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Focus Bridges: Oregon Coast Highway Bridges

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The Oregon Coast Highway is the name given to US-101 as it follows the Pacific coastline in Oregon. This highway is significant for its numerous historic bridges, including a number of unique designs. Also noteworthy is the effort made to preserve and maintain these unique bridges, many of which are very impressive structures designed by noted engineer Conde McCullough. Some of McCullough's most famous Oregon Coast Highway bridges are discussed here.

The 1936 Conde B. McCullough Memorial Bridge over Coos Bay was named after the engineer who designed this and many of the Oregon Coast Highway Bridges. One of the most significant bridges in Oregon, this unique bridge consists of numerous open spandrel concrete arch approach spans and a steel riveted cantilever through truss for the main spans. McCullough was a strong supporter of concrete bridges, and often resorted to use of steel only when the crossing needs dictated it. That said, McCullough's approach to steel bridge construction is both unique and impressive. Despite being built in a time where bridges often had built-up beams with lacing and lattice on the members, this bridge was built of solid steel members, drawing the eye to the appearance of the bridge as a whole, rather than detailed built-up parts of the bridge. Where built-up members were used, the cover plate was pierced with diamond-shaped handholes, a unusual and more attractive approach to the oval-shaped handholes, which started to be used in bridge construction in the late 1930s. The top and bottom chords of the truss offer an unusually curve-like and graceful appearance that differs from typical cantilever truss bridges. The portal bracing for the bridge is a work of art in its own right, with a highly decorative design. The abutments of the bridge include beautiful stairways for pedestrian traffic.

The Siuslaw River Bridge in Florence and the Umpqua River Bridge in Reedsport, both built in 1936, offer a unique comparison of bridge designs. Both bridges consist of a series of short concrete approach spans which lead up to large rainbow through arch spans, which themselves lead to a central main movable span. The Florence Bridge's movable span is a double leaf deck truss bascule span, while the Reedsport movable span is a through truss swing span. Like the Conde B. McCullough Memorial Bridge, the metal trusses of these bridge lack the lacing and lattice typically found in truss bridge construction of this

period. The rainbow arch spans offer an impressive appearance that almost overshadow the movable spans, which may have been McCullough's intent. The Florence Bridge is also noted for its four richly detailed art deco style bridgetender houses.

The 1934 Yaquina Bay Bridge in Newport is one of the largest and most impressive of the bridges on the Oregon Coast Highway. Like the Conde B. McCullough Memorial Bridge, this bridge features open spandrel concrete deck arch spans which lead up to three larger steel spans. The steel spans consist of a central through arch span, flanked on each end by a deck arch span. On the roadway, the ends of the through arch span are complimented by ornate decorative concrete pillars, which the sidewalks pass through. The abutments of the bridge include stairways that are richly detailed.

The Depoe Bay Bridge is a concrete open-spandrel arch bridge that was designed by Conde McCullough and built in 1927 and widened sensitively in 1940.

The 1927 Ben Jones Bridge over Rocky Creek is a unusual preservation solution. US-101 was realigned away from this bridge, and the former US-101, which was narrow, is now a partly one-way road that shares a bike path as well. The concrete open spandrel arch bridge was rehabilitated and now carries low volumes of traffic.

The 1931 Cape Creek Bridge is one of the most distinctive concrete open spandrel arch bridges in the entire country. The bridge resembles a design used for Roman aqueducts, consisting of two levels of short, repeating arches that lead up to the larger main arch span.

All of the bridges discussed here have been maintained, rehabilitated, and preserved by the Oregon Department of Transportation. One of the more noteworthy methods used by ODOT to preserve these bridges is cathodic protection of the reinforced concrete. This complex process, broken down into a simple description, involves adding a system of electrical conductors to the bridge which pass a small electrical current into the bridge. This current enhances the abilities of a special concrete metal-based coating which is placed over the concrete of the bridge to protect the underlying concrete and reinforcing. The coating essentially takes the brunt of the harmful effects of salt and moisture, and in doing so, prevents deterioration to the actual bridge's concrete and reinforcing. This protection is more than just paint, because the electrical current turns the reinforcing steel into a cathode, while the metal-based coating becomes an anode, and it is this electrochemistry that discourages deterioration of the reinforcing steel (cathode).



Conde B. McCullough Memorial Bridge over Coos Bay



Cape Creek Bridge



Yaquina Bay Bridge in Newport



Umpqua River Bridge in Reedsport



Ben Jones Bridge



Conde B. McCullough Memorial Bridge over Coos Bay



Conde B. McCullough Memorial Bridge over Coos Bay



Conde B. McCullough Memorial Bridge over Coos Bay



Depoe Bay Bridge



Siuslaw River Bridge in Florence



Siuslaw River Bridge in Florence



Umpqua River Bridge in Reedsport



Yaquina Bay Bridge in Newport



Yaquina Bay Bridge in Newport