

Dunnville Bridge  
Spanning the Red Cedar River at County Trunk Highway Y  
Downsville Vicinity  
Dunn County  
Wisconsin

HAER No. WI-95

HAER  
WIS  
17-DOW.V,  
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
Department of the Interior  
National Park Service  
Great Lakes Systems Office  
1709 Jackson Street  
Omaha, Nebraska 68102-2571

HISTORIC AMERICAN ENGINEERING RECORD

DUNNVILLE BRIDGE  
HAER No. WI-95

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1-

Location: Spanning the Red Cedar River at County Trunk Highway Y,  
Downsville Vicinity, Dunn County, Wisconsin

USGS Quad: Durand North

UTM Coordinates: 15:587378:4951875

Date of Construction: 1934

Present Owner: Dunn County

Present Use: Highway Bridge

Significance: The Dunnville Bridge is an excellent example of a steel, Warren overhead truss with verticals. It is among the earliest examples of the Wisconsin Highway Department's use of this design; previously, the agency had employed Pratt and Parker trusses for overhead spans. While a number of overhead Warren truss bridges were subsequently built, less than three dozen examples of this type now survive in the state. The Dunnville Bridge was built by the Worden-Allen Company of Milwaukee, one of the most prolific Wisconsin bridge builders in the early decades of the twentieth century.

Historians: Chad J. Perkins and Charlene K. Roise  
Hess, Roise and Company, Minneapolis, Minnesota  
April 1996

The Dunnville Bridge (WisDOT ID P-17-962) is located in rural southwestern Wisconsin just east of the site of the once-thriving village of Dunnville (see Figures 1 and 2). The bridge carries County Trunk Highway Y, a paved route running in a generally north-south direction, across the Red Cedar River. Not far downstream, the Red Cedar joins the Chippewa River, which flows southwesterly to the Mississippi. The bridge is oriented on a northeast to southwest axis. Tree-covered, rolling hills dominate the landscape. Just past the northeast end of the bridge is an abandoned railroad right-of-way, now the Red Cedar State Trail, which follows the river. Beyond the trail, on either side of the road, are the foundations of several buildings from the former village of Dunnville. South of the bridge is a public boat landing, with parking. A small park is southwest of the bridge.<sup>1</sup>

The Dunnville Bridge consists of a single-span, steel, twelve-panel, riveted, Warren overhead truss with verticals. Sub-struts and horizontal members serve as additional bracing within each web. The span has a length of 66 meters (216 feet). The truss carries a roadway with a 6-meter-wide (20-foot-wide) concrete deck with concrete curbs. The curved upper chords and inclined end posts are composed of back-to-back channel sections tied with a cover plate and V-lacing. The lower chords are formed by back-to-back channel sections joined by battens. Rolled I-beams are used for all verticals and diagonals. The horizontal bracing members are channel sections. The railings consist of an angle section on the top and a bar on the bottom, with lattice work between. A channel section is attached to the bottom of each bar. Angles with

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<sup>1</sup>The bridge description is based upon a field inspection of the structure by Chad J. Perkins, 13 February 1995, the Wisconsin Department of Transportation (WisDOT) bridge card for Bridge B-17-962, and a printout from the WisDOT bridge database dated 16 December 1994.

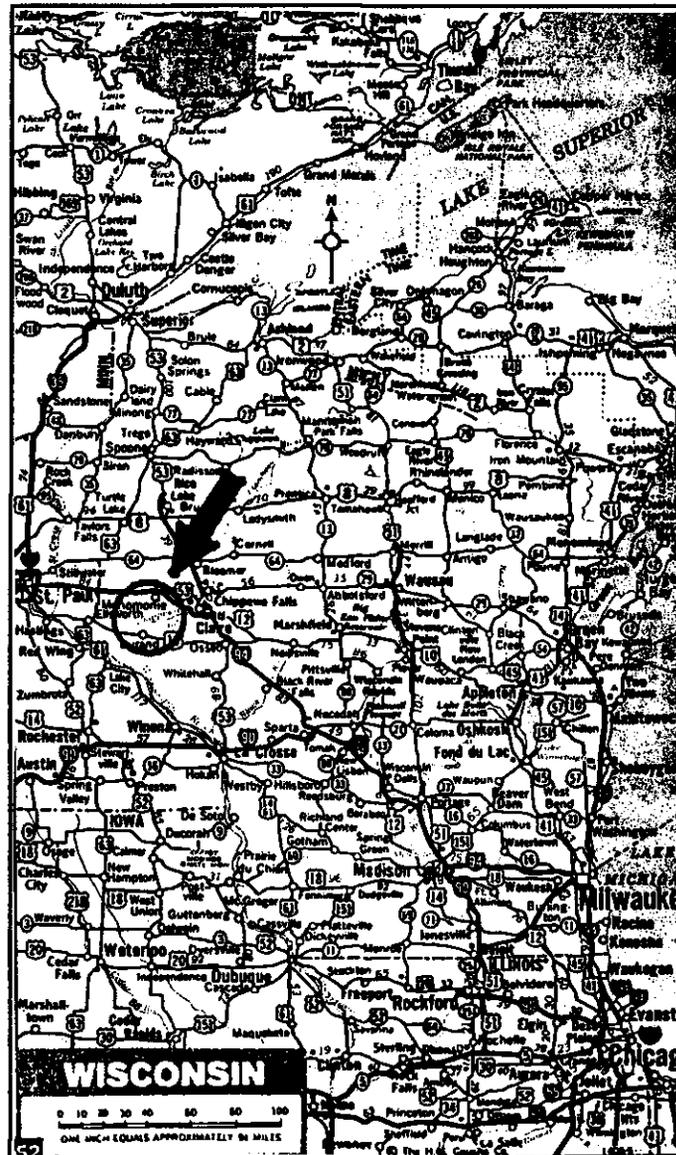
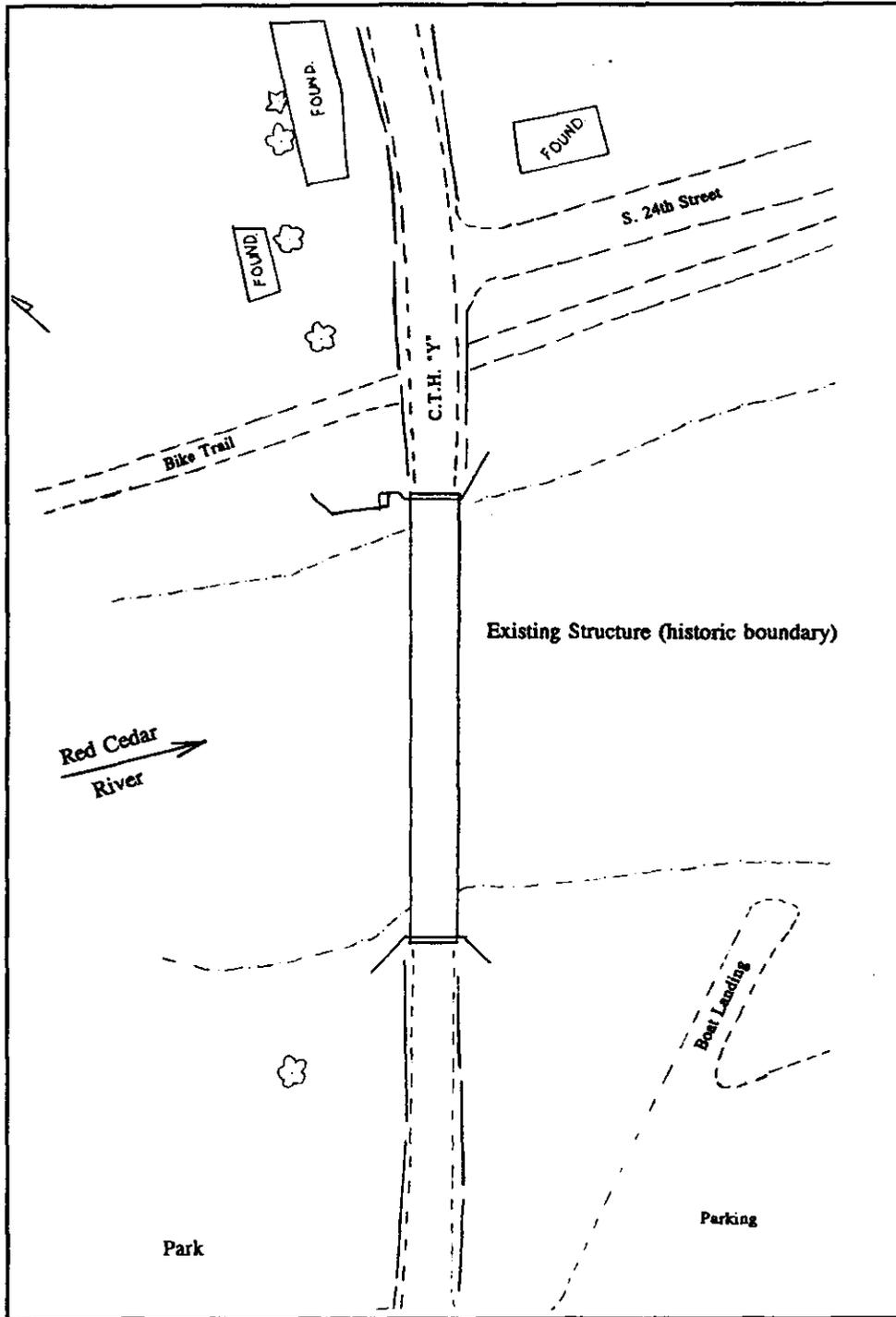


Figure 1 Map of Wisconsin with the vicinity of the bridge circled.



**Figure 2 Site Plan of the Dunnville Bridge, Dunn Township, Dunn County, WI. Scale: 0.02572 mm = 25.72 m (1: = 84.38'). Source: Adaptation of Plan for SHSW #94-1899/DN, Ayres Associates, 1994.**

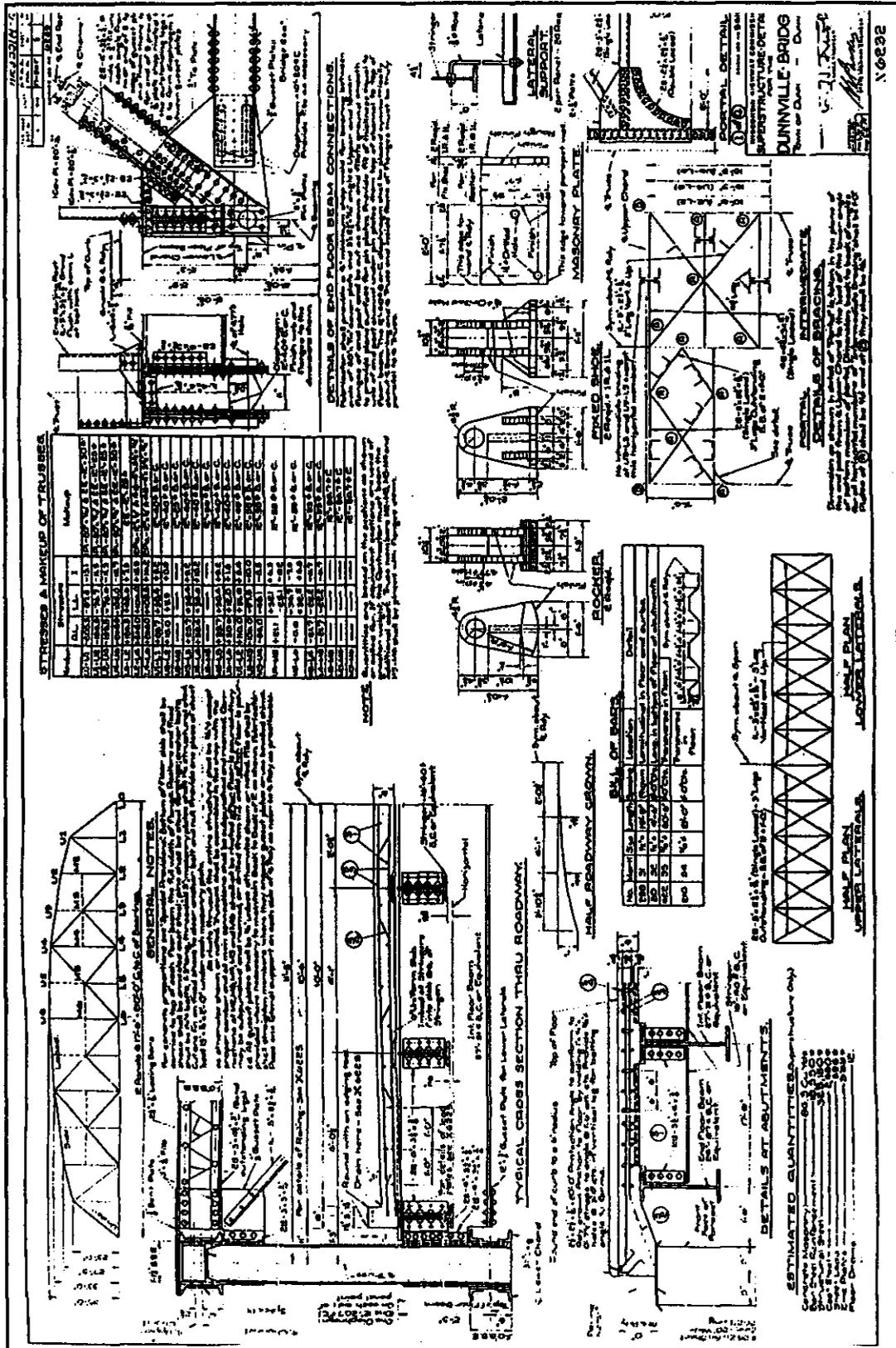


Figure 3 Wisconsin Highway Commission, "Superstructure Details for the Dunnville Bridge," Plan X6232.

V-lacing form the portal bracing members. The sway bracing consists of three horizontal members made of back-to-back angles tied with V-lacing. These horizontal members are joined by diagonal angle sections. The top laterals are composed of angles connected by V-lacing, and the bottom laterals are angles. Steel I-beams, riveted to the superstructure, serve as floor beams. The stringers are also I-beams, which are riveted to the floor beams. Rocker bearings at the southwest end allow for expansion. Concrete abutments support the structure. The wing walls, which angle outward, and the back walls are also concrete. A steelmaker's mark, "Inland," appears on some members.

The Worden-Allen Company of Milwaukee served as the builder and contractor when the bridge was constructed in 1934, following plans prepared by the Wisconsin Highway Commission.<sup>2</sup> The only known alteration took place in 1936 when, to discourage spring ice jams, the structure was raised by adding four feet of concrete to the abutments, back and wing walls.<sup>3</sup> The physical condition of the bridge is good and the historic integrity has been maintained.

The village of Dunnville blossomed briefly at this location in the mid-nineteenth century. The village was situated at the northernmost steamboat landing on the Red Cedar River, near

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<sup>2</sup>Construction information comes from a bridge plate, located on the southeastern end post, which reads "Worden Allen Co., Contractors, 1934"; from bridge plans by the Wisconsin Highway Commission for "Superstructure Details for the Dunnville Bridge," Plan X6232, 23 June 1934; and from the WisDOT bridge card, which also notes plans X6234 and X6225.

<sup>3</sup>"Raise Dunnville Bridge 4 Feet to Avoid Ice Jam," *Dunn County News*, 30 April 1936, sec. II, p.2; Proceedings of the Dunn County Board of Supervisors, 7 May 1936, pages 30 and 31, Dunn County Courthouse, Menomonie, WI.

its convergence with the Chippewa River. These rivers provided access to the interior of Wisconsin before the railroads arrived, and transported logs harvested from the extensive pine forests to the north. Knapp, Stout, and Company, the main lumber interest in the region, was responsible for much of Dunnville's commercial development. During the 1850s, the company erected a store, hotel and warehouse on the northeastern bank of the river to serve its workers and other settlers drawn to the area. The foundations of these buildings can still be found near the end of the bridge (see photograph WI-95-11). The company unloaded supplies at the boat landing, which is still in use at the southern end of the bridge. A prosperous future seemed assured in 1854 when Dunnville, thanks to its central location, became the seat of government for Dunn County. This geographical advantage was lost four years later, however, when Pepin County was formed from the southwestern part of Dunn County. Also in that year, Dunnville's wooden courthouse burned down. The county seat was soon claimed by Menomonie, and Dunnville gradually faded away. The memory of Dunnville has been perpetuated by the Newbery Medal-winning children's book, *Caddie Woodlawn*, published in 1935. The author, Carol Ryrie Brink, related stories told to her by her grandmother, the real "Caddie," who grew up during the mid-1800s near the village of Dunnville.<sup>4</sup>

Dunnville's rise and fall, however, did not affect the importance of the adjacent river

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<sup>4</sup>C.S. Bundy, *Early Days in the Chippewa Valley* (Menomonie, WI: Flint-Douglas Printing Co., 1916), 9-11; George Forrester, ed., *Historical and Biographical Album of the Chippewa Valley, Wisconsin* (Chicago: A. Warner, 1891-1892), 122-124, 137; F. Curtiss-Wedge and Geo. O. Jones, comps., *History of Dunn County, Wisconsin* (Minneapolis: H.C. Cooper, Jr. and Co., 1925), 209, 210; John M. Russell, ed., *Caddie Woodlawn: A Pioneer Girl on Wisconsin's Frontier* (Menomonie, WI: Dunn County Historical Society, 1970), 3-11; and William F. Stark, *Ghost Towns of Wisconsin* (Sheboygan, WI: Zimmerman Press, 1977), 151-161.

crossing, which has been used since at least 1849. The original survey of the region completed in that year notes a ford in the vicinity. An 1877 map lists a ferry at that location. Plat maps from 1888 and 1927 show what appear to be bridges.<sup>5</sup> At least two other bridges have occupied the site. Historical photographs, both undated, show portions of metal Pratt trusses, one of which may have been a double-intersection Pratt.<sup>6</sup> A stone abutment that supported one or both of these bridges lies northwest of the current northeast abutment. The fate of the earlier bridges is unknown, but they might have succumbed to the periodic freshets of the Red Cedar.

The present Dunnville Bridge was one of five built by the Wisconsin State Highway Commission in 1934 as part of a flood-relief program. It was also a Depression-relief project. Funds were provided by the federal government under Section 204 of the National Industrial Recovery Act, New Deal legislation designed to put the unemployed back to work. In exchange for financing the construction, Washington required that the county subsequently maintain the bridges, which were on county trunk highways. In 1935, the Dunn County Board of Supervisors accepted ownership of the new structures.<sup>7</sup>

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<sup>5</sup>The plat maps, in the collection of the Dunn County Historical Society, Menomonie, WI, include the original survey by Alexander Anderson, Deputy Surveyor, 1849, registered by George B. Sargent, Surveyor General, Dubuque, IA, March 22, 1853; *Map of Dunn County, Wisconsin* (N.p.: Nash and Morgan, 1877; reprint, Menomonie, WI: Dunn County Historical Society, 1994), n.p.; *Plat Book of Dunn County, Wisconsin* (Minneapolis: C.M. Foote and Co., 1888), n.p.; and *Atlas and Plat Book, Dunn County, Wisconsin* (Des Moines, IA: Kenyon Company, 1927), 45.

<sup>6</sup>The photo of what may be a double-intersection Pratt is in Stark, 158. The other historical photo is found in Russell, 4.

<sup>7</sup>"Must Pass on County Maintenance of Five Bridges," *Dunn County News*, 28 February 1935, sec. II, p.2; "Five More Bridges to be County-Maintained," *Dunn County News*, 21 March 1935, sec. II, p. 1; "Skeleton Report of Bridge Work Given," *Dunn County News*, 1 August 1935, sec. I, p. 4; and Proceedings of the Dunn County Board of Supervisors, 15 March 1935, pages 1, 2, 8-13, and 25 July 1935, pages 7 and 8, Dunn County

According to a bridge plate on the southeastern end post of the bridge, the Worden-Allen Company was the builder. Worden-Allen was founded just after the turn of the century and was active in Wisconsin until at least the mid-1930s. The firm was one of the largest bridge builders in the Midwest, with offices in Milwaukee, Chicago, and Houghton, Michigan. The Lackawanna Bridge Company, organized in 1909, was a subsidiary of Worden-Allen. Lackawanna's offices, located in Milwaukee, Buffalo, and New York City, further extended Worden-Allen's influence.<sup>8</sup>

For the Dunnville crossing, the firm produced a Warren truss, a design patented in 1848 by two British engineers. Warren trusses are distinguished by their triangular web configurations, which are composed of diagonal sections that support both tension and compression. Some examples, like the Dunnville Bridge, also have vertical members which handle nominal stresses.<sup>9</sup> The further addition of sub-struts and horizontal bracing members makes the Dunnville Bridge unique. Only one similar bridge, the Tainter Lake Bridge, is known to be extant in the state. It was one of the four other bridges built as part of the 1934 flood program in Dunn County.

Plans for the Dunnville Bridge were prepared by the Wisconsin State Highway Commission. The commission began developing and distributing standard plans for common

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Courthouse, Menomonie, WI.

<sup>8</sup>Robert S. Newbery, Jeffrey A. Hess, and Robert M. Frame, III, *Historic Highway Bridges of Wisconsin*, vol. 2: *Truss Bridges* (Madison, WI: Wisconsin Department of Transportation, forthcoming).

<sup>9</sup>*Cultural Resource Management in Wisconsin: A Manual for Historic Properties*, vol.2, transportation section 12, 17; and Newbery, et al.

bridge types shortly after it was formed in 1911. Soon, the design of most new bridges in the state followed these plans. Standard plans for Pratt overhead trusses were adopted by the commission in 1912. The Pratt and a modified Pratt, the Parker truss, remained the most popular overhead trusses until the mid-1930s, when they lost favor to the Warren.<sup>10</sup> An inventory of the state's overhead truss bridges prepared by the Wisconsin Department of Transportation in 1980 shows a general pattern. Prior to 1937, Pratts were used for shorter overhead spans and Parkers for the longer spans. In 1934, three Warren trusses, including the Dunnville Bridge, appeared. From 1937 on, Warrens were built almost exclusively. Due to attrition, the 1980 inventory may not include all overhead trusses built in the state, but it shows that the Dunnville Bridge was an early use of the style by the highway commission. It was also apparently an experimental design: beginning in 1937, Warren spans were based on highway commission standard plans of a different design than the Dunnville structure.<sup>11</sup>

The Dunnville Bridge was determined eligible for the National Register of Historic Places in 1995 because of its unusual design. It was recognized, as well, as an early example of the Wisconsin State Highway Commission's use of the Warren overhead truss. It was also found significant as the product of a prolific early twentieth-century Wisconsin bridge builder, the

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<sup>10</sup>*Cultural Resource Management in Wisconsin: A Manual for Historic Properties*, vol.2, transportation section 12, 3 and 17; and Newbery, et al, show the transition from the Pratt to the Warren overhead truss. For the plans of the Pratt overhead truss, see Wisconsin Highway Commission, "Steel Highway Bridge, Concrete Floor, 112'-0" Span, 16'-0" Roadway," Plan A15, 24 January 1912.

<sup>11</sup>Comparative bridge data is found in the printed report from the WisDOT bridge database entitled "Potential Historic Bridges," 27 October 1980, 58-61; and in a correspondence from Robert S. Newbery to Richard A. Bernstein, 17 November 1993.

Worden-Allen Company of Milwaukee. The dwindling number of bridges of this type adds to the importance of this survivor. Of the five pre-1937 Warren overhead trusses extant in Wisconsin, the Dunnville Bridge has the second-longest span.<sup>12</sup> Although built after the decline of Dunnville, the bridge's location at a traditional river crossing is also of interest.

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<sup>12</sup>Of the five extant Warren overhead trusses, three were built in 1934, one in 1923, and one in 1904. The 1923 bridge is believed to have been moved and modified, and the 1904 bridge may have been designed by a railroad company. Information on the extant bridges is from an undated report from WisDOT's bridge database.

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\_\_\_\_\_. "Superstructure Details for the Dunnville Bridge," Plan X6232, 23 June 1934.

#### Project Information

The Wisconsin Department of Transportation plans to use federal funds to replace the Dunnville Bridge during the summer of 1996. Since the bridge is eligible for listing in the National Register of Historic Places, this Historic American Engineering Record study has been

prepared as part of the Federal Highway Administration's responsibility under Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the Federal Highway Code. Hess, Roise and Company was retained to complete the documentation by the project engineer, Ayres Associates, of Eau Claire, Wisconsin.