

# MINNESOTA HISTORIC PROPERTY RECORD

## PART I. PROPERTY IDENTIFICATION AND GENERAL INFORMATION

**Common Name:** Camp Ripley Bridge  
**Bridge Number:** 4969  
**Identification Number:** MO-GRE-049  
**Location:**  
Feature Carried: TH 115  
Feature Crossed: Mississippi River  
Descriptive Location: at Camp Ripley  
Town, Range, Section: 130N-29W-16  
Town or City: Green Prairie Township  
County: Morrison

### UTM:

Zone: 15  
Easting: 5103184  
Northing: 396759

### Quad:

Belle Prairie  
7.5 Minute Series  
1983

### Present Owner:

State

### Present Use:

Mainline

### Significance Statement:

Bridge 4969 is significant under Criterion A for its association with the founding and history of Camp Ripley. It is significant under the context "State Owned Buildings: The Development of Camp Ripley, 1929-1945." It is significant under Criterion C for its unusual engineering solution to a bi-modal transportation problem by combining a railroad bridge with a vehicular bridge in a single structure. Some combination railroad/highway bridges exist with the two transportation modes on separate decks, or otherwise separated. Bridge 4969 is particularly unusual in that the railroad track runs the length of the deck within the roadway, similar to a street railway design, with no safety features.

The "Historical and Architectural Inventory of Camp Ripley, Minnesota" (1994) states: "According to the local press, plans for the combined highway and railroad bridge 'were prepared jointly by the state highway department, Northern Pacific railroad, the county of Morrison and the military department.' In April 1930, the Minneapolis Bridge Company won a low-bid contract to construct the bridge for approximately \$97,000. The Northern Pacific donated about one-quarter of the

cost, with the balance supplied by the state. The contractor completed the project in November 1930."

The selection of the site of Camp Ripley in Morrison County was justified by Adjutant General E.A. Walsh for its accessibility to the Northern Pacific Railway line and to state highways, particularly State Trunk Highway 27 (U.S. Highway 317). Both the rail line and the highway were separated from the proposed camp site by the Mississippi River. Connecting the site with the two transportation lines posed questions of engineering and economics. Planners and engineers could either build two bridges, one for the railroad and one for the highway, or they could combine two functions in a single structure.

The hybrid structure, while likely more expensive than either bridge alone, was probably less expensive than the total cost of two separate Mississippi River bridges. The fact that the railroad track was designed to occupy the center of the bridge, and the fact that no safety features for separating railroad from highway traffic are apparent in the bridge structure or in any existing plans, indicate that railroad use was infrequent. The infrequent railroad use may be an additional reason for combining the two functions in one bridge. Finally, research indicates that the railroad paid a quarter of the cost of the bridge and the state paid three quarters, suggesting that railroad anticipated considerably less use of the bridge.

To design a combination railroad and highway bridge, several uncommon engineering elements had to be included in the design. A primary issue is loading. The Bridge Inventory Report indicates the design load for 4969 to be "RR" or railroad loading. A 1995 load rating of the bridge showed the inventory rating to be HS 33.5 and the operating rating to be HS 55.9. Through 2003, standard Mn/DOT highway design loads were HS 25. The 1930 railway design load used on the bridge was sufficient to result in a bridge that has capacity in excess of that required for a new highway bridge design in 2003.

To achieve the requisite railroad loading, the bridge engineers designed the configuration of four girders that exists in the bridge today. The two center girders support the railroad track and the center portion of the roadway. The two outside girders support the remainder of the deck and roadway. The center girders have additional elements necessary for railroad loading, such as stiffeners, bracing, and bearings, that would not be necessary on a structure designed for highways alone. The deck and roadway needed a level vehicular surface with flush rails, a feature that required the placement of girders at different heights, necessitating additional engineering solutions for the relationship of the superstructure with the substructure. The result was an unusual engineering solution that served to connect the new Camp Ripley with the existing railroad and highway transportation systems.

## **PART II. HISTORICAL INFORMATION**

### **Date of Construction:**

1930

### **Contractor and/or Designer (if known):**

Contractor: Minneapolis Bridge Company

Designer: Minnesota Highway Department  
Northern Pacific Railroad  
Morrison County  
Minnesota National Guard

### **Historic Context:**

State Owned Buildings: The Development of Camp Ripley, 1929-1945

### **National Register Criterion:**

A, C

## **PART III. DESCRIPTIVE INFORMATION**

### **Descriptive Information:**

Bridge 4969 carries Trunk Highway 115 and a single railroad track on an east-west alignment over the Mississippi River at the edge of Camp Ripley in Morrison County. It is a five-span, steel girder bridge. The overall structure length is 413 feet, 3 inches. The out-to-out structure width is 31 feet, 8 inches. The three center spans are 82 feet each and the two flanking spans are 83 feet, 7.5 inches each. The substructure has four reinforced-concrete wall river piers and two reinforced-concrete abutments with turnback wingwalls.

The superstructure is composed of four built-up plate girders with 80-inch webs. The two center girders are located four feet on either side of the bridge center line and carry shallow steel beams that directly support the railroad track and also function as railroad ties. The two outside girders are located 10 feet 6 inches on either side of the bridge center line, or 6 feet 6 inches outside the two center girders. The outside girders support the reinforced-concrete bridge deck that extends beyond the railroad track in the center. The girder webs have stiffeners at each tie location; alternate stiffeners are partial depth. Full-depth stiffeners on the north outside girder support outside brackets that once carried a sidewalk (see description below). The center girders have lower lateral and vertical bracings between girders.

Because the railroad track, which runs longitudinally along the bridge deck, cannot rise above roadway surface and obstruct vehicular traffic, the tops of the rails are kept flush with the road surface by lowering the two center girders that carry the railroad tracks. This creates an unusual situation at the piers and abutments where the four girders rest at two different elevations: the bottom flanges of the outside girders are 6-5/8 inches above the bottom flanges of the inside girders. The bearings beneath the girders must accommodate the elevation differential at the piers and abutments.

Original engineering plans for the bridge are not available. Plans from rehabilitation projects in 1971 and 1998 indicate some original elements that were altered in the two projects. The original design included a 24-foot roadway (curb-to-curb) with a five-foot sidewalk cantilevered on the north side. Metal railings were supported by outside knee braces on both sides of the bridge. The 1998 rehabilitation widened the roadway to 28 feet 4 inches by removing the north sidewalk surface and original curbs and pouring a new reinforced-concrete deck. The south knee braces were removed entirely and the north knee braces were cut down to brackets. The original ornamental metal railing panels were remounted on the outside of the new deck and protected with new Illinois Type Rail on a new inside curb. The original expansion bearings were replaced with elastomeric bearing pads. The existing deck, with joints over the piers, was replaced with a reinforced-concrete deck continuous from abutment to abutment.

## **PART IV. SOURCES OF INFORMATION**

### **References:**

"Historical and Architectural Inventory of Camp Ripley, Minnesota," prepared by Hess, Roise and Company, Minneapolis, July 1994, for Minnesota State Historic Preservation Office. See also: Camp Ripley Bridge, Camp Ripley Historic Resources Inventory, 1994, Minnesota State Historic Preservation Office.

## **PART V. PROJECT INFORMATION**

### **Historians:**

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### **Form Preparer:**

Mead & Hunt, 2006

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