Communication

Hood Canal Bridge Project Team
The ultimate goal of the Hood Canal Bridge Team is to administer a world-class project to replace the Hood Canal Bridge. Meet one of the people who makes it all happen.

Scott Ireland, *Construction Manager, Hood Canal Bridge Project Team*

Scott Ireland joined the Hood Canal Bridge Project Team in October 2005 and, ready to take on his numerous responsibilities as the WSDOT Construction Manager. His extensive work experience, education and long-term interest in bridge construction prepared him to successfully lead the Hood Canal Bridge Project Team through the construction challenges.

While attending St. Martin's University, Scott interned at the WSDOT Bridge Office in 1996-1997 and developed a passion for bridge construction. After he graduated with is B.S. in Civil Engineering, he joined WSDOT to pursue his engineering career.

He spent his first six years working on a number of different design and construction projects as a Lead Designer and a Lead Project Inspector. His experience within WSDOT helped Scott pursue his interest in bridge construction when he transferred to the Tacoma Narrows Bridge Project as the Bridge Field Engineer.

After three years on the Tacoma Narrows Bridge Project, Scott joined this team in his current position on the Hood Canal Bridge Project. Since that time Scotty, as he is known to the HCB Team, has successfully led his crews through major project milestones, including anchor construction and placement, truss construction, lift span construction and pontoon construction. His focus on construction and engineering oversight ensures his team is properly prepared for their responsibilities.

"I can't express how privileged I feel to have the opportunity to work with the caliber of people we have on this project," said Scotty. "It has been a great experience to work with such a talented and committed project team."

Outside of work, Scotty can be found spending time with his wife Julie, and sons Shane and Nate. Together, the family enjoys supporting their sons' sporting events or enjoying the Olympic Peninsula's rivers while fishing for salmon and steelhead.

Contact irelans@wsdot.wa.gov or 253-305-6430

Crews place concrete on Z pontoons spans. Sept. 16, 2008.

Next Month's Activities

East-half Assembly, Outfitting and Testing

- Move the pontoon Z draw span from the west side of Pier 6 to the east side of the lift span assembly
- Continue working on the road deck electrical system for the lift span and draw span
- Begin hydraulic flush operations and complete flush and pressure tests for three cylinders

Fabrication at Oregon Iron Works

- Continue welding diagonals supporting the bearing boxes and tack fitting secondary diagonals into place on the west A-frame
- Complete stringer installation on the east truss
- Continue bolting of the deck grating on Span 66

Hood Canal Bridge Site

- Inspect pontoons J and H to complete the Leak Detection System punchlist
- Continue installing lighting and power conduit in the electrical building diesel room
- Continue planning the work for float-in

Hood Canal Bridge
West-half Retrofit and
East-half Replacement Project
East-half Replacement: 2009
West-half Retrofit: 2010

Q. Where is the bridge?

A. The Hood Canal Bridge is located between Kitsap and Jefferson counties at the mouth of the Hood Canal.

Q. Why is it important?

A. It serves as a vital economic and social link between the greater Puget Sound and the Olympic Peninsula.

Q. What is WSDOT doing?

A. The Washington State Department of Transportation is improving this lifeline by replacing the east-half floating portion of the bridge, replacing the east and west approach spans, replacing the east and west transition truss spans and updating the west-half electrical system. The project completion estimate is 2010.

Q. What can drivers do to stay informed?

A. Sign up to receive the latest news regarding the Hood Canal Bridge Project and other related area transportation news in your e-mail. Visit **www.HoodCanalBridge.com**.

This report highlights updated Hood Canal Bridge Project information from **September 1-30.**

For more information about the Hood Canal Bridge Project visit the project web site, **www.HoodCanalBridge.com**, or contact project staff:

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Washington State Department of Transportation
Monthly Report
EAST-HALF REPLACEMENT COMPLETION GOAL: 2009
WEST-HALF RETROFIT COMPLETION GOAL: 2010
September 2008

Hood Canal Bridge West-Half Retrofit and East-Half Replacement Project

Left: The four newly connected pontoons (UVWX), looking from X to U. Sept. 26, 2008. Right: Crews at TPS work inside pontoon X, checking its connections to pontoon W. Sept. 26, 2008.

Project Delivery

Connecting all the pieces
WSDOT and Kiewit-General pulled together to achieve another Hood Canal Bridge Project milestone Sept. 19 when they successfully completed connection of the final four new pontoons at Todd Pacific Shipyards (TPS) in Seattle.

Work to connect pontoons U, V, W and X began Aug. 12 and represents the final joining operations before the May-June 2009 float-in. The operation required that the four pontoons be perfectly aligned and squeezed together tightly with steel strands through a process called post-tensioning.

Post-tensioning enables the pontoons to resist the bending forces on the bridge caused by wind, waves and tide. The pontoons are first post-tensioned individually and then together in assembled groups.

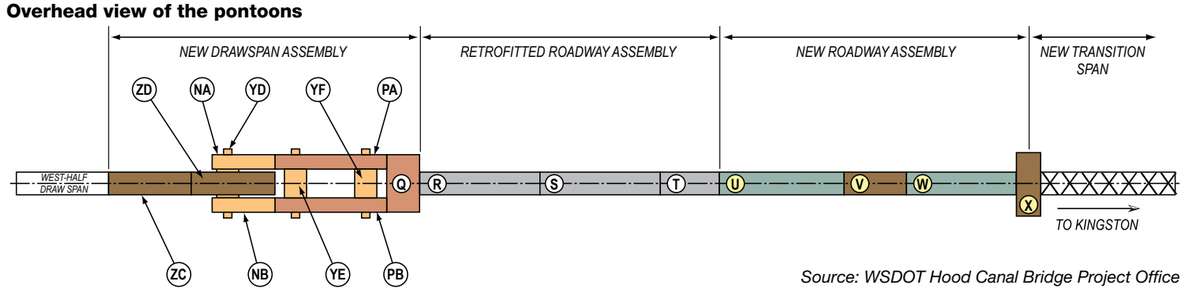
WSDOT and K-G had to meet exacting standards to ensure the pontoons were properly aligned with each other while joining. At each stage of the joining process the pontoons had to be lined up within 1/8 inch over their entire length before they could be grouted together. This means the entire section, which stretches 925 feet, was only allowed to deviate from a perfectly straight line by the width of two pennies.

This work was completed ahead of schedule and marks the completion of new pontoon assembly for the entire project.

Once grouting is completed on the four pontoons, crews will continue building columns and girders that support the elevated roadway.

The joining of pontoons U,V, W and X brings the overall project to 85 percent complete. Completing the new roadway assembly is another milestone for the Hood Canal Bridge Project and another step toward the six-week closure in May-June 2009.

Overhead view of the pontoons



Source: WSDOT Hood Canal Bridge Project Office

Accountability

Creating a current against oxidation

Electricity does much more than turn on lights, power electronics and run the motors and hydraulic pumps that move the massive lift spans and draw spans on the Hood Canal Bridge – it also protects the structure from corrosion.

The four-tiered protection starts in the pontoons' anchor galleries where anchor cables connect to pontoons. A small electrical current is induced into 3-inch diameter anchor cables. The dual-purpose cables – ranging from approximately 1,600 to 4,000 feet in length – connect to the 44 anchors far below and help maintain the alignment of the 1.5-mile long bridge.

The Hood Canal Bridge's anchors and anchor cables have several oxidation safeguards in place to reduce the effects of the highly corrosive saltwater environment. Oxidation – or rust – is actually an electrical process that causes steel to breakdown at an atomic level, weakening its structural integrity. WSDOT's protective measures not only safeguard the bridge's anchor system, but they also save money in the long run by reducing maintenance costs.

1) Anchor Cable Protection at the Anchors

Crews replace anchor cables and jewels.

The anchor cables loop around the anchors and are ringed at their base by gigantic necklaces of 12-inch long, 50-pound iron and zinc beads – or jewels – which reduce friction between the cable and anchor as the bridge moves up and down.

The zinc jewels, placed every four jewels, serve as sacrificial anodes by attracting the oxidation process and essentially keeping rust away from both the steel cables and iron jewels. Since the anchors are continuously submerged at large depths, the zinc last for a long time and extends the life of the anchors.

2) Submerged Anchor Cable Protection

The submerged portion of the steel anchor cables are protected against corrosion damage by cathodic protection systems. Rectifiers in the galleries charge the anchor cables with a small, negative electrical current, turning the cables themselves into cathodes or electrical conductors. The current runs through the length of the cable and repels negatively charged ions that promote the oxidation process.

Even so, these oxidizing negative ions must go somewhere. Sacrificial platinum-niobium clad copper rod anodes are suspended from the bridge and connected to the positive charge of the rectifiers. These anode assemblies consist of the 78-inch long, 1/2-inch diameter rods, wire ropes, and weights that keep the rods floating at the correct elevation in the water – about 30 feet below the surface.

The process of negatively charging the anchor cables and positively charging the anodes causes the corrosion to slowly destroy the anodes, instead of the anchor cables. The anodes are cheaper and easier to replace than the anchor cables, meaning that the system extends the life of the cables.

3) Anchor Cable Protection in the Wet Cells

Oxidizing zinc anodes near the rectifier produce a white crystalline substance.

The anchor cables enter the pontoons through "wet cells." The cells are partially filled with water at the level of the Hood Canal. Because this continuous flooding and drying causes stress on the anchor cables, it is a key area that WSDOT observes and protects to prevent damage to the anchor cables. A sacrificial zinc anode is provided in the cells. The zinc is electrically connected to all the metal in the cell, and when the cell is flooded, the anode is submerged. Submerging the zinc activates it and provides cathodic protection to all the metallic elements of the system while the zinc anode is underwater.

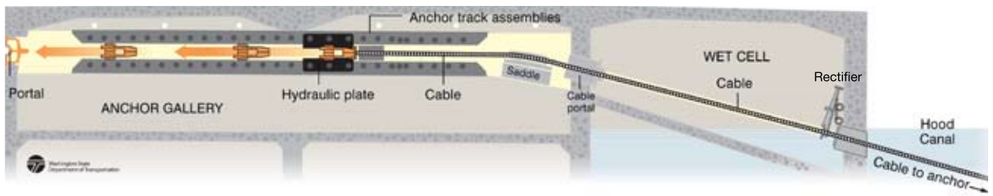
Zinc naturally attracts the particles that would oxidize with the steel, causing corrosion and rust. As the zinc anode corrodes and the cell dries, it produces a white, powdery, crystalline covering that washes away when it is submerged, exposing a new layer of zinc to provide protection.

4) Anchor Cable Protection at the Pontoon Terminations

Anchor cable sockets are filled with molten zinc to give them additional protection.

The anchor cables connect to the bridge pontoons with large sockets. These sockets connect to hydraulic jacks and allow bridge maintenance technicians to modify the tension of the cables. The sockets are filled with molten zinc which provides yet another layer of protection against oxidation.

WSDOT's extensive use of cathodic protection for the anchors and anchor cables reduces wear and tear on the components, cutting cost and maintenance. It is another way WSDOT is extending the life of the Hood Canal Bridge and protecting resources.



Source: WSDOT Hood Canal Bridge Project Office

Performance Measures

Requests for Information/Requests for Change

Large multi-faceted construction projects, such as the Hood Canal Bridge Project, require extensive communication between the contractor and WSDOT.

Much of this communication centers on gathering information about construction methods and materials and on evaluating potential changes to the contract plans. This essential communication is accomplished through the formal Request for Information (RFI) and Request for Change (RFC) processes.

The entire Technical Resolution processes a tremendous amount of information on a monthly basis in order to enable field construction to proceed on schedule.

Over the past year, the Hood Canal Bridge Team completed 155 RFIs and 377 RFCs. In September 2008, the team completed 31 RFCs and met their goal by processing all RFC's in an average of 13 days – eight days less the goal of 21 days.

This month, the team also completed 14 RFIs, returning the clarificaions to the contractor in an average of 16 days, which is only two days longer than the goal of 14.

The WSDOT Technical Service and Construction managers work closely with the contractor to prioritize the multiple RFIs and RFCs, ensuring that timely decisions are made to support the project's schedule and budget.

Financial Status

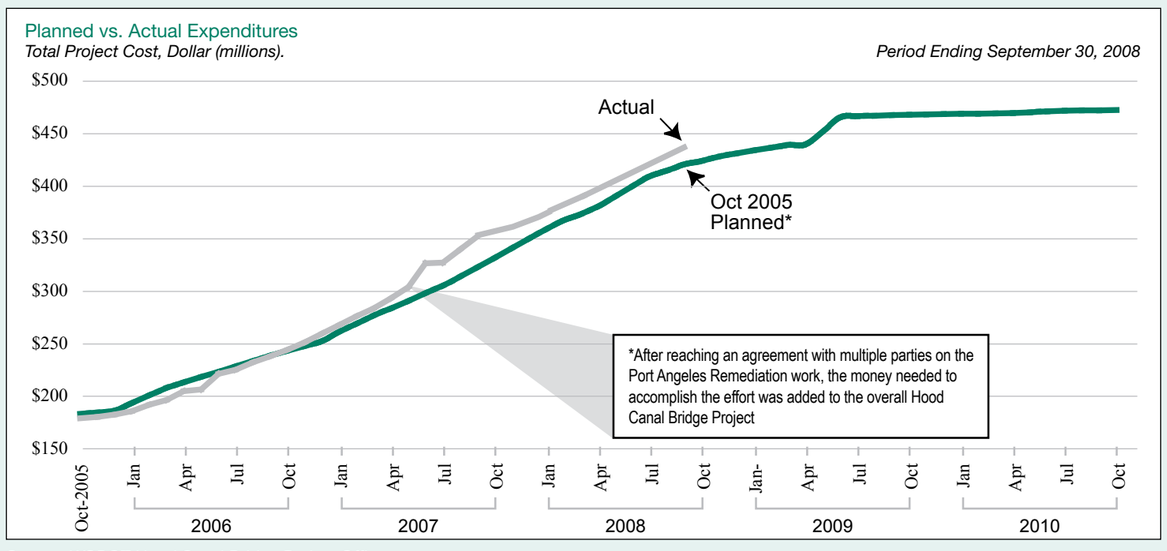
Project Cost Summary — *Period Ending September 30, 2008*

CATEGORY	BUDGET	EXPENDED
Original Commitments		
Port Angeles	$82,741,000	$82,225,000
Bridge Site Work	$41,594,000	$41,376,000
Work in Progress	$81,728,000	$80,344,000
Subtotal Original Commitments	$206,063,000	203,945,000
Modified Commitments		
WSDOT Construction Management	$32,036,000	$22,101,000
Bridge Closure Mitigation	$9,644,000	$2,490,000
New Facilities & Bridge Construction	$223,225,000	$199,494,000
Subtotal Modified Commitments	$264,905,000	$224,085,000
PAR - Port Angeles Remediation		
PAR - Construction & Engineering	$2,300,000	$2,286,000
PAR - Design Engineering	$1,500,000	$738,000
PAR - Settlement & Other Costs	$3,040,000	$2,657,000
Subtotal Port Angeles Remediation	$6,840,000	$5,681,000
Project Total	$477,808,000	$433,711,000

A worker installs a spiral rebar cage for a column. Sept. 4, 2008.

Planned vs. Actual Expenditures

Total Project Cost, Dollar (millions). — *Period Ending September 30, 2008*



Source: WSDOT Hood Canal Bridge Project Office