

1

2

3

HISTORIC AMERICAN ENGINEERING RECORD

HAER
WIS
16-AMN.V)
1-

TAYLOR BRIDGE
(Bayfield Road Bridge)
HAER No. WI-103

Location: Spanning the Middle River at Bayfield Road
Amnicon Vicinity
Douglas County, Wisconsin

UTM: 15.589420.5160040

Quad: Poplar, Wisconsin (7.5 minute series)

Date of Construction: ca. 1930

Present Owner: Town of Amnicon

Present Use: Vehicular highway bridge

Significance: Crossing the Middle River in rural Douglas County in northwest Wisconsin, the Taylor Bridge is a timber, bolt-connected, pony truss of queen-post design. Constructed in 1929-1930, it is the last remaining queen-post truss bridge in the state, and one of the state's only timber-truss bridges.

Historians: Denis P. Gardner, Jeffrey A. Hess, Charlene K. Roise
Hess, Roise and Company, Minneapolis, Minnesota
September 1997

Situated in Amnicon Township in northwest Wisconsin, the Taylor Bridge (Bridge P-16-97) carries Bayfield Road, an unpaved rural route, across the Middle River in an east-west direction, about one mile south of the community of Wentworth (see Figure 1). The structure takes its name from the family who homesteaded the immediate area in the early 1900s.¹

The bridge is located in Douglas County, which was carved from La Pointe County by the state legislature in 1854. The county is the namesake of Stephen A. Douglas, a prominent senator from Illinois, who held a financial interest in the expanding port town of Superior, the county seat. Originally occupied by Chippewa Indians, the area saw an influx of white settlement with the opening of the Federal Land Office at Superior in 1855. By 1860, the population of Douglas County was officially listed as 812 persons. In December 1881, the Northern Pacific Railroad reached Superior, leading to a boom in industrial growth and population in the city. While Superior continued to expand in the late nineteenth and early twentieth centuries, the rest of the county's development was minimal by comparison.²

The Taylor Bridge was constructed during 1929 and 1930, several years after the town of Amnicon was established. The town is in Amnicon Township, which was founded in 1906 and is located only a few miles east of Superior.³ The town and township take their name from the Amnicon River, located just west of the township's seat, Wentworth. The word Amnicon is a corruption of the Indian word "Aminikan," which means "spawning ground." The local American Indian population gave this name to the river because whitefish migrated up the river to spawn every fall.⁴ Like most of Douglas County, Amnicon Township is covered with second-growth forest dominated by oak, maple, birch, spruce, pine, poplar and tamarack.

¹ This report draws heavily, without further citation, from the "Truss Bridge Intensive Survey Form for the Taylor Bridge" by Jeffrey A. Hess, prepared for the Wisconsin Department of Transportation, Madison, 1986. Site and architectural information were obtained from a site visit by Jeffrey A. Hess in October 1986, and verified by Denis P. Gardner on August 21, 1997. Additional information was derived from an interview with Roy Martin, Town of Amnicon, 20 October 1986, by Jeffrey A. Hess, and from the "Amnicon Town Board Minutes," November 1984, Amnicon Town Hall.

² Stan May, "It's Birthday No. 109 for Douglas County Today," *The Evening Telegram*, February 3, 1963; "A Brief History of Douglas County," Douglas County clippings file, Superior Public Library, Superior, Wisconsin.

³ Interview with Patricia Barsness, Town Clerk, Town of Amnicon, August 21, 1997, by Denis P. Gardner; telephone interview with Jim Pellman, historian, City of Maple, August 22, 1997, by Denis P. Gardner.

⁴ *Official Directory, 1914-1915: County of Douglas* (Superior: n.p., 1914), 12-13.

Construction along the route that was to become Bayfield Road began in 1860, when the Superior Town Board let a contract to the company of Wilson and Peterson. When finished, however, the road from Superior to the eastern county line amounted to little more than a trail. Interest in developing a more practical road did not flourish until 1870, with the completion of the Lake Superior and Mississippi Railroad to Duluth, Minnesota, which shared a harbor with Superior. The railroad provided an efficient connection to St. Paul, Minnesota's capital, some 150 miles to the south. Citizens of Bayfield, Wisconsin, another Lake Superior community about 70 miles east of the twin ports, realized that the commute to St. Paul would be much quicker with a well-developed thoroughfare to Superior. As a result, Bayfield pursued development of a road running west to the Brule River in Douglas County. Superior agreed to construct the remaining distance, moving west to east to connect with the road constructed by Bayfield.⁵

Work on Superior's portion of the road began about one mile south of the present-day community of South Range, south of Superior. The road extended east from the previously developed St. Croix Road, which provided the link to Superior. The route, which generally followed section lines, was interrupted by several waterways which required bridges. A 130-foot structure was erected over the Amnicon River. Four miles further east, a span of 83 feet was constructed to cross the Middle River, which flowed in a deep gully. Bridged with a 63-foot span, the Poplar River was the last major waterway crossed before the Superior road connected with the Bayfield section.

The Bayfield, Superior and Duluth Stage Company immediately began traversing the new road, carrying both passengers and freight. For several years after its completion, the Bayfield Road served as the primary commercial route in Douglas County. Its importance diminished, however, with the expansion of railroad lines to the region. For the local residents, though, the gravel road would remain a principal east-west thoroughfare. Also, the route grew busier as copper mining and logging companies became active in the area.⁶ With increased traffic by heavier and faster vehicles in the first decades of the twentieth century, it is not surprising that the township sought to improve the Middle River crossing with a more modern structure.

In the fall of 1929, the Douglas County Board of Supervisors approved a petition from the town of Amnicon to build a bridge across the Middle River "between sections 2 and 35, Townships 47 and 48, Range 12." The town proposed to pay half the cost of the \$800 bridge,

⁵ Pellman interview; Robert Armour, *Superior, Wisconsin, 1857-1885* (Superior: Silver-Tonsberg Printing, 1994), 169-170.

⁶ Ibid.

and the county agreed to pay the remaining \$400. Although county records give no further information, the bridge was probably completed in 1930. This date is partially confirmed by a local resident, who was told by an elderly member of the community that he had helped build the bridge's masonry abutments in "the early 1930s."⁷

The bridge is composed of a single 40'-8" span and a 13'-8"-wide deck. The bolted, timber pony truss features a queen-post configuration with wood decking, wood curbs and railings. The inclined end posts and the top and bottom chords, all of timber, measure 12"-0" x 12"-0" in section. The center panel is cross-braced with 4"-0" x 6"-0" timber diagonals. There is also timber side bracing to increase the stability of the web. Cylindrical, steel 1-3/4" rods with threaded upper and lower ends form the verticals and tie the upper chord to the floor beams. The floor beams consist of two 6"-0" x 12"-0" timbers bolted side by side with a small gap between them. The verticals protrude down through the gap to a mounting plate which sits flush against the underside of the floor beams. At either end of the structure, the floor beam rest directly on the abutments. Three sets of five 6"-0" x 12"-0" stringers constitute the foundation for the wood deck and rest atop the floor beams. The abutments consist of rubble fieldstone with concrete scour guards.⁸

In 1982, the bridge was struck by an automobile, resulting in the fracture of the north elevation's lower chord near the easternmost vertical. Shortly afterwards, the chord was spliced together by a bolted, steel tie plate. A November 1982 article in *The Evening Telegram*, a local newspaper, called into question the safety of the bridge for vehicular traffic. The article also noted the historic value of the bridge as the last remaining queen-post truss in the state, and reported the State Historical Society of Wisconsin's concern about the township's plans for the structure. Over a decade later, the township and the Wisconsin Department of Transportation have decided to replace the bridge with a single-span concrete slab on the same site. A tentative agreement has been reached to sell the queen-post truss to a private party from Springbrook, Wisconsin. If this agreement is finalized, the bridge will be reconstructed on private land, with access by invitation only.⁹

The Taylor Bridge is significant as one of Wisconsin's few surviving wood-truss bridges, and the only known example of a queen-post configuration, a venerable truss design. Webs of

⁷ Martin interview; "Proceedings of the Board of Supervisors of Douglas County, Wisconsin, 1929-1930," at the Douglas County Courthouse, Superior, 48.

⁸ See footnote 1.

⁹ Martin and Barsness interviews; bridge file for P-16-97, Wisconsin Department of Transportation, District 8 Office, Superior, Wisconsin; *The Evening Telegram*, November 30, 1982.

queen-post trusses form a truncated triangle. The inclined end posts and top chord are in compression; the lower chord is in tension, as are vertical members tying the lower chord to the upper chord at the end posts. The center panel is typically cross-braced to improve web stability. In its use of metal-rod verticals and center-panel wood diagonals, the Taylor Bridge conforms to classic nineteenth-century timber queen-post bridge design.

The queen post could reach a somewhat longer span than another early truss, the king post. Neither, however, were as versatile as trusses popularized during the nineteenth century. Truss development was further advanced in the last half of the nineteenth century by the commercial availability of wrought and cast iron, as well as the increasing sophistication of the nascent field of engineering. By the late nineteenth century, economical steel production stimulated even further advances in truss design. Steel-stringer bridges also displaced the inherently short-span king- and queen-post trusses. By the early 1900s, queen-post truss bridges were rarely built.¹⁰

The 1930 construction date of the Taylor Bridge is, therefore, quite remarkable. The use of timber was also quite unusual at that late date. As a 1928 bulletin of the Wisconsin Highway Commission pointed out, state law prohibited counties from funding wooden highway bridges. Apparently the state highway authorities, if they were indeed aware of the Taylor Bridge's design, were occasionally willing to bend the rules in a timber-rich area such as Douglas County. Such a decision was sanctioned by no less an authority than J. A. L. Waddell, who noted in his influential text on bridge engineering: "In some special situations where timber is abundant, of good quality, and reasonable in price . . . , it is still true economy to build wooden bridges." Douglas County is still a timber-producing area, and Taylor Bridge currently stands next to a small custom sawmill, which has facilitated recent repairs. Apart from the splicing of the lower chord, the bridge retains its original design integrity.¹¹

Project Information

As the only queen-post truss bridge in the Wisconsin, and one of the state's few timber truss bridges, the Taylor Bridge was determined eligible for the National Register of Historic Places in 1996. The Federal Highway Administration (FHWA) became involved with plans to

¹⁰ Mansfield Merriman and Henry S. Jacoby, *A Text-Book on Roofs and Bridges*, Part 1, 5th ed. (New York: John Wiley & Sons, 1926), 52.

¹¹ Martin interview; "Amnicon Town Board Minutes"; Wisconsin Highway Commission, *The Principal Statutes Relating to the Federal Aid Highway Systems, State Trunk Highway Systems, County Trunk Highway Systems and County Systems of Prospective State Highways* (Madison: Published by the State, 1928), 92-93; J. A. L. Waddell, *Bridge Engineering*, vol. 1 (New York: John Wiley & Sons, 1916), 772.

replace the structure, subjecting the project to review under Section 106 of the National Historic Preservation Act of 1966. The FHWA and the Wisconsin State Historic Preservation Officer signed a Memorandum of Agreement regarding the project, which was accepted by the Advisory Council on Historic Preservation; the Wisconsin Department of Transportation (WisDOT) was a concurring party to the agreement. The agreement stipulated that WisDOT would "make a good faith effort to relocate the Taylor Bridge." In addition, WisDOT pledged to create an interpretive display on the Taylor Bridge and another Douglas County structure, the Woodlawn Road Bridge. The display is to be housed at the Fairlawn Museum in Superior, Wisconsin, which is operated by the Douglas County Historical Society. Finally, WisDOT agreed to document the Taylor Bridge for the Historic American Engineering Record. Ayres Associates, the consulting engineers for the bridge project, retained Hess, Roise and Company to prepare the documentation. David Pantzlaff and Jan Zander coordinated the project for Ayres. Charlene Roise was principal investigator and senior historian for Hess Roise; Denis Gardner undertook field survey and research, and drafted the text. Jeff Hess, who inventoried the bridge in 1986, was also consulted. Jerry Mathiason completed the large-format photography as a subcontractor to Hess Roise.

Sources Cited

Published Sources

The Evening Telegram, November 30, 1982.

Armour, Robert. *Superior, Wisconsin, 1857-1885*. Superior: Silver-Tonsberg Printing, 1994.

May, Stan. "It's Birthday No. 109 for Douglas County Today." *The Evening Telegram*, February 3, 1963.

Merriman, Mansfield, and Henry S. Jacoby. *A Text-Book on Roofs and Bridges*. 5th ed. 2 vols. New York: John Wiley & Sons, 1926.

Official Directory, 1914-1915: County of Douglas. Superior: n.p., 1914.

Waddell, J. A. L. *Bridge Engineering*. 2 vols. New York: John Wiley & Sons, 1916.

Wisconsin Highway Commission. *The Principal Statutes Relating to the Federal Aid Highway Systems, State Trunk Highway Systems, County Trunk Highway Systems and County Systems of Prospective State Highways*. Madison: Published by the State, 1928.

Unpublished Sources

"A Brief History of Douglas County." In Douglas County clippings file, Superior Public Library, Superior, Wisconsin.

Amnicon Town Board Minutes. November 1984. Located at Amnicon Town Hall, Wentworth, Wisconsin.

Bridge file for P-16-97. Wisconsin Department of Transportation, District 8 Office, Superior, Wisconsin.

Hess, Jeffrey A. "Truss Bridge Intensive Survey Form for the Taylor Bridge." Prepared for the Wisconsin Department of Transportation, Madison, 1986.

Interviews

Barsness, Patricia, Town Clerk, Town of Amnicon. Interview by Denis P. Gardner, August 21, 1997.

Martin, Roy. Interview by Jeffrey A. Hess, October 20, 1986.

Pellman, Jim, Historian. Telephone interview by Denis P. Gardner, August 22, 1997.