



# **BASELINE CONDITIONS REPORT**

## **Executive Summary**

**Working Draft**

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***Prepared for:***

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## **EXECUTIVE SUMMARY**

### ***Introduction***

TEA-21 programmed funding for a feasibility study to replace or improve the Columbia River Crossing along a proposed SR 35 corridor linking Oregon and Washington near Bingen, Wash., and Hood River, Ore. A Purpose and Need Statement was developed and adopted by the RTC in 1999. RTC has begun conducting a feasibility study of a new or improved crossing.

With multiple agencies having jurisdiction or providing services in the study area, there is a wealth of information that needs to be centralized and made available for further use in this study. Collecting and developing a database of information is just part of the need; it is also critical to present the data in a fashion that is useful to the agencies and understandable to the public.

### ***Purpose***

This Baseline Conditions Report will summarize and evaluate existing data necessary to understand existing physical and operational features within the study area associated with the existing river crossing, including bottlenecks such as intersections with the bridge and I-84 and SR14, toll booths, connecting arterial roadways, rail and marine transportation. This data will form the baseline for comparison with the future “no-build” conditions and subsequent strategies, refinement, screening and evaluation.

This Baseline and Existing Conditions Inventory has been prepared to assist those involved with this study in understanding the current and future needs associated with the current Hood River Bridge crossing. This inventory is a summary of existing conditions of the built and natural environment, transportation facilities and conditions, current and future deficiencies in level-of-service, and identified substandard design conditions. This report describes the existing and 20-year No-Build conditions to be used for evaluating improvement alternatives in the corridor.

This report includes a review of the engineering information associated with the Hood River Bridge, existing transportation facilities, their respective deficiencies and funding sources, environmental issues that may impact or constrain crossing improvements, and economic conditions.

### ***Report Format***

This report has been developed so that major study areas, such as transportation and environmental, are included as separate chapters. The report is organized as follows:

Chapter 1, “Engineering,” contains information regarding existing physical and operational features within the study limits associated with the existing river crossing. River navigation is included in Chapter 2. Included will be a compilation of structural condition information for the bridge and connecting roadways, as-built bridge and

roadway information. Under development is a mapping database using existing mapping data in the study area.

This data will form the baseline for comparison with the future “no-build” conditions and subsequent strategies, refinement, screening and evaluation. The data developed will be tailored to the tiered evaluation framework.

Chapter 2, “Navigation”, identifies the types, frequency, size and operational characteristics of vessels transiting the Columbia River at the existing Bridge vicinity as well as other crossing corridors. Also included are recommended bridge design clearances to accommodate river navigation.

Chapter 3, “Environmental”, summarizes existing environmental data through contacts with federal, state, and local agencies, collection of available documents, and windshield reconnaissance of the project area. Applicable information is summarized in this chapter along with maps suitable for use in the development of alternatives and impact evaluations.

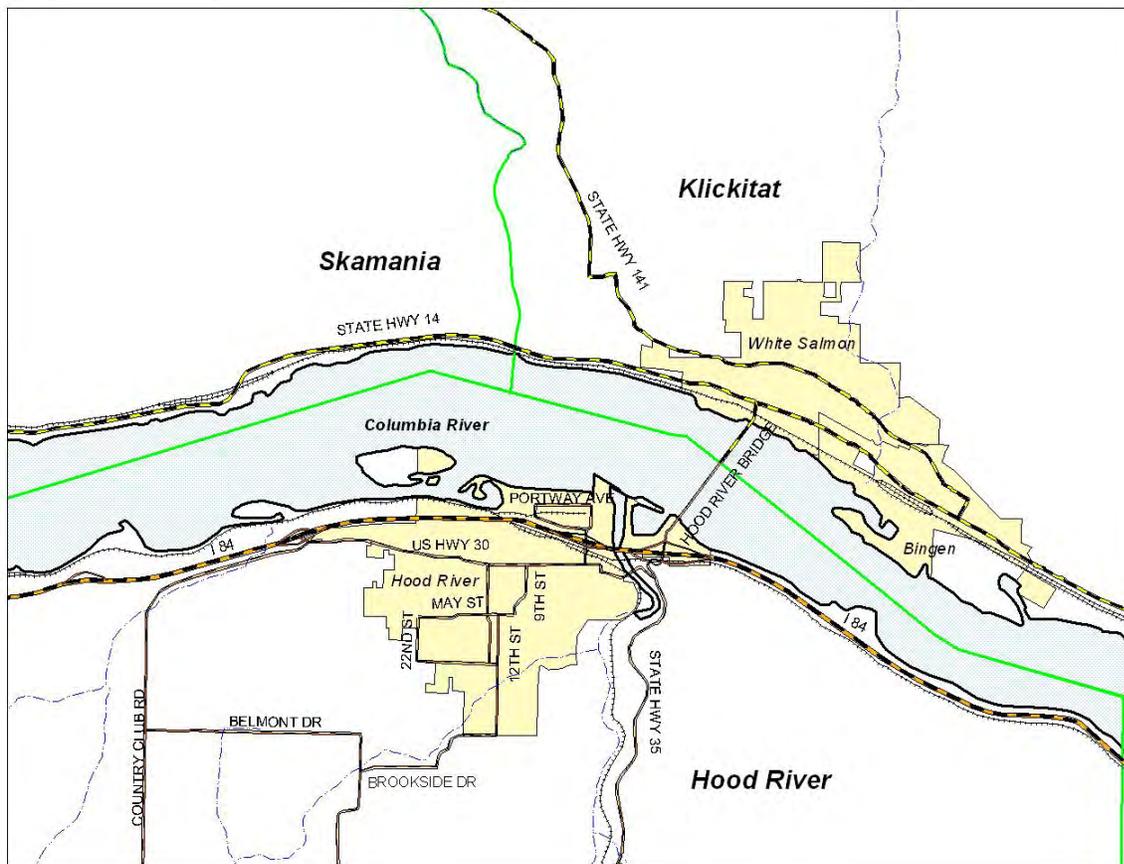
Information in this chapter includes land use and development plans for cities, counties, and ports; wetlands and stream crossing data; Gorge Management Act information; air quality and noise information; in-lieu tribal fishing sites and tribal, cultural, archaeological, historical data; as well as recreational use information.

Chapter 4, “Economics”, assembles existing and available economic and trade data to identify and describe the region and its industries. This includes an assessment of the role of interstate and regional trade in the regional economy and the importance of crossing as a commuter route to support the local economy.

The interstate and regional significance of the study region’s trade economy and the role of a Columbia River Crossing within the study region will be identified and described in the context of the proposed Tier 1 alternatives. General commodity flows will be described to provide an overview of local economy with respect to volumes of goods movement. Specific local industries or economic sectors involved in or affected by goods movement, including interstate trade, will be identified and the potential impacts of alternative crossings will be assessed to the extent relevant and necessary in the Tier 1 alternatives screening.

Chapter 5, “Transportation”, summarizes existing data necessary to understand existing physical and operational features within the study limits associated with the existing river crossing, including bottlenecks such as intersections with the bridge and I-84 and SR14, toll booths, connecting arterial roadways, rail and marine transportation. This data will form the baseline for comparison with the future “no-build” conditions and subsequent strategies, refinement, screening and evaluation. Data is included from traffic counts, studies such as the SR-14 Corridor Plan, and the Hood River Transportation System Plan.

## Project Vicinity



## Summary of Findings

The following is a brief summary of the key findings from the Baseline Conditions inventory.

## Engineering

- No engineering analysis has been conducted that addresses the cost or problems associated with adding a sidewalk to the Hood River Bridge.
- A sidewalk study would need to examine such issues as wheelchair accessibility, bridge load strengthening, and modifications to the lift mechanisms to accommodate the additional load.
- The previous bridge inspections appear to be adequate. PB bridge engineers would suggest a more aggressive inspection schedule and process if they were responsible for the inspection on this bridge.
- Further communications with the Port of Hood River are ongoing regarding Bridge Inspection reports and maintenance repairs conducted to date to compile a more comprehensive understanding of the Bridge.

## Navigation Issues

- The Hood River Bridge has a vertical clearance of 67 feet, which is an adequate height to allow most tugs to pass under without lifting the span.
- The horizontal clearance on the navigation channel is less than the 300 feet, which is recommended by the Corps of Engineers and the towboat operators.
- During high water, the passage of large vessels such as the stern-wheelers or cruise ship may require the bridge to be opened.
- The Hood River Bridge typically opens only once or twice a month.

## Environmental Issues

- There are a number of threatened or endangered anadromous fish stocks that migrate through the bridge relocation study area. The National Marine Fisheries Service has designated all of the Columbia River shoreline within 300 feet of the water as Critical Habitat for these species.
- There are two designated access areas for Native American Fisheries in the bridge relocation area.
- Water quality in the area is generally good, but there are specific water quality issues in the Columbia, Hood and White Salmon Rivers.
- There are wetlands that would be directly impacted by proposed bridges in all of the corridors.
- There are a number of sensitive plants in the study area. They are primarily located at or near Stanley Rock or near the West Hood River Interchange.

## Economic Issues

- The majority of the population and employment in the study is located on the Oregon side of the bridge.
- The Hood River Bridge carries a substantial amount of truck freight and it is used by a large number of consumers who are seeking retail options in Oregon.

## Transportation Issues

- Most of the road system in the area of the Hood River Bridge has adequate capacity. However there are several identified highway capacity problems near the south end of the bridge.
- Identified current or near-term congestion locations include the Hood River Bridge access road at SR-14 (northbound-to-westbound left turn), the area between the toll booth and the four-way stop at the Port of Hood River and retail complex access road; and the left turns from each of the I-84 ramps.
- Two existing public transit systems provide basic local transit service to the area.
- The total number of bridge crossing on the Hood River Bridge was relatively stable from 1993 to 1998. This number increased somewhat in 1999.

# Chapter 1 - Engineering and Bridge Inspections

## **Objective:**

**Obtain, review and comment on the following documents regarding the Hood River Bridge:**

- October 1998 Underwater Inspection Report
- October 1997 Mechanical and Electrical Inspection Report
- July 1995 Load Rating
- April 1993 Routine and Fracture Critical Member Bridge Inspection Report (Including the Routine Inspection, Fracture Critical Inspection, and Underwater Inspection)
- HNTB conversation memos on other inspection materials.

## Bridge Inspections:

The majority and a summary of the repair/maintenance recommendations are included in the April 1993 Inspection report. The recommendations made in the reports appear to be adequate and reasonable assuming that the field data was collected accurately, however there does not seem to be an aggressive approach to prolonging the service life of the structure. The recommendations are outlined in the Executive Summary portion of the reports, and are more specifically addressed in the Routine Bridge Inspection formwork, the Fracture Critical Inspection formwork and the underwater inspection formwork.

1. The 1998 and 1993 underwater inspection reports did not note or mention any issues with the bridge. These reports do document some localized scour effects but nothing that would be considered necessary for immediate repair, but should be monitored and a retrofit measure implemented if the problem persists.
2. The October 1997 Mechanical and Electrical Inspection Report does document and outline a programs for maintenance. No report documentation from the Port of Hood River documents if these repairs have been carried out, but conversation with HNTB engineering staff that prepared the reports indicated that all measures outlined for maintenance repair have been completed.
3. The July 1995 and 1993 Load Rating does document members in the bridge, which fall below a load-rating factor of 1 (below 1 is deficient). In 1996, the Port did contract with HNTB to prepare plans to repair the defective members and that work was subsequently completed in 1996. HNTB later in 1996 followed up with a supplemental load rating documenting that no bridge members have a Rating Factor below 1. This information was obtained in conversation with HNTB. Copies of these records have been requested from the Port of Hood River.
4. The April 1993 Routine and Fracture Critical Member Bridge Inspection Report (Including the Routine Inspection, Fracture Critical Inspection, and Underwater Inspection).

Fracture Critical Inspection Results (1993): The fracture critical inspection did document some stringers (load carrying bridge members, specifically stringers in spans 43, 54, S10, and S12) as have significant fatigue prone details, followed with the statement, "failure of stringers in spans 53, 54, S10, and S12 would allow the ends of these strings to drop down and carry the roadway with them which would undoubtedly cause a catastrophic hazard to the traveling public". A recommendation was made by HNTB to install bracket supports at these stringers to support the stringers in the event of a stringer end connection failure. To our knowledge and HNTB's no repair has been carried out to fix this situation. HNTB did note that the Port of Hood River has contacted them to begin plan preparation for replacement of the deck and that retrofits of the affected stringers would be included in that work. . Replacement of the deck should be completed within two years (winter of 2002).

Routine Inspections. The documentation obtained from the Port of Hood River only produced 1 routine inspection report. Follow up conversation with HNTB engineers have yielded routine inspection reports dating back to 1978. HNTB has indicated that they have carried out routine inspections since 1978 and specifically in the following years: 1978, 1979, 1980, 1981, 1982, 1984, 1985, 1987, 1989, 1991, and 1993. The inspection reports completed are at various levels and some completed before there were established State and National inspection requirements and format. The latest inspection (1993) is by far the most comprehensive inspection done to date.

### **Summary Comments:**

Although the report seems complete and thorough regarding the deficiencies noted during the inspection, typical inspection programs required by the Federal Highway Administration (FHWA) on State owned bridges or bridges requesting federal funds are as follows:

- Routine – every two years
- In-Depth - as required and determined by the owner, but most do it at a minimum of every four or five years
- Fracture Critical – every one to two years, depending on condition and local requirements
- Underwater - five years
- Mechanical/Electrical every two years
- Load rating – follows with In-Depth Inspections

The FHWA recommends these and the States are required to follow the guidelines to insure Federal funding. For typical highway structures the states typically have a Biennial Inspection program that is an in-depth inspection including hands on all fracture critical members every two years.

The inspection program for the Hood River Bridge is current in some aspects, underwater and mechanical & electrical, but out of date or sequence for routine, and

fracture critical; which are the most common two for this type of bridge. The inspection reports do document and recommend maintenance repair of items found during those inspection, but it appears there is a lack of complete record keeping to track all inspections and or repair performed to the bridge.

The inspection requirements outlined above are National Bridge Inspection Standard recommendations that apply to State owned structures applying for Federal funding of bridgework. Many bridges that are owned and operated by Toll Authorities do not fully comply with the Federal recommendations and perform the minimum of inspections required to meet insurance or bond holder requirements, and as far as PB can tell there is no Federal Law requiring them to do more. State Law may require more thorough inspections on a State-by-State basis.

Regardless of legal requirements though, if there were to be an incident on a bridge that could have been avoided by inspections or by implementing repairs recommended as part of an inspection the owner would be in jeopardy since it is such common and widely used practice to perform Biennial Inspections. PB always makes it standard practice to include as part of our limited scope annual inspections for private bridge owners recommendations for more frequent inspections to be in compliance with FHWA standards as this is the national standard for the majority of bridges in the Untied States.

The Port of Hood River in general has hired a competent engineering company to assist them with the inspecting and recommending maintenance repairs to the bridge. The last detailed inspection and recommendation are now approaching 7 years of age, which by Federal and State standards is inadequate. PB would suggest that it is time for a full in-depth inspection to be carried out, setting up a baseline condition on which to institute a more consistent and proactive inspection, maintenance, and documentation process for the Hood River Bridge. This process will definitely be needed if some outcomes of this study are using Federal funds to finance short or long-term solution to the existing bridge.

## Pedestrian Walkway Feasibility

**Objective:** Obtain and review all relevant studies the Port of Hood River produced regarding structural modification to the Hood River Bridge for adding pedestrian walkways.

**Documents Obtained:** Two documents were reviewed related to the addition of pedestrian walkways to the Hood River Bridge. They are:

1. Non-Structural Alternatives for Bicycle and Pedestrian Use of the Hood River Toll Bridge, HNTB May 10<sup>th</sup>, 1999. (Attached)
2. And 1-page fax cost proposal from HNTB's Tom Cassette to Port of Hood River, 1996. (Attached)

The first document is a concept planning alternative report, and does not meet the objective to review the structural aspects of adding a sidewalk to the bridge. Therefore no review was conducted.

The second document, (1 page fax cost proposal from HNTB) the following actions were taken:

1 Conversation between Doren Fix of the Port of Hood River and Larry Conrad of PBQD

Subject: SR35 HNTB Structural Design Report for adding a Pedestrian walkway to the Hood River Bridge

Doren indicated that back in June of 1996 the Port of Hood River had requested HNTB to prepare an estimate to add a pedestrian walkway to the upstream side of the Hood River Bridge. HNTB at the time was preparing widening plans for the north approach and sent a memo, which outlined an estimated conceptual cost for design and construction of the walkway. This is the only structural study done, and shortly afterwards the funding mechanism was lost and no further action was taken. Therefore the only item available for review and verification is the one page memo.

2 Conversation between Tom Cossette, HNTB and Mike Traffalis PBQD.

Subject: SR35 HNTB Structural Design Report for adding a Pedestrian walkway to the Hood River Bridge

Tom is the engineer who produced the memo Doren Fix had faxed to Larry Conrad, and he indicated that the construction cost is only based on square foot dollar amount for similar types of works and doesn't assess the need for strengthening or rehabilitating the existing bridge.

**Conclusions:**

There has not been a structural study for adding a walkway to the Hood River Bridge. If a study were to be carried out, not only will the study have to examine width, which side, ADA, uses, but also determine whether the existing bridge can be strengthened to support such a modification.