NPS Form 10-900 OMB No. 1024-0018 (Expires 5/31/2012)

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N
United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Holmes Street Bridge

other names/site number Bridge No. 4175

2. Location

street & number Holmes Street over the Minnesota River ☐ not for publication N/A

city or town Shakopee ☐ vicinity

state Minnesota code MN county Scott code 139 zip code 55379

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this __X__ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property __X__ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___ national ___ statewide __local

Britta L. Bloomberg 5/13/10

Signature of certifying official/Title Britta L. Bloomberg, Deputy State Historic Preservation Officer Date

State or Federal agency/bureau or Tribal Government Minnesota Historical Scoiety

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

✓ entered in the National Register ___ determined eligible for the National Register

___ determined not eligible for the National Register ___ removed from the National Register

___ other (explain:) _____

for Edson Beall JUL 6 2010

Signature of the Keeper Date of Action

Holmes Street Bridge
Name of Property

Scott County, Minnesota
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply.)

- [ ] private
- [ ] public - Local
- [X] public - State
- [ ] public - Federal

Category of Property
(Check only **one** box.)

- [ ] building(s)
- [ ] district
- [ ] site
- [X] structure
- [ ] object

Number of Resources within Property
(Do not include previously listed resources in the count.)

Contributing	Noncontributing	
0	0	buildings
0	0	district
0	0	site
1	0	structure
0	0	object
1	0	**Total**

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

Iron and Steel Bridges in Minnesota, 1873-1945

Number of contributing resources previously listed in the National Register

0

6. Function or Use

Historic Functions
(Enter categories from instructions.)

TRANSPORTATION/road-related (vehicular)

Current Functions
(Enter categories from instructions.)

TRANSPORTATION/pedestrian-related

7. Description

Architectural Classification
(Enter categories from instructions.)

Other: Warren-with-verticals deck truss

Materials
(Enter categories from instructions.)

foundation: CONCRETE
walls: N/A
roof: N/A
other: STEEL

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with **a summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Constructed in 1927, the Holmes Street Bridge, also designated Bridge No. 4175, spans the Minnesota River at the northern edge of the city of Shakopee, Scott County, Minnesota. Historically, the bridge carried Trunk Highway (TH) 5 (now TH 169/101) from Holmes Street on the south bank of the river in Shakopee to the north bank. The bridge is a 645-foot-long deck truss with an out-to-out deck width of 42.4 feet. It consists of four main spans, each of which has three riveted steel trusses designed in a Warren truss configuration with verticals. Significant features of the Holmes Street Bridge are the deck-truss design and configuration and the Classical Revival architectural details. The Holmes Street Bridge is a rare example of a deck truss bridge in Minnesota. Because of its urban location as a gateway to downtown Shakopee, the bridge was designed with Classical Revival stylistic elements. This includes recessed panels in the concrete river piers, open-arched concrete piers in the approach spans, concrete railings on the abutments, ornamental metal railings on the main spans, and stairways and architectural details around and below the concrete abutments.

Narrative Description

Property and Setting

The Holmes Street Bridge is located at the northern edge of the city of Shakopee, Minnesota, where Holmes Street now dead-ends at the river. TH 5 (now TH 169/101) was locally designated as Holmes Street.[1] The Minnesota Department of Transportation (Mn/DOT) officially closed the Holmes Street Bridge to vehicular traffic as of 2005.

The city of Shakopee is located on the south side of the Minnesota River. The south approaches to the Holmes Street Bridge were originally built across a Chicago, Milwaukee and St. Paul Railway spur track, now the location of Levee Drive. Adjacent to Levee Drive is a bituminous bicycle and pedestrian trail that passes beneath the south approach. The Minnesota Department of Natural Resources (DNR) has an easement with the city on portions of this trail and also owns and maintains Riverside Park, which is located immediately west of the north end of the bridge. On the north, the bridge connects with a paved pedestrian/bicycle trail that is part of the DNR's Minnesota Valley State Trail System. The north approach originally spanned Indian Road, an unpaved roadway that has been abandoned.

Description

The Holmes Street Bridge was completed in 1927 and is aligned on a north-south axis. It has an overall length of 645 feet and an out-to-out width of 42.4 feet. The superstructure consists of four main river spans and four approach spans, two on the north and two on the south. The main spans provide 22 feet of vertical clearance at high water. Each main span comprises three riveted, steel, deck Warren trusses, with a 125-foot clear span, pier to pier. Typically, a truss bridge utilized only two trusses. Although research did not yield information on why three trusses were used, it appears three trusses were incorporated to provide adequate support for the wide deck with roadway and sidewalks on the bridge. As originally built, the main spans accommodated a 28-foot roadway and two 5-foot sidewalks cantilevered on brackets from the outside trusses. The approach spans are 30-foot-long, cast-in-place, reinforced-concrete, deck girder spans.

The substructure comprises reinforced-concrete piers and abutments that display Classical Revival architectural elements. The river piers are solid with a pair of arched recesses on either side, suggesting a column supporting each of the three trusses. The approach piers have four arched openings with a column supporting each girder. The U-shaped abutments have pilasters with recessed panels.

Atop the abutments are poured concrete parapet-railings with Classical Revival recessed panels. The railings on the main and approach spans consist of panels of curved and open-lattice metalwork with square metal posts. The railings are two feet, eight inches high. Poured concrete Jersey barriers were installed in 1972 between the pedestrian sidewalks and the roadway. Seven fluted cast-iron light standards with elongated glass lamps and finials were originally mounted along each railing. These were removed in 1969.

A concrete pedestrian stairway with metal pipe railing is located on each side of the north abutment, leading down to the former Indian Road. The Classical Revival detailing of the underside of the abutment suggests the attention given to the pedestrian access to Riverside Park at the northwest end of the bridge.

[1] Julius A. Coller, II, *The Shakopee Story,* (Shakopee, Minn: North Star Pictures, 1960), 316, 320.

Rehabilitation

Deck reconstruction and repairs were performed on the bridge in 1969 and 1972. The projects replaced the deck slab on the steel truss spans, repaired the deck slab at the abutments and approach spans, added concrete Jersey barriers between the roadway and sidewalk, replaced the steel floor beams and stringers adjacent to the deck joints, and removed the cast-iron light standards. The steel truss spans were also repainted during this project.

Since 1972, repairs have been made to the Holmes Street Bridge in an effort to extend its service life. This maintenance included concrete repairs to the piers and deck, replacement of the steel roller-nest expansion bearings with elastomeric pads, and an assortment of steel reinforcements to the trusses.

In recent years the Holmes Street Bridge has experienced severe deterioration due to moisture from unsealed deck joints, transverse cracking in the deck along each floor beam, and an inadequate deck drainage system. Mn/DOT, Scott County, and the City of Shakopee hired HDR, Inc. and Mead & Hunt, Inc. (Mead & Hunt) in 2009 to develop rehabilitation plans to preserve the bridge for continued use by pedestrians and bicyclists. Recommendations from the *Minnesota Department of Transportation Historic Bridge Management Plan for Bridge No. 4175,* as well as the *Secretary of the Interior's Standards for Rehabilitation,* were applied in the development of rehabilitation plans to preserve the bridge's character-defining features.[2] After the rehabilitation project, ownership of the bridge will be transferred from Mn/DOT to Scott County.

The rehabilitation project is expected to be completed in 2010, and will include repairing or replacing deteriorated components of the bridge deck, such as floor beams, stringers, and sidewalk overhang brackets; cleaning and painting all steel surfaces; and repairing spalling and scaling concrete elements of the bridge. Any deteriorated elements of the bridge that cannot be repaired will be replaced in-kind. The concrete Jersey barriers, which were added in 1972, will be removed. To meet pedestrian and bicycle use safety standards, the existing ornamental railing will be replaced with a replica railing using bolts with acorn style nuts that emulate the current rivet appearance. A stainless steel cable will also be added to the back side of the railing to reduce the opening size. Additional safety elements include new lighting standards that replicate the original standards as closely as possible at seven original locations on the bridge. Americans with Disabilities Act (ADA) ramps will also be installed at both ends of the east and west raised sidewalk/overlook.

Integrity

The character-defining features of the Holmes Street Bridge, which are the prominent or distinctive aspects or qualities of a historic property that contribute significantly to its physical character, are the deck truss design and construction and the Classical Revival architectural details. The Holmes Street Bridge comprises four main spans, each of which has three riveted, steel trusses designed in a Warren-with-verticals configuration. Furthermore, because of the bridge's urban location as a gateway to downtown Shakopee, the Holmes Street Bridge features recessed panels in the concrete river piers, open-arched concrete piers in the approach spans, recessed panels on the abutments, ornamental metal railings on the approach spans and main spans, concrete parapet railings on the abutments, and stairways adjacent to the north abutment.

The Holmes Street Bridge retains integrity of location, setting, design, materials, workmanship, feeling, and association. Since its date of construction in 1927, the Holmes Street Bridge has spanned the Minnesota River in the same location to connect the city of Shakopee on the river's south bank to TH 169/101 (formerly TH 5) on the north bank. The bridge's setting has experienced only minor change's over the last eight decades. The rail line that ran below the bridge on the south end is no longer extant, but the rail corridor has been maintained and converted to a regional hike and bike trail. Despite the minor changes in the bridge's setting, the spatial relationships to the river and the city of Shakopee, as well as how the bridge is situated in the setting, have not changed. Therefore, the bridge's integrity of location and setting has not been compromised.

The Holmes Street Bridge also retains integrity of design, materials, and workmanship. As previously stated, the bridge's character-defining features include the Warren deck trusses and the Classical Revival architectural details. Although the bridge experienced minor alterations in 1969 and 1972, and will be rehabilitated in 2010, none of the work impacted the bridge's character-defining features. Rather, the past alterations and planned rehabilitation work have and will continue to preserve the bridge for continued use. Furthermore, the 2010 rehabilitation project will reverse several of the earlier alterations. The Jersey barriers, which were installed to separate vehicular and pedestrian traffic, will be removed, and light standards that replicate the historic light standards as closely as possible will be installed on the bridge. Additionally, any deteriorated components of the bridge that cannot be repaired will be replaced in-kind. The workmanship, as evidenced in the Classical Revival detailing of the bridge, was not compromised with previous

[2] Mead & Hunt, Inc. and HNTB, *Minnesota Department of Transportation (Mn/DOT) Historic Bridge Management Plan, Bridge Number 4175,* Prepared for the Minnesota Department of Transportation (June 2006); United States Secretary of the Interior, *Standards for the Rehabilitation of Historic Properties,* (Washington, D.C.: Government Printing Office, 1992).

alterations and will not be compromised by the planned rehabilitation project. For these reasons, the Holmes Street Bridge also retains integrity of design, materials, and workmanship.

Continuing to express the aesthetic and historic sense of its period of significance, the Holmes Street Bridge retains integrity of feeling and association. Although vehicular traffic no longer uses the bridge, it retains the physical, character-defining features to convey historic significance, and stands as a tangible representative of the important connection between a city and trade areas beyond in a period when the automobile came of age.

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- [ ] A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- [ ] B Property is associated with the lives of persons significant in our past.
- [x] C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- [ ] D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

- [ ] A Owned by a religious institution or used for religious purposes.
- [ ] B removed from its original location.
- [ ] C a birthplace or grave.
- [ ] D a cemetery.
- [ ] E a reconstructed building, object, or structure.
- [ ] F a commemorative property.
- [ ] G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance
(Enter categories from instructions.)

ENGINEERING

Period of Significance

1927

Significant Dates

1927

Significant Person
(Complete only if Criterion B is marked above.)

N/A

Cultural Affiliation

N/A

Architect/Builder

Hoffmann, M.J., Bridge Engineer, Mn. Dept. of Highways; Minneapolis Steel and Machinery Co. (fabricator); Widell Construction (builder)

Period of Significance (justification)
1927 is the date of construction for the Holmes Street Bridge.

Criteria Considerations (explanation, if necessary)
Not applicable.

Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance and applicable criteria.)

The Holmes Street Bridge is eligible for listing in the National Register of Historic Places (National Register) under *Criterion C: Engineering*, at the state level of significance as a rare example of a deck truss bridge in Minnesota. Each of the four main spans has three trusses instead of the conventional two trusses. Each truss component is designed and constructed in a Warren truss configuration with verticals. Other character-defining features include the Classical Revival architectural design elements, such as recessed panels in the concrete river piers, open-arched concrete piers in the approach spans, recessed panels on the abutments, ornamental metal railings on the approach spans and main spans, concrete parapet railings on the abutments, and stairways adjacent to the north abutment. The Minneapolis Steel and Machinery Company, an important, statewide Minnesota firm, fabricated the trusses. Under contract to the Minnesota Department of Highways (MHD), Widell Construction built the Holmes Street Bridge to carry TH 5 over the Minnesota River and into Shakopee in Scott County.

The period of significance for the Holmes Street Bridge is its 1927 date of construction. The Holmes Street Bridge meets Registration Requirement 9 established in Frederic Quivik and Dale Martin, "Iron and Steel Bridges in Minnesota," (July 1988). Registration Requirement 9 states, "A Deck Truss Bridge. Such bridges are very rare [in Minnesota] and represent a design solution to an unusual site condition." This bridge also meets Registration Requirement 4, which states, "Built by an Important Bridge Fabricator" and identifies the Minneapolis Steel and Machinery Company as one of "three Minnesota firms [that] achieved statewide importance." Of the ten deck truss bridges built in Minnesota before 1946 identified in the first Minnesota historic bridge study, Robert M. Frame III, "Historic Bridge Project," (March 1985), the Holmes Street Bridge is the sole remaining vehicular deck truss bridge built before 1946 in the state.[3] As such, it is a rare example of a deck truss bridge in the state that was built by an important bridge fabricator, the Minneapolis Steel and Machinery Company.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Historic Context

Urban growth in Minnesota began in the 1840s with the establishment of settlements along the Mississippi and lower St. Croix Rivers. Until the extensive building of railroads in the late 1860s, settlement followed rivers—the Mississippi, Minnesota, and St. Croix—and the shore of Lake Superior. Even after construction of the railways enabled large numbers of settlers to create inland communities, this early pattern persisted.[4]

Most bridges in cities and towns crossed natural barriers, primarily watercourses, and ravines. Few crossed human-made features such as railroad tracks, except in the Twin Cities. Most communities along rivers were situated on only one shore. In these cases, bridges served to link them to the rural districts and smaller settlements on the other side. This removed natural obstacles for the rural residents and increased the area over which the merchants and bankers in the larger towns could extend their business.[5] Improved access and removal of natural obstacles was especially important for county seats, such as Shakopee, that served as the centers of judicial functions, property assessment, and maintenance of the peace.[6]

[3] A review of the Minnesota Department of Transportation's PONTIS database revealed the disposition of the nine other deck truss bridges identified in the 1985 study as constructed before 1946 as follows: Bridge No. 3232, replaced 2000; Bridge No. 3585, replaced 1996; Bridge 3692, replaced 1993; Bridge No. 5004, replaced 1991; Bridge No. 5190, replaced 2002; Bridge No. 5357, replaced 1985; Bridge 5947, replaced 2008; Bridge 6524, replaced 1996; Bridge No. L5733, extant but is not a deck truss vehicular bridge. (Note: The bridge inventory number – L5733 – is assigned to the three, west through-girder approach spans of a railroad bridge that crosses West River Road and the Mississippi River in Minneapolis.).

[4] Quivik, Frederic and Dale Martin. "Iron and Steel Bridges in Minnesota, 1873-1945." *National Register of Historic Places Multiple Property Documentation Form.* 1990; Federal Writers' Project, *Minnesota: A State Guide* (New York: The Viking Press, 1938), 48-63.

[5] Quivik and Martin. "Iron and Steel Bridges in Minnesota, 1873-1945"; Scott F. Anfinson, "Archeological Potentials for the West Side of the Central Minneapolis Waterfront" (report for the Minnesota Historical Society, 1984), 76.

[6] Schmiedeler, Tom, "Civic Geometry: Frontier Forms of Minnesota's County Seats," *Minnesota History* (St. Paul: Minnesota Historical Society, Fall 2001), 332.

The City of Shakopee

Shakopee is located on the site of a Dakota village and was settled by traders and missionaries as early as 1844.[7] Towns began to develop in the Minnesota River Valley following the 1851 Treaty of Mendota, which opened up the area for Euro-American settlement. Early settlers hailed primarily from New England and the Mid-Atlantic States, but the later influx of German, Irish, Bohemian, and Scandinavian immigrants was critical to the settlement of the county.[8]

In 1854 the town of Shakopee was platted and named as the seat of Scott County, and on May 23, 1857, it was incorporated as a city. By that time, the city had a population of 767.[9] The original plat was aligned with the Minnesota River, so lots in the earliest part of town have a northwest-southeast orientation. Later additions were aligned on a north-south orientation.

Shakopee grew over the next 20 years, as evidenced by the increasing population and number and diversity of buildings. In 1854 the first public school and post office were constructed, while the first railroad shops of the Minnesota Valley Company opened in 1867. In 1874 the Occidental Hotel was opened for business.[10] By 1900 the population of Scott County had reached 15,000, and Shakopee's population was 2,047.[11]

During the early years following settlement, steamboat travel along the Minnesota River was the primary means of transportation. Like other communities along the river, such as St. Peter and Mankato, Shakopee's economy revolved around the river.[12] River travel began to decline by the 1870s as railroads were built across Minnesota, providing a more economical means of transportation. Inconsistent water levels on the Minnesota River also contributed to the decline, and by the early twentieth century only summer excursion steamers were found plying the river's waters.

While railroads were an important aspect of the region's transportation network, roads were also part of the network. Early roads developed as wagon trails and typically followed the trade routes established by American Indian tribes. One such road ran along the north bank of the Minnesota River to connect Shakopee with Chaska to the west and St. Paul to the east (the portion of this road between Shakopee and Eden Prairie is known today as Flying Cloud Road). Located on the south bank of the river, Shakopee was linked to the road by ferries serving both the north and south ends of the city from the mid 1850s to the late 1870s. The first bridge to connect Shakopee with the road on the river's north bank opened in 1880.

Known as the Lewis Street Bridge, the bridge was constructed after the citizens of Shakopee voted in the April 1878 general election to issue bonds to fund the project.[13] With construction of the bridge, Shakopee merchants and farmers were able to expand their trade area. Following controversy about where the bridge would span the Minnesota River, the swing bridge was located at Lewis Street and officially opened to traffic in 1880.[14]

As the automobile became an increasingly important means of transportation in the 1920s and 1930s, the MHD worked to upgrade roads to accommodate automobile travel. Also during this time, the Minnesota State Legislature established an official system of numbered roads, called Constitutional Routes, throughout the state. Constitutional Route 5 began at the Minnesota and Iowa state line

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[7] Coller, *The Shakopee Story,* 13-14.

[8] Coller, *The Shakopee Story*, chapters 3-5; "Scott County History." Scott County Historical Society. <http://www.scottcountyhistory.org/scotthistory.html> Accessed October 2005.

[9] Coller, *The Shakopee Story*, 703.

[10] Coller, *The Shakopee Story,* 30-110.

[11] "Minnesota: Population of Counties by Decennial Census: 1900-1990"; Coller, *The Shakopee Story*, 703. <http://www.census.gov/population/cencounts/mn190090.txt> Accessed October 2005.

[12] Coller, *The Shakopee Story,* 222; Hoisington, Daniel John. *A German Town: A history of New Ulm, Minnesota.* (NewUlm, Mn: The City of New Ulm, Minnesota, 2004), 15.

[13] "That Bridge! The Result of the City Election." *Shakopee Courier*, vol. 1, no. 34 (6 April 1878).

[14] Coller, *The Shakopee Story,* 119.

at a point south of Blue Earth and extended northeasterly to Swan River, passing through a number of cities along its route, including Shakopee. Portions of this route, including the segment through Shakopee, were later designated TH 5.[15]

The MHD upgraded TH 5 where it ran along the north bank of the Minnesota River by paving it and replacing the Lewis Street Bridge. In August 1928 the paved highway between Shakopee and Chaska opened. The 1880 Lewis Street Bridge was converted to a pedestrian bridge and used until 1942, when it was requisitioned for scrap metal for the war effort.[16] The next month, the upgraded and paved road into Minneapolis and St. Paul opened, "thus opening a new era in public and private transportation between the cities and Shakopee."[17] In 1931 these upgraded portions of TH 5, including the segment through Shakopee, as well as portions of other Constitutional Routes and Trunk Highways were designated as United States Highway 169.

The Holmes Street Bridge

The Holmes Street Bridge replaced the 1880 Lewis Street Bridge.[18] The Lewis Street Bridge was a 409-foot-long metal, swing span bridge that allowed for Minnesota River navigation. It first opened in 1880.[19] According to Shakopee resident Julius Coller, who wrote about the city's history, the community's proposal to build the bridge arose from desires to increase the Shakopee trading area. Faced with competition for the county seat from the village of Jordan, Shakopee established a Board of Trade in 1878. The board revived an 1876 proposal to build a bridge across the Minnesota River.

In 1926 a new highway bridge was authorized at Shakopee to be located at the foot of Holmes Street, 300 feet west of Lewis Street. A petition letter dated April 12, 1926, indicates that local manufacturing companies did not consider a moveable bridge, like that at Lewis Street, to be necessary for a new crossing of the Minnesota River at Shakopee. Citing ample railroad service, improved trunk highways, and the river's inconsistent water levels for navigation and freight transport, the manufacturers petitioned for a fixed-span bridge to be built as part of a transportation link between southwestern Minnesota and the Twin Cities.[20]

The Holmes Street Bridge was built in 1927 by the MHD as a fixed span. Its elevation on the upper river bluff allowed for a deck-truss configuration instead of a through-truss or moveable span. The use of shallow concrete girders in the shorter approach spans provided additional vertical clearance for the railroad line passing underneath, thus creating a grade separation. The bridge connected with Holmes Street on the south. The Holmes Street Bridge was designed by MHD Bridge Engineer M.J. Hoffmann and built by the Widell Company of Mankato at a cost of approximately $146,000. The steel work was fabricated by the Minneapolis Steel and Machinery Company.

The Holmes Street Bridge continued to carry TH 169/101 (former TH 5) into Shakopee until 1990, when a new four-lane bridge was constructed at the foot of Lewis Street to carry TH 169/101 over the Minnesota River. The bridge has been used as a pedestrian bridge since being closed to vehicular traffic. In 2009 Mn/DOT, Scott County, and the City of Shakopee contracted with HDR Engineering Inc. and Mead & Hunt to develop rehabilitation plans to preserve the Holmes Street Bridge for continued use as a pedestrian and bicycle trail bridge. The rehabilitation project is expected to be completed in 2010.[21]

Design and Engineering

Early truss bridges were constructed primarily of wood, but also of wood and iron (the latter used for tension members) as national bridge building companies designed and patented efficient and reliable trusses. The three most important patents of this mid-nineteenth century experimental period were the Howe truss, Pratt truss, and the Warren truss. The Howe truss, designed by William Howe in 1840, consisted of diagonal members in compression and vertical members in tension, and was the most commonly used

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[15] "Details of Routes 1-25," <http://www.steve-riner.com/mnhighways/r1-25.htm> (accessed 1 December 2009); "Details of Routes 152-218," <http://www.steve-riner.com/mnhighways/r152-218.htm> (accessed 1 December 2009); "How Minnesota Highway Route Numbers are Assigned," <http://www.steve-riner.com/mnhighways/markings.htm> (accessed 1 December 2009);

[16] Huber, Michael C., Patricia A. Huber, and Joseph C. Huber, *Shakopee Scrapbook*, (Shakopee, Mn: Parkside Printing, Inc., 1992), 2.

[17] Coller, *The Shakopee Story,* 320.

[18] Coller, *The Shakopee Story,* 119-120.

[19] Coller, *The Shakopee Story,* 118-120.

[20] Shakopee Manufacturers, 12 April 1926. In the Bridge No. 4175 site file at the Minnesota SHPO.

[21] Granger, Susan and Scott Kelly, *Report on Bridge 4175: Shakopee, Minnesota, S.P. 7009-52 (T.H. 169)*, September 30, 1994.

wood truss. When iron and steel replaced wood for longer spans, Thomas and Caleb Pratt patented the Pratt truss in 1844. The Pratt truss is comprised of vertical members in compression and diagonal members in tension, and became the most commonly used truss. The Warren truss was developed in the United States by Squire Whipple in 1849 without knowledge of James Warren's invention of the same truss in England the year before. It utilizes diagonals in both tension and compression, and became frequently used in the twentieth century for steel bridges after the riveted connection replaced the pin connection.[22]

Truss bridges consist of a framework superstructure that supports the roadway over the span of the bridge. The framework consists of individual members that form a prominent geometric pattern of solids and voids. Individual members are various shapes and sizes, such as angle sections, channel sections, I-beams, and round and square rods. Composite or built-up members consist of multiple shapes attached to each other by rivets and lacing bars, lattice bars, or batten plates.

Mn/DOT divides truss bridges into four categories, which are characterized by their differing framework configurations and follow accepted engineering nomenclature for bridges. The four categories are: iron and steel pony (low) truss bridges, iron and steel through (high) truss bridges, iron and steel deck truss bridges, and iron and steel arch bridges. Site conditions are usually the determining factor for the choice of truss bridge type. Pony or through truss bridges were generally selected when there was relatively little difference between the level of the road and the level of the water. Deck trusses and arch bridges were used where the elevation difference was great, such as when a bridge was needed to carry a road over a deep gorge. Pony trusses were selected for relatively short spans, whereas through and deck trusses were chosen for longer spans. Arch bridges served very long spans and utilize arch spans, rather than truss spans, between supports. This type consists of iron or steel rib arches (built-up members) carrying a frame that transfers the load from the deck to the arch ribs.[23]

The position of the roadway, or bridge deck, relative to the trusses that span between supports distinguishes bridges in the first three categories (pony, through, and deck). On a pony truss, the deck is attached at the lower chord, or bottom edge, of each truss. The trusses are low enough that overhead bracing to resist lateral sway is not needed. The deck is also attached at the lower chords on a through truss bridge, but the trusses are high enough that overhead bracing is required to resist lateral sway. In the case of a deck truss, the deck is attached to the upper chord, or top edge, of each truss. Truss bridges may also be categorized by the configuration, or type, of the trusses themselves. In most cases, the name for each truss type comes from the person or company who developed it (e.g. Howe, Pratt, and Warren, as mentioned above).[24] The Holmes Street Bridge is classified as a Warren-with-verticals truss.

The Warren truss is characterized by diagonal members that function in both tension and compression, and form a "W" pattern along the length of the truss. A Warren truss may or may not have vertical members, which are usually somewhat thinner or lighter than the diagonals. Warren truss bridges became associated with twentieth century truss bridge construction when they supplanted the Pratt truss type.

The type of connection used at the points where bridge members intersect is another important distinction between the various types of truss bridges. During the nineteenth century, most iron and steel truss bridges were pin connected, meaning that at each intersection of vertical, diagonal, and chord members, a pin set through holes in the members held them together. Around the turn of the twentieth century, bridge designers and builders started using rivets to connect truss members, especially for short span bridges. At each intersection of the vertical, diagonal, and chord members, a steel gusset plate was riveted to the members. By the 1920s the riveted connection replaced pins for many longer spans.[25]

Materials

In the mid-1800s national bridge companies were experimenting with the use of cast and wrought iron for bridge building. Cast iron, which as its name implies, was cast or formed into required shapes. Due to its brittleness, the material could not be rolled or forged, and the material's brittleness contributed to its unreliability for compression members in bridge trusses. After the Ashtabula Bridge in Ohio collapsed in 1876, cast iron was no longer used to fabricate bridges. Unlike cast iron, wrought iron was a nearly pure material

[22] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* (National Register of Historic Places Multiple Property Documentation Form, 1989).

[23] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* F-1–F-2.

[24] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* F-2.

[25] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-6.

that could be easily forged or rolled to produce structural shapes. Therefore, it became the preferred bridge building material until it was supplanted by steel, which could be produced in large amounts at low cost.[26] There was a brief transitional period from wrought iron to steel in the early 1890s. Despite the metallurgical difference between wrought iron and steel, bridge fabricators used the two materials similarly in producing truss members. In most instances, the framework configurations for bridge superstructures built of steel were virtually identical to those built of wrought iron.[27]

Steel remained the prominent material used for bridge building in Minnesota until the 1930s. By that time, reinforced concrete had risen in popularity as a major structural material, and highway and bridge engineers had adopted standardized plans for reinforced concrete structures. However, metal truss bridges, such as the Holmes Street Bridge, continued to be constructed in the early twentieth century, albeit on a much smaller scale than in the nineteenth century when they "epitomized safe, economical, and durable highway engineering."[28]

The Minneapolis Steel and Machinery Company
The Minneapolis Steel and Machinery Company was founded by J.L. Record and Otis Briggs around the turn of the twentieth century. Although the company fabricated other products such as steel structural buildings, store fronts, stairs, water tanks and towers, and steel grain elevators, bridge fabrication and construction was a major focus of the venture in the early years. By 1903 the company had a plant, which included a riveting shop, machinery shop, foundry, blacksmith shop, pattern/template shop, and storage facilities, located along Hiawatha Avenue between East 28th and Lake Streets in Minneapolis. Employing 1,200 people by 1908, the Minneapolis Steel and Machinery Company served a large regional market, preparing steel for bridges ranging in size from a 63-foot, riveted Warren pony truss to the 645-foot-long Holmes Street Bridge.[29]

By the 1910s the Minneapolis Steel and Machinery Company had added farm tractors to its list of products. In 1929 the company merged with several other companies into the Minneapolis Moline Power Implement Company, which became well known for its tractors.[30]

In addition to the Minneapolis Steel and Machinery Company's importance as a Minnesota-based bridge fabricator serving a large regional market, the company played a major role during the early 1900s in establishing standards and specifications for steel bridges. These standards and specifications were used primarily by local governments and were developed specifically for Minnesota traffic conditions to increase the quality of bridges local governments were constructing. After the Minnesota State Highway Commission developed their own set of standards and specifications in 1911, standards and specifications were applied to all bridges.[31]

Developmental history/additional historic context information (if appropriate)

Quivik, Frederic and Dale Martin. "Iron and Steel Bridges in Minnesota." *National Register of Historic Places Multiple Property Documentation Form.* 1989. Accepted by the National Register of Historic Places, 1989. Available at the Minnesota State Historic Preservation Office.

[26] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-6–E7.

[27] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-7.

[28] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-8.

[29] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-15.

[30] "Minneapolis-Moline History," < http://www.minneapolis-moline.com> (accessed December 5, 2009).

[31] Quivik, Fredric L. and Dale L. Martin, *Iron and Steel Bridges in Minnesota,* E-16.

9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

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Holmes Street Bridge
Name of Property

Scott County, Minnesota
County and State

Previous documentation on file (NPS):

___preliminary determination of individual listing (36 CFR 67 has been requested)
___previously listed in the National Register
___previously determined eligible by the National Register
___designated a National Historic Landmark
___recorded by Historic American Buildings Survey #_____
___recorded by Historic American Engineering Record #_____
___recorded by Historic American Landscape Survey #_____

Primary location of additional data:

___State Historic Preservation Office
_X_ Other State agency
___Federal agency
___Local government
___University
___Other
Name of repository: **Minnesota Department of Transportation**

Historic Resources Survey Number (if assigned): SC-SPC-068

10. Geographical Data

Acreage of Property .68
(Do not include previously listed resource acreage.)

Shakopee, Minn.
1958 Revised 1993
NAD 1927

UTM References
(Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing		Zone	Easting	Northing
1	15	458330	4960730	3			
2	15	458340	4960630	4			

Verbal Boundary Description (Describe the boundaries of the property.)
The boundary is a 695-foot by 42.4-foot rectangle with a long center axis that coincides with the centerline of the bridge, and with a perimeter that encompasses the entire bridge.

Boundary Justification (Explain why the boundaries were selected.)
The boundary encompasses the total bridge superstructure, total substructure, and all other integral abutment and approach elements.

11. Form Prepared By

name/title Christine Long, Bob Frame, and Heather Goodson / Historians
organization Mead & Hunt, Inc. date January 21, 2010
street & number 7900 West 78th Street, Suite 370 telephone 952-941-5619
city or town Minneapolis state MN zip code 53719-2700
e-mail Christine.Long@meadhunt.com, Bob.Frame@meadhunt.com, Heather.Goodson@meadhunt.com

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.

  A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.

- **Continuation Sheets**

- **Additional items:** (Check with the SHPO or FPO for any additional items.)

Photographs:

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

Name of Property: Holmes Street Bridge

City or Vicinity: Shakopee

County: Scott **State:** MN

Photographer: Dietrich Floeter

Date Photographed: April and May 2005

Description of Photograph(s) and number: Original negative contained in the Minnesota Historic Property Record documentation for the Holmes Street Bridge/Bridge No. 4175, Minnesota Historical Society

General view of north elevation, view south.
1 of 16.

General view of east elevation from Route 101 Bridge, view west.
2 of 16.

General view of west elevation from north bank, view east.
3 of 16.

General view of west elevation from south bank, view east.
4 of 16.

Detail of rail, view northeast.
5 of 16.

Detail of southwest corner of bridge, view north.
6 of 16.

Detail of south abutment showing underpass, view southwest.
7 of 16.

Detail of north abutment, view northeast.
8 of 16.

Detail of view shoe on pier, view east.
9 of 16.

Detail of shoes on north end of truss on pier, view northeast.
10 of 16.

Detail of pier, view south.
11 of 16.

Detail of west side of truss, view north.
12 of 16.

Detail of east side of truss, view north.
13 of 16.

Detail of underside and interior of truss, view north
14 of 16.

Detail of south abutment and CR 101 underpass, view west.
15 of 16.

Detail of pier, view south.
16 of 16.

Property Owner:

(Complete this item at the request of the SHPO or FPO.)

name _____

street & number _____ telephone _____

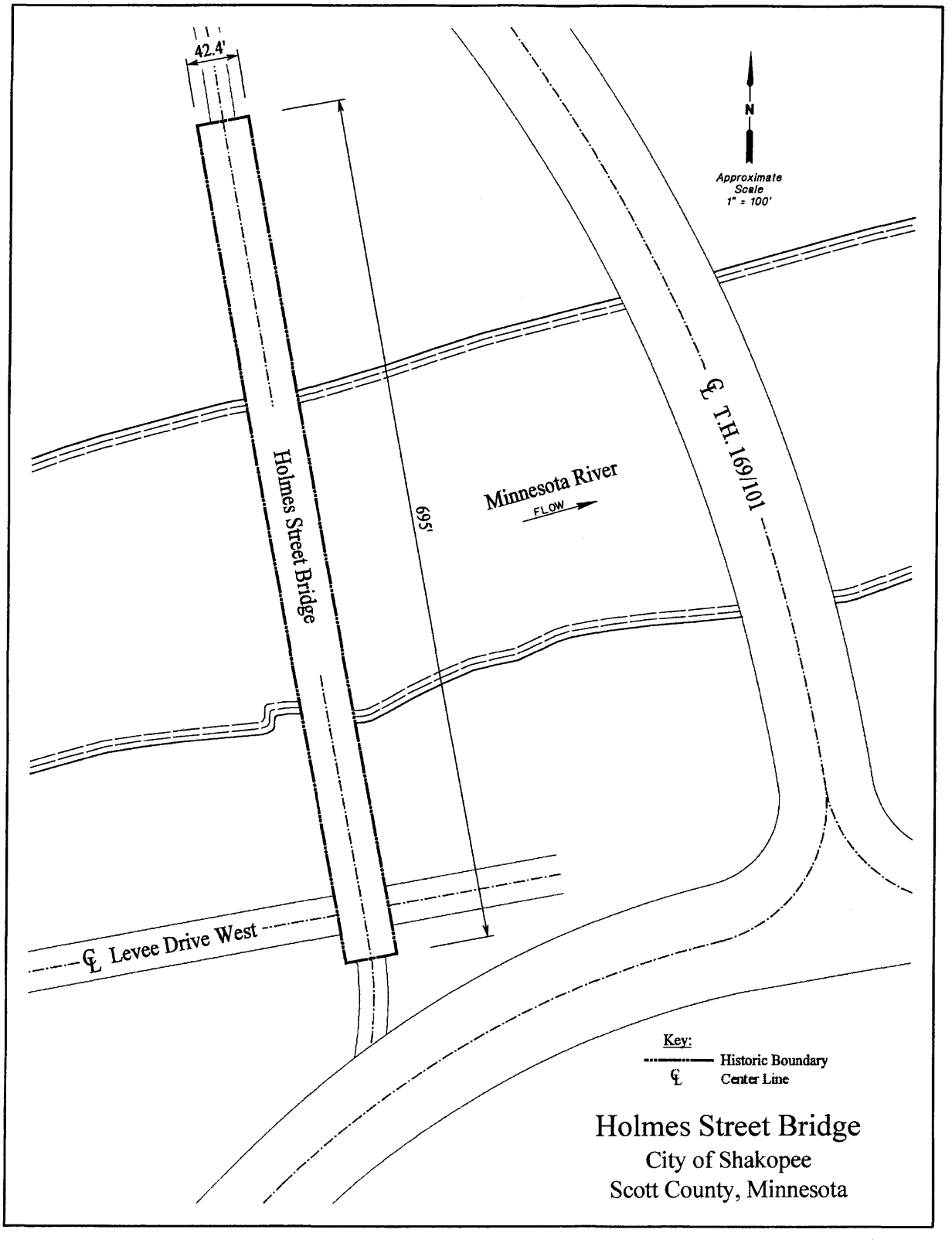
city or town _____ state _____ zip code _____

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Holmes Street Bridge
Name of Property
Scott County, Minnesota
County and State
Not applicable.
Name of multiple listing (if applicable)

Section number Additional Documentation Page 1



United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Holmes Street Bridge
Name of Property
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Section number Additional Documentation Page 2