



First and 10: ODOT tackles \$147 million Willamette River Bridge October 16, 2009
By Dick Upton, Major Projects Unit manager, Oregon Department of Transportation

The golden shovels flashed in the Oregon summer sun on Aug. 11, 2009. Transportation advocates U.S. Sen. Ron Wyden and U.S. Rep. Peter DeFazio helped Oregon Department of Transportation Director Matt Garrett and those of us on the project team break ground to begin construction on the Interstate 5 Willamette River Bridge at Eugene and Springfield.

With the groundbreaking, the goal line is finally in sight, though we still have many yards to go. The bridge's anticipated completion date at the end of 2012 is now closer than the beginning of our journey to the kickoff ceremony.

ODOT has been addressing Oregon's aging bridges for more than eight years, as part of the OTIA III State Bridge Delivery Program. Preliminary inspections of the state's bridges started in 2001. Soon after, the Legislature funded the third Oregon Transportation Investment Act, which provided \$1.3 billion to address 365 bridges statewide over 10 years.

At \$147 million in construction costs, the Willamette River Bridge is the largest project in the program, in terms of dollars. During a preliminary inspection in 2002, ODOT engineers identified shear cracks severe enough to require posting weight limits for the bridge. Heavy-haul trucks had to be rerouted 200 miles around one of the vital links in Interstate 5, the major north-south corridor for the West Coast.

By 2004, ODOT had erected a temporary detour bridge over the Willamette River at Eugene and Springfield to keep freight and other vehicles moving. We were then ready to consider what kind of permanent structure would serve for the next 50 or more years and how best to build it.

When a bridge is deficient, our fiscal rule of thumb is that repairs which cost more than 50 percent of the cost of replacement warrant a new bridge. Because the old structure could not be widened to accommodate forecasted increases in traffic nor be reinforced to current federal and seismic standards, repairing it wasn't practical.

Because of the size and complexity of the project, we ultimately set our sights on a new, versatile procurement method. As an agency, we are well-versed in the traditional design-bid-build procurement method, either designing a bridge ourselves or hiring an architectural and engineering firm to create the design and then putting the project out to bid, selecting a contractor based on price. Since 2000, we had also chalked up a number of successful projects using the design-build procurement method. We select a design-build team based on a "best value" proposal submitted from a group of short-listed, qualified firms that provide both design and construction under one contract, typically weighting the proposals 50 percent to 60 percent based on value and 40 percent to 50 percent on price.

Design-build projects aren't always the least costly, but they offer rapid delivery and often greater innovation than the traditional design-bid-build option. When rapid inflation is a factor in construction costs, as it has been for the last several years in particular, saving a year in procurement time with design-build can translate into significant dollars.



With the Willamette River Bridge project, we chose for the first time to use the construction manager/general contractor, or CM/GC, procurement method. ODOT hired an A&E firm and retains control over design decisions, while receiving critical input from the contractor regarding construction alternatives and pricing options. CM/GC allows us to control costs, schedule issues and design options, adjusting the outcome as the project proceeds. Preconstruction consulting by the contractor has turned into early work packages that allow portions of the peripheral work on the project to start before the final design is complete. Next we will negotiate a subsequent guaranteed maximum price for the remaining work. If we aren't able to reach a guaranteed maximum price with the CM/GC, our A&E firm would finish the design and we could put the construction out to bid for a low-bid award.

Early work packages that the CM/GC, Hamilton Construction, and its primary subcontractor, Slayden Construction, have started include clearing trees from the work site, constructing access roadways on the south bank of the river, and building a temporary work bridge and demolition containment platform. Meanwhile, consultants OBEC Engineers and T. Y. Lin International continue to advance the main bridge design: They are working on the profile of the interchange ramps so that the freeway profiles can clear both the Union Pacific Railroad running below the ramps and the four-lane Oregon 126 state highway, the key east-west link between the communities of Eugene and Springfield.

The new Willamette River Bridge features a deck-arch design that will please both people and creatures. The original, now-decommissioned structure was a somewhat uninspired, bulb-type, simple I-beam bridge with multiple piers and bents. For 40 years, it did sturdy Clydesdale service. Fortunately, it will be demolished before it can suffer in comparison with the pleasant Thoroughbred curves of the new deck-arch bridge.

The deck-arch structures—separate northbound and southbound spans, side by side 16 feet apart—will provide open vistas for drivers and a sleek profile to passing bike riders and river paddlers. They will also minimize disturbance to river dwellers, like salmon and Oregon chub, as each arch touches down in the water only once, in the middle of the river.

Hamilton will cast the concrete arches in place at the work site. They will be approximately 400 feet long, in contrast to the usual 100-foot beams. The total length of the bridges, including approach spans, will be approximately 1,870 feet.

The Willamette River Bridge is primarily funded through the OTIA III program with state of Oregon revenue bonds. Of the total construction cost of \$147 million, \$30 million is covered by federal earmarks for enhancements that take into account the bridge's unique setting: over a major river amid the 200-acre Alton Baker Park and Whilamut Natural Area. Enhancements include features such as a tube-type open rail—three horizontal tubes broken by posts only every 10 or so feet—which will allow motorists a much greater view from the bridge. Landscaping will also complement what drivers see: the city of Eugene for southbound drivers and the park itself for those northbound.

At this moment, Hamilton Construction is hard at work building a wood-and-steel work platform and demo-containment structure, which will be almost 120 feet wide and set 10 feet above the water level. Our goal is to contain 100 percent of construction debris, preventing all of it from entering the water. We also expect to recycle the 1.3 million board feet of lumber and 15 million pounds of steel that make up the work bridge. And we're talking with cities and counties about possible reuse of the modular box beams from the detour bridge when it's no longer needed as an alternate route for traffic. Our next deadline is coming all too fast: Oct. 31 marks the end of the in-water work window for the Willamette River, as dictated by fish migration cycles. We're relying on our CM/GC partners to help us meet our commitments to our environmental regulatory agency partners, and then get out of the water and up on deck for winter work for our next first down marker: building the arches by spring 2010.

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