

Chicago and Northwestern Railroad Bridge
Spanning the Eagle River
City of Eagle River
Vilas County
Wisconsin

HAER No. WI-106

HAER
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63-EAGR,
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PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Great Lakes System Office
1709 Jackson Street
Omaha, Nebraska 68102-2571

HISTORIC AMERICAN ENGINEERING RECORD
CHICAGO AND NORTHWESTERN RAILROAD BRIDGE

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- Location:** Spanning the Eagle River
City of Eagle River, Vilas County, Wisconsin
- USGS Eagle River West Quadrangle, Universal Transverse Mercator
Coordinates: Zone 16 Easting 325228 Northing 5087257
- Present Owner:** City of Eagle River
- Present Use:** Snowmobile bridge
- Significance:** The Chicago and Northwestern (CNW) Railroad Bridge is a 337', multi-span, riveted, steel, deck plate girder structure that was constructed in 1902. Built by the American Bridge Company, the trestle is significant as a component of the railway line that promoted the development of Eagle River. Indeed, the CNW provided access to much of northern Wisconsin and Michigan's Upper Peninsula, thus spurring the development of logging and tourism industries in the region. The growth of Eagle River in the late-nineteenth and early-twentieth centuries was attributable to these industries.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: 1902
2. Architect: Unknown
3. Original and subsequent owners:

1902-1980	CNW Railway
1980-2000	City of Eagle River
4. Builder: American Bridge Company
5. Alterations and additions: The bridge originally had a railing constructed from three sets of riveted steel plates, as well as steel encasements around the three piers anchored to the river bottom. By 1930, the plate railing had

CHICAGO AND NORTHWESTERN RAILROAD BRIDGE
HAER No. WI-106
Page 2

apparently been replaced with an open steel railing.¹ Following the 1980 abandonment of the rail line, the tracks and railing were removed. The structure was then adapted for snowmobile trail use by installing new decking and an open, two-course wood railing. Additionally, the steel casing was removed at some point from the three piers. In response to the accelerated deterioration that resulted, those pier foundations were encased in concrete after 1994.²

B. Historical Context:

LOCAL AREA HISTORY & IMPACT OF THE RAILROAD

Due to its remote geographic location and lack of accessibility, Eagle River was sparsely populated before the arrival of the railroad. Originally settled by a handful of pioneers engaged in trading and logging, the community of Eagle River was officially organized in 1857. Little growth occurred until 1883 when the Milwaukee, Lake Shore & Western Railroad Company extended its line north from Three Lakes--about nine miles to the south. The railroad reached Eagle River in June of that year on its way to Watersmeet, MI, approximately 27 miles to the north. Consequently, 1883 initiated "the rise of the village," as "the influx of newcomers began."³

Railway lines in northern Wisconsin were important for the development of the lumber industry since they could transport timber from forest to mill, and lumber from mill to market. Before the arrival of the railroad, logs were generally floated along the Eagle River to the Wisconsin River, and then on to the Mississippi River and markets to the south. However, due to its rapids and length, the Wisconsin was an expensive and damaging river on which to transport logs and lumber.⁴ With the arrival of the railroad, vast stands of pine in the vicinity of Eagle River were harvested without the costs and damage associated with river conveyance. By 1886, lumber camps near Eagle River were purchasing significant amounts of supplies

¹ Historic Photograph, Eagle River Historical Museum, c. 1910; Historic Photograph, Collection of Jim Bonson, Eagle River, c. 1930.

² J. Palzkill, "Bridge Inspection Report, Eagle River Snowmobile Bridge, Project 1601-12-00," (Fleming, Andre & Associates, Inc., Eau Claire, WI 1994).

³ George O. Jones, comp., History of Lincoln, Oneida and Vilas Counties (Minneapolis: H.C. Cooper, 1924): 184.

⁴ Barbara Wyatt, "Logging and Lumber Milling," Cultural Resource Management in Wisconsin 2, (1986).

from the community, thus adding greatly to its growing prosperity.⁵

In 1893 Vilas County was organized with Eagle River designated as the seat of government. With a population of 1,500 in 1895 and 1,600 in 1900, the community claimed one planing mill and three saw and shingle mills.⁶ The town's prosperity peaked between 1890 and 1910, a period which also saw the height of the logging industry in the immediate region. The turn-of-the-century era also featured a series of mergers and reorganizations among railroad companies, during which the CNW purchased the Milwaukee, Lake Shore & Western Railroad Company.

The railroad did much to develop a lucrative tourism industry in northern Wisconsin. With dwindling loads of lumber to haul, new sources of revenue had to be found. In an effort to generate traffic by attracting tourists to the area, railroads often served as the North Woods' first chamber of commerce. Indeed, railroad company promotions advertised the area as a resort destination as early as 1898--although the recreation industry itself dates to the 1880s.⁷ The White Spruce Inn, for example, sat on the bank of the Eagle River by 1886, with the *Old Eagle* steamboat ready to transport travelers along the river as needed. Advertisements, which benefited both the railroad and the community, enticed sportsmen to "the finest lakes in the state," with unsurpassed and bountiful hunting and fishing.⁸

The presence of the railroad notwithstanding, Eagle River resort and business owners also wanted to capitalize on the growing popularity of the automobile. Thus they worked to improve the road system leading to their community. The *Big Fish Trail* was one such route and was meant to direct tourists "in the best possible manner" to Eagle River.⁹ By 1925 the community listed many summer resorts and tourist services, including taxicabs, restaurants, sporting good dealers, a confectioner and two chiropractors.¹⁰

⁵ Jones, 186.

⁶ R.L. Polk & Co., Wisconsin State Gazetteer and Business Directory 1895-96 (Chicago: R.L. Polk & Co., 1895).

⁷ Daniel D. Scrobell, Early Times: The Early History of the Minocqua Area as Seen Through the Pages of the "Minocqua Times" Newspaper (Minocqua, WI: Heritage House Publishing, 1998): 26.

⁸ R.L. Polk & Co., Wisconsin State Gazetteer and Business Directory 1895-96.

⁹ Eagle River Centennial, Vilas County News-Review, 20 June 1957, Special Edition, second section.

¹⁰ R.L. Polk & Co., Wisconsin State Gazetteer and Business Directory 1924-25 (Detroit: R.L. Polk & Co., 1924).

CHICAGO AND NORTHWESTERN RAILROAD BRIDGE
HAER No. WI-106
Page 4

Tourism continued to develop strongly, but it relied more heavily on the automobile. The railroad continued to provide, and the bridge across the Eagle River continued to facilitate, passenger service into the City of Eagle River until 1965 and freight service until 1980.

METAL GIRDER BRIDGES

Metal girders were first adopted for use in railroad bridges in 1847. The development of riveted plates with reinforced vertical stiffeners produced designs that were simple to construct, and that could span distances of less than 100 feet.¹¹ Until steel became affordable after 1890, plate girder construction was not used widely on highway or railroad bridges.¹² Once the price of steel stabilized, however, plate girders became cheaper to build than other kinds of structural systems for spans less than 70 feet. Deck girder bridges were built as late as 1939 and utilized on both highways and railroads.

Plate girders offered many advantages to railroads. As trains became heavier and the traffic and loads greater, other types of bridges were thought to be too flexible to serve dependably. Continuous structures, such as those constructed with plate girders, were generally free of the unwanted, secondary stresses that the companies feared. Additionally, due to its simple design, there was only a small opportunity for error in plate girder bridge construction and performance. As well, the risk of faulty workmanship was minimized because the bridge components were fabricated under supervised, factory conditions. The girders were then easily transported to their location, "leaving the bracing between the girders as the only parts requiring hand-riveting after the girders are in place on the piers."¹³ Once in place, plate girder bridges required little attention besides a layer of paint to prevent rust.

CHICAGO & NORTHWESTERN RAILROAD BRIDGE

The first bridge at this location was constructed of wood in 1883. On 10 November 1902, *The Vilas County News* reported a crew of men from the CNW preparing for a new steel bridge that would be built during the winter.¹⁴ The bridge plate identifies

¹¹Crossings over 100 feet tended to become cumbersome and expensive.

¹² Charles K. Hyde, *Historic Highway Bridges of Michigan* (Detroit: Wayne State University Press, 1993): 89.

¹³ J.B. Johnson, C.W. Bryan and F.E. Turneure, *The Theory and Practice of Modern Framed Structures* (New York: J. Wiley & Sons, 1910): 3-4.

¹⁴ *Vilas County News-Review*, 10 November 1902.

the American Bridge Company of New York as the builder and 1902 as the date of construction.

The American Bridge Company of New York was formally organized on 14 April 1900 by J.P. Morgan and Company. It became a subsidiary of the United States Steel Corporation in April 1901 and operated until 1927. As described by Victor Darnell, the American Bridge Company was an amalgamation of many smaller firms: "twenty-four companies, fifty percent of the nation's fabricating capacity, were purchased the first year" representing many of the nation's foremost bridge builders at the turn of the century.¹⁵ The American Bridge Company headquarters in New York was responsible for contracts, construction, and sales until at least 1913. Generally, shop drawings were made at one office and were distributed to the shops for fabricating, thereby maintaining a central control. With steel plate girders as the primary structural components, the American Bridge Company offered railroads a cost effective alternative to the truss bridges that were popular at the time.

The CNW bridge across the Eagle River is a plate girder structure that served the railroad reliably, if unspectacularly, from 1902 to 1980. Despite the dearth of information available about the bridge itself, it was a key component of the railroad line that facilitated the travel of freight and passengers between Watersmeet, MI and the population centers of Milwaukee and Chicago to the south. As such, it was a silent, yet invaluable asset to the development of Vilas County in general, and the community of Eagle River in particular.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural character: The CNW Railroad Bridge was built in 1902. It is a 337' structure comprised of three, centrally-placed, riveted, steel, deck plate girder spans and eleven, shorter, approach spans created from timber piles (seven spans to the north and four to the south).
2. Condition of fabric: The historic fabric of this structure is fair. The steel exhibits only light rust and pitting, however, the piers and bents suffer rot and deterioration in many of their individual, timber components.

¹⁵ Victor Darnell, A Directory of American Bridge-Building Companies, 1840-1900 (Washington, D.C.: Society for Industrial Archeology, Occasional Publication No. 4, 1984).

B. Description:

The bridge is a 337', riveted, steel, deck plate girder structure with timber approach spans at each end. The bridge sits about 10' above the high water mark. The central, steel plate girder portion of the bridge consists of three spans, each approximately 65' in length. All approach spans are supported by cross-braced, 12", treated timber pile bents, as well as the abutments on each end and more substantial, timber piers that also support the ends of the plate girders closest to the approach spans' termini. The seven north spans are all 13'-0" long, except for span #5 (counting from north to south) which is 12'-5" long and span #7 which is 10'-6". The four south approach spans are (from north to south) 10'-9", 12'-7", 13'-0" and 12'-3" long, respectively. The deck that traverses the approach spans is carried by 13" x 13" beams atop the bents, as well as two sets of three, 16" x 8" timber stringers.

Four large piers carry the plate girder spans, the northern three of which are anchored to the river bottom and encased in concrete. The foundation of each pier is comprised of three rows of eight, 14" x 12" timbers tied with cross-bracing, atop which are four courses of 12" x 12" timbers and to which the bearings are attached. The plate girders from which the main spans are constructed are fabricated from .5" thick plates and angles, thus resembling "I" beams. Each girder is 6'-6" high and stiffened with 3.5" x 5" angles. The girders are placed upon the piers in such a fashion that the outer-edge-to-outer-edge distance between them is 7'-9". The bearings are 2'-6" long and 8" high with a 1" plate on which the girder ends rest. The deck itself is approximately 14' wide, with 8" x 8" ties.

C. Setting:

Spanning the Eagle River in the City of Eagle River, the bridge parallels Railroad Street (USH 45), from which it is approximately 50' to the west. The area to the north generally consists of commercial development that has occurred in the last 20 years, while that to the south encompasses the historic, Eagle River business district --including the historic CNW depot. Riverview Park (HABS No. WI-356) is immediately to the southwest of the bridge.

PART III. SOURCES OF INFORMATION

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CHICAGO AND NORTHWESTERN RAILROAD BRIDGE

HAER No. WI-106

Page 8

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PART IV. PROJECT INFORMATION

This project has been sponsored by the Wisconsin Department of Transportation. It was directed by Dr. John N. Vogel, Principal Investigator and Sr. Historian for Heritage Research, Ltd. (HRL), who also provided the photographic documentation and compiled additional descriptive data. The technical information and historic context was originally prepared by Chad D. Moffett and Christina Slattery of Mead & Hunt, Inc. Michael T. McQuillen, HRL Project Historian, subsequently reviewed, supplemented and edited that material, and compiled this document.

CHICAGO AND NORTHWESTERN RAILROAD BRIDGE
HAER No. WI-106
Page 9

