PREPARED BY

Mead & Hunt

Historic Context and Evaluation Criteria

HISTORIC STANDARD TRUSS BRIDGES IN WISCONSIN

WISCONSIN DEPARTMENT OF TRANSPORTATION

March 2024

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Cover image: The 1910 Woodford Drive Bridge (AHI No. 14182) in Washington County.

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APPENDICES

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1. Introduction and Purpose

Prepared for the Wisconsin Department of Transportation (WisDOT), this study of standard truss bridges in Wisconsin is intended to assist WisDOT in fulfilling its historic preservation responsibilities as mandated by the National Historic Preservation Act of 1966, the U.S. Department of Transportation Act of 1966, and related amendments, laws, and regulations. The report focuses on the identification, documentation, and evaluation of standard metal-truss bridges within the boundaries of the state.

Previous works on historic bridges in Wisconsin have been completed and was initiated by the Historic Bridge Advisory Committee (HBAC). The HBAC was established in 1981 by WisDOT to conduct a statewide survey of historic bridges focused on movable, metal-truss, stone-arch, and concrete-arch bridges. Metal-truss bridges were covered in volume two of the series, *Historic Bridges of Wisconsin*, published in 1998. While this volume covered truss bridges up through 1941 and did discuss standardization of truss bridges by the State Highway Commission of Wisconsin (SHC, now WisDOT) in its context, additional standard truss bridges have come of historic age in the two decades since. Furthermore, a previous understanding that standard truss bridges were ubiquitous throughout the state has greatly contributed to the rapid loss of these resources as they have been deemed fracture-critical and are routinely removed and replaced. As such, a supplementary study focusing solely on these resources is needed to provide deeper investigation of the history of standard truss bridges and criteria specific to evaluating such structures as they become rarer.

It is also important to clarify the definition of a standard bridge, as not all truss bridges fall within this category. A standard bridge refers to a bridge designed with standard plans. Standard bridge plans were first released in 1911 by the SHC as a result of Progressive Era policies of uniformity, safety, and professionalism as coordinated by a centralized governmental authority. Thereafter, the SHC regularly published best-practice bulletins, reviewed and inspected all State-aided (as well as select County- and Federally-aided) bridge construction projects and materials, and kept standard bridge designs and specifications updated and aligned with evolving engineering practices.[1] Most typical crossings, regarded generally as those under 300 feet in length and over features like water or ravines, were suitable for standard plan bridge projects. The SHC would maintain the general features of their standard plans such as materials, bridge type, configuration, road width, and riveting, and plug in project specifics like length. The practice of publishing standard truss plans continued through 1945, after which point plans were continuously modified by the SHC, consultants, and computers in place of official plan updates.

Not all bridges could be standardized. Particularly lengthy bridges, or bridges at unique locations such as interstate (state-to-state) crossings, required non-standard, “special” bridge plans. By definition, the SHC deemed any bridge determined to be a transportation necessity, required to be more than 300 feet in length, or falling under “unusual” conditions to be special.[2] The majority of these special bridges were

[1] Wisconsin Department of Transportation, *Historic Highway Bridges in Wisconsin, Volume 2: Truss Bridges* (Madison, Wis.: Wisconsin Department of Transportation, 1998), 83, 89.

[2] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915* (Madison, Wis., 1915), 21.

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truss bridges due to their extreme length requirements and a truss span's ability to support such great lengths. These plans could not be standardized because the crossings represented particular engineering challenges, required truss formations beyond the standard Warren or Pratt varieties, or did not otherwise lend themselves to existing standard plans. Therefore, special and unique plans and specifications were drafted by the SHC's bridge engineers for each of these projects and funding came from a separate pool.[3] These special bridge projects by their very nature represented the minority of bridge projects in the state and were undertaken fairly consistently by the SHC from 1911 through 1960. Because they were not standard truss bridges, they will not be covered further in this context.

Apart from special bridges, there are also otherwise non-standard truss bridges that are non-standard truss types like Baileys, Kingposts, Queenposts, and other less common truss configurations, as well as any truss bridges designed and commissioned by entities other than the SHC. City and County bridges, bridges off the state highway system, and pedestrian bridges are all examples of truss bridges likely to be non-standard, but may not be classified by the SHC as "special" bridges.

In the fall of 2022 and spring of 2023 a survey was conducted of all known extant truss bridges that had not been previously surveyed or evaluated for National Register of Historic Places (National Register) eligibility. The survey pool contained a total of 22 bridges. The survey was completed by the University of Wisconsin – Milwaukee Cultural Resource Management program (UWM-CRM) and the Museum Archeology Program (MAP). The purpose of the survey was to complete a general inventory of extant truss bridges in Wisconsin and provide field data to inform this context and evaluation criteria. However, it should be of note that the survey pool was not limited to SHC standard truss bridges. The survey pool contained a variety of special, standard, and otherwise non-standard truss bridges. Completed survey forms are included in Appendix B.

In addition to in-depth field survey and inspection, supplemental research was conducted on standard bridge plans, individual bridge histories, and the SHC through materials made available by the Wisconsin Historical Society (WHS) library and WisDOT. Source material provided by WisDOT consisted of select biennial reports of the SHC; standards and specifications of the SHC from 1931, 1935, and 1941; a series of Wisconsin truss bridge studies from the late 1970s; and a sizeable but incomplete collection of 194 standard truss plans from 1911 to 1940 (see Appendix A; copies of these plans are publicly available at https://wisdot.box.com/s/jwfjcsp8uz0eeq2z44um2glysjpdhy4x).[4] In addition to standard plans, an extremely limited supply of "detail sheets" were provided by WisDOT and consist of specific standard bridge details, like railing style, concrete abutments, and decking, and were seemingly updated less

[3] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 21.

[4] There is no way to know how many standard truss plans the SHC produced in total and there are certain sets of standard truss plans we know are missing that were alluded to in other sources, such as the 1945 plans. However, WisDOT engineers shared the full collection of standard truss plans they have in their collection and standard plans were not held at any other repository investigated in this study. Additionally, 37 plan sheets were undated and therefore excluded from analysis. Footnotes denote the use of the available standard plan pool to conduct analysis throughout the report.

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frequently than full plan sheets. However, with only a few to analyze and no mention of them in other source material, there is no way to know how often they were used. Deductions, generalizations, and statistics throughout the context and evaluation criteria were based on the plans and detail sheets that were provided. Additionally, Mead & Hunt, Inc. (Mead & Hunt) worked with WisDOT to compile a spreadsheet of known extant truss bridges in the state as of spring 2023 (standard and otherwise). General information, such as location, truss configuration, year built, and evaluation status, was gathered for each of these 125 bridges.

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2. Truss Bridge Design and Identification

There are three basic aspects to all trusses: 1) they are a combination of relatively small members that act as a beam by frames or joints; 2) each member is subjected to tension or compression only; and 3) they are composed of triangular configurations.[5] Truss bridges could be designed to carry the maximum live load with a minimal dead load—meaning the weight of the bridge itself—which allowed them to be very effective at carrying larger live loads over great span lengths.[6]

Truss bridges are divided into three broad types: pony (also known as low) trusses, thru (also known as overhead or high) trusses, and deck trusses. Both pony and thru trusses have roadways located at or near level with the bottom chord, so that traffic travels between the sides of the truss spans. Thru trusses typically have parallel overhead structural members and bracing. Pony trusses have no overhead structural members.[7] In a deck truss, the roadway is located at or level with the top chord, so that traffic travels above the structure, with the truss members below the roadway. This type requires considerable vertical clearance to allow for the sizeable truss members below deck.[8] Figure 1 illustrates the three types.

[5] Parsons Brinckerhoff and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types* (prepared for The National Cooperative Highway Research Program, Transportation Research Council, and National Research Council, October 2005), 13, http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25(15)_FR.pdf.

[6] Parsons Brinckerhoff and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types*, 14.

[7] Historic American Engineering Record, “Trusses, a Story by the Historic American Engineering Record [Poster]” (National Park Service, 1976).

[8] Parsons Brinckerhoff and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types*, 16–17.

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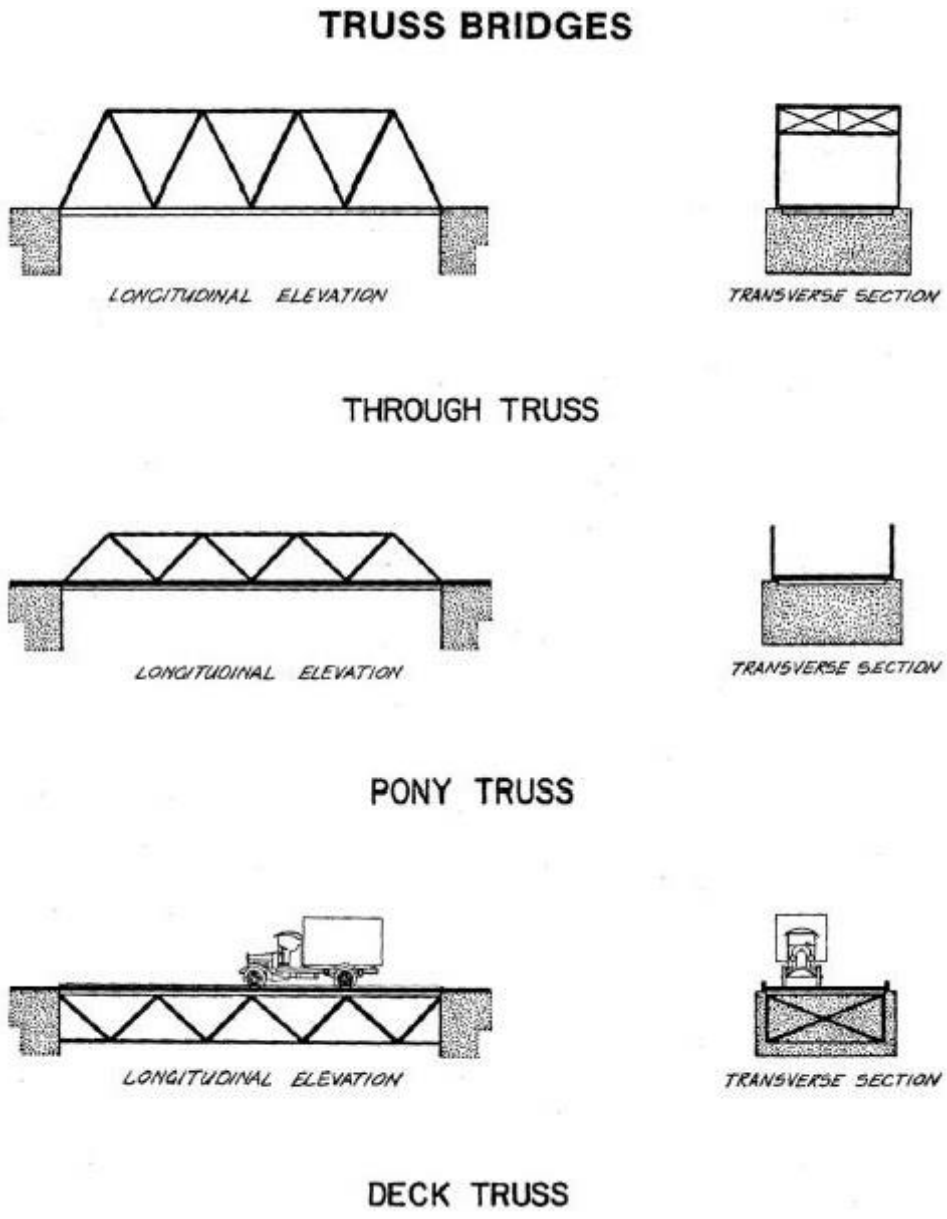

Figure 1. Basic truss types as shown on a Historic American Engineering Record poster.[9]

After type, a truss bridge can be further categorized by its truss member configuration. This refers to the manner in which the structural and support members of the truss system are organized and varies depending on which members are in compression or tension. Generally, configurations are named after the person who first engineered or patented the designed.[10] The most common standard truss bridge configurations in Wisconsin were Warren and Pratt, followed by Parker. The Warren truss is defined by its

[9] Historic American Engineering Record, "Trusses, a Story by the Historic American Engineering Record [Poster]."

[10] Historic American Engineering Record, "Trusses, a Story by the Historic American Engineering Record [Poster]."

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equal-sized members and the ability of some of those members to act in both tension and compression. A Pratt truss is a simple arrangement of diagonals in tension and verticals in compression.[11] Wisconsin also has Camelback and Pennsylvania trusses, which are specific Parker configurations defined by exactly five top chord slopes, and panels subdivided by ties and struts, respectively.[12] Figure 3 illustrates extant truss configurations in Wisconsin.

Lastly, truss bridges can be categorized by their structural member connection type. Truss members were historically connected by one of two methods: pins or rivets (see Figure 2). The earliest examples of truss bridges were connected with pins. By 1911 and the introduction of SHC standard bridge plans, all trusses were being constructed with rivets because of their structural advantages. However, a common truss bridge rehabilitation practice throughout the latter half of the twentieth century was to replace both rivets and pins with bolts or welding of the bridge members for maximum structural integrity.[13]

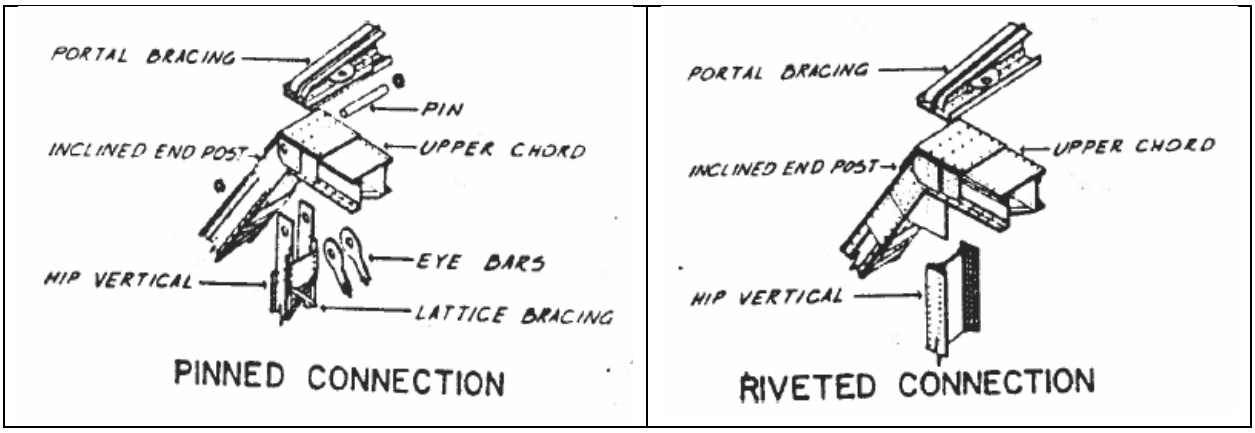

Figure 2. Diagrams of pinned versus riveted connections.

[11] North Carolina Department of Transportation, “Truss Bridges,” n.d., https://www.ncdot.go initiatives-policies/Transportation/bridges/historic-bridges/bridge-types/Pages/truss.aspx.

[12] North Carolina Department of Transportation, “Truss Bridges.”

[13] North Carolina Department of Transportation, “Truss Bridges.”

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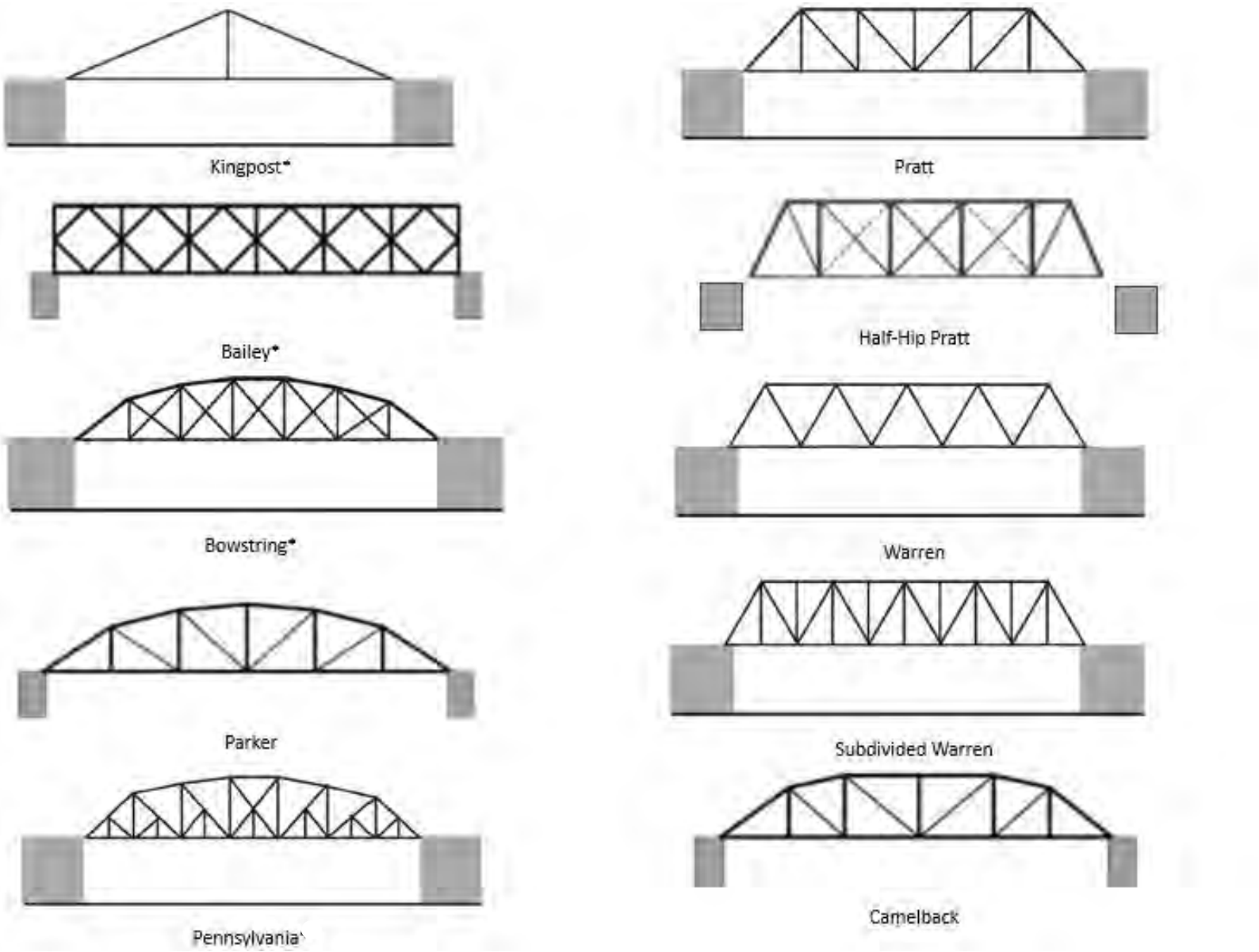

Figure 3. Truss bridge types extant in Wisconsin. Those denoted with an asterisk are non-standard truss configurations.

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3. The Evolution of Standard Truss Bridges

A. 1910s

The SHC was established in 1911 by the state legislature in tandem with a system of state aid for the improvement of public roads and bridges within Wisconsin. The SHC subsumed the previously established Highway Division of the Wisconsin Geological and Natural History Survey, and included State Geologist W.O. Hotchkiss; the Dean of the College of Engineering of the University of Wisconsin, F. E. Turneaure; and three Governor-appointed three members: J.H. Van Doren, John S. Owen, and John A. Hazelwood.[14]

Chapter 337 of the 1911 Wisconsin Session Laws provided that each county board should propose a county system of state highways to connect all towns and railway stations, and consider those systems of adjoining counties to ensure the proposed systems tie into one another across county lines. Once a county officially established this main system of heavily traversed roads, local and state money could be appropriated and expended to improve certain portions of the system. In regard to bridge work, localities with a population of less than 5,000 could vote to improve a particular bridge location and levy a tax equal to two-fifths of the estimated cost of the work. Local government officials could then apply to the state and county for aid, for 20 and 40 percent of the estimated cost of bridge improvements, respectively. Alternatively, a county board could vote to provide four-fifths of the cost of bridge improvements on the county system, in which case the locality would pay no direct portion of the cost, and the state would pay the remaining fifth.[15]

With a clear system in place to fund road and bridge projects throughout the state, the SHC was tasked with a variety of duties to appropriately manage infrastructure programming. The SHC's duties fell within ten broad categories: administration, publicity, general inspections, road surveys, road plans, road inspections, bridge surveys, bridge plans, bridge inspections, and experimental roads.[16] With such a wide breadth of tasks, the SHC sought to streamline its work as much as possible. Immediately after its organization in 1911, the SHC devoted much of its efforts to preparing a set of standard bridge plans. Relying on the past experiences and combined insights of the Wisconsin Geological Survey and the highway departments of neighboring states, the SHC produced standard plans and general recommendations for use in the state. Most bridges required individual substructure drawings due to the unique circumstances of each crossing, but superstructures could be standardized relatively easily.[17] The Bridge Department of the SHC worked as a team to design the bridge plans, but the Staff Bridge Engineer or a Division Engineer had to sign off on them. For much of the first decade of service, SHC

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[14] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 1.

[15] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 2.

[16] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 5–25.

[17] M.W. Torkelson, "Highway Bridges in Wisconsin," *The American City* XII, no. 4 (April 1915): 287.

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standard bridge plans were primarily signed by Bridge Engineer M.W. Torkelson, though Division Engineer W.C. Buetow also signed off on a number of standard plans.[18] In 1918 C.H. Kirch took over the role of Bridge Engineer and remained in the role through 1940, signing off on the vast majority of standard plans produced by the SHC.[19] In most instances the SHC and its Bridge Department recommended the use of reinforced-concrete slab or girder bridge construction whenever possible. Slab and girder spans were appropriate for lengths ranging from 6 to 80 feet. For spans longer than 80 feet, trusses were recommended.[20] Steel bridges—which consisted of most standard bridges at this time—were typically designed with reinforced-concrete floors of 6 inches thick on average. However, for spans over 150 feet, this type of floor was uneconomical due to the strain they put on the spans, and creosoted wood block floors were used in their place.[21] No matter the length, material, or bridge type, the SHC consistently recommended rivets rather than pins as the connection type.[22]

For bridges spanning from 80 to 150 feet, thru Pratt trusses with reinforced-concrete decks were recommended. In addition to these lengthy spans, bridges spanning 36 to 80 feet could also be thru trusses, though of the Warren design.[23] Yet even as early as 1911, plate girder bridges were becoming more popular and preferable to truss bridges due to their favored appearance and easier maintenance, specifically when it came to painting. In 1915 the SHC wrote, “It is thought that in a few years [plate girder bridges] will be used almost to the exclusion of truss bridges for spans of from 40 to 70 feet.”[24] However, it should be noted that the SHC understood that each bridge project is unique, and standard plans were to function as general guidelines to be conformed to as closely as possible, with room for individualized adjustments. Figure 4 provides an early example of a standard truss bridge plan.[25]

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[18] State Highway Commission of Wisconsin, State Highway Commission of Wisconsin Standard Bridge Plans, 1908-1940 (Wisconsin, 1940 1908), available at Wisconsin Department of Transportation, Wisconsin Department of Transportation, Bureau of Structures; Wisconsin Highway Commission, *Preliminary Biennial Report to the Governor and Legislature of Wisconsin*, 1921, iv.

[19] State Highway Commission of Wisconsin; Wisconsin Highway Commission, *Sixth Biennial Report of State* (Madison, Wis., 1926), 4; State Highway Commission of Wisconsin, *Twelfth Biennial Report of State Highway Activities* (Madison, Wis., 1939), 3.

[20] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 5–25.

[21] Torkelson, “Highway Bridges in Wisconsin,” 287–90.

[22] State Highway Commission of Wisconsin.

[23] State Highway Commission of Wisconsin.

[24] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 24.

[25] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 24.

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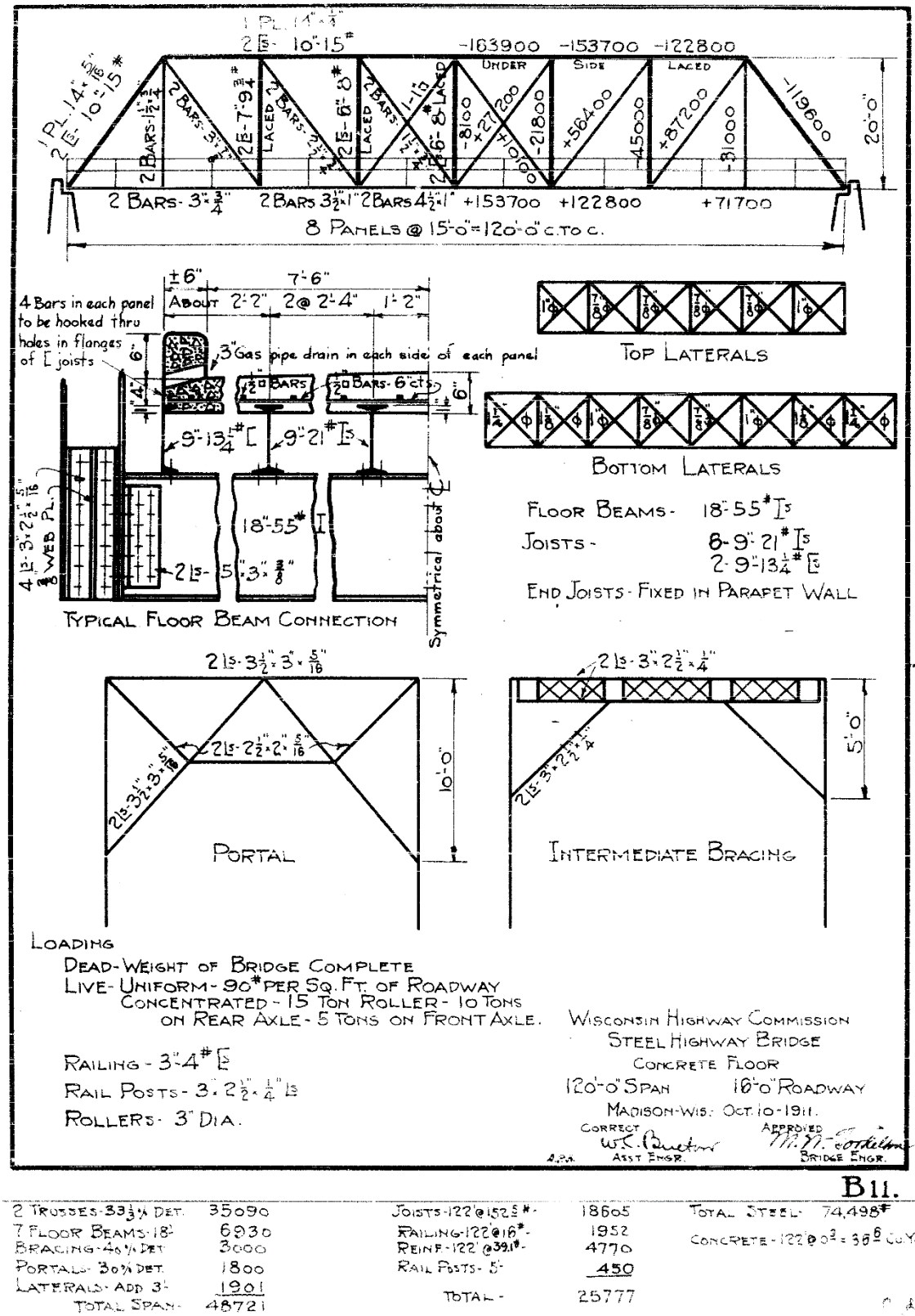

Figure 4. A 1911 standard steel Pratt high truss superstructure plan. Provided by WisDOT.

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For most of the decade the SHC was fairly consistently ramping up its state aid bridge construction budget and updating its standard plans. In 1912, 115 bridges were built at a total cost of $89,418. In 1914 the SHC aided in constructing 294 bridges at a cost of $328,031.[26] In 1916 state aid bridge construction peaked for the decade at 313 bridges built and a total of $461,716.[27]

During this time standard bridge plans were evolving as the SHC grew its experience and insight on preferable conditions. In terms of trusses, the Warren design remained preferable for shorter spans through 1940. Different versions of a Pratt truss were frequently experimented with throughout the decade. A traditional Pratt was used for thru truss plans in 1911, followed by a Camelback thru truss in 1912. Just a year later a Parker truss was recommended for a thru truss span of 180 feet. Simultaneously, the SHC was investigating the ideal roadway width. The earliest and cheapest bridge plans featured roadways of 16 feet from 1908 to 1928. Only briefly, from 1913 to 1915, the SHC designed plans with 18-foot roadway widths. In 1916 it then expanded standard roadways to 20 feet, while still occasionally advising a narrower bridge. Overall, these various preferences and experiments resulted in a wide array of standard plans throughout the decade, which were followed as guidelines more so than exact specifications by construction crews.

While it is possible that this trend of experimentation and growing budget may have continued, the country's involvement in World War I from 1917 to 1918 caused the SHC to repress the construction of permanent bridges due to the high demand of steel and other materials.[28] After-war conditions contributed to a continued lack of bridge projects and a delay in project schedules going forward, impacting funding availability and bridge construction through 1923.[29]

B. 1920s

The down time during and after the war granted the SHC time to focus on quality control and assessment of structures, and to formulate a reliable inspection system going forward. During the early 1920s the SHC devoted its efforts to honing its standard bridge requirements, calling for strictly high-grade materials and rigid supervision on all future bridge projects.[30] The SHC also revamped its inspection system, resulting in an efficient, reliable system complete with clear contracting standards, experienced supervisory roles, and laboratory testing of all standard bridge materials (namely cement and steel) led by the SHC itself, all resulting in much safer bridges.[31]

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[26] Wisconsin Highway Commission, *Preliminary Biennial Report to the Governor and Legislature of Wisconsin*, 98.

[27] Wisconsin Highway Commission, *Second Biennial Report Showing Operations of the Wisconsin Highway Commission, July 1, 1911, to January 1, 1915*, 14.

[28] Wisconsin Highway Commission, *Preliminary Biennial Report to the Governor and Legislature of Wisconsin*, 14, 20, 22.

[29] Wisconsin Highway Commission, *Preliminary Biennial Report to the Governor and Legislature of Wisconsin*, 20.

[30] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 63.

[31] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 63.

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Following the ebb caused by World War I, by 1925 a seemingly endless flow of bridge projects streamed into the SHC. Advancements in the auto industry allowed for wider, heavier vehicles able to transport heavier loads. Therefore, bridges throughout the state needed to rapidly adapt to carry them, resulting in the curtailment or alteration of older bridge types and amendments to standard bridge plans.

With the ever-increasing popularity of the automobile, roads and bridges needed to adjust to the exponentially growing volume of traffic. Simultaneously, state highway departments across the country sought to create uniform bridge requirements to minimize interstate traffic conflict. In response, the American Association of State Highway Officials (AASHO, renamed the American Association of State Highway and Transportation Officials [AASHTO] in 1973) prepared standard specifications for all classes of road and bridge work for the entirety of the United States. In response to these specifications, the U.S. Department of Agriculture's Bureau of Public Roads published additional designs and general details for simple truss span highway bridges, conforming to and expanding off of AASHO's work. All roadways were designed to be 20 feet and span lengths began at 60 feet and continued at intervals of 20 feet up to 200 feet, followed by 225 and 250 (see Figure 5). Tables within the guidelines provided for appropriate alternatives in configuration.[32] Initially working more as general guidelines due to the inability of each state to adopt these specifications exactly as proposed, the SHC worked to adopt most recommendations regarding bridge design and construction.[33]

[32] State Highway Commission of Wisconsin, *Standard Specifications for Road and Bridge Construction* (Madison, Wis., 1931), 2.

[33] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 63–67.

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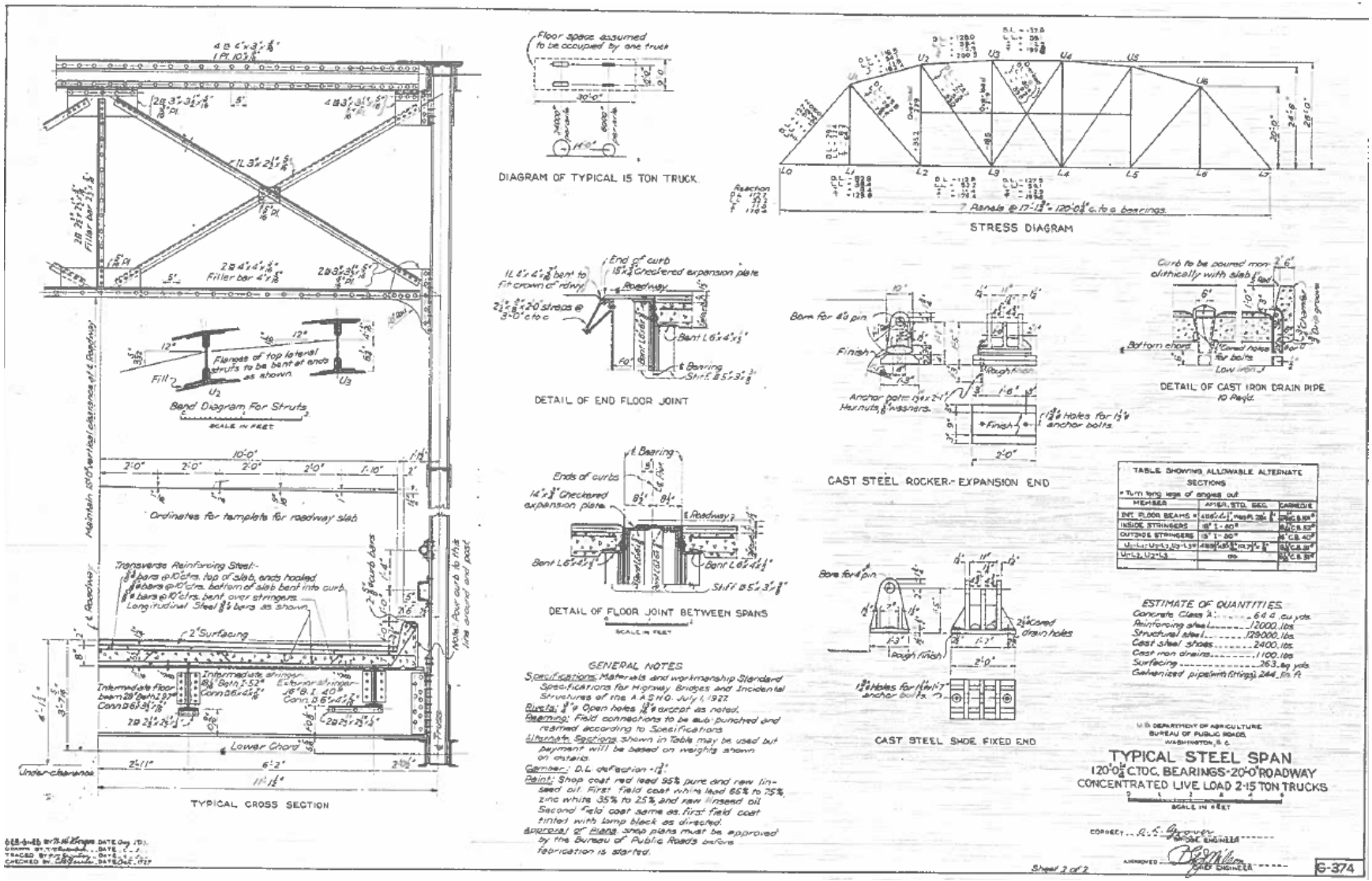

Figure 5. Sample 1929 steel truss span from the Bureau of Public Roads Typical Plans. Provided by WisDOT.

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The adoption of AASHO's specifications resulted in a complete revision of the state's superstructure standards between 1925 and 1926. Namely, bridges were now required to carry the modern truck loading weight with proper allowance for impact due to moving loads, raising the standard to over 30 tons, well exceeding the previous 15-ton standard.[34] Along with increased weight came increased width. Busier roadways required wider, and in some cases more, lanes to accommodate traffic. As such, many bridges throughout the state were being widened throughout the 1920s, typically from the standard 16 feet of 1911 to upwards of 20 feet, the latest standard (see Figure 6). However, with roadway requirements being altered so rapidly and frequently, the SHC decided it would be poor policy to remove and replace all narrow bridges every time roadway width requirements were updated. To remedy this, the SHC established a policy that structures were not to be widened to meet current roadway requirements unless such widening would exceed a minimum of six feet. Otherwise, the only alteration would be minor guard fencing added to the structure.[35]

Additionally, it was resolved that one standard method of temperature-warping expansion allowance would be consistently used, as opposed to the previous array of methods that were inconsistently applied. In the previous decade, many standard truss plans featured roller bearings, which used a series of relatively small-diameter rod-like features aligned between metal plates, allowing the truss end above the rollers to move when the overall metal in the truss expanded and contracted with heat and cold (see Figure 7). Throughout the latter half of the 1910s and into the early 1920s, the SHC experimented with other expansion types: slotted bolts and rocker bearings. The slotted bolt design was simply two metal plates, one atop the other, with the truss mounted on the top plate that could move, while the bottom plate remained stationary. The plates were kept in alignment with each other by a bolt that extended up from the bottom plate through an elongated hole or slot in the top plate, allowing horizontal movement (see Figure 8). The slotted-bolt bearing was for smaller trusses; for larger trusses, a rocker bearing was used. In the rocker bearing, a large metal triangle, similar in design to a pie slice, was used. The short side of the triangle, like the pie crust edge, rested on a fixed metal plate. The top of the triangle or wedge was attached to the end of the truss with a steel pin, allowing the metal wedge to move or rock back and forth on the metal plate and let the truss above expand and contract.[36] In 1926 the SHC determined the rocker bearing was most favorable and that going forward, a cast steel fixed shoe and expansion rocker resting on a cast steel masonry plate would be used on all truss spans, as well as concrete girders over 50 feet long and steel plate girders (see Figure 9).[37]

[34] State Highway Commission of Wisconsin, *Standard Specifications for Road and Bridge Construction*, 244.
[35] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 67.
[36] State Highway Commission of Wisconsin.
[37] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 65.

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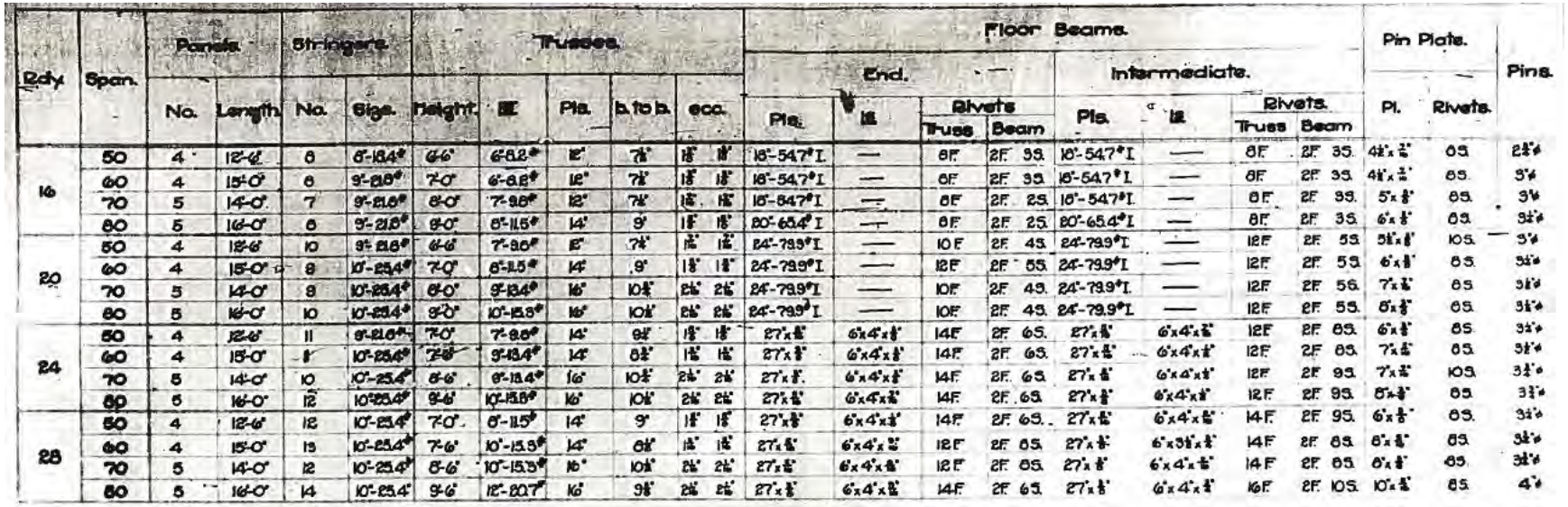

Rdy.	Span.	Panels.		Stringers.		Trusses.					Floor Beams.								Pin Plates.		Pins.
											End.				Intermediate.						
		No.	Length	No.	Size.	Height		Pls.	b. to b.	ecc.	Pls.		Rivets		Pls.		Rivets.		Pl.	Rivets.	
													Truss	Beam			Truss	Beam			
16	50	4	12'-6"	8	6"-16.4#	6'-6"	6"-8.2#	12"	7⅞"	1⅝" 1⅝"	18"-54.7#I	—	8F	2F 3S.	18"-54.7#I	—	8F	2F 3S.	4½"x⅝"	6S.	2⅝"ø
	60	4	15'-0"	8	9"-21.8#	7'-0"	6"-8.2#	12"	7⅞"	1⅝" 1⅝"	18"-54.7#I	—	8F	2F 3S.	18"-54.7#I	—	8F	2F 3S.	4½"x⅝"	6S.	3"ø
	70	5	14'-0"	7	9"-21.8#	8'-0"	7"-9.8#	12"	7⅞"	1⅝" 1⅝"	18"-54.7#I	—	8F	2F 2S.	18"-54.7#I	—	8F	2F 3S.	5"x⅝"	6S.	3½"
	80	5	16'-0"	8	9"-21.8#	9'-0"	8"-11.5#	14"	9"	1⅝" 1⅝"	20"-65.4#I	—	8F	2F 2S.	20"-65.4#I	—	8F	2F 3S.	6"x⅝"	6S.	3½"ø
20	50	4	12'-6"	10	9"-21.8#	6'-6"	7"-9.8#	12"	7⅞"	1⅝" 1⅝"	24"-79.9#I	—	10F	2F 4S.	24"-79.9#I	—	12F	2F 5S.	5½"x⅝"	10S.	3"ø
	60	4	15'-0"	9	10"-25.4#	7'-0"	8"-11.5#	14"	9"	1⅝" 1⅝"	24"-79.9#I	—	12F	2F 5S.	24"-79.9#I	—	12F	2F 5S.	6"x⅝"	6S.	3½"ø
	70	5	14'-0"	9	10"-25.4#	8'-0"	9"-13.4#	16"	10½"	2⅛" 2⅛"	24"-79.9#I	—	10F	2F 4S.	24"-79.9#I	—	12F	2F 5S.	7"x⅝"	6S.	3½"ø
	80	5	16'-0"	10	10"-25.4#	9'-0"	10"-15.3#	16"	10½"	2⅛" 2⅛"	24"-79.9#I	—	10F	2F 4S.	24"-79.9#I	—	12F	2F 5S.	8"x⅝"	6S.	3½"ø
24	50	4	12'-6"	11	9"-21.8#	7'-0"	7"-9.8#	14"	9⅛"	1⅝" 1⅝"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	12F	2F 6S.	6"x⅝"	6S.	3½"ø
	60	4	15'-0"	11	10"-25.4#	7'-6"	9"-13.4#	14"	9⅛"	1⅝" 1⅝"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	12F	2F 6S.	7"x⅝"	6S.	3½"ø
	70	5	14'-0"	10	10"-25.4#	8'-6"	9"-13.4#	16"	10½"	2⅛" 2⅛"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	12F	2F 9S.	7"x⅝"	10S.	3½"ø
	80	5	16'-0"	12	10"-25.4#	9'-6"	10"-15.3#	16"	10½"	2⅛" 2⅛"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	12F	2F 9S.	8"x⅝"	6S.	3½"ø
28	50	4	12'-6"	12	10"-25.4#	7'-0"	8"-11.5#	14"	9"	1⅝" 1⅝"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	14F	2F 9S.	6"x⅝"	6S.	3½"ø
	60	4	15'-0"	13	10"-25.4#	7'-6"	10"-15.3#	14"	9⅛"	1⅝" 1⅝"	27"x⅝"	6"x4"x⅝"	12F	2F 6S.	27"x⅝"	6"x5½"x⅝"	14F	2F 6S.	6"x⅝"	6S.	3½"ø
	70	5	14'-0"	12	10"-25.4#	8'-6"	10"-15.3#	16"	10½"	2⅛" 2⅛"	27"x⅝"	6"x4"x⅝"	12F	2F 6S.	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	6"x⅝"	6S.	3½"ø
	80	5	16'-0"	14	10"-25.4"	9'-6"	12"-20.7#	16"	9⅝"	2⅛" 2⅛"	27"x⅝"	6"x4"x⅝"	14F	2F 6S.	27"x⅝"	6"x4"x⅝"	16F	2F 10S.	10"x⅝"	6S.	4"ø

Figure 6. c.1930 standard truss bridge dimensions and components. Provided by WisDOT.

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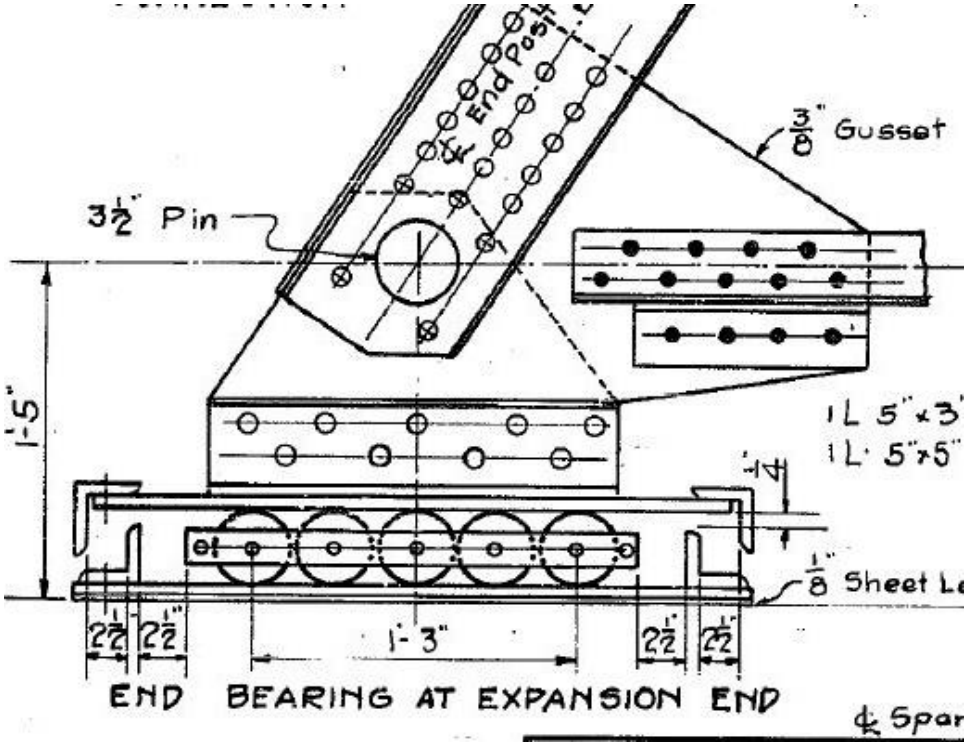

Figure 7. 1914 standard truss bridge plan, showing roller bearing detail typical on standard truss bridges prior to 1915. Plan sheet courtesy of WisDOT.

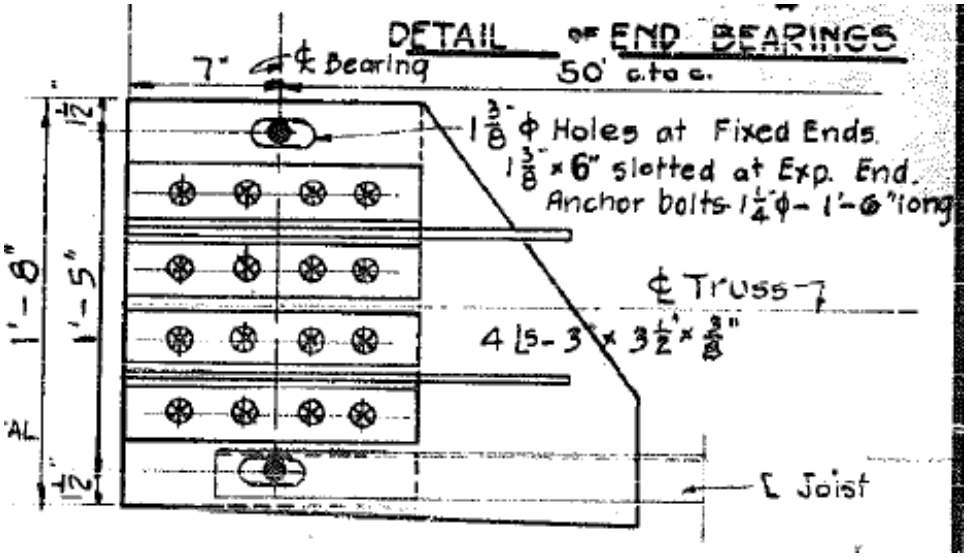

Figure 8. 1915 standard Warren truss bridge plan showing slotted bolt detail typical on shorter truss bridges between 1914 and 1926. Plan sheet courtesy of WisDOT.

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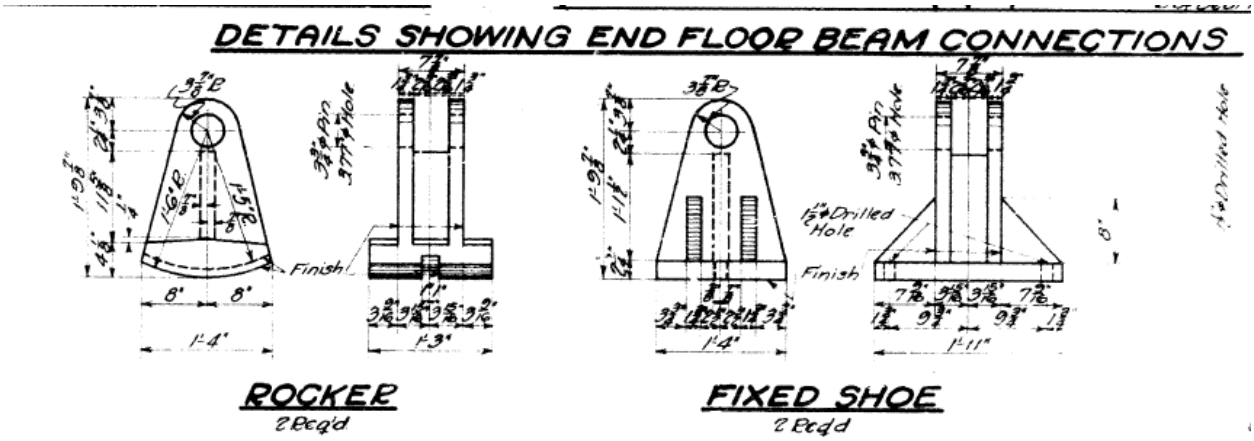

Figure 9. 1928 standard high truss bridge plan showing fixed shoe and rocker detail that was standard after 1926. Plan sheet courtesy of WisDOT.

In addition to the specifications laid out by AASHO, the SHC also proposed its own adjustments to bridge design and construction. Some of the adjustments were due to cost and budgeting. Concrete became the preferred material because it had the advantage of being used for any width of roadway with a minimum additional cost. Steel deck structures were similarly preferred, though steel through structures were deemed less cost effective and therefore out of favor. Generally, short- and medium-span standard bridge plans increasingly trended towards concrete girder spans as opposed to steel trusses, though spans exceeding 100 feet in length remained steel trusses (see Figure 10).[38]

[38] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities* (Madison, Wis., 1928), 32.

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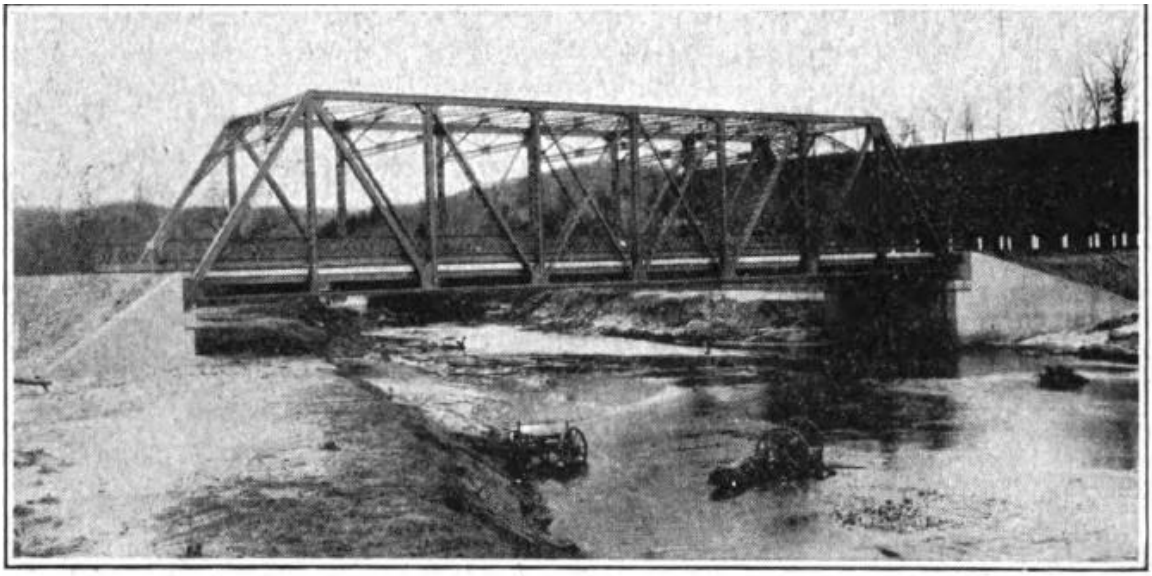

The Kickapoo Bridge on State Trunk Highway No. 33 between Hillsboro and Ontario, Vernon County. A 120 ft. high truss with 24 ft. roadway. This type of structure may be economically used when spans of over 100 feet are required.

Figure 10. STH 33 Bridge (B-62-952; AHI No. 120084; nonextant), example of a 1928 bridge span exceeding 100 feet, requiring a truss design, in the SHC's seventh biennial report.[39]

Cost was not the only factor considered by the SHC, however, as new to the bridge design equation in this decade was aesthetic appeal. According to the SHC's sixth biennial report, "Through years of effort on the part of the [SHC] the public has been educated to appreciate beauty in bridge construction so that there is now a demand for work of the very best quality and appearance."[40] To this end, in 1926 the SHC determined that concrete is more adaptable to aesthetics in bridge construction than steel, though with the right design, a steel structure could be visually appealing. With that, beauty was officially added to the list of key features in bridge plans, along with strength, durability, and reasonable economy.[41] This shift is particularly well highlighted by the replacement of two light steel trusses with timber approaches in Gays Mills along State Trunk Highway 131 with a new 45-foot reinforced-concrete girder bridge. The switch to concrete allowed for decorative design elements like a concrete railing and streetlamps (see Figure 11).[42]

[39] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 32.

[40] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 67.

[41] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 67–68.

[42] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 16.

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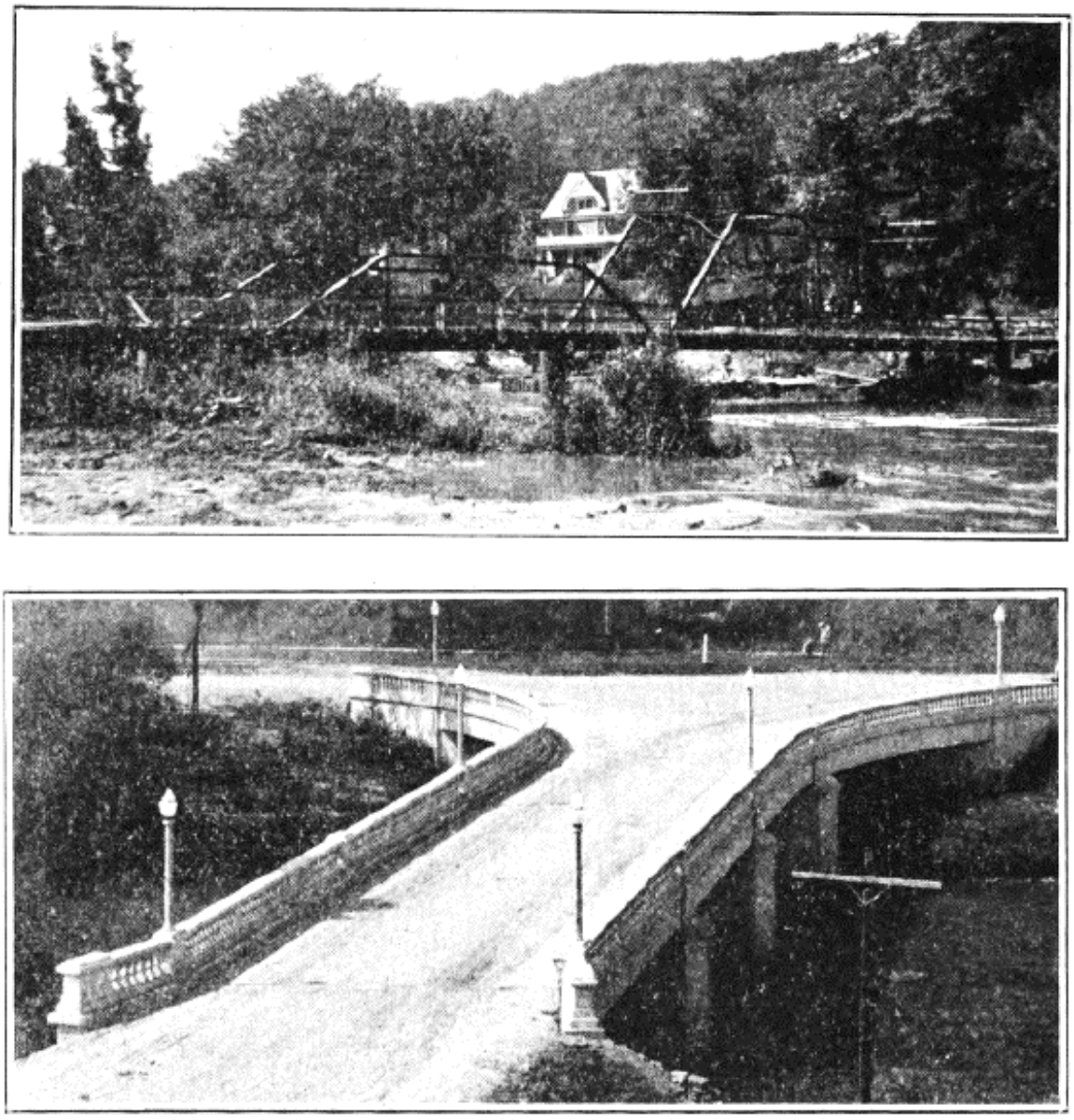

The old and the new. Two light steel trusses with timber approaches replaced by four 45 ft. reinforced concrete spans, with 24 ft. roadway. The Gays Mills Bridge on State Trunk Highway No. 131. The ground beyond the bridge rises very abruptly and it was necessary to construct curved approaches to enable traffic to enter the bridge safely.

Figure 11. A later (1949) example of the replacement of a truss bridge with a single reinforced-concrete girder bridge. Note the architectural details of the concrete span (decorative railings, light posts) in addition to the increased safety. Replacement projects like this were being undertaken throughout the twentieth century.[43]

[43] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 16.

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With all of the new requirements for bridge safety, weight, road width, material quality, and aesthetics, the average cost of bridge projects had gone up significantly in the late 1920s. Between 1911 and 1925 the average bridge construction cost was roughly $1,900. Between 1926 and 1927 it was just under $3,900, more than double the price.[44] With added cost, labor, and material needs, the SHC could not keep up with its initial pacing. For its first 14 years of operation, the SHC averaged 192 state aid and 276 county aid bridge construction projects a year.[45] Between 1924 and 1928 state and county standard bridge projects averaged only a fraction of that initial rate, around 57 and 95 constructed annually, respectively.[46] In terms of federally-funded bridge projects, 59 were completed in the first eight years funding was available.[47] Between 1924 and 1928 federally funded bridge projects averaged around 36 a year, still a notable decline.[48] However, this lull in bridge projects was short lived as the Great Depression and state and federal work programs brought a change in tides for infrastructure projects nationwide.

C. 1930s

While everyday Americans suffered tremendous losses and setbacks throughout the Great Depression, American infrastructure and innovation pushed on, in some ways more successfully than ever before. The period was marked by unprecedented government aid and support of infrastructure projects through federal work programs seeking to employ as many citizens as possible. Through legislation like the National Industrial Recovery Act of 1933 (NIRA), the Emergency Relief Appropriation Act of 1935 (ERA), and the President's Re-Employment Agreement, along with work programs like the Public Works Administration (PWA), Works Progress Administration (WPA), and Civil Works Administration (CWA), millions of dollars in funding fueled thousands of roadway and bridge projects in states across the nation, including Wisconsin.[49]

With so much state and federal support, the SHC was able to strengthen its efforts from the 1920s and carry them forward through the 1930s. Typical bridge project activities continued to include widening, load-bearing capacity improvements, bridge inspections, and replacement of unsafe bridges. Additionally, the SHC conducted research into roadway surface materials and subsequently tasked the Maintenance Department with betterment of the roadways, referring to the resurfacing of existing roads and bridges with a higher type of surface, such as bituminous surface atop crushed stone or gravel and sealing the roadway. This was done in an effort to alleviate dust, which was contributing negatively to the surrounding environment and impairing roadway visibility, and quickly became one of the major efforts of the SHC

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[44] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 145–46.

[45] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 145–46. As previously referenced, material shortages due to World War I drastically limited infrastructure projects between 1917 and 1923. Therefore, this statistic is skewed. While bridge counts were not available for individual years between 1911 and 1925, it should be assumed that non-war years had bridge construction project counts well above these averages.

[46] Wisconsin Highway Commission, *Sixth Biennial Report of State*, 191–93; State Highway Commission of Wisconsin, *Seventeenth Biennial Report of State Highway Activities* (Madison, Wis., 1949), 140–43.

[47] Federal funding was first made available in 1917, six years after the creation of the State Highway Commission of Wisconsin.

[48] Wisconsin Highway Commission, *Seventh Biennial Report of State Highway Activities*, 140–42.

[49] Wisconsin Highway Commission, *Tenth Biennial Report of State Highway Activities* (Madison, Wis., 1934).

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during this period. Thousands of miles of roadway and bridges were resurfaced for dust alleviation purposes annually.[50]

Building off the aesthetics standard for bridges that came to be expected in the previous decade, the SHC initiated roadside improvement efforts across the state in 1932.[51] While previously carried out by county highway organizations, the SHC began supplementing the work as a part of state projects. Roadside improvement consisted of beautification efforts such as decorative landscape and plantings alongside roadway and bridge approaches and utilitarian plantings to prevent erosion and snow drifts. These small projects could be completed by unskilled laborers and worked to employ Wisconsinites in need of a job who had little to no previous experience in the construction industry.[52]

In addition to these efforts, the SHC continued to produce standard bridge plans. As in the 1920s, the SHC worked to amend bridge plans to adjust to increased traffic flow, weightier loads, and stricter safety standards. Generally, this meant replacing earlier, thinner truss members with thicker, stronger ones (see Figure 12). While AASHO's specifications had initially acted as general guidelines, by 1936 all state standard bridge plans were expected to fully align with the national standards, and Wisconsin bridge plans were revised accordingly.[53] Sixteen-foot road widths were officially deemed obsolete by 1934 due to the danger of such narrow roadways. Road and bridge widths needed to be minimally 18 feet, with most existing bridges ranging between 20 and 22 feet, but with the current standard varying between 24 and 30 feet for maximum safety (see Figure 13).[54]

[50] State Highway Commission of Wisconsin, *Twelfth Biennial Report of State Highway Activities*, 19–20.

[51] Wisconsin Highway Commission, *Tenth Biennial Report of State Highway Activities*, 15.

[52] Wisconsin Highway Commission, *Eleventh Biennial Report of State Highway Activities* (Madison, Wis., 1936), 21–22.

[53] Wisconsin Highway Commission, *Eleventh Biennial Report of State Highway Activities*, 7.

[54] Wisconsin Highway Commission, *Tenth Biennial Report of State Highway Activities*, 35.

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Figure 12. Photographs of two truss bridges: a 99-foot-long standard-plan 1917 Pratt thru truss with a 16-foot-wide deck (top) and a 104.7-foot-long standard-plan 1936 Pratt thru truss with a 31-foot-wide deck (bottom). Notice the wider, larger, solid steel truss members in the 1936 bridge and the limited weight capacity sign adjacent to the 1917 truss. Later truss bridges were made to carry much heavier loads.

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Plan Year	Road width in plan					
1908	16					
1911	16					
1912	16					
1913	16	18				
1914	16	18				
1915	16	18				
1916	16		20			
1917	16		20			
1918	16		20			
1919	16		20			
1920	16		20			
1923	16		20			
1927	16		20	24		
1928	16		20	24	28	
1929			20	24		
1936			20	24		30
1937			20	24		30
1938			20	24		30
1939				24		
1940				24		

Figure 13. Standard plan road widths by year.[55]

In terms of truss bridges, experimentation with configurations and standard plans had resumed. According to available standard plans, thru trusses were generally becoming less common and Pratt and Parker thru trusses were fast falling out of favor. While truss spans remained favorable for spans over 80 feet, thru types were unfavorable as they did not readily lend themselves to widening projects and to do so would require a costly and extensive undertaking. Thru trusses were still being constructed, though infrequently and limited to crossings with little traffic flow that did not have the same width and safety demands as heavily trafficked areas. Where and when constructed, Warren configurations were opted for. Otherwise, deck trusses continued to be recommended due to their minimum necessary expenditure for widening, though they were not suitable for all crossings due to the necessity of sufficient space beneath the bridge to accommodate the larger substructure.[56]

Further, due to the rapidly evolving road width requirements, the SHC found that very few bridges were lasting anywhere near their estimated 50-year lifespan. Rather than continue to waste financial and physical effort on these short-lived bridges in light traffic areas, in the mid-1930s the SHC shifted to a recommendation of a timber treated trestle with an asphalt plank surface for lightly travelled crossings

[55] State Highway Commission of Wisconsin, *Twelfth Biennial Report of State Highway Activities*.

[56] Wisconsin Highway Commission, *Tenth Biennial Report of State Highway Activities*, 47.

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with no more than moderate ice conditions or heavy floating debris, making trusses even more rare. In 1934 the timber treated trestle model was modified to a creosoted timber substructure with a steel I-beam deck and concrete floor. This was effectively the same cost as an all-timber structure, but with less weathering and therefore lower maintenance costs. These trestles had a lifespan of up to 35 years, still longer than most bridges were being used at this time and, coupled with their lower initial cost and reasonable maintenance efforts, they were given favorable consideration.[57]

With the massive influx of state and federal funding towards infrastructure projects as a tool to combat the Depression, the SHC found itself nearly as busy as it was in its earliest years. Between 1930 and 1932 the SHC saw a massive jump from an average of approximately 40 federal and 56 state standard bridge projects a year to 77 and 134 projects annually, respectively.[58] In 1934 those numbers had roughly flipflopped with 146 federal and 62 state standard bridge projects a year. This trend continued through the rest of the decade with a peak in federally funded bridge projects in 1935 and 1936 at 272 a year.[59] Conversely, county bridge project numbers were trending well below what they had in previous decades, largely because the state was able to fund many of the undertakings that had once been the responsibility of the county. Between 1930 and 1938 county-funded projects varied from only eight to 29 a year.[60] The trend of increased federal funding slowed but did not end after 1939 with the formal close of the New Deal era, and inflated numbers of bridge projects continued into the early 1940s.

D. 1940s

It was not long into the new decade that the U.S. entered World War II in December 1941. This massive war mobilization effort resulted in full employment and greatly increased government spending. Unlike in years past, however, the spending was directed towards the military rather than infrastructure projects on the home front, and bridge projects in Wisconsin quickly backslid. This initial drop in projects created a backlog of bridge work to be undertaken in the second half of the decade, including replacement of older structures and the construction of larger, heavy-duty bridge projects. However, standard truss bridge projects saw a sharp decline and eventual end in this decade as other bridge types became even more favored for most bridge lengths and large, lengthy truss projects received specialized, non-standard plans to meet unique site conditions and demands.

Coasting off the increased government funding of the late 1930s, the first couple of years of the 1940s showed only a slight decrease in bridge projects. The years 1940 and 1941 averaged around 125 federally funded, 27 state funded, and seven county funded bridge projects. Even more than bridges, most of the SHC's Bridge Department work had shifted to drainage structures like culverts during this

[57] Wisconsin Highway Commission, *Eleventh Biennial Report of State Highway Activities*, 43.

[58] Wisconsin Highway Commission, *Ninth Biennial Report of State Highway Activities* (Madison, Wis., 1932), 208–10.

[59] Wisconsin Highway Commission, *Eleventh Biennial Report of State Highway Activities*, 196–97.

[60] Wisconsin Highway Commission, *Ninth Biennial Report of State Highway Activities*, 208–10; Wisconsin Highway Commission, *Eleventh Biennial Report of State Highway Activities*, 196–97.

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time, accounting for 69 percent of their bridge structure constructions.[61] Over the course of the SHC's 30 years of operation, the early push for bridge constructions and standard plan design had gradually declined and shifted to maintenance of existing structures and other efforts, such as drainage structures, dust alleviation, and roadside improvement and beautification efforts. This resulted in the drafting of new standard plans becoming an increasingly minor task.

Of the standard bridge projects that were being undertaken, very few standard truss bridges were being constructed. In 1940, of the total 267 standard bridge structures built by the SHC, only nine were trusses—just 3.4 percent overall. The trusses collectively spanned 2,908.5 feet and cost a total of approximately $571,250. Conversely, the most popular bridge type of the year—a concrete I-beam bridge with treated timber trestle—was constructed at 41 crossings, spanned 2,357 feet, and had a total cost just over $271,000, roughly half the cost of the trusses despite the similar total combined span lengths.[62] Truss bridges remained unfavorable due to their high cost, unlikelihood of being used for their estimated lifespan allowed, and increasingly unpopular aesthetics. Reinforced concrete was firmly touted as, "more aesthetically pleasing and less visually intrusive… than metal truss bridges," in addition to their durability, minimal maintenance, and limited need for steel.[63] However, they were still one of the most feasible options for long-spanning crossings, though U.S. entry into World War II curbed nearly all bridge projects by the spring of 1942.

The war effort meant an almost complete disruption to all SHC activities. In 1943 the SHC wrote to Walter Goodland, the acting Governor of Wisconsin: "Since war was declared there has been a cessation of highway construction, excepting work under contract, or on projects considered essential to the war effort."[64] The SHC staff was reduced by half due to military deployment and engagement with work directly related to the war effort, resulting in extreme delays and total halts to their projects underway.[65] Further, many of the materials typically used for bridge work, such as steel, concrete, and gravel, were restricted for such use as they were essential to the war effort. Without men, materials, or machines available to complete project work, improvements unrelated to the war, no matter how badly needed, were postponed for its duration.[66] In some instances even bridge construction projects deemed to be related to the war effort were unable to move forward due to the virtual impossibility of obtaining structural steel.[67] Between federal, state, and county funded bridge projects combined, only ten bridges were

[61] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities* (Madison, Wis., 1943), 96.

[62] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 96.

[63] Parsons Brinckerhoff and Engineering and Industrial Heritage, *A Context for Common Historic Bridge Types*, 2-27–29.

[64] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 5.

[65] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 5.

[66] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 9.

[67] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 22.

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constructed by the SHC in 1943.[68] Similar numbers continued through 1945.[69] However, the SHC was well aware that when the war eventually ended and millions of men returned in need of employment, it would be well prepared with a massive backlog of infrastructure projects to put them to work.[70]

As anticipated, by the end of the war in September 1945, Wisconsin roadways and bridges were showing the signs of years of neglect. Once again addressing Governor Goodland in February 1947, the SHC expressed, “Many of our most important and used highways suffered during the war years and now must be improved to provide the service required of them. Plans for construction or reconstruction are ready and work will proceed as rapidly as materials and labor are available and prices have stabilized to the degree that costs are justified.”[71] This demand for materials presented a larger obstacle than the SHC had planned for in its anticipation of post-war project work. A continued lack of structural steel and other metals was the chief difficulty in resuming bridge construction. What materials were available were extremely expensive, preventing any attempts at a largescale construction program despite the obvious need for one. Rather, work continued to be limited to only the absolute necessities regarding the continued functioning of the state’s transportation system.[72]

Due to the continued lack of bridge projects, standard truss constructions still ebbed. However, with several truss bridges out of compliance following the neglect they suffered during the war, there was a small jump in truss construction between 1946 and 1947. In 1946 eight truss bridges were built, accounting for 5.4 percent of all bridges constructed that year. A year later, 12 truss bridges were built, representing 7.2 percent of all bridge projects.[73] While still low, these truss project counts were the highest they had been since pre-1930. The increase was short-lived though. In 1948 no truss bridges were constructed and excepting a few rare bridge replacements, the SHC closed the era of standard truss bridges.[74] With little need for standard truss plans, the SHC continued to use its 1945 standard plan designs with no alterations for the latter half of the 1940s and for all truss replacements thereafter. These plans still met the appropriate weight bearing capacity and road width requirements, and with so few trusses being built there was no need to update or improve upon them.

E. 1950s

As with previous wars, U.S. involvement in the Korean War between 1950 and 1953 resulted in a high demand for steel to support the war effort. With limited supply on the home front, the construction of

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[68] State Highway Commission of Wisconsin, *Fifteenth Biennial Report of State Highway Activities* (Madison, Wis., 1945), 99–101.

[69] State Highway Commission of Wisconsin, *Fifteenth Biennial Report of State Highway Activities*, 99–101; State Highway Commission of Wisconsin, *Sixteenth Biennial Report of State Highway Activities* (Madison, Wis., 1947), 102–4.

[70] State Highway Commission of Wisconsin, *Fourteenth Biennial Report of State Highway Activities*, 10.

[71] State Highway Commission of Wisconsin, *Sixteenth Biennial Report of State Highway Activities*, 5.

[72] State Highway Commission of Wisconsin, *Sixteenth Biennial Report of State Highway Activities*, 10.

[73] State Highway Commission of Wisconsin, *Seventeenth Biennial Report of State Highway Activities*, 138.

[74] State Highway Commission of Wisconsin, *Eighteenth Biennial Report of State Highway Activities* (Madison, Wis., 1951), 42.

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bridges stalled. In the interim the SHC continued to evolve bridge safety standards as well as restructure the SHC itself, with an aim for maximum efficiency and minimal budget. The 1950s encapsulated an era of rapid innovation, modernization, and progress for the SHC as it shifted away from in-house bridge design, a reliance on steel, and its lingering focus on trusses, and towards consultant- and computer-generated design; precast, prestressed concrete; and the Interstate Highway System.

By June 1950 the nation was well underway preparing its armed forces for a "hot war" in Korea. According to the SHC's 1952 biennial report, "considerable delay was caused on several projects by shortages in materials induced by the demands of the Korean War. Steel, in particular, was difficult to obtain. And when this condition improved it was followed by some shortages in cement."[75] Such shortages accounted for a significant delay in the start and completion dates of many structures, including bridges, throughout the state. While the situation had somewhat improved by late 1952, it was anticipated that project work would be impacted through the 1953 season.[76] Then, as expected, in 1953 concrete and steel became readily available at very reasonable costs, along with greatly reduced contract costs for labor due to the strong competition for state contract bids, likely linked to the returning veteran labor force.[77] Rather than devote its time and effort during such pleasurable conditions on small, standard bridges, the SHC prioritized special bridges projects. Between 1950 and 1954 only five truss bridges were constructed, representing less than one percent of all bridges designed by the SHC during the period. Of the five, only one was constructed with standard plans.[78]

Other than the preferential treatment of special bridge projects during this time, standard truss projects were stymied by other factors as well. The SHC itself was suffering from a critical demand for staff in 1954. In preparation for future expansion of the Interstate Highway System, the SHC was busy at work streamlining its contract letting process, working to expand its highway planning unit, and generally gearing up to take on unprecedented amounts of work in anticipation that federal legislation would soon pass that would greatly expand its budget. Therefore, the SHC began relying more consistently on the work of engineering and design consultants. While it continued to provide guidance on specifications and safety standards for new bridge construction, the SHC was no longer the sole producer of small bridge plans on government-aided projects. Consultants were able to adjust the previously standardized bridge plans as appropriate, straying away from the standard bridge plan system of the previous 40 years.[79] Further, not only were non-SHC bridge engineers granted permission to design these bridges, but computers were as well. A critical shortage of engineers with bridge design experience was remedied by the creation and introduction of the Automatic Data Processing team at the Highway Department headquarters in Madison. Electronic computers performed bridge specification work previously completed

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[75] State Highway Commission of Wisconsin, *Nineteenth Biennial Report of State Highway Activities* (Madison, Wis., 1952), 10.

[76] State Highway Commission of Wisconsin, *Nineteenth Biennial Report of State Highway Activities*, 10.

[77] State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities* (Madison, Wis., 1954), 13.

[78] State Highway Commission of Wisconsin, *Nineteenth Biennial Report of State Highway Activities*, 42; State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities*, 64.

[79] State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities*, 15.

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by humans. By the end of the decade these computers were able to automate most of the bridge design process, deeming standard plan sheets entirely obsolete (see Figure 14).[80]

Figure 14. The SHC's "bridge computer" first implemented in bridge design in the late 1950s.[81]

While the SHC did step away from its standard bridge plan design role, it did not stop examining existing bridges of 20 feet or more to ensure they met all safety requirements. By 1949 the SHC had identified 92 bridges with restricted load limits (meaning their inability to meet the SHC's standard 35-ton load capacity). By 1952, 40 of those bridges had been relocated to pedestrian crossings, demolished and replaced, or braced.[82] In 1954 the SHC had 56 bridges in the restricted class. Load postings were added to these bridges to identify their limited load capacity.[83] Additionally, the SHC's research on vehicular safety identified that after 1950, 20-foot-wide roadways were no longer preferable. Instead, nearly all roadways, including bridges, were recommended to be at least 24 feet with eight-to-ten-foot shoulder widths.[84] Between width, overhead clearance, and live load capacity, by 1957, 2,500 of the State Trunk Highway system bridges in Wisconsin were considered substandard and unsafe.[85]

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[80] State Highway Commission of Wisconsin, *Twenty-Second Biennial Report of State Highway Activities* (Madison, Wis., 1958), 14–15.

[81] State Highway Commission of Wisconsin, *Wisconsin Highway Report: Twenty-Fourth Biennial Review (1961-1962)* (Madison, Wis., 1962), 44.

[82] State Highway Commission of Wisconsin, *Nineteenth Biennial Report of State Highway Activities*, 12.

[83] State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities*, 11.

[84] State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities*, 12–13.

[85] State Highway Commission of Wisconsin, *Twenty-First Biennial Report of State Highway Activities* (Madison, Wis., 1957), 51.

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With so many substandard bridges across the state, the SHC spent the latter half of the twentieth century working to replace, or when not financially feasible, rehabilitate these structures, all while working to rapidly fulfill its portion of the nation's goal to complete the National System of Interstate Highways by 1980. With the passage of the Federal-Aid Highway Act of 1956, the country, namely each state, got to work on the massive undertaking that would be constructing interchanges, highways, and bridges over dry land across the state, all to be a part of the state's nearly 500 miles of Interstate Highway System. This work alone commanded the majority of the SHC's attention and funding, but the work of maintaining Wisconsin's existing roadway and bridges could not be neglected. While 20 years prior the SHC had standardized bridges to cross roadway gaps at right angles, by the 1950s these right angles, often led into by curving bridge approaches, posed unsafe and uncomfortable traffic conditions for modern, high speed drivers. According to the SHC's twenty-first biennial report, "One by one these poorly located structures designed for traffic conditions of the past are being replaced."[86]

Bridge replacement projects aimed at improving roadway safety strategically targeted early truss bridges. Just as important as structural soundness in bridge design was traffic safety. Thru trusses, "with [their] massive structural elements alongside the motorist, seeming to crowd him toward the center of the road into the path of oncoming traffic" were avoided and replaced whenever possible.[87] This resulted in a major effort to remove and replace many historic truss bridges, an effort that continues today for very similar reasoning.

Rather than truss bridges, nearly all structures being built in the 1950s were deck types, with all supporting structural members below the roadway, away from traffic. Roadways were still minimally 24 feet, with wide curbs and heavy railings, designed both to withstand the impact of an oncoming vehicle and provide refuge to pedestrians. Still, railings were kept low enough to maintain the viewshed of the landscape or body of water below, as aesthetics were always an important consideration to the SHC and citizens of Wisconsin alike.[88] Additionally, just as much an aesthetics choice as a maintenance and cost decision, "cast-in-place" and precast, prestressed concrete bridges were being built "wherever feasible" because, "For spans of 50 to 70 feet, a bridge of prestressed concrete can be constructed for about the same cost as one of steel, and the future maintenance costs of the concrete bridge promise to be less."[89] Concrete did not pose a risk of rusting, was easier to repair when damaged, cheaper and easier to transport to project sites, and lasted longer than steel. While metal-truss bridge projects did not *entirely* cease post-1960, none of the truss bridges constructed after 1955 are considered standard (at least not as designed and overseen by the SHC).[90]

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[86] State Highway Commission of Wisconsin, *Twenty-First Biennial Report of State Highway Activities*, 51.

[87] State Highway Commission of Wisconsin, *Twenty-First Biennial Report of State Highway Activities*, 51.

[88] State Highway Commission of Wisconsin, *Twenty-First Biennial Report of State Highway Activities*, 51.

[89] State Highway Commission of Wisconsin, *Twenty-Second Biennial Report of State Highway Activities*, 15.

[90] State Highway Commission of Wisconsin, *Twentieth Biennial Report of State Highway Activities*; State Highway Commission of Wisconsin, *Twenty-First Biennial Report of State Highway Activities*; State Highway Commission of Wisconsin, *Twenty-Second Biennial Report of State Highway Activities*.

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4. Summary of Standard Plan Review

Based on the historic context of truss bridge standardization and analysis of the 156 available standard plans, the following information is a general overview of the characteristics of standard truss bridge plans:

A. Truss configuration

All available truss standard plans depict either pony (low) trusses or thru (high) trusses. There are no deck trusses and no lenticular trusses among identified and dated standard plans.

B. Connection type

From the earliest to the latest standard plan, all show riveted connections. There are no standard plans among the available plans that show pinned connections.

C. Truss type

- Warren: The Warren truss type is the most common and is used throughout the standard plan time period for all low or pony trusses. The Warren type was first used for thru trusses in 1937, according to dated plans, and is shown in versions with a straight upper chord as well as in Camelback versions with an upper chord having exactly five slopes. For greater span lengths, Warren plans show a horizontal middle chord segment. All Warren standard plans show vertical members in the Warren type, but the verticals are always labeled “nominal” or optional.

- Pratt: The Pratt type, which first appears in 1911 in dated plans for a thru truss, is the most common type after the Warren. While the Pratt truss is used primarily for thru trusses, a few Pratt half-hip variations are shown for low or pony trusses beginning in 1911. For longer span lengths, the Pratt type appears in the Camelback variation. A 180-foot Pratt variation with a polygonal top chord, known as a Parker truss, first appeared in 1913 and in various years thereafter. The Parker type may be shown with a nominal middle chord.

D. Span length

Standard truss plans were designed for a wide range of span lengths from 35 to 190 feet. There are references to plans with longer spans up to 231 feet, but actual plans for these extreme span lengths are not found in the available collection of standard plans. The standard plans generally determine truss type by span length, with the less common types being used for the longer spans. Judging by the number of standard plans with greater span lengths, the Warren and Pratt variations—Camelback and Parker—would be less common. Also, the Pratt half-hip low truss would be less common among low truss designs because it appears far less often among the available standard plans.

E. Other details

- Expansion bearings: In the available standard plans, a clear change in bearing type occurred between 1913 and 1915. Through 1914 truss standard plans showed roller bearings for

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expansion bearings. In 1914 two new expansion types were introduced to replace the rollers: slotted bolts and rocker bearings. In 1926 all standard plans uniformly showed rocker bearings. See Figure 15 and Figure 16.

- Railings: All truss standard plans show railings constructed with two parallel rails made of channel-section members. The two rails may have constituted the entire railing or, apparently in high truss designs, they may have had an X-lattice of bars extending between the top and bottom rails. The latter detail is termed a Lattice Railing on standard detail sheet A-10, which is specified in many truss standard plans and one identified copy is dated 1928. See Figure 17.

Figure 15. Roller-nest expansion bearing. Photo courtesy of Historic Bridges.

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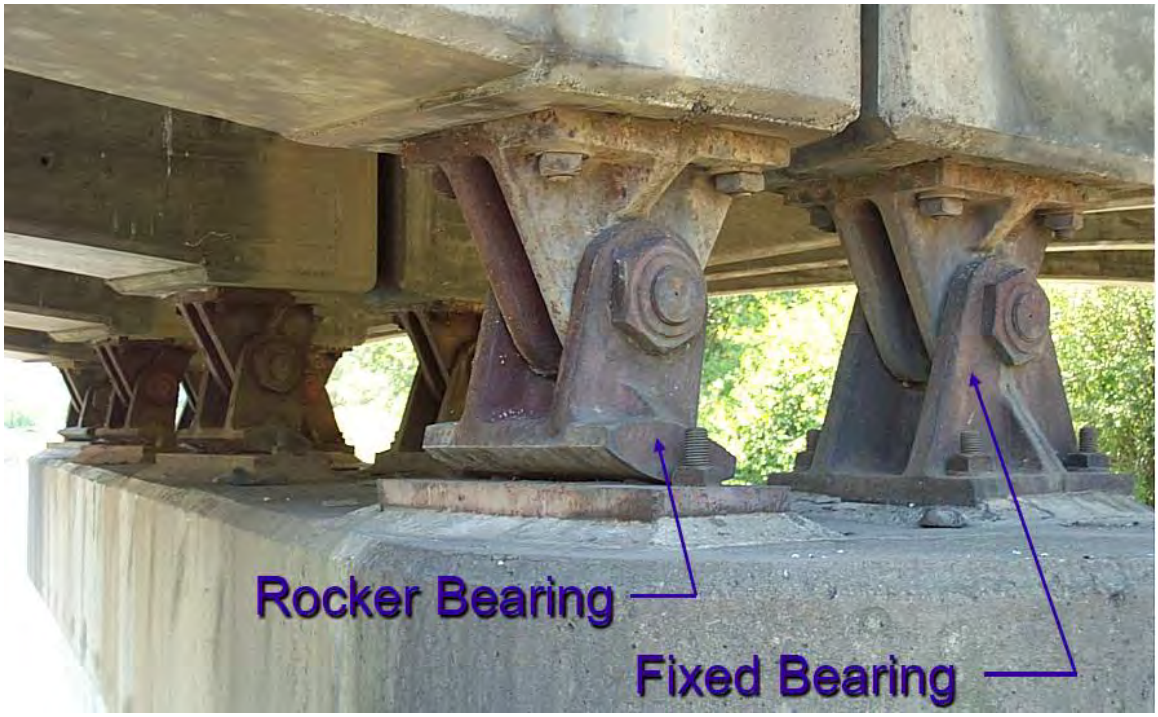

Figure 16. Fixed and rocker expansion bearing. Photo courtesy of Transportation Research Board webinar titled "Bearing with Bridges – Bearings and Expansion Joints on Highway Bridges," June 18, 2020.

Figure 17. Standard plan railing detail on Riley Road Bridge (AHI No. 245701, P-50-0091), 1921.

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For more information on understanding truss bridge design, configuration, and components, the following resources are available:

Comp, T. Allen, and Donald Jackson. “Technical Leaflet: Bridge Truss Types: A Guide to Dating and Identifying.” American Association for State and Local History, May 1977. https://www.academia.edu/32075760/HAER_Technical_Leaflet_95_Bridge_Truss_Types.

Historic Bridge Foundation. “Bridge Types.” *Historic Bridge Foundation*, n.d. https://historicbridgefoundation.com/bridge-types/.

Khaleghi, Bijan, and Richard Zeldenrust. “Bearing with Bridges - Bearings and Expansion Joints on Highway Bridges.” presented at the Transportation Research Board Webinar, June 18, 2020. https://onlinepubs.trb.org/onlinepubs/webinars/200618.pdf.

Parsons Brinckerhoff and Engineering and Industrial Heritage. *A Context for Common Historic Bridge Types*. prepared for The National Cooperative Highway Research Program, Transportation Research Council, and National Research Council, October 2005. http://onlinepubs.trb.org/onlinepubs/archive/NotesDocs/25-25(15)_FR.pdf.

Wyatt, Barbara. “Transportation.” In *Cultural Resource Management in Wisconsin: Volume 2*, 2:12–1 to 12–29. Cultural Resource Management in Wisconsin: A Manual for Historic Properties. Historic Preservation Division: State Historical Society of Wisconsin, 1986. https://www.wisconsinhistory.org/pdfs/cms/WI%20SHPO%20CRMP%20Volume%202%20Transportation.pdf.

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5. National Register Evaluation Criteria for Standard Plan Truss Bridges

The following evaluation discussion applies only to truss bridges built according to SHC standard plans. In order to apply the evaluation criteria for standard-plan truss bridges, it must first be established if the truss bridge was designed according to a standard plan since, as noted in the context, not all truss bridges were. The SHC deemed any bridge determined to be a transportation necessity, required to be over 300 feet in length, and/or falling under "unusual" conditions to be a "special" bridge. A special bridge would have plans custom-engineered for its "special" unique conditions and situation and will be evaluated on an individual basis.

A. Identification of standard plan bridges and "special" bridges

The use of standard plans may be able to be confirmed through documentary evidence. In some cases there may be a notation on the original bridge plans indicating that the plans are based on a state standard plan. If so, that would be substantial evidence of that bridge's connection to an identified standard truss plan.

Due to the absence of a notation on plans, an incomplete series of standard truss plans, and the possibility of bridges to exhibit characteristics of a blend of standard plans rather than a single set, it may be almost impossible to directly tie an extant truss bridge to a corresponding standard plan. Therefore, a three-step test can be applied to determine whether a particular truss bridge is likely constructed according to a standard plan:

1. Was the bridge built between the years 1911 and 1950?

2. Is the bridge's truss configuration Warren or Pratt (including variations on these types, such as Camelback, Parker, or Pennsylvania)?

3. Does the composition of individual truss members conform with the composition of truss members depicted in an identified standard plan?

Physical evidence of a direct relationship between an existing truss bridge and a standard truss plan will confirm (or not) that the bridge was constructed according to a standard plan. Each standard plan includes a number of specific design details, and an existing truss can be compared to determine the nature of the relationship of physical details with plan details and the number of one-to-one direct relationships.

For example, the standard plan for a 1917 thru truss—100 feet long with a 16-foot roadway—includes notations for the following members: upper chord, two channels with top plate and laced underside; lower chord, two angles; verticals, two channels laced both sides; diagonals, two angles; railings, two lines of channels; portal, all paired channels. The same members can be readily viewed on an extant truss bridge built about 1917 and their composition of members determined to be the same or different from the plan notations. Many of these member compositions remained the same in standard plans year after year, typically changing only for much longer or much shorter spans.

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To perform the bridge-plan comparison, first identify a known standard plan from the same year-built (or closest year of available plans) of the existing bridge. If multiple plans are available for that year, select the plan with the span length closest to that of the existing bridge. Then, compare the individual truss and portal members of the existing bridge to the same members of the standard plan (i.e., upper and lower chords, diagonals, and verticals), as well as the portal.

The greater the number of similarities, the more confidence then exists in determining that the existing bridge was based on a particular standard plan, even though the plans for the existing bridge may not identify the connection to standard plans. If the bridge is determined to be a standard plan truss bridge, the evaluation should continue following the evaluation criteria outlined below.

If the review cannot produce a degree of certainty that the existing bridge was designed in accordance with an existing standard truss plan, the evaluation of the truss bridge should be completed using National Register Criteria.

B. National Register Criteria

The evaluation of Wisconsin's truss bridges designed according to standard plans is based on the National Register Criteria as outlined in National Register bulletins *How to Apply the National Register Criteria for Evaluation* and *How to Complete the National Register Registration Form.*[91] The National Register employs four criteria for evaluation: A, B, C, and D. *Criterion A* and *Criterion B* involve associative value, *Criterion C* involves design or construction value, and *Criterion D* involves information value.

Criterion A: Events – Properties that are associated with events that have made a significant contribution to the broad patterns of our history
Criterion A recognizes bridges that have an important association with single events, a pattern of events, repeated activities, or historic trends that are significant within the context of transportation and bridge-building history.

Criterion B: Persons – Properties that are associated with the lives of persons significant in our past
Criterion B recognizes bridges that illustrate the important achievements of a person who was significant in the past. Structures must be compared to other properties associated with the work of the individual to identify those that best represent a person's historic contributions. Architects, artisans, artists, and engineers are often represented by their works, which are eligible under *Criterion C*. Therefore, the significant works of engineers or bridge-building firms are generally eligible under *Criterion C*, not *Criterion B*, and it is unlikely that bridges are significant under *Criterion B*.

[91] Information in this section is from U.S. Department of the Interior, National Park Service, *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (Washington, D.C., 1990, revised 1997), https://www.nps.go subjects/nationalregister/upload/NRB-15_web508.pdf; U.S. Department of the Interior, National Park Service, *National Register Bulletin: How to Complete the National Register Registration Form* (Washington, D.C., 1997), https://www.nps.go subjects/nationalregister/upload/NRB16A-Complete.pdf.

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Criterion C: Design/Construction – Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
Criterion C recognizes bridges that have distinctive design or construction characteristics that demonstrate the following: (1) the pattern of features common to a particular class of resources, (2) the individuality or variation of features that occurs within the class, (3) the evolution of that class of resources, and/or (4) the transition between classes of resources. *Criterion C* also recognizes bridges that are the work of a master or demonstrate high artistic value. Bridges are most likely to be significant under *Criterion C*.

Criterion D: Information Potential – Properties that have yielded, or may be likely to yield, information important in prehistory or history
Criterion D is most often applied to archaeological properties and it is highly unlikely that any bridges would be eligible under *Criterion D*.

Because *Criteria B* and *D* are unlikely to apply, only a detailed discussion of *Criteria A* and *C* specifically applied to Wisconsin standardized truss bridges is provided below. The potential significance of truss bridges is evaluated based on the bridge's contribution to the broad patterns of history and/or engineering. To be eligible, a bridge must be associated with at least one area of significance and must be able to convey its significant association. Potential areas of significance for standard-plan truss bridges under *Criteria A* and *C* are outlined below.

(1) *Criterion A*

Under *Criterion A*, bridges may be eligible if they are associated with important trends or events that have made a significant contribution to the broad patterns of history. To possess significance, a direct connection between the bridge and an important state or local event, trend, or pattern must be demonstrated. The following are the most likely areas of significance for a bridge; however, any of the areas of significance under *Criterion A* may apply if a demonstrated association and significance is established. Evaluation of a standard truss bridge should consider if any of the areas of significance under *Criterion A* apply.

Transportation
The area of significance of Transportation is defined in the National Register bulletin *How to Apply the National Register Criteria for Evaluation* as the process and technology of conveying passengers or materials. For an individual bridge to be significant within a larger transportation network of interconnected resources it needs to, on its own, be an important crossing and demonstrate individual significance within the larger transportation network substantiated by documentary evidence. Significant transportation associations may include bridges that are individually important as part of a transportation route and represent:

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- Bridges that opened transportation within an area

- Early or important grade-separation structures or bridges that eliminated dangerous intersections of highways and railroads (see also Politics/Government)

- Bridges that were early or important major river crossings

Politics/Government
This area of significance is defined in the National Register bulletin *How to Apply the National Register Criteria for Evaluation* as the enactment and administration of laws by which a nation, state, or other political jurisdiction is governed and activities related to the political process. Federal programs of the New Deal provided relief funding and established policies and priorities that contributed to bridge and infrastructure construction. One example is the focus of New Deal programs in the 1930s on the construction of grade-separation projects. Bridges may be significant if they have a direct association with New Deal programs through funding or work-relief efforts as substantiated by documentary evidence.

Community Planning and Development
The area of significance of Community Planning and Development as defined in the National Register bulletin *How to Apply the National Register Criteria for Evaluation* is the design or development of the physical structure of communities. A bridge may derive significance individually if it is a gateway to the community and/or stands out individually as part of a planned community improvement.

Entertainment Recreation
The area of significance of Entertainment and Recreation as defined in the National Register bulletin *How to Apply the National Register Criteria for Evaluation* is the development and practice of leisure activities for refreshment, diversion, amusement, or sport. A bridge may derive significance individually if it provided the first access to a prominent recreational area and/or park.

(2) *Criterion C*
Criterion C applies to bridges that are significant in the area of Engineering for their design and/or construction, including such considerations as engineering features and aesthetic treatment. The application of each consideration of *Criterion C* as applied to standard truss bridges is presented below.

Distinctive characteristics of a type, period, or method of construction
Distinctive design or construction characteristics include patterns of features common to a particular bridge type, variations of features within bridge types, and evolutions/transitions that illustrate an important variation within an established bridge type. Truss bridges built according to standard plans possess significance by demonstrating the highest level of similarity to standard plan details, beginning with the basic truss type and continuing with the comparison with each member comprising the truss, including upper and lower chords, diagonals, verticals, portal (if a thru truss), railings, and major connections (riveted).

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High artistic value

This aspect of *Criterion C* considers bridges that were designed with outstanding architectural style as expressed in their overall form, aesthetic treatment, or applied ornamentation. A bridge will have high artistic value when its combination of decorative features is able to convey overall aesthetic value. Standard truss plans demonstrate engineering that is intentionally functional and economic and devoid of aesthetic enhancements and decorative detail. A standard truss bridge is based on standard plans; therefore, there is not a distinction of the aesthetics among the truss bridges.

Work of a master

This aspect of *Criterion C* considers bridges that express substantial evidence of the distinguishing characteristics of a master's important work. A bridge recognized for its significance as the work of an engineering master needs to be distinguishable from others in its characteristic style and quality. A standard truss bridge is based on standard plans and therefore would not represent the work of an important engineer, designer, fabricator, or builder. While truss standard plans are approved and signed by the SHC bridge engineer, the engineering designs are largely anonymous and cannot be attributed to a particular designing engineer with any certainty.

(3) Period of significance

The period of significance as defined in the National Register bulletin *How to Complete the National Register Registration Form* is the length of time when a property was associated with important events, activities or persons, or attained the characteristics which qualify it for the National Register. For bridges with significance under *Criterion C*, the period of significance is the date of construction and/or the dates of any significant alterations or additions. For bridges with significance under *Criterion A*, the period of significance is the period when the property demonstrates the association.

C. Evaluating integrity

To be listed in the National Register, a truss bridge built according to a standard plan must not only be shown to be significant under the evaluation criteria, but also must display historic integrity. Integrity is evaluated based on an assessment of the physical features related to significance and the bridge's ability to convey significance. Bridges that do not retain sufficient integrity to convey significance are not eligible for listing in the National Register. For truss bridges based on standard plans, integrity is largely related to the individual bridge's adherence to a standard plan.

(1) Aspects of integrity

Historic integrity is distinguished from structural (or functional) integrity, which describes the ability of a structure to perform its original design function. Within the concept of integrity, the evaluation criteria cite seven aspects or qualities that, in various combinations, define integrity. To retain historic integrity, a property will always possess several, and usually most, of the aspects. The seven aspects of integrity are:

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- *Design – The combination of elements that create the form, plan, space, structure, and style of a property.*

  Design refers to the physical features that make up the structure. In bridges, changes in design often are closely related to changes in key features and related materials. For trusses, changes in design could be changes to the truss configuration.

- *Materials – The physical elements that were used in the original design and construction of a bridge.*

  Bridge materials—steel, for truss bridges—are used in a structure's design and construction. Bridge materials are intimately connected with design.

- *Workmanship – The physical evidence of the crafts used in the construction of a bridge.*

  Workmanship reflects the labor and skill of artisans. With the use of standard plans the work of artisans became rare and was not found to be a significant aspect of integrity for standard truss bridges.

- *Location – The place where the historic property was constructed or the place where the historic event occurred.*

  Location refers to the specific place where a bridge was built and/or an event occurred.

- *Setting – The physical environment of a historic property.*

  Setting refers to the character of the place in which the bridge played its historical role. Setting often reflects the basic physical conditions under which a property was built and the functions it was intended to serve.

- *Feeling – A bridge's expression of the aesthetic or historic sense of a particular period of time.*

  The aspect of feeling results from the presence of physical features that, taken together, convey the property's historic character.

- *Association – The direct link between an important historic event or person and a historic property.*

  A property retains association if it remains in the place where the important event or activity occurred and is sufficiently intact to convey that relationship to an observer.

An important part of establishing integrity is determining whether a standard truss bridge retains the essential physical features that are character-defining and enable it to convey its historic identity. This

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process involves defining the essential physical features related to significance, determining if the features are retained and visible enough to convey significance, and determining which aspects of integrity are important to the bridge's significance and if they are present. For truss bridges based on standard plans, the truss design is an essential physical feature that conveys significance, along with the configuration of its members.

In considering integrity, the degree of change to a bridge as evidenced by any alterations over time is weighed against the nature and degree of its engineering or historical significance. The period of significance is called out as a benchmark against which the bridge should be compared to determine whether or not it retains historic integrity. For a bridge to retain physical integrity, its present appearance should closely resemble its appearance during the time the bridge derived its significance. Alterations introduced after the period of significance generally negatively impact a bridge's historic integrity.

Different aspects of integrity affect the eligibility of a structure in different ways, depending on how each relates to the property's significance. The retention of specific aspects of integrity is paramount for a property to convey its significance under each of the evaluation criterion. Therefore, the assessment of integrity for *Criterion A* differs from the assessment for *Criterion C*. In addition, the type of alteration affects the assessment of the change and its impact on historic integrity. Some alterations are significant enough to diminish the historic integrity of a bridge and therefore render it not eligible for listing in the National Register, while others will not impact the historic integrity of a structure enough to render it not eligible.

Criterion A relates to the significance of a structure gained through its historical associations. Therefore, integrity aspects of location, setting, feeling, and association play an important role in conveying the structure's significance. As a result, these aspects of integrity are often weighed more heavily in the assessment of a structure's overall historic integrity under *Criterion A*. Integrity aspects of design, workmanship, and materials are also important, but alterations that affect these aspects likely will not result in the same level of diminished integrity. Under *Criterion A*, a truss bridge needs to retain enough of its historic appearance to represent the period of significance. This will typically include retention of the truss design but some degree of alterations may be acceptable while not diminishing its ability to convey significance. Other minor alterations to a bridge significant under *Criterion A*, such as replacement railings or deck, will typically not impact its integrity.

Since *Criterion C* relates to the engineering and/or architectural significance of a structure, the integrity aspects of design, workmanship, and materials are typically more important. This is because they allow a structure to convey its physical features and characterize the type, period, or method of construction. Location and setting may be important under *Criterion C* when the design responds to the immediate environment. A change in location, setting, feeling, or association may result in diminished integrity but alterations that affect these aspects likely will not result in the same level of diminished integrity.

Typical alterations to standard-plan truss bridges in Wisconsin and their impact on integrity are discussed below.

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To evaluate truss bridges constructed according to standard plans that possess significance under *Criterion C*, the primary integrity concern is the degree to which the extant bridge conforms with its standard plan. The most important item would be the truss design itself and whether it continues to conform to the type in the plan or if there have been changes. For example, a truss bridge built according to a standard plan of a Warren-with-verticals truss type should continue to retain the features and characteristics of that truss type. Related to this, but of secondary importance, would be the configuration of the members comprising the truss, since the composition of most of the members is specified in each standard plan. Because all available standard plans show riveted connections, the use of welding would indicate a more recent repair that did not follow the original design using bolts. It is rare, likely impossible, to find modern repairs using rivets, and bolts would be a better substitute than welding. An acceptable repair would involve the in-kind replacement of members or parts of members using bolts instead of rivets; welding would be acceptable if very limited use.

A truss bridge that does not retain its original truss design or has had significant alteration, including not in-kind replacement of members, to the configuration would not retain integrity and therefore could not convey significance and would not be eligible for the National Register under *Criterion C*.

Other alterations to a bridge significant under *Criterion C* that do not impact the design and configuration would not impact its integrity. The following are common alterations that typically do not impact the historic integrity of a standard truss in a way that renders it not eligible.

- Expansion bearings: original expansion bearings would be an important detail to note and surviving roller bearings would be very unusual. Since bearings are often changed and updated for safety and other important reasons, replacement bearings are not a significant integrity issue. See Figure 15 and Figure 16.

- Railings: original standard-plan railings are simple and functional and easily damaged over the life of the bridge and often replaced. As such, repaired or replacement railings do not affect the integrity of the truss bridge if they are not overly decorative or ornamental. See Figure 17.

- New deck: repair or replacement of a deck over the life of a bridge is not unusual and does not affect the overall design and construction integrity of the truss bridge. See Figure 18 and Figure 19.

- Approach guard rail: as part of road safety improvements and changing or updating bridge and roadway safety requirements, new or additional guardrails may be added to the bridge approaches; the guardrails may extend onto the bridge and in front of existing railings. Such guardrails do not impact the integrity of the truss bridge. See Figure 20.

Cumulative minor alterations should be considered collectively to see if they lead to an overall loss of historic integrity and, in those cases, could render a structure not eligible.

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Figure 18. Early standard plan wood deck (view from below) on the Richardson Bridge (AHI No. 245600, P-33-0213), 1917.

Figure 19. Replacement concrete deck on the Pine River Bridge (AHI No. 245691, B-19-0509), 1939.

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Figure 20. Addition of modern guardrail on the Josie Creek Road Bridge (AHI No. 245702, P-54-0906), 1915.

D. Conclusion

The application of the National Register Criteria and integrity requirements provides a framework for evaluating the significance and integrity of Wisconsin truss bridges based on standard plans. The National Register Criteria are based on the historic context and guidance provided by the National Park Service. Further investigation, including field survey and site-specific research, will provide valuable information to inform the application of the National Register Criteria and consideration of historic integrity. The Criterion will be used by WisDOT to facilitate compliance with applicable preservation laws including, Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the U.S. Department of Transportation Act of 1966.

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Appendix A. List of Available Wisconsin Standards Plans for Truss Bridges (provided by the Wisconsin Department of Transportation)

The following plans are available for viewing and download at https://wisdot.box.com/s/jwfjcsp8uz0eeq2z44um2glysjpdhy4x

Year	Plan name, number, or designation	Truss Type (Thru or Pony)	Truss Design (Warren, Pratt, Other)	Span Length	Road Width	Truss height	No of panels	Connection type	Expansion bearing type	Bridge Engineer
1908	B2	Pony	Warren w/nominal verticals	40	16	3-0	3		None	Torkelson
1911	A10		Warren w/nominal verticals	36	16	4-6	3	Riveted	None	Torkelson Buetow
1911	A3		Warren w/nominal verticals	45	16	5-3	3	Riveted	None	Torkelson Buetow
1911	A4		Warren w/nominal verticals	50	16	5-6	4	riveed	None	Torkelson Buetow
1911	A5		Warren w/nominal verticals	56	16	6-0	4	Riveted	None	Torkelson Buetow
1911	A6		Warren w/nominal verticals	60	16	6-0	4	Riveted	None	Torkelson Buetow
1911	A7		Warren w/nominal verticals	65	16	6-6	5	Riveted	None	Torkelson Buetow
1911	A8		Warren w/nominal verticals	70	16	7-0	5	Riveted	None	Torkelson Buetow
1911	A9		Warren w/nominal verticals	75	16	7-6	5	Riveted	None	Torkelson Buetow
1911	B5		Pratt half-hip	80	16	8-0	5	Riveted	None	Torkelson Buetow
1911	A10		Warren w/nominal verticals	80	16	8-0	5	Riveted	None	Torkelson Buetow
1911	B5	Thru	Pratt	80	16	18-0	5	Riveted	None	Unsigned
1911	A11		Warren w/nominal verticals	84	16	8-6	6	Riveted	None	Torkelson Buetow
1911	B9	Thru	Pratt	105	16	20-0	7	Riveted	None	Torkelson Buetow
1911	B10	Thru	Pratt	112	16	20-0	7	Riveted	None	Torkelson Buetow
1911	B11	Thru	Pratt	120	16	20-0	8	Riveted	None	Torkelson Buetow
1911	B12	Thru	Pratt	128	16	22-0	8	Riveted	None	Torkelson Buetow
1912	B1		Pratt half-hip	60	16	6-0	4	Riveted	None	Torkelson Buetow
1912	B2		Pratt half-hip	65	16	6-6	5	Riveted	None	Torkelson Buetow
1912	B4		Pratt half-hip	75	16	7-6	5	Riveted	None	Torkelson Buetow
1912	B6		Pratt half-hip	84	16	8-6	6	Riveted	None	Torkelson Buetow
1912	A14	Thru	Pratt	105	16	20-0	7	Riveted	Rollers	Torkelson Buetow
1912	A15	Thru	Pratt	112	16	20-0	7	Riveted	Rollers	Torkelson Buetow
1912	A16	Thru	Pratt	120	16	20-0	8	Riveted	Rollers	Torkelson Buetow
1912	A17	Thru	Pratt	128	16	22-0	8	Riveted	Rollers	Torkelson Buetow
1912	A18	Thru	Camelback	140	16	25-0	8	Riveted	Rollers	Torkelson Buetow
1912	B13	Thru	Camelback	140	16	25-0	8	Riveted	Rollers	Torkelson Buetow
1912	A19	Thru	Camelback	150	16	25-0	8	Riveted	Rollers	Torkelson Buetow
1912	B14	Thru	Camelback	150	16	25-0	8	Riveted	Rollers	Torkelson Buetow
1913	A27		Warren w/nominal verticals	40	18	5-0	3	Riveted	None listed	Torkelson
1913	A28		Warren w/nominal verticals	50	18	5-6	4	Riveted	None listed	Torkelson
1913	A29		Warren	60	18	5-6	4	Riveted	None listed	Torkelson
1913	A32		Warren	75	18	7-8	5	Riveted	None listed	Torkelson
1913	A21	Thru	Camelback	140	18	27-0	8	Riveted	Rollers	Torkelson
1913	A20	Thru	Camelback	140	18	27-0	8	Riveted	Rollers	Torkelson
1913	A22	Thru	Camelback	150	18	28-0	8	Riveted	Rollers	Torkelson
1913	A23	Thru	Camelback	160	18	28-0	8	Riveted	Rollers	Unsigned
1913	A24	Thru	Camelback	168	18	30-0	9	Riveted	Rollers	Torkelson
1913	A25	Thru	Camelback	171	18	30-0	9	Riveted	Rollers	Unsigned
1913	A26	Thru	Camelback	180	18	30-0	10	Riveted	Rollers	Torkelson
1913	A130	Thru	Parker	180	18	30-0	10	Riveted	Rollers	Torkelson
1914	A1		Warren w/nominal verticals	35	16	4-6	3	Riveted	Slotted bolt	Buetow
1914	A21		Warren w/nominal verticals	35	18	4-6	3	Riveted	Slotted bolt	Buetow
1914	A2		Warren w/nominal verticals	40	16	5-0	3	Riveted	Slotted bolt	Buetow

Year	Plan name, number, or designation	Truss Type (Thru or Pony)	Truss Design (Warren, Pratt, Other)	Span Length	Road Width	Truss height	No of panels	Connection type	Expansion bearing type	Bridge Engineer
1914	A22		Warren w/nominal verticals	40	18	5-0	3	Riveted	Slotted bolt	Buetow
1914	A3		Warren w/nominal verticals	45	16	5-3	3	Riveted	Slotted bolt	Buetow
1914	A23		Warren w/nominal verticals	45	18	5-3	3	Riveted	Slotted bolt	Buetow
1914	A4		Warren w/nominal verticals	50	16	5-6	4	Riveted	Slotted bolt	Buetow
1914	A24		Warren w/nominal verticals	50	18	5-6	4	Riveted	Slotted bolt	Buetow
1914	A5		Warren w/nominal verticals	55	16	6-0	4	Riveted	Slotted bolt	Buetow
1914	A25		Warren w/nominal verticals	55	18	6-0	4	Riveted	Slotted bolt	Buetow
1914	A6		Warren w/nominal verticals	60	16	6-0	4	Riveted	Slotted bolt	Buetow
1914	A26		Warren w/nominal verticals	60	18	6-6	4	Riveted	Slotted bolt	Buetow
1914	A7		Warren w/nominal verticals	65	16	6-6	5	Riveted	Slotted bolt	Buetow
1914	A27		Warren w/nominal verticals	65	18	7-0	5	Riveted	Slotted bolt	Buetow
1914	A8		Warren w/nominal verticals	70	16	7-0	5	Riveted	Slotted bolt	Buetow
1914	A28		Warren w/nominal verticals	70	18	7-6	5	Riveted	Slotted bolt	Buetow
1914	A9		Warren w/nominal verticals	75	16	7-6	5	Riveted	Slotted bolt	Buetow
1914	A29		Warren w/nominal verticals	75	18	8-0	5	Riveted	Slotted bolt	Buetow
1914	A39		Warren w/nominal verticals	80	16	8-0	5	Riveted	Slotted bolt	Torkelson
1914	A30		Warren w/nominal verticals	80	18	8-6	5	Riveted	Slotted bolt	Buetow
1914	A11		Warren w/nominal verticals	85	16	8-6	6	Riveted	Slotted bolt	Buetow
1914	A14	Thru	Pratt	100	16	20-0	6	Riveted	Rollers	Torkelson
1914	A34	Thru	Pratt	100	18	20-0	6	Riveted	Rollers	Torkelson
1914	A15	Thru	Pratt	105	16	20-0	7	Riveted	Rollers	Torkelson
1914	A35	Thru	Pratt	105	18	20-0	7	Riveted	Rollers	Torkelson
1914	A16	Thru	Pratt	112	16	20-0	7	Riveted	Rollers	Torkelson
1914	A36	Thru	Pratt	112	18	20-0	7	Riveted	Rollers	Torkelson
1914	A16	Thru	Pratt	120	16	20-0	8	Riveted	Rollers	Torkelson
1914	A17	Thru	Pratt	120	16	20-0	8	Riveted	Rollers	Torkelson
1914	A40	Thru	Pratt	120	18	20-0	8	Riveted	Rollers	Torkelson
1914	A37 revision	Thru	Pratt	120	18	20-0	8	Riveted	Rollers	Torkelson
1914	A16	Thru	Pratt	128	16	22-0	8	Riveted	Rollers	Torkelson
1914	A38	Thru	Pratt	128	18	22-0	8	Riveted	Rollers	Torkelson
1914	A41	Thru	Camelback	156	18	28-0	9	Riveted	Plan note: "See drawing N431"	Torkelson
1915	A14	Thru	Pratt	100	16	20-0	6	Riveted	Rocker - see drawing N903, Bearing No. 1	Buetow
1915	A34	Thru	Pratt	100	18	20-0	6	Riveted	Rocker - see drawing N903, Bearing No. 1	Buetow
1915	A15	Thru	Pratt	105	16	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 1	Buetow
1915	A35	Thru	Pratt	105	18	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 1	Buetow
1915	A16	Thru	Pratt	112	16	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 1	Buetow
1915	A36	Thru	Pratt	112	18	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1915	A17	Thru	Pratt	120	16	20-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1915	A37	Thru	Pratt	120	18	20-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1915	A18	Thru	Pratt	128	16	22-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow

Year	Plan name, number, or designation	Truss Type (Thru or Pony)	Truss Design (Warren, Pratt, Other)	Span Length	Road Width	Truss height	No of panels	Connection type	Expansion bearing type	Bridge Engineer
1915	A38	Thru	Pratt	128	18	22-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1915	A19	Thru	Camelback	140	16	27-0	8	Riveted	Rollers	Torkelson
1915	A19 revision	Thru	Camelback	140	16	27-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1915	A39	Thru	Camelback	140	18	27-0	8	Riveted	Rollers	Torkelson
1915	A39 revision	Thru	Camelback	140	18	27-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1915	A20	Thru	Camelback	150	16	28-0	8	Riveted	Rollers	Torkelson
1915	A20 revision	Thru	Camelback	150	16	28-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1915	A49	Thru	Camelback	150	18	28-0	8	Riveted	Rollers	Torkelson
1915	A40 revision	Thru	Camelback	150	18	28-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1916	A45		Warren w/nominal verticals	55	20	6-0	4	Riveted	Slotted bolt	Buetow
1916	A46		Warren w/nominal verticals	60	20	6-6	4	Riveted	Slotted bolt	Buetow
1916	A47		Warren w/nominal verticals	65	20	7-0	5	Riveted	Slotted bolt	Buetow
1916	A48		Warren w/nominal verticals	70	20	7-6	5	Riveted	Slotted bolt	Buetow
1916	A49		Warren w/nominal verticals	75	20	8-0	5	Riveted	Slotted bolt	Buetow
1916	A10		Warren w/nominal verticals	80	16	8-0	5	Riveted	Slotted bolt	Buetow
1916	A50		Warren w/nominal verticals	80	20	8-6	5	Riveted	Slotted bolt	Buetow
1917	A41		Warren w/nominal verticals	35	20	4-6	3	Riveted	Slotted bolt	Buetow
1917	A42		Warren w/nominal verticals	40	20	5-0	3	Riveted	Slotted bolt	Buetow
1917	A43		Warren w/nominal verticals	45	20	5-3	3	Riveted	Slotted bolt	Buetow
1917	A44		Warren w/nominal verticals	50	20	5-6	4	Riveted	Slotted bolt	Buetow
1917	A54	Thru	Pratt	100	20	20-0	6	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1918	A50-16		Warren w/nominal verticals	50	16	6-6	4	Riveted	rocker (no notes)	Kirch
1919	B15		Warren w/nominal verticals	80	20	8-6	5	Riveted	Slotted bolt	Torkelson
1919	A55	Thru	Pratt	105	20	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1919	A57	Thru	Pratt	120	20	20-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1920	Not legible		Warren w/nominal verticals	50	20	5-6	4	Riveted	Slotted bolt	Buetow
1920	B??		Warren w/nominal verticals	80	20	8-6	5	Riveted	Slotted bolt	Buetow
1920	A56	Thru	Pratt	112	20	20-0	7	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1920	A58	Thru	Pratt	128	20	22-0	8	Riveted	Rocker - see drawing N903, Bearing No. 2	Buetow
1920	A59	Thru	Camelback	140	20	27-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1920	A60	Thru	Camelback	150	20	28-0	8	Riveted	Rocker - see drawing N903, Bearing No. 3	Buetow
1923	not legible	Thru	Pratt	100	20	20-0	6	Riveted	rocker, w/details on plan	Unsigned
1923	not legible revision	Thru	Pratt	100	20	22-0	6	Riveted	rocker, w/details on plan	Kirch
1927	A50-16		Warren w/nominal verticals	50	16	6-6	4	Riveted	rocker, w/details on plan	Kirch
1927	not legible		Warren w/nominal verticals	50	24	7-0	4	Riveted	rocker, w/details on plan	Kirch
1927	A60-16		Warren w/nominal verticals	60	16	7-0	4	Riveted	rocker, w/details on plan	Kirch
1927	A60-20		Warren w/nominal verticals	60	20	7-0	4	Riveted	rocker, w/details on plan	Kirch
1927	not legible		Warren w/nominal verticals	60	24	7-6	4	Riveted	rocker, w/details on plan	Kirch
1927	A70-20		Warren w/nominal verticals	70	20	8-0	5	Riveted	rocker, w/details on plan	Kirch

Year	Plan name, number, or designation	Truss Type (Thru or Pony)	Truss Design (Warren, Pratt, Other)	Span Length	Road Width	Truss height	No of panels	Connection type	Expansion bearing type	Bridge Engineer
1927	A70-24		Warren w/nominal verticals	70	24	8-0	5	Riveted	rocker, w/details on plan	Kirch
1928	not legible		Warren w/nominal verticals	50	20	6-6	4	Riveted	rocker, w/details on plan	Kirch
1928	A50-??		Warren w/nominal verticals	50	24	7-0	4	Riveted	rocker, w/details on plan	Kirch
1928	A50-28		Warren w/nominal verticals	50	28	7-0	4	Riveted	rocker, w/details on plan	Kirch
1928	A60-16		Warren w/nominal verticals	60	16	7-0	4	Riveted	rocker, w/details on plan	Kirch
1928	A60-20		Warren w/nominal verticals	60	20	7-0	4	Riveted	rocker, w/details on plan	Kirch
1928	A60-28		Warren w/nominal verticals	60	28	7-6	4	Riveted	rocker, w/details on plan	Kirch
1928	A70-16		Warren w/nominal verticals	70	16	8-0	5	Riveted	rocker, w/details on plan	Kirch
1928	A70-20		Warren w/nominal verticals	70	20	8-0	5	Riveted	rocker, w/details on plan	Kirch
1928	A70-24		Warren w/nominal verticals	70	24	8-6	5	Riveted	rocker, w/details on plan	Kirch
1928	A70-28		Warren w/nominal verticals	70	28	8-6	5	Riveted	rocker, w/details on plan	Kirch
1928	A80-24		Warren w/nominal verticals	80	24	9-6	5	Riveted	rocker, w/details on plan	Kirch
1928	A100-24	Thru	Pratt	100	24	23-0	6	Riveted	rocker, w/details on plan	Kirch
1928	A110=20	Thru	Pratt	110	20	23-0	8	Riveted	rocker, w/details on plan	Kirch
1928	A120-20	Thru	Pratt	120	20	23-0	6	Riveted	rocker, w/details on plan	Kirch
1928	A150-24	Thru	Parker	150	24	30-0	9	Riveted	rocker, w/details on plan	Kirch
1929	A140-20	Thru	Parker	140	20	29-0	7	Riveted	rocker, w/details on plan	Kirch
1936	T140-30	Thru	Parker w/nominal middle chord	140	30	29-0	9	Riveted	rocker, w/details on plan	Kirch
1937	T80-30		Warren w/nominal verticals	80	30	12-6	5	Riveted	rocker, w/details on plan	Kirch
1937	T120-24	Thru	Warren w/nominal verticals and middle chord segments	120	24	23-0	8	Riveted	rocker, w/details on plan	Kirch
1937	?120-24	Thru	Pratt	120	24	23-0	8	Riveted	rocker, w/details on plan	Unsigned
1937	T140-24	Thru	Warren Camelback w/nominal middle chord segments	140	24	29-0	8	Riveted	rocker, w/details on plan	Kirch
1937	T160-24	Thru	Warren Camelback w/nominal verticals & middle chord segments	160	24	31-0	10	Riveted	rocker, w/details on plan	Kirch
1937	T190-24	Thru	Warren Camelback w/nominal middle chord segments	190	24	33-0	10	Riveted	rocker, w/details on plan	Unsigned
1938	T75-30		Warren w/nominal verticals	75	30	11-9	5	Riveted	rocker, w/details on plan	Kirch
1938	T100-30	Thru	Warren w/nominal verticals & middle chord segment	100	30	23-0	6	Riveted	rocker, w/details on plan	Kirch
1938	T120-20	Thru	Warren w/nominal verticals & middle chord segment	120	20	23-0	6	Riveted	rocker, w/details on plan	Kirch
1938	T120-30	Thru	Warren w/nominal verticals & middle chord segment	120	30	23-0	6	Riveted	rocker, w/details on plan	Kirch
1938	130-24	Thru	Warren Camelback w/nominal verticals & middle chord segments	130	24	28-0	8	Riveted	rocker, w/details on plan	Unsigned
1938	T130-30	Thru	Warren Camelback w/nominal verticals & middle chord segments	130	30	28-0	8	Riveted	rocker, w/details on plan	Kirch
1938	T150-24	Thru	Warren Camelback w/nominal verticals & middle chord segments	150	24	30-0	8	Riveted	rocker, w/details on plan	Kirch
1938	T150-30	Thru	Warren Camelback w/nominal verticals & middle chord segments	150	30	30-0	8	Riveted	rocker, w/details on plan	Kirch
1938	T160-20	Thru	Warren Camelback w/nominal verticals & middle chord segments	160	20	30-0	8	Riveted	rocker, w/details on plan	Kirch
1940	T160-24	Thru	Warren Camelback w/nominal verticals & middle chord segments	160	24	30	8	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	75	24	11-8	5	Riveted	rocker, w/details on plan	Torkelson
Undated		Pony	Warren	75	20	11-8	5	Riveted	rocker, w/details on plan	Torkelson
Undated		Pony	Warren	50	20	6-10	4	Riveted	rocker, w/details on plan	Kirch

Year	Plan name, number, or designation	Truss Type (Thru or Pony)	Truss Design (Warren, Pratt, Other)	Span Length	Road Width	Truss height	No of panels	Connection type	Expansion bearing type	Bridge Engineer
Undated		Pony	Warren	60	20	9-6	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	24	9-6	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	20	9-0	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	60	16	9-0	5	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pennsylvania	231	24	36-0	14	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	210	20	35-0	12	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	200	30	34-0	12	Riveted	rocker, w/details on plan	Unsigned
Undated		Thru	Pennsylvania	180	24	32-0	11	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	165	24	31-0	9	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	160	30	31-0	9	Riveted	rocker, w/details on plan	Unsigned
Undated		Thru	Camelback	160	22	30-0	8	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	150	30	30-0	9	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	150	28	30-0	9	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	150	24	30-0	9	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Parker	140	28	29-0	9	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Parker	140	24	29-0	9	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Pratt	130	28	29-0	8	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Pratt	130	24	29-0	8	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Pratt	130	20	23-0	8	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Pratt	125	24	23-0	8	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	120	28	23-0	8	Riveted	rocker, w/details on plan	Kirch Buetow
Undated		Thru	Pratt	120	24	23-0	8	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	120	20	23-0	8	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	110	24	23-0	8	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	100	30	23-0	6	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	100	28	23-0	6	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	100	24	23-0	6	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	100	20	23-0	6	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	20	18-6	5	Riveted	rocker, w/details on plan	Unsigned
Undated		Pony	Warren	80	28	9-6	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	24	18-6	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	20	9-0	5	Riveted	rocker, w/details on plan	Kirch
Undated		Pony	Warren	80	16	9-0	5	Riveted	rocker, w/details on plan	Kirch
Undated		Thru	Pratt	100	24	23-0	6	Riveted	rocker, w/details on plan	Kirch

Appendix B. Completed Survey Forms

Primary Info

AHI Number	245615		
Historic Name	B-18-001		
Other Name			
Property Address	CTH D		
County	Eau Claire	**Municipality**	
Civil Town	Ludington	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	27-7-W-33-0-0
Style	NA (unknown or not a building)	**Wall Material**	
Historic Use	overhead truss bridge	**Structural System**	Warren Truss
Year Built	1948	**Year Demolished**	
Structural Additions			
Architects	State Highway Commission of Wisconsin		

Other Info

Survey Year	
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: B-18-001. WisDOT Highway Structures Information System.
Additional Comments	Structure B-18-001 is a three-span Polygonal Warren Overhead Truss bridge of riveted steel construction. The bridge measures 265-feet-long and has a 26.8-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete piers and abutments. The bridge's truss design features nine vertical members and eight diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1948 and carries County Highway D over the Eau Claire River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

WisDOT Designation: Unknown
Historic Name (if applicable): N/A
Current Owner: Eau Claire County
Year Built: 1948
Engineer: State Highway Commission of Wisconsin
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Eau Claire
City/Village/Town: Town of Ludington
Crossing: Eau Claire River

Technical Data
Bridge Category: Polygonal Warren Overhead Truss
Spans and Type: 3 spans: One Overhead Truss, Two Deck Girder
Connection Type: Riveted
Substructure: Steel floor beams, poured concrete piers and abutments
Overall Length and Width: 265-feet-long, 26.8-foot-wide deck
Floor System: Concrete, poured in place
Date of Survey: 4/07/2023

Summary Description

Structure B-18-001 is a three-span Polygonal Warren Overhead Truss bridge of riveted steel construction. The bridge measures 265-feet-long and has a 26.8-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete piers and abutments. The bridge's truss design features nine vertical members and eight diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1948 and carries County Highway D over the Eau Claire River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: B-18-001. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

B-18-001 View Looking North

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

B-18-001 View Looking East

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

B-18-001 View Looking West

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

B-18-001 View Looking NNW

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-18-001

B-18-001 View Looking South

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-19-509

WisDOT Designation: Major Col-Rural
Historic Name (if applicable): n/a
Current Owner: State Highway Department
Year Built: 1939
Engineer: unknown
Fabricator: Illinois Steel
Contractor: unknown
Year Moved to Site (if applicable): n/a
Status: Extant

Geographic Data
County: Florence
City/Village/Town: Town of Fern
Crossing: State Highway 101 over Pine River

Technical Data
Bridge Category: Warren pony truss
Spans and Type: Single, simple span
Connection Type: Riveted
Substructure: Poured concrete abutments with wingwalls
Overall Length and Width:

- 28.5 feet wide total
- 90 feet long between abutments or 96 feet long from back of each abutment

Floor System: concrete
Date of Survey: 12/01/2022

Summary Description

According to the Highway Structures Information System, B-19-509 was originally constructed in 1939. The bridge is located in a rural setting in the Town of Fern, Florence County and trends east-west and spans Pine River on State Highway 101. B-19-509 is a single, simple span Warren pony truss bridge with verticals. The bridge members are steel. The bridge consists of six, fifteen-feet panels between end posts and vertical members. The end posts and top/upper chords are built-up with V-lacing along the underside and plates at the ends and connections. The connections are riveted with gusset plates connecting the vertical members and diagonal members. The bottom chord is built-up with battens.

The superstructure is composed of reinforced, poured concrete decking and steel floor beams and deck stringers. The floor beams are large I-beams spanning perpendicular between each of the vertical and diagonal member connections. The deck stringers are smaller I-beams connected with angle plates to each floor beam. Each section is reinforced with cross angles connected at the center with plates and connected to the decking with a single vertical rod. Rocker bearings connect the superstructure to the concrete abutments.

In 1980, the original deck was removed and replaced with bar steel reinforced, poured concrete deck featuring expansion joints on each end and two floor drains along the south end of pavement. A beam guardrail was installed and connected with bolts on the interior sides of the bridge span in 1986. Two of the rocker bearings were replaced in 1996. A concrete overlay was installed in 2006.

Sources

Files and Construction records, “B-19-509”, Highway Structures Information System (HSI).

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-19-509

B-19-509, Overview of bridge setting, deck, and approach, facing west on STH 101.

B-19-509, Overview of north span, facing southwest.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-19-509

B-19-509, Underside of superstructure, facing east.

B-19-509, Concrete abutment and wingwall, facing south from Pine River.

Primary Info

AHI Number	245601		
Historic Name	Bridge B-33-2		
Other Name	B-33-002		
Property Address	Riverside Lane over the Pecatonica River		
County	Lafayette	**Municipality**	
Civil Town	Gratiot	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	1-4-E-4-0-0
Style	Not a Building	**Wall Material**	
Historic Use	pony truss bridge	**Structural System**	Steel Frame
Year Built	1952	**Year Demolished**	
Structural Additions			
Architects	State Highway Commission of Wisconsin		

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: B-33-002. WisDOT Highway Structures Information System
Additional Comments	Structure B-33-002 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 125.5-feet-long and has a 20.5-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1952 and carries Riverside Lane over the Pecatonica River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-002

WisDOT Designation: Unknown
Historic Name (if applicable): N/A
Current Owner: Town of Gratiot
Year Built: 1952
Engineer: State Highway Commission of Wisconsin
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Lafayette
City/Village/Town: Town of Gratiot
Crossing: Pecatonica River

Technical Data
Bridge Category: Low Pony Truss
Spans and Type: One span, steel pony truss
Connection Type: Riveted
Substructure: Steel girder, poured concrete abutments
Overall Length and Width: 125.5-feet-long, 20.5-feet-wide deck
Floor System: Concrete, cast in place
Date of Survey: 3-20-2023

Summary Description

Structure B-33-002 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 125.5-feet-long and has a 20.5-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1952 and carries Riverside Lane over the Pecatonica River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records:B-33-002. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-002

B-33-002 View Facing East

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-002

B-33-002 View facing North

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-002

B-33-002 View facing West

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-002

B-33-002 View facing Northeast

Primary Info

AHI Number	245599		
Historic Name	Calamine Bridge		
Other Name	B-33-625		
Property Address	County Highway G over Pecatonica River		
County	Lafayette	**Municipality**	
Civil Town	Willow Springs	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	3-3-E-8-0-0
Style	Not a Building	**Wall Material**	
Historic Use	overhead truss bridge	**Structural System**	Warren Truss
Year Built	1940	**Year Demolished**	
Structural Additions			
Architects			

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: B-33-625. WisDOT Highway Structures Information System.
Additional Comments	Structure B-33-625 is a single span Polygonal Warren Overhead Truss bridge of riveted steel construction. The bridge measures 165-feet-long and has a 23-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1940 and carries County Highway G over the Pecatonica River. The bridge received a new deck in 1985. Otherwise, work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-625

WisDOT Designation: Unknown
Historic Name (if applicable): Calamine Bridge
Current Owner: Lafayette County
Year Built: 1940
Engineer: State Highway Commission of Wisconsin
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Lafayette
City/Village/Town: Town of Willow Springs
Crossing: Pecatonica River

Technical Data
Bridge Category: Polygonal Warren Overhead Truss
Spans and Type: One span, steel overhead truss
Connection Type: Riveted
Substructure: Steel floor beams, poured concrete abutments
Overall Length and Width: 165-feet-long, 23-foot-wide deck
Floor System: Concrete, cast in place
Date of Survey: 3-20-2023

Summary Description

Structure B-33-625 is a single span Polygonal Warren Overhead Truss bridge of riveted steel construction. The bridge measures 165-feet-long and has a 23-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1940 and carries County Highway G over the Pecatonica River. The bridge received a new deck in 1985. Otherwise, work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: B-33-625. WisDOT Highway Structures Information System.

"Pecatonica River Bridge." Bridgehunter.com. Accessed March 23, 2023. http://bridgehunter.com/wi/lafayette/B33062500000000/

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-625

B-33-625 View facing West

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-625

B-33-625 View Facing North

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-625

B-33-625 View facing East

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-33-625

B-33-625 View facing East/Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-35-0067

WisDOT Designation: Oth. Principal Arterial – Rural
Historic Name (if applicable): N/A
Current Owner: State Highway Department
Year Built: 1936
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Lincoln
City/Village/Town: Township of Bradley
Crossing: USH 8 over Tomahawk River

Technical Data
Bridge Category: Overhead Pratt Truss
Spans and Type: One span, steel overhead truss
Connection Type: Riveted
Substructure: Steel girder, concrete abutments
Overall Length and Width: 104.7 ft. long, 31 ft.-wide deck
Floor System: Concrete, cast in place
Date of Survey: 2/28/23

Summary Description

Structure B-35-0067 is a single-span, overhead Pratt truss bridge of riveted steel construction. The bridge measures 104.7 feet in length with a 31 foot-wide, cast-in-pace concrete deck. Steel beams below the decking are supported by concrete abutments. The bridge's overhead truss design features five vertical members and four diagonals on each elevation, connected with riveted plates. Steel railings are located along the length of both trusses. Struts with lateral bracings connect the top chords, with portal struts with bracings at either end. The subject structure was constructed over the Tomahawk River in 1936, and while historic plat maps suggest there was a crossing at this location prior to its construction, details of an earlier structure are unknown. The bridge received new decking and substructure in 1976, and work since that time has generally included repairs, painting, and preventative maintenance. Current traffic levels are high, as USH 8 provides a popular corridor across the northern portion of the state.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-35-0067

Sources

Files and construction records: B-35-0067. WisDOT Highway Structures Information System

"Tomahawk River Bridge." Bridgehunter.com. Accessed February 29, 2023, http://bridgehunter.com/wi/lincoln/B35006700000000/.

Wisconsin Historical Society Digital Collections. "Map 1920: Plat Book of Lincoln County (Wis.) circa 1920." Accessed February 29, 2023, https://content.wisconsinhistory.org/digital/collection/cwdp/id/1646.

B-35-0067, looking NE

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-35-0067

B-35-0067, looking NE

B-35-0067, looking SE

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-35-0067

B-35-0067, looking SE

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-48-0224

WisDOT Designation: Minor Art-Rural
Historic Name (if applicable): N/A
Current Owner: State Highway Department
Year Built: 1953
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Polk
City/Village/Town: Village of Osceola
Crossing: STH 243 over St. Croix River

Technical Data
Bridge Category: Warren deck truss
Spans and Type: Five spans, steel deck trusses
Connection Type: Riveted
Substructure: Steel girders, concrete piers and abutments
Overall Length and Width: 674 ft. long, 34.2 ft.-wide deck
Floor System: Concrete
Date of Survey: 3/7/23

Summary Description

Structure B-48-0224 is a five-span, Warren deck truss bridge constructed of riveted steel in 1953. It carries two lanes of traffic on STH 243 over the St. Croix River from Osceola in Polk County, Wisconsin into Minnesota. The bridge is a total of 674 feet long, with three middle spans measuring 162 feet in length and two 91-foot spans on either end connecting to the approaches. The 34.2-foot-wide concrete decking was replaced in 1980, with minor miscellaneous repairs since that time. Concrete half-walls topped with painted steel railings travel the length of the north and south elevations. The steel truss below the decking is a variation on the Warren Truss commonly known as a Warren truss with verticals, as vertical steel members bisect the equilateral triangles on the top and bottom chords. Both pilings and abutments are reinforced concrete, with stone rip rap along the east and west embankments.

Sources

Files and construction records: B-48-0224. WisDOT Highway Structures Information System

"St. Croix River Bridge." Bridgehunter.com. Accessed March 6, 2023, http://bridgehunter.com/wi/polk/B48022400000000/.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-48-0224

B-48-0224, looking NE

B-48-0224, looking NE

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-48-0224

B-48-0224, looking SE

B-48-0224, looking E

Primary Info

AHI Number	245614		
Historic Name	Somerset Bridge		
Other Name	B-55-920		
Property Address	Main ST		
County	St. Croix	**Municipality**	Somerset
Civil Town		**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	31-19-W-35-0-0
Style	NA (unknown or not a building)	**Wall Material**	
Historic Use	deck truss bridge	**Structural System**	Steel Frame
Year Built	1932	**Year Demolished**	
Structural Additions			
Architects	Wisconsin Highway Commission		

Other Info

Survey Year	
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: B-55-920. WisDOT Highway Structures Information System.
Additional Comments	Structure B-55-920 is a four-span. Deck Girder, Deck Truss bridge of riveted steel construction. The bridge measures 325.3.5-feet-long and has a 41-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments and piers. The bridge's truss design features two 111-foot-long Deck Truss spans having seven vertical members and eight diagonals on each elevation, all of which are connected with riveted steel plates, and two 52-foot-long Deck Girder spans. The subject structure was constructed in 1932 and carries Main Street in the Village of Somerset over the Apple River. The bridge received a new deck in 1982. Since that time work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-55-920

WisDOT Designation: Unknown
Historic Name (if applicable): Somerset Bridge
Current Owner: Village of Somerset
Year Built: 1932
Engineer: Wisconsin Highway Commission
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: St. Croix
City/Village/Town: Village of Somerset
Crossing: Apple River

Technical Data
Bridge Category: Deck Truss, Deck Girder
Spans and Type: Four spans: two Deck Truss, two Deck Girder
Connection Type: Riveted
Substructure: Steel Girder, concrete abutments, concrete piers
Overall Length and Width: 325.3-feet-long, 41-foot-wide deck
Floor System: Concrete, cast in place
Date of Survey: 4/07/2023

Summary Description

Structure B-55-920 is a four-span. Deck Girder, Deck Truss bridge of riveted steel construction. The bridge measures 325.3.5-feet-long and has a 41-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments and piers. The bridge's truss design features two 111-foot-long Deck Truss spans having seven vertical members and eight diagonals on each elevation, all of which are connected with riveted steel plates, and two 52-foot-long Deck Girder spans. The subject structure was constructed in 1932 and carries Main Street in the Village of Somerset over the Apple River. The bridge received a new deck in 1982. Since that time work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

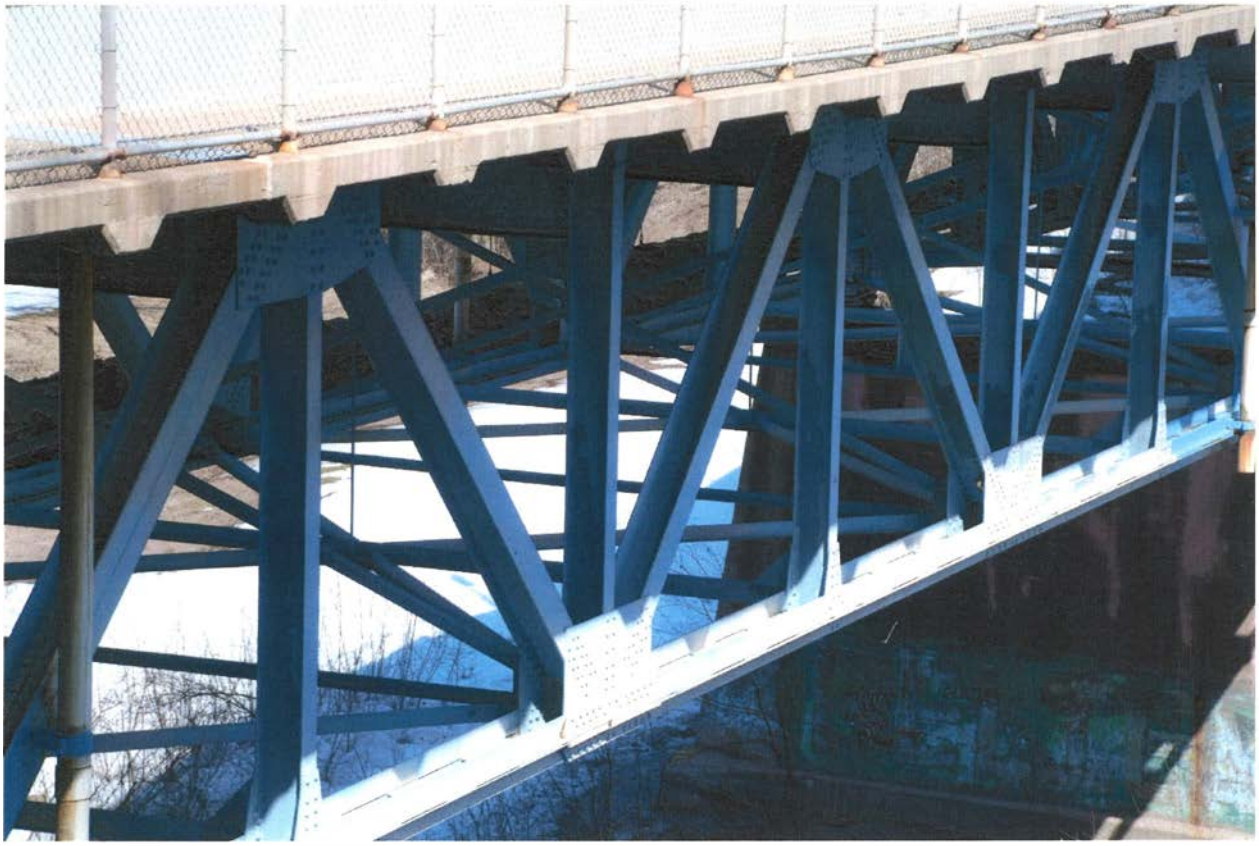
Files and construction records: B-55-920. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-55-920

B-55-920 View Looking Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-55-920

B-55-920 View Looking Northeast

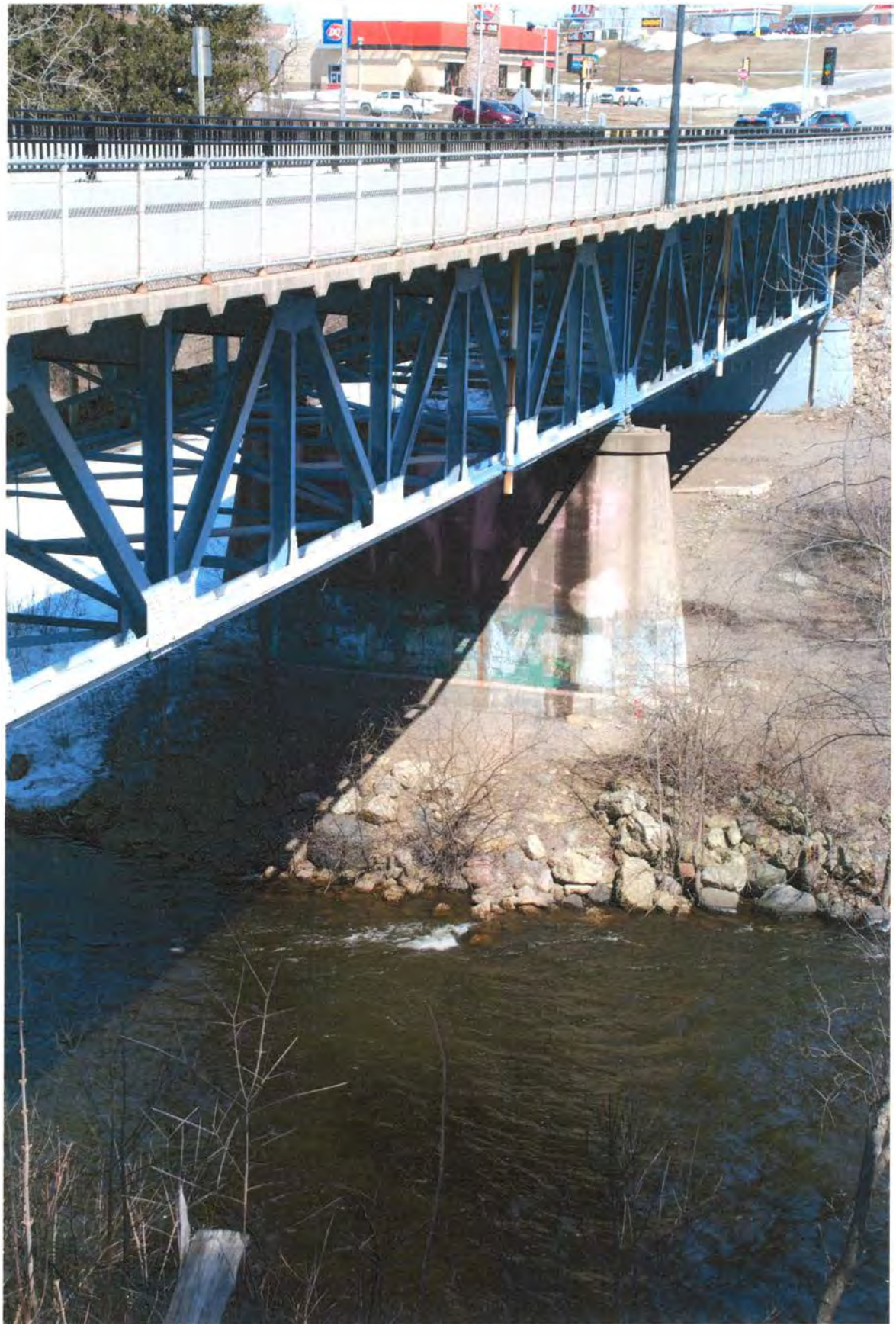


TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-55-920

B-55-920 View Looking Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. B-55-920

B-55-920 Vie Looking Northeast



TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-19-0013

WisDOT Designation: Local-Rural
Historic Name (if applicable): n/a
Current Owner: Town of Florence
Year Built: 1930
Engineer: unknown
Fabricator: Illinois Steel
Contractor:unknown
Year Moved to Site (if applicable): n/a
Status: extant

Geographic Data
County: Florence
City/Village/Town: Town of Florence
Crossing: National Forest Road 2446 (Pentoga Road) over Brule River

Technical Data
Bridge Category: Warren pony truss
Spans and Type: Single, simple span
Connection Type: Riveted and bolted
Substructure: Poured concrete abutment wrapped in steel sheeting and an I-beam crib with heavy rip rap
Overall Length and Width: 60 feet long by 18 feet wide
Floor System: wood timber stringers over wood timber floor beams
Date of Survey: 12/01/2022

Summary Description
According to the Highway Structures Information System, P-19-0013 was originally constructed in 1930. The single lane bridge is located in a rural setting in the Town of Florence, Florence County in the Chequamegon-Nicolet National Forest and trends east-west between the Wisconsin and Michigan state borders.

P-19-0013 is a single, simple span Warren pony truss bridge with verticals. The bridge members are steel. Each span consists of four, fifteen-foot panels between end posts and verticals. The end posts and the upper chord are built-up with battens along the underside. The vertical members and diagonal members are comprised of angle flanges built-up with battens. The connections are riveted and at bolted at gusset plates connecting the vertical members and diagonal members. The lower chords consist of steel angles built-up with battens. Two horizontal steel channel guardrails were installed on either span.

The decking consists of two timber stringers on top of perpendicular wood planks. The wood planks are supported by additional I-beam stringers on I-beam floor beams. The I-beam floor beams connect to the vertical and diagonal joints. Suspension cable ties reinforce the superstructure by wrapping the underside of the I-beam floor beams bolting through the end

posts and upper chords with large eyebolts. According to the construction log for P-19-0013 in the Highway Structures Information System, the superstructure was reinforced in 1988. The bolted connections, such as the cable ties and the I-beam floor beams, may indicate these were later alterations made to reinforce the bridge. Each section of the superstructure underside is reinforced with cross angle rods which are bolted to the I-beam floor beams.

The substructure consists of poured concrete abutments that were or have been wrapped in steel sheeting that has then reinforced with an I-beam crib. Heavy, large rock riprap surrounds abutment.

Sources

Files and Construction records, “P-19-0013”, Highway Structures Information System (HSI).

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-19-0013

P-19-0013, Overview of bridge setting, deck, and approach, facing east on Pentoga Road toward the Michigan border.

P-19-0013, Overview of south span, facing northeast.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-19-0013

P-19-0013, Timber stringer and wood plank decking, facing east.

P-19-0013, Superstructure underside toward concrete abutment and sheet metal and I-beam crib, facing east across Brule River.

Primary Info

AHI Number	245604		
Historic Name	Bridge P-22-158		
Other Name			
Property Address	Big Green Road over Big Green River		
County	Grant	**Municipality**	
Civil Town	Mount Ida	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	6-3-W-6-0-0
Style	Not a Building	**Wall Material**	
Historic Use	pony truss bridge	**Structural System**	Steel Frame
Year Built	1919	**Year Demolished**	
Structural Additions			
Architects	The Elkhart Bridge & Iron Company		

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: P-22-158. WisDOT Highway Structures Information System. Bridge Plate
Additional Comments	Structure P-22-158 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 52-feet-long and has a 17-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by steel abutments. The bridge's truss design features three vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1919 and carries Big Green Road over the Big Green River. Work on the bridge has generally included repairs, painting, and preventative maintenance. The bridge was fabricated by the Elkhart Bridge & Iron Co. of Elkhart, Indiana and was constructed by W. E. Gifford of Madison, WI.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-158

WisDOT Designation: Unknown
Historic Name (if applicable): N/A
Current Owner: Town of Mount Ida
Year Built: 1919
Engineer: Unknown
Fabricator: The Elkhart Bridge & Iron Co., Elkhart, IN
Contractor: W. E. Gifford, Madison, WI
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Grant
City/Village/Town: Town of Mount Ida
Crossing: Big Green River

Technical Data
Bridge Category: Low Pony Truss
Spans and Type: One span, steel pony truss
Connection Type: Riveted
Substructure: Steel floor beams, steel abutments
Overall Length and Width: 52.00-feet-long, 17-foot-wide deck
Floor System: Concrete, cast in place
Date of Survey: 3/21/2023

Summary Description

Structure P-22-158 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 52-feet-long and has a 17-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by steel abutments. The bridge's truss design features three vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1919 and carries Big Green Road over the Big Green River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: P-22-158. WisDOT Highway Structures Information System.

Bridge Plate

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-158

P-22-158 View looking Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-158

P-22-158 View looking Northwest

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-158

P-22-158 View looking Southwest

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-158

P-22-158 View looking Southeast

Primary Info

AHI Number	245602		
Historic Name	Dennis Bridge		
Other Name	P-22-239		
Property Address	Waterfall Road over Little Platte River		
County	Grant	**Municipality**	
Civil Town	Lima	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	4-1-W-15-0-0
Style	Not a Building	**Wall Material**	
Historic Use	pony truss bridge	**Structural System**	Steel Frame
Year Built	1927	**Year Demolished**	
Structural Additions			
Architects			

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: P-22-239. WisDOT Highway Structures Information System.
Additional Comments	Structure P-22-239 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 64-feet-long and has a 25.3-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features three vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1927 and carries Waterfall Road over the Little Platte River. The bridge received a new deck in 1966 and work since that time has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-239

WisDOT Designation: Unknown
Historic Name (if applicable): Dennis Bridge
Current Owner: Town of Lima
Year Built: 1927
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Grant
City/Village/Town: Township of Lima
Crossing: Little Platte River

Technical Data
Bridge Category: Low Pony Truss
Spans and Type: One Span, steel pony truss
Connection Type: Riveted
Substructure: Steel Girder, concrete abutments
Overall Length and Width: 64 ft. long, 25.3 ft. wide deck
Floor System: Concrete, cast in place
Date of Survey: 3/21/23

Summary Description

Structure P-22-239 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 64-feet-long and has a 25.3-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features three vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1927 and carries Waterfall Road over the Little Platte River. The bridge received a new deck in 1966 and work since that time has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: P-22-239. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-239

P-22-239 View facing West

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-239

P-22-239 View facing North

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-239

P-22-239 View facing East

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-239

P-22-239 View facing Northeast

Primary Info

AHI Number	245603		
Historic Name	Bridge P-22-312		
Other Name			
Property Address	Platte Road over Platte River		
County	Grant	**Municipality**	
Civil Town	Harrison	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	3-2-W-8-0-0
Style	Not a Building	**Wall Material**	
Historic Use	pony truss bridge	**Structural System**	Steel Frame
Year Built	1935	**Year Demolished**	
Structural Additions			
Architects			

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: P-22-312. WisDOT Highway Structures Information System.
Additional Comments	Structure P-22-312 is a single span low Pony truss bridge of riveted steel construction. The bridge measures 103-feet-long and has a 22.5-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates, and riveted steel struts. Steel railings are located along the length of both trusses. The subject structure was constructed in 1935 and carries Platte Road over the Platte River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-312

WisDOT Designation: Unknown
Historic Name (if applicable): N/A
Current Owner: Town of Harrison
Year Built: 1935
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Grant
City/Village/ Town: Town of Harrison
Crossing: Platte River

Technical Data
Bridge Category: Low Pony Truss
Spans and Type: One span, steel pony truss
Connection Type: Riveted
Substructure: Steel floor beams, poured concrete abutments
Overall Length and Width: 103-feet-long, 22.5-foot-wide deck
Floor System: Concrete, cast in place
Date of Survey: 3-21-2023

Summary Description

Structure P-22-312 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 103-feet-long and has a 22.5-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features seven vertical members and six diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1935 and carries Platte Road over the Platte River. Work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: P-22-312. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-312

P-22-312 View facing Northwest

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-312

P-22-312 View facing Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-312

P-22-312 View facing Southeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-22-312

P-22-132 View facing North

Primary Info

AHI Number	245600		
Historic Name	Richardson Bridge		
Other Name	P-33-213		
Property Address	Richardson Lane over the Galena River		
County	Lafayette	**Municipality**	
Civil Town	New Diggings	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	1-1-E-34-0-0
Style	Not a Building	**Wall Material**	
Historic Use	overhead truss bridge	**Structural System**	Pratt Truss
Year Built	1917	**Year Demolished**	
Structural Additions			
Architects			

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: B-33-625. WisDOT Highway Structures Information System.
Additional Comments	Structure P-33-213 is a single span Overhead Pratt Truss bridge of riveted steel construction. The bridge measures 99-feet-long and has a 16-foot-wide timber deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features five latticework vertical members and six diagonals on each elevation, which are connected with riveted steel plates, and it has riveted latticework steel struts. Steel railings are located along the length of both trusses. The subject structure was constructed in 1917 and carries Richardson Lane over the Galena River. The deck has been replaced twice; once in 1984 and again in 2018. Otherwise, work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-33-213

WisDOT Designation: Unknown
Historic Name (if applicable): Richardson Bridge
Current Owner: Town of New Diggings
Year Built: 1917
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Lafayette
City/Village/Town: Town of New Diggings
Crossing: Galena River

Technical Data
Bridge Category: Overhead Pratt Truss
Spans and Type: One span, steel overhead truss
Connection Type: Riveted
Substructure: Steel floor beams, poured concrete abutments
Overall Length and Width: 99-feet-long, 16-foot-wide deck
Floor System: Timber
Date of Survey: 3-20-2023

Summary Description

Structure P-33-213 is a single span Overhead Pratt Truss bridge of riveted steel construction. The bridge measures 99-feet-long and has a 16-foot-wide timber deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features five latticework vertical members and six diagonals on each elevation, which are connected with riveted steel plates, and it has riveted latticework steel struts. Steel railings are located along the length of both trusses. The subject structure was constructed in 1917 and carries Richardson Lane over the Galena River. The deck has been replaced twice; once in 1984 and again in 2018. Otherwise, work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: P-33-213. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-33-213

P-33-213 View facing Southeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-33-213

P-33-213 View Facing Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-33-213

P-33-213 View facing Northwest

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-33-213

P-33-213 View looking Northwest

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0179

WisDOT Designation: Local-Rural
Historic Name (if applicable): N/A
Current Owner: Town of Holton
Year Built: 1936
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Marathon
City/Village/Town: Town of Holton
Crossing: Rosedale Avenue over West Branch of Big Eau Pleine River

Technical Data
Bridge Category: Warren pony truss
Spans and Type: 1 span, steel pony (low) truss
Connection Type: Riveted
Substructure: Reinforced concrete abutments
Overall Length and Width: 63.5 ft. long x 19.9 ft. wide
Floor System: Steel floor beam
Date of Survey: 2/21/2023; 06/13/2023

Summary Description
Structure P-37-0179 is a single-span, Warren pony-truss bridge of riveted steel construction. The bridge measures 63.5 feet in length with a deck width of 19.9 feet and a substructure of reinforced concrete abutments with angled wing walls. Steel floor beams support a concrete deck; riveted steel X-bar railings run along both sides of the deck. The bridge's Warren truss design includes vertical members at each panel point along the lower chord as a means of stabilizing the bridge's horizontal elements (a subtype of the Warren truss commonly referred to as "Warren truss with verticals"). The bridge may have been constructed as part of a 1936 county-wide WPA project to improve secondary farm-to-market roads, although the bridge does not display a WPA identification plaque. Historic maps indicate that a bridge has existed at this location since at least 1881, though the nature of this early structure is unknown.

Sources

Map of the County of Marathon, Wisconsin. La Crosse, WI: Bussell & Holway, 1881.

Files and construction records: P-37-0179. WisDOT Highway Structures Information System.

WPA Project Cards: Marathon County (1936). Wisconsin Historical Society Digital Collections. https://content.wisconsinhistory.org/digital/collection/tp/id/78787/rec/11 (accessed February 17, 2023).

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0179

Photos

Photo 1 of 4: Rosedale Avenue Bridge (P-37-0179), east elevation, viewed from north bank of Big Eau Pleine River, looking west.

Photo 2 of 4: Rosedale Avenue Bridge (P-37-0179), east elevation, viewed from south bank of Big Eau Pleine River, looking northwest.

Photo 3 of 4: Rosedale Avenue Bridge (P-37-0179), interior of west elevation, viewed from south end of the bridge, looking northwest.

Photo 4 of 4: Rosedale Avenue Bridge (P-37-0179), north approach, looking south along Rosedale Avenue.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0190

WisDOT Designation: Local-Rural
Historic Name (if applicable): N/A
Current Owner: Town of Rietbrock
Year Built: 1940
Engineer: Unknown
Fabricator: Illinois Steel Company
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Marathon
City/Village/Town: Town of Rietbrock
Crossing: Meridian Road over Black Creek

Technical Data
Bridge Category: Warren pony truss
Spans and Type: 1 span, steel pony (low) truss
Connection Type: Riveted
Substructure: Reinforced concrete abutments
Overall Length and Width: 85 ft. long x 25 ft. wide
Floor System: Steel floor beam
Date of Survey: 2/22/2023; 6/13/2023

Summary Description
Structure P-37-0190 is a single-span, Warren pony-truss bridge of riveted steel construction. The bridge measures 85 feet in length with a deck width of 25 feet and a substructure of reinforced concrete abutments and angled wingwalls. Steel floor beams support a concrete deck. The bridge's Warren truss design includes vertical members at each panel point along the lower chord as a means of stabilizing the bridge's horizontal elements (a subtype of the Warren truss commonly referred to as "Warren truss with verticals"). Primary chords bear the imprint of the Illinois Steel Company. Narrow steel railings span the length of each truss. The bridge may have been constructed as part of a series of county-wide WPA projects to improve county- and township-owned roads through resurfacing, the installation of drainage structures, and the construction of bridges (although it does not display a WPA identification plaque). Historic maps indicate that a bridge has existed at this location since at least 1881, though the nature of this early structure is unknown.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0190

Sources

Map of the County of Marathon, Wisconsin. La Crosse, WI: Bussell & Holway, 1881.

WPA Project Cards: Marathon County (1939). Wisconsin Historical Society Digital Collections. https://content.wisconsinhistory.org/digital/collection/tp/id/78787/rec/11 (accessed February 17, 2023).

Files and construction records: P-37-0190. WisDOT Highway Structures Information System.

Photos

Photo 1 of 3: Meridian Road Bridge (P-37-0190), west elevation, looking northeast.

Photo 2 of 3: Meridian Road Bridge (P-37-0190), interior of east truss, looking east.

Photo 3 of 3: Meridian Road Bridge (P-37-0190), south approach, looking north.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0203

WisDOT Designation: Local-Rural
Historic Name (if applicable): N/A
Current Owner: Town of Stettin
Year Built: 1939
Engineer: Unknown
Fabricator: Bethlehem Steel
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant (closed)

Geographic Data
County: Marathon
City/Village/Town: Town of Stettin
Crossing: Stettin Drive over Artus Creek

Technical Data
Bridge Category: Warren pony truss
Spans and Type: 1 span, steel pony (low) truss
Connection Type: Riveted
Substructure: Reinforced concrete abutments
Overall Length and Width: 53.3 ft. long x 24 ft. wide
Floor System: Steel floor beam
Date of Survey: 2/21/2023; 6/13/2023

Summary Description

Structure P-37-0203 is a single-span, Warren pony-truss bridge of riveted steel construction. The bridge measures 53.3 feet in length with a width of 24 feet and features reinforced concrete abutments and angled wingwalls. Steel floor beams support a bituminous deck. The bridge's Warren truss design includes vertical members at each panel point along the lower chord as a means of stabilizing the bridge's horizontal elements (a subtype of the Warren truss commonly referred to as "Warren truss with verticals"). Steel railings are located along the length of both trusses. Individual chords bear the imprint of Bethlehem Steel. The bridge may have been constructed as part of a 1939 county-wide WPA project to improve county- and township-owned roads through resurfacing, the installation of drainage structures, and the construction of bridges, among other work (although it does not display a WPA identification plaque). Historic maps indicate that a bridge has existed at this location since at least 1881, though the nature of this early structure is unknown.

At the time of the 2/21/2023 site visit, the bridge had been closed with barricades at both approaches and heavy snowdrifts across the deck.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0203

Sources

Map of the County of Marathon, Wisconsin. La Crosse, WI: Bussell & Holway, 1881.

WPA Project Cards: Marathon County (1939). Wisconsin Historical Society Digital Collections. https://content.wisconsinhistory.org/digital/collection/tp/id/78787/rec/11 (accessed February 17, 2023).

Files and construction records: P-37-0203. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0203

Photos

Stettin Drive Bridge (P-37-0203), south elevation and concrete substructure, looking northwest.

Stettin Drive Bridge (P-37-0203), interior of south truss and view of the floor beams, decking and railing removed, looking southeast.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-37-0203

Stettin Drive Bridge (P-37-0203), interior of north truss and view of the floor beams, decking and railing removed, looking northwest.

Stettin Drive Bridge (P-37-0203), west approach, looking east.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-40-0658

WisDOT Designation: Local-urban
Historic Name (if applicable): City Bridge 317
Current Owner: Milwaukee Metropolitan Sewerage District (MMSD)
Year Built: 1976
Engineer: unknown
Fabricator: Carnegie Illinois Steel Company
Contractor: unknown
Year Moved to Site (if applicable): n/a
Status: Extant (closed)

Geographic Data
County: Milwaukee County
City/Village/Town: City of Milwaukee
Crossing: N. 50th Place over Menomonee River

Technical Data
Bridge Category: Bailey, double truss single story
Spans and Type: Single, simple span
Connection Type: Welded; bolted; pinned
Substructure: Poured concrete abutments on a random ashlar, stone embankment
Overall Length and Width: 70 feet long x 21 feet wide
Floor System: Wood plank floor beams and timber stringers
Date of Survey: 01/24/2023

Summary Description
According to the Highway Structures Information System, P-40-0658 was originally constructed in 1976. The bridge is located at the end of North 50th Place south of the intersection with West State Street in the City of Milwaukee, Milwaukee County and trends north-south across the Menomonee River. According to the *North 50th Pedestrian Bridge Fracture Critical Inspection* (2016), the P-40-0658 was constructed as:

> a temporary structure south of the intersection of North 50th Place and West State between West State Street and Doyne Park. …The bridge was a temporary structure used by a concrete ready-mix plant and served as a relief outlet when trains obstructed the private access road to W. State Street. That plant is no longer occupying the parcel and the bridge has been closed to both pedestrian and vehicular traffic with a precast barricade and steel fence.

Bailey truss bridges were developed during World War II. P-40-0658 is a double truss, single story Bailey bridge with spans consisting of paired steel trusses. These are composed of modular X-shaped panels, referred to as Bailey panels, designed to be portable, quick to construct, and adjustable. The four truss members – two for each span – consist of seven pairs of 10-foot Bailey panels. The Bailey panels are prefabricated with vertical and diagonal members fillet welded on

either side of gusset plates. The individual panels are connected end to end by pins through the upper and bottom chords. The paired trusses are braced laterally with internal diagonal flanges, or raker, bolted to the truss members and transoms and with brace framing that is bolted to the upper chord of each panel pair. The outermost panels are pinned to vertical end posts. The superstructure is a sill fixed spread footing with bearings. Longitudinal steel stringers span the underside of the bridge and are supported by lateral steel floor beams which are referred to as transoms in Bailey truss bridges. The transoms thread through the double trusses and are adjoined to the bottom chords with transom clamps. Sway braces, consisting of diagonal tie rods, connect to the interior bottom chords below each panel section.

The decking consists of lateral wood plank floor beams laid perpendicular to the steel stringers. Supported by the floor beams, timber stringers serve as the wear tread and run longitudinally between the trusses with gravel aggregate laid in the center. Steel rails, the ribband, is installed along the outer edges of the timber stringers, running the length of the bridge.

The north and south banks of the Menomonee River are retained by random ashlar stone embankments or retaining walls. The substructure of the bridge consists of a reinforced concrete abutments set atop the north and south river embankments.

As the bridge is no longer in use, the north approach to the bridge has been barricaded with a concrete barrier. The south approach remains open.

Sources

Files and Construction records, “P-40-0658”, Highway Structures Information System (HSI).

Holth, Nathan. “An Introduction to Historic Bridges.” HistoricBridges.org

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-40-0658

P-40-0658, Overview of bridge setting, deck, and approach, facing north from Doyne Park.

P-40-0658, Overview of west span, facing northeast.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-40-0658

P-40-0658, Underside of superstructure, facing east.

P-40-0658, Concrete abutment and stone retaining wall, facing north across Menomonee River.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-50-0091

WisDOT Designation: Local-Rural
Historic Name (if applicable): N/A
Current Owner: Town of Kennan
Year Built: 1921
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Price
City/Village/Town: Township of Kennan
Crossing: Riley Road over N. fork Jump River

Technical Data
Bridge Category: Warren pony (low) truss
Spans and Type: Steel span (1)
Connection Type: Riveted
Substructure: Timber abutments
Overall Length and Width: 60 ft. long, 20 ft.-wide deck
Floor System: Concrete cast-in-place
Date of Survey: 2/28/23; 6/12/2023

Summary Description
Structure P-50-0091 is a single-span pony truss bridge of riveted steel construction. It carries Riley Road across the north fork of the Jump River in a single north-south span. The one-lane bridge measures 60 feet in length, with a 20 foot-wide, cast-in-place concrete deck. The bottom chord is supported by steel floor beams, with timber abutments and angled timber wing walls. The bridge's design is commonly referred to as a "Warren truss with verticals," as vertical members bisect the equilateral triangles along the top chord. Members are held in place with both square-head and circular-head rivets. A steel pedestrian railing is located on the inside length of each elevation.

Sources

Files and construction records: P-50-0091. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-50-0091

Photo 1 of 4. P-50-0091, south approach, looking north.


Photo 2 of 4. P-50-0091, P-50-0091, east elevation and substructure, looking northwest.

Photo 3 of 4. P-50-0091, east elevation, looking northeast.

Photo 4 of 4. P-50-0091, interior of east truss and overview of decking, looking southeast.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-54-0906

WisDOT Designation: Local-Rural
Historic Name (if applicable): N/A
Current Owner: Town of Dewey
Year Built: 1915
Engineer: Unknown
Fabricator: Cambria Steel Company (previously known as Cambria Iron Company)
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Rusk
City/Village/Town: Town of Dewey
Crossing: Josie Creek Road over Josie Creek

Technical Data
Bridge Category: Warren pony (low) truss
Spans and Type: Steel span (1)
Connection Type: Riveted
Substructure: Timber abutments
Overall Length and Width: 51.9 ft. long, 15.8 ft-wide decking
Floor System: Wooden decking, Bituminous overlay
Date of Survey: 2/28/23; 6/12/2023

Summary Description
Structure P-54-0906 is a single-span pony truss bridge of riveted steel construction. Constructed in 1915, the structure carries Josie Creek Road over Josie Creek, traveling north-south and providing access to the Josie Creek County Park, a local campground and rifle range. This one-lane bridge measures 51.9 in length with a 15.8-foot wide deck. Decking materials are wooden planks with an asphalt overlay. The decking is supported by steel floor beams, with timber abutments. The bridge's design is commonly referred to as a "Warren truss with verticals," as vertical members bisect the equilateral triangles along the top chord. A steel guardrail has been installed along the inside length of each elevation.

Sources

Files and construction records: P-54-0906. WisDOT Highway Structures Information System

"LRD Josie Crk. Rd. over Josie Creek." BridgeReports.com. Accessed March 6, 2023, http://bridgereports.com/1610116.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-54-0906

Photo 1 of 4. P-54-0906, overview of bridge from north approach, looking south.

Photo 2 of 4. P-54-0906, east elevation, looking southwest.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-54-0906

Photo 3 of 4. P-54-0906, west truss, facing east.

Photo 4 of 4. P-54-0906, connection and decking detail.

Primary Info

AHI Number	245613		
Historic Name	Struthers Bridge		
Other Name	P-62-220		
Property Address	Upper Newton RD		
County	Vernon	**Municipality**	
Civil Town	Harmony	**Unincorporated Community**	
Parcel		**PLSS (T-R-D-S-Q-QQ)**	13-6-W-24-0-0
Style	Not a Building	**Wall Material**	
Historic Use	pony truss bridge	**Structural System**	Steel Frame
Year Built	1933	**Year Demolished**	
Structural Additions			
Architects			

Other Info

Survey Year	2023
Tax Credit Project Number	
Tax Credit Case Number (legacy)	
WHS Project Number	
Bibliographic Reference	Files and construction records: P-62-220. WisDOT Highway Structures Information System.
Additional Comments	Structure P-62-220 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 83-feet-long and has a 16-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features four vertical members and eight diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1933 and carries Upper Newton Road over the North Fork of the Bad Axe River. Since that time work on the bridge has generally included repairs, painting, and preventative maintenance.

Other Eligibility Evaluation

Individual Eligibility Evaluation	
Proposed Historic District	
Contributing	
Evaluation Date	
Eligibility Comments	

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

WisDOT Designation: Unknown
Historic Name (if applicable): Struthers Bridge
Current Owner: Town of Harmony
Year Built: 1933
Engineer: Unknown
Fabricator: Unknown
Contractor: Unknown
Year Moved to Site (if applicable): N/A
Status: Extant

Geographic Data
County: Vernon
City/Village/Town: Town of Harmony
Crossing: North Fork of the Bad Axe River

Technical Data
Bridge Category: Low Pony Truss
Spans and Type: One Span, steel pony truss
Connection Type: Riveted
Substructure: Steel Girder, concrete abutments
Overall Length and Width: 83 ft. long, 16 ft. wide deck
Floor System: Concrete, cast in place
Date of Survey: 4/06/23

Summary Description

Structure P-62-220 is a single span. low Pony truss bridge of riveted steel construction. The bridge measures 83-feet-long and has a 16-foot-wide, cast in place concrete deck. Steel beams below the decking are supported by poured concrete abutments. The bridge's truss design features four vertical members and eight diagonals on each elevation, connected with riveted steel plates. Steel railings are located along the length of both trusses. The subject structure was constructed in 1933 and carries Upper Newton Road over the North Fork of the Bad Axe River. Since that time work on the bridge has generally included repairs, painting, and preventative maintenance.

Sources

Files and construction records: P-62-220. WisDOT Highway Structures Information System.

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

P-62-220 View Looking East

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

P-62-220 View looking North

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

P-62-220 View Looking West

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

P-62-220 View Looking Northeast

TRUSS BRIDGE SURVEY FORM: BRIDGE NO. P-62-220

P-62-220 View Looking NNE

Appendix C. Extant Standard Truss Bridges in Wisconsin

Extant Truss Bridges in Wisconsin (as of December 2023)*

* The following data was provided by WisDOT and is limited to state-inspected truss bridges, therefore not accounting for privately held truss bridges.

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	YEAR BUILT
HISTORIC-AGE BRIDGES					
P-36-0022	MANITOWOC	MANITOWOC RAPIDS	MILL ROAD (PEDESTRIAN)	UNKNOWN CREEK	1887
P-53-0162	ROCK	TURTLE	LATHERS RD	TURTLE CREEK	1887
P-66-0063	WASHINGTON	BARTON	PEDESTRIAN (WOOD FORD DR)	MILWAUKEE RIVER	1891
P-13-0190	DANE	DUNN	E DYRESON RD	YAHARA RIVER	1897
P-11-0703	COLUMBIA	LODI	CHESTNUT ST	UNION PACIFIC RR	1900
P-71-0914	WOOD	ROCK	LYNN LINE RD	E FK BLACK RIVER	1906
P-32-0140	LA CROSSE	HAMILTON	PEDESTRIAN (TOWN RD- OLD B)	LA CROSSE RIVER	1910
P-58-0079	SHAWANO	WITTENBERG	MEADOWLARK LANE	S BR EMBARRASS RIVER	1910
P-40-0775	MILWAUKEE	WAUWATOSA	CNW RR	WATERTOWN PLANK RD	1911
P-54-0906	RUSK	DEWEY	JOSIE CRK. RD. (DEAD END)	JOSIE CREEK	1915
P-33-0213	LAFAYETTE	NEW DIGGINGS	RICHARDSON LANE (DEAD END)	GALENA RIVER	1917
P-22-0158	GRANT	MOUNT IDA	BIG GREEN RD	BIG GREEN RIVER	1919
B-62-0977	VERNON	STARK	PED WALK (KICKAPOO VALLEY RESERVE)	KICKAPOO RIVER	1920
P-50-0091	PRICE	KENNAN	RILEY RD	N FK JUMP RIVER	1921
P-45-0714	OZAUKEE	PORT WASHINGTON	PEDESTRIAN PATH	SAUK CREEK	1925
P-22-0239	GRANT	LIMA	WATERFALL RD	LITTLE PLATTE RIVER	1927
P-40-0751	MILWAUKEE	GLENDALE	CNW RR	N SUNNY POINT RD	1928
P-42-0042	OCONTO	LAKEWOOD	SMYTH RD	N BR OCONTO RIVER	1928
B-15-01000002	DOOR	STURGEON BAY	MICHIGAN STREET	STURGEON BAY	1930
P-19-0013	FLORENCE	FLORENCE	PENTOGA RD	BRULE RIVER	1930
B-12-0009	CRAWFORD	FREEMAN	STH 82	MISSISSIPPI RIVER 04	1931
B-11-0910	COLUMBIA	COLUMBUS	RIVER RD: OLD HWY 73	CRAWFISH RIVER	1932
B-52-0857	RICHLAND	BUENA VISTA	STH 130-STH 133	LONG LAKE	1932

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	YEAR BUILT
B-55-0920	ST. CROIX	SOMERSET	MAIN STREET	APPLE RIVER	1932
P-62-0220	VERNON	HARMONY	UPPER NEWTON RD	N FK BAD AXE RIVER	1933
P-09-0715	CHIPPEWA	CHIPPEWA FALLS	CENTRAL STREET	DUNCAN CREEK	1934
B-17-0951	DUNN	RED CEDAR	CTH BB	TAINTER LAKE	1935
P-22-0312	GRANT	HARRISON	PLATTE RD	PLATTE RIVER	1935
B-35-0067	LINCOLN	BRADLEY	USH 8	TOMAHAWK RIVER	1936
P-37-0179	MARATHON	HOLTON	ROSEDALE AVE	W BR BIG EAU PLEINE RIVE	1936
B-10-0378	CLARK	GREENWOOD	G BEGLEY ST	BLACK RIVER	1938
B-33-0365	LAFAYETTE	WAYNE	CTH D	PECATONICA RIVER	1938
B-53-0145	ROCK	FULTON	USH 51	ROCK RIVER	1938
B-09-0379	CHIPPEWA	COLBURN	CTH G	YELLOW RIVER	1939
B-12-0363	CRAWFORD	EASTMAN	STH 179	KICKAPOO RIVER	1939
B-19-0509	FLORENCE	FERN	STH 101	PINE RIVER	1939
B-32-0050	LA CROSSE	WASHINGTON	CTH G	COON CREEK	1939
B-32-0548	LA CROSSE	FARMINGTON	CTH M	FLEMING CREEK	1939
B-41-0389	MONROE	SPARTA	STH 16/71-WISC AVE	MILWAUKEE AVE/CP RR	1939
B-32-0300	LA CROSSE	LA CROSSE	USH 14/61-STH 16	CROSS & 2ND ST -MISS R	1940
B-33-0625	LAFAYETTE	WILLOW SPRINGS	CTH G	PECATONICA RIVER	1940
P-37-0190	MARATHON	RIETBROCK	MERIDIAN RD	BLACK CREEK	1940
B-09-0497	CHIPPEWA	ANSON	CTH K	YELLOW RIVER	1942
B-25-0081	IOWA	CLYDE	STH 130-STH 133	WISCONSIN RIVER 05	1942
B-18-0001	EAU CLAIRE	LUDINGTON	CTH D	EAU CLAIRE RIVER	1948
B-09-0003	CHIPPEWA	BIRCH CREEK	CTH M	CHIPPEWA RIVER 19	1950
B-22-0020	GRANT	WOODMAN	STH 133	GREEN RIVER	1950
B-33-0002	LAFAYETTE	GRATIOT	RIVERSIDE LANE	PECATONICA RIVER	1952
B-48-0224	POLK	OSCEOLA	STH 243	ST CROIX RIVER 06	1953
B-16-0759	DOUGLAS	SUPERIOR	BN CONVEYOR BELT	USH 2-USH 53-E 2ND ST	1955
B-62-0011	VERNON	STARK	CTH P	KICKAPOO RIVER	1955
B-11-0005	COLUMBIA	WISCONSIN DELLS	CMSTPP RR	STH 13/16/23-BROADWAY ST	1956

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	YEAR BUILT
B-12-0005	CRAWFORD	FREEMAN	STH 82	BN RR/WINNESHIEK SLOUGH	1956
B-16-00050001	DOUGLAS	SUPERIOR	IH 535-USH 53	ST LOUIS BAY	1961
P-40-0658	MILWAUKEE	MILWAUKEE	N 50TH ST (DEAD END)	MENOMONEE RIVER	1976
POST-1976 BRIDGES (NOT YET OF HISTORIC AGE AND NOT INCLUDED IN THE TABLES OF HISTORIC-AGE BRIDGES ON THE FOLLOWING PAGES (BY TYPE)					
B401000	MILWAUKEE	WAUWATOSA	OAK LEAF TRAIL	MENOMONEE RIVER	1981
P-13-0187	DANE	FITCHBURG	MILITARY RIDGE STATE TRAIL (DNR)	FITCHRONA RD	1984
B050075	BROWN	GREEN BAY	SKYWALK	USH 141-MAIN ST	1985
B-06-0079003A	BUFFALO	NELSON	STH 25	MISSISSIPPI RIVER 09	1988
P200939	FOND DU LAC	FOND DU LAC	PEDESTRIAN BRIDGE	SOUTH DITCH	1990
B130472	DANE	MADISON	BIKE PATH	WEST BR STARKWEATHER CRK	1996
B130473	DANE	MADISON	BIKE PATH	DRAINAGE DITCH	1996
B400908	MILWAUKEE	MILWAUKEE	PEDESTRIAN BR	LINCOLN CR	2001
B050377	BROWN	GREEN BAY	PEDESTRIAN	N. BRANCH WILLOW CK.	2002
B590172	SHEBOYGAN	SHEBOYGAN FALLS	PEDESTRIAN WALK	MULLET RIVER	2002
B130522	DANE	ROXBURY	ICE AGE TRAIL	USH 12 E/W	2003
B130534	DANE	MIDDLETON	BIKE PATH	PHEASANT BRANCH CR	2003
B130535	DANE	WAUNAKEE	STH 113 BIKE PATH	SIX MILE CREEK	2003
B670269	WAUKESHA	MUKWONAGO	PEDESTRIAN	MUKWONAGO RIVER	2005
B710144	WOOD	PORT EDWARDS	RECREATION TRAIL	MOCCASIN CR	2005
B050385	BROWN	GREEN BAY	PEDESTRIAN BRIDGE	BAIRD CREEK	2006
B140186	DODGE	ELBA	ASTICO PARK PED	CRAWFISH R	2006
B400730	MILWAUKEE	WEST ALLIS	PEDESTRIAN	W WASHINGTON ST	2006
B530246	ROCK	JANESVILLE	JANESVILLE BIKE PATH	UNKNOWN CREEK	2006
B130605	DANE	MADISON	STARKWEATHER CR BIKE	USH 151	2007
B130620	DANE	ROCKDALE	PEDESTRIAN PATH	KOSHKONONG CREEK	2009

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	YEAR BUILT
B200171	FOND DU LAC	FOND DU LAC	WILD GOOSE TRAIL	IH 41	2009
B370394	MARATHON	ROTHSCHILD	PEDESTRIAN/BICYCLE TRAIL	WISCONSIN RIVER	2009
B180200	EAU CLAIRE	EAU CLAIRE	BOYD PARK PED BRDG	EAU CLAIRE R	2010
B400739	MILWAUKEE	MILWAUKEE	HANK AARON STATE TRAIL	MENOMONEE RIVER	2010
B400740	MILWAUKEE	SHOREWOOD	OAK LEAF TRAIL	EAST CAPITOL DRIVE	2010
B440280	OUTAGAMIE	APPLETON	MEMORIAL PARK WALKWAY	APPLE CREEK	2010
B450096	OZAUKEE	GRAFTON	OZAUKEE INTERURBAN TRAIL	43	2010
B130606	DANE	MADISON	STARKWEATHER CREEK PED.	ABERG AVENUE	2011
B400742	MILWAUKEE	BROWN DEER	OAK LEAF TRAIL	TRIB TO BEAVER CR	2011
B640177	WALWORTH	WHITEWATER	WALKING PATH	WHITEWATER CREEK	2011
B230161	GREEN	MONROE	RECREATIONAL TRAIL	8TH ST	2012
B400741	MILWAUKEE	BROWN DEER	OAK LEAF TRAIL	BR. MILWAUKEE RIVER	2012
B400912	MILWAUKEE	MILWAUKEE	HIKING TRAIL	OAK LEAF TRAIL	2012
B020065	ASHLAND	ASHLAND	PRENTICE PARK	FISH CREEK	2013
B400747	MILWAUKEE	MILWAUKEE	HANK AARON STATE TRAIL	HAWLEY RD	2013
B400761	MILWAUKEE	MILWAUKEE	HANK AARON STATE TRAIL	MENOMONEE R	2013
B400762	MILWAUKEE	MILWAUKEE	HANK AARON STATE TRAIL	CANADIAN PACIFIC RR	2013
B440466	OUTAGAMIE	KAUKAUNA	TRAIL OVER CANAL	FOX RIVER POWER CANAL	2013
B130666	DANE	FITCHBURG	MILITARY RIDGE PATH	CTH PD, MCKEE RD	2014
B170211	DUNN	MENOMONIE	BIKE TRAIL	RED CEDAR RIVER	2014
B300125	KENOSHA	KENOSHA	PEDESTRIAN	WATERWAY	2014
B130878	DANE	BLUE MOUNDS	MILITARY RIDGE STATE TRAIL (DNR)	CHT F / CAVE OF THE MOUNDS RD	2015
B320212	LA CROSSE	LA CROSSE	OAK ST CONNECTION PED BRIDGE	BURLINGTON NORTHERN	2015
B400784	MILWAUKEE	WAUWATOSA	PEDESTRIAN	WATERTOWN PLANK ROAD	2015
B590188	SHEBOYGAN	SHEBOYGAN FALLS	CTH TA (TAYLOR DR) (PEDESTRIAN BRIDGE)	SHEBOYGAN RIVER	2016
B590189	SHEBOYGAN	SHEBOYGAN	CTH TA (TAYLOR DR) (PEDESTRIAN BRIDGE)	UNION PACIFIC RAILROAD	2016

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	YEAR BUILT
B660192	WASHINGTON	WEST BEND	PEDESTRIAN	MILWAUKEE RIVER	2016
B130811	DANE	MCFARLAND	LOWER YAHARA RIVER TRAIL	LAKE WAUBESA	2017
B130834	DANE	MCFARLAND	LOWER YAHARA RIVER TRAIL	LAKE WAUBESA	2017
B200251	FOND DU LAC	FOND DU LAC	PEDESTRIAN	LAKESIDE LAGOON	2017
B400928	MILWAUKEE	GREENDALE	OAK LEAF TRAIL	ROOT RIVER	2017
B030202	BARRON	RICE LAKE	CEDARSIDE TRAIL	RED CEDAR RIVER	2018
B440468	OUTAGAMIE	APPLETON	PEDESTRIAN BRIDGE	LAWRENCE AVE	2019
B060500	BUFFALO	BUFFALO	GREAT RIVER STATE TRAIL WINONA CONNECTOR	BNSF RR	2020
B060501	BUFFALO	BUFFALO	GREAT RIVER STATE TRAIL WINONA CONNECTOR	MISSISSIPPI BACKWATERS	2020
B110180	COLUMBIA	PORTAGE	PORTAGE PEDESTRIAN TRAIL	PORTAGE CANAL	2020
B130866	DANE	FITCHBURG	BADGER STATE TRAIL	CTH PD	2020
B401010	MILWAUKEE	OAK CREEK	OAK LEAF TRAIL	OAK CREEK	2020
B401011	MILWAUKEE	OAK CREEK	OAK LEAF TRAIL	OAK CREEK	2020
B570093	SAWYER	HAYWARD	SKI AND BIKE TRAIL	STH 77	2020
B130877	DANE	MIDDLETON	PEDESTRIAN	PHEASANT BRANCH CREEK	2021
B650055	WASHBURN	TREGO	WILD RIVERS STATE TRAIL	USH 63	2021
B130555	DANE	MADISON	PEDESTRIAN	PLEASANT VIEW ROAD	2022
B130880	DANE	MADISON	GARVER PATH CONNECTION	STARKWEATHER CREEK	2021
B130881	DANE	MADISON	IVY ST. GARVER PATH CONNECTION	STARKWEATHER CREEK - EAST BRANCH	2021
B130882	DANE	MADISON	GARVER PEDESTRIAN PATH	STARKWEATHER CREEK FLOOD FRINGE	2021
B130892	DANE	MIDDLETON	UNNAMED BIKE PATH	PLEASANT VIEW ROAD	2022
B300140	KENOSHA	PLEASANT PRAIRIE	CTH C SHARED USE PATH	DES PLAINES RIVER	2019
TOTAL NUMBER OF EXTANT TRUSS BRIDGES IN WISCONSIN					**124**

Extant Historic-age Parker Truss Bridges in Wisconsin*

* The following data was provided by WisDOT and is limited to state-inspected truss bridges, therefore not accounting for privately held truss bridges.

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	TYPE	YEAR BUILT
P-40-0775	MILWAUKEE	WAUWATOSA	CNW RR	WATERTOWN PLANK RD	THRU	1911
B-15-01000002	DOOR	STURGEON BAY	MICHIGAN STREET	STURGEON BAY	THRU	1930
B-11-0910	COLUMBIA	COLUMBUS	RIVER RD: OLD HWY 73	CRAWFISH RIVER	THRU	1932
B-25-0081	IOWA	CLYDE	STH 130-STH 133	WISCONSIN RIVER 05	THRU	1942

Extant Historic-age Pratt Truss Bridges in Wisconsin*

* The following data was provided by WisDOT and is limited to state-inspected truss bridges, therefore not accounting for privately held truss bridges.

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	TYPE	YEAR BUILT
P-36-0022	MANITOWOC	MANITOWOC RAPIDS	MILL ROAD (PEDESTRIAN)	UNKNOWN CREEK	THRU	1887
P-53-0162	ROCK	TURTLE	LATHERS RD	TURTLE CREEK	THRU	1887
P-66-0063	WASHINGTON	BARTON	PEDESTRIAN (WOOD FORD DR)	MILWAUKEE RIVER	THRU	1891
P-13-0190	DANE	DUNN	E DYRESON RD	YAHARA RIVER	THRU	1897
P-32-0140	LA CROSSE	HAMILTON	PEDESTRIAN (TOWN RD-OLD B)	LA CROSSE RIVER	THRU	1910
P-33-0213	LAFAYETTE	NEW DIGGINGS	RICHARDSON LANE (DEAD END)	GALENA RIVER	THRU	1917
P-42-0042	OCONTO	LAKEWOOD	SMYTH RD	N BR OCONTO RIVER	THRU	1928
B-52-0856	RICHLAND	BUENA VISTA	STH 130-STH 133	WISCONSIN RIVER 05	THRU	1932
P-09-0715	CHIPPEWA	CHIPPEWA FALLS	CENTRAL STREET	DUNCAN CREEK	THRU	1934
B-35-0067	LINCOLN	BRADLEY	USH 8	TOMAHAWK RIVER	THRU	1936
B-11-0005	COLUMBIA	WISCONSIN DELLS	CMSTPP RR	STH 13/16/23-BROADWAY ST	DECK	1956
P-71-0914	WOOD	ROCK	LYNN LINE RD	E FK BLACK RIVER	PONY	1906

Extant Historic-age Warren Truss Bridges in Wisconsin*

* The following data was provided by WisDOT and is limited to state-inspected truss bridges, therefore not accounting for privately held truss bridges.

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	TYPE	YEAR BUILT
B-10-0378	CLARK	GREENWOOD	G BEGLEY ST	BLACK RIVER	THRU	1938
B-33-0365	LAFAYETTE	WAYNE	CTH D	PECATONICA RIVER	THRU	1938
B-09-0379	CHIPPEWA	COLBURN	CTH G	YELLOW RIVER	THRU	1939
B-12-0363	CRAWFORD	EASTMAN	STH 179	KICKAPOO RIVER	THRU	1939
B-33-0625	LAFAYETTE	WILLOW SPRINGS	CTH G	PECATONICA RIVER	THRU	1940
B-09-0497	CHIPPEWA	ANSON	CTH K	YELLOW RIVER	THRU	1942
B-18-0001	EAU CLAIRE	LUDINGTON	CTH D	EAU CLAIRE RIVER	THRU	1948
P-40-0751	MILWAUKEE	GLENDALE	CNW RR	N SUNNY POINT RD	DECK	1928
B-55-0920	ST. CROIX	SOMERSET	MAIN STREET	APPLE RIVER	DECK	1932
B-17-0951	DUNN	RED CEDAR	CTH BB	TAINTER LAKE	DECK	1935
B-53-0145	ROCK	FULTON	USH 51	ROCK RIVER	DECK	1938
B-41-0389	MONROE	SPARTA	STH 16/71-WISC AVE	MILWAUKEE AVE/CP RR	DECK	1939
B-48-0224	POLK	OSCEOLA	STH 243	ST CROIX RIVER 06	DECK	1953
B-16-0759	DOUGLAS	SUPERIOR	BN CONVEYOR BELT	USH 2-USH 53-E 2ND ST	DECK	1955
B-12-0005	CRAWFORD	FREEMAN	STH 82	BN RR/WINNESHIEK SLOUGH	DECK	1956
P-11-0703	COLUMBIA	LODI	CHESTNUT ST	UNION PACIFIC RR	PONY	1900
P-58-0079	SHAWANO	WITTENBERG	MEADOWLARK LANE	S BR EMBARRASS RIVER	PONY	1910
P-54-0906	RUSK	DEWEY	JOSIE CRK. RD. (DEAD END)	JOSIE CREEK	PONY	1915
P-22-0158	GRANT	MOUNT IDA	BIG GREEN RD	BIG GREEN RIVER	PONY	1919
B-62-0977	VERNON	STARK	PED WALK (KICKAPOO VALLEY RESERVE)	KICKAPOO RIVER	PONY	1920
P-50-0091	PRICE	KENNAN	RILEY RD	N FK JUMP RIVER	PONY	1921
P-22-0239	GRANT	LIMA	WATERFALL RD	LITTLE PLATTE RIVER	PONY	1927
P-19-0013	FLORENCE	FLORENCE	PENTOGA RD	BRULE RIVER	PONY	1930

ID	COUNTY	MUNICIPALITY	FEATURE ON	FEATURE UNDER	TYPE	YEAR BUILT
B-52-0857	RICHLAND	BUENA VISTA	STH 130-STH 133	LONG LAKE	PONY	1932
P-62-0220	VERNON	HARMONY	UPPER NEWTON RD	N FK BAD AXE RIVER	PONY	1933
P-22-0312	GRANT	HARRISON	PLATTE RD	PLATTE RIVER	PONY	1935
P-37-0179	MARATHON	HOLTON	ROSEDALE AVE	W BR BIG EAU PLEINE RIVE	PONY	1936
B-19-0509	FLORENCE	FERN	STH 101	PINE RIVER	PONY	1939
B-32-0050	LA CROSSE	WASHINGTON	CTH G	COON CREEK	PONY	1939
B-32-0548	LA CROSSE	FARMINGTON	CTH M	FLEMING CREEK	PONY	1939
P-37-0190	MARATHON	RIETBROCK	MERIDIAN RD	BLACK CREEK	PONY	1940
B-09-0003	CHIPPEWA	BIRCH CREEK	CTH M	CHIPPEWA RIVER 19	PONY	1950
B-22-0020	GRANT	WOODMAN	STH 133	GREEN RIVER	PONY	1950
B-33-0002	LAFAYETTE	GRATIOT	RIVERSIDE LANE	PECATONICA RIVER	PONY	1952
B-62-0011	VERNON	STARK	CTH P	KICKAPOO RIVER	PONY	1955

Appendix D. Pilot Evaluations

DocuSign Envelope ID: 3B10254E-5995-4BF2-9C3A-D49FD4767F43

(Revised March 2022)

Wisconsin Department of Transportation
Determination of Eligibility – Short Form for Bridges

WisDOT Project ID#: N/A

WHS #: _____ **AHI #:** 245699

Property Name(s): Merdian Road Bridge (P-37-0190)

Address/Location: Meridian Road over Black Creek

City & County: Town of Rietbrock, Marathon County **Zip Code:** 54411

Town: 29N **Range:** 4E **Section:** 2

Date of Construction: 1940

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

DocuSigned by:
Barry Paye
3F13953827A84D7...

March 28, 2024

WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

Daina Penkins 4/3/2024

State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):

Name and location: Meridian Road Bridge (P-37-0190), Marathon County

Public Owner: Wisconsin Department of Transportation

Criteria:

____	A (history)	**Areas of Significance:**	Engineering
____	B (important persons)	**Period of Significance:**	1940
X	C (architecture/eng.)	**Significant Date:**	
____	D (archeology)	**Significant Person:**	
		Cultural Affiliation:	
		Architect/Builder:	

Classification:

# of Contributing Structures	1
# of Noncontributing Structures	

UTM Reference:	15N	736009	4989618
	Zone	Easting	Northing

ATTACHMENT CHECKLIST
☒ USGS map with UTM coordinates

Determination of Eligibility Prepared By:

Name & Company:	Sam Jasper and Bob Frame, Mead & Hunt, Inc.				
Address:	2440 Deming Way			Phone:	608-273-6380
City:	Middleton	State:	WI	Zip:	53562
Email:	sam.jasper@meadhunt.com, bob.frame@meadhunt.com			Date:	January 2024
Sub-contracting to:					
Address:				Phone:	
City:		State:		Zip:	
Email:					

Methodology

The Meridian Road Bridge (Structure P-37-0190) was identified as a potential State Highway Commission of Wisconsin (SHC) standard plan bridge in the *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report prepared for the Wisconsin Department of Transportation (WisDOT) by Mead & Hunt, Inc. (Mead & Hunt). In March 2023 a field survey was conducted and a Wisconsin Historic Preservation Database (WHPD) record created for the bridge (AHI No. 245699). Historians from Mead & Hunt conducted research on the bridge and coordinated with WisDOT to obtain information related to the bridge.

Narrative Description

The Meridian Road Bridge, constructed in 1940, carries Meridian Road on a north-south alignment over the Black Creek in the town of Rietbrock, Marathon County. Meridian Road is a straight two-lane road extending across a rural setting with a scattering of farms across a largely flat landscape.

The Meridian Road Bridge is a single-span, riveted, steel Warren pony truss with concrete deck and concrete abutments. The total structure length is 85 feet with an out-to-out width of 25 feet. The Warren truss has five panels. The top chord consists of two channels with top plate and underside V-lacing (see Figure 1) while the bottom chord is two channels (see Figure 2). Vertical and horizontal members are single rolled I-beams. All members and connections are riveted. The railing is a single channel member and the guardrail below is single large channel member; both are horizontally curved at the ends of the bridge. The floor system is comprised of a concrete deck on four steel floor beams suspended from truss verticals and seven lines of steel stringers. Expansion rocker bearings are located on the south end and the fixed bearings are on the north end. Throughout the structure's history it has received regular preemptive maintenance and new paint.

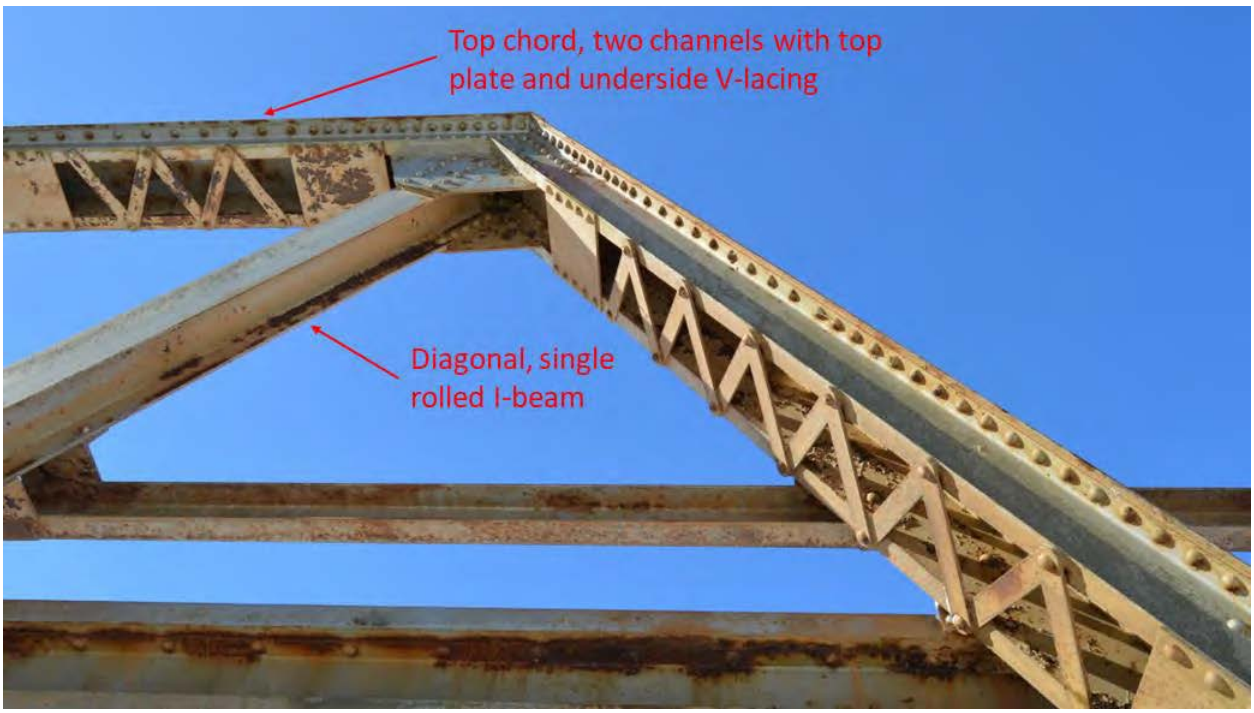


Figure 1. Meridian Road Bridge top chord, end post, and diagonal member details.

Figure 2. Meridian Road Bridge bottom chord details.

History

Prior to the creation of the SHC in 1911, many different truss bridge designs were being produced by independent contractors across the state. Bridge construction innovation in the mid-nineteenth century led to the growing popularity of the truss bridge design, and a nationwide industry for metal truss bridge construction grew rapidly.[1] Many different truss types and configurations were developed, which contributed to a growing confusion of varying bridge types needing different kinds of construction and maintenance. Tasked with the wide mandate of managing and improving the network of public roads and bridges, the SHC looked for ways to streamline the process.[2] To achieve greater efficiency the agency developed a set of standard bridge plans. Produced by the Bridge Department of the SHC, the standardized plans functioned more as general guidelines to be followed as close as possible, with the understanding that each bridge project is unique and might need adjustments.

Initially the SHC recommended three truss types that would remain in use through the 1940s. For spans of 36 to 80 feet, the SHC preferred a Warren pony truss design. For spans 80 to 150 feet, the SHC recommended a Pratt thru truss with a reinforced-concrete deck. The SHC experimented with the Pratt truss over the years, changing the standardized plan and even some years changing to new thru truss types, including the Camelback truss variation for longer spans over 150 feet.[3] In addition to the three truss types, the SHC also recommended a reinforced-concrete slab and girder span for shorter spans

[1] Barbara Wyatt, "Transportation," in *Cultural Resource Management in Wisconsin: Volume 2*, vol. 2, Cultural Resource Management in Wisconsin: A Manual for Historic Properties (Historic Preservation Division: State Historical Society of Wisconsin, 1986), 12–13, https://www.wisconsinhistory.org/pdfs/cms/WI%20SHPO%20CRMP%20Volume%202%20Transportation.pdf.

[2] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* (Prepared for the Wisconsin Department of Transportation, January 2024), 8.

[3] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*, 9.

ranging from 6 to 30 feet. Using the created standard plans leading up to the 1940s, the SHC constructed hundreds of new bridges across the state.

Bridge construction decreased during World War I due in part to a shortage of materials, and into the 1920s it would take several years for there to be enough bridge building materials to meet demand. During this time the SHC decided to focus on quality control and assessment of structures, and to formulate a reliable inspection system going forward. Calling for strictly high-grade materials and inspection standards resulted in much safer bridges, which was a high priority because of the growing prevalence of the automobile and the increasingly higher weight loads the bridges had to support. In addition, the automobile also changed the widths of the bridges. From the onset in 1911, SHC standard plans called for the road width on bridges to be 16 feet. By 1927, 16 feet was considered dangerous and obsolete, and road width increased to 24 feet to accommodate a safe passage of cars.[4] Road widths would increase in size going forward into the 1930s to meet national standards.

Bridge construction did not slow down in the 1930s despite the Great Depression. The government funneled millions of dollars into infrastructure programs like the Works Progress/Projects Administration (WPA) to provide Americans with jobs. With a surge of funding and manpower, the SHC was able to expand bridge projects to include widening, load-bearing capacity improvements, bridge inspections, and replacement of unsafe bridges. The number of bridge projects across the state inflated in the inter-war years and continued until World War II, when materials were diverted to the war effort instead. Going into 1940, the SHC started moving from truss bridge designs to concrete I-beam designs. In 1940 alone, of the 267 bridges constructed based on standard plans, only nine were truss bridges.[5]

One of the nine truss bridges built in 1940 was the subject Meridian Road Bridge. A bridge has existed at this crossing from at least 1881 and has gone through at least two replacements.[6] The subject bridge was constructed in 1940. In May 1940, the Marathon County Highway Commissioner put out a call for contractor bids for the construction of a new bridge at Merdian Road over the Black Creek.[7] Research did not reveal who was awarded the contract and built the bridge; however, it did reveal construction was completed in the same year. A report by the Marathon County Highway Commission in the *Wausau Daily Herald* states the bridge was completed at a total cost of $8,148.06, with cost split evenly between the town and county.[8] Research has not reveled any major alterations besides asphalt replacement on the deck and routine maintenance.

Statement of Significance

The *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report establishes guidelines for the National Register of Historic Places (National Register) eligibility of standard plan truss bridges in Wisconsin.[9] Using the evaluation criteria, the first step is to ascertain if the Meridian Road Bridge was designed according to a standard plan. There are no surviving plan

[4] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*, 11, 20.

[5] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*, 17, 22.

[6] Bussell & Holway, “Map of the County of Marathon, Wisconsin” (La Crosse, Wis.: Bussell & Holway, 1881).

[7] J.A. Clark, “Notice to Contractors of Bridge Construction,” *Wausau Daily Herald*, May 17, 1940.

[8] Paul Luedtke, “Report County Aid Bridges,” *Wausau Daily Herald*, December 10, 1940.

[9] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*.

documents for the Meridian Road Bridge. As such, the bridge must be compared to the available standard plans for identification as an example of a standard plan bridge. Because the Meridian Road Bridge was built between 1911 and 1950 and is a Warren truss, it has a high probability of being built based on a standard plan. However, the member details must be compared to standard plans to confirm the relationship.

The comparison was made between the Meridian Road Bridge, built in 1940, and the SHC standard plan from 1938 for a 75-foot Warren with nominal verticals (plan T75-30).[10] The standard plan for 1938 includes notations for the following members: top chord, two channels with top plate and laced bottom; lower chord, two channels; verticals and diagonals, single rolled I-beams; railings, single channel member and the guardrail below is single large channel member; rocker expansion bearing.

The Meridian Road Bridge includes the following details: top chord, two channels with top plate and underside V-lacing; bottom chord, two channels; verticals and diagonals, single rolled I-beams; railings, single channel member and the guardrail below is single large channel member; rocker expansion bearing; all members are riveted. Both the standard plan and the Meridian Road Bridge are comprised of the same member types in the same locations; therefore, it is probable the bridge is based on a standard plan.

To demonstrate that the truss bridge members follow the standard plan, analysis of notations made on the standard plan is provided here. Important notations on the T75-30 standard plan are highlighted in Figure 3. The standard plan's notation is not very legible, so translations are included here. Looking at the left side of the diagram, there are two notes above the top chord identifying its characteristics. First is "1PL with dimensions." 1PL means there is a top plate running along the top of the chord. The second note reads "2[s with dimensions." 2[s means the top chord is comprised of two steel beams in the shape of a "[" or channel. The final aspect of the top chord is noted running along the underside of it, stating "Under Side Laced." This means that the underside of the top chord has some form of lacing; in the case of the Meridian Road Bridge, is it V-shaped lacing. For the bottom chord there is a note on the bottom left identifying its characteristics. The note states "2[s with dimensions," meaning it is comprised of two steel beams in the shape of a "[" or channel.

[10] Kirch, "1938 Standard Plan for a Steel Highway Bridge, 75-Ft Warren, T75-30; Revised in 1939" (Madison, Wis.: Wisconsin Highway Commission, April 13, 1938).

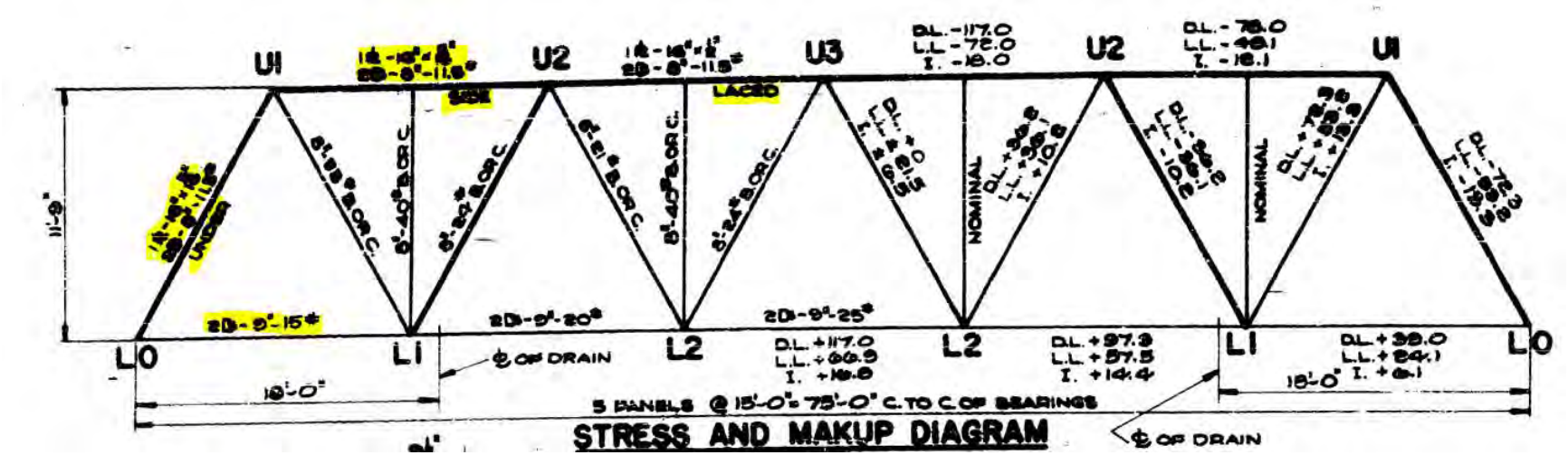


Figure 3. Cross section of the 1938 75-foot Warren with nominal verticals, T75-30 standard plan.[11]

[11] Kirch, "1938 Standard Plan for a Steel Highway Bridge, 75-Ft Warren, T75-30; Revised in 1939."

National Register Criteria

Wisconsin's truss bridges designed according to standard plans are evaluated under National Register *Criteria A*, *B*, *C*, and *D* as outlined in the evaluation criteria. *Criterion A: Events* recognizes that bridges with important associations with single events, a pattern of events, repeated activities, or historic trends within the context of transportation and bridge building history might possess historical significance. In accordance with the report, the Meridian Road Bridge is not eligible under National Register *Criterion A* in the area of Transportation as it does not represent an important crossing and does not demonstrate individual significance within the larger road network. There is no documentary evidence that demonstrates that the Meridian Road Bridge opened transportation within an area, eliminated dangerous intersections of highways, or was an important or early Black Creek crossing. The bridge has no known association with New Deal programs and thus lacks significance in the area of Politics/Government. It was not a gateway to a community and did not stand out individually as part of a community improvement plan; therefore, it does not possess significance in the area of Community Planning and Development. Likewise, the bridge did not provide access to a recreational area or park and does not possess significance in the area of Entertainment/Recreation. Therefore, the Meridian Road Bridge is not eligible under National Register *Criterion A.*

Under *Criterion B: Persons,* bridges and other significant works by engineers or bridge building firms are generally eligible under *Criterion C,* not *Criterion B.* This is because works from architects, artisans, artists, and engineers are often represented by their produced works, which are eligible under *Criterion C*. Therefore, the Meridian Road Bridge is not eligible under National Register *Criterion B.*

Criterion C applies to bridges that are significant in the area of Engineering for their design and/or construction, including such considerations as engineering features and aesthetic treatment. The Meridian Road Bridge was identified to be built based on an SHC standard plan. In accordance with the evaluation criteria, truss bridges built according to standard plans possess significance by demonstrating the highest level of similarity to standard plan details. As demonstrated earlier, the Meridian Road Bridge is the same Warren pony truss configuration of the 1938 standard plan and also consists of the same member characteristics found in the plan. Therefore, the Meridian Road Bridge possess significance under National Register *Criterion C* for representing distinctive characteristics of a type, period, or method of construction. The period of significance is 1940, the year of its construction.

The Meridian Road Bridge does not possess significance under National Register *Criterion D bec*ause it has not yielded, and is not likely to yield, information important in prehistory or history.

Integrity

To be listed in the National Register, a truss bridge built according to a standard plan must not only be shown to be significant under the evaluation criteria, but also must display historic integrity. Integrity is evaluated based on an assessment of the physical features related to significance and the bridge's ability to convey significance. Since *Criterion C* relates to the engineering and/or architectural significance of a structure, the integrity aspects of design, workmanship, and materials are typically more important.

Per the evaluation criteria, for truss bridges eligible under *Criterion C* the primary integrity concern is the degree to which the extant bridge conforms with its standard plan, and the secondary concern is the configuration of the members relating to the standard plan. The Meridian Road Bridge exhibits the same

characteristics of the 1938 standard plan as stated earlier. It is a Warren pony truss with the same number of five panels and members in original configuration. The bridge still exhibits its original Warren pony truss configuration design with no alterations, thus giving it integrity of design. There have been no alterations to the structure; therefore, it retains integrity of materials. Due to the standardization of bridge construction, the Meridian Road Bridge does not reflect the work of artisans and thus integrity of workmanship is not significant.

The bridge remains in its original location over the Black Creek and thus retains integrity of location. It remains a bridge over a small river bordered by farm fields and has not changed since construction. Therefore, the bridge retains integrity of setting. In addition, the physical features of the bridge and the surrounding river and fields convey the structure's historic character from the time it was constructed, and the bridge maintains its association with standard plan bridge construction in the town of Rietbrock. Thus, the bridge has integrity of feeling and association.

Overall, the Meridian Road Bridge meets six aspects of integrity and retains enough of its historic components to convey significance.

Recommendation

In accordance with the *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report, the Meridian Road Bridge possesses National Register significance under *Criterion C: Engineering* for demonstrating distinctive characteristics of a type, period, or method of construction and retains sufficient integrity to convey its significance. The structure was built in 1940 based on an SHC standard plan and maintains its original configuration and materials. It is recommended eligible for the National Register under *Criterion C*.

References

Bussell & Holway. "Map of the County of Marathon, Wisconsin." La Crosse, Wis.: Bussell & Holway, 1881.

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Kirch. "1938 Standard Plan for a Steel Highway Bridge, 75-Ft Warren, T75-30; Revised in 1939." Madison, Wis.: Wisconsin Highway Commission, April 13, 1938.

Luedtke, Paul. "Report County Aid Bridges." *Wausau Daily Herald*. December 10, 1940.

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Wyatt, Barbara. "Transportation." In *Cultural Resource Management in Wisconsin: Volume 2*, 2:12–1 to 12–29. Cultural Resource Management in Wisconsin: A Manual for Historic Properties. Historic Preservation Division: State Historical Society of Wisconsin, 1986. https://www.wisconsinhistory.org/pdfs/cms/WI%20SHPO%20CRMP%20Volume%202%20Transportation.pdf.

Photographs

Figure 4. Approach to the Meridian Road Bridge, view facing south.

Figure 5. West side of the Meridian Road Bridge, view facing northeast.

Figure 6. East side of the Meridian Road Bridge, view facing southwest.

Figure 7. Top chord details, view facing west.

Figure 8. Bottom chord details and concrete abutment, view facing southwest.

Figure 9. Floor beams and stringers, view facing west.

Map

Town of Rietbrock, Marathon County

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(Revised March 2022)

Wisconsin Department of Transportation
Determination of Eligibility – Short Form for Bridges

WisDOT Project ID#: N/A

WHS #: _____ **AHI #:** 245600

Property Name(s): Richardson Bridge (P-33-0213)

Address/Location: Richardson Lane over the Galena River

City & County: Town of New Diggings, Lafayette County **Zip Code:** 53586

Town: 1N **Range:** 1E **Section:** 34

Date of Construction: c.1920

WisDOT Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this request for Determination of Eligibility:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

DocuSigned by:
Barry Paye
3F1305827A84D7...

March 28, 2024

WisDOT Historic Preservation Officer **Date**

State Historic Preservation Office

In my opinion, the property:

☒ Meets the National Register of Historic Places criteria.
☐ Does not meet the National Register of Historic Places criteria.

Dawna Lenker 4/3/2024

State Historic Preservation Officer **Date**

Comments (FOR AGENCY USE ONLY):

Name and location: Richardson Bridge (P-33-0213), Lafayette County, Wisconsin

Public Owner: Wisconsin Department of Transportation

Criteria:

____	A (history)	**Areas of Significance:**	Engineering
____	B (important persons)	**Period of Significance:**	c.1920
X	C (architecture/eng.)	**Significant Date:**	
____	D (archeology)	**Significant Person:**	
		Cultural Affiliation:	
		Architect/Builder:	Decker & Hague

Classification:

# of Contributing Structures	1
# of Noncontributing Structures	

UTM Reference:	15N	716596	4710358
	Zone	Easting	Northing

ATTACHMENT CHECKLIST
☒ USGS map with UTM coordinates

Determination of Eligibility Prepared By:

Name & Company:	Sam Jasper and Bob Frame, Mead & Hunt, Inc.				
Address:	2440 Deming Way			Phone:	608-273-6380
City:	Middleton	State:	WI	Zip:	53562
Email:	sam.jasper@meadhunt.com, bob.frame@meadhunt.com			Date:	January 2024
Sub-contracting to:					
Address:				Phone:	
City:		State:		Zip:	
Email:					

Methodology

The Richardson Bridge (Structure P-33-0213) was identified as a potential State Highway Commission of Wisconsin (SHC) standard plan bridge in the *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report prepared for the Wisconsin Department of Transportation (WisDOT) by Mead & Hunt, Inc. (Mead & Hunt). In March 2023 a field survey was conducted and a Wisconsin Historic Preservation Database (WHPD) record was created for the bridge (AHI No. 245600). Historians from Mead & Hunt conducted research on the bridge and coordinated with WisDOT to obtain information related to the bridge.

Narrative Description

The Richardson Bridge, constructed c.1920, carries Richarson Lane on a northwest-southeast alignment over the Galena River in the town of New Diggings, Lafayette County. Richardson Lane is a one-lane road branching northwest off County Trunk Highway I; it connects to a farm and then crosses the Galena River before dead-ending into farm fields. The setting is rural with a scattering of farms across a hilly landscape.

The bridge is a single-span, riveted, steel Pratt thru truss bridge with a wood deck and poured concrete abutments. The total structure length is 99 feet with an out-to-out width of 16 feet. The Pratt truss has six panels, each 16 feet, 6 inches measured along the bottom chord. The top chord consists of two channels with top plate and underside V-lacing (see Figure 1) while the bottom chord is two angles with batten plates (see Figure 2). Vertical members are two channels back-to-back with V-lacing on both sides. Diagonal members are comprised of two angles (see Figure 1). Portal bracing consists of two angles paired with the overhead bracing members, also having X-lacing. All members are riveted. Two original metal rails on each side of the bridge are comprised of channel members with posts at the midpoint of each panel (see Figure 3). The floor system consists of a wood deck on five steel floor beams suspended from truss verticals and seven steel stringers. The movable bearing is buried and not visible.

Throughout the structure’s history it has received regular preemptive maintenance and new paint. Major replacements include a deck replacement in 1984 and another in 2018 due to flooding damage. In addition, four of the interior stringers were replaced in-kind in 2018.

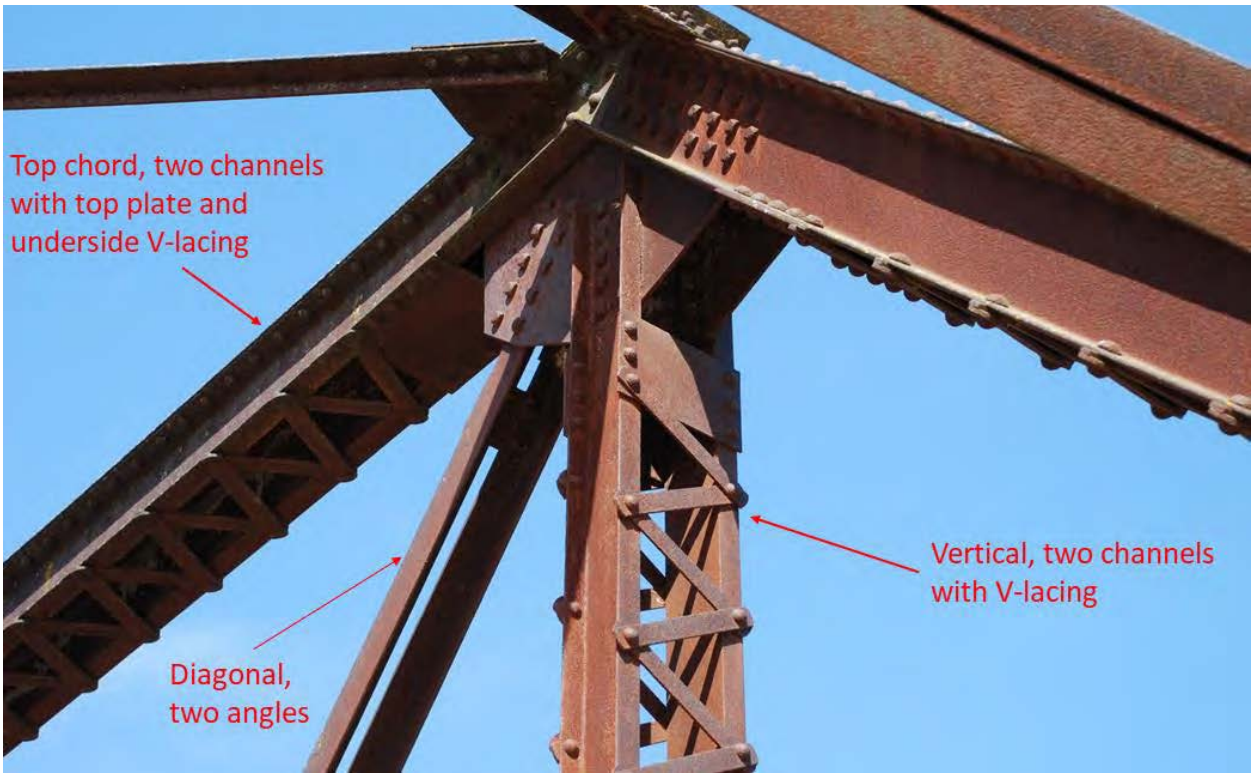

Figure 2. Richardson Bridge top chord, diagonal, and vertical member details.

Figure 3. Richardson Bridge top chord details.

Figure 4. Richardson Bridge railing details.

History

Prior to the creation of the SHC in 1911, many different truss bridge designs were being produced by independent contractors across the state. Bridge construction innovation in the mid-nineteenth century led to the growing popularity of the truss bridge design, and a nationwide industry for metal truss bridge construction grew rapidly.[1] Many different truss types and configurations were developed, which contributed to a growing confusion of varying bridge types needing different kinds of construction and maintenance. Tasked with the wide mandate of managing and improving the network of public roads and bridges, the SHC looked for ways to streamline the process.[2] To achieve greater efficiency the agency developed a set of standard bridge plans. Produced by the Bridge Department of the SHC, the standardized plans functioned more as general guidelines to be followed as close as possible, with the understanding that each bridge project is unique and might need adjustments.

Initially the SHC recommended three truss types that would remain in use through the 1940s. For spans of 36 to 80 feet, the SHC preferred a Warren pony truss design. For spans 80 to 150 feet, the SHC recommended a Pratt thru truss with a reinforced-concrete deck. The SHC experimented with the Pratt truss over the years, changing the standardized plan and even some years changing to new thru truss

[1] Barbara Wyatt, "Transportation," in *Cultural Resource Management in Wisconsin: Volume 2*, vol. 2, Cultural Resource Management in Wisconsin: A Manual for Historic Properties (Historic Preservation Division: State Historical Society of Wisconsin, 1986), 12–13, https://www.wisconsinhistory.org/pdfs/cms/WI%20SHPO%20CRMP%20Volume%202%20Transportation.pdf.

[2] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* (Prepared for the Wisconsin Department of Transportation, January 2024), 8.

types, including the Camelback truss variation for longer spans over 150 feet.[3] In addition to the three truss types, the SHC also recommended a reinforced-concrete slab and girder span for shorter spans ranging from 6 to 30 feet. Using the created standard plans leading up to the 1940s, the SHC constructed hundreds of new bridges across the state.

One of the bridges that possibly utilized a standard plan is the subject Richardson Bridge, which has an unclear construction date. While WisDOT records state the bridge was constructed in 1917, newspaper research has revealed that to be incorrect. First mention of the bridge comes from a call for bids for bridge construction in Layfette County in the March 1917 edition of the *Argyle Atlas*.[4] In January 1918, in the *Republican Journal*, the Lafayette County reported that the bridge was contracted out to Decker & Hague, but was not completed.[5] The last mention of the bridge from newspaper research comes from a frustrated citizen of New Diggings in a 1920 letter to the editor in the *Benton Advocate*. The article stated that the city voted to build a new bridge in April 1916 next to Mark Richardson's property. After awarding the contract to Decker & Hague, it spent a total of $5288.60 on materials and the contractor. However, by February 1920 the bridge had not been built and there was only a site for the bridge.[6] After the 1920 article, research revealed no other information about the bridge's construction date. Therefore, due to this lack of information, the Richardson Bridge construction date is c.1920. One possible reason for construction delays could be war-time material shortages that lasted through 1923.[7]

The Richardson Bridge serves as the Galena River crossing for Richardson Lane. Today the road dead-ends just north of the bridge, but originally the road extended north on the west side of the river and connected to County Road W.[8] At some point before 1952 the road north of the bridge was removed and reverted to farmland.[9] Research into Mark Richards did not reveal him to be prominent in New Diggings or Layfette County, and he has no connection to the bridge's construction

Statement of Significance

The *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report establishes guidelines for the National Register of Historic Places (National Register) eligibility of standard plan truss bridges in Wisconsin.[10] Using the evaluation criteria, the first step is to ascertain if the Richardson Bridge was designed according to a standard plan. The only surviving plan document for the bridge is a single plan sheet for the concrete abutments that does not include the superstructure. Due to the incomplete series of the plan, the bridge must be compared to the standard plans for identification as an example of a standard plan bridge. Because the Richardson Bridge was built between the years 1911 and 1950 and is a Pratt truss, it has a high probability of being built based on a standard plan. However, the member details must be compared to standard plans to confirm.

[3] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*, 9.

[4] "Call for Bid," *The Argyle Atlas*, March 9, 1917.

[5] "Richardson Bridge Contractor," *The Republican-Journal*, January 10, 1918.

[6] J.M. Thompson, "The Tax Payer Talks," *The Benton Advocate*, February 13, 1920.

[7] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*, 11.

[8] Foote, Charles M.; Henion, John W., "Plat Book of Lafayette County, Wisconsin" (Lafayette, Wisconsin: C.M. Foote & Co., 1895).

[9] U.S. Geological Survey, "New Diggings Quadrangle / Wisconsin / 7.5 Minute Series (Topographic)" (U.S. Geological Survey, 1952).

[10] Mead & Hunt, Inc., *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria*.

Because construction of the Richardson Bridge was contracted out to Decker & Hague in 1917, the SHC's standard plan of the 1917 100-foot Pratt (plan A54) was used for comparison.[11] The standard plan for 1917 include notations for the following members: top chord, two channels with top plate and laced bottom; lower chord, two angles; verticals, two channels laced both sides; diagonals, two angles; railings, two lines of channels; portal, all paired angles.

The Richardson Bridge includes the following details: top chord, two channels with top plate and underside V-lacing; bottom chord, two angles with batten plates; verticals, two channels back-to-back with V-lacing on both sides; diagonals, two angles; railings, two lines of channels; portal bracing, paired angles with overhead lateral bracing also having X-lacing; all members are riveted. Both standard plan and the Richardson Bridge are comprised of the same member types in the same locations. Therefore, it is probable the bridge is based on a standard plan.

To demonstrate that the truss bridge members follow the standard plan, analysis of notations made on the standard plan is provided here. Important notations on the A54 standard plan are highlighted in Figure 4. Looking at the left side of the diagram, there are two notes above the top chord identifying its characteristics. The first reads "1PL with dimensions." 1PL means there is a top plate running along the top of the chord. The second note reads "2[s with dimensions." 2[s means the top chord is comprised of two steel beams in the shape of a "[" or channel. The final aspect of the top chord is noted running along the underside of it, stating "Under Side Laced." This means the underside of the top chord has some form of lacing; in the case of the Richardson Bridge, is it V-shaped lacing. For the bottom chord there is a note on the bottom left identifying its characteristics. The note states "2Ls with dimensions." 2Ls means the bottom chord is comprised of two beams in the shape of a "L" or angle.

On the first vertical member on the left is a note identifying the characteristics for all vertical members, stating "2[s with dimensions." 2[s means vertical members are comprised of two steel beams in the shape of a "[" or channel. It also has a note stating "Laced," meaning it has some form of lacing; in the case of the Richardson Bridge, is it V-shaped lacing. On the first diagonal member on the left is a note on the identifying the characteristics for all diagonal members, stating "2Ls with dimensions." This means it is comprised of two beams in the shape of a "L" or angle.

[11] W.J. Buetow, "1917 Standard Plan for a Steel Highway Bridge, 100-Ft Pratt, A54; Revised in 1921" (Madison, Wis.: Wisconsin Highway Commission, April 26, 1917).

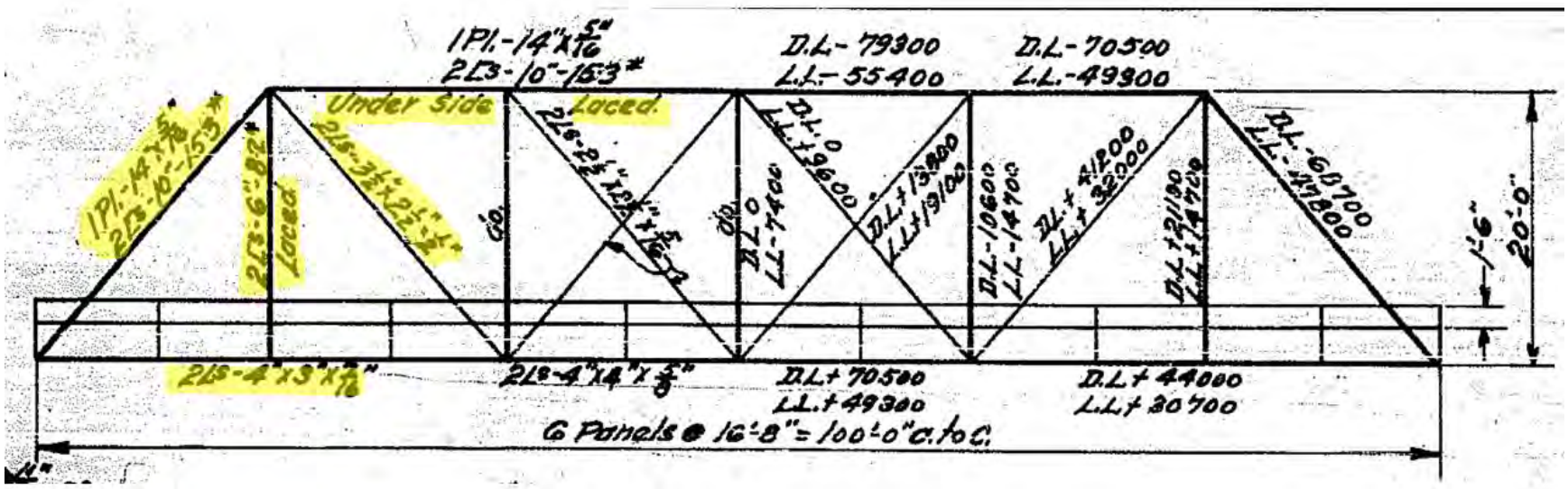

Figure 4. Cross section of the 1917 100-foot Pratt truss bridge in the A54 standard plan.[12]

[12] Buetow, "1917 Standard Plan for a Steel Highway Bridge, 100-Ft Pratt, A54; Revised in 1921."

National Register Criteria

Wisconsin's truss bridges designed according to standard plans are evaluated under National Register *Criteria A*, *B*, *C*, and *D* as outlined in the evaluation criteria. *Criterion A: Events* recognizes that bridges with important associations with single events, a pattern of events, repeated activities, or historic trends within the context of transportation and bridge building history might possess historical significance. In accordance with the report, the Richardson Bridge is not eligible under National Register *Criterion A* in the area of Transportation as it does not represent an important crossing and does not demonstrate individual significance within the larger road network. There is no documentary evidence that demonstrates that the Richardson Bridge opened transportation within an area, eliminated dangerous intersections of highways, or was an important or early Galena River crossing. The bridge has no known association with New Deal programs and thus lacks significance in the area of Politics/Government. It was not a gateway to a community and did not stand out individually as part of a community improvement plan; therefore, it does not possess significance in the area of Community Planning and Development. Likewise, the bridge did not provide access to a recreational area or park and does not possess significance in the area of Entertainment/Recreation. Therefore, the Richardson Bridge is not eligible under National Register *Criterion A.*

Under *Criterion B: Persons,* bridges and other significant works by engineers or bridge building firms are generally eligible under *Criterion C,* not *Criterion B.* This is because works from architects, artisans, artists, and engineers are often represented by their produced works, which are eligible under *Criterion C*. Therefore, the Richardson Bridge is not eligible under National Register *Criterion B.*

Criterion C applies to bridges that are significant in the area of Engineering for their design and/or construction, including such considerations as engineering features and aesthetic treatment. The Richardson Bridge was identified to be built based on an SHC standard plan. In accordance with the evaluation criteria, truss bridges built according to standard plans possess significance by demonstrating the highest level of similarity to standard plan details. As demonstrated earlier, the Richardson Bridge is the same thru Pratt truss configuration of the 1917 standard plan and also consists of the same member characteristics found in the plan. The only difference in the structure is the wood-plank deck instead of the concrete deck in the standard plan. Therefore, the Richardson Bridge possess significance under *Criterion C* for representing distinctive characteristics of a type, period, or method of construction. The period of significance of the bridge is c.1920, its date of construction.

The Richardson Bridge does not possess significance under National Register *Criterion D bec*ause it has not yielded, and is not likely to yield, information important in prehistory or history.

Integrity

To be listed in the National Register, a truss bridge built according to a standard plan must not only be shown to be significant under the evaluation criteria, but also must display historic integrity. Integrity is evaluated based on an assessment of the physical features related to significance and the bridge's ability to convey significance. Since *Criterion C* relates to the engineering and/or architectural significance of a structure, the integrity aspects of design, workmanship, and materials are typically more important.

Per the evaluation criteria, for truss bridges eligible under *Criterion C* the primary integrity concern is the degree to which the extant bridge conforms with its standard plan, and the secondary concern is the

configuration of the members relating to the standard plan. The Richardson Bridge exhibits the same characteristics of the 1917 standard plan as stated earlier. It is a Pratt thru truss with the same number of six panels, and members in original configuration of six diagonal and five verticals with two end posts. The bridge still exhibits its original Pratt thru truss configuration design with minimal alterations, thus giving it integrity of design. Alterations to the structure came in the form of two replacements of its wood deck, but replacement of the deck does not impact integrity. Per the evaluation criteria, repair or replacement of a deck over the life of a bridge is not unusual and does not affect the overall design and construction integrity of the truss bridge. In addition, the replacement of the four steel stringers with new in-kind replacements in 2018 also does not impact integrity; therefore, the bridge retains integrity of materials. Due to the standardization of bridge construction, the Richardson Bridge does not reflect the work of artisans and thus integrity of workmanship is not significant.

The bridge remains in its original location over the Galena River and thus retains integrity of location. It remains a bridge over a small river bordered by farm fields and has not changed since construction. Therefore, the bridge has integrity of setting. In addition, the physical features of the bridge and the surrounding river and fields convey the structure's historic character from the time it was constructed, and the bridge maintains its association with standard plan bridge construction in New Diggings. Thus, the bridge retains integrity of feeling and association.

Overall, the Richardson Bridge meets six aspects of integrity and retains enough of its historic components to convey significance.

Recommendation

In accordance with the *Historic Standard Truss Bridges in Wisconsin: Historic Context and Evaluation Criteria* report, the Richardson Bridge possesses National Register significance under *Criterion C: Engineering* for demonstrating distinctive characteristics of a type, period, or method of construction and retains sufficient integrity to convey its significance. The structure was built c.1920 based on an SHC standard plan and maintains the majority of its original configuration and materials. It is recommended eligible for the National Register under *Criterion C*.

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Photographs

Figure 5. The Richarson Bridge, view facing west.

Figure 6. The Richarson Bridge, view facing northeast.

Figure 7. Approach to the Richarson Bridge and portal bracing, view facing northwest.

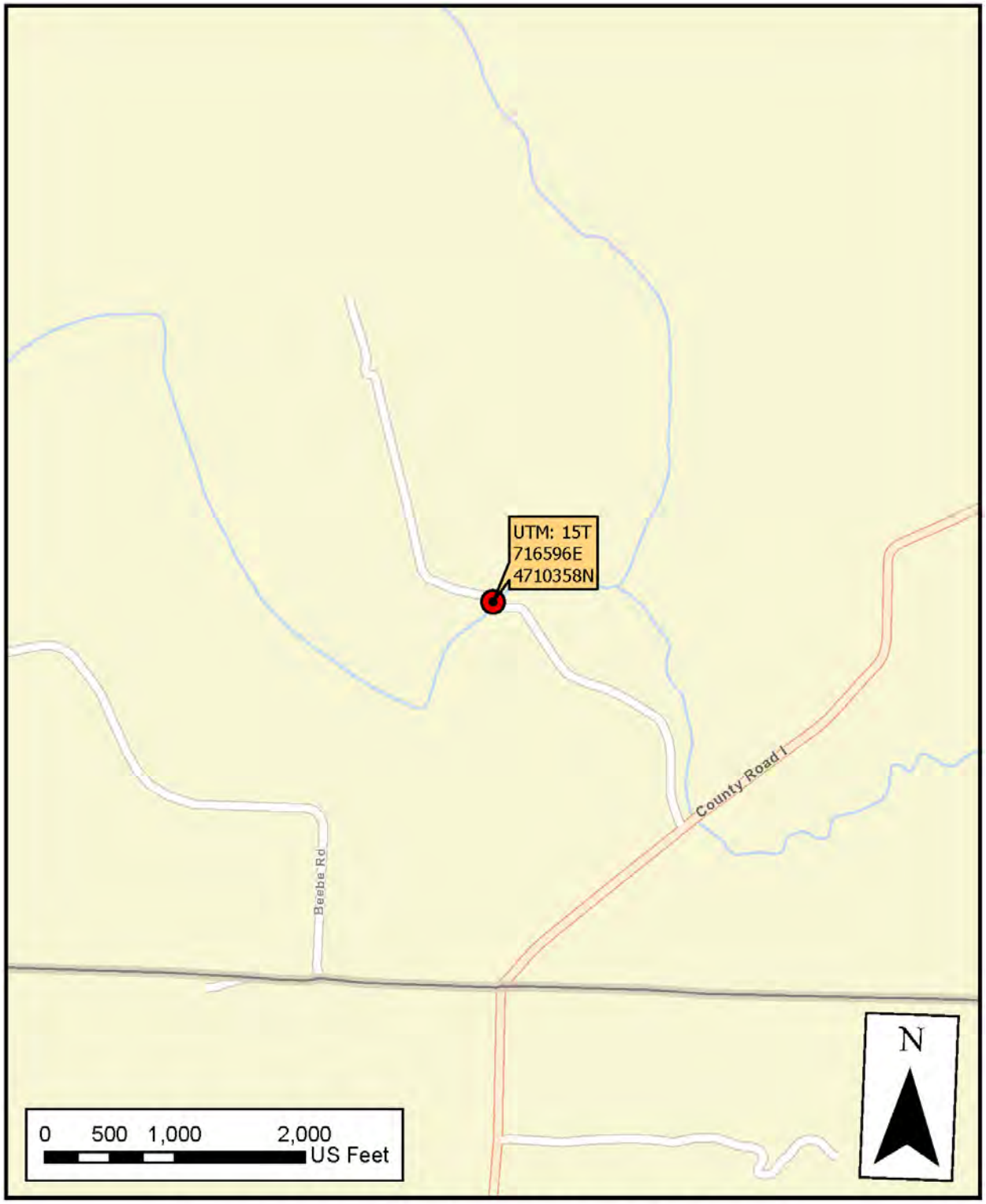
Figure 8. Steel floor beams and stringers, view facing southeast.

Figure 9. Vertical and diagonals members, and railing, view facing west. This photo shows the two lines of channel railing, two channel verticals, and two angle diagonals.

Figure 10. Riveted connection showing details of top chord, vertical, and diagonals members, view facing north.

Figure 11. Bottom chord details, view facing northeast.

Map



Town of New Diggings, Lafayette County