BAKER RIVER BRIDGE
(Henry Thompson Bridge)
State Route 20 spanning the Baker River
Concrete
Skagit County
Washington

HAER No. WA-105

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

PHOTOGRAPHS

HISTORIC AMERICAN ENGINEERING RECORD
NATIONAL PARK SERVICE
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HAER No. WA-105

Location:	State Route 20 spanning the Baker River, Main Street in Concrete, Skagit County, Washington. UTM: 10/592800/5377000 Quad: Lake Shannon, Wash.
Date of Construction:	1917
Engineer:	Bowerman and McCloy, of Seattle. A. L. Strong was the county engineer.
Fabricator:	J. R. Wood Superior and Washington Portland Cement Companies of City of Concrete donated the cement.
Owner:	City of Concrete Town Hall Concrete, WA 98237
Present Use:	Vehicular and pedestrian traffic.
Significance:	The bridge was the only link between the two halves of the city of Concrete. It is an early example of a reinforced-concrete open spandrel arch and was reputedly one of the longest single-span concrete structures in the West when built. The designer took pains to ornament the bridge in a classical style. It was placed on the National Register of Historic Places in 1976.
Historian:	Wm. Michael Lawrence, August 1993

History of the Bridge

The town of Concrete is located at the confluence of the Baker and Skagit Rivers, in the Cascade Mountains. It has always been a small community. Its population was 1,500 at its peak in 1912. When the bridge was built, the town depended heavily on two local factories for its livelihood, owned by the Superior Portland Cement Company and the Washington Portland Cement Company.

The Baker River Bridge was, until the construction of a new highway bridge downstream in 1972, the only vehicular and pedestrian connection between the two halves of the town of Concrete. It replaced a wooden bridge which County Engineer A. L. Strong condemned as unsafe and beyond repair.[1] Two drawings survive which locate the old bridges and its predecessor. The old bridge was between Limestone Street to the west and Concrete Road to the east.[2] The new bridge was built just to the north.[3] The site is one where the river narrows slightly and flows just between two high bluffs.

The Skagit County Board of Commissioners decided to build the new bridge in 1915.[4] The two Portland cement companies agreed to donate the cement necessary to build a concrete bridge, making such a structure as inexpensive as the alternative under consideration, a steel truss.[5] By the following spring, Bowerman and McCloy, Consulting Engineers, of Seattle, prepared the necessary drawings. The County Commissioners at that time, whose names appear on the drawings, were Henry Thompson (Chairman), Alfred Polson, and E. A. Sisson.[6] The bridge was completed in January 1917.[7]

The bridge has continued to be a part of the life of the town of Concrete to the present day. In 1918, a logging train killed Henry Thompson, and the bridge was named in his honor.[8] It is still in service, although the highway now crosses the river at a point downstream over a new bridge built in 1972. It was placed on the National Register of Historic Places in 1976, culminating two years of efforts by a local community action group.[9]

Design and Description

Drawings for the Baker River Bridge survive, but are fragmentary. Therefore, a description and analysis of the structure must be a qualified one. The bridge is a open-spandrel reinforced-concrete ribbed deck arch with a 186′ main span at the skewbacks.[10] In addition, there are two approach spans, consisting of reinforced-concrete deck girders, the eastern one being 18′ long and the western one somewhat shorter.[11]

The deck is approximately 18′ wide curb-to-curb, with a 5′ wide sidewalk at the south side and the rest taken up by a roadway.[12] The irregular terrain made it necessary to slope this deck, with the west end higher than the east. This floor bears on a beam at the longitudinal centerline of the bridge and on girders at 8′ to either side of the centerline, except at the central four spandrels.[13] There, an infill wall with pilasters support the deck. The approach span curtain walls are in the form of elliptical arches, as are the curtain walls between the spandrel columns on the main span, except for the central section where the arch ribs meet the deck. The deck cantilevers beyond the columns, girders, and infill walls, being supported by brackets. The spandrel columns supporting the girders are 1′- 6″ X 2′- 2″.[14]

According to the drawings, the parabolic arch rib varies in its radius along the centerline from 145′ at the crown to over 221′ at the skewbacks. Each arch rib is approximately 5′ wide, and 6′ from extrados to intrados, with little variation along its length. The ribs are fixed, without hinges, and depend on their abutments to counteract its outward thrust.[15] The abutments are at the bases of piers or towers at each end of the span. These piers measure approximately 25′ x 12′. The piers are not solid, but consist of four reinforced-concrete walls.[16] The piers and abutments were poured directly on bedrock.[17]

The bridge is distinctive for its architectural ornamentation. Lines on the concrete railings and piers form rectangular patterns, resembling wood paneling. The brackets supporting the cantilevered parts of the decks are similar in form to those found under the eaves of Renaissance Revival houses of the nineteenth century. The spandrel columns have capitals and bases and, with the arches they support, give the impression of a Roman arcade. Obelisks surmounted by electric lights in globes flanked the approaches. This heavily ornamented bridge, however, seems out of place at it mountainous rural site rather than in an urban setting.

Among the reinforced concrete-ribbed arch bridges surviving in Washington, this is an early example. With its ornamentation and heavy piers, it contrasts with a later examples of reinforced-concrete arches, such as the Spokane River bridge at Long Lake dam, built in 1949. That streamlined structure is also an open spandrel fixed arch, but is more sophisticated with the Considère hinges used in its construction.[18] The two may be said to represent the early and late years for the construction of such bridges in the early twentieth century. It falls in line with aesthetic treatment seen in the United States in the 1910s and

1920s; more particularly in the Pacific Northwest, examples of this construction type are seen in bridges constructed by the Oregon State Highway Commission under the direction of Conde B. McCullough.[19]

Repair and Maintenance

Inspections of the bridge have discovered minor cracking and spalling, especially on the roadway and sidewalk as early as 1952.[20] The roadway approaches the bridge at sharp angles which are difficult for motorists to negotiate. To deal with this problem the Washington State Highway Department widened the eastern approach towards the south in 1954, removing the railing in the process.[21] The state straightened the highway alignment by building a new bridge downstream in 1972, by-passing this one.[22]

Data Limitations

The drawings for this bridge survive in a fragmentary state. Copies were available at the Bridge Preservation Section, Washington State Department of Transportation, in Olympia. They were useful in the description and analysis of the structure. Nothing concerning this bridge appears in any engineering or construction journals, other than a brief mention in *Pacific Builder and Engineer*. Newspaper clipping files at the Washington State Library in Olympia provided several articles concerning the bridge, and although written rather recently, provided some information regarding its history. Ronald Smith, Regional Bridge Inspection Engineer of the WSDOT Bridge Preservation Section, and a native of Concrete, inquired of townspeople about the bridge and its history and discovered why the structure was named after Henry Thompson.

Project Information

This project is part of the Historic American Engineering Record (HAER), National Park Service. It is a long-range program to document historically significant engineering and industrial works in the United States.

The Washington State Historic Bridges Recording Project was co-sponsored in 1993 by HAER, the Washington State Department of Transportation (WSDOT), and the Washington State Office of Archeology & Historic Preservation. Fieldwork, measured drawings, historical reports, and photographs were prepared under the general direction of Robert J. Kapsch, Ph.D., Chief, HABS/HAER; Eric N. DeLony, Chief and Principal Architect, HAER;

and Dean Herrin, Ph.D., HAER Staff Historian.

The recording team consisted of Karl W. Stumpf, Supervisory Architect (University of Illinois at Urbana-Champaign); Robert W. Hadlow, Ph.D., Supervisory Historian (Washington State University); Vivian Chi (University of Maryland); Erin M. Doherty (Miami University), Catherine I. Kudlik (The Catholic University of America), and Wolfgang G. Mayr (U.S./International Council on Monuments and Sites/Technical University of Vienna), Architectural Technicians; Jonathan Clarke (ICOMOS/Ironbridge Institute, England) and Wm. Michael Lawrence (University of Illinois at Urbana-Champaign), Historians; and Jet Lowe (Washington, D.C.), HAER Photographer.

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_____. Drawing of east approach span for Baker River Bridge. Sheet D-2. Title block illegible. Held by Bridge Preservation Section, WSDOT.

_____. "Detail for West Pier, Baker River Bridge." Sheet D-1. 3 March 1916. Held by Bridge Preservation Section, WSDOT.

B. & Mc. [Bowerman and McCloy] Untitled drawing of abutments. 31 July 1916. Held by Bridge Preservation Section, WSDOT.

[Bowerman and McCloy] Section at spandrel. n.d. Held by Bridge Preservation Section, WSDOT.

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"Way Back When," *Concrete Herald* [July 1976]

ENDNOTES

[1] "Could Mean Money For Repairs: Concrete Bridge Recommended to National Register," *Skagit Valley Herald*, 3 January 1976.

[2] A. L. Strong, Skagit County Engineer, "Map Showing Relocation of Baker River Bridge, Town of Concrete," November 1915, held by Bridge Preservation Section, Washington State Department of Transportation, Olympia, WA [WSDOT].

[3] "Location Sheet, Bridge at Concrete," n.d., Held by Bridge Preservation Section, WSDOT.

[4] "Construction News," *Pacific Builder and Engineer* 20 (2 October 1915): 31.

[5] "Could Mean Money For Repairs: Concrete Bridge Recommended to National Register."

[6] Bowerman and McCloy, consulting engineers, "Concrete Arch over Baker River at Concrete, Skagit County, Wn.," 28 March 1926 and 14 April 1926, sheets 1 and 2, held by Bridge Preservation Section, WSDOT.

[7] "Way Back When," *Concrete Herald* [July 1976].

[8] Adrienne Nelles, Interview by Ronald Smith, Regional Bridge Inspection Engineer, Bridge Preservation Section, WSDOT, 24 July 1993. Henry Thompson was Adrienne Nelles' grandfather. Ronald Smith inquired of Nelles and other residents of Concrete about the bridge.

[9] "Historic Landmark, *Concrete Herald*, 17 June 1976.

[10] Bowerman and McCloy, "Concrete Arch over Baker River at Concrete, Skagit County, Wn.," 28 March 1926 and 14 April 1926, sheet 1.

[11] Bowerman and McCloy, Drawing of east approach span for Baker River Bridge, sheet D-2 [title block illegible], held by Bridge Preservation Section, WSDOT. No drawings survive for the west approach.

[12] Bowerman and McCloy, sheet 1 (28 March 1926) has the plan of the deck and Section E-E on sheet 2 (14 April 1926) gives dimensions for the sidewalk and roadway.

[13] Ibid., section E-E and F-F on sheet 2.

[14] Ibid.

[15] Bowerman and McCloy, "Concrete Arch over Baker River at Concrete, Skagit County, Wn.," sheet 1.

[16] Bowerman and McCloy, "Detail for West Pier, Baker River Bridge." Sheet D-1 (3 March 1916), held by Bridge Preservation Section, WSDOT.

[17] B. & Mc. [Bowerman and McCloy], Untitled drawing of abutments, 31 July 1916, held by Bridge Preservation Section, WSDOT.

[18] See "Spokane River Bridge at Long Lake, HAER No. WA-95," by Wm. Michael Lawrence, 1993, held by Historic American Engineering Record, National Park Service, Department of the Interior.

[19] See Robert William Hadlow, "Conde B. McCullough, 1887-1946: Master Bridge Builder of the Pacific Northwest," Ph.D. diss. (Washington State University, 1993).

[20] "Baker River Bridge, No. 20/259," Kardex Card File, and Bridge Inspection Reports in Correspondence Files, Bridge Preservation Section, WSDOT.

[21] Washington Department of Highways, "Secondary State Highway 17-A, Baker River Bridge No. 17-A/7.5, Skagit County, Roadway Rewidening." Approved 21 April 1954, held by Bridge Preservation Section, WSDOT.

[22] "Baker River Bridge, No. 20/259," Bridge Inspection Reports, in Correspondence Files, Bridge Preservation Section, WSDOT.