OLD YOUNG'S BAY BRIDGE
Spanning Young's Bay at Milepoint 6.89 on Warrenton-Astoria Highway (Highway No. 9)
Astoria vicinity
Clatsop County
Oregon

HAER OR-128
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
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HAER No. OR-128

Location: Spanning Young's Bay at Milepoint 6.89
on the Warrenton-Astoria Highway
(Highway Number 9)
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Date of Construction: 1921

Engineer: Conde B. McCullough

Builders: Gilpin Construction Company

Present Owner: State of Oregon

Present Use: Vehicular Bridge

Significance: The Old Young's Bay Bridge #330 was the first moveable span bridge designed by state bridge engineer Conde B. McCullough and is one of only five surviving double-leaf bascule bridges in Oregon built before 1941. The bridge is significant for its association with McCullough as an early example of his work. McCullough is considered to be the most outstanding bridge engineer in Oregon history, serving with the Oregon State Highway Department from 1919 until his death in 1946. The bridge is also significant as it embodies the distinctive characteristics of a double-leaf bascule drawspan bridge, an important technological advance in moveable bridge design.

The Old Young's Bay Bridge #330 was determined eligible for the National Register of Historic Places in 1999.

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I. DESCRIPTION AND HISTORY

Description

The Old Young's Bay Bridge #330 is a drawbridge of the double-leaf trunnion bascule type, the drawspan giving a clear channel opening of 150'. The bridge consists of two 75' central cantilevered sections operated by 40 horsepower electric motors and counterweights. Fifty-eight pile trestle secondary spans and ten timber stringer spans carry 1,616 feet of approach roadway to the central span and contribute to an overall structure length of 1, 766 feet. Large ornate Art Deco Style concrete and wood approach pylons stand on either side of the roadway at both ends of the structure. Two 3'-6" sidewalks were added to the approach spans in 1933. Four small operator's houses are located on the bridge, two at the north and two at the south end of the central cantilevered sections of the bridge. The operator's houses are designed in an Art Deco Style and have segmental arched openings and shallow hipped roofs. They project from the outside of the bridge and are supported by two curved concrete brackets. The bridge has three types of bridge railings. (1) A concrete and timber railing located on the approach spans features concrete horizontal top and base members with vertical decorative wooden balusters placed between the concrete mainposts. (2) A concrete railing with segmental arched openings is located near the operator's houses. (3) A rounded metal tube railing is located on the two cantilevered sections.

The Historic Background

Astoria was founded in 1811 with the establishment of the first fur trading post by John Jacob Astor's Pacific Fur Company making Astoria the oldest continually occupied European settlement on the west coast. Overland travel to Astoria was difficult and for many years virtually all trade, travel, and communication was accommodated by the abundant local waterways. It was not until 1898 that the first railroad was constructed connecting Astoria to the Willamette Valley. The earliest major road building effort in the area was the construction of the Astoria-Salem Military Road, surveyed in 1855-56, and opened in 1858. Unfortunately, the road was nearly impossible to maintain due to erosion and deadfall, and it was abandoned by the 1880s. In 1901, plans were made to build a new road from Astoria to Nehalem Valley to connect with the Nehalem - St Helens road that had opened in 1879. This road, now part of the Nehalem Highway, opened in 1909. Construction of the Columbia River Highway between 1913 and 1915 accommodated travel from Seaside at the Oregon coast, through Astoria, to Portland and the major markets of the inland valley. The Roosevelt Coast Military Highway (now the Oregon Coast Highway, 101), begun in 1919, eventually established a continuous route from Astoria to California.

The Old Young's Bay Bridge was the second bridge to cross Young's Bay, replacing an older drawbridge at an adjacent alignment on the original route of Highway 26. Old Young's Bay Bridge was designed in 1919 by Conde B. McCullough, built by Gilpin Construction Company of Astoria, and opened to traffic at the end of June, 1921. In October of that year President Warren G. Harding pressed a golden button at the White House in Washington D.C. lowering the draw leaves to formally open the Columbia River Highway connecting Mosier to Seaside via Portland and Astoria.

It is the second oldest surviving double-leaf bascule bridge in Oregon, the 1913 Willamette River (Broadway) Bridge #6757 in Portland being the oldest. Bridge # 330 was renamed the Old Young's Bay Bridge when the "New" Young's Bay Bridge was constructed in 1964 at a new site across Young's Bay (Smith Point) along the new alignment of Highway 101. The Old Young's Bay Bridge is one of C. B. McCullough's first Oregon bridges. McCullough worked for the Oregon State Highway Department from 1919 to 1946 and is Oregon's most prominent and famous bridge engineer. His best known bridges include the steel arches over the Willamette River at Oregon City and Yaquina Bay at Newport, the concrete arch bridges on the Oregon Coast Highway, the steel cantilever over Coos Bay, and the Rogue River (Gold Beach) Bridge. The bridge was built as part of an improvement project for Highway 30, and Highway 26, and cost $360,146.86 to build.

Bascule Bridges are one of four types of moveable bridges; vertical lift, Scherzer rolling lift, and swing being the other three designs. Moveable bridges are utilized where the roadway would otherwise obstruct a navigable waterway and impede river traffic. Around 1890, practical methods of counter balancing the enormous weight of the span and refinements to the electric motor led to the development of the modern lift and bascule bridges. When the bascule and lift spans were introduced, the swing span tended to disappear because the new moveable types opened faster. The word bascule is French for seesaw. Bascule bridges are counter balanced cantilevers that swing upwards to open to a vertical position to let vessels pass. Vertical-lift bridges have towers at each end, from which ropes are operated to lift the bridge, like the sash of a window. Swing bridges are pivoted at the center of the span, and open by turning horizontally. A Scherzer rolling lift bridge is a cantilever with a counterbalance shaped like a quarter of a wheel and lifts by rolling backwards along a track.

The earliest form of the bascule bridge was a flap of framed timber across the moat of a castle, drawn up by chains from inside. Bascule bridges, with one or two spans hinged and counterweighted, are favored for narrow waterways where traffic is heavy. The Tower Bridge (1894) across the Thames River at London is the most famous example of this type of bridge. The first American bascule bridge appeared in its modern form in Chicago in 1893. Famous bascule bridges in the U. S. include the Arlington Memorial Bridge over the Potomac at Washington, D. C. (1932), and the Outer Drive Bridge, a double-deck bascule bridge crossing the Chicago River in Chicago (a span of 260 feet) and a double-leaf bascule bridge (1940) at Lorain, Ohio (a length of 333 feet).

In Oregon, only twenty-two moveable span bridges remain, 12 of which were constructed before 1941. Only one of Oregon's moveable span bridges, the 1917 Columbia River (Interstate 5 Northbound) Bridge #1377A, a steel through truss (Pennsylvania-Petit) has been listed on the National Register of Historic Places.

Seven additional moveable structures were identified in Historic Highway Bridges of Oregon as historically significant and have been determined eligible for the National Register by the State Historic Preservation Office (SHPO) they include:

The 1910 Willamette River (Hawthorne, Portland) Bridge #2757 a vertical lift
The 1912 Willamette River (Steel, Portland) Bridge #2733, a steel through truss (Pratt) vertical lift
The 1913 Willamette River (Broadway, Portland) Bridge #6757, a double-leaf bascule
The 1922 Coquille River Bridge #598, a swing span
The 1926 Willamette River (Burnside, Portland) Bridge #511, a double-leaf swing span.
The 1936 Siuslaw River (Florence) Bridge #1821E, a steel double-leaf bascule
The 1936 Umpqua River (Reedsport) Bridge #1822, steel through truss (Parker) swing span.

Five other moveable bridges built prior to 1941 were listed as reserve pool bridges in Historic Highway Bridges of Oregon, they include:

The 1913 Willamette River (Van Buren Street, Corvallis) #2728 a swing span
The 1921 Old Young's Bay #330, a double leaf bascule
The 1924 Lewis and Clark River #711, a single leaf bascule
The 1939 Columbia River (White Salmon) #6645, a steel through truss, vertical lift
The 1931 Isthmus Slough #1132F double leaf bascule.

The reserve pool bridges were not considered eligible for the National Register in 1985, but with the loss of six historic moveable bridges since then, the four reserve pool bridges are now considered significant because of the rarity of this resource type. The bridges that were replaced between 1985 and 1999 include:

The 1933 John Day River #1827, swing span
The 1938 Walluski River #2320 swing span
The 1921 Coquille River #598 swing span
The 1934/1991 South Slough #1940 bascule
The 1939 Catching Slough #2278C swing span
The 1921 Nehalem #574 swing span.

II. SOURCES

Oregon Department of Transportation. ODOT Engineering Antiquities Inventory, 1981

Oregon Department of Transportation. ODOT Bridge Section Records

Smith, Norman, Dykman. Historic Highway Bridges of Oregon. Salem: Oregon Department of Transportation, 1985.

Stephens, John H., Towers, Bridges and other Structures. New York: Sterling Publishing Company, 1976.

Weber, Allison. Interview with Roz Keeney, June 16, 1999.

III. PROJECT INFORMATION

This documentation has been prepared by the Oregon Department of Transportation, in association with a transportation project which rehabilitated the Lewis and Clark Bridge. Utilizing the Secretary of the Interior's Standards for the Treatment of Historic Properties, the rehabilitation project focused on improving pedestrian/bicycle and maintenance staff safety, restoration of the historic look of the bascule railings, operator's houses, and pylons, and improvements to the mechanical operations. The project goals also included protecting the structure from vandalism, weather, and functional obsolescence, ensuring the long-term protection of the resource and reducing maintenance costs.

Project work to rehabilitate the bridge and upgrade its safety includes the following items:

- Rehabilitate the operator's houses by cleaning and painting them in historically accurate colors.
- Restore the windows on the operator's houses to their 1921 appearance and materials.
- Install compatibly designed steel-mesh shutters to protect the windows of the operator's house.
- Repair the pylons on the north and south ends of the bridge.
- Replace and restore the damaged and deteriorated bridge balusters on the approach rails in-kind.
- Replace the bascule decks with fiber reinforced composite deck material.
- Overlay the approach spans travel surface with a thin coat of concrete.
- Construct a new cantilevered steel pedestrian/bicycle sidewalk with metal rails around the exterior of the operator's houses and on the bascule spans.
- Replace the non-historic metal railing on the bascules with a timber and steel backed rail that visually restores the look of the original rails.
- Rehabilitate or replace in-kind the span-locks on the bascules.