

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.



Geoff Swett, *Bridge Technical Advisor, Hood Canal Bridge Team*

Geoff Swett has been a part of the Hood Canal Bridge (HCB) Team since the project's early designing stages in 1999. He works at the WSDOT Bridge and Structures Office as a Bridge Designer, a position that calls on him to serve as a Bridge Technical Advisor for several WSDOT projects, including the HCB Project.

Geoff's primary responsibility for the HCB Project is advising on technical issues related to construction work on the transition trusses, lift spans, west-half widening and approach construction, rehabilitation on pontoons R, S and T, pontoon construction and ballasting, and structural issues.

"This project has been and is a once in a lifetime project," Geoff said. "There is such a wide variety of work that it has been exciting and a great learning experience. I have also had the chance to meet and work with dozens of top quality WSDOT and contractor personnel. It's really been a pleasure."

Before joining the HCB Team, Geoff worked on several projects that prepared him for the challenges of the job. He started at WSDOT in June 1991 with the Northwest Region Construction Office. One of his first projects was the rehabilitation of the State Route 520 floating bridge. He also worked in a Region Design Office on the SR 18 corridor improvement project.

After a stint with WSDOT, Geoff returned to the University of Washington to get his Masters Degree in Structural Engineering. He earned his degree in 1998, rejoined WSDOT and has been working in the Bridge and Structures Office ever since.

In his free time, Geoff enjoys spending time with his family at their cabin on Hartstene Island in the south Puget Sound. He also enjoys skiing, hunting, mountain biking, and a good round of golf. Geoff routinely starts his day at the gym to prepare for the challenges ahead.

Project responsibilities: Advising on technical issues related to: construction work on the transition trusses, lift spans, west half widening and approach construction, rehabilitation on pontoons R, S and T, pontoon construction and ballasting and structural issues.

Questions? 360-705-7157 or SwettG@wsdot.wa.gov

Next Month's Activities



Crews from Foss Tugboats guide pontoon V out of the graving dock at CTC. Feb. 21, 2008.

Pontoon Construction

- Fourth cycle begins
- Form installation and rebar setting begin

East-half Assembly, Outfitting and Testing

- ZC and ZD assembly
- Crews continue installation of conduit

Transition Span and Lift Fabrication

- Completion of lift span fabrication
- Crews will fit the top decking and the longitudinal strut of the west truss

Hood Canal Bridge 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 **February 1–29, 2008.**

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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Monthly Report

Hood Canal Bridge Retrofit and East-Half Replacement Project



With pontoon X clear of the graving dock, crews from WSDOT, Kiewit-General and Foss Tugboats prepare pontoon ZD for float out at Concrete Technology Corporation in Tacoma. Feb. 21, 2008.

Project Delivery

Cycle three pontoons take the plunge

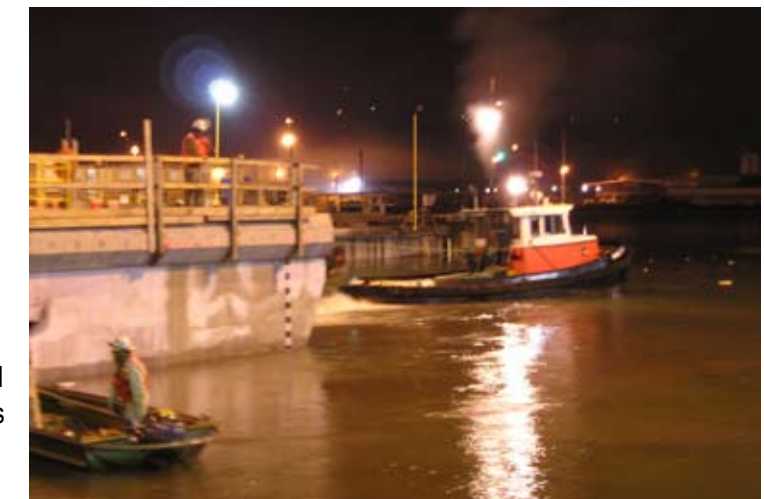
Feb. 21, 2008 marked another major milestone for the Hood Canal Bridge Project as the third cycle of pontoons floated out of Concrete Technology Corporation (CTC) in Tacoma. After the CTC graving dock was flooded, five large tugs and two small tugs from Foss Tugboats maneuvered the four massive pontoons into the Puget Sound where they began their slow journey north to Seattle. Pontoons V, X and ZC and ZD cleared the dock about 5:30 a.m.

Pontoons ZC and ZD arrived at Todd Pacific Shipyards (TPS) in Seattle at 8:30 p.m., ready for assembly, post-tensioning and outfitting work. Pontoons V and X will be moored at Seattle's Pier 26 until space at TPS is available.

Construction of the third cycle began in July 2007 and was finished in February 2008 as scheduled. V and X will be among the bridge's new roadway pontoons, while pontoons ZC and ZD will be joined to form the retractable portion of the draw span assembly.

The completion of the third cycle brings the number of finished new pontoons to 12, leaving just two of the total 14 to be constructed.

Work on the two pontoons included in the fourth and final cycle is now underway at CTC. Cycle four construction will be completed in August 2008. Following their float out, fourth cycle pontoons U and W will be connected with pontoons V and X, and make up the easternmost portion of the new floating bridge.



A tug maneuvers pontoon ZC out of the graving dock at CTC. Feb. 21, 2008.

Accountability

What it takes to make a floating bridge float

Steel and concrete: Not exactly materials which come to mind for most people when thinking of the word “float.” Yet these are the primary components WSDOT and Kiewit-General (K-G) used in order to build the Hood Canal Bridge pontoons.

The floating bridge’s pontoons must weigh less than the water they displace. In order to accomplish this, the gigantic structures must meet exacting standards that ensure the pontoons will maintain their structural integrity, yet be light enough to remain buoyant.

Pontoon Q is a prime example of WSDOT and K-G’s weight-saving techniques in action.

This pontoon is unique because it not only supports columns and roadway, but also houses the draw span’s machinery. The mechanical components in pontoon Q will run the hydraulic cylinders to raise and lower three lift spans. Electrical drive motors in pontoon Q are used to retract and extend the draw span pontoons.

The machinery adds significant weight to pontoon Q, and to ensure it still was able to float level, WSDOT had to add ballast – or counterbalances – within the structure and use Styrofoam fill in place of concrete to reduce overall weight. Like the other new east-half pontoons, keeping overall weights low was a paramount issue.

WSDOT must also design outer pontoon walls using “tight tolerances,” meaning that the margin for error is extremely small at 1/8 inch or less. To accomplish this, much more rigid forms than are standard are used to prevent bowing during concrete placement – which would ultimately add weight to the structures.

Given the fact that the new pontoons’ outer walls are 10 inches thick and range in length from 60 to 360 feet and width from 40 to 180 feet, 1/8 inch might seem inconsequential. But that 1/8 inch of additional



A Kiewit-General crewmember installs Styrofoam fillers in the lower ramp of pontoon PB at Todd Pacific Shipyards in Seattle. Feb. 12, 2008.

material can be enough weight to lower the entire pontoon in the water by three inches, making it much more difficult to float out of the graving dock and connect with other pontoons.

Keeping pontoons “light” calls for constructing walls that are relatively thin but extremely strong. To achieve this, rebar mats along with vertical and longitudinal tendons need to fit within the tight confines of the 10-inch exterior walls. While the industry standard calls for aligning such mats within 3/8ths inch, those placed in the Hood Canal Bridge pontoons pretty much had to be dead on.

The precisely placed tendons — .6-inch high strength steel strands — not only further reinforce the concrete structures but significantly add to its long-term integrity as well. Through a process called “post-tensioning,” the tendons compress and bolster the pontoons without creating unnecessary weight.

WSDOT and K-G have developed and attained the best possible weight-saving techniques through meticulous planning and skilled construction. Maintaining the highest standards of quality and using the best materials available is necessary to ensure the bridge pontoons float properly and last for the next 75 years.

Performance Measures: Managing and tracking submittals

Project submittals are the tool used to document how K-G’s engineered work procedures and working drawings comply with contract requirements.

Having work plan submittal packages completed on time is essential in order to keep the project on schedule. WSDOT’s design and business team aims to complete the review of each submittal within 30 days of receiving it from K-G.

Both WSDOT and K-G have developed an efficient submittal process that has allowed the team to handle submittals well (see

Project Submittal History chart at right). The project team is focused on prioritizing project submittals carefully in order to provide important work process information to the crews at all four project construction sites.

Project Submittal Numbers

- The number of submittals from K-G to WSDOT in 2007 almost doubled over that of 2006, increasing from 185 to 346.
- WSDOT reviewed and completed 336 of the 346 (97 percent) submitted in 2007. The remaining 10 submittals were received late in December and processed in 2008.

Project submittal history

Period Ending February 29, 2008

	Feb.	Requested	Average	Goal
Turnaround (in days)	12	21	19	30
Submittals	Feb.	Total	Average	
Received	50	744	29	
Completed	48	713	27	
Late submissions	12	113	5	
Returned for Correction	7	91	4	

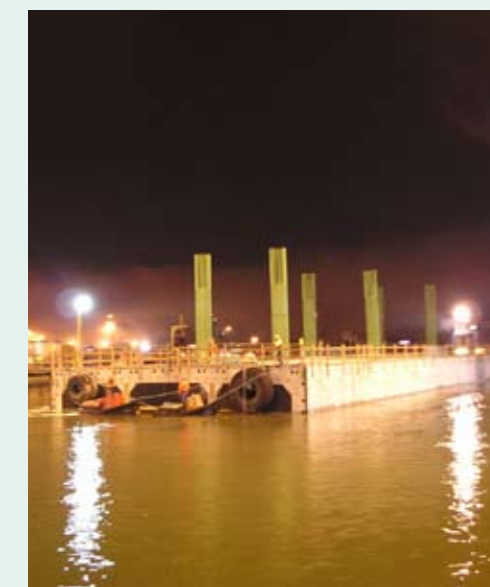
Source: WSDOT Hood Canal Bridge Project Office

Financial Status

Project Cost Summary

Period Ending February 29, 2008

CATEGORY	BUDGET	EXPENDED
Original Commitments		
Port Angeles	\$82,741,000	\$82,893,000
Bridge Site Work	\$41,594,000	\$40,884,000
Work in Progress	\$81,728,000	\$76,708,000
Subtotal Original Commitments	\$206,063,000	\$200,485,000
Modified Commitments		
WSDOT Construction Management	\$32,036,000	\$17,303,000
Bridge Closure Mitigation	\$9,644,000	\$1,365,000
New Facilities & Bridge Construction	\$223,225,000	\$158,425,000
Subtotal Modified Commitments	\$264,905,000	\$177,093,000
PAR - Port Angeles Remediation		
PAR - Construction & Engineering	\$2,300,000	\$2,115,000
PAR - Design Engineering	\$1,500,000	\$742,000
PAR - Settlement & Other Costs	\$3,040,000	\$2,657,000
Subtotal Port Angeles Remediation	\$6,840,000	\$5,514,000
Project Total	\$477,808,000	\$383,092,000

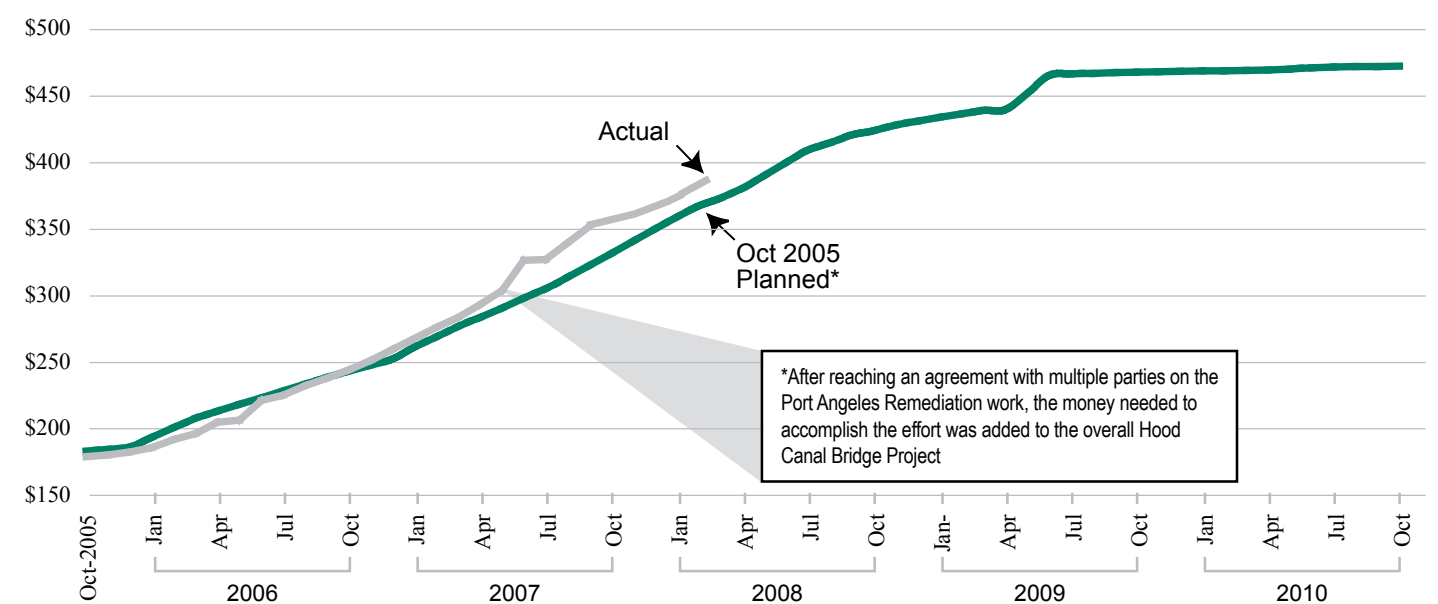


Pontoon V is guided out of CTC in Tacoma. Feb. 21, 2008.

Planned vs. Actual Expenditures

Total Project Cost, Dollar (millions).

Period Ending February 29, 2008



Source: WSDOT Hood Canal Bridge Project Office



Crews from Kiewit-General install wall forms into pontoon X at CTC in Tacoma. Aug. 27, 2007