 feet above 0 CRD in the closed position and 178 feet CRD in the raised position. The highest clearance of these alternate channels provides a vertical clearance of 72 feet above CRD, or 56 feet above a 16-foot CRD river stage.

Vessels require bridge openings either because they are too tall to pass under the fixed spans, or because the location of the primary channel provides a safer, direct line for navigating between the I-5 bridges and the movable span in the BNSF bridge just downriver, which is aligned with the I-5 lift spans. Marine traffic that is too tall to navigate the primary channel under the I-5 bridges in the closed position often uses the barge channel, but then must make an S-turn maneuver between the I-5 bridges and the BNSF bridge opening to align with the relatively narrow opening in the BNSF bridge. The S-turn maneuver becomes more difficult to accomplish at times of high river flow or with large loads for which exact alignment approaching the BNSF bridge is critical.

#### I-5 Bridge Openings

To minimize the vehicle traffic congestion associated with openings on the I-5 bridges, the openings are limited to avoid rush-hour openings. The existing I-5 bridges opened for vessel traffic an average of 289 times per year over the past 25 years. During the past five years, the annual average was 209 lifts for vessel traffic and 459 average total lifts when maintenance lifts are included. For those vessels that requested a bridge lift during that period, tugs and barges accounted for half of all openings, followed by sailboats at 22 percent, and construction equipment at 17 percent. Each of the remaining vessel types accounted for between one and four percent.

#### **Vessel Impacts**

On average, about 2,600 commercial vessel trips occur each year, and more than 185,000 recreational activity days per year occurred in the Columbia River in Multnomah County. At the lowest mid-level bridge height studied (95 feet), 41 vessels would be restricted from passing a portion of the year, and 12 other vessels/users would not be able to pass at any time of year without mitigation. All other vessels would pass unrestricted. As discussed in Chapter 7 of the Navigation Impact Report, a range of mid-level bridges,

studied in 5-foot increments from 95 feet through 125 feet, were evaluated as potential measures to further minimize navigation impacts. At the highest mid-level bridge height studied (125 feet), just three vessels/users would be restricted from passing a portion of the year, and five other vessels/shipments, including three projected to be built/fabricated, would not be able to pass at any time of year without mitigation. All other vessels would pass unrestricted.

All of the bridge heights discussed in the NIR, including the maximum vertical clearance (178 feet CRD) with the existing lift span, would pose vertical clearance constraints on either existing or projected future vessels or shipments. Some of the incremental vessel clearance changes were small and some were substantial. For example, when increasing the bridge height from 95 feet to 105 feet, 16 additional vessels could pass all year round, whereas when increasing from 120 to 125 feet, for example, just one additional vessel could pass year round.

## **Future Waterway Use**

### Upriver Zoning and Land Use

Between the I-5 bridges and the Celilo Falls BNSF railroad bridge 95 miles to the east, many shoreline land uses are dependent on the Columbia River. In general, the Columbia River shoreline is identified by local jurisdictions as a resource to be leveraged for river-dependent uses that are more in line with recreational, environmental, habitat or economical purposes than with industrial marine, water-dependent uses. The majority of significant land uses in that section are governed by the laws applicable to the 85-mile long Columbia River Gorge National Scenic Area which protects the natural characteristics of the gorge and severely limits industrial development outside of existing incorporated communities. Except for the Columbia Business Center in Vancouver, most of the industrial zoned land will continue to support existing uses and will be limited to businesses that would not be height constrained (for example, lumber or recreational sailboat manufacturing).

## **Unique Industrial Capabilities**

### Columbia Business Center

The Columbia Business Center is a 220 acre industrial facility with approximately 6200 linear feet of waterfront on the Columbia River. It is a multi-modal facility with rail and highway access, and has two barge slips that can accommodate vessels up to 400 feet in length. In addition to numerous other commercial tenants, the CBC is the home to the three industrial fabricators that use the barge slips to ship large products, often for the oil exploration and production industry on Alaska's North Slope. These large manufactured products require occasional openings of the I-5 lift bridge.

## **The Industrial Fabricators**

Although the majority of vessels operating in the vicinity of the I-5 bridge will have ample vertical clearance at 116', three industrial metal fabricators (Thompson Metal Fab., Inc., Oregon Iron Works and Greenberry Industrial LLC) (collectively, the "Fabricators") are located upriver from the bridge and on occasion, ship large manufactured structures via barge under the existing bridge, which in some cases require the I-5 bridge to fully open. All three Fabricators are tenants at a the Columbia Business Center, located on the North bank (Washington side) of the Columbia River about one mile upriver from the I-5 Bridge.

Thompson Metal Fab and Greenberry Industrial manufacture large metal structures for use in the energy and transportation industries. These structures are loaded onto barges at the CBC heavy lift dock and shipped under the I-5 bridge. Although such shipments are relatively infrequent, they do require bridge openings as they will not fit under the bridge at the barge channel or alternate barge channel.

The fabricators indicate they require a large a shipment every year or two, consisting of structures for the oil industry (oil rig modules), Pacific Northwest industries (structures for forest products plants and other local firms), USACE (lock gates, fish weirs and other structures) and departments of transportation (mainly bridge structures). In addition, these firms are currently fabricating structures that support offshore energy programs (wind and tidal power).

Marine industries and fabricators ship products or have vessels transiting under the bridges on an as-needed basis all months of the year. The reported air drafts ranged from 60 feet to 141 feet.

As early as 2006, Thompson Metal Fab insisted that any replacement bridge must provide at least 125 feet of vertical clearance. All three fabricators have written letters to the Coast Guard objecting to the 116 feet of vertical clearance of the propose bridge. Oregon Iron Works and Greenberry Industrial were willing to discuss with CRC the possible mitigation of their business impacts from the proposed bridge, however, Thompson Metal Fab insisted that it could only be mitigated through relocation to a new location below the bridge. According to CRC's analysis, moving the fabricators was too costly and not a real option for mitigation. As a result of the fabricators communications with the Coast Guard and public comments on the proposed bridge, the Coast Guard considered the fabricators to be waterway users that would be burdened by a bridge with 116 feet of vertical clearance.

Throughout the application and pre-application phases of the project, the Coast Guard informed CRC that it would require notice of any actions or agreements undertaken to mitigate the project impacts to the fabricators.

Using information gathered in the NIR, the Columbia River Vertical Clearance NEPA Re-Evaluation dated December 2012 identified 11 potentially impacted users of a bridge

with a vertical clearance of 116' above Columbia River Datum (CRD). A vessel was determined to be potentially impacted if it could not pass under the bridge with a 10 foot air-gap (vertical clearance between the highest point of the vessel and the lowest point of the underside of the bridge) while the river water level is at 16 feet above zero CRD. 16 feet above zero CRD is the water level that was exceeded less than 2% of the time over the past 40 years.

Additional information regarding each user can be found in the USCG Findings of Fact and HQ Evaluation for this project.

The NEPA Re-Evaluation determined that the following 4 potentially impacted users would be unable to pass under the proposed 116 foot bridge under any water level and therefore considered them to be "Impacted":

- Greenberry Industrial
- Oregon Iron Works
- Thompson Metal Fab
- J.T. Marine Derrick Barge (DB) Taylor

The NEPA Re-Evaluation determined that the following 5 potentially impacted waterway users could pass under the 116 foot bridge a substantial portion of the year with less than a 10 foot air gap. The NEPA Re-Evaluation therefore concluded that there was "no substantial impact" to these users

- Advanced American Construction DB 4100
- General Construction DB General
- Port of Portland's Dredge Oregon
- USACE dredge Yaquina
- SDS Lumber Company (possible future shipment)

The NEPA Re-Evaluation determined that although the following 2 users/vessels would be unable to pass under the 116 foot bridge at any time, they only had a "remote chance of being impacted".

- Diversified Marine Derrick Barge (DB) Freedom
- Schooner Creek Boat Works

Section 10.3 of the CRC Bridge Application dated 30 January 2013 subsequently determined that the following 7 of 11 potentially impacted users could be accommodated by a 116 foot vertical clearance above 0 CRD if allowing for less than a ten foot air gap, and therefore no mitigation would be required:

- Advanced American Construction DB 4100
- General Construction DB General

- Port of Portland's Dredge Oregon
- USACE Dredge Yaquina
- SDS Lumber Company (future shipment)
- Diversified Marine Derrick barge (DB) Freedom
- Schooner Creek Boat Works

Section 10.3 of the CRC Bridge Application also concluded that the following four vessels/users have a need for some transits that would be too tall to pass under the 116 ft vertical clearance bridge:

- Greenberry Industrial (projected future shipment)
- Oregon Iron Works (projected future shipment)
- Thompson Metal Fab
- J.T. Marine Derrick Barge (DB) Taylor

### **Mitigation Negotiations and Agreements**

#### Upriver Fabricators

By August of 2013, CRC had negotiated agreements with all three industrial fabricators. Through these agreements, each Fabricator will accept financial compensation to make up for business losses associated with the reduced clearance of the new bridge. The Coast Guard was not privy to the negotiations or terms of the agreements, and is not a party to the agreements. As the Coast Guard had requested, CRC and the fabricators have provided notice that the agreements were reached prior to the permit decision date of September 30, 2013. Because the fabricators voluntarily negotiated and reached agreement with CRC, the Coast Guard believes the fabricators no longer object to the proposed bridge with 116 feet of vertical clearance.

#### U.S. Army Corps of Engineers Dredge Yaquina

The U.S. Army Corps of Engineers operates the dredge Yaquina above and below the I-5 bridges to maintain the deep and shallow channels of the Columbia River. Based on the Draft April 2013 Conceptual Staging Plan submitted by CRC, the USACE has determined that the proposed bridge construction staging will prevent the Dredge Yaquina from operating up-river of the I-5 Bridge for approximately 28 months.

In an email dated 19 September 2013 to D13, the USACE regional office stated the following: "CRC's current proposal to construct the new I-5 bridge interrupts the USACE's current dredging maintenance operation for a 28 month period during construction. The USACE's dredge will not be able to navigate through the I-5 bridge location during that period."

The USACE is working on an Intergovernmental Agreement with ODOT in order to resume working on a mitigation plan for maintenance dredging during construction of the

new bridge.

J.T. Marine's Derrick Barge (DB) Taylor. CRC documented the history of meetings the project held with JT Marine regarding mitigation strategies for their derrick barge, DB Taylor. On 22 August 2013, a follow-up meeting was held to discuss the mitigation agreement. At that time, JT Marine indicated that they had met with a project opponent and had concluded that they could not longer support the project. This was contradictory to the 30 January 2013 letter to the USCG indicating they were a strong supporter of the project. JT Marine stated their desire to discontinue any further discussions about mitigation. CRC had determined that there are options to modify the vessel.

### **Public Comments**

On 6 May 2013, the Coast Guard issued a public notice for the project. The public notice announced that application materials had been received by the Coast Guard on 30 January 2013 for a fixed bridge with 116 feet above CRD of vertical clearance. The notice announced there were six impacted waterway users, with three of them being shore-based fabricators. Restricted clearances during construction were also cited in the notice, as well as realignment of the federal channels and an 18% encroachment on the turning basin. In addition, the notice announced two public meetings and solicited comments on navigation.

The Coast Guard received 616 comments, with 246 comments related to navigation. A comment matrix was prepared and sent to CRC for response on items related to navigation, alternatives, environment, cost, light rail, etc. On 27-29 August, the Coast Guard held an On Board Review to review the CRC responses to comments. At the conclusion of the OBR, the CG had identified several items that needed further clarification from CRC on a mid-level moveable bridge alternative; FAA airspace impacts; the mitigation status for JT Marine, Hidden Family, Houston Equities and Legendary Yachts; information regarding the oil and gas industry; and transit and cargo values. On 20 September 2013, CGHQ held a teleconference with ODOT, requesting responses to the above listed items. On 23 September 2013, ODOT addressed each issue via several memorandums. The responses to these items are summarized in the Coast Guard HQ evaluation.

### **Primary Legal Authority for Oregon Lead Project**

Through a series of intergovernmental and public communications in July and August of 2013, the Coast Guard became aware that due to a lack of CRC funding by the Washington legislature, Oregon intended to proceed as a sole lead for the CRC project. Ordinarily, the Coast Guard presumes that states have the legal authority to obtain all necessary land to build a bridge. Because Oregon proposed to build the entire bridge—including the portions within Washington—the Coast Guard wrote to the attorneys general of both states to request legal opinions on whether the Oregon-only bridge construction was legally permissible. In letters dated September 19, 2013, the attorneys general of Washington and Oregon separately confirmed that an Oregon-only bridge construction plan was legally permissible in both states. The Coast Guard accepts these

attorney general opinions as sufficient legal authority within their respective states for the construction of the CRC bridge by the State of Oregon.

#### Coast Guard Headquarters and District 13 Collaboration to Expedite Review

On August 20, 2012, the Steering Committee on Federal Infrastructure Permitting and Review Process Improvement determined that the CRC project was of national or regional significance and added it to the President's Infrastructure Dashboard. To ensure project milestones were met, the Coast Guard entered into a Statement of Protocols with Federal DOT and the two federal co-lead agencies, FHWA and FTA. The Protocols established procedures to enhance dialogue between the signatory agencies and established certain project milestones culminating with a Coast Guard permit decision by September 30, 2013.

Due to a confluence of events and factors unique to the CRC project, i.e., retirement of D13 District Commander, transfer of D13 Bridge Administrator, decision by Washington legislature to not fund project, disestablishment of CRC offices in Vancouver and change from bi-state project to Oregon-lead project, the Coast Guard internally shifted resources and responsibilities to ensure the project could remain on schedule for a September 30 decision. Toward that end, the D13 District Commander requested that CG Headquarters complete the project fact finding work initiated at the district level. The Headquarters Bridge Program staff continued to work closely with the D13 personnel temporarily assigned to the CRC project to complete the fact finding and administrative record supporting the permit decision. Although the final agency decision authority for the CRC project has always remained at CGHQ in accordance with 33 C.F.R. 1.01(1)(a), the final permit decision authority was elevated to Vice Commandant to ensure adequate administrative separation between the staff performing the permit review and the officer with final decision authority.