LEWIS & CLARK BRIDGE
Spanning Lewis & Clark River at Milepoint 4.78, on Warrenton Highway (Highway No. 9)
Astoria vicinity
Clatsop County
Oregon

HAER OR-127
OR-127

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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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HISTORIC AMERICAN ENGINEERING RECORD

LEWIS & CLARK BRIDGE
HAER No. OR-127

Location: Spanning Lewis & Clark River at milepoint 4.78 on the Warrenton Highway (Hwy. No. 105), Astoria Vicinity, Clatsop County, Oregon.

Date of Construction: 1924

Engineer: Conde B. McCullough

Builders: Pacific Bridge Company

Present Owner: State of Oregon

Present Use: Vehicular Bridge

Significance: The Lewis & Clark Bridge #711 is Oregon's only remaining single-leaf bascule draw span built before World War II and is an early moveable span bridge designed by state bridge engineer Conde B. McCullough. 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 single-leaf bascule drawspan bridge, an important technological advance in moveable bridge design. The Lewis & Clark Bridge #711 was determined eligible for the National Register of Historic Places in 1999.

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I. DESCRIPTION AND HISTORY

Description

The Lewis and Clark Bridge is located at the mouth of the Lewis & Clark River on Old Highway 101, connecting Seaside (and points south along the Oregon coast) to Astoria. The bridge comprises a central single-leaf bascule drawspan flanked by fixed, pile trestle spans. The drawspan is a riveted steel, 112', single-leaf bascule span, operated by dual electric motors and provides 105' of lateral waterway clearance. Forty-eight pile trestle and stringer spans carry 716' of approach roadway, contributing to a total structure length of 828'. Two operator's houses are located on either side of the road at the west end of the movable leaf. The operator's houses are constructed in an Art Deco Style and feature a hipped roof and segmental arched openings. The houses project from the outsides of the bridge and are supported by four curved brackets. A narrow wooden "cat walk" has been added to the outside of the west side of the bridge to access the operator's houses. A metal and timber guardrail is located on either side of the bridge approaches. The railing on the bascule leaf is constructed of rounded metal tubing with horizontal rails and vertical balusters. A plaque located in the northern operator's house indicates that the Pacific Bridge Company constructed the bridge in 1924.

Historic Background

The Lewis & Clark Bridge #711 was constructed in 1924 and was the second bridge to cross the Lewis and Clark River at that location. It is the only remaining single-leaf bascule draw span built before World War II in Oregon and is one of C. B. McCullough's early Oregon bridges.

McCullough's best known bridges are the steel arches over the Willamette River at Oregon City, the Yaquina Bay Bridge at Newport, the concrete arch bridges on the Oregon Coast Highway, the steel cantilever over Coos Bay, and the Rogue River (Gold Beach) Bridge. Joseph A. Weber, a mechanical engineer for the Oregon State Highway Department, designed the mechanical parts of the bridge. Weber, a contemporary of McCullough, immigrated to the United States in about 1902 and began working for the Oregon Highway Department in 1919, retiring in 1954. Weber designed all of the mechanical works for C. B. McCullough's bridges.

The Lewis & Clark Bridge is located on the historic alignment of the Roosevelt Coast Highway, later renamed the Oregon Coast Highway. The bridge is located west of the City of Astoria. 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 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, U.S. 101), begun in 1919, ran south along the coast and eventually established a continuous route from Astoria to California.

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 22 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) Bridge #2728, a swing span.
The 1921 Old Youngs Bay Bridge #330, a double leaf bascule.
The 1924 Lewis and Clark River Bridge #711, a single leaf bascule.
The 1939 Columbia River (White Salmon) Bridge #6645, a steel through truss, vertical lift.
The 1931 Isthmus Slough Bridge #1132F, a 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 Bridge #1827, swing span.
The 1938 Walluski River Bridge #2320, swing span.
The 1921 Coquille River Bridge #598, swing span.
The 1934/1991 South Slough Bridge #1940 bascule.
The 1939 Catching Slough Bridge #2278C, swing span.
The 1921 Nehalem Bridge #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.

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III. PROJECT INFORMATION

This documentation has been prepared by the Oregon Department of Transportation, in association with a federally-funded transportation project which rehabilitated the Lewis and Clark Bridge. Utilizing the Secretary of the Interior's Standards for the Treatment of Historic Properties, the bridge was restored to its c.1920s configuration, and included the following work:

- Rehabilitate the two operator's houses windows (6 on each house), to their original 1924 wood frame configuration.
- Install compatibly designed steel-mesh shutters to protect the windows of the operator's houses similar to the existing steel-mesh shutters.
- Pressure wash and paint the two concrete piers and operator's houses from the road deck up.
- Replace the non-historic metal tube rail with a timber and steel backed rail (similar to those approved for the Historic Columbia Highway and Grave Creek Covered Bridge) on the main bascule span, to visually replicate the original 1924 configuration.
- Replace the non-historic galvanized steel and timber rail with a timber and steel backed rail on the north and south sides of the east approach to visually replicate the original 1924 configuration.
- Add a 24" wide metal maintenance access walk on the north side of the bascule span near road grade.
- Add a lightweight metal rail to the new 24" maintenance access walk on the north side of the bascule span.
- Remove the non-historic wooden pedestrian/maintenance walk (catwalk) to the operator's house on south side of the east approach to the bridge.
- Widen the deck on the east approach span from 22' to 33'-6".
- Replace the wooden deck of the east approach with a concrete deck.
- Replace the wooden bascule decks with a fiber reinforced composite deck.
- Add a lightweight steel walkway under the bridge attached to the bridge substructure on the north side of the east approach span for access from the riverbank.
- Upgrade the electrical and mechanical equipment that operates the bascule.
- Install a new maintenance access stair between the deck level and the lower level of the pier at the northeast operator's house corner.
- Widen the existing cantilevered span lock access platform at the lower level on the east side of the pier to facilitate easier access for equipment.
- Install new guardrail flares and connections at the east end of the structure.
- Flare curbs on the east approach to meet pier walkways.