

Johnson Bridge
Spanning Redwood River
Seaforth vicinity
~~Sheridan Township~~
Redwood County
Minnesota

HAER No. MN-56

HAER
MINN,
64-SEFD.Y,
/

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
U.S. Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

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Johnson Bridge

HAER No. MN-56

Location: Spanning Redwood River, on the line between Sections 28 and 29, Township 112 North, Range 37 West, Seaforth vicinity, Sheridan Township, Redwood County, Minnesota

UTM: 15:316290:4927890
Quad: Wabasso, Minnesota (1967, 1:24,000)

Date of Construction: 1904

Builder: William S. Hewett and Company
Minneapolis, Minnesota

Present Owner: Sheridan Township

Present Use: Vehicular highway bridge

Significance: Built in 1904, the Johnson Bridge was the second all-metal bridge built by Sheridan Township. It is highly representative of the work of William S. Hewett and Company of Minneapolis, Minnesota, a major regional bridge builder .

Historians: Demian J. Hess and Jeffrey A. Hess
March 1992

Bridge Description

Bridge Number L6930 crosses the Redwood River one-half mile east and north of the community of Seaforth, in Sheridan Township, Redwood county. The bridge carries a north-south township road and is situated on the line between Sections 28 and 29, Township 112 North, Range 37 West. The setting around the bridge is rural, with farm fields to the north, and grasslands to the south (see HAER Photographs No. MN-56-1 and MN-56-2).

The bridge, historically called the "Johnson Bridge," consists of a steel, five-panel, pin-connected, Pratt through truss, flanked by steel stringer approach spans. The truss has a roadway width of 16 feet and a span of 85 feet. The overall bridge length is 111 feet. The main span still rests on its original steel tubular piers (see HAER Photograph No. MN-56-8). The approach spans are carried by steel pile bent abutments. The north abutment features a concrete back wall, while the south abutment has timber back- and wingwalls.

The main truss of the John Bridge is composed of standard steel members. The top chord and end posts are built up from back-to-back channel sections, tied by riveted cover plates and battens. The lower chord is formed by paired, punched eyebars. Face-to-face angle sections tied by riveted battens form the hip verticals, and the other verticals are composed of back-to-back channel sections tied by V-lacing. Paired eyebars form the web diagonals. The center panels are counter-braced by paired, square-section eyerods with turnbuckles. All portal bracing is formed of riveted angle sections, while cross-braced, circular-section eyerods form the top lateral bracing. The bridge's wooden deck is carried by steel stringers supported on I-beam floor beams. The floor beams are suspended from the bridge superstructure by means of U-bolts hung over the lower pin connections. Builder's plates are mounted above each portal and read: "W.S. Hewett & Col., Builder, 1904, Minneapolis, MINN." The main truss is in good condition, with no signs of alteration, and only minor collision damage to some of its vertical members (see HAER Photographs No. MN-56-1 to MN-56-7). [1]

History and Significance

Built in 1904, the Johnson Bridge is a typical early twentieth century Pratt through truss and exhibits no unusual engineering features. First patented in 1888, the Pratt truss gained widespread popularity throughout the United States by the end of the nineteenth century. In Minnesota, the first Pratt trusses seem to have been built in the 1870s, and were commonplace by the 1880s. According to a 1988 statewide survey of metal highway bridges, the Johnson Bridge is one of only eight trusses still existing in Redwood County built before 1911, the start of state standardization. Of these bridges, the Johnson Bridge is the only one known to have been built by William S. Hewett and Company. [2]

The Johnson Bridge was only the second metal bridge constructed by Sheridan Township. Wooden spans were initially preferred throughout the state, for lumber was readily available and the spans could be constructed by local builders with no special technical knowledge. Wooden structures, however had several disadvantages. Although initially inexpensive, they required frequent maintenance, which added up to a high long-term cost. By some reports, these locally built bridges were also poorly designed and could not provide dependable, year-round service. [3]

The problems of early wooden bridges became more significant as traffic increased in the late nineteenth century. A major reason for the rising traffic volume was the construction of railroads in the state, which stimulated commerce and encouraged settlement. [4] The first railroad reached the St. Paul and Minneapolis metropolitan area in 1852, and by the 1870s, lines were being constructed into the surrounding hinterland. As population levels rose throughout the state, the old system of roads and bridges became increasingly inadequate. Reflecting the seriousness of the situation, farmers, bicycling enthusiasts, railroad interests, businessmen and others formed a loose alliance in the mid-1880s termed the "Good Roads Movement," which agitated road improvements on local, state and national levels.

All-metal bridges began to appear in Minnesota during the 1870s in response to the demand for road improvements. Metal bridges could be imported relatively cheap over the newly-built railroad lines, making them a viable alternative to wooden construction. The first cost of these structures was higher than wooden bridges, but they required less maintenance in the long run. Blue earth County, in the south-central portion of the state, appears to have been one of the first counties to embark on a regular program of metal bridge construction. The county built its first metal bridge in 1872, awarding a contract to the Wrought Iron Bridge Company of Canton, Ohio, to build an iron span over the LeSueur River. From 1873 until 1900, all but two of the bridges built by the county were metal.

The transition from wood to metal was further facilitated by a substantial increase after 1870 in the number of firms specializing in metal bridge construction. Initially, all of these firms were located out of state, with many significant builders in the vicinity of Chicago, Illinois, as well as Cincinnati, Cleveland and Canton, Ohio. [5] These new bridge companies actively promoted metal bridge construction, sending agents throughout Minnesota to solicit county and township governments for bridge contracts. [6] By the 1880s, several major bridge companies appeared in Minnesota as well. One of the earliest was Hewett and Jones of Minneapolis, formed in 1883 by Commodore P. Jones and Seth Maurice Hewett. Although this firm dissolved within a year, both men went on to establish companies of their own. Perhaps most significantly, Hewett and Jones trained many new bridge builders who later founded their own businesses. By 1890, five major bridge companies were based in Minneapolis, all managed by men who had entered the business in the employ of either Jones or Hewett. [7]

With the appearance of a large number of bridge companies--including several which were Minnesota-based--and the development of good rail connections, metal bridge construction became commonplace in many Minnesota counties by the 1880s. Located in the interior of a far western county, however, Sheridan Township did not begin the transition to metal bridges until the early 1900s. Although two railroads were built to Redwood County in the 1870s, neither line passed through the interior. One railroad ran through Sanborn and Walnut Grove along the southern border of the county, while the other connected Sleepy Eye with Redwood Falls, near the Minnesota River to the north. Although the county population rose dramatically, climbing from 869 in 1870 to 5,375 in 1880, most of this growth occurred adjacent to the railroad lines. The interior townships, like Sheridan were left largely undeveloped. In 1870, Sheridan's population numbered no more than 111. By 1880, it had grown to only 155. [8]

The situation began to change late in the 1890s. At that time, the Chicago, and North Western Railroad began to build spur lines through the center of Redwood County to promote wheat production. The first line was completed in 1899 and ran north to south through the central portion of the county, connecting Vesta Township with Burt, Iowa. This route passed directly through Sheridan Township, and the railroad platted

the village of Seaforth along the tracks to serve as a business center, complete with its own grain elevator. The new village lay just south of an older farming community located on the Redwood River. The second spur line was completed in 1902, and ran south of Sheridan Township, connecting Morgan Township, on the eastern edge of the county, with the city of Marshall to the west. [9]

Under the influence of the railroad, Sheridan Township's population began to rise--numbering 699 in 1900 and reaching 715 by 1910. [10] At the same time, the township also began to replace its wood bridges. In October 1902, the township supervisors called a special meeting "for the Purpose of voting for or against the Building of an Iron Bridge across the Redwood River," immediately north of Seaforth. The voters unanimously approved the measure, signalling the start of metal bridge construction in the township. [11]

On June 14, 1904, another special meeting was called by James C. Johnson, apparently a nearby land owner, "to determine by ballot whether [sic] to Build a Bridge or not...across the Redwood River on the East line of Section 29, Town 112, R37." Although the vote did not specify the fact, the new bridge was also to be metal, replacing an older wooden span at the site. Taking its name from its petitioner, the so-called Johnson Bridge was approved by the township by a vote of 32 to 5. [12]

Bids for construction were opened at the Johnson Bridge site on June 23, 1904. Several Minnesota bridge builders appear to have bid on the project, for the Redwood Gazette reported that "a bunch of bridge contractors from Minneapolis arrived here last Wednesday evening and drove to Seaforth the following morning where they put in bids on the construction of the new bridge across the Redwood river." [13] On opening the bids, the township supervisors found the lowest bidder was William S. Hewett and Company of Minneapolis.

William S. Hewett was no stranger to bridge construction, for his uncle was Seth Maurice Hewett, one of the first bridge builders in Minneapolis. Originally from Maine, William moved to Minneapolis in 1887 to take a job in his uncle's bridge company. In 1897, William founded his own firm and quickly established himself as one of the largest bridge builders in the region. By the early 1900s, Hewett had built many bridges in the Twin Cities metropolitan area, including almost all of the spans for the Twin City Rapid Transit Company, as well as the Minneapolis Park Department. The firm was also extremely active throughout the northern tier states, opening a branch office in Billings, Montana, in 1904. [14]

For the Johnson Bridge, Hewett proposed to build "one 855 x 16' steel span on steel cylinder piers complete, for the sum of \$2,600. The contract, executed on the same day bids were opened, specified that the total cost of the bridge, including two steel stringer approach spans, was to be \$2,990. Hewett promised to complete the substructure by September 15, and the entire bridge by September 20, 1904 (see proposal and contract in Supplementary Data section).

In his bid, Hewett stated that the bridge would conform with plans "on file," presumably with the township secretary. An examination of township records in 1992 did, in fact, reveal that a blueprint for the Johnson Bridge was filed with Hewett's proposal. For reasons which are unclear, however, this plan was prepared by Milo A. Adams, another Minneapolis bridge builder. Adams had arrived in Minneapolis in 1882 and, shortly thereafter, became an agent for Commodore P. Jones's bridge company. Sometime around 1900, Adams founded his own bridge firm which, like William S. Hewett and Company, was active throughout the northwest, including Minnesota and Montana. [15] It is possible that the two firms had a close working

relationship, and Hewett may have arranged for Adams to prepare the plans for the Johnson Bridge. It is also possible that Adams had submitted the plans to the county earlier, and these simply served as the basis for all later bids. A third possibility is that the township simply lost Hewett's original plans and filed Adams' blueprint by mistake. A close examination reveals that the blueprint does conform to the general dimensions and as-built appearance of the Johnson Bridge. There are several variations, however, including a minor change in the detailing of the hip verticals, a different configuration of the portal bracing, and the apparent substitution of U-bolts for hanger plates to connect the floor beams to the superstructure (see HAER Photograph No. MN-56-9).

Although his contract specified all work would be completed in September, Hewett apparently did not finish the bridge until October 6, 1904, when he made final application for payment. After its opening in 1904, the Johnson Bridge carried traffic without incident. An inspection in 1992 revealed that no major alterations have ever been made to the structure.

Despite the bridge's trouble-free history, the Redwood County Highway Engineer reported in 1969 that it was in "poor" condition. The chief reason for the low rating was concern over the bridge's carrying capacity, which was listed as only 4 tons. [16] In 1987, the county and township finally began the planning process to replace the Johnson Bridge with a modern highway structure. [17]

In March 1989, the State Historic Preservation Office (SHPO) notified the Federal Highway Administration (FHWA) that the Johnson Bridge, Bridge Number L6930, was eligible for nomination to the National Register of Historic Places. [18] After determining that there was no practical alternative to demolishing the bridge, the SHPO, the FHWA, Redwood County, Sheridan Township, and the Advisory Council on Historic Preservation entered into a Memorandum of Agreement, stipulating that the structure would be documented according to the standards of the Historic American Buildings Survey/Historic American Engineering Record. Once the documentation had been completed, the Johnson Bridge was to be replaced. [19]

ENDNOTES

1. Appearance and condition of bridge based on a field survey by Demian Hess, historian, Hess, Roise and Company, on 18 February 1992.
2. Information on Minnesota bridge building presented here and below was drawn from Frederic L. Quivik and Dale L. Martin, "Iron and Steel Bridges in Minnesota," unpublished Multiple Property Documentation Form, July 1988. Also see Robert M. Frame, III, "Historic Bridge Project," unpublished report, 31 March 1985, 7-21. For the findings of the statewide bridge survey, see Jeffrey A. Hess, "Final Report of the Minnesota Historic Bridge Survey," unpublished report, August 1988, 16. All of the above cited material is on file at SHPO, Minnesota Historical Society, St. Paul, Minnesota.
3. The problems with early wooden bridges and roads are discussed extensively in Arthur J. Larsen, The Development of the Minnesota Road System (St. Paul: Minnesota Historical Society, 1966).
4. The effect of railroad construction, particularly in connection to bridge building, is discussed in Frederic L. Quivik, "Montana's Minneapolis Bridge Builders," IA: the Journal of the Society for Industrial Archeology 10:1 (1984): 35-54.
5. A rough measure of the dramatic increase in bridge companies after 1870 is provided in Victor C. Darnell, Directory of American Bridge Building Companies, 1840-1900 (Washington, D.C.: Society for Industrial Archeology, 1984). Darnell, for example, lists at least 48 bridge firms which operated in Chicago. Of these, only four began operations before 1870. This pattern holds true for almost all other cities listed in Darnell's inventory.
6. An example of the way bridge builders began to solicit work in the 1870s is provided in Frame, "Historic Bridge Project," 12-13.
7. For a discussion of Minneapolis' bridge firms, and particularly Hewett and Jones, see Quivik, "Montana's Minneapolis Bridge Builders."
8. For information on railroad construction in Redwood County, see Wallace F. Simpson, "Redwood County, Now and Then," 1968, pamphlet, Reference Library, Minnesota Historical Society, St. Paul, Minnesota. For population statistics refer to the federal censuses for 1870 and 1880.
9. Wayne E. Webb and J.I. Swedberg, Redwood: The Story of a County (St. Paul: North Central Publishing Company, 1964), 173-178.
10. Refer to the federal censuses for 1900 and 1910.
11. See 11 October 1902, Sheridan Township Minutes; records held in Seaforth, Minnesota.
12. For information on the vote to build the bridge, the award of the contract, and subsequent payments refer to Sheridan Township records for the dates cited in the text. All records currently held in Seaforth, Minnesota.
13. Redwood Gazette (Redwood Falls, Minnesota), 29 June 1904, 2:1.

14. Quivik, "Montana's Minneapolis Bridge Builders"; Return Ira Holcombe and William H. Bingham, eds., Compendium of History and Biography of Minneapolis and Hennepin County, Minnesota (Chicago: Henry Taylor and Company, 1914), 367-377; Maurice W. Hewett, "William Sherman Hewett: A Biography," typewritten ms., [1956], on file at Reference Library, Minnesota Historical Society, St. Paul, Minnesota.

15. Quivik, "Montana's Minneapolis Bridge Builders."

16. Redwood County Highway Department, "Condition Report on the Township and Municipal Bridges, 1969," unpublished report, 6 January 1970, copy on file with Sheridan Township records, Seaforth, Minnesota.

17. Francis M. Jordan, Erickson Engineering Company to Minnesota Historical Society, 26 May 1987; correspondence on file at SHPO, Minnesota Historical Society, St. Paul, Minnesota.

18. For the determination of eligibility see Dennis A. Gimmestad, Deputy SHPO to James Cheatam, Federal Highway Administration, 10 March 1989; correspondence on file at SHPO, Minnesota Historical Society, St. Paul, Minnesota. To make this determination, SHPO relied on a statewide survey of metal truss bridges conducted in 1988, and a related Multiple Property Documentation Form for iron and steel bridges in the state. According to the Multiple Property Documentation Form, a metal truss was eligible for nomination under Criterion C if it met one of the following conditions:

- 1) built before 1900
- 2) built between 1905-1911 under one of the Minnesota Highway Commission's programs
- 3) truss fabricated by an important bridge fabricator
- 4) constructed by an important Minnesota bridge builder
- 5) designed by an important engineer
- 6) exhibited an unusual truss configuration
- 7) exhibited exception ornamentation
- 8) exhibited exceptional engineering skills to meet unusual site conditions

Based on these criteria, the statewide survey had recommended that the bridge was eligible for nomination. See the following sources: Hess, "Final Report," 27-28; Quivik and Martin, "Iron and Steel Bridges in Minnesota," 1988.

19. Refer to the following correspondence, on file at SHPO, Minnesota Historical Society, St. Paul, Minnesota: Dennis A. Gimmestad, Deputy SHPO to James Cheatham, FHWA, 10 March 1989; Memorandum of Agreement, accepted 19 June 1991; Charles E. Foslien, FHWA to Dennis Gimmestad, 5 May 1989; Christine Whitacre, National Park Service to Peter E. Boomgarden, Redwood County Highway Engineer, 19 June 1991. This report is intended to fulfill the documentation requirements, and was prepared by the firm of Hess, Roise and Company of Minneapolis, Minnesota under a contract with Sheridan Township.

SOURCES CITED

- Curtiss-Wedge, Franklyn, comp. The History of Redwood County, Minnesota. Vol. 1. Chicago: H.C. Cooper Jr. and Co., 1916.
- Darnell, Victor C. Directory of American Bridge-Building Companies, 1840-1900. Washington, D.C.: Society for Industrial Archaeology, 1984.
- Frame, Robert M. "Historic Bridge Project." Unpublished report prepared for the Minnesota Historical Society and the Minnesota Department of Transportation, 31 March 1985.
- Hess, Jeffrey A. "Final Report of the Minnesota Historic Bridge Survey." Unpublished report prepared for the Minnesota Historical Society and the Minnesota Department of Transportation, August 1988.
- Hewett, Maurice W. "William Sherman Hewett: A Biography." Typed manuscript, [1956]. Reference Library, Minnesota Historical Society, St. Paul, Minnesota.
- Holcombe, Return Ira and William H. Bingham, eds. Compendium of History and Biography of Minneapolis and Hennepin County, Minnesota. Chicago: Henry Taylor and Company, 1914.
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- Sheridan Township Records. Seaforth, Minnesota.
- Simpson, Wallace F. "Redwood County Now and Then." Mimeographed manuscript, 1968. Reference Library, Minnesota Historical Society, St. Paul, Minnesota.
- Webb, Wayne E. and J.I. Swedberg, eds. Redwood: The Story of a County. St. Paul: North Central Publishing Co., 1964.

CONTRACT.

This Agreement, made the 23rd day of June A. D. 1904
by and between **WILLIAM S. HEWETT & CO.** of Minneapolis, Minnesota, of the first part, and
the Town of Sheridan, by the Town Board of
Superior of said County
of Redwood County, State of Minnesota of the second part, WITNESSETH:

That the said first party hereby agrees to furnish all material, and to construct and complete ready for
travel, the substructure and superstructure for a Steel Highway
bridge over the Redwood River, about one mile
East of Superior at the site of the old bridge,

in said County and State,
said bridge is to be 85 feet long, extreme length, to be built in one span
to have 12 ft of steel approach at one end and 14 ft
steel approach at the other end of said bridge

Said bridge to have one roadway 16 feet in width, and to be constructed in
accordance with general specifications and plan which are hereto annexed and made a part of this contract.

The said first party hereby agrees to have the substructure ready for the erection of, and at right
angles to the line of said superstructure on or before the 15th day of November, A. D. 1904
and said first party agrees to have the superstructure completed on or before the 30th day
of September, A. D. 1904, condition of stream permitting, and contingent upon strikes or other
delays, unavoidable or beyond their control.

In consideration of the foregoing, materials and work to be furnished and executed by said first party,
said second party hereby agrees to pay said first party the sum of Two thousand, Nine
hundred and Ninety (\$2990⁰⁰) Dollars, in the manner following, to-wit:
One thousand (\$1000⁰⁰) Dollars
on the delivery of the finished iron work at the nearest R. R. Station to the bridge site, and the balance of the
above amount on the completion of said superstructure ready for travel and according to plan and specifications
hereto annexed; said payments to be made in Cash and Town orders
Said orders to draw interest at the rate of 5%
per cent per annum until paid.

And for the performance of each and every article of this agreement, the said parties hereby bind them-
selves by these presents.

In Testimony Whereof, Witness the signatures of said parties. But it is mutually agreed and under-
stood that no settlement or payments under this contract shall become binding on said first party, unless made or
acknowledged by said first party or one of their agents having specific written authority to make settlement of
and receive payment under this contract.

WILLIAM S. HEWETT & CO.

W. S. Hewett By W. S. Hewett
H. P. Hewett
H. P. Hewett

WITNESSES:

L. J. Johnson

Second Party.