

The Bridge Replacement Program of Grant County, Washington

by Derek Pohle, Grant County, Ephrata, Wash.

Grant County is located in the center of Washington State in the upper Columbia River Basin. The county is dominated by irrigated and dry land agriculture, much of it served by the United States Bureau of Reclamation (USBR) Columbia Basin Reclamation Project. Most of Grant County's bridges were originally built by the USBR and subsequently turned over to the county. These bridges were typically timber superstructures supported by concrete substructures. Grant County owns over 250 bridges ranging in length from less than 20 ft to 313 ft. Some 145 of these bridges have concrete superstructures.

All of the original bridges that have been replaced used concrete bridge elements. The county typically uses single-span, prestressed concrete deck bulb tees or deck precast concrete units with multiple webs that are designed for asphalt overlays. "Deck" girders have a structural deck cast monolithically with the girder and require no additional deck casting in the field. Generally, Central Pre-Mix Prestress Inc., located in Spokane, Wash., supplies our girders. Grant County together with the Federal Bridge Replacement Program and local dollars fund the replacement bridges over 20 ft long. Replacements under 20 ft long use local funds. Grant County chooses concrete for ease of construction, extended service life, durability, and ease of maintenance and inspection.

During the 2007-2008 construction season, the county replaced the Crescent Bar Bridge, which is the only link to Crescent Bar Island on the Columbia River at Trinidad. The bridge had to be constructed during the Salmonid fish window of November through February. The bridge was replaced in halves to allow traffic to be maintained to the island. The old steel beam and wood deck structure was replaced by

a 130-ft-long, single-span, prestressed concrete deck bulb-tee bridge. Using concrete allowed the unique timing and construction constraints of this project to be met.

In 2008, the county replaced Br. No. 118 where Road F-NE crosses the USBR Main Canal. Road F-NE serves a remote area in the north-central portion of the county. The original structure was a surplus U.S. Army steel Bailey bridge that the county over time needed to restrict to a 5-ton capacity. The Bailey bridge was replaced with a 148-ft-long, single-span, prestressed concrete deck bulb-tee bridge. The span length and the clear span requirement over the canal made concrete an ideal choice.

During 2009 and 2010, the county replaced Br No. 244 where Road 3-NE crosses the USBR East Low Canal. Road 3-NE (Wheeler Road) serves the Wheeler corridor; the most commercially and industrially developed area of Grant County, just east of Moses Lake. The existing five-span structure experienced deterioration and was selected for replacement. The study also determined a single-span concrete structure was the most economical and easiest to construct. The county was resigned to replace the bridge using its own funds and had started the design when funding became available from the American Recovery and Reinvestment Act (ARRA). The bridge was replaced with a 165-ft-long, skewed, single-span, prestressed concrete deck bulb-tee bridge. These girders are believed to be the longest single-cast girders of this type in Washington State.

Grant County formed a dedicated bridge maintenance crew in 2002. Due to their inspired hard work, the condition of our bridges has improved significantly, especially our remaining timber bridges. This has caused us some unexpected consternation as now only



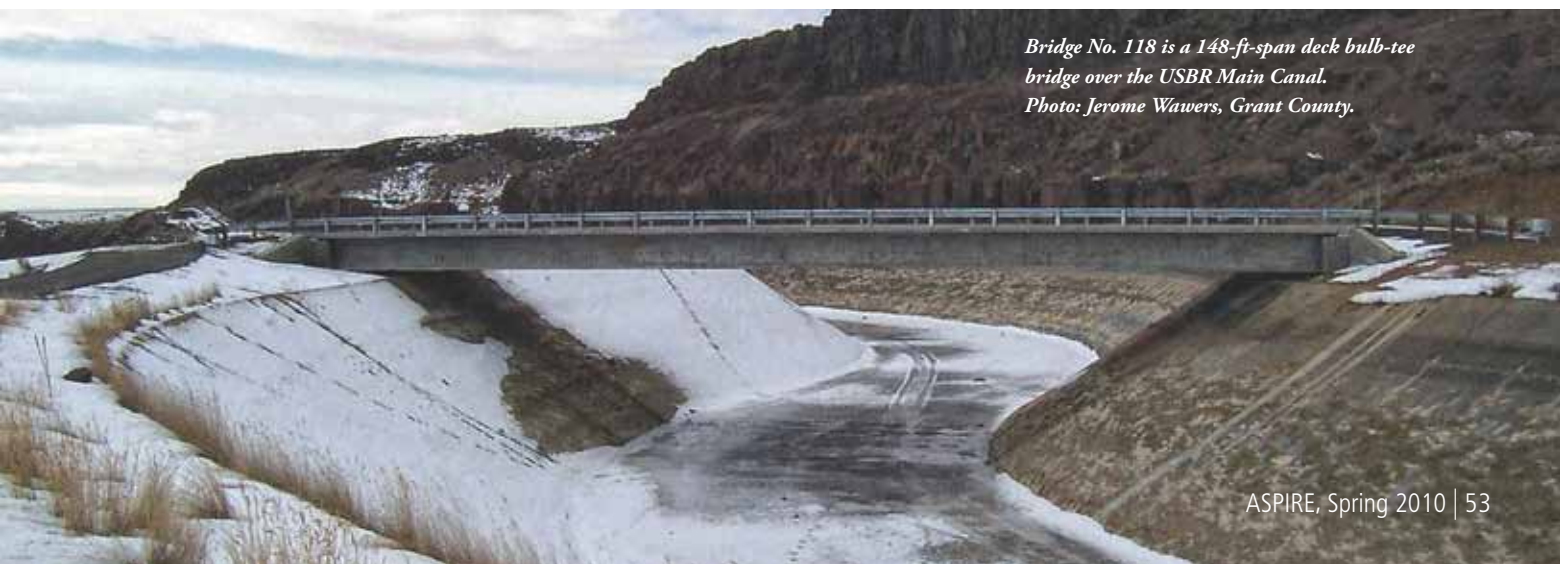
The Crescent Bar Bridge over the Columbia River is a 130-ft-long, single-span, prestressed concrete deck bulb-tee bridge shown here during girder placement. Photo: Jeff Tincher, Grant County.



The Wheeler Road Bridge No. 244 was a five span structure replaced in February 2010 with a 165-ft-long single-span deck bulb-tee girder. Photo: Larry Maine, Grant County.

one of our bridges qualifies for replacement funding. We look forward however to continuing replacement of our timber system with concrete. Concrete offers us the best value for our investment.

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Bridge No. 118 is a 148-ft-span deck bulb-tee bridge over the USBR Main Canal. Photo: Jerome Wawers, Grant County.